

MENTAL HEALTH OF URBAN AND RURAL YOUTH IN SASKATCHEWAN

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By

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## **ABSTRACT**

The health and mental health status of rural populations has often been neglected as a research priority; particularly in the case of rural youth. The purpose of this study is to examine the differences in depressed mood and suicide ideation of urban and rural youth and to determine what factors are associated with depressed mood and suicide ideation. More specifically, this study will examine depressed mood and suicide ideation of urban and rural youth (grades 5 to 8) in the Saskatoon Health Region (SHR) using data from the Student Health Survey.

This project involved secondary data analysis of SHR's Student Health Survey. There were 5,783 grade 5-8 students that participated in the survey. The final logistic regression models revealed similarities and differences between urban and rural youth in the risk factors that predicted the likelihood of students reporting symptoms of depressed mood and suicide ideation. For depressed mood, both urban and rural youth reported their relationship with their parents, their general mental health, low self-esteem, and suicide ideation as risk factors for depressed mood. Gender, age, having been drunk, and feeling like an outsider at school were risk factors for depressed mood in urban youth, while rural students reported that their living situation, their perception of their weight, being physically bullied, and being electronically bullied increased their likelihood of reporting symptoms of depressed mood. In terms of suicide ideation, both urban and rural youth were more likely to report depressed mood and a poor relationship with their parents as risk factors. Urban youth also reported being Aboriginal, that they had tried smoking, and being victims of physical bullying as risk factors. No additional risk factors were found for rural youth. This data will help to address local and national gaps in the literature about the mental health status of youth in rural populations. This research may inform policies and programming in both the health and education sectors.

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## DEDICATION

*I would like to dedicate my thesis to two of the most incredible people in my life.*

*To my husband Wyatt, your love, patience, humor, dedication, encouragement, sacrifices, and endless support did not go unappreciated throughout this process. You have helped me strive to do my best and I am my best when I am with you.*

*Today. Tomorrow. Always.*

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## **CHAPTER 1: INTRODUCTION**

Rural health is particularly important to the province of Saskatchewan as 40% of Saskatchewan residents live in rural areas compared to 16% in the rest of Canada (Statistics Canada, 2003). Research has found that the health status of rural Canadians is usually poorer than that of urban Canadians (Groft, Hagen, Miller, Cooper, & Brown, 2005; Mitura & Bollman, 2003; Plotnikoff, Bercovitz, & Loucaides, 2004). A national report from DesMeules and Pong (2006) found that in comparison to urban residents rural residents had: higher proportions of people living with low income, a higher proportion of people with low education levels, elevated prevalence of obesity and smoking rates, and lower prevalence of physical activity and fruit and vegetable consumption. Despite the large proportion of Saskatchewan's population living in rural areas and the associated findings that rural Canadians report poorer health outcomes than urban Canadians, the overall mental health status of rural populations in Saskatchewan has often been neglected as a research priority (Marko, Neudorf, & Kershaw, 2009), particularly in the case of rural youth.

Previous studies from the United States and Canada have explored the differences in risk behaviours (e.g., smoking and drinking) between urban and rural youth (Atav & Spencer, 2002; Plotnikoff, et al., 2004). Research from Atav et al. (2002) found that in comparisons to their urban and suburban counterparts, rural youth were at greater risk for using tobacco, alcohol, and other drugs; history of pregnancy; and carrying a knife, club, or other weapon to school or in the community. Furthermore, a Canadian study by Plotnikoff et al. (2004), found that rural students were more likely to have tried smoking (73.0%) than urban students (64.4%) and also found that rural students were more likely to be overweight and/or obese than their urban counterparts (Plotnikoff et al., 2004). Although research has identified rural youth as being at risk for

engaging in more risk behaviours and for obesity, prior research has neglected to investigate the differences in mental health status between rural and urban youth.

### **Purpose and Significance of the Study**

This project examined the differences in mental health of urban and rural youth in grades 5 to 8 in the Saskatoon Health Region (SHR) using data from the SHR's Student Health Survey. Specific questions considered included:

- 1) What is the prevalence of mental health issues, specifically depressed mood (sustained and pervasive feelings of despair. E.g., "How often have you felt or behaved this way in the past week...I felt hopeful about the future?") and suicide ideation (thoughts about taking one's own life. E.g., "Have you seriously thought about suicide in the past 12 months?") in rural and urban youth in grades 5 to 8 in the SHR?
- 2)
  - a) Do urban and rural youth differ in terms of their levels of depressed mood?
  - b) Are urban or rural youth more likely to report that they had thought about suicide (suicide ideation) in the past 12 months?
- 3)
  - a) What factors predict the likelihood that urban students would report symptoms of depressed mood?
  - b) What factors predict the likelihood that rural student would report symptoms of depressed mood?
  - c) What factors predict the likelihood that urban students would report that they had seriously considered suicide in the past 12 months? and
  - d) What factors predict the likelihood that rural students would report that they had seriously considered suicide in the past 12 months?

The dependent variable that will be investigated will be mental health. This will be measured using depressed mood and suicide ideation. The independent variables that will be investigated are: age, gender, neighbourhood income, parental education and occupation, physical activity, obesity, health, mental health, bullying, self-esteem, peer relationships, parental relationship, and risk behaviors.

### **Significance**

Based on the results from a previous Student Health Survey, the SHR re-assigned six Public Health Nurses and a variety of other public health staff to schools located in low-income neighbourhoods in Saskatoon. In addition, the SHR collaborated with the University of Saskatchewan's College of Medicine to open paediatric clinics in two community schools, and SHR provided funding to ten community schools to enhance and develop after-school programs. Furthermore, the SHR implemented a mental health and physical activity intervention in five schools in low-income neighbourhoods of Saskatoon. Individual schools throughout Saskatoon have also changed and/or created programming to address issues that were found in the surveys. For example, a number of schools in Saskatoon introduced new physical activity programs after school administrators and teachers learned of low physical activity scores in their schools from the Student Health Survey. Therefore, this current research will help inform policies and programming in both the health and education sectors, as well as provide evidence for the development of interventions and/or policies for these sectors. These findings will fill local and national gaps in the literature about the mental health status of youth in rural populations, as well as, provide data at a local level so the local level can prioritize, target, and inform interventions. Moreover, this research will identify risk factors that are associated with depressed mood and

suicide ideation in urban and rural youth and will determine the prevalence of depressed mood and suicide ideation in this population.

### **Overview of Chapters**

This thesis is organized into five chapters. Chapter one includes a brief introduction to the study. Chapter two provides a summary of the literature surrounding mental health, specifically depressed mood and suicide ideation in youth to provide the necessary background knowledge in order to understand the significance of the research questions. This chapter ends with an outline of the history of the Student Health Survey. Chapter three describes the research methodology of the study, while chapter four discusses the findings of the current study. Finally, chapter five summarizes the findings with respect to existing literature, discusses the potential limitations of the study and clinical applications of the findings.

### **Definition of Terms**

The following definitions will be used in this thesis.

#### **Mental Health**

According to the World Health Organization, mental health is an integral and essential part of health (World Health Organization, 2010). They define mental health as “*a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community*” (World Health Organization, 2010). For the purpose of this study, the variables used to measure mental health will be depressed mood and suicide ideation.

## **Depressed Mood**

Depression can be described as a state (short-lived feelings of sadness), mood (sustained and pervasive feelings of despair), or to a clinical syndrome (depressed mood accompanied by various symptoms, such as fatigue, loss of energy, sleeping difficulties, and appetite changes) (Oltmanns, Emery, & Taylor, 2002). This study utilized the definition of depression as a mood.

## **Suicide Ideation**

Suicide ideation is described as thoughts about taking one's own life (Centers for Disease Control and Prevention, 2007).

## **Youth**

Youth is defined as the time when someone is young, more specifically the time between childhood and adulthood (Merriam-Webster, 2014). Youth is described as a fluid category rather than a fixed age group (United Nations Educational, Scientific, and Cultural Organization, N.D.). In this study youth refers to students who were registered in grades five to grade eight at the time of data collection.

## **Urban and Rural**

For the purposes of this study, *urban* was defined as schools located in Saskatoon and *rural* was defined as all schools located outside of the city of Saskatoon (Marko, et al., 2009).

## **Deprivation**

Peter Townsend (1987) defined deprivation as “*a state of observable and demonstrable disadvantage relative to the local community or wider society or nation to which an individual, family, or group belongs*”. Disadvantage can occur at numerous levels, such as housing, education, food, work, or social ties. A person is considered deprived if they fall below the level

attained by the majority of the population. *Material deprivation* is the deprivation of the goods and conveniences of modern life, such as an adequate car or housing. *Social deprivation* refers to relations within the family and in the workplace and community (Pampalon, Hanel, Ganache, & Raymond, 2009).

## **CHAPTER TWO: LITERATURE REVIEW**

Chapter two is divided into three sections. The first section of the chapter reviews the relevant literature related to the health and mental health of urban and rural youth. The next section examines the study's mental health variables: depressed mood and suicide ideation. This section is followed by a review of relevant theories of depressed mood and suicide ideation. Finally, the chapter ends with the history of the Student Health Survey and a brief description of the most current version of the survey.

### **Overview of Health and Mental Health in Youth**

#### **Rural versus Urban Health**

Families living in rural areas face unique geographical challenges in maintaining their health and obtaining health care (Mitura & Bollman, 2003). Research has shown that the health status of rural Canadians is generally worse than that of urban Canadians (Groft, et al., 2005). For example, there is evidence that there is a rising prevalence among rural Canadian children and youth of risk factors for adult-onset conditions such as cardiovascular disease (Atav & Spencer, 2002; Evers, Taylor, Manske, & Midgett, 2001; Groft, et al., 2005). Furthermore, a 2002 Statistics Canada study of the health of Canadians showed that rates of smoking, obesity, and heavy drinking among rural youth exceeded the national average (Groft, et al., 2005; Statistics Canada, 2002). Studies in the United States have found similar findings as those in Canada in regards to the health of rural youth. A Pennsylvania study of 624 grade 9, 10, and 11 students revealed that 30.0% of students reported that they were overweight, 27% reported suffering from headaches, 12.8% had used tobacco, and 10.7% reported using alcohol (Puskar, Tusaie-Mumford, Sereika, & Lamb, 1999). However, none of these results were compared to an urban sample of youth. Studies that have investigated the health behaviours and/or beliefs of



rural youth in Canada are limited (Groft, et al., 2005). Local data on the health status of the Saskatoon Health Region (SHR) rural residents, found that health behaviour measures (e.g., self-reported health, smoking, physical activity, vegetable and fruit consumption, overweight and obesity, and community belonging) were generally poorer in rural SHR residents than in urban SHR residents (Marko, et al., 2009). However, overall rural SHR residents fared at least as well or better than urban SHR residents on most health measures (Marko, et al., 2009). Although these results are useful for understanding the health of the rural population in the SHR, the majority of the results are not presented by age groups. Therefore, little to no data is presented for children or adolescent populations, making it difficult to apply these findings to these age groups.

### **Rural versus Urban Mental Health**

Population based surveys on mental health usually underrepresent residents from remote settings because of the cost and the inconvenience of surveying these individuals (Kelly, Stain, Coleman, Perkins, Fragar, Fuller, & Lewin, et al., 2010). Furthermore, studies to date have been inconclusive about the impact of rural environments on mental health (Kelly, et al., 2010). Finally, cross-sectional surveys have been limited in their ability to address patterns of mental health disorders (Kelly, et al., 2010). However, a Pennsylvania study of 624 grade 9, 10, and 11 students found that 28% of the students surveyed reported always having concerns with psychosocial issues, 24% reported feeling confused by the future, 17% reported feeling depressed, 10% reported feeling lonely, 8% were having trouble at home, 5% lacked a best friend, and 5% reported having thought about suicide (Puskar, et al., 1999). While this study demonstrated that youth from rural communities face challenges in regards to their mental health, this study had several limitations, including: the results are only from four schools in the

southwestern Pennsylvania area and the majority of the respondents to the survey were female (60.3%). All the schools in this study were from similar geographical areas, making it more difficult to generalize the results to other areas. Furthermore, gender differences explained in this study may have been due to the discrepancy between male and female respondents, not necessarily because males and females are inherently different.

Not all studies show that residents living in rural communities have more mental health concerns than residents living in an urban community. A study of over 9,000 adults ages 16-64 in Great Britain found higher rates of psychiatric morbidity, alcohol dependence, and drug dependence in residents from urban areas than in residents living in rural areas (Paykel, Abbott, Jenkins, Brugha, & Meltzer, 2003). Their findings also suggested that social differences were strongly associated with higher rates of psychiatric morbidity, alcohol, and drug use (Paykel, et al., 2003). Although the results of this study demonstrated that older adolescents and adults living in rural areas fared better than their urban counterparts in terms of mental health functioning, these results cannot be generalized to youth living in the same environment. This study further demonstrates how research in the area of mental health in youth from rural communities is a neglected area of research.

### **Explaining Social Inequalities in Rural and Urban Health**

Urban health inequalities have been studied more frequently than rural health inequalities because inequalities in health are more often observed between more deprived and affluent areas within the same city (Riva, Bambra, Curtis, & Gauvin, 2010). There are two models that can help to explain area-level conditions that may interact with an individual's socioeconomic circumstances that influence health: the collective resource model and the local social inequality model (Riva, et al., 2010).

The collective resource model suggests that people living in areas that have more social and material collective resources (e.g., higher quality service amenities, wealth, employment, social support) have better health than those living elsewhere. These collective resources provide opportunities for people to live healthier lives and may be important for less affluent individuals because they may be more reliant on local resources and services (Riva, et al., 2010). In England, their rural areas are on average less deprived and more socially cohesive and therefore, their collective resources may explain why they report more health advantages than their urban counterparts (Riva, et al., 2010).

The disparity between an individual's socioeconomic position and the socioeconomic conditions of their local area may affect health and can be explained by the local social inequality model. Individuals that are less affluent living in more affluent areas with more collective resources may have more health concerns than less affluent individuals living in more deprived areas because of problems such as the ability to purchase goods, participation in community life, and the effects of comparing oneself to ones neighbours. In contrast, an individual that is more well-off living in a deprived area may have better health than their counterparts living in affluent areas (Riva, et al., 2010). In general, rural communities have been described as 'close knit' and have also been described to share traditional values of hard work and cooperation (Boyd, Hayes, Wilson, & Bearsley-Smith, 2008). This suggests that sense of community and neighbourhood cohesion are high in at least some rural communities (Boyd, et al., 2008).

## **Youth and Mental Health**

Adolescence is a distinct developmental phase. It is characterized by biological changes of puberty, increasing academic, vocational and social responsibility, shifting interpersonal

dynamics with their family and peers, and changing perceptions of self (Shortt & Spence, 2006). Some youth deal with these changes positively, while others do not. Mental disorders invade all aspects of development and functioning for youth, including: family and peer relationships, school performance, and subsequent productivity and functioning as an adult (National Institute of Mental Health (NIMH), 2001; United States Department of Health and Human Services, 1999; Waddell, McEwan, Hua, & Shepherd, 2002). It is estimated that approximately 14% to 20% of youth experience a mental health disorder (Waddell, et al., 2002; Waddell & Shepherd, 2002; Waddell, 2007) and between 50% and 74% of mental disorders begin in childhood (Kim-Cohen, Caspi, Moffitt, Harrington, Milne, & Poulton, 2003; Schwartz, Waddell, Barican, Zuberbier, Nighingale, & Gray-Grant, 2009). Typically mental disorders cause significant distress and impairment in youth functioning at home, at school, with their peers, and in the community (Waddell, et al., 2002). The effects of mental disorders are said to worsen if the disorder occurs early in development and many disorders continue to exhibit through to adulthood (Costello & Angold, 2000; Waddell, et al., 2002).

### **Help Seeking Behaviours of Youth**

Despite the high prevalence of mental disorders among youth, they are unlikely to seek help or support from professional sources (Hodges, O'Brien, & McGorry, 2007). Youth are more likely to seek help from informal sources before they seek help from formal sources (Hodges, et al., 2007). Barriers to accessing help in youth include: trust, a belief that their problems can be solved on their own, a belief that therapy may not be helpful, the stigma of mental illness, limited knowledge of mental health services, concerns about cost, anxiety, embarrassment, fear of reaction of others, fear of what might happen in therapy, and belief that family and/or friends can help more than therapy (Deane, Wilson, Ciarrichi, & Rickwood, 2002;

Hodges, et al., 2007). For rural youth there are additional barriers to accessing services, including: the cost and availability of services and/or they may need to travel long distances to access services. Furthermore, living in a small community, concerns about anonymity and confidentiality are also significant barriers to seeking mental health services (Hodges, et al., 2007). However, there is the argument that living in a smaller community with tighter social networks makes it possible for earlier detection of mental health concerns (Hodges, et al., 2007).

### **Cost of Mental Health**

The cost of collective health care spending in Canada exceeds \$182 billion annually; 94% of the funds goes towards health care services, while only approximately 6% goes towards public health spending, which includes early childhood development and disorder prevention programs (Canadian Institute for Health Information, 2011). Additionally, approximately 75% of children with a mental health disorder do not access specialized treatment services (Schwartz, et al., 2009; Waddell, 2007). This has led to children's mental health being dubbed as the "orphan's orphan" of healthcare (Waddell, 2007). The cost associated with mental health disorders in children and youth is high, and this is especially true when the disorders are not prevented or addressed early and additional costs related to social, education, child protection, justice, and acute health care services are needed (Waddell, et al., 2002). Costs are also accrued through loss of human potential and productivity (NIMH, 2001). Overall, mental health disorders are a leading cause of disability in the population. It is estimated that the cost for Canadians to treat mental health disorders is more than \$14 billion annually (Stephens & Joubert, 2001; Waddell, 2007). According to Waddell (2007), due to the high cost, prevalence, and life course impact, mental health disorders are arguably the leading health problem for Canadian children.

## **Effects of Poverty on the Mental Health of Youth**

In 2007, 9.2% of Canadians were living on a low income<sup>1</sup> and in Saskatchewan this rate was 7.3% (Collins & Jensen, 2009). Groups most affected by poverty in Canada are children, lone-parent families, women, unattached individuals, seniors, Aboriginal peoples, persons with a disability, recent immigrants and visible minorities, and the working poor (Collins & Jensen, 2009). In 2007, 9.5% of Canadian children (those under the age of 18) were members of a low-income household (Collins & Jensen, 2009). Children and youth living in low-income households can face numerous challenges (Allensworth, 2011). Some of these challenges include: living in substandard housing, increase in crime, decrease in safety, and reduced social networks (Williams & Jackson, 2005). Children and youth from low-income households also experience more food insecurity, more chronic and infectious diseases, more injuries, increased social and emotional behavioral problems, and experience more violence and death (Allensworth, 2011; Currie & Lin, 2007) when compared to children from more affluent families.

Poverty can also affect the mental health of children and youth. Feeling happiness with their family and their environment can be negatively affected if youth are aware of their parent's economic difficulties (Dashiff, DiMicco, Myers, & Sheppard, 2009; Frojd, Marttunen, Pelkonen, von der Pahlen, Kaltiala-Heino, 2006). Perceptions of their family's financial difficulties have been associated with aspects of youth mental health. For example, Frojd et al. (2006) found that when Finnish youth were aware of their parent's financial difficulties, girls were more likely to experience depressed mood while boys were more likely to drink to the point of intoxication. Awareness of their parent's economic difficulties was also found to be associated with a reported

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<sup>1</sup> Statistics Canada uses Low Income Cut Off (LICO) to measure low income (Collin & Jensen, 2009)

sense of helplessness, and feelings of shame and inferiority (Dashiff, et al., 2009; Frojd et al., 2006). Chronic exposure to poverty has also been associated with depression, substance abuse, early sexual activity, criminal activity, anxiety, and externalizing behavior problems in youth (Dashiff, et al., 2009).

Neighbourhood also plays a significant role on the effects of poverty on youth. Low income neighbourhoods are often characterized as having social disorganization, crime, and high rates of unemployment, all of which creates an environment where youth are exposed to gangs and violence (Dashiff, et al., 2009). Furthermore, perceptions of the community as being disadvantaged have been associated with decreased feelings of connectedness and less feelings of social obligation by residents (Dashiff, et al., 2009).

The research presented above outlines the potential negative effects of poverty on the mental of youth; however, these studies continue to fail in regards to presenting these effects in non-urban environments. As discussed, rural communities have been described as close knit and consisting of more social cohesion, but do these characteristics of rural communities protect youth against the effects of poverty, such as depressed mood or suicide ideation? This is an area where previous research has neglected to investigate and where this current study has attempted to fill some of these gaps.

## **Overview of Depression**

### **Depression – Definition and Prevalence**

According to the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorder (DSM; 2000), major depressive disorder is a period of pervasive sadness that lasts for at least two weeks. Individuals often withdraw from activities or hobbies they previously found worthwhile. This definition has not changed in the most current version (fifth

edition) of the DSM (American Psychiatric Association, 2013). Depression also affects individuals eating habits, energy levels, sleep, and cognition. Individuals report difficulty concentrating and often experience thoughts of hopelessness, guilt, worthlessness, and suicide (Freberg, 2010). Depression in children and youth is more often characterized by irritability than with sadness (Hazell, 2009). Depression also occurs more often in association with other disorders, such as: anxiety, conduct disorder, hyperkinesis, and learning disorders than in isolation (Hazell, 2009). Characteristics of depression are presented in Table 2.1.

Table 2.1

*Characteristics of Depression in Children and Youth (from Huberty, 2012)*

Cognitive	Behavioural	Physical
<ul style="list-style-type: none"> <li>• “All or nothing” thinking</li> <li>• Catastrophizing</li> <li>• Memory problems</li> <li>• Concentration problems</li> <li>• Attention problems</li> <li>• Internal locus of control</li> <li>• Negative views</li> <li>• Automatic thinking</li> <li>• Negative attributional style</li> <li>• Negative affect</li> <li>• Feelings of helplessness and hopelessness</li> <li>• Low self-esteem</li> <li>• Feeling loss of control</li> <li>• Suicidal thoughts</li> </ul>	<ul style="list-style-type: none"> <li>• Depressed mood</li> <li>• Social withdrawal</li> <li>• Does not participate in usual activities</li> <li>• Shows limited effort</li> <li>• Decline in self-care or physical appearance</li> <li>• Decreased work or school performance</li> <li>• Appears detached from others</li> <li>• Crying for no apparent reason</li> <li>• Inappropriate response to events</li> <li>• Irritability</li> <li>• Apathy</li> <li>• Uncooperative</li> <li>• Suicide attempts</li> </ul>	<ul style="list-style-type: none"> <li>• Psychomotor agitation or retardation</li> <li>• Somatic complaints</li> <li>• Poor appetite or over eating</li> <li>• Insomnia or hypersomnia</li> <li>• Low energy or fatigue</li> </ul>



Health Canada (2009) has reported that approximately 11% of men and 16% of women in Canada will experience major depression during their lifetime. For youth (ages 4 to 17 years), 3.5% were estimated to experience some type of depressive disorder during these years (Waddell, 2007). At a more local level, in 2008/2009 the Saskatoon Student Health Survey found that 17.9% of urban youth ages 9 to 15 reported experiencing moderate depressed mood and 4.2% reported experiencing severe depressed mood (Scott, Cushon, & Neudorf, 2012). Another study of Saskatchewan youth conducted in 2007 revealed that 14% of youth reported feeling sad or hopeless for a period of two weeks or more (Martz & Wagner, n.d.).

### **Depression - Risk Factors**

Risk factors are conditions, characteristics or events that exist prior to an unhealthy outcome and can increase the probability of that outcome over the population base rate (Garber, 2006; Shortt & Spence, 2006). Depression has an intricate, multifactorial causal structure and it is unlikely that any one risk factor can explain the development of depression in an individual, nor could the reduction of one risk factor be sufficient enough to prevent depression (Garber, 2006). Therefore, it is more likely that the accumulation and/or the interaction among numerous risk factors will lead to the development of depression (Garber, 2006; Table 2.2).

**Age and Gender.** Both age and gender have been found to be associated with the development of depression in individuals (Shortt & Spence, 2006). The risk for depression begins in early adolescence and continues to rise until individuals are in their 20's (Shortt & Spence, 2006). Prior to adolescence, the rate of depression in males and females is equal or higher in males (Garber, 2006). However, during adolescence females are or three times as likely as males to experience depression (Garber, 2006; Shortt & Spence, 2006). The gender difference for depression may be explained by multiple factors, including: pubertal status, which

has been found to be a more important indicator of depression than age; (Angold, Costello, & Worthman, 1998; Shortt & Spence, 2006), hormonal changes; increased stress; differences in interpersonal orientation; maladaptive responses to stress; and differences in socialization (Garber, 2006).

Table 2.2  
*Risk Factors and General Findings for Depression in Youth*

Risk Factors	General Findings	
Gender	Rates of depression are greater in females than in males.	Garber (2006) and Shortt and Spence (2006)
Genes	Depression is inheritable. Heritability may or may not increase with age.	Garber (2006) and Shortt and Spence (2006)
Parents with Depression	Children of parents with depression have a greater risk for depression than children of non-depressed parents.	Garber (2006)
Negative Life Events	Negative life events can predict an increase in depression in youth.	Shortt and Spence (2006)
Socioeconomic Status	Individuals from lower socioeconomic status have a greater risk for depression than individuals from a higher socioeconomic status.	Malhorta and Das (2007) and Lemstra, et al. (2008)
Rural vs. Urban	Findings have found both increased and decreased rates of depression in rural populations.	Mitura and Bollman (2003) and Maggi et al. (2010)
Bullying	Being bullied and bullying is related to increased risk of depression in youth.	Huberty (2012) and Klomek et al. (2007)
Other	Peer relationships, perceived parental rearing behaviour, self-esteem, hyperactivity/inattention, anxiety, feeling like an outsider, bullying, alcohol use, suicide ideation, hunger, parental education, and conduct problems have been associated with increased rates of depression.	Macphee and Andrews (2006) and Lemstra (2010)

**Genetic Factors.** Evidence supporting the finding that depression runs in families is growing (Shortt & Spence, 2006). Studies with twins revealed that the heritability of depressive symptoms ranges from 36% to 70% (Garber, 2006; Shortt & Spence, 2006). Furthermore,

family studies estimate that first-degree relatives of individuals with major depressive disorder are twice as likely to experience major depressive disorder themselves (Shortt & Spence, 2006). Genetic influences have also been found to vary with age. However, the directionality of the relationship is debatable. Some studies have found a decrease in the heritability with increasing age, while others have found the opposite (Garber, 2006; Johnson, McGue, Gaist, Vaupel, & Christensen, 2002).

**Children of Depressed Parents.** According to Garber (2006), parental depression is one of the strongest risk factors for depression in youth. Children of depressed parents are three to four times more likely to develop a mood disorder compared to children of non-depressed parents (Garber, 2006). These children are also more likely to have an increased risk for higher medical utilization, other internalizing disorders, behaviour problems, school problems, suicide attempts, substance use disorders, and lower overall functioning (Garber, 2006).

**Negative Life Events.** There are several studies that have found that negative life events can predict increases in depressive symptoms in youth (Shortt & Spence, 2006). Not only do negative life events affect the child, but also the parents that may influence the development of depression or other disorders in their child (Shortt & Spence, 2006). Negative life events may contribute to parental psychopathology, family conflict, dysfunctional family, and parenting skills (Shortt & Spence, 2006). However, not all people face the same challenges in life and although there are increased likelihoods to develop depression not all people who experience negative life events develop depression (Shortt & Spence, 2006).

**Socioeconomic Status.** Individuals from lower socioeconomic backgrounds have a two-fold increase in lifetime risk for major depression compared to those from higher socioeconomic backgrounds (Malhotra & Das, 2007). Youth living in lower socioeconomic conditions may

have less control over their environment and may develop difficulties in developing intimate relationships (Malhotra & Das, 2007). Furthermore, youth from disadvantaged backgrounds may experience more negative life events and be less capable of dealing with these events when they occur (Malhotra & Das, 2007).

A systematic review from Saskatoon of depressed mood and anxiety in youth aged 10 to 15 years old found an inverse relationship between the prevalence of depressed mood and anxiety and socioeconomic status. Higher rates of depressed mood and anxiety were most often found among youth from lower socioeconomic status (Lemstra, Neudorf, D'Arcy, Kunst, Warren, & Bennett, 2008).

**Rural versus Urban.** Research is inconsistent regarding the role rural environments play on the risk for depression. A national survey of rural Canadians ages 12 and above revealed that 7.7% were ninety percent likely to experience a major depressive episode and 10.1% of northern and small metro regions from this same survey were ninety percent likely to experience a major depressive episode (Mitura & Bollman, 2003). However, a more recent study of rural-urban migration and mental health diagnoses found that rural youth and young adults who were born in and grew up in the same rural community were at lower risk of being diagnosed with depression, suggesting that rural environments may play a protective role against depression (Maggi, Ostry, Callaghan, Hershler, Chen, D'Angiulli, & Hertzman, 2010).

**Bullying.** Students with depression are more likely to be victims of bullying and relational aggression (Huberty, 2012). Huberty (2012) argues that students who are bullied or who experience relational aggression are less integrated into social networks. Furthermore, students that are rejected or socially isolated by their peers are more likely to develop depressive symptoms. A study of 9<sup>th</sup> to 12<sup>th</sup> graders reported that frequent exposure to victimization or

bullying others was related to high risks of depression, suicide ideation, and suicide attempts compared to youth not involved in bullying behaviours (Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007). This study also revealed that even infrequent involvement in bullying behaviour was related to an increased risk of depression and suicidality (Klomek, et al., 2007). Therefore, both victimization and bullying were found to be related to increased risk of depression and suicide in youth (Klomek, 2007).

**Other Factors.** A study by MacPhee and Andrews (2006) examined risk factors that predicted depression in 12 to 13 year olds, using data from the National Longitudinal Survey of Children and Youth (NLSCY). This study found that peer relationships, perceived parental rearing behaviour, self-esteem, hyperactivity/inattention, and conduct problems contributed significantly to elevated depression scores (MacPhee & Andrews, 2006). Lemstra (2010), using data from the Saskatoon Student Health Survey (2006/2007), found students were more at risk for moderate or severe depressed mood if they reported low self-esteem, feeling like an outsider at school, alcohol usage, anxiety, suicide ideation, being hungry, and parents having low education.

### **Depression - Protective Factors**

Protective factors are described as conditions, skills, or events that reduce the likelihood of unhealthy outcomes or increase the likelihood of healthy outcomes (Shortt & Spence, 2006). In order to prevent depression in youth, individuals need to develop a number of protective resources and experience social surroundings that are health promoting (Shortt & Spence, 2006). Some protective factors found for depression in youth are: high self-esteem, the ability to self-reflect, having higher levels of activity, good interpersonal skills, mastery over their environment, being physically active, and a belief in a power higher than themselves (Shortt &

Spence, 2006). Cognitive factors that have been found to be protective include: attribution style, functional attitudes, and problem-solving abilities (Shortt & Spence, 2006). Familial and social context can also be protective against depression, including: high perceptions of parental warmth, family support, a supportive relationship with parents, and a cohesive family environment (Shortt & Spence, 2006). Finally, connectedness to school, positive relationships with non-family adults and neighbourhood engagement have also been found to be protective (Shortt & Spence, 2006).

## **Overview of Suicide Ideation**

### **Suicide Ideation – Definition and Prevalence**

Suicidal behaviour has several different levels: ideation, contemplation, planning/preparation, attempt, and finally consummation (Tapia, Barrios, & Gonzalez-Forteza, 2007). Suicide ideation is described as thoughts about taking one's own life (Centers for Disease Control and Prevention, 2007). According to the World Health Organization, the mean annual rate of suicide in the 5-14 year old age group per 100,000 in Canada in 2004 was 0.6 for females and 0.8 for males and 0.7 overall (World Health Organization, 2012). These numbers dramatically increased in the 15-24 year old range. The mean annual rate of suicide for the 15-24 year old age group per 100, 000 in Canada in 2004 was 17.0 for males, 4.8 for females and 11.0 overall (World Health Organization, 2012).

At a more local level, the results of the Saskatoon Student Health Survey in 2008/2009 revealed that 8.9% of students in grades five to eight had reported seriously considering suicide in the past 12 months (Scott et al., 2012). A study of Saskatchewan rural youth (grades 7 to 12) reported that 9.3% of students reported seriously considering suicide in the past 12 months (Martz & Wagner, n.d.). Although, there are those who believe that children are not at risk for

suicide based on the belief that they do not have the developmental capacity, some researchers have shown that by the ages of 8 to 9 years old a thorough understanding of suicide is present and that even younger children understand the concept of “killing oneself” (Reisch, Jacobson, Sawdey, Anderson, & Henriques, 2008).

### **Suicide Ideation – Risk Factors**

There are numerous studies that have looked at the risk factors for suicide ideation in youth (Afifi, Cox, & Katz, 2007; Armstrong & Manion, 2006; Field, Diego, & Sanders, 2001; Groholt, Ekeberg, Whichstrom, & Haldorsen, 2005; Groleger, Tomori, & Kocmur, 2003). Risk factors for suicide ideation include: gender, self-esteem, depression, risk behaviours, substance use, living in a rural or urban environment, and neighbourhood (for a summary see Table 2.3).

**Gender.** Many studies have investigated the association between gender and suicide (Knox & Caine, 2005; Reisch, et al., 2008; World Health Organization, 2012). Most studies have found that suicide risk is higher among males than females (Knox & Caine, 2005; Reisch, et al., 2008). The World Health Organization reported that males have a higher incidence of completing suicide while females have been found to have a higher incidence of suicide ideation than males (DeMan, 1999; Juon, Nam, & Ensminger, 1994; World Health Organization, 2012).

**Self-Esteem.** Self-esteem and how competent one feels have been linked to suicidal youth. In a study of 65 suicidal and 390 non-suicidal youth, results revealed that suicidal youth had lower self-esteem, a more negative evaluation of their abilities, and a more unstable self-concept in comparison to their non-suicidal peers (Groholt, et al., 2005). Suicidal youth also reported more loneliness, were less likely to ask for help from others, had more disruptive behaviors, and increased depressive affect (Groholt, et al., 2005). In another study that looked at the influence of self-esteem and family support on suicide risk, the authors found that family

support diminishes the impact of self-esteem on suicide risk behaviour among youth. Overall, self-esteem and family support were found to have an interacting effect on modifying suicide risk (Sharaf, Thompson, & Walsh, 2009).

Table 2.3  
*Risk Factors and General Findings for Suicide Ideation in Youth*

Risk Factors	General Findings	
Gender	Males have higher rates of suicide completion than females. Females have higher rates of suicide ideation.	Knox and Caine (2005) and Reisch et al (2008) and World Health Organization (2012)
Self-Esteem	Youth with lower self-esteem are at a greater risk for suicide ideation	Groholt et al (2005)
Depression	Strongest predictor of suicide ideation.	DeMan (1999) and Evans et al (2004) and Juon et al (1994) and Peter et al (2008)
Risk Behaviours	Shoplifting, physical fighting, damaging property, fighting with a weapon, carrying a knife, gambling, smoking, drinking, and drug use, and sexual activities and intercourse were all found to be associated with suicide ideation and attempts.	Afifi et al (2007)
Neighbourhood	Living in poor neighbourhoods increase odds of suicide ideation and attempts.	Dupéré et al (2009)
Substance Use	Cigarette smoking, alcohol use/abuse, and marijuana use is associated with increased suicide behaviours.	Chabrol et al (2008) and Wu et al (2004)
Rural vs. Urban	Findings have found increased rates for suicide in rural populations.	Armstrong and Manion (2006) and Yip et al (2000)
Other	Youth with suicide ideation were more likely to have more internalizing behaviours, poor family relationships, less supportive school climate, family history of depression, anger, loneliness, school failure, traumatic life events, and substance use.	Reisch et al (2008) and Field et al (2001) and Groleger et al (2003)

**Depression.** The link between depression and suicide ideation has been well documented in the literature (DeMan, 1999; Evans, Hawthorn, & Rodham, 2004; Juon, et al.,



1994; Peter, Roberts, & Buzdugan, 2008). A study that examined the relationship between suicide ideation and other variables (age, gender, self-esteem, locus of control, stress, social support, anomy, health, alcohol use, and drug use) with the effect of depression removed on French-Canadian and English-Canadian high school students found that when depression was removed there was a reduction or a loss of relationship between suicide and its correlates. This suggests that depression explains a significant proportion of the variance in suicide ideation and therefore, is the strongest predictor of suicide ideation (DeMan, 1999). Moreover, a study of 9886 Korean youth also found that depression was the strongest predictor of suicide ideation among this population (Juon, et al., 1994). Finally, in a systematic review by Evan et al. (2004) that looked at 20 studies of depression and suicide in youth, the authors found that depression was a significant predictor for suicide in all 20 studies. These findings clearly demonstrate that youth with depressive symptoms are at an increased risk for suicidal thoughts and behaviours.

**Risk Behaviours.** A study of Canadian youth aged 12 to 13 years old found that almost all of the risk behaviours they measured (shoplifting, physical fighting, damaging property, fighting with a weapon, carrying a knife, gambling, smoking, drinking, drug use, sexual activities and intercourse) were associated with suicide ideation and attempts among youth boys in unadjusted models (Afifi, Cox, & Katz, 2007). When the model was adjusted, only damaging property, sexual intercourse, and smoking cigarettes were associated with suicidal ideation among youth boys. Similarly, only smoking cigarettes and marijuana use remained significant with suicide attempts for boys (Afifi, et al., 2007). For females, all risk behaviours were significantly associated with suicide ideation and attempts in the unadjusted model. However when models were adjusted, only carrying a knife was associated with suicide ideation and shoplifting and gambling remained significant for suicide attempts (Afifi, et al., 2007).

**Substance Use.** Previous studies have found significant associations between smoking, alcohol use, and marijuana use with increased rates of suicidal behaviours (Chabrol, Chauchard, & Girabet, 2008; Wu, Hoven, Liu, Cohen, Fuller, & Shaffer, 2004). In a study of youth ages 9-17 years old that examined the association between youth substance use/abuse and suicidal behaviours, it found that alcohol use/abuse was strongly associated with suicide attempts. This study also found cigarette smoking to be significantly associated with suicide attempts even after controlling for alcohol and drug use/abuse (Wu, et al., 2004). Even though this study found significant associations between suicide attempts, cigarette smoking and alcohol use/abuse, they did not find a significant association between suicide attempts and drug use/abuse (Wu, et al., 2004).

In terms of marijuana use, youth 15 to 20 years old who were marijuana users were more likely to have higher rates of suicidal behaviors, as well as anxious and depressive symptoms in comparison to non-marijuana users (Chabrol, et al., 2008). Furthermore, after controlling for depressive and anxious symptoms, marijuana was found to be an independent predictor of suicidal behavior. Therefore, marijuana use contributes to suicidal behaviours independently of depression and anxiety (Chabrol, et al., 2008).

**Rural versus Urban.** In terms of rural youth, studies have found that in Western countries such as Canada and Australia, the rates of suicide among male rural youth are greater than that of their urban counterparts (Armstrong & Manion, 2006). Males between the ages of 15 and 24 were found to be 50% more likely to die by suicide if they were living in a rural community versus an urban community (Armstrong & Manion, 2006; Wilkinson & Gunnell, 2000). However, this was not the case for females. Studies have found that females living in

urban communities were more likely to die by suicide than those living in rural communities (Armstrong & Manion, 2006; Yip, Callanan, & Yuen, 2000).

Armstrong & Manion (2006) found that the distance students lived from their school in rural communities predicted suicidal ideation. Moreover, these researchers found that youth engagement was a mediating factor through which distance from school predicts suicidal ideation (Armstrong & Manion, 2006). Overall, these researchers found that youth engagement and proximity to school were positively associated, and youth engagement was related to lower suicidal ideation scores (Armstrong & Manion, 2006).

**Neighbourhood.** A study of 2776 participants from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) examined whether or not living in a less affluent neighbourhood was associated with suicidal thoughts and attempts in late adolescence (Dupéré, Leventhal, & Lacourse, 2009). They found that the odds of suicidal ideation were two times higher in less affluent than affluent neighbourhoods and the odds of suicide attempts were four times higher in deprived neighbourhoods (Dupéré, et al., 2009).

**Other.** A study examining the influencing factors and characteristics of youth that have suicidal ideation found that participants who had thoughts of suicide were more likely to have more internalizing behaviours, lower scores for family caring, poorer communication with their mother and father, lower family cohesion and supervision, have a less supportive school climate, less school connectedness, and had lower career aspirations in comparison to those that did not have thoughts of suicide (Reisch, et al., 2008). Other risk factors that have been found in previous studies are: family history of depression, anger, loneliness, depression, school failure, traumatic life events, and substance use (Field, et al., 2001; Groleger, et al., 2003).

## **Suicide Ideation - Protective Factors**

Few studies have looked at the protective factors for suicide ideation. For some factors the inverse of the risk factors can be considered protective factors (Evans, et al., 2004). For instance, mental health problems like depression were considered a risk factor, but the absence or the inverse mental health well-being or no depression would be a protective factor (Evans, et al., 2004). However, this is not the case for socioeconomic status (SES). Although low SES is associated with increased suicide ideation, wealth over a certain threshold does not protect against suicide thoughts and behaviours (Evans, et al., 2004). Other factors that lessen the effects of suicide attempts are supportive social relationships with peers, parents, and school (Kidd, Henrich, Brookmeyer, Davidson, King, & Shahar, 2006).

## **Methodological Differences in Researching Depression and Suicide Ideation**

The methodologies used in the research of depression and suicide ideation are extremely varied. The main methodological issues are: lack of consistent measurement of depression and suicide ideation, discrepancies between sample sizes for research examining suicide ideation, lack of the use of theoretical perspectives, and differences in age groups that are used in researching depression and suicide ideation.

## **Differences in Measurement of Depression**

Depression can be measured in a number of ways; there is no consistent measurement for this variable. Some researchers use already established and commonly employed self-report measures, such as the Children's Depression Inventory (CDI), the Center for Epidemiological Studies Depression Scale (CES-D), Beck's Depression Inventory (BDI), or the DSM Scale for Depression (DSD) (DeLay, Hafen, Cunha, Weber, & Laursen, 2013; Farrel, Sijibenga, & Barrett, 2009; Kelder, Murray, Orphinas, Prokhorov, McReynolds, & Zhang, et al., 2001; Plunkett,

Henry, Robinson, Behnke, & Falcon III, 2007; Shahar & Henrich, 2010). Other researchers do not employ these types of questionnaires, but use one or more self-report questions to measure depression. Some examples of these questions are: how often they “been in a bad mood:”, “...felt lonely”, “...was not excited in doing things” (Crum, Storr, Ialongo, & Anthony, 2008; Sigfusdottir, Asgeirsdottir, Sigurdsson, & Gudjonsson, 2011). While many of these measures are valid and reliable, the large variety of measures used to examine depression make it difficult to compare results across studies.

### **Differences in Measurement of Suicide Ideation**

Similar to depression, measurement for suicide ideation is also inconsistent. The most commonly used question for suicide ideation is, “during the past 12 months, have you had suicidal thoughts?” or some derivative of this question (Consoli, Peyre, Sperenza, Hassler, Fallisard, Touchette, & et al., 2013; Dupéré, et al., 2009; Juon, et al., 1994; Peter, et al., 2008). There is often inconsistency in the wording of this question across studies, making it difficult to compare findings across studies. Few studies examining suicide ideation use self-report scales, such as the Suicidal Ideation Scale. This scale has demonstrated strong reliability ( $>.80$  Cronbach’s coefficient alpha) and good construct validity (Armstrong & Minion, 2006). This finding leads to questions about the validity and reliability of using only one question to measure suicide ideation.

### **Small Sample Size of Youth Reporting Suicide Ideation**

Another methodological issue in studies of suicide ideation is the small sample sizes of youth who report they have thought about suicide. For example, Field, et al (2001), compared 16 participants who had experienced suicidal ideation to 72 participants who had not. Further, Groholt et al. (2005) compared 65 adolescents who were hospitalized for suicide attempts to 390

non-suicidal adolescents. Although it is difficult to ascertain how many participants will report they have had thoughts about suicide before conducting a study, these small sample sizes often make it difficult to interpret results. Correlations that are highly significant in the larger group may not be significant in the smaller group and differences between the groups may be exaggerated (Groholt, et al., 2005).

### **Defining Rural Areas**

The definition for rural used in research varies greatly depending on what researchers are examining and the geographical focus being addressed (i.e., local, regional, national, or international) (Mitura & Bollman, 2003). Most definitions of rural encompass some type of criteria involving population numbers, population density, settlement areas, or labour markets (Bollman & Clemenson, 2008). Therefore, what leads one researcher to choose a definition of rural over another varies greatly, especially in Canada where provinces differ significantly in population. For example, one study in British Colombia selected a definition of rurality based on population size (Maggie, et al., 2010), while another study in Alberta used distance from a major urban center for their definition (Groft, et al., 2005). Two studies in Saskatchewan also differed in their definition of rural. The rural health status report from SHR used a dichotomous definition of rural (i.e., City of Saskatoon residents were one group (urban) and all other residents were another group (rural)), while a different study of rural youth used a definition of rural based on population size (i.e., populations less than 5500). Differences in the definition of rural used in the literature are not only difficult to compare, but may not correctly define where people live.

### **Lack of Theoretical Perspectives**

Much of the research conducted on depression and suicide ideation are epidemiological in nature and do not utilize current theories to support their findings. This can be seen as a

limitation to many of the studies in this area because theoretical perspectives help explain experiences that individuals can have happen during their life. Theory also helps guide the development of interventions and helps explain how the interventions will work and the factors that will facilitate or inhibit the effectiveness of an intervention (Brathwaite, 2002).

### **Differences in Age Groups**

Studies that examine depression and suicide ideation in youth vary from study to study as to what age groups they employ. Many studies examine youth in high school grade - grade nine through twelve (Field, et al., 2001; Klomek, et al., 2007; Plunkett, et al., 2007; Puskar, et al., 1999; Shahar & Henrich, 2010; Sigfusdottir, et al., 2011) and few examine students in middle school grades – grade five to grade eight. Therefore, less is known about the risk factors associated with depressed mood and suicide ideation in this younger age group and findings from previous studies make it difficult to generalize to this younger population.

### **Theories to Understanding Depressed Mood and Suicide Ideation**

Two theories will be discussed to provide a framework for understanding how various factors can affect the development of mental health concerns in youth. The first theory is an ecological transactional model which investigates the influence of the environment on the individual. The second theory that will be discussed is Beck's theory of depression. This theory examines the cognitive processes involved in the development of depression and suicide ideation in youth.

#### **An Ecological Transactional Model**

An ecological transactional model provides a framework for understanding how multiple factors can influence the development of depression and suicide ideation in youth (Cicchetti & Toth, 1998). This model is based on the work of Belsky (1980), Brofenbrenner (1977), and

Cicchetti and Rizley (1981). Cicchetti and Lynch (1993) theorized ecological contexts as consisting of a number of nested levels with varying degrees of proximity to the individual, some of which are more proximal (closer) to the individual, while others are more distal (away) to the individual. Depending on how proximal the influence is to the individual, the role it plays on the emergence of depressed mood and/or suicide ideation may be more or less evident (Cicchetti & Toth, 1998). Cicchetti and Lynch's (1993) nested levels are based on Bronfenbrenner's (1977) ecological systems theory, but rather than the structure of the environment consisting of the microsystem, the mesosystem, the exosystem, and the macrosystem as Bronfenbrenner outlines, their model consists of the macrosystem, exosystem, microsystem, and ontogenic development.

The macrosystem consists of cultural values, laws, customs, and resources that permeate societal and family functioning (Lynch & Cicchetti, 1998). The exosystem refers to social settings that do not contain the individual, but that affect their experiences in immediate settings. (Berk, 2002; Bronfenbrenner, 1998). This level may include the neighbourhood and the community in which an individual lives, (Lynch & Cicchetti, 1998) as well as the organizations located within these areas, such as schools. The microsystem consists of the family environment that both children and parents create and experience. The final level in this model - the ontogenic level, includes the individual and their own developmental adaptation (i.e., genes, behaviors). Lynch and Cicchetti (1998) argue that this final level reflects the belief that individuals are important elements of their own environment. This is similar to Bronfenbrenner (1998), whose innermost level, the microsystem, includes activities and interaction patterns in the individual's immediate surroundings. Bronfenbrenner (1998) emphasises that at this level all relationships are bidirectional. That is, adults affect youth's behaviors and youth's genetically



and socially influenced characteristics, such as their physical attributes and personality, also affect adult's behaviors.

Cicchetti and Lynch (1993) postulated that these levels of the environment interact with each other over time, which in turn shape an individual's development and adaptation. In this model, an individual's functioning and the context in which it takes place is mutually influencing each other. It is also important to note that the environment is not static and does not affect individuals in a uniform way. Instead, the environment is ever changing. Important life events, such as the birth of a sibling, death of a family member, entering school, moving to a new neighbourhood, or parent's divorcing change the existing relationship of the individual with their environment, producing new conditions that affect development (Berk, 2002; Bronfenbrenner, 1998). Furthermore, the timing of environmental change affects its impact. For example, moving to a new neighbourhood as a toddler than as an adolescent has different consequences with many relationships and activities beyond the family (Berk, 2002). Bronfenbrenner (1998) referred to this temporal dimension of his model as the chronosystem. Changes in life events can be imposed on the individual or they can arise from within the individual as they get older and they can select, modify, and create many of their own settings and experiences (Berk, 2002; Bronfenbrenner, 1998). Therefore, in ecological systems theory, individuals are both products and producers of their environment in a network of interdependent effects (Berk, 2002).

The ecological-transactional model also addresses the effect of time on development. However, unlike Bronfenbrenner (1998) who addressed how when the event occurred (or timing of the event) has an impact on the individual, the ecological-transactional model concentrates on how the proximity and the type of risk affects the duration of the effects of the risk factors. This is not addressed in a pure ecological model and is a strength of the ecological-transactional

model. According to Lynch and Cicchetti (1998), each level of the environment contains potentiating and compensatory risk factors for the individual. Potentiating factors increase the likelihood of poor outcomes – either for the youth or in other levels of the ecology, while compensatory factors decrease the likelihood of poor outcomes. Additionally, there is a temporal element linked to both types of risk factors. Transient risk factors fluctuate and may be temporary. Enduring factors represent more permanent conditions or characteristics. Therefore, youth experiencing potentiating and compensatory factors that are enduring and proximal to the individual will have longer-lasting effects (Lynch & Cicchetti, 1998). Figure 2.1 shows individual and social contextual factors at the proximal and distal levels that interact over the course of development to predict mental health outcomes in youth (Shorrt & Spence, 2006).

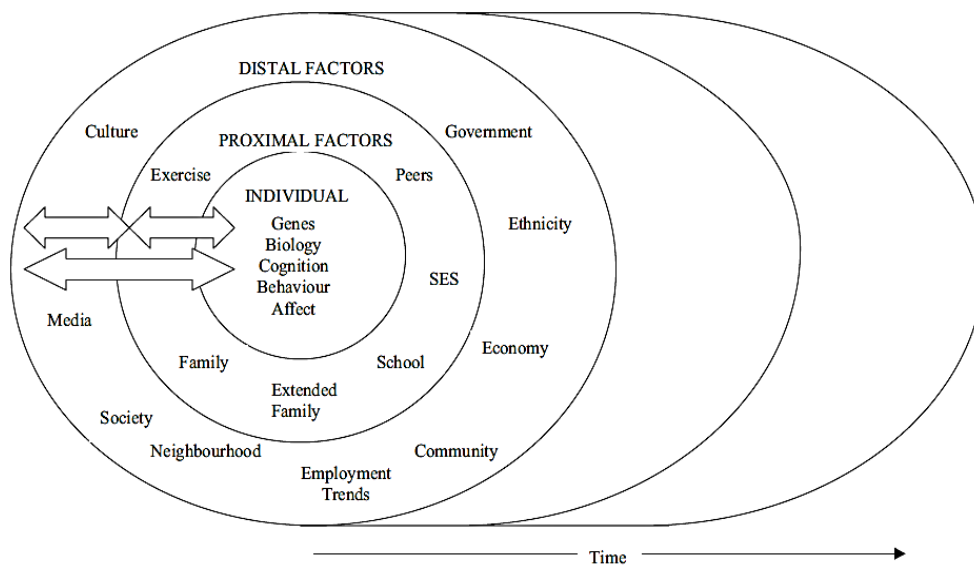


Figure 2.1 An ecological-transactional model showing factors associated with depressed mood and suicide ideation in youth (from Shorrt & Spence, 2006).

Applying this model to the current research, the type of community an individual lives in, such as an urban or rural community (an exosystem variable) may be associated with an increase or

decrease in the likelihood of developing depressed mood or suicide ideation (ontological variables).

### **Beck's Cognitive Theory of Depression**

The current study also utilizes Beck's Cognitive Theory of Depression. His theory is the most broadly known theory for depression and suicide (Kim, Moon, & Kim, 2011). According to this perspective, the thinking of the depressed person is characterized by the "cognitive triad", which consists of negative views of the self, the world, and of the future (Bauman, Toomey, & Walker, 2013; Kaslow, Stark, Printz, Livingston, & Tsai, 1992; Moss, 1992). The first component of this triad is the depressed individuals' negative view of themselves. The individual sees themselves as defective, inadequate, or deprived (Moss, 1992). With this type of negative view of oneself, the individual is quick to blame or attribute any unpleasant experience as a defect in themselves (Moss, 1992). The second component of the triad is the individual's view of the world. Having a broad negative view of the world gets translated into a negative construing of new situations as they arise (Moss, 1992). The third component of the triad is a negative view of the future. The individual develops a universal pessimism. Not only does the individual perceive themselves as worthless, but the environment is full of obstacles, and the future offers no hope that anything better will happen (Moss, 1992). Therefore, a youth experiencing a stressful situation may think that they are worthless (view of the self), that the world is unfair (view of the world), and that nothing they do can make it better (view of the future). Triggering this cognitive triad may lead to the development of depression or those who are already experiencing depression may commit suicide to end their symptoms (Kim et al., 2011).

In order to explain differences in depressive reactions to life events, Beck (1983) explained that individuals are more likely to experience depression or suicide ideation if life events challenge their schemas relating to sociotropy (placing excessive value on personal relationships) and autonomy (excessive investment in perceiving independence and freedom of choice). According to Beck (1983), individuals with high sociotropic values are more likely to experience depression and/or suicide ideation in response to life events that threaten their social relationships, whereas individuals who values autonomy are more likely to experience depression and/or suicide ideation in situations that involve a threat to independence and freedom of choice.

### **History of the Student Health Survey**

In 2006, a study titled “Health Disparity by Neighbourhood Income” compared the health status of residents of Saskatoon’s six low-income neighbourhoods<sup>2</sup> to the rest of Saskatoon using data from Statistics Canada Canadian Community Health Survey (Lemstra, Neudorf, & Opondo, 2006). This study found that residents living in low-income neighbourhoods had significant disparity in numerous health issues, including: mental health disorders, suicide attempts, injuries and poisonings, diabetes, coronary heart disease, chronic obstructive pulmonary disorder, Chlamydia, gonorrhoea, hepatitis C, teen births, low birth weight, infant mortality and all-cause mortality (Lemstra, et al., 2006).

Upon completion of this study, community consultations were initiated by the Saskatoon Health Region (SHR) to transfer knowledge of the findings of the study and to gather information on what should be done moving forward. The consultations revealed that if there

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<sup>2</sup> Neighbourhoods included: Confederation Suburban Centre, Meadowgreen, Pleasant Hill, Westmount, Riversdale, and King George.

were interventions, the interventions should begin with children, should have a strong relationship between community residents and schools, be located in the schools, and that the interventions should not only include health care needs, but also programs for recreational activities (Lemstra, 2010). Based on the feedback from the community consultations, it was decided that children in the middle years of school (grades 5 to grade 8) would be chosen for assessment and intervention. This decision was supported by the literature that suggested that children in the middle years of school have the best chance of a positive response to interventions and most children will still be in school (Rohrbach, Ringwalt, Ennett, Vincus , 2005).

Prior to the implementation of an intervention there was a need to establish baseline levels of health status, mental health status and risk behaviours within children in grades 5 to 8 in Saskatoon schools (Scott, et al., 2012). In order to provide baseline data for the interventions, a cross-sectional survey was undertaken with youth in grades 5 to 8 in Saskatoon entitled the Saskatoon Student Health Survey. The goals of the Saskatoon Student Health Survey were: to provide a variety of information that informs the SHR, the community and the public about the overall health status of children (grades 5 to 8) living in Saskatoon, to provide information that will influence health, social policy and practice, not only within SHR, but externally as well, to support the identification, implementation and evaluation of new interventions aimed at addressing specific disparities among children in Saskatoon, to identify the health disparities in children in Saskatoon, to inform the SHR and the public about the health and health behaviour of children in Saskatoon, and to bring together members of our internal organizations and external organizations for the purpose of acting upon our research findings (Scott, et al., 2012).

## **2006/2007 Student Health Survey**

In the winter of the 2006/2007 school year, the first Saskatoon Student Health Survey was administered. Both the Saskatoon Public Schools and the Greater Saskatoon Catholic Schools participated in the survey. There were a total of 76 elementary schools in both of the school divisions that took part in the survey. The 2006/2007 Saskatoon Student Health Survey contained 106 questions that measured physical and mental health status, risk behaviours (e.g., smoking, drinking and drug use), nutrition, socioeconomic status and school related variables (Scott, et al., 2012).

The results from 2006/2007 demonstrated there was disparity in health outcomes between students attending a school located in a low-income neighbourhood in comparison to students attending a school that was located in a more affluent neighbourhood. This first survey was instrumental in informing the SHR and educational stakeholders (Saskatoon Public Schools and the Greater Saskatoon Catholic Schools) of the disparity that exists among Saskatoon's youth. This information has led to the SHR, the Saskatoon Public School Board and the Greater Saskatoon Catholic School Board making some important changes in schools located in the lowest income neighbourhoods in Saskatoon. The 2006/2007 Student Health Survey findings resulted in: the SHR in partnership with the Greater Saskatoon Catholic School Board, the Saskatoon Public School Board, and the University of Saskatchewan opened two paediatric clinics located directly in low-income neighbourhood schools (St. Mary's Community School and W.P. Bate Community School), the SHR dedicated the time of six Public Health Nurses in six of Saskatoon's schools that are located in the low-income neighborhoods, the SHR allocated funding to ten schools (located in Saskatoon's low-income neighborhoods) to develop and enhance after-school programming, and the SHR disseminated the findings of the Student Health

Survey to each participating school, which has led to schools using the results to develop new programming (e.g., physical activity programs, bullying programs, etc.).

### **2008/2009 Student Health Survey**

In the fall/winter of the 2008/2009 school year, the second Saskatoon Student Health Survey was administered. Again, both the Saskatoon Public Schools and the Greater Saskatoon Catholic Schools participated in the survey and a total of 76 elementary schools participated from both divisions. Based on the findings of the 2006/2007 survey the 2008/2009 survey primarily focused on physical activity, mental health and bullying. The survey also included questions that measured demographics, socioeconomic status, and parent relationship (Scott, et al., 2012).

The results from 2008/2009 also demonstrated that there was disparity in health outcomes between students who went to a school located in a low-income neighbourhood in comparison to students who went to a school that was located in a more affluent neighbourhood. These findings further informed the SHR and educational stakeholders (Saskatoon Public Schools and the Greater Saskatoon Catholic Schools) of the disparity that exists among Saskatoon's youth and led to more important changes in schools located in the lowest income neighbourhoods in Saskatoon. The 2008/2009 Student Health Survey findings resulted in: the SHR introducing a physical activity program in five of Saskatoon's schools located in the low-income neighborhoods, and the SHR introduced a mental health program (ROAR) in five of Saskatoon's schools that are located in the low-income neighborhoods.

### **2010/2011 Student Health Survey**

After the findings of the 2008/2009 survey, SHR developed and implemented the third Student Health Survey. This third survey (2010/2011) revisited some of the indicators from the

first survey that were not included in the second survey, for example, smoking, drinking, and nutrition (Table 2.4). Furthermore, this current survey expanded to include schools located in the rural schools that were located in SHR. Both the Saskatoon Public School Board and the Greater Saskatoon Catholic Schools, as well as the Prairie Spirit School Board and Horizon School Board participated in the survey.

Table 2.4  
*Student Health Survey 2010/2011 Survey Topics*

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Demographics	Self-Perceived Health Status
Age	Self-rated health
Grade	Self-rated mental health
Gender	
Number of schools attended	Mental Health
Cultural status	Self-esteem
Living arrangements	Depressed mood
	Anxiety
Socioeconomic Status	Suicide ideation
Occupation	
Father's	Risk Behaviours
Mother's	Smoke cigarettes
Education	How many cigarettes smoked
Father's	Where you got cigarettes
Mother's	Drink alcohol
Neighbourhood	Have you ever been drunk
Perceived family wealth	Where you got alcohol
Social Support	Bullying
Family relationship scale	Frequency of bullying
	Location of bullying
Physical Activity	Action taken when last seen/heard bullying
Frequency of activity	
	Peer Groups/Friendships
Physical Health	Friendship scale
Height, weight, BMI	Feel like an outsider
Weight perception	
Nutrition	
Went hungry – last 30 days	
Fruit and vegetable servings	
Milk servings	
Pop and juice servings	

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A total of 111 schools participated in the survey (36 rural schools and 75 City of Saskatoon schools). There were 20 schools that opted out of the survey for various reasons, including: lack of students in grades 5 to 8 (i.e., less than 20 students altogether), participation in other surveys, and/or lack of consent forms returned. Only one school in the City of Saskatoon opted out of the survey due to lack of time to participate.

### **The Current Study**

In order to obtain more knowledge about the mental health of rural youth, research on the differences between rural and urban youth is necessary to establish potential areas of need.

Although research on the risk factors associated with depressed mood and suicide ideation have clearly demonstrated that there are numerous factors that can influence the development of these mental health problems in youth, many of the studies that were presented in this chapter only used urban populations for their research, neglecting the rural populations, and perpetuated the lack of research in this area. Furthermore, several methodological issues have been identified in studies of risk factors for depressed mood and suicide ideation. In order to have a better understanding of depression and suicide ideation in youth more rigorous research is needed. Specifically, more consistent measures of depression and suicide ideation, larger sample sizes when comparing groups, consistent measures of what is a rural area, more use of theoretical perspectives, and more research using students in middle school (i.e., grades five to eight).

The purpose of the current study is to examine if there are differences in the prevalence of mental health, in terms of depressed mood and suicide ideation, of urban and rural youth, as well as to determine what risk factors are associated with depressed mood and suicide ideation in urban youth and what risk factors are associated with depressed mood and suicide ideation in rural youth. This study will also compare the findings from the urban and rural populations and

will attempt to explain the findings using an ecological-transactional model and/or Beck's theory of depression. This research will attempt to fill the gaps and some of the methodological issues that were identified in the literature. Furthermore, this research may also be used to inform programs and policies in both the health and education sectors by determining which factors are associated with more mental health concerns in youth.

### **CHAPTER THREE: METHODOLOGY**

The following is a description of the study's research methodology. First, the research design is discussed. Next, a description of the participants, variables, instruments, data collections, and analysis that were used is described. Ethical considerations are also identified and explained. Finally, data analyses of the research questions are discussed. It is important to note that the methods and design for this study were determined by the researcher at the Saskatoon Health Region (SHR). For the purposes of this study, the data from the SHR's Student Health Survey will be used as a secondary source.

#### **Design**

The design for this study is a population based cross-sectional design. Due to the nature of the design, threats to the internal and external validity were minimized. There were no pre and post surveys, which eliminated testing effects and instrumentation effects. Furthermore, as this survey occurred during a single period of time, history and maturation effects were also eliminated. Students from all schools in Saskatoon and students from all schools in rural Saskatchewan within the SHR boundaries were asked to participate in the survey, which potentially allows for the results to be generalizable to the population being studied. In contrast, generalizability at a more localized level (e.g., school level) was more challenging as some schools in the rural areas had a small number of students in their schools. Furthermore, there may have been the risk of selection effect, as students from a certain neighbourhood, rural town, or school may have been more likely to return their consent forms and participate in the study.

#### **Participants**

The participants for the Student Health Survey were students in grades 5, 6, 7, and 8. The participants for the urban component of the study are from the city of Saskatoon. Schools

from the Greater Saskatoon Catholic School Board and the Saskatoon Public School Boards agreed to take part in the study. There were 75 schools from these two school boards that participated in the study. For the rural component, students were from the Prairie Spirit and the Horizon school boards. Schools were included if they had more than 20 students in grades 5 to 8 (two schools in the same rural municipality were combined to make this cut off when necessary) and were not a colony or Hutterite school. There were a total of 36 schools that participated after the inclusion criteria were met.

## **Variables**

**Dependent Variables.** The outcome investigated for this study is mental health. Mental health will be determined by two variables: depressed mood and suicide ideation. These variables will be investigated separately. Mental health is a complex and difficult phenomenon to measure and we recognize that examining only depressed mood and suicide ideation does not capture the full picture of mental health of urban and rural youth in Saskatchewan and is a potential limitation of this study. However, examining depressed mood and suicide ideation is an important start to understanding these populations more thoroughly.

**Independent Variables.** The independent variables that were investigated were: sex, age group, number of schools attended, cultural status, living arrangements, material deprivation, social deprivation, total deprivation, perceived wealth, parental education, parental occupation, relationship with parents, physical activity, obesity, weight perception, hunger, general health and mental health, self-esteem, smoking, drinking, feeling like an outsider at school, friendships, and bullying. All the independent variables were categorical. The independent variables were selected based on previous Student Health Survey research.

## Instruments

The measures used in the Student Health Survey originated from the National Longitudinal Survey for Children and Youth (NLSCY) developed by Statistics Canada. Evidence of validity and reliability exists for the use of the instrument with youth 10 to 17 years of age (Statistics Canada, 2004). The NLSCY was designed to collect information about factors influencing a youth's social, emotional and behavioural development and to monitor the impact of these factors on a youth's development over time (Statistics Canada, 2004).

**Depressed Mood Scale.** The twelve question depressed mood scale used in the NLSCY originated from the twenty questions in the Centre for Epidemiological Studies Depression Scale (CES-D), which was developed by L.S. Radloff (Radloff, 1977, 1991). The purpose of the CES-D was to capture elevated depressive symptoms common to more than one diagnostic category and that could be found in persons without a clinical diagnosis of depression (Poulin, Hand, & Boudreau, 2005). This scale was not developed to diagnosis clinical depression, but rather to inform on the risk of clinical depression.

The shorter twelve item version of the scale was specifically developed for the NLCY 1996 cycle of the survey in order to use the scale in large multi-domain population health surveys (Poulin et al., 2005). In 2005, Poulin et al. investigated the validity and reliability of the CES-D-12. The objective of the study was to determine the degree of confidence that could be placed on inferences about risk of depression among students based on their scores on the CES-D-12. This study investigated the content validity and internal consistency reliability of the scale (Poulin et al., 2005).

In terms of content validity, the CES-D-12 covered six of the nine possible symptoms of depression and the scale contained numerous affective symptoms of depression. Six of the items

from the scale focused on depressed mood and almost all somatic symptoms are represented in the scale (Poulin et al., 2005). However, the CES-D-12 does not include symptoms of irritability, feelings of worthlessness or guilt, suicidal ideation and psychomotor retardation or agitation. This was noted as a possible limitation to the CES-D-12, especially questions pertaining to irritability, which is a key symptom of depression in youth (Poulin et al., 2005). The exclusion of this symptom could result in the underestimation of the prevalence of depression risk among youth (Poulin et al., 2005). The internal consistency the CES-D-12 was found to have a Cronbach alpha value of 0.85 (Poulin et al., 2005). This is consistent with other findings using the 20-item CES-D that have had alpha values ranging from 0.85-0.97 when the CES-D was administered to youth (Radloff, 1991). The criterion commonly cited as acceptable or good reliability for applied research has been an alpha value between 0.80 and 0.90 (Clark & Watson, 1995). The internal consistency of the CES-D-12 falls within this criterion.

**Suicide Ideation.** Due to the sensitive nature of this topic, only one question was asked of students about suicide. The question was “In the past year (12 months), did you seriously consider suicide?” There were two possible response categories for this question: “yes” and “no”. This question originated from the NLSCY, however no validity or reliability have been reported.

## **Data Collection**

In order to obtain the sample of students for this study, a four level consent procedure was followed. First, each school board was asked for their participation in the study (this consent was obtained for all four school boards by the Saskatoon Health Region). Second, each individual school determined if they wanted to participate in the survey. This was done by contacting the principal of each school and explaining the purpose of the study; consent was

gathered verbally. The third level of consent was parental consent. Each student in grade 5, 6, 7, and 8 was given a consent form to take home that outlined the purpose of the Student Health Survey, the risks and benefits of participating, how and where the survey took place, and also included contact information for the parents in case they had more questions about the survey. Furthermore, the Saskatoon Health Region included the information about the survey and a copy of the survey on their website for interested parents and schools to access. Students could only be asked to participate in the survey if they had written parental consent. The final level of consent was child consent. At the time of administration of the survey, the researchers verbally explained the study to the students in plain language and asked each student to sign the front of the survey if they agreed to participate; each student could choose whether or not they wanted to participate. There were no penalties for not participating.

The survey was researcher administered. Each school was given a day to administer the survey and a team of researchers went to the school to administer the survey. Each school determined whether to pull the students who were participating out of class or for the researchers to enter the class and administer the survey to the students that had obtained parental consent. Students not participating continued with their regular classwork. Each student was provided with a survey and with an envelope to place and seal the survey in after completion. Before administering the survey, each student was given verbal explanation of the survey and instructions about how to complete the survey. This method was chosen to reduce the burden of administering the survey from the teachers and school staff, but most importantly to reduce any violations of confidentiality and maintain consistency of the survey procedures. The researchers were able to ensure that no one but the child filled out the survey, that the survey was not taken home, and that it remained sealed in an envelope until the time of data entry. In order to access

this data for this study, this researcher applied for the necessary ethics from the University Ethics Board and from SHR that were required for the analysis of the data. After ethics was approved, a de-identified data set was given for the purpose of this study.

### **My Role in the Student Health Survey**

During my five years at the Saskatoon Health Region, my primary role was Project Lead for the Student Health Survey. I was involved in all three years of the Student Health Survey, before I left the position to complete this graduate degree. Since the beginning of the project I was involved with the survey development, which included: choosing questions and scales to include on the questionnaire, researching validity and reliability of the scales, and the formatting and organization of the questionnaire. I was also involved in all aspects of the data collection process and for the third cycle of the survey, which was used for this project, I was directly involved with administering the survey to the participants and I trained other data collectors to administer the survey. In terms of data entry, for the first two cycles of the Student Health Survey, Health Information Management practicum students were involved with the entering data, but I took over this task when the students completed their practicum. For the final cycle of the survey, the individuals who collected the data were also involved with entering the data. I was primarily involved with the cleaning of the data and the management of the database needed for data analysis. My role also involved conducting basic data analysis and preparing reports for dissemination. I also participated in presenting results of our research at conferences.

### **Ethics Requirements**

Data used for analysis was collected by the Saskatoon Health Region and was used as a secondary data source for the current study. Therefore, ethics approval for the use of the data collected by the Saskatoon Health Region was obtained for this research. Permission to use the



data from the Saskatoon Health Region was also obtained. The researchers from the Saskatoon Health Region obtained their own ethics approval to conduct the third Student Health Survey. Risks for participating in the survey were minimal; therefore, the Saskatoon Health Region obtained a minimal risk approval.

## **Data Analysis**

Data analysis involved multiple logistic regression analysis using SPSS 21.0 for Windows. Preliminary analysis of the data was conducted and is discussed below followed by analysis that was conducted to specifically address the research questions.

**Preliminary Analysis.** Descriptive statistics were conducted for all the variables. All of the variables were categorical; therefore, frequencies and percentages were calculated. This analysis is presented in more detail in Chapter 4. In order to identify any issues with multicollinearity, collinearity diagnostics were performed using SPSS 21.0.

**Analysis Addressing Research Question 1.** The first research question that was addressed was, “What is the prevalence of mental health issues, specifically depressed mood and suicide ideation, in rural and urban youth in grades 5 to 8 in the SHR?” Prevalence was calculated by the following formula:

$$\frac{\text{Number of respondents with a given mental health indicator}}{\text{Total number of respondents}} \times 100$$

**Analysis Addressing Research Question 2a and 2b.** The next research questions that were addressed were, “do urban and rural youth differ in terms of their levels of depressed mood?” and “are urban or rural youth more likely to report that they had thought about suicide (suicide ideation) in the past 12 months?” In order to explore the differences between urban and

rural youth separate chi-square test for independence were conducted depressed mood and suicide ideation.

**Analysis Addressing Research Questions 3 a, b, c, and d.** The final questions that were addressed were, “what factors predict the likelihood that urban students would report symptoms of depressed mood?”, “what factors predict the likelihood that rural student would report symptoms of depressed mood?”, “what factors predict the likelihood that urban students would report that they had seriously considered suicide in the past 12 months”, and “what factors predict the likelihood that rural students would report that they had seriously considered suicide in the past 12 months?” To address these research questions, multivariable logistic regressions were conducted to determine what variables are associated with depressed mood and suicide ideation in urban and rural youth. Prior to the multivariable logistic regression analyses, a series of bivariate logistic regression analyses were conducted to determine which independent variables would be entered into the multivariable models. A  $p$ -value of  $\leq .20$  was chosen as the statistical criterion for inclusion based on past research of Hosmer and Lemeshow (1989). These bivariate logistic regressions were conducted separately for depressed mood (urban and rural) and suicide ideation (urban and rural). After selecting the individual variables based on the bivariate analyses, multiple logistic regression models were created for depressed mood and suicide ideation. The results of the multiple logistic regression analyses were reported separately for urban youth and rural youth. All together four models were created.

## **CHAPTER FOUR: RESULTS**

The following section describes the results of the analysis of the three research questions outlined in Chapter 3. First, response rates for the survey are explained, followed by descriptive analysis of the variables used in the analysis. Next, the results of the analysis of the research questions are described.

### **Response Rates**

Overall, there were 5,783 students in grades 5 to 8 that completed the 2010/2011 Student Health Survey in both the City of Saskatoon schools and rural schools. Overall, there were 12,391 students registered in these grades at the time of consent collection. Therefore, 46.7% of students in grades 5 to 8 in SHR completed the survey. For the rural sample, there were 2883 students registered in grades 5-8 for the schools that were included in the survey (36 schools), 1469 students that completed the survey for a response rate of 50.9%. In comparison, for the urban sample, there were 9508 students registered in grades 5-8 for 75 schools that were included in the survey, 4314 students that completed the survey for a response rate of 45.4%.

### **Frequencies**

#### **Demographics**

Demographics for the 2010/2011 Student Health Survey included: city school or rural school, sex, age, cultural status (Aboriginal status and how many years they have lived in Canada), whom the students live with (living situation), and how many schools they attended in the previous year (student mobility). Overall, the majority of the students who participated in the survey attended a school located in the City of Saskatoon (74.6%), did not identify themselves as an Aboriginal person (89.2%), have lived in Canada all their lives (89.9%), lived with both parents (75.3%), were between the ages of 11 to 12 years old (51%), and attended only one

school in the past year (92.3%). In terms of urban and rural participants, the majority of students in both settings did not identify themselves as an Aboriginal person (87.5% and 94.1% respectively), were between the ages of 11-12 years old (51.1% of urban and 50.4% of rural), have lived in Canada all their lives (88.1% urban and 95.1 % rural), lived with both their mother and father (72.9% urban and 82.2% rural), and only attended one school in the past year (91.5% urban and 94.5% rural). The demographics of the participants are detailed in Table 4.1.

Table 4.1  
*2010/2011 Student Health Survey Demographics*

Variables	Overall	Urban	Rural
Location of Schools			
City of Saskatoon	74.6	-	-
Schools			
Rural Schools	25.4	-	-
Sex			
Male	47.4	47.8	46.2
Female	52.6	52.2	53.8
Age			
10 and Under	18.8	21.5	10.8
11-12	51.0	51.1	50.4
13 and Above	30.3	27.4	38.8
Do you identify yourself as an Aboriginal person?			
No	89.2	87.5	94.1
Yes	10.8	12.5	5.9
How many years have you lived in Canada?			
All of my life	89.9	88.1	95.1
Part of my life	10.1	11.9	4.9
Living situation			
Both my mother and father	75.3	72.9	82.2
One parent (mother or father only/half with mother half with father	21.5	23.7	15.0
Other living situation	3.2	3.4	2.7
Student mobility			
One	92.3	91.5	94.5
Two or more	7.7	8.5	5.5

## **Socioeconomic Status**

Students were also asked questions regarding their family's socioeconomic status. Questions included: does your father have a job, does your mother have a job, father's education level, mother's education level, and the student's perception of how well-off their family is. Students were also asked to provide their address and postal code. Geocoding was used to determine what material deprivation, social deprivation, and total deprivation quintile the student's neighbourhood fell in based on 2006 Census data. Geocoding data was only available for participants who lived within the City of Saskatoon. The majority of the students reported that their father and/or mother had jobs (90.5% and 83.0% respectively), and that their father's and/or mother's had some college or were university graduates (49.0% and 57.1% respectively). Lastly, most students thought that their families were average or very well off/quite well off (51.4% and 44.9% respectively) in terms of wealth.

For urban students, the majority of participants reported that their father's and mother's had a job (89.1% and 82.4% respectively), their father's had some college or were university graduates (52.0%), their mother's had completed some college or were university graduates (59.4%), and considered their family very well off/quite well off (45.0%) or of average wealth (51.3%). In terms of material deprivation, there were 14.7% of students that lived in the most deprived neighbourhoods. For social deprivation, there were 9.5% of students that lived in the most derived neighbourhoods, and finally for total deprivation there were 12.9% of students living in the most deprived neighbourhoods. For rural students, the majority of participants reported that their father's and mother's had a job (94.8% and 84.8% respectively). In terms of parent's education, 41.0% of students indicated that their father's had completed some college or university or graduated from university. However, 38.2% of rural students indicated that their

father's had graduated high school or had less education. The majority of rural students indicated that their mother's had completed some college or university/were university graduates. Finally, the majority of rural students indicated that they thought that their family were very well off/quite well off (44.0%) or that their families were average in terms of wealth (51.7%). Socioeconomic variables are detailed in Table 4.2.

### **Mental Health Variables**

Mental health questions from the 2010/2011 Saskatoon Student Health Survey included: self-report mental health, self-esteem, depressed mood, suicide ideation, parent relationship, friendship scale, and feeling like an outsider at school. All mental health variables were investigated because they were the dependent variables and the independent variables for this study. Results revealed that most students rated their mental health as very good or excellent (64.4%). However, for self-esteem, 37.2% of the students that participated in the survey reported scores in the low range for self-esteem. Furthermore, 16.9% of students had scores that feel in the somewhat elevated/very elevated range for depressed mood and 6.4% of students in grades 5-8 reported that they had seriously considered suicide in the past 12 months. In terms of relationships, there were 39.4% of students whose scores fell in the range that indicted they had few friends or troubled relationships with these friends and 37.8% of students had scores that indicated their relationship with their parents was poor. Mental health variables for urban and for rural youth are presented in Table 4.3.

### **Health Variables**

Health questions from the 2010/2011 Saskatoon Student Health Survey included: physical activity, body mass index, perceptions of weight, have you ever gone hungry because there wasn't enough food (hunger), and self-reported health.

Table 4.2  
*2010/2011 Student Health Survey Socioeconomic Status Variables*

Variables	Percentage	Urban	Rural
Does your father have a job?			
No	3.6	4.1	2.3
Yes	90.5	89.1	94.8
I don't know/I don't have or see a father	5.8	6.8	2.9
Does your mother have a job?			
Yes	83.0	82.4	84.8
I don't know/I don't have or see a mother	2.2	2.6	0.9
Father Education			
High school graduate or less	27.0	23.2	38.2
Some college or university graduate	49.2	52.0	41.0
I don't know or doesn't apply	23.8	24.8	20.8
Mother Education			
High school graduate or less	23.4	20.7	31.1
Some college or university graduate	57.1	59.4	50.6
I don't know or doesn't apply	19.5	19.9	18.2
Material Deprivation			
Most Deprived	-	14.7	-
Most Affluent	-	21.0	-
Rest of Saskatoon	-	64.3	-
Social Deprivation			
Most Deprived	-	9.5	-
Most Affluent	-	29.0	-
Rest of Saskatoon	-	61.4	-
Total Deprivation			
Most Deprived	-	12.9	-
Most Affluent	-	32.6	-
Rest of Saskatoon	-	54.5	-
How well off do you think your family is?			
Very well off/quite well off	44.9	45.0	44.0
Average	51.4	51.3	51.7
Not very well off/not at all well off	3.7	3.7	3.9

Results revealed that the majority of students were moderately active (72.2%), 21.3% of students were classified as overweight or obese based on their self-reported height and weight and 17.3%

of students thought that they were overweight by five pounds or more. There were 3.2% of students who reported that they went hungry most of the time or always because there was no food. Overall, there were 58.4% of students that rated their health as very good or excellent.

Detailed results are presented in Table 4.4 and are presented for urban and for rural youth.

Table 4.3  
2010/2011 Student Health Survey Mental Health Variables

Variables	Percentage	Urban	Rural
Self-Perceived Mental Health			
Poor/Fair	7.9	8.2	7.2
Good	27.7	27.5	28.3
Very Good/Excellent	64.4	64.4	64.5
Self-Esteem			
Low Self-Esteem	37.2	37.1	37.4
Moderate Self-Esteem	43.3	43.0	43.8
High Self-Esteem	19.6	19.9	18.9
Depressed Mood			
Minimal	83.1	83.3	82.7
Somewhat Elevated	14.3	13.9	15.5
Very Elevated	2.6	2.8	1.9
Suicide Ideation			
No	93.6	96.7	93.7
Yes	6.4	3.3	6.3
Parent Relationship			
Poor Relationship	37.8	37.8	37.8
Moderate Relationship	33.2	33.7	31.9
Excellent Relationship	29.0	28.5	30.3
Friendships			
Has a few friends	39.4	38.6	41.8
Has some friends	32.7	32.3	33.7
Has many friends	27.9	29.1	24.5
Feels like an outsider			
Never/Rarely	76.0	77.1	72.9
Some of the time	16.9	16.0	19.7
Most of the time/All of the time	7.0	6.9	7.4



Table 4.4  
 2010/2011 Student Health Survey Health Variables

Variables	Percentage	Urban	Rural
Physical Activity			
Inactive	11.4	12.5	8.9
Moderately Active	72.2	72.0	73.0
Optimally Active	16.4	15.7	18.1
Body Mass Index (BMI)			
Underweight	5.3	4.8	6.5
Healthy Weight	73.4	73.6	73.0
Overweight/Obese	21.3	21.6	18.1
Perception of Weight			
I think I'm overweight (by 5 pounds or more)	17.3	17.0	18.1
I think I'm underweight (by 5 pounds or more)	8.7	8.9	8.3
I think my weight is okay	74.0	74.1	73.6
Hunger			
Never/Rarely	84.4	8.3	84.7
Sometimes	12.3	12.2	12.7
Most of the time/Always	3.2	3.5	2.5
Self-Perceived Health			
Poor/Fair	8.1	7.9	8.7
Good	33.5	34.0	32.1
Very Good/Excellent	58.4	58.1	59.2

### Risk Behaviors

Risk behavior questions from the survey included: smoking, alcohol, and has the student ever been drunk. Results are presented in Table 4.5. Overall, there were 3.3% of students that reported they tried smoking, this was the same for urban and rural students. There were 22.7% of students reported that they had tried alcohol, and of those students who tried alcohol, 3.5% of them reported they had been drunk before. In terms of urban students, there were 20.5% who indicated that they had tried alcohol, and 3.3% of those students reported that they had been drunk before. For rural students, 29.3% of participants reported that they had tried alcohol and 4.1% of those students reported having been drunk.

Table 4.5  
*2010/2011 Student Health Survey Risk Behaviour Variables*

Variables	Percentage	Urban	Rural
Smoking			
Never Smoked	96.7	96.7	96.7
Has Tried Smoking	3.3	3.3	3.3
Alcohol			
Never drank alcohol	77.3	79.5	70.7
Has tried alcohol	22.7	20.5	29.3
Have you ever been drunk?			
No	96.5	96.7	95.9
Yes	3.5	3.3	4.1

### **Bullying Variables**

The Student Health Survey gathered information about bullying. Questions included: physical bullying, social bullying, verbal bullying, and electronic bullying. There were 3.4% of students who reported that they experienced physical bullying every week or many times a week. There were 7.5% of students who reported that they experienced social bullying every week or many times a week. There were 10.2% of students who indicated that they experienced verbal bullying every week or many times a week and 2.3% of students said they were electronically bullied every week or many times a week. Results for urban and for rural youth are presented in Table 4.6.

Table 4.6  
*2010/2011 Student Health Survey Bullying Variables*

Variables	Percentage	Urban	Rural
Physical Bullying			
Never	78.2	78.6	77.1
Once or twice	18.4	17.7	20.2
Every week/many times a week	3.4	3.7	2.7
Social Bullying			
Never	71.1	73.0	65.9
Once or twice	21.4	20.2	24.8
Every week/many times a week	7.5	6.8	9.3
Verbal Bullying			
Never	59.7	61.2	55.3
Once or twice	30.1	29.0	33.3
Every week/many times a week	10.2	9.8	11.4
Electronic Bullying			
Never	89.8	89.9	89.5
Once or twice	7.9	7.9	7.9
Every week/many times a week	2.3	2.2	2.6

### Research Questions

#### **1. What is the prevalence of mental health issues, specifically depressed mood and suicide ideation, in rural and urban youth in grades 5 to 8 in the SHR?**

The CES-D-12 was used to measure depression in this study. Score ranged from 0 to 36. Total scores that ranged between 12 and 20 were considered to have somewhat elevated depressed mood symptoms and total scores that ranged between 21 and 36 were considered to have very elevated depressed mood symptoms (Poulin et al., 2005). Overall, there were 5,783 students in grades 5 to 8 that completed the survey. There were 740 students whose scores were in the somewhat elevated range (scores 12-20) and there were 133 students whose scores were within the very elevated range (scores 21 to 36). The overall, prevalence of students with somewhat elevated symptoms of depressed mood was 12.8% and 2.3% for students with very

elevated symptoms of depressed mood. When somewhat elevated and very elevated depressed mood symptoms were combined (scores between 12-36), there was an overall prevalence of depressed mood for students in grades 5 to 8 in the SHR of 15.1%.

For urban youth, there were 532 students whose scores were within the somewhat elevated range (scores 12-20) and there were 108 students whose scores were within the very elevated range (scores 21-36). The overall prevalence of somewhat elevated depressed mood symptoms for urban youth was 9.2%. The prevalence of very elevated depressed mood symptoms in urban youth was 1.9%. Overall, 11.1% of urban students reported somewhat elevated/very elevated symptoms of depressed mood (scores between 12-36).

For rural youth, there were 208 students whose scores were within the somewhat elevated range (scores 12-20) and there were 25 students whose scores were within the very elevated range (scores 21-36). The overall prevalence of somewhat elevated depressed mood symptoms for rural youth was 3.6%. The prevalence of very elevated depressed mood symptoms in rural youth was 0.4%. Overall, 4.0% of rural students reported somewhat elevated/very elevated symptoms of depressed mood (scores between 12-36). From here on in, the term depressed mood will encompass both somewhat elevated symptoms and very elevated symptoms.

For suicide ideation, students were asked if they had seriously considered suicide in the past 12 months; responses were either yes or no. There were 340 students who indicated that they had seriously thought about suicide. The overall prevalence of suicide ideation of students in grades 5 to 8 in the SHR was 5.9%. In terms of urban versus rural, there were 254 urban youth and 86 rural youth who had indicated yes to the suicide ideation question. The prevalence of urban students who had suicide ideation was 4.4% and 1.5% for rural youth.

### **2a. Do urban and rural youth differ in terms of their levels of depressed mood?**

To determine if urban and rural youth differ in terms of their levels of depressed mood, a Chi-Square test for independence was performed. The Chi-Square test revealed no significant difference in the levels of depressed mood of urban and rural youth,  $\chi^2 (1, n=5174) = .007$ ,  $p=.638$ .

### **2b. Are urban or rural youth more likely to report that they had thought about suicide (suicide ideation) in the past 12 months?**

A Chi-Square test for independence was conducted to investigate if urban or rural youth are more likely to report that they had seriously considered suicide in the past 12 months. The Chi-Square test for independence (with Yates Continuity Correction) indicated that there was no significant difference between urban and rural youth to report that they had thought about suicide in the past 12 months,  $\chi^2 (1, n=5340) = .001$ ,  $p=.978$ .

### **3a. What factors predict the likelihood that urban students would report symptoms of depressed mood?**

Logistic regression analysis was performed to measure the influence of a number of factors on the likelihood that urban students would report that they had severe/very elevated symptoms of depressed mood. The final model contained eight independent variables (gender, age, parent relationship, general mental health, self-esteem, suicide ideation, having been drunk, and feeling like an outsider at school). The final model containing eight independent variables was statically significant,  $\chi^2 (13, N=2840) = 798.29$ ,  $p=.000$ , indicating that the model was able to distinguish between students who reported and did not report severe/very elevated symptoms of depressed mood. The goodness-of-fit of the model was assessed by the Homer-Lemeshow statistical test. The goodness-of-fit test result ( $p=.361$ ) suggests that that the model was

appropriate. The final model explained between 24.7% (Cox and Snell R square) and 42.5% (Nagelkerke R squared) of the variance in depressed mood symptoms, and correctly classified 88.2% of cases. As shown in Table 4.8 all the variables remaining in the final model made a statistically significant contribution to the model. The strongest predictor of reporting severe/very elevated depressed mood symptoms in urban students was feeling like an outsider at school most of the time/all of the time, with an odds ratio of 7.58 followed by students who reported having a poor relationship with their parents, with an odds ratio of 6.42. This indicated that urban students who reported severe/very elevated symptoms of depressed mood were over 7 times more likely to report feeling like an outsider at school most of the time/all of the time and were over 6 times more likely to report having a poor relationship with their parents. The complete list of odds ratios are presented in Table 4.7.

Table 4.7  
*Logistic Regression Predicting the Likelihood of Reporting Severe/Very Elevated Symptoms of Depressed Mood – Urban Population*

Variables	Beta	Standard Error	Odds Ratio	95% CI	Sig.
Gender (Female)	.268	.131	1.307	1.012-1.689	.041
Age (10 and Under)	-.611	.188	.543	.376-.784	.001
Parent Relationship (Poor Relationship)	1.860	.257	6.423	3.881-10.628	.000
Parent Relationship (Moderate Relationship)	1.064	.266	2.899	1.722-4.881	.000
General Mental Health (Poor/Fair)	1.277	.195	3.584	2.445-5.255	.000
General Mental Health (Good)	.392	.142	1.479	1.120-1.954	.006
Self-Esteem (Low)	1.192	.277	3.293	1.913-5.670	.000
Suicide Ideation (Yes)	1.310	.199	3.707	2.509-5.478	.000
Have you ever been drunk (Yes)	.938	.289	2.556	1.450-4.505	.001
Feeling like an outsider (Some of the time)	.985	.147	2.679	2.008-3.574	.000
Feeling like an outsider (Most of the time/All of the time)	2.026	.199	7.585	5.136-11.202	.000

### **3b. What factors predict the likelihood that rural student would report symptoms of depressed mood?**

In order to determine the effect of a number of factors on the likelihood that rural students would report that they had severe/very elevated symptoms of depressed mood, logistic regression was performed. The final model contained eight independent variables (who do you live with most of the time, parent relationship, weight perception, general mental health, self-esteem, suicide ideation, physical bullying, and electronic bullying). The final model containing the final eight independent variables was statistically significant,  $\chi^2 (15, N=1079) = 316.16$ ,  $p=.000$ , indicating that the model was able to distinguish between rural students who reported that they had and did not have severe/very elevated symptoms of depressed mood. The goodness-of-fit of the final model was assessed by the Homer-Lemeshow statistical test. The goodness-of-fit test result ( $p=.280$ ) suggests that that the model is appropriate. The model as a whole explained between 25.4% (Cox and Snell R square) and 43.1% (Nagelkerke R square) of the variance in depressed mood symptoms and correctly classified 88.0% of cases. As shown in Table 4.9, all the remaining independent variables made a significant contribution to the model. The strongest predictor of severe/very elevated symptoms of depressed mood in rural students was low self-esteem. Rural students with severe/very elevated symptoms of depressed mood were 7.69 times more likely to report low-self-esteem and were 5.78 times more likely to report they had poor/fair general mental health. All odds ratios are presented in Table 4.8.

Table 4.8

*Logistic Regression Predicting the Likelihood of Reporting Severe/Very Elevated Symptoms of Depressed Mood – Rural Population*

Variables	Beta	Standard Error	Odds Ratio	95% CI	Sig.
Who do you live with? (Other Living Situation)	1.337	.495	3.807	1.444-10.037	.007
Parent Relationship (Poor Relationship)	.837	.315	2.309	1.246-4.280	.008
Weight Perception (I think I am Overweight)	.748	.231	2.113	1.345-3.322	.001
General Mental health (Poor/Fair)	1.755	.322	5.783	3.076-10.872	.000
Self-Esteem (Low)	2.040	.508	7.694	2.845-20.805	.000
Suicide Ideation (Yes)	1.248	.324	3.482	1.845-6.570	.000
Physical Bullying (Every Week/Many Times a Week)	1.320	.521	3.742	1.349-10.383	.011
Electronic Bullying (Once or Twice)	.923	.288	2.517	1.430-4.429	.001

### **3c. What factors predict the likelihood that urban students would report that they had seriously considered suicide in the past 12 months?**

Logistic regression analysis was performed to measure the influence of a number of factors on the likelihood that urban students would report that they had seriously considered suicide in the past 12 months (suicide ideation). The final model contained five independent variables (do you identify yourself as an Aboriginal person, parent relationship, depressed mood, smoking, and physical bullying). The final model containing five independent variables was statically significant,  $\chi^2 (7, N=3045) = 345.93, p=.000$ , indicating that the model was able to distinguish between students who reported and did not report suicide ideation. The goodness-of-fit was  $p=.509$  suggesting that that the model is appropriate. The final model explained between 10.7% (Cox and Snell R square) and 27.9% (Nagelkerke R squared) of the variance of suicide ideation, and correctly classified 93.7% of cases. As shown in Table 4.9 all the variables remaining in the final model made a statistically significant contribution to the model. The



strongest predictor of reporting suicide ideation in urban students was severe/very elevated symptoms of depressed mood, with an odds ratio of 5.32 followed by students who reported having tried smoking, with an odds ratio of 4.95. This indicated that urban students who reported suicide ideation were over 5 times more likely to report severe/very elevated symptoms of depressed mood and were over 4 times more likely to report having tried smoking. All odds ratios are presented in Table 4.9.

Table 4.9  
*Logistic Regression Predicting the Likelihood of Reporting Suicide Ideation - Urban Population*

Variables	Beta	Standard Error	Odds Ratio	95% CI	Sig.
Do you identify yourself as an Aboriginal person? (Yes)	.464	.201	1.590	1.072-2.358	.021
Parent Relationship (Poor Relationship)	1.359	.301	3.891	2.157-7.018	.000
Depressed Mood (Somewhat Elevated/Very Elevated)	1.671	.174	5.319	3.781-7.482	.000
Smoking (Yes)	1.599	.264	4.950	2.948-8.131	.000
Physical Bullying (Once or Twice)	.504	.183	1.656	1.157-2.369	.006
Physical Bullying (Every Week/Many times per Week)	.834	.292	2.303	1.301-4.078	.004

### **3d. What factors predict the likelihood that rural would report that they had seriously considered suicide in the past 12 months?**

Logistic regression analysis was performed to measure the influence of a number of factors on the likelihood that rural students would report that they had seriously considered suicide in the past 12 months (suicide ideation). The final model only contained two independent variables (parent relationship and depressed mood). The final model containing two independent variables was statically significant,  $\chi^2 (3, N=1139) = 90.32, p=.000$ , indicating that

the model was able to distinguish between students who reported and did not report suicide ideation. The goodness-of-fit test result ( $p = 1.00$ ) suggests that the model is appropriate. The final model explained between 7.6% (Cox and Snell R square) and 19.5% (Nagelkerke R squared) of the variance of suicide ideation, and correctly classified 93.2% of cases. As shown in Table 4.10 all the variables remaining in the final model made a statistically significant contribution to the model. The strongest predictor of reporting suicide ideation in rural students was a poor relationship with their parents, with an odds ratio of 5.97 followed by students who reported severe/very elevated symptoms of depressed mood, with an odds ratio of 5.10. This indicated that rural students who reported suicide ideation were almost six times more likely to report a poor relationship with their parents and over five times more likely to report severe/very elevated symptoms of depressed mood. Lastly, rural students who reported suicide ideation were over 2 times more likely to report a moderate relationship with their parents.

Table 4.10

*Logistic Regression Predicting the Likelihood of Reporting Suicide Ideation - Rural Population*

Variables	Beta	Standard Error	Odds Ratio	95% CI	Sig.
Parent Relationship (Poor Relationship)	1.787	.489	5.971	2.289-15.575	.000
Parent Relationship (Moderate Relationship)	1.040	.525	2.828	1.011-7.912	.048
Depressed Mood (Somewhat Elevated/Very Elevated)	1.630	.268	5.105	3.016-8.641	.000

### **Comparison of risk factors for symptoms of depressed mood and suicide ideation in urban and rural youth**

The final logistic regression models revealed that there were many similarities and differences in the risk factors that predict the likelihood of students reporting somewhat elevated/very elevated symptoms of depressed mood and suicide ideation in urban and rural

youth. For depressed mood, risk factors that predicted the likelihood of students reporting symptoms of depressed mood in both urban and rural students was their relationship with their parents, their general mental health, low self-esteem, and suicide ideation. However, for urban students, gender, age, having been drunk, and feeling like an outsider at school were also important risk factors for depressed mood. These factors did not increase the likelihood of reporting somewhat elevated/very elevated symptoms of depressed mood for rural students. However, rural students did report that their living situation (who they lived with), their perception of their weight, being physically bullied, and being electronically bullied increased their likelihood with reporting symptoms of depressed mood. These comparisons are presented in Table 4.11.

Table 4.11  
*Comparison of Risk Factors Predicting the Likelihood of Reporting Symptoms of Depressed Mood and Suicide Ideation in Urban and Rural Students*

Depressed Mood		Suicide Ideation	
Urban	Rural	Urban	Rural
Gender	Who do you live with	Do you identify yourself as being Aboriginal?	Depressed Mood
Age	Parent Relationship	Parent Relationship	Parent Relationship
Parent Relationship	General Mental Health	Depressed Mood	
General Mental Health	Self-Esteem	Smoking	
Self-Esteem	Suicide Ideation	Physical Bullying	
Suicide Ideation	Physical Bullying		
Having been drunk	Electronic Bullying		
Feeling like an outsider at school	Perception of weight		

In terms of suicide ideation, both urban and rural students who reported having seriously thought about suicide in the past 12 months were also more likely to report depressed mood and a poor relationship with their parents. However, for urban students they were also likely to report being Aboriginal, that they had tried smoking, and being victims of physical bullying. No

additional risk factors were found for rural students. These similarities and differences are presented in Table 4.11.

## **CHAPTER 5: DISCUSSION**

The results of the study are interpreted in this final chapter. This chapter begins with a discussion of the prevalence of depressed mood and suicide ideation among urban and rural youth. Next, the chapter focuses on a discussion of the results of the four multiple logistic regression models as well as a comparison of the factors associated with elevated mental health issues in urban and rural youth. Finally, the study's limitations are presented followed by conclusions that can be taken from this project.

### **Prevalence of Depressed Mood and Suicide Ideation among Urban and Rural Youth**

Overall, the prevalence of somewhat elevated symptoms of depressed mood of urban and rural youth was 12.8% and 2.3% for very elevated symptoms of depressed mood. These rates are similar to findings of a Saskatchewan study (see Martz & Wagner, n.d.). When we separate the results in terms of urban and rural youth, the prevalence of somewhat elevated symptoms of depressed mood in urban youth was 9.2% and 1.9% for very elevated symptoms of depressed mood. These findings are also similar to previous Student Health Survey results (see Lemstra, 2008). The prevalence of somewhat elevated and very elevated symptoms of depressed mood (3.6% and 0.4% respectively) amongst rural youth were considerably less than other Saskatchewan studies and Saskatoon findings, but were consistent with overall Canadian rates.

The overall prevalence of suicide ideation of urban and rural youth in Saskatchewan was 5.9%. In comparison to rates found in other studies, the prevalence found in this study was lower than in other studies (see Martz & Wagner, n.d.; Peter, et al., 2008; Scott, et al, 2012). This trend continues when we look at urban and rural rates separately. For urban youth, the prevalence of suicide ideation was 4.4% and was 1.5% for rural youth. Although the rates of

suicide ideation in the current study were less than rates found in previous studies, it was found that more urban youth reported thinking about suicide than their rural counterparts.

One explanation for the divergence of the rates of suicide ideation in this study in comparison to previous studies may lie in the differences in age demographics. The current study encompassed students in grades 5 to 8, whereas previous Canadian studies (Peter, et al., 2008) utilized students in grades 7 to 10 and the previous study in Saskatchewan (Martz & Wagner, n.d.) utilized students in grades 7 to 12. Suicide ideation tends to increase with age and this may account for some of the differences in prevalence rates.

### **Differences between Urban and Rural Youth in Terms of Depressed Mood and Suicide Ideation**

Results revealed that urban and rural students did not significantly differ in terms of their rates of suicide ideation and depressed mood. In terms of depressed mood, previous studies have been inconsistent in their findings in terms of the role that environment plays on the risk of depressed mood. Some studies have found that that the smaller and more remote the location the more likely students were to experience a major depressive episode (Mitura & Bollman, 2003). However, another study demonstrated that individuals who were born and grew up in the same rural community were at a lower risk for being diagnosed with depression (Maggi, et al., 2010). The findings of the current study neither confirm nor deny either side of the argument.

For suicide ideation, results are also inconsistent in terms of the role of environment. Previous research has found that the rates of suicide for rural males were greater than their urban counterparts (Armstrong & Manion, 2006). Unlike males, females were more likely to die by suicide if they lived in an urban community (Armstrong & Manion, 2006; Yip, et al., 2000). Armstrong and Manion (2006) also found that the distance students lived from their school in

rural communities reliably predicted suicide ideation. However, for the current study no significant differences between urban and rural populations were found.

A possible explanation for the non-significant results may be due to the definition of rural in this study. Many of the communities involved in the study were close in distance to Saskatoon, which is why they are part of the Saskatoon Health Region. Furthermore, rural communities that are close to Saskatoon are growing creating suburban centers surrounding the city. Although, other studies in Saskatchewan using both urban and rural populations have used this definition of rural (see Marko, et al., 2009), definitions of rural both in the current study and previous research, does not capture the intricacies of what actually constitutes a rural population. Most “official” definitions of rural encompass some type of criteria involving population numbers, population density, settlement areas, or labour markets (see Bollman & Clemenson, 2008). However, none of the definitions give information about the degree of isolation, infrastructure of the community, or even services that may be located in the community or nearby. The definitions also do not include factors that make rural living unique or different to urban living. Using definitions of rural based solely on distance from an urban center, such as the definition used in this study, is a significant limitation to this study.

Although the definition of rural in this study is a limitation, there was rational for choosing this definition. While suburban centers, such as Martensville and Warman were incorporated into the analysis of this data as part of the rural sample, these towns who became cities on November 3, 2009 and October 24, 2012 respectively (which occurred during and well after data collection) (Government of Saskatchewan, 2009; Government of Saskatchewan, 2012), have schools that are located outside of the City of Saskatoon and are included within the surrounding rural school division. Furthermore, with the inclusion of the suburban center

schools (i.e, Martensville and Warman) included in the analysis of this study there were still approximately three times more students who participated in the survey from schools located in Saskatoon (urban) versus students who participated from schools located outside of Saskatoon (rural). This was also true for students registered in these grades: there were three times more students registered in grades 5 to 8 from Saskatoon than there were from schools located outside of Saskatoon. Therefore, without this dichotomous definition, the analysis performed in this study would not have been possible due to the smaller amount of students from smaller rural towns located in the Saskatoon Health Region (SHR). However, the findings of this study should be interpreted with caution due to the inclusion of suburban centers in the definition of rural in this study.

### **Comparison of Risk Factors for Depressed Mood and Suicide Ideation in Urban and Rural Youth**

The third objective of this study was to determine what variables are significantly associated with depressed mood in urban and rural youth and what variables are significantly associated with suicide ideation in urban and rural youth. Results revealed several associations that were significant for both urban and rural youth and were significant for both depressed mood and suicide ideation. Across all four models, relationship with parents was a significant predictor for depressed mood and for suicide ideation for both urban and rural youth. This finding supports the notion that aspects of the microsystem, such as family or our relationships with our family can create increased risk for problems in the ontological system, such cognition or behaviors (i.e., depressed mood and/or suicide ideation), which in turn affects individual development. Earlier studies have found that family conflict increases the likelihood of depressed mood in both males and females (Sigfusdottir, et al., 2011). Further, a study of 17



year old French youth found that after adjusting for confounding variables, the results revealed that negative relationships with either both or one parent and both parents living together with a negative relationship was significantly associated with depression and suicide risk in both males and females (Consoli, et al., 2013).

The link between depression and suicide has been well documented in the literature (DeMan, 1999; Evans, et al., 2004; Juon, et al., 1994; Peter, et al., 2008). Prior research has recognized that depressed youth experience more frequent suicidal thoughts (Field, et al., 2001; Peter, et al., 2008; Waldrop, Hanson, Resnick, Kilpatrick, Naugle, & Saunders, 2007). Consistent with this research, the current study found that for urban and rural youth, depressed mood was a significant predictor for suicide ideation and vice versa - suicide ideation was found to be a significant predictor for depressed mood for both urban and rural youth. These findings are also consistent with Beck's cognitive theory of depression (Beck, 1976). Triggering the cognitive triad – negative views of the self, of the world, and of the future can lead to the development of symptoms of depression, which can include thoughts about suicide.

Both physical and electronic bullying was found to be significant risk factors for depressed mood for rural students, but not for the urban students. However, being physically bullied was a significant predictor of suicide ideation in urban youth, but not for rural youth. These findings are consistent with previous research in that students with depression are more likely to be victims of bullying and relational aggression (Huberty, 2012) and that frequent exposure to victimization or bullying of others was related to high risks of depression, suicide ideation, and suicide attempts (Klomek, et al., 2007). A recent study of urban high school youth found there was an association between bullying and the risk for seriously considering or attempting suicide even after taking into account race, ethnicity, immigration status, and gender

(Hepburn, Azrael, Molnar, & Miller, 2012). Differences between urban and rural students may be explained by the ecological-transactional model. For both urban and rural students, bullying often occurs within the exosystem (i.e., at school) which in turn affects individuals at the ontological level. The exosystem is most directly linked to community supports that can be activated when a youth is experiencing negative outcomes. Therefore, in a supportive exosystem, treatment services or supportive adults would be available for youth to access if they are being bullied, which would help protect against developing symptoms of depression. However, an unsupportive or an inappropriate environment can place young people at risk for the negative course that some lives take (Cicchetti & Toth, 1998). Differences between urban and rural youth for bullying outcomes can also be explained by other influences of the exosystem. The type of community, urban or rural, consists of differing values and societal rules that impact the types of community supports available to youth in these communities. For example, if a community believes that bullying is an important area of intervention they may be less tolerant of bullying and provide more supports for youth who are victims of bullying; therefore reducing the effects of negative outcome on the individual (ontogenic level).

Other associations that were found to be significant for depressed mood for both urban and rural youth were having poor/fair general mental health and having low self-esteem. These variables were not significant predictors for suicide ideation. The finding that poor general mental health as a predictor for depressed has not been documented in previous research for child and adolescent populations. Therefore, it is unclear if this finding is consistent with previous research. For self-esteem, earlier studies have established the strong relationship between low self-esteem and the risk for depression (Farrell, et al., 2009; Hayes, Harris & Carver, 2004; MacPhee & Andrews, 2006; Plunkett, et al., 2007; Shahar & Henrich, 2010). In a

study by MacPhee and Andrews (2006), self-esteem accounted for the majority of explained variance in depression scores for both males and females, suggesting that self-esteem is a strong predictor of depressive symptoms. According to Beck's (1976) theory of depression, having low self-esteem may contribute or magnify a negative view of the self. People with low self-esteem often see events and experiences as relevant to their sense of self, and they are highly reactive to these events (Hayes, et al., 2004).

Female gender was also found to be a significant predictor of depressed mood in the urban sample, but was not significant for the rural sample. This finding is consistent with previous research that has established that female gender has been significantly associated with depression (Garber, 2006; Shortt & Spence, 2006; Wade, Cairney, & Prevalin, 2002). It was also found that being age 10 or under was significantly associated with elevated symptoms of depressed mood for urban youth. This finding is not consistent with earlier studies that have consistently found that risk for depression begins in early adolescence and continues to rise until individuals are in their 20's (Shortt & Spence, 2006). Age was not a significant predictor for rural youth or for any model with suicide ideation. It was somewhat surprising that gender and age were not found to be a significant predictor for rural youth or for suicide ideation because of findings in the literature. However, genes are unlikely to operate in a static fashion throughout development and their influence may vary across a person's life (Cicchetti & Toth, 1998). At various developmental periods, genes may be turned on or off and the diverse factors that regulate gene activation and deactivation are likely to vary developmentally (Cicchetti & Toth, 1998). Although gender is part of the ontogenic level it is mostly affected by the macrosystem: the culture, values, and traditions of the environment. Genetics will have a more proximal and enduring effect to a person's development, but gender differences often reflect wider social,

cultural, and political controversies (Widiger, 2008). This explanation can also help to explain the finding that identifying oneself as Aboriginal was a significant predictor of suicide ideation in rural youth. Research has found that Aboriginal communities have higher suicide rates than the rates observed in the general population (Health Canada, 1994). While the overall Canadian rate of suicide has declined, in some Aboriginal communities and populations the rates have continued to rise (Kirmayer, Brass, Holton, Paul, Simpson, & Tait, 2007). From the ages of 10 to 19 years old, Aboriginal youth on reserves are 5 to 6 times more likely to die from suicide than their peers in the general population (Kirmayer, et al., 2007). Cultural continuity (i.e., maintaining and securing cultural past and traditions into the future), historical, socioeconomic, and environmental conditions have been identified in the literature as probable factors in the higher rates of suicide in Aboriginals (MacNeil, 2008).

Urban youth reporting having been drunk were more likely to report symptoms of depressed mood and urban youth who tried smoking were more likely to report seriously thinking about suicide in the past 12 months. These findings were not found for their rural counterparts. These findings are similar to previous studies that have examined the association between depressed mood and substance use, such as drinking alcohol (Crum, et al., 2008; Kelder, et al., 2001). It is suggested that depressed youth may self-medicate with substances such as tobacco, alcohol, or drugs to regulate feelings of depression or to cope with psychological stressors (Kelder, et al., 2001). Similarly, a study of youth ages 9 to 17 years old found that smoking was found to be significantly associated with suicide attempts (Wu, et al., 2004). These researchers concluded that smoking may be used by some individuals with depressive symptoms such as suicidal behaviors to self-medicate (Wu, et al., 2004). Differences between urban and rural youth may be explained by looking at the effects of the ecology on the individual. Rural communities have

been described as closer knit and consisting of more social cohesion (Boyd, et al., 2008) and therefore it may be more difficult for youth to engage in risk behaviors at this age because of these characteristics. Therefore, for rural youth, their community may be a more proximal factor influencing their outcomes whereas for urban youth, their community may be a more distal factor having less of an influence on their outcomes.

The strongest predictor of elevated symptoms of depressed mood for urban youth was feeling like an outsider at school most of the time/all of the time. Students who felt this way were over seven times more likely to experience symptoms of depressed mood. Previous research using past Student Health Survey data by Lemstra (2010) also found that students were more at risk for depressed mood if they reported feeling like an outsider at school. National studies have also found somewhat similar results to the current study. In a National Longitudinal Study of Adolescent Health comprising of 11,572 youth in grades 7 through 12, found that school connectedness (feeling that teachers treated students fairly, feeling close to people at school, and feeling like part of the school) was significantly associated with lower levels of emotional distress and suicidality (Resnick, Bearman, Blum, Bauman, Harris, Jones, et al., 1997). According to Beck (1983), individuals with high sociotropic values are more likely to experience depression in response to life events that threaten their social relationships. Based on this theory, youth who feel that they are outsiders at school would feel that their social relationships are being threatened and therefore experience more symptoms of depression.

Adverse family environments, such as those characterized by the absence of cohesive and supportive parents have been associated with depression in youth (Shortt & Spence, 2006). In the current study, rural youth who did not live any amount of time with their parents, such as students in foster care, reported more elevated symptoms of depressed mood; this finding is

consistent with earlier studies. Negative life events, such as those that may be associated with living apart from one's parents have also been documented in the literature to be a risk factor for depression in youth (Garber, 2006; Shortt & Spence, 2006). Research has shown that dual-parent, intact families are more likely to be economically stable, have more resources, and engage in more parental monitoring than other family structures (Beam, Gil-Rivas, Greenberger, & Chen, 2002).

An interesting finding of the current study was that rural students who thought that they were overweight by five pounds or more were more likely to report elevated symptoms of depressed mood. Perception of weight and depression has not been well investigated in the research. However, in a study of Australian students from age 14 up to age 21 revealed that perception of being overweight during adolescence was a significant risk factor for depression in young adults (Al Mamun, Cramb, McDermott, O'Callaghan, Najman, & Williams, 2007). Although, this study used participants that were older than in the current study, both studies can argue that there are adverse effects to believing that you are overweight. The current study also demonstrated that these thoughts are beginning even earlier than the age of 14.

It was somewhat surprising that the socioeconomic factors (i.e., material deprivation, social deprivation, total deprivation, mother/father occupation, and mother/father education) were not found to be associated with elevated symptoms of depressed mood for urban youth. Previous research has been well-documented on the effects on socioeconomic status and mental health, specifically depression. Youth from lower socioeconomic backgrounds are twice as likely to experience major depression when compared to individuals from higher socioeconomic conditions (Malhotra & Das, 2007). Less control over their environment, difficulties with

developing intimate relationships, and experiencing more negative life events may all contribute to this increase in their risk for depression (Malhortra & Das, 2007).

### **The Influence of Environment on Depressed Mood and Suicide Ideation in Youth**

The findings of the current research has identified that there are similarities and differences in risk factors associated with depressed mood and suicide ideation in youth in Saskatchewan. Results revealed that the most consistent predictor of depressed mood and suicide ideation in youth was their relationship with their parents. Closer examination of the results found that the strongest predictors of elevated symptoms of depressed mood for urban students were related to their relationships with others (i.e., feeling like an outsider at school and having a poor relationship with others). In contrast, the greatest predictors for elevated symptoms of depressed mood for rural students were low self-esteem and poor/fair general mental health. The strongest predictors for rural youth were related to how the youth felt about themselves internally. This and previous research has attempted to explain potential reasons why these differences exist.

One argument suggests that individuals living in urban areas experience more stress and less stable social conditions (Paykel, et al., 2003). Examining the results of depressed mood for urban youth, the strongest predictors were those related to the youth's social environment (i.e., parent relationship and feeling like an outsider at school), which is consistent with this finding. Another argument is that rural environments play a protective role for mental health of youth because it provides them with a needed sense of stability and control (Maggi, et al., 2010). Furthermore, rural communities have been characterized as socially proximate or "close knit" while sharing traditional values of hard work and cooperation (Boyd, et al., 2008). Furthermore, rural communities have been described as comprising of collectivistic family structures and

strong community coalitions and a healthy environment for rural people needs to include strong community support by churches and schools and caring community members (Boyd, et al, 2008). The findings of the rural sample suggest the strongest predictors for depressed mood are variables that are internally influenced (i.e., general mental health, and low self-esteem) indicating that for rural youth, their social environment may be more stable and as such that plays a protective factor. Whereas for the urban sample, social environment is less stable and more of a risk factor; therefore, these factors play more of a role in depressed mood. For the rural sample, there were less risk factors that was associated with depressed mood and suicide ideation, which is consistent with previous research that suggests rural residents have better mental health than their urban counterparts (Riva, et al., 2010).

Another explanation of these results can be explained by the ecological transactional model. According to Cicchetti & Lynch (1993), an individual's functioning and the context in which it takes place is mutually influencing each other. Therefore, when we examine the differences between urban and rural youth the role of the environment plays a more significant role. At the macrosystem level, the values and customs that surround a community have an effect on how a community functions, for example what services they provide, what kind of supports they offer, and what kind of community engagement is occurring. As a result, an individual living in a community where there are more stressful situations and less stable social conditions may have less access to services or supports in their community, and there may be less community engagement. These individuals may experience more negative outcomes from where they live, such as symptoms of depressed mood and suicide ideation. However, if an individual lives in a community where there is less stress and more stable social conditions, where they have more access to services, supports, and more community engagement, these



individuals may experience less negative outcomes because the environment is playing a protective role in their lives.

The ecological transactional model also explains the similarities of risk factors for depressed mood and suicide ideations that were found between urban and rural youth. According to this model it is not unexpected that the most consistent risk factor for depressed mood and suicide ideation in urban and rural youth is their relationship with their parents since family is the most proximal to the individual, especially for youth who still live with their parent(s) and/or guardian the majority of the time. Furthermore, relationships with parents are life-long and are more enduring. Therefore, the more negative the relationship with their parents, the more negative the outcome and the longer the relationship remains negative, the longer the effect that factor will have on the individual.

However, the ecological transactional model may not fully explain the internal factors that were found to be associated with elevated symptoms of depressed mood and suicide ideation. The internal factors, such as low self-esteem, are best explained by Beck's cognitive theory of depression. According to Beck, the thinking of a depressed person is characterized by negative views of themselves, the world, and the future (Moss, 1992). Therefore, an individual with low self-esteem may think that they are not smart (view of themselves), that everyone thinks they are stupid (view of the world), and there is nothing they can do to make it better (view of the future). The triggering of this cognitive triad may lead to the development of depressed mood and/or suicide ideation (Kim, et al., 2011).

### **Study Limitations**

There are several limitations to the current study that may have influence over the study results and the conclusions that were drawn from the findings.

**Response Rate.** The overall response rate for this study was 46.7% of eligible students in grades 5 to 8 in the SHR. The SHR's procedure for collecting consent was likely the reason the response rate for this study was not higher. Children were asked to take the consent form home and then return it back to school. Not all consent forms were returned; which could have been the result of children not taking the consent form home, parents not completing the consent form, or children not returning the consent form to school. Therefore, it is possible that these results are not representative of the all the students in grades 5 to 8.

**Selection Bias.** This study had selection bias by location of schools, cultural status, and deprivation. The selection bias in this study warrants caution in interpreting the findings of this study. There was an underrepresentation of rural students, individuals of Aboriginal cultural status and immigration status, individuals living in the most deprived neighbourhoods in Saskatoon, and individuals who reported thoughts about suicide. This may affect the findings in that differences between the groups may be exaggerated and findings that were significant in the larger group may not have been found to be significant in the smaller groups.

**Study Design.** The design for this study was a population based cross-sectional design. Therefore, the results cannot be considered causal as there is no possibility of measuring trends over time. Furthermore, the secondary analysis conducted for the current study may have been stronger if it employed a survey specifically designed for the research questions addressed. However, using a cross-sectional design is a first step to exploring depressed mood and suicide ideation in urban and rural youth in Saskatchewan.

Additionally, the Student Health Survey used self-report questionnaires which can be prone to bias and potential misinterpretation of the questions, which could affect the responses and the interpretations of the results.

**Definition of Rural.** For this study the definition of rural included all schools within the Saskatoon Health Region that were located outside of the city of Saskatoon, which included the suburban centers outside of the city of Saskatoon. Therefore, differences between urban and rural populations found in this study may not have captured true differences between these populations because of the potential confounding effect of including the suburban centers into the rural analysis.

**Definition of Mental Health.** For the purpose of this study only depressed mood and suicide ideation were used to examine the risk factors associated with adverse mental health outcomes. Mental health is a complex phenomenon that cannot be explained by only two variables. However, due to the lack of research of mental health in rural youth and the lack of research that examines mental health in Saskatchewan, this current research is a beginning to understanding risk factors that can adversely affect youth living in both urban and rural communities in Saskatchewan.

**Depressed Mood Scale.** The CES-D-12 scale was found to have good internal consistency and adequate content validity. However, upon examination of the content of the scale it was found that questions pertaining to irritability were not included as part of the scale. Irritability has been said to be a key symptom of depression in youth (Poulin et al., 2005) and therefore is a possible limitation of the scale that may lead to an underestimation of the prevalence of depression in youth (Poulin et al., 2005).

**Measure of Suicide Ideation.** Measures of suicide ideation was obtained through one question, “In the past 12 months, did you seriously consider suicide?” Although this question has been utilized in previous population based studies, such as the National Longitudinal Study

of Children and Youth (NLSCY), no validity or reliability have been reported. Therefore, it unclear if this is a reliable question for obtaining information about suicide ideation.

## **Conclusions**

There are aspects of depressed mood and suicide ideation that are unique to urban and rural youth in Saskatchewan. From this study we can conclude that urban and rural youth differ in the type of risk factors that are associated with depressed mood and suicide ideation. Although some similarities exist between the two populations, there are differences in the strength of the predictors. For both populations, risk factors such as self-esteem, relationship with parents, depressed mood, and suicide ideation are important risk factors. Most importantly, relationship with parents appears to be the most consistent predictor for both suicide ideation and depressed mood in urban and rural youth.

At this point, the results of this study need more of a mixed methods approach to understanding complex issues, such as depressed mood and suicide ideation, particularly within this population of urban and rural youth. Furthermore, analysis using urban, suburban, and rural populations is also needed in order to have a more complete understanding of how the environment influences mental health, especially for youth. While the results of this study confirm that depressed mood and suicide ideation are important concerns for youth in both urban and rural settings, the determinants of these outcomes require further empirical inquiry before appropriately informing future prevention programs and/or policy initiatives.

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