

The Anatomy of Rural-Urban Youth Suicidal Ideation—
Who is at Greatest Risk. What Factors to Target. How to Intervene.

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partial fulfillment of the requirements for the degree of Doctor of Philosophy

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Abstract

Suicide embodies a considerable but often preventable loss of life. As the second leading cause of death for young people in Canada between the ages of 15 and 24, nearly one-quarter of all annual deaths for this age group are accounted for by those who have died by suicide. Greater still is the prevalence of suicidal behaviour. Annually, suicide and suicidal behaviours across the age span are estimated to cost the Canadian economy \$2.2 billion. Given the high personal costs to victims, survivors, and taxpayers, it seems crucial that prevention strategies be implemented to reduce the high rate of suicide and suicidal behaviours, as well as to promote mental health, particularly in youth. The promotion of positive mental health and well-being is especially relevant for youth living in rural areas. Fewer mental health resources are available in rural communities than in urban centres. Moreover, youth living in rural, low population density areas often do not believe that their anonymity and right to privacy would be protected if they were to seek mental health services. The present research was carried out to provide a potential foundation for stimulating mental health promotion and suicide prevention approaches, differing by rural and urban community and by gender, before such concerns emerge. Through a survey of 813 (459 rural youth; 354 urban youth) secondary school youth in Eastern Ontario, we examined the inverse association between suicidal ideation and engagement in extracurricular activities, such as sports, music, drama, or community groups.

Who is at greatest risk: It was found that rural youth reported significantly more suicidal thoughts than did urban youth ($p < .01$). Perceived social support accounted for rural and urban differences, while difficulties coping with daily stressors accounted for gender differences, in self-reported suicidal ideation. Thus, “red flags” for communities at risk could

include perceived deficits in social support within a given community, as well as having a number of young females who indicate poor coping with daily stressors.

What factors to target: Depressive symptoms, risk behaviours, self-esteem, and social support differed in importance in the prediction of suicidal ideation based on rural-urban setting and gender. Results reflecting differences underscore the importance of examining such factors in mental health research. A “one size fits all” approach to youth mental health promotion and suicide prevention does not appear to be a prudent strategy.

How to intervene: Youth engagement was explored as one possible means of intervention. In rural youth, personally meaningful engagement and engagement in a number of activities was directly inversely related to suicidal ideation. Regression analyses involving interaction analyses were carried out with youth engagement as a moderator for mental health indicators such as depressive symptoms, risk behaviours, self-esteem, and social support in the prediction of suicidal ideation. Through simple slope analyses, it was found that youth engagement significantly reduces the relationships between suicidal ideation and mental health indicators, particularly for males ($p < .001$). Therefore, youth engagement appears to be more universally beneficial for rural youth, given that rural dwelling appears to be a risk factor for suicidal ideation. Moreover, for male youth at risk for suicidal ideation, given depressive symptoms, risk behaviours, low self-esteem, and low perceived social support, youth engagement may be of particular benefit.

With knowledge of who is at greatest risk for suicidal ideation, what factors to target, and a possible intervention road map, we can reach youth and foster resiliency before suicidal thoughts emerge.

Keywords: youth, suicidal ideation, engagement, rural, prevention

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The Anatomy of Rural-Urban Youth Suicidal Ideation—

Who is at Greatest Risk. What Factors to Target. How to Intervene.

CHAPTER 1

Youth suicide embodies a considerable but often preventable loss of life, posing a tremendous social and economic burden (Moore, Mao, Zhang, & Clarke, 1997). As the second leading cause of death after motor vehicle accidents for young people in Canada (Statistics Canada, 2004), nearly one-quarter of all annual deaths for youth are accounted for by those who have died by suicide (Mood Disorder Society of Canada, 2002). Correspondingly, suicide results in more deaths for young people than cancer, AIDS, and all other natural causes of death combined (Canadian Association for Suicide Prevention [CASP], 2004). Despite this, there is no national youth suicide prevention strategy in Canada to guide activities that would address this major health issue.

Not only is youth suicide a tragedy for those who die, it is also devastating for family, friends, and the community. Peers and family member survivors close to victims of suicide experience a hurt, despair, and loss complicated by guilt and stigma (Suicide Prevention Resource Centre [SPRC], 2006). It is also a concern that the risk of suicide contagion increases in communities after a death by suicide occurs (Centre for Suicide Prevention, 2004).

With regard to economic concerns, the estimated cost of suicide can be as high as four million dollars per death, depending on the effect on survivors and potential years of life lost (CASP, 2004). Moreover, each attempted suicide costs between \$30 000 and \$300 000 dollars, as a function of family disruption, support required, hospital services, and rehabilitation (CASP, 2004). Thus, annually, suicide and suicidal behaviours are estimated to

cost the Canadian economy \$2.2 billion (Lane & Desjardins, 2002). Given the high personal costs to victims, survivors, and taxpayers, it seems crucial that prevention strategies be implemented in Canada in order to reduce the high rate of suicidal thoughts, suicidal behaviours, and deaths by suicide, particularly among youth. However, before prevention programs are designed, it is imperative to understand suicidal ideation by examining related factors or predictors that programs should target and measure.

Understanding Suicide

In community-based work, it may be difficult to measure deaths by suicide or attempts as a function of prevention approaches, given the low frequency of these behaviours within small samples. Specifically, in Canada, children between the ages of 5 and 14 years die by suicide at a rate of 1.1 for every 100,000; those 15 to 24 years die by suicide at a rate of 13 per 100,000 (Afifi, Cox, & Katz, 2007; Bridge, Goldstein, & Brent, 2006). Although this is considered to be of “epidemic” proportions (Young, 1985), even more disturbing is that, for every youth who dies by suicide, there are approximately up to 400 documented and undocumented suicide attempts (Cutler, Glaeser, & Norberg, 2001). However, despite the frequency of suicide attempts among youth, conducting research examining such attempts or even deaths as an outcome variable would yield low statistical power unless using a very large, perhaps national sample. Thus, beyond attempts, greater still is the prevalence of suicidal ideation within the general population of adolescents. Suicidal ideation is a red flag warning sign for both potential attempts and deaths by suicide (Anderson & Smith, 2003),

Approximately one quarter of Canadian youth aged 13 to 18 have seriously contemplated suicide at some point in their lives (Manion & Lee, 2004). For every youth

who seriously considers suicide, approximately half go on to make a suicide attempt (SPRC, 2006b). In fact, among inpatient mental health samples, the majority of attempters report past ideation and the majority of current ideators report past attempts (Anderson & Smith, 2003). Thus, suicidal thoughts are a major risk factor for attempts and deaths by suicide; for that reason, all reported ideation should be taken seriously (Canadian Psychiatric Association, 2006). Given the suicide risk associated with ideation, as well as the higher rates of ideation than attempts and deaths by suicide in the general population, suicidal thoughts may be a useful focus for suicide prevention research purposes. The current study includes an examination of suicidal thoughts. However, for more efficient detection of potentially at-risk youth, researchers suggest that the use of suicidal ideation as an outcome variable in research must be accompanied by an understanding of other factors that exacerbate risk or enhance protection for youth (Gunnell, Harbord, Singleton, Jenkins, & Lewis, 2004). The present research involves an examination of such issues. More specifically, high levels of depression, risk behaviours, low self-esteem, and social isolation are seen as key contributing factors to suicidal thoughts (Ledgerwood, 1999; Moscicki, 1995; Statistics Canada, 2004). By contrast, youth engagement has been found to be associated with lower rates of depression, less participation in risk behaviours, enhanced self-esteem and social support (Bartko & Eccles, 2003; Mahoney & Schweder, 2002; Pancer et al., 2002; Vesely et al., 2004). To date, little research has examined youth engagement in structured extracurricular activities as a means of suicide prevention or mental health promotion (e.g., Armstrong, 2009a, 2009b; Ramey et al., 2010). Therefore, we examined this issue in a sample of urban and rural youth.

The Present Study

The present research is a cross-sectional, community-based, descriptive study of risk and protective factors for youth suicide by rural-urban setting and gender. This research highlights three key related areas of study: 1) *Who is at greatest risk*: We explored whether differences in suicidal ideation exist by rural-urban setting, by gender. Specific explanatory hypotheses for geographic and gender differences were proposed and tested in relation to social isolation, socioeconomic status, stress and coping, as well as ethnicity. Findings related to these hypotheses can be used to describe communities in which we may predict that suicidal ideation would be elevated. 2) *What factors to target*: Important risk and protective factors, mental health indicators (i.e., depressive symptoms, risk behaviours, self-esteem, and social support), may also differ in relation to suicidal ideation by community and gender. Therefore, in a mediation model comparing both setting and gender groups in a single analysis, we carried out an examination of the strength of prediction of these factors in relation to suicidal ideation. This analysis may help elucidate which factors to target for each rural-urban group, by gender. 3) *How to intervene*: We conducted a comprehensive evaluation of youth engagement as a buffer between mental health indicators and suicidal ideation. The examination of youth engagement provides one possible avenue for intervention.

WHO IS AT GREATEST RISK FOR SUICIDE IDEATION: SETTING, GENDER, WHY DIFFERENCES MAY EXIST, AND PREDICTORS

Snapshot of Youth Suicide Ideation in Rural and Urban Communities By Gender

As deaths by suicide, suicidal behaviours, and suicidal ideation are not the same for youth from different backgrounds, research and prevention approaches must recognize

important differences amongst groups of youth. Youth living in modern rural communities often represent an especially high risk population for suicide (Baume & Clinton, 1997; Dudley, Kelk, Florio, Howard, & Waters, 1998; Dudley, Waters, Kelk, & Howard, 1992; Thompson, 1987; Yip, Callanan, & Yuen, 2000). Gender issues are also clearly relevant in mental health research and, in particular, for studies of youth suicide (e.g., Wilkinson & Gunnell, 2000). Only when there is a comprehensive understanding of risk and protective factors for suicidal ideation, in particular by setting and gender, can appropriate strategies be implemented to promote positive mental health within higher risk communities.

Rural Youth Suicide by Gender

Rural lifestyles have traditionally been romanticized as idyllic and stress-free (Puskar, Tusaie-Mumford, Sereika, & Lamb, 1999). Coinciding with this belief is a perception that rural communities are immune from urban problems (Hall et al., 2008; Struthers & Bokemeier, 2000). Although rural dwelling may once have been perceived as a safeguard for youth mental health and well-being concerns, evidence to the contrary has increasingly surfaced since the late 1980's (e.g., Canadian Institutes of Health Research [CIHR], 2011; Forrest, 1988).

Some research has yielded findings that rural youth under the age of 20 are four to six times more likely to die by suicide than are their urban counterparts (CPHI, 2006). However, there is little research to suggest why these urban-rural differences exist or whether there are differences in suicidal ideation across these communities. One possible explanation for higher rural youth suicide findings might be differential access for rural youth to mental health and support resources. For example, in Canada, only one in six youth access mental health services when they are experiencing concerns (Canadian Psychiatric

Association, 2006; Offord, Boyle, Fleming, Munroe Blum, & Rae Grant, 1989). There is also no evidence to suggest that those receiving services have access to therapeutic approaches which are evidence-based (Manion, 2010). Accessible services are even scarcer in rural communities (Anderson & Gittler, 2005; CIHR, 2011; Forrest, 1988). Compounding these factors, youth living in rural, low population density areas do not believe that their anonymity and right to privacy would be protected if they were to seek mental health services (CIHR, 2011; Craft, 1986; Heflinger & Hinshaw, 2010). Concern about confidentiality is one of the primary reasons influencing whether youth seek health care and speak openly with professionals (Lehrer, Pantell, Tebb, & Shaffer, 2007). Thus, it would appear that not only are fewer resources available in rural communities for youth experiencing mental health concerns, such as suicidal ideation, but also youth are less likely to access those services than in urban communities. The issues surrounding accessibility to individually-based treatment services in rural communities, compounded with the high rates of youth suicide and suicidal ideation and behaviours, as well as the low disclosure rates, suggest the particular need for research to stimulate the development of youth suicide prevention programs in rural communities. Despite this need, little research exists in this area to guide such efforts.

It is not universally true that youth suicide and other mental health concerns are higher in rural than urban communities. Internationally, findings regarding mental health and well-being indicators by rural-urban dwelling have been somewhat contradictory. More specifically, certain researchers have concluded that suicide and factors related to suicide, such as affective concerns, substance and behavioural problems, low self-esteem, or low social support are more problematic for youth and other persons living in rural than urban

regions (Baume & Clinton, 1997; Dudley, Kelk, Florio, Howard, & Waters, 1998; Dudley, Waters, Kelk, & Howard, 1992; Forrest, 1988; Hall et al., 2008; Kosky & Dundas, 2000; Phillips, Li, & Zhang, 2002; Puskar et al., 1999; Singh & Siahpush, 2002; Taylor, Page, Morrell, Harrison, & Carter, 2005a; Stewart, McKenry, Rudd, & Gavazzi, 1994; Thompson, 1987; Vijayakumar, John, Pirkis, & Whiteford, 2005; Yip, Callanan, & Yuen, 2000). By contrast, other research has yielded no significant urban-rural difference with regard to these mental health and well-being concerns (Adcock, Nagy, Simpson, 1991; Dukes & Stein, 2003; Heyerdahl, Kvernmo, & Wichstrom, 2004; Johnston, O'Malley, & Bachman, 2000; Kessler et al., 1994; Lowry, Powell, Kann, Collins, & Kolbe, 1998). Furthermore, substance abuse, affective disorders, and self-esteem have also been found to be significantly *more* problematic for urban than rural youth (Andrews, Hall, Teesson, & Henderson, 1999; Galliher, Rostosky, & Hughes, 2004; Glendinning & West, 2007; Micciolo, Williams, Zimmermann-Tansella, & Tansella, 1991). Although these studies are not without limitations, including cross-sectional designs and small sample sizes, these limitations appear to be fairly evenly distributed across studies representing the three types of outcomes. Therefore, a potentially better explanation for these differing rural-urban results would be that rural and urban communities are not the same everywhere. For example, research has found that exclusively farming rural communities, by comparison to exclusively town-based rural communities, have higher rates of depression and stress reported by youth (Clark-Lempers, Lempers, & Netusil, 1990). Thus, a broad-brush statement that rural communities, or urban communities, are globally more risky for youth suicide and well-being concerns would not be appropriate.

Despite the differing findings in research, little attempt has been made to propose and

test potential explanations for possible rural-urban differences in mental health concerns, such as suicidal ideation. In general, the examination of community-level factors is a neglected area of mental health research (Wilson & Donnermeyer, 2006). However, establishing and testing explanations for urban-rural differences may help in the early identification of regions where youth may be more at risk for suicidal ideation.

Furthermore, a solid grounding in theory and research literature to explain differences may also help in the understanding of why results may vary by rural and urban settings internationally. Additionally, although there is some literature to suggest that there are gender differences in key mental health and well-being issues for youth, with female youth at particular risk for certain concerns like depression (e.g., Adcock et al., 1991; Heyerdahl et al., 2004; McCauley Ohannessian, Lerner, Lerner, & von Eye, 1999; Obeidallah, McHale, & Silbereisen, 1996; Puksar et al., 1999; Wilkinson & Gunnell, 2000), there is a paucity of research examining rural and urban suicidal ideation differences by gender.

Previous research supports a main effect of gender in relation to suicidal ideation. Specifically, females are more likely to attempt suicide, but males are more likely to die by suicide (Tiller et al., 1998). Other research has found that females are more likely than males to indicate depressed feelings and to think about suicide (e.g., Eskin et al., 2007; Hallfors et al., 2004; Reynolds, 1988). These findings suggest that young males and females approach mental health and suicidal ideation differently. Therefore, understanding of gender differences in relation to suicidal ideation has direct implications for both suicide prevention and intervention efforts. Understanding key differences in youth experiences, based on geographic region, by gender, will help to inform efficient, evidence-based practice for different groups of youth in mental health promotion and prevention.

Urban-Rural Differences in Suicidal Ideation: Why Differences May Exist

Social Isolation

Durkheim (1897) was the first to recognize the societal, community-embedded risk factors for suicide. He proposed that, in individualistic societal conditions, people become particularly susceptible to suicide. Through the condition of social disintegration, social structures are less cohesive, and people become isolated through excessive individualism (Durkheim, 1897). By contrast to the promotion of individualism, through structures in society that allow for people to “commune” with one another, people discover meaning in life and are protected from well-being concerns, such as suicidal ideation (Durkheim, 1912). Traditionally, rural communities were thought to provide structures with strong social capital through a web of intergroup relations and integration (Durkheim, 1857/1951). There is some research to support this theory. Specifically, traditional rural communities offer strong supportive networks through cohesive family and peer groupings (Wilson & Donnermeyer, 2006). By contrast, positive social bonds are sometimes viewed as weaker in urban areas (Wilson & Donnermeyer, 2006).

In Siberia or certain coastal regions of Italy today, rural areas have very strong kin-based networks (Glendinning & West, 2007). Within these networks, there are very clear roles and responsibilities for youth and all generations appear to adhere to traditional rural cooperative values and aspirations (Glendinning & West, 2007). Social isolation is, thus, a problem associated with urban rather than rural regions in these countries. Thus, research has found that less social isolation in traditional rural communities by contrast to urban

regions is associated with fewer mental health concerns and lower suicide rates in rural than urban areas (Glendinning & West, 2007; Micciolo et al., 1991).

By contrast to regions of the world with more traditional rural values, in places such as Australia or North America, the close-knit relationships for which rural areas were once known are eroding (Forrest, 1988; Hall et al., 2008; Stewart et al., 1994). Traditional kin-based networks are changing: The strong nuclear-extended family networks may no longer be a hallmark of rural regions to protect youth from other forms of isolation, such as geographic isolation (Hall et al., 2008; Struthers & Bokemeier, 2000). Concerning social isolation in many rural areas, there are smaller and fewer peer groups than in urban regions (Bourke, 2003). As such, there is less opportunity for social interaction and greater perceived social isolation, potentially associated with declines and restructuring of rural economies and infrastructure (Bourke, 2003; Stewart et al., 1994; Sung, Puskar, & Sereika, 2006; Taylor et al., 2005; Wilkinson & Gunnell, 2000). By contrast to urban regions, rural neighbours are infrequently used for support (Rosenberg, 1989). Overall, the changing face of rurality appears to one in which rural cultures promote self-sufficiency and independence (Hall et al., 2008). In addition to geographic isolation, fewer opportunities for social interaction, less kin-based cohesion, and a drive for independence would provide a prime breeding ground for feelings of social isolation for youth living in rural areas. Therefore, it is proposed that suicidal ideation would be more problematic in rural areas where social support may be significantly lower than in urban regions. If this is the case, perceived social support could potentially be used as an early marker for rural regions where youth may be at risk for mental health and well-being concerns, such as suicidal ideation. Moreover, as it is believed that social support may be more important for females than for males (Chodorow, 1974;

Tiller et al., 1998), perceived social support may be a particularly relevant factor to consider in relation to suicidal ideation for rural females.

Socioeconomic Status

Researchers often speculate on low socioeconomic status as a potential explanation accounting for rural and urban differences in mental health and well-being without evaluating this issue (e.g., Puskar et al., 1999). In particular, lower rural income levels may be misleading because they are compensated for by a lower cost of living. It is possible that the perception of socioeconomic status as accounting for differences can be attributed to the fact that low socioeconomic status is one of the known universal risk factors for suicidal ideation and other well-being concerns (Puskar et al., 1999; Vijayakumar, John, Pirkis, & Whiteford, 2005). In many rural communities, there are often uncertain economic futures, lower levels of education with more high school non-completion, lower incomes, and higher child poverty rates than in many urban communities (Estell, Irvin, & Hutchins, 2007; Stewart et al., 1994; Wilkinson & Gunnell, 2000). Thus, it is possible that socioeconomic status, including such things as parental income and education, may account for possible rural and urban differences with regard to suicidal ideation. However, previous research in these areas has been equivocal. Specifically, rural-urban differences in both internalizing and externalizing mental health concerns were not found to be accounted for by socioeconomic status in some research (Glendinning & West, 2007; Heyerdahl et al., 2004). In other research, socioeconomic status was found to mediate the relationship between rural-urban setting and suicidal ideation (Taylor et al., 2005). Moreover, Geronimus and colleagues (2006) found that low socioeconomic status in urban areas was more predictive of a truncated life than in rural areas. It seems, however, that the lowest socioeconomic status

of both rural and urban regions may be most problematic in relation to well-being (Brownell, Mayer, & Chateau, 2006). By contrast, another study suggested that high socioeconomic status, and not low socioeconomic status, is related to increased risk for suicide (Hjern & Bremberg, 2002). All of this research would collectively suggest that, if socioeconomic status (above or below average) makes one stand out in any community, people are more likely to have mental health concerns. Thus, it may be that lower socioeconomic status in rural regions may not account for rural-urban differences, particularly as lower rural income levels are often compensated for by lower living costs. Despite widespread lay speculation that lower socioeconomic status relates to higher rural mental health concerns, socioeconomic status and rural-urban setting may be independently associated with mental health and well-being concerns (Taylor et al., 2005). However, social status concerns are believed to be more problematic for males than females, whereas relational concerns are more problematic for females (Watt & Sharp, 2001); thus, socioeconomic status may be particularly relevant for male youth in relation to suicidal ideation. Therefore, socioeconomic status may be more important in explaining gender differences in suicidal ideation, rather than rural-urban distinctions.

Stress and Coping

Through research, it has been proposed that rural youth may respond more negatively to stressors, such as a social and economic change, than urban youth (Wilson & Donnermeyer, 2006). However, no research has directly examined this issue, nor examined how rural versus urban youth respond to daily hassles. Nevertheless, researchers have found that rural youth tend to use much higher levels of avoidance coping than urban youth (Sung et al., 2006). Avoidance or disengagement coping is associated with difficulties managing

stressors and poor psychosocial functioning, such as depressive symptoms (Sung et al., 2006) or suicidal ideation (Votta & Manion, 2004). With regard to gender, female youth report more difficulties addressing stress than males, which tends to be associated with higher levels of depression and attempted suicide in females (Adcock et al., 1999). Therefore, rural female youth may be at greater risk for mental health and well-being concerns, such as suicidal ideation, than their rural male and urban (male and female) youth counterparts, given difficulties coping with stress.

Ethnicity

In Canada, almost 90% of new immigrants gravitate toward urban regions, comprising 28% of the urban population and 6% of the rural population (Beshiri, 2004). Therefore, it is possible that certain key differences in research findings between rural and urban communities may be accounted for by ethnic differences between these regions, including those related to suicidal ideation. In certain cultural and religious groups, suicide is viewed as an unforgivable sin; thus these groups may underreport thoughts, attempts, or even deaths by suicide (Khokher & Khan, 2005). Research with a community sample of almost 5000 adults in England examining groups from White, Caribbean, Bangladeshi, Indian, and Pakistani backgrounds has, in fact, yielded findings of group differences in reported suicide ideation (Crawford et al., 2005). Crawford et al. found that self-reported ideation was less common among adult men and women from all ethnic minority groups. Despite the fact that ethnic groups such as Indian, Bangladeshi, and Pakistani were reporting lower rates of ideation than other ethnic groups, there were higher rather than correspondingly lower rates of death by suicide within these groups by comparison to many others (Crawford et al., 2005). It is unclear whether these results are generalizable to school-

aged youth.

By contrast to Crawford et al. (2005), Kennedy et al. (2005) found no differences in the prevalence of suicide ideation between ethnic groups of Chinese, Indo-Asian, and European descent. However, the sample consisted entirely of university students from one city in British Columbia, thus results may not be generalizable to a broader community sample or to younger groups of youth. If results of the Kennedy et al. study are more reflective of immigrant youth in general than the adult results of the England study or the cross-nation findings, then ethnicity might not account for rural-urban reporting differences in suicidal ideation. Indeed, research suggests that among ethnic minority youth living in North America or Australia, given acculturation, values and beliefs tend to be more similar to those of mainstream adolescents than their countries of ancestral origin (Arnett, 2007). Nevertheless, given the differences in suicidal ideation based on ethnicity described here, this area warrants further study in relation to explaining possible urban-rural differences in reported ideation, by gender.

Although Aboriginal populations are greater in rural regions in Canada and the rates of death by suicide are significantly higher for aboriginal than non-aboriginal youth (Government of Canada, 2008), the examination of Aboriginal youth is beyond the scope of the present study given the small sample of participating Aboriginal youth. Nevertheless, further research should consider the examination of differences in suicidal ideation for rural and urban Aboriginal youth.

In addition to possible rural-urban and gender differences in suicidal ideation based on social isolation, socioeconomic status, stress and coping, and ethnicity, other important differences may also exist. More specifically, risk and resiliency factors that predict suicidal

ideation may also differ by rural-urban setting and gender.

WHAT FACTORS TO TARGET: RISK & RESILIENCE

Prevention science has clearly found that it is necessary to understand and target both risk and resiliency factors in relation to behavioural outcomes, such as crime, violence, substance use, and academic performance (Pollard, Hawkins, & Arthur, 1999). Risk factors are measurable characteristics, variables, or hazards of a group, an individual, or a situation that predict a negative outcome (Masten & Reed, 2002; Pollard et al., 1999). By contrast, protective factors are measurable characteristics in groups, individuals, or situations that predict positive outcomes in the context of risk (Masten & Reed, 2002). The presence of protective factors can help to protect youth from the negative effects of risk factors; this is known as resilience (Barankin & Khanlou, 2009). As such, protective factors can exert their influence on a particular negative outcome through their inverse relationship with risk factors for the outcome or through their direct inverse relationship with the outcome. This issue, however, has yet to be examined in relation to many suicide risk and protective factors for youth.

In the etiology of suicidal cognitions and behaviours, factors that enhance risk are high levels of depression and engagement in health-harming risk behaviours (e.g., Moscicki, 1995; Statistics Canada, 2004). Over half of children and teens who suffer from depression will eventually attempt suicide at least once (Fombonne, Wostear, Cooper, Harrington, & Rutter, 2001). By contrast, self-esteem and social support are known protective factors (e.g., Bearman & Moody, 2004; Wild, Flisher, & Lombard, 2004). These issues are some of the most powerful risk and protective factors for suicide, suicidal behaviours, and suicidal ideation examined in the literature (e.g., Bearman & Moody, 2004; Eskin, Ertekin, Dereboy,

& Demirkiran, 2007; Wild et al., 2004).

Depressive Symptoms

The relationship between depression or depressive symptoms and suicide has been well-documented in the literature. Depression or depressive symptoms are predictive of suicide and suicidal ideation (e.g., Becker & Grilo, 2007; Eskin, Ertekin, Dereboy, & Demirkiran, 2007; Evans, Hawton, & Rodham, 2004; Stoelb & Chiriboga, 1998; Watt & Sharp, 2001). In fact, depression is one of the most consistent predictors of suicidal thoughts, attempts, and deaths by suicide in both young males and females (Eskin et al., 2007). It is considered to be the most serious risk factor for suicidal ideation in adolescents, as well as in adults (Eskin et al., 2007; Grøholt, Ekeberg, Wichstrøm, & Haldorsen, 2000; Thompson, Mazza, Hertin, Randell, & Eggert, 2005). However, not all individuals who are depressed go on to die by suicide, and not all suicidal youth are depressed. Nevertheless, depression remains a major risk factor for suicidal ideation (e.g., Stoelb & Chiriboga, 1998).

Risk Behaviours

In addition to the association between depressive symptoms and suicidal ideation, participation in health-harming behaviours is also associated with suicidal ideation. Specifically, smoking, substance use, restrictive eating, bingeing or purging, physical fighting, and risky sexual behaviour, are all associated with suicidal ideation (Afifi, Cox, & Katz, 2007; Becker & Grilo, 2007; Hallfors et al., 2004; Stein, Lilenfeld, Wildman, & Marcus, 2004; Watt & Sharp, 2001). Of all the risk-taking behaviours in which youth may partake, alcohol abuse is the most often cited behaviour associated with acute suicide risk (Stoelb & Chiriboga, 1998). However, illegal drug use, longitudinally, is the risk behaviour most associated with recurring suicidal ideation (Hallfors et al., 2004). Although there is a

strong association between depressive symptoms and risk-taking behaviour (Hallfours et al., 2004), risk behaviour is also a key independent predictor of suicidal ideation (Becker & Grilo, 2007). Moreover, although depressive symptoms and risk behaviours are important associated predictors of suicidal ideation, a consideration of risk factors in relation to youth concerns should also include a consideration of protective factors (Pollard, Hawkins, & Arthur, 1999).

Self-Esteem

During adolescence, self-esteem is an especially salient factor in adolescent development (Guillon, Crocq, & Bailey, 2003). Self-esteem is often conceptualized as “an individual’s opinion of him- or herself, or the degree to which one holds attitudes of acceptance or rejection of oneself” (Guillon et al., 2003, p.59). More specifically, in the initial conceptualization of self-esteem, James (1890) proposed that low self-esteem emerges when one’s self-evaluation encounters a dissonance between one’s “real self”(who an individual is) and one’s “ideal self” (who an individual would like to be). It has been found in research that many individuals who are at risk for suicide experience a discord between their real and ideal selves, or low self-esteem (McElroy, 2004; Watt & Sharp, 2001). By contrast, high self-esteem is a protective factor in relation to suicidal ideation (Kelly, Lynch, Donovan, & Clark, 2001).

Like risk-taking behaviour, although low self-esteem is highly correlated with depression (Guillon et al., 2003; Waldo, Hesson-McInnis, & D’Augelli, 1998), controlling for depression, self-esteem is an independent inverse predictor of suicidal ideation (Kelly et al., 2001). Strikingly, self-esteem as a protective factor is the most reliable inverse predictor of suicidal ideation in the literature (Eskin et al., 2007). A key variable associated with self-

esteem in relation to suicidal ideation is social support (Guillon et al., 2003).

Social Support

As noted previously, isolation may be related to suicidal ideation (Health Canada, 2003). By contrast, perceived social support has typically been cited as a protective factor for youth suicidal ideation (Bearman & Moody, 2004; Eskin et al., 2007). More specifically, having close friends and a supportive family are rated by youth as protective factors and a source of help concerning suicidal ideation (Evans, Smith, Hill, Albers, & Neufeld, 1996). However, one caveat arises in that supportive peers are not universally protective. Peer supports that reinforce risk behaviours may promote suicidal thoughts and behaviours (Berkman, Glass, Brissette, & Seeman, 2000; Watt & Sharp, 2001). Nevertheless, in general, social support from family and friends is positively related to mental health (Berkman et al., 2000; Ystgaard et al., 1999). Moreover, if youth reach the point where they are feeling distressed, support can help prevent young people from reaching the point where they might seriously consider suicide (O'Donnell, Stueve, Wardlaw, & O'Donnell, 2003). In particular, social support is important for distressed youth as young people are more likely to turn to informal support networks, especially friends, rather than formal networks, such as psychologists, counsellors, or teachers (Davidson & Manion, 1996; O'Donnell et al., 2003). Thus, for youth in general, as well as already-distressed youth, social support is a strong protective factor for youth suicidal ideation (Bearman & Moody, 2004; Eskin et al., 2007; O'Donnell et al., 2003).

Some youth at risk for death by suicide, due to the presence of risk factors, may not express suicidal thoughts. Thus, research must focus on both an examination of risk factors and protective factors (Pollard et al., 1999). A *protective factor model* is one in which some

variables modify the relationships between risks and outcomes (Zimmerman, Bingenheimer, & Notaro, 2002). In the present research, we examined the presence of social support and self-esteem as protective factors modifying the relationship between depressive symptoms and risk behaviours with suicidal ideation.

The spectrum of suicide, suicidal behaviours, and suicidal ideation is a complex phenomenon involving multiple risk and protective factors such as academic success or problems, instability in the family, economic issues, parental and personal psychopathology, personal vulnerabilities, exposure to stressful life events and circumstances, and social, cultural, and contextual factors (e.g., Beautrais, 2000; Eskin et al., 2007; Fergusson, Woodward, & Horwood, 2000; Martin, Richardson, Bergen, Roeger, & Allison, 2005). Thus, an examination of depressive symptoms, risk behaviours, self-esteem, and social support provides but one avenue of discovery concerning risk and resiliency to suicidal ideation. Examinations of diverse settings, personal factors, or situations are also necessary in order to understand suicide risk and prevention (Eskin et al., 2007). Furthermore, it is the interplay between these factors that appears to be most relevant, as it is evident that suicide is a complex, multidimensional phenomenon.

Rural, Urban & Gender Differences in Relation to Risk and Protective Factors

As noted, mental health indicators, such as depressive symptoms, risk behaviours, self-esteem, and social support are sometimes found to be more problematic for rural than urban communities (e.g., Baume & Clinton, 1997; Dudley et al., 1998; Hall et al., 2008), but these findings may differ based on the nature of the rural community. Such risk and resiliency factors have yet to be examined by rural-urban dwelling as predictors of suicidal ideation.

Gender differences have been identified consistently in youth suicide research (e.g., Wilkinson & Gunnell, 2000; Eskin et al., 2007; Hallfors et al., 2004; Reynolds, 1988; Tiller et al., 1998). Specifically, females in North America are more likely than males to think about and attempt suicide, but males are more likely to die by suicide (Eskin et al., 2007; Hallfors et al., 2004; Reynolds, 1988, Tiller et al., 1998). Risk and protective factors for suicidal ideation may also be differentially related to suicidal ideation by gender (Gunnell, Harbord, Singleton, Jenkins, & Lewis, 2004; Qin, Agerbo, Westergard-Nielson, Eriksson, & Mortenson, 2000). Thus, depressive symptoms, risk behaviours, self-esteem, and social support may interact with gender differently in the development of suicidal ideation.

Depression may be a more important predictor of suicidal risk in females than in males. In one study, females diagnosed with major depressive disorder were 49 times more likely to die by suicide, while males were 8.6 times more likely to die by suicide, than those not diagnosed with major depressive disorder (Shaffer, 1988). Major depressive disorder is the most highly correlated factor with suicidal ideation for girls (Hallfors et al., 2004). With caution given that data was cross-sectional and limited to a sample from one school, early research using a structural equation model yielded findings to suggest that females might progress directly from depression to suicidal ideation, whereas males might progress from depression to substance use to suicidal ideation (Metha, Chen, Mulvenon, & Dode, 1998). Thus, for females, depressive symptoms independently may be highly important in the prediction of suicidal ideation, whereas a combination of risk behaviours and depressive symptoms may be more relevant for males. Concerning risk behaviours, male suicidal youth were 4.4 times more likely to be substance users than non-substance users, while female suicidal youth were 0.8 times more likely to be substance than non-substance users (Stoelb

& Chiriboga, 1998). Other researchers have also noted that the association between risk behaviours and suicidal ideation is stronger for males than for females (Afifi, Cox, & Katz, 2007). Given these gender differences, the importance of depressive symptoms and risk behaviours as predictor variables in their relationship with suicidal ideation should vary as a function of gender.

Regarding self-esteem, Tiller et al. (1998) found that a feeling of worthlessness was a more important predictor of suicidal ideation in males than in females. Relationship problems or family conflicts may also be more important predictors of suicidal ideation in females than males (Tiller et al., 1998). Research to date has yet to examine gender differences in self-esteem and social support as protective factors for suicidal ideation. Current research appears to include an examination of the lack of self-esteem or social support as risk factors. As noted previously, rural and urban differences also have yet to be examined in relation to risk and protective factors for suicidal ideation. Moreover, the integration of rural-urban and gender differences in the study of risk and protective factors in relation to suicidal ideation is a gap in the literature. An examination of these factors can be helpful in leading to more targeted youth suicide prevention efforts.

HOW TO INTERVENE: YOUTH SUICIDE PREVENTION THROUGH YOUTH ENGAGEMENT

Globally, youth suicide is a leading and often preventable cause of death (Kutcher & Szumilas, 2008; WHO, 2008). However, as up to 40% of youth indicate that they would not tell anyone if they were suicidal (Manion, Davidson, Clark, Norris, & Brandon, 1997), the promotion of positive mental health and well-being before suicidal thoughts or plans emerge appears to be critical. Fostering positive developmental trajectories to preclude youth suicide

is particularly relevant for modern rural communities. In these regions, by comparison to urban areas, there are often fewer mental health resources (e.g., CIHR, 2011; Forrest, 1988) and often correspondingly higher youth suicide rates (Morrell, Taylor, Slaytor, & Ford, 1999; Yip, Callanan, & Yuen, 2000).

One context for healthy development and risk prevention is youth engagement. *Youth engagement* is the “meaningful participation and sustained involvement of a young person in an activity that has a focus outside himself or herself” (Pancer, Rose-Krasnor, & Loiselle, 2002, p. 49). It consists of affective, cognitive, and behavioural components, such as enjoyment, perceived control, and involvement frequency (Rose-Krasnor, 2009). Engagement in extracurricular activities at school or in the community, such as sports, music, drama, and volunteering, is strongly associated with positive health and development outcomes (e.g., Busseri, Rose-Krasnor, Willoughby, & Chalmers, 2006; Caldwell & Baldwin, 2003; Centre of Excellence for Youth Engagement [CEYE], 2003; Rose-Krasnor, Busseri, Willoughby, & Chalmers, 2006; Perkins & Borden, 2003). However, research has primarily examined health outcomes of youth engagement as they relate to a decreased likelihood of participation in risk behaviours. Although there is some evidence to suggest that youth engagement promotes mental health and well-being (e.g., Fredricks & Eccles, 2006), little is known about the mechanisms by which engagement may lead to positive health outcomes (CEYE, 2003). Moreover, to date, scarce research exists concerning engagement in extracurricular activities as a potential avenue of youth suicide prevention.

Youth engagement appears to be pertinent to suicidal ideation given that involvement in extracurricular activities is associated with fewer depressive symptoms, less participation in risk behaviours, higher self-esteem, and greater social support (e.g., Bartko & Eccles,

2003; Pancer et al., 2002; Scales and Leffert, 1999; Vesely et al., 2004). Correspondingly, depressive symptoms, risk behaviours, low self-esteem, and a lack of social support are seen as key factors in the etiology of suicidal ideation (e.g., Moscicki, 1995; Statistics Canada, 2004). Therefore, a primary goal of the present research was to explore youth engagement in relation to predictors of suicidal ideation as well as to suicidal ideation itself.

Leisure Engagement, Positive Youth Development, and Risk Factors for Suicide

Approximately 40% to 50% of a typical adolescent's time is spent participating in leisure activities (Caldwell & Baldwin, 2003; Csikszentmihalyi & Larson, 1984). However, the majority of activities that adolescents engage in involve "passive leisure," or free time pursuits that are unstructured and involve little physical or mental energy, such as watching television (Caldwell & Baldwin, 2003; Gordon & Caltabiano, 1996; Hofferth, 1998). Passive leisure can result in boredom, which is linked with greater feelings of depression, hopelessness, and suicidal ideation (Mazza & Eggert, 2001), as well as drug use and delinquency (Caldwell & Darling, 1999; Gordon & Caltabiano, 1996). In fact, in one study, suicidal adolescents were found to engage in solitary leisure activities such as reading 33% more than their non-suicidal peers (Mazza & Eggert, 2001). Youth who frequently spent their time in unstructured party situations with peers were also equally at risk for suicide as those who frequently engaged in solitary recreation (Mazza & Eggert, 2001). Nevertheless, a growing body of research suggests that activity involvement is associated with positive youth development (e.g., Busseri et al., 2006; Caldwell & Baldwin, 2003; Rose-Krasnor et al., 2006; Perkins & Borden, 2003). By contrast to certain unstructured leisure activities, structured leisure has often been found to promote a positive developmental trajectory (Perkins & Borden, 2003). The positive impact of structured activity engagement may be

more pronounced in young people by comparison to other age groups (Eccles & Barber, 1999; Taylor & Pancer, 2007).

Structured extracurricular activities for youth include, but are not limited to, school- or community-based clubs, sports teams, bands or drama groups, regular volunteering or community service, organized and regular political involvement, and church youth groups (Mahoney, Schweder, & Stattin, 2002; Pancer, Pratt, Hunsberger, & Alisat, 2007).

Specifically, structured activities have been operationalized as those with a specific purpose that include youth of one's own age group, have an adult leader, and involve meeting regularly (Mahoney et al., 2002; Mahoney & Stattin, 2000). These activities—those which are regular and sustained—are designed to produce positive intrapersonal and interpersonal youth development and enhance one's connection to the community (Hanson, Larson, & Dworkin, 2003; Henderson, Brown, Pancer, & Ellis-Hale, 2007; Niemi, Hepburn, & Chapman, 2000; Perkins & Borden, 2003). More specifically, active involvement in the life of the community, school, or society fosters growth-related experiences such as empowerment, psychological well-being, social development, academic orientation, and a greater sense of career direction (e.g., Barber, Eccles, & Stone, 2001; Busseri et al., 2006; Hansen et al., 2003; Mahoney, Eccles, & Larson, 2004; Janosz, LeBlanc, Boulerice, & Tremblay, 1997; Pancer et al., 2007; Taylor & Pancer, 2007).

With regard to suicidal ideation and youth engagement, primarily only sport participation has been examined. Suicide attempts have been found to be more likely in those who report no sport engagement in the past month (Simon, Powell, & Swann, 2004). Nevertheless, it is unclear whether youth may simply engage in fewer sports if already at risk for suicide. Further research suggests that sport participation is longitudinally protective

against suicidal ideation and attempts among youth (Brown & Blanton, 2002). Other research also supports that sports participation predicts lower suicidal ideation (e.g., Taliaferro, Rienzo, Miller, Pigg, & Dodd, 2008). Research has not examined whether engagement in any type of structured leisure activity may hold similar benefits for youth. Early data from program evaluation studies of Youth Net/Reseau Ado—a mental health promotion organization that involves an engagement component—does, however, suggest that engagement in various types of structured activities might reduce the risk of youth suicide (Armstrong, 2009a, 2009b; Ramey et al., 2010). Nevertheless, it is difficult to determine whether it was the youth engagement component or the mental health support system that resulted in fewer suicidal thoughts. Specifically, prior to engagement or during engagement in group activities, youth who report serious suicidal thoughts are connected to individual mental health services. Moreover, 50% of youth participants in Youth Net activities indicated pre-existing connections to mental health services (e.g., psychologist, social worker, psychiatrist) prior to activity participation. The Youth Net research (Armstrong, 2009b; Ramey et al., 2010) is also the only research to date to suggest how youth engagement in structured extracurricular activities may act to reduce the risk of suicidal ideation through factors associated with suicide, such as self-esteem. A comprehensive analysis of youth engagement and its *moderating* role between depressive symptoms, risk behaviours, self-esteem, and social support with suicidal thoughts has yet to be studied. No research to date has examined gender differences (given the predominantly female sample of the Youth Net research) nor rural-urban differences in youth engagement and its relationship with suicidal ideation.

Depressive Symptoms, Suicidal ideation, and Youth Engagement

In addition to the well-documented relationship between depressive symptoms and suicidal ideation, several researchers have noted an inverse relationship between depressive symptoms and youth engagement. In particular, extracurricular and community engagement have been found to be associated with fewer depressive symptoms (Barber et al., 2001; Bartko & Eccles, 2003; Brown & Blanton, 2002; Mahoney et al., 2002; McHale, Crouter, & Tucker, 2001; Pancer et al., 2007; Pedersen et al., 2005; Simon et al., 2004). However, much of this research is limited due to cross-sectional designs rendering the direction of the relationship between youth engagement and mental health unclear. Individuals may become involved in activities if they are experiencing positive mental health, decrease their involvement if they are experiencing poor mental health, or involvement in activities may enhance mental health. Nevertheless, in one recent longitudinal study of youth engagement and developmental success in which one measured item was depressive symptoms, Bussari et al. (2006) found that involvement in a number of extracurricular activities enhanced developmental success over time. Thus, it would appear that youth engagement may enhance mental health. Further supporting this research are findings that youth at risk for depressive symptoms indicate fewer symptoms if they are involved in an extracurricular activity (Mahoney & Schweder, 2002). In particular, Mahoney and Schweder reported that among 14-year-olds who had detached relationships with their parents, those who were involved in structured activities with a supportive activity leader reported lower levels of depressed mood. Moreover, Mahoney and Schweder found that individuals at greatest risk for a depressed mood appeared to benefit the most from involvement in after-school activities. Thus, youth engagement appears to act, either directly or indirectly, as a protective factor for depressive symptoms, and youth at greatest risk appear to benefit the most from

engagement. Given that depressive symptoms are associated with suicidal ideation, engagement may act as a buffer for youth at risk for suicidal ideation as a function of depressive symptoms.

Risk Behaviours, Suicidal ideation, and Youth Engagement

In addition to the association between depressive symptoms and suicidal ideation, as noted previously, many risk behaviours are predictive of suicidal ideation. Risk behaviours also appear to be inversely associated with youth engagement. In particular, youth engagement has also been found to be associated with less self-reported participation in behaviours such as substance use, teen pregnancy, or criminal activity (e.g., Allen, Philliber, Herrling, & Gabriel, 1997; Anderson-Butcher, Newsome, & Ferrari, 2003; Barber et al., 2001; Benson, Leffert, Scales, & Blyth, 1998; Eccles & Barber, 1999; Larson, 1994; Mahoney, 2000; Vesely et al., 2004). Moreover, Vesely et al. found that youth community involvement was associated with lower rates of participation in risky sexual behaviours. Further, in a longitudinal study, Eccles and Barber discovered that youth engagement was related to lower levels of alcohol and drug use.

Overall, risk behaviours place young people at elevated chance for suicidal ideation, and youth engagement may decrease risk behaviours or other developmental concerns. Moreover, youth engagement may be particularly beneficial for those young people at greatest danger for a negative developmental trajectory (Mahoney & Schweder, 2002; Marsh, 1992; Marsh & Kleitman, 2002), potentially such as those young people who may be at risk for suicidal ideation as a function of risk behaviours. Therefore, youth engagement should be examined as a buffer between risk behaviours and suicidal ideation.

Self-Esteem, Suicidal ideation, and Youth Engagement

Self-esteem is an especially salient factor in adolescent development (Guillon, Crocq, & Bailey, 2003). Low self-esteem is often predictive of suicidal ideation (Watt & Sharp, 2001). It has also been well-documented that youth engagement fosters a sense of self-esteem (Barber et al., 2001; Eccles & Barber, 1999; Ferron, Narrin, Cauderay, & Michaud, 1999; Pancer et al., 2007; Pancer et al., 2002; Pedersen et al., 2005; Sabo, Miller, Melnick, Farrell, & Barnes, 2005; Richman & Shaffer, 2000; Shaw, Kleiber, & Caldwell, 1995). Specifically, structured activities can have a positive impact on identity development and self-esteem (Shaw et al., 1995). In turn, Sabo et al. proposed that individuals may enhance their self-esteem through engagement in extracurricular activities and, thus, may exhibit lower suicidal ideation. Research has yet to explore this issue. Furthermore, research has not examined youth engagement as a buffer between low self-esteem and suicidal ideation. Given that low self-esteem puts youth at risk for suicidal ideation and youth engagement may act as a buffer for youth at risk for well-being concerns (Mahoney & Schweder, 2002; Marsh, 1992; Marsh & Kleitman, 2002), this issue should be addressed.

Social Isolation, Suicidal ideation, and Youth Engagement

Like self-esteem, social support from family and friends is positively related to mental health (Berkman, Glass, Brissette, & Seeman, 2000; Ystgaard et al., 1999). Moreover, suicidal youth profile as more socially isolated than non-suicidal youth (Watt & Sharp, 2001). This isolation for suicidal youth often occurs both within families and among peers (Stillion & McDowell, 1996). Having close friends and a supportive family are rated by youth as protective factors and a source of help concerning suicidal ideation (Evans, Smith, Hill, Albers, & Neufeld, 1996).

By contrast to general peer interactions, structured extracurricular activities are

thought to promote prosocial interactions with peers and extra-familial adults (Busseri et al., 2006; Mahoney & Schweder, 2002; Pancer et al. 2002). Having a supportive activity leader may provide an outlet for youth who are experiencing suicidal thoughts (Manion & Lee, 2004). Therefore, although individuals may report feelings of social isolation, positive support found through activity involvement should be associated with lower suicidal ideation. Thus, youth engagement in structured activities should act as a buffer between low perceived support and suicidal ideation.

The Measurement of Youth Engagement: Meaning, Breadth, and Intensity

The relationship between youth engagement and positive development in the literature may be confounded by the method in which youth engagement has been measured (Busseri et al., 2006; Rose-Krasnor et al., 2006). Often, youth engagement is measured dichotomously, assessing only whether youth are or are not involved in extracurricular activities (e.g., Barber et al., 2001; Eccles & Barber, 1999; Johnson, Powers, & Dyck, 1999; Mahoney, 2000; Mahoney & Stattin, 2000; Mahoney et al., 2002). However, this “all or nothing” approach fails to capture differences among engaged youth (Fredricks & Eccles, 2006; Rose-Krasnor et al., 2006). Thus, Rose-Krasnor et al. and Busseri et al. (2006) propose that youth engagement be measured along quantitative categories such as breadth and intensity. We also propose an examination of the subjective meaning found in engagement.

Personally Meaningful Engagement

One neglected area of research concerns youth engagement in activities which are personally meaningful. Personally meaningful engagement is thought to be essential for health and well-being (Caldwell & Baldwin 2003; Kleiber, 1999). Meaningful engagement

ultimately involves youth having fun, experiencing competence, self-determination, and intrinsic motivation, as well as enjoying pleasurable experiences (Caldwell & Baldwin, 2003). Moreover, within the experience of meaningful engagement, youth feel a personal commitment to sustain engagement (i.e., they would find the activity or activities hard to give up), they also feel challenged by the activity as well as experience a sense of success and belonging (Walker, Marczak, Blyth, & Borden, 2005). Such activities are expected to be related to personal growth and meaning and purpose in life (Nakamura, 2001; Nakamura & Csikszentmihalyi, 2002). Anything that provides meaning or purpose has been suggested to be related to decreases in the risk for suicide (Frankl, 1984).

Structured extracurricular activities are believed to be more conducive to finding meaning and experiencing positive affect than unstructured leisure activities (Hutchinson, Baldwin, & Oh, 2006; Rathunde & Csikszentmihalyi, 1993). However, certain unstructured activities may still be contexts in which many youth derive important meaning and experience positive affect and well-being (Hutchinson et al., 2006). In fact, youth can be meaningfully engaged in almost any genre of activity (Pancer et al., 2002). Thus, theoretically, it would appear important to encourage youth to get involved in something that might interest them and provide a situation in which they might be able to find success, challenge, fun and, thus, well-being (Vicary, Smith, Caldwell, & Swisher, 1998). However, engagement in structured rather than unstructured activities is more likely to promote constructive, prosocial behaviour and provide young people with meaningful roles and well-being (Fauth, Roth, & Brooks-Gunn, 2007; Fredricks & Eccles, 2006; Gottfredson, Gerstenblith, Soule, Womer, & Lu, 2004)

The ultimate experiential outcomes of meaningful engagement may differ between

gender groups, even if activities provide something to live for across genders. Erikson (1968) postulated that identity formation is an important developmental task for youth. Youth suicide relates to identity formation, gaining acceptance and approval from peers, whereby an identity crisis is a risk factor for suicide (Stillion & McDowell, 1996). For males, identity is proposed to be related to status, and a low social status is predictive of suicide (Chodorow, 1974; Watt & Sharp, 2001). Youth engagement in structured extracurricular activities, such as school sports teams, is one means through which males acquire status and develop their personal identity or self-concept (Denner & Griffin, 2003; Shaw, Kleiber, & Caldwell, 1995). The occurrence of psychopathology in men is common if a male upholds the stereotypical gender expectation that he must perform exceptionally well, and he does not feel that he is living up to this expectation (Farrell, 1993; Heifner, 1997). In support of this, Baumeister's (1990) escape theory of suicide proposes that suicidal ideation begins with the perception that one is failing to live up to rigid self-strivings. Thus, for males, engaging in activities that promote a sense of success or competence should be directly related to lower suicidal ideation. By contrast to males, it has been proposed that women do not respond to status strain with suicide (Chodorow, 1974). Instead, they are thought to respond to relational strains (Chodorow, 1974). Engagement in structured activities enhances prosocial relations (Busseri et al., 2006; Mahoney & Schweder, 2002; Pancer et al. 2002) and, thus, may provide meaning to females in this way, rendering the activity as important to females.

Similar to the theory of "flow," and the development of status, when a person experiences intrinsic motivation in an activity, they may experience success and challenge (Wigfield & Eccles, 2000), and they persistently carry out the activity for the pleasure and

personal satisfaction associated with the activity (Ryan & Deci, 2000). Thus, a consolidation of intrinsic motivation, flow, and other theories of youth engagement yields a definition of meaningful engagement: Meaningful engagement can be defined as *an activity which promotes success, challenge, would be hard to give up, is believed to be important, and is experienced as fun*. It should be noted that certain solitary activities, such as videogames, may meet these criteria and would, thus be considered by an individual to be meaningful engagement. Thus, meaningful engagement is but one dimension to examine, as there may be a strong difference between structured and unstructured leisure engagement.

Breadth of Engagement

Breadth of engagement has been defined as the number of different activities in which youth are engaged (Rose-Krasnor et al., 2006). Breadth is relevant to positive youth development as engagement in multiple activities may be related to more adaptive psychosocial outcomes than engagement in a single activity, regardless of the nature of the activities (Pedersen et al., 2005). Other researchers propose that involvement in many activities may have more positive developmental implications than even very frequent involvement in one activity (Busseri et al., 2006; Fletcher & Shaw, 2000). More specifically, engagement in a number of pursuits allows for a range of skills and values to develop, leads to encounters with more people, and may thus enable youth to be better able to achieve developmental tasks and experience a fuller range of growth (Busseri et al., 2006; Hansen et al., 2003; Shanahan & Flaherty, 2001). Furthermore, if a person experiences difficulties in one activity, when engaged in multiple activities, other activities may replace or compensate for the problematic activity (Busseri et al., 2006; Iso-Ahola, 1980). Early research in this area is contradictory as to whether there is a ceiling effect or whether too

many activities may be disadvantageous to development (Busseri et al., 2006; Lerner et al., 2001; Pancer et al., 2007; Rose-Krasnor et al., 2006). For example, can a young person be over-involved or over-committed to extracurricular activities, thus taxing their coping skills with deleterious effects in other areas, such as scholastic performance? Longitudinally, Busseri et al. found that breadth of engagement predicts successful developmental outcomes in the areas of mental health and social well-being, with no evidence of a ceiling effect. However, Rose-Krasnor et al. found no additive protection against risk behaviour beyond engagement in five or six activities. Correspondingly, in a study by Pancer et al., highly and moderately engaged youth did not differ in terms of adjustment. Nevertheless, based on some favourable findings, it would appear that breadth of engagement (or number of activities in which youth are engaged), perhaps up to a certain point, is an important feature of positive youth development and, thus, mental health and well-being.

Intensity of Engagement

Intensity of engagement has been defined as the average frequency of a young person's engagement (Rose-Krasnor et al., 2006). It was believed that intense participation in one activity over time may lead to the development of skill mastery and knowledge, as well as commitment to engagement (Busseri et al., 2006). Moreover, frequent engagement in one activity is thought to be one means through which youth acquire status and develop their personal identity or self-concept (Denner & Griffin, 2003; Shaw et al., 1995). Despite the face value of frequent engagement in one activity in relation to positive developmental outcomes, such as mental health, research has yet to support this hypothesis. By contrast to this, Simon et al. (2004) found no frequency "dose-response" of sport engagement in relation to suicidal ideation. Moreover, only breadth, rather than intensity of engagement, was

related to positive developmental outcomes in the literature (Busseri et al., 2006). Based on the given findings, it appears that intensity of engagement may not be as important to well-being as was once believed. Group differences, such as rural-urban setting and gender, are other factors to consider in relation to youth engagement.

Rural-Urban Differences in Youth Engagement and Suicidal Ideation

A pervasive underlying assumption among youth engagement theorists is that participation in structured extracurricular activities is equally beneficial for all youth (Fredricks & Eccles, 2006). Despite this assumption, promising research has yielded findings that youth at greatest risk for developmental concerns benefit the most from engagement (Mahoney, Schweder, & Stattin, 2002; Marsh, 1992; Marsh & Kleitman, 2002). As noted, some research suggests possible differences in mental health concerns and suicidal ideation based on rural-urban living conditions (e.g., Yip, Callanan, & Yuen, 2000). However, to date, no research has explored rural-urban differences in youth engagement, as a singular issue of interest or in relation to mental health concerns and suicidal ideation. Such an exploration may impact public policy by yielding more cost-effective, higher risk targets for suicide prevention and mental health promotion purposes.

A pilot study for the present research yielded findings to suggest that living distance from school inversely predicted youth engagement within a rural community (Armstrong & Manion, 2007). Research has also yielded findings to suggest that older persons living in Canada are less likely to be engaged in activities if living in rural compared to urban communities (Keefe, Andrew, Fancey, & Hall, 2006). It is unknown, however, whether rural youth are less likely to be engaged than urban youth. We carried out such an exploration in the present research. Moreover, the present research involves an exploration of youth

engagement as a moderator variable in relation to mental health and suicidal ideation for rural and urban youth.

Facing geographic isolation is a risk factor for suicide in Canada (Health Canada, 2003). Indeed, rurality itself is often found to be a risk factor for suicidal ideation (Canadian Institutes of Health Information, 2006). Therefore, if youth engagement is beneficial in promoting positive mental health in individuals at *greatest risk* for mental health or other concerns (Mahoney & Schweder, 2002; Marsh, 1992; Marsh & Kleitman, 2002), the relationship between youth engagement and well-being concerns such as suicidal ideation will likely be stronger in rural than urban communities. Given the lack of research in this area, however, there is a need to examine youth engagement as it relates to resiliency to suicide by comparing samples of urban and rural youth.

Gender Differences in Youth Engagement and Suicidal Ideation

No research to date has examined gender differences in youth engagement and suicidal ideation. Moreover, very little research has explored gender differences in youth engagement and mental health, primarily because most research has been carried out with university samples of psychology students who are mainly females. Any gender differences in youth engagement and suicidal ideation may reflect the way that engagement is measured. Specifically, given the literature previously discussed, if identity or intrinsically motivating variables, such as successfulness or challenge are measured as components of meaningful engagement, youth engagement may appear to be more important for males in relation to mental health. In contrast, if the social aspects of engagement are measured, engagement may appear to be more important for females in relation to mental health. As suicidal ideation is potentially more common among contemporary rural females than rural males or

urban youth of both genders, then perhaps engagement breadth or intensity would be more important for females than males in relation to suicidal ideation.

HYPOTHESES AND NOVEL CONTRIBUTIONS

Who is at Greatest Risk: Rural Youth Suicide

It appears that young people living in remote rural regions of Canada are more likely to die by suicide than their urban counterparts (CIHI, 2006). For prevention purposes, by contrast to posthumous measurements of suicide rates, youth suicidal ideation differences across non-remote rural and urban Canadian communities have yet to be explored.

However, as suicide rates appear to be higher in less traditional rural communities globally, such as North America (Baume & Clinton, 1997; Dudley, Kelk, Florio, Howard, & Waters, 1998; Dudley, Waters, Kelk, & Howard, 1992; Thompson, 1987; Yip, Callanan, & Yuen, 2000), and suicidal ideation is a strong predictor of suicide (Canadian Psychiatric Association, 2006), we anticipated that youth living in less remote rural Canadian communities would experience more suicidal thoughts than urban youth. Moreover, intensity of suicidal thoughts (i.e., passing thoughts by comparison to “I would kill myself if I had the chance”) was measured between rural and urban communities. Given the higher suicide rates in contemporary rural communities, we predicted that not only would rural youth have more suicidal thoughts than urban youth, but they would also be considered at higher risk for suicide attempts and completed suicides based on the nature of their thoughts.

Gender differences. As females are more likely than males to think about suicide (e.g., Eskin et al., 2007; Hallfors et al., 2004), and Canadian rural youth are more likely to die by suicide than urban youth, we expected that rural female youth would indicate the highest levels of suicidal ideation by comparison to rural males and urban youth. Exploring

rural-urban and gender differences in suicide ideation may help in the identification of highest risk groups to target with prevention efforts.

Rural-Urban Youth Suicidal Ideation: Why Differences May Exist

To date, little research has attempted to test and explore potential explanations for possible rural and urban differences in youth suicide by gender. As not all rural communities are the same, and definitions of rurality vary widely (Armstrong, 2008), theories and research that appear to explain results may be helpful in guiding descriptions of rural communities in which findings of this study may be applicable.

Social isolation. Grounded in the literature connecting social support to suicidal thoughts and behaviours (e.g., Watt & Sharp, 2001), and the theories proposed by Durkheim regarding the relationship between social isolation and suicidal ideation, we proposed that suicidal ideation would be more problematic in rural areas where social support may be significantly lower than in urban regions. Social support may also be more relevant for females than males in the prediction of suicidal ideation (Chodorow, 1974; Tiller et al., 1998).

Social isolation was defined and measured in the present study as a perceived lack of satisfaction with social support and number of persons whom youth indicate as supportive. Given that youth may mobilize support in times of need, for example, with access to the internet, social media, cellular telephones or face to face contact, even in more geographically isolating settings, social support in times of need will also be measured. It will be particularly important to measure whether youth seek support in times of need as a potential explanatory factor if there is no relationship between perceived social isolation and suicidal ideation as a function of the community in which young people live. Measurement

of technological or virtual support in times of need was beyond the scope of our research.

Socioeconomic status. An examination of the existing literature would suggest, if socioeconomic status differs from average within an urban or a rural region for given individuals, this may be related to suicidal thoughts and behaviours. Therefore, we did not expect that socioeconomic status would explain possible community-based rural-urban differences in suicidal thoughts. However, as status concerns are believed to be more of a concern for males and females (Watt & Sharp, 2001), it is possible that socioeconomic factors may be a significant explanatory factor for male suicidal ideation.

Stress and coping. Rural youth appear to have more difficulty coping with stress than urban youth (Sung et al., 2006; Wilson & Donnermeyer, 2006), and female youth have more trouble with stress and coping than males (Adcock et al., 1999). Moreover, poor coping is associated with psychological difficulties (Sung et al., 2006). Therefore, we expected that rural female youth may be at greater risk for suicidal ideation than their rural male and urban (male and female) youth counterparts, given difficulties coping with stress.

Ethnicity. As values of ethnic minority youth tend to resemble those of mainstream youth (Arnett, 2007), we expected that ethnic differences between rural and urban regions would not explain possible suicidal ideation or gender differences. Thus, we predicted that results of this study would contrast with research examining ethnic reporting differences in youth suicidal ideation across different countries and resemble findings of research examining ethnicity in relation to reporting suicidal ideation within a given country. Aboriginal differences were not a focus of the ethnicity examination, as the Aboriginal sample was small.

What Factors to Target: Risk and Resilience

Understanding rural-urban differences in suicidal ideation by gender is important, as is defining which communities may be at risk based on factors such as social support, socioeconomic status, stress and coping, or ethnicity. These factors tell us *who* to target with interventions or prevention programs for suicidal ideation. However, knowing about risk and protective factors for youth suicidal ideation and how these differ by gender and rural-urban setting provides an avenue for *what* factors to target. Presenting findings regarding rural and urban differences in risk and protective factors for youth suicidal ideation by rural-urban setting and gender provides a novel contribution to the literature.

Grounded in the literature, we expected that self-esteem and social support, as protective factors, would predict depressive symptoms, which would predict risk behaviours. We expected that risk factors would predict suicidal ideation. Our mediation model, herein, follows this pattern (Figure 2). However, as protective factors are more salient for people at greatest risk of mental health concerns and gender differences are also noted in relation to risk and protective factors for suicidal ideation (e.g., Pollard et al., 1999), we predict that a single model of risk and protection will not be a good fit for all rural-urban and gender groups. It is unknown how these patterns of risk and protective factors may specifically play out in a mediation model where both gender and rural-urban factors are entered into the same analysis, as this has yet to be explored.

How to Intervene: Youth Suicide Prevention through Youth Engagement

Youth engagement is one potential avenue of intervention for suicidal ideation in relation to the risk and protective factors, such as depressive symptoms, risk behaviours, self-esteem, and social support. Our study is among the first to examine youth engagement beyond sport participation as a resiliency factor specifically for suicidal ideation. As youth

engagement is associated with positive youth development and promotes mental health, we expected that youth engagement in structured activities would be inversely related to suicidal ideation.

Our research is also the first to examine youth engagement as a buffer or moderator between suicidal ideation and risk factors for suicidal ideation, such as depressive symptoms, risk behaviours, low self-esteem, and a perceived lack of social support. It has previously only been studied in mediation analyses including variables such as “self-esteem” and “suicide risk” (Ramey et al., 2010), which precludes the inclusion of non-engaged youth in statistical equations. With mediation, qualifiers such as breadth of engagement would not be meaningful to study, given that no included youth could be involved in zero activities. By contrast, with moderation analyses, breadth of engagement is meaningful to study and a buffer hypothesis can be tested. Specifically, as noted, researchers believe that youth engagement promotes well-being and it may act as a moderator for youth suicidal ideation in those at risk.

Moderator hypothesis. Depressive symptoms, risk behaviours, low self-esteem, and low social support all enhance the risk of suicidal ideation. By contrast, youth engagement was found to be related to well-being across the studies previously described. Therefore, we expected that youth engagement may act as a buffer for those at risk for suicidal ideation who are experiencing depressive symptoms, risk behaviours, low self-esteem, and low social support.

Meaning, breadth, and intensity. We examined youth engagement by breadth of engagement (number of activities), intensity of engagement (frequency of engagement), and by meaningful engagement (an activity which promotes success, challenge, would be hard to

give up, is believed to be important, and is experienced as fun). Given the relationship between meaning and decreased risk for suicide (Frankl, 1984), we predicted that meaningful engagement would be significantly inversely related to suicidal ideation. Moreover, as research conducted by Busseri et al. (2006) suggested that breadth rather than intensity of engagement was most relevant in relation to positive developmental outcomes, we expected that breadth rather than intensity of engagement would be most relevant in relation to suicidal ideation.

Rural-Urban Differences in Youth Engagement and Suicidal Ideation

We investigated the value of engaging at-risk urban and rural youth, by gender. Overall, we predicted that youth engagement would be most directly inversely related to suicidal ideation in groups of youth at greatest risk for suicidal thoughts and mental health concerns. Therefore, if rural females exhibited more suicidal ideation than their male and urban counterparts, youth engagement might appear to be most directly beneficial for female youth, particularly rural females. Moreover, we expected that youth engagement would act as a buffer for youth suicidal ideation, based on depressive symptoms, risk behaviours, low self-esteem, and low perceived social support. Research in different areas related to suicidal ideation suggests that differing from others within one's own community might put one at greatest risk for ideation (e.g., Brownell et al., 2006). Thus, if urban and rural males are less at risk for suicidal ideation and mental health concerns than their female peers within these communities, perhaps being a male with depressive symptoms, engaged in risk behaviours, experiencing low self-esteem and low perceived support might make males particularly at risk for suicidal ideation (since they would be more anomalous in relation to other males than their female peers would be). Thus, we thought it possible that the buffering effects of

youth engagement might be particularly notable for males, particularly urban males, by comparison to rural youth or urban females.

Addressing Key Limitations in the Literature

Definitions of rural and urban communities are rarely included in the research literature (Armstrong, 2008). Therefore, as it is unclear to which communities research findings may be generalizable (e.g., large versus small urban centres, mixed farming-village rural communities, remote rural communities), the present research included clear youth definitions of their non-remote rural and urban communities.

Little research exists concerning gender and rural-urban differences in suicidal ideation and predictors of suicidal ideation. Moreover, few research studies attempt to explain why such rural-urban differences exist. The present research, therefore, examines these issues.

Research on youth engagement has primarily examined sport participation as a resiliency factor for suicidal ideation to the exclusion of other types of activities. Moreover, youth engagement research has primarily studied engagement versus non-engagement instead of factors such as breadth, intensity, and meaning. Youth engagement has never been studied as a moderator between risk factors and suicidal ideation. The present research is a novel attempt to address these gaps in the literature.

Overall, the goal of this research was to explore risk and resiliency in relation to youth suicidal ideation for different groups of youth with the ultimate goal of stimulating further research and corresponding targeted youth engagement prevention and intervention initiatives, if warranted by the findings.

CHAPTER 2

Methodology

Participants

Participants (N = 813) in this cross-sectional, paper-and-pencil survey research were recruited from urban and rural secondary schools in Eastern Ontario between Spring 2005 and Spring 2007. Research only took place during the months of April, May, and early June to give students, particularly new students, a chance to become engaged in school-based extracurricular activities during their academic year. Concerning the sampling frame, two rural schools and three urban schools were selected to participate. “Rural” was defined as a population of 1000 people or less living in a given area, and less than 400 people per square kilometre, to be consistent with the Statistics Canada (2005) definition. However, all participating youth were also asked to define the communities in which they live, as noted below, so that these regions could be described in detail.

In the selection process to attempt to obtain a regionally-representative English-speaking sample, schools from a city centre urban region (i.e., an urban area with the highest local population density/km²), a suburban region 10 minutes by car from a city centre, a suburban region 30 minutes from a city centre, a rural region one hour from a city centre, and a rural region two hours from a city centre were selected to participate. Schools included in the study were general public schools that did not have specialized programs such as gifted units or arts streams. Within each school, a probability sampling method was used to select classrooms to participate. Specifically, from each school, based on the number of classrooms that each school was willing to offer for the study, classrooms were randomly selected, with an equal number selected from each grade. Teachers from selected

classrooms were then contacted, informed about the study in detail, and asked if they would be willing to allow their students to participate. An exclusionary criterion for student participation was a lack of understanding of the English language.

Concerning the overall sample, 459 rural and 354 urban youth took part in this study. This group was comprised of 52% females and 48% males, and participants ranged in age from 13 to 19 years ($M_{age} = 16.15$ years). The participation rate for the rural school students in classrooms invited to take part in the study was 55%. Regarding the grade distribution at rural schools, the participation rates were 45%, 53%, 65%, and 57% for grades nine, ten, eleven, and twelve students, respectively. The participation rate from urban school students in classrooms invited to take part in the study was 83%. Participation rates by grade at urban schools were 78%, 80%, 91%, and 83% for grades nine, ten, eleven, and twelve students, respectively. However, within the urban settings, participation rates varied considerably by school. Specifically, the overall urban participation rate may have been inflated by the fact that certain schools had a very dynamic staff member who convinced participating teachers to use study participation as an assignment, whereby findings could be beneficial to teach about statistics, sport or other extracurricular involvement, or mental health. Thus, a large proportion of students in those classrooms were encouraged to participate. The participation rates in the current study are very similar to those in research examining how consent procedures affect participation rates and sample demographics in health research (Nelson et al., 2002). Specifically, in research where a study team is allowed to contact eligible participants directly, participation rates tend to be about 85% (Nelson et al., 2002). This is similar to the present study where teachers spoke directly to the students and encouraged them to participate. By contrast, in health research where written permission is required

before a team can contact participants, response rates tend to be about 43% (Nelson et al., 2002). In the present study, response rates of younger students who required parental permission for participating, and who were not directly encouraged by a teacher to participate, was 45%. Some older students could be encouraged to participate on the day of the study by the research team, if they were old enough to participate without the requirement of parental consent (in those cases, response rates were not as high as 85% as some teachers required only students who had pre-consented to participate, while others allowed for the team to speak to the classes). The research by Nelson et al. found that, in health research, non-participants who were contacted by the researchers and those who were not contacted were identical demographically to the participants (i.e., regarding gender composition, age, and health concerns). Thus, even though different ways of acquiring participant consent significantly affects participation rates, the overall demographics and results did not differ based on the method of recruitment. It is, therefore, not expected that participant recruitment differences significantly affected the present sample demographics or results. Nevertheless, the rural and urban samples in the present study will be analyzed based on ethnicity and other factors to make sure that they appear to be representative regardless of the recruitment method (see Results).

Of the students who reported their ethnic classification in the rural communities, 91% described themselves to be White, 4% described themselves as Aboriginal, 1% described themselves as Black, 0.4% described themselves as Asian, and the remainder claimed to be of mixed or other descent. Median family income was reported in the range of \$41,000 to \$60,000 for the 321 rural participants who indicated their annual household earnings. Among urban participants, 73% described themselves to be White, 9% indicated that they

are Asian (including Chinese, Japanese, East Indian, etc.), 5% described themselves to be Black, 4% described themselves to be Middle Eastern, 0.6% reported Hispanic descent, 0.3% described themselves to be Aboriginal, and the remainder reported other or mixed descent. The median family income reported by 288 urban youth was in the range of \$60,000 to \$80,000.

Demographic characteristics of the sample can be found in Table 1.

In-Depth Descriptions of Each School Community

Sample 1 ($n = 124$) consisted of youth from an urban city centre. In this sample, 66% of the youth reported that they were White. The population density of this region was 3123.9 persons/km² (Elections Canada, 2008). The second largest ethnic groups reported were Asian and Middle Eastern, both 7%. Sample 2 ($n = 80$) youth were selected from a city suburb and 62% indicated that they were White, while the next largest reported ethnic group was Asian, 11%. The population density of this region was 1247 persons/km² (Elections Canada, 2008). Sample 3 ($n = 150$) came from a city suburb in which 84% indicated that they were White, while 7% reported that they were Asian. The population density of this region was 575.5 persons/km² (Elections Canada, 2008). Sample 4 ($n = 227$) consisted of youth living outside a city. In this sample, 92% of youth indicated that they were White, while the second largest reported groups was Aboriginal, 3%. The population density of this region was 13.1 persons/km² (Elections Canada, 2008). Sample 5 ($n = 232$) youth came from a region outside of a city in which 93% indicated that they were White. The next largest reported ethnic group was Aboriginal, 4%, and population density of this region was 12.3 persons/km² (Elections Canada, 2008).

Youth Qualitative Descriptions of their School Communities

Population density and ethnic characteristics alone do not fully describe contextual factors relevant to the population being studied. Therefore, participating youth were asked to define their communities in the context of the survey. Two independent raters then were asked to analyse the data for common responses within each of the five community samples. Based on suggestions to measure inter-rater reliability in qualitative research (Armstrong, Gosling, Weinman, & Martaeu, 1997), kappa statistics were used to assess coder agreement. Similar points were coded as “1/1” while dissimilar or missing points between raters were coded as “0/1”.

With 81% agreement between the two raters, the kappa statistic approached 1.00. Thus, inter-rater reliability was high. Overall, raters derived the following common themes from youth reports:

Sample 1. Youth reported that, in their community, most students could walk to a school and to friends’ houses. For students who did not walk to school, they indicated living within a 15 minute drive to school. They said that nearby schools are in a relatively busy part of the city. Youth reported that they typically live within a 15 minute drive to “downtown” (city centre). They also indicated that they attend a school in a community with a high ethnic diversity.

Samples 2 & 3. Youth in the two suburban regions reported very similar definitions of their community, thus findings were combined. They indicated that they often could walk to school and they also live close to friends. For students who did not walk to school, they indicated living within a 15 minute drive to school. They reported that they typically live

more than a 15 minute drive to “downtown” in a city, but closer than one hour. These youth also reported attending a school in their community with a high ethnic diversity.

Samples 4 & 5. Youth indicated that, in their communities, most people live in small towns, villages, or on farms. They reported that most students have to drive or bus to get to a school. Youth said that they are scattered around the area. They indicated that most youth typically live 15 to 60+ minutes away from schools and each other by car. They noted that most youth live one to two hours (Sample 4), or two or more hours (Sample 5), away from a major city centre by car. These youth reported a low ethnic diversity in their communities.

Measures

A sample questionnaire package can be found in Appendix A.

Suicidal ideation. It is often thought that suicidal behaviour is a broad spectrum or continuum, rather than an isolated event (Beck, Kovacs, & Weissman, 1975; Brezo et al., 2007; Carlson & Cantwell, 1982; Fergusson, Horwood, Ridder, & Beautrais, 2005; Metha, Chen, Mulvenon, & Dode, 1998). Theorists accepting this perspective assume that suicidal ideation precedes suicidal behaviour and attempts, which precede deaths by suicide (Rich, Kirkpatrick-Smith, Bonner, & Jans, 1992). In support of this conceptualisation, researchers have found congruence between these constructs, and suggest that individuals experiencing any of these might be from the same high risk group (Beautrais, 2001), thereby providing support for the continuum hypothesis. Thus, for the present study, suicidal ideation, “thoughts and cognitions about taking one’s life” (Reynolds, 1988, p. 4), was selected as the measure of choice, as frequent thoughts of suicide are one of the best predictors of risk for suicidal behaviours, attempts, and deaths by suicide (King, 2004). Furthermore, early identification of at-risk participants also provided the opportunity for connecting these youth

to mental health resources or other means of coping before more serious behaviours, attempts, or deaths by suicide occurred.

In the present study, suicidal ideation was conceptualized as thoughts regarding suicide or death and self-harm behaviour, whereby more serious ideation might include ideas that suicide is an acceptable choice or solution (Reynolds, 1991). Suicidal thoughts were assessed using two measures.

The Suicidal Ideation Questionnaire (SIQ; Reynolds, 1988) is a self-report paper-and-pencil questionnaire including 30 items. Frequency scores on each item range from one to six, where one represents “I’ve never had this thought” and six represents “I have this thought almost every day,” measured over a 30-day period. Over 6500 youth from urban communities in the midwestern United States took part in validation and standardization of this measure (Reynolds, 1988). Reliability based on Cronbach’s (1951) coefficient alpha was .97 (Reynolds, 1998). Reynolds found that this measure also demonstrated construct validity, as the SIQ was positively correlated with constructs that are considered to be related to suicidal cognitions, such as depression, hopelessness, and self-esteem.

The SIQ includes eight critical items concerning specific plans for suicide, whereby a frequency score of five or six is viewed as a critical frequency. However, due to participant safety concerns, scores of four (“I have this thought about once a week”) and above were viewed as a critical frequency in the present study for risk assessment follow-ups to be made by trained research assistants. Cut-off scores of 41 or greater on the total SIQ are also thought to represent critical suicide risk. Reynolds found gender differences on this measure, with females scoring significantly higher than males. Approximately 8% of the males and 12% of the females in his sample reached the cut-off score.

In the present sample, the reliability coefficient, measured with Cronbach's alpha, was .96 for rural youth and .93 for urban youth. These are comparable to Reynolds' (1988) results. Given the similar results between the current rural sample and the standardization urban sample, this measure was deemed to be appropriate for use in the present study. In the present study, however, it should be noted that a few urban youth with refugee backgrounds spoke to the research team about their frequent thoughts of death (given traumatic losses or experiences with death in their previous countries), but they indicated that they have no thoughts of suicide. It may be that the SIQ scores may be slightly inflated for such persons, given questions regarding thoughts of death. Therefore, to be sensitive to diverse backgrounds, another measure of suicidal ideation was also included in the present research.

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) Item 9 was also used to assess suicidal ideation. Specifically, Item 9 on the BDI-II measures current suicidal ideation (past two weeks). Scores range from 0 ("I don't have any thoughts of killing myself") to 3 ("I would kill myself if I had the chance"). This item has been psychometrically validated by different groups of researchers as a clear measure of suicidal ideation (e.g., Larsson, Melin, & Breitholtz Andersson, 1991; Lewinsohn, Rohde, & Seeley, 1993). For example, at least 40% of high school students obtaining scores of 2 or 3 on the BDI-II suicide ideation item indicated significant levels of suicidal ideation (a score of 2 or 3) when retested 4- to 6-weeks later (Larsson et al., 1991). With regard to concurrent validity, reported suicidal ideation on this item is associated with prior suicide attempts (Larsson et al., 1991; Lewinsohn et al., 1993). This item was used in analyses in the present study where the BDI-II as a whole was not required in the same analyses, because it likely was less biased for the refugee youth having frequent thoughts of death situations due to

traumatic memories. Otherwise, the SIQ was used in the analyses. The use of the SIQ or the BDI-II Item 9 was noted in the description of statistical analyses.

Youth engagement. Youth engagement was measured with the Centre of Excellence for Youth Engagement (CEYE) Engagement Matrix (also known as the Youth Activities Matrix; CEYE, 2005). This measure is a self-report questionnaire examining how important or meaningful youth engagement is for an individual on a scale of 0 to 4 for up to four activities. Although initial reliability studies suggest that a Cronbach's alpha reliability score of this measure was .78 (M. Busseri, personal communication, February 5, 2005), the researchers included both structured and unstructured extracurricular activities in their initial validation. Current validity findings in their research are much higher (close to .90 scores on the subjective quality of engagement scale), with their analysis of only structured extracurricular activities (M. Busseri, personal communication, February 5, 2005). Research on extracurricular activities suggests that it is structured, rather than unstructured, activities which promote positive mental health (Mahoney, Schweder, & Stattin, 2002). Structured extracurricular activities include, but are not limited to, school-based clubs, youth groups, community-based clubs, and sports teams (Mahoney, Schweder, & Stattin, 2002). Specifically, structured activities have been operationalized as those that include youth of one's own age group, have an adult leader, and involve meeting at least once per week at a regular time (Mahoney et al., 2002; Mahoney & Stattin, 2000). In the present study, youth were asked to only report structured activities in which they were engaged. Two independent raters narrowed down the types of structured extracurricular activities reported by participating youth to include the following: Sports teams, clubs or committees at school, music (e.g. school band), drama, or art groups, community or church groups, and

volunteering or community service.

Items on the Engagement Matrix measure such things as enjoyment, challenge, success, and importance of the activity to the individual. Thus, they measure the subjective quality of engagement for a particular individual. Further, this measure also contains items regarding the breadth of engagement (i.e., number of different activities in which youth are engaged), how long youth have been engaged, initiation of and sustained engagement, and frequency of involvement. Most previous research on youth engagement has only examined whether youth are engaged or not engaged (Fredricks & Eccles, 2006; Rose-Krasnor, Busseri, Willoughby, & Chalmers, 2006).

In addition to the solid internal reliability of the CEYE Engagement Matrix when examining structured extracurricular involvement, this measure also has a high degree of convergent validity with a youth social responsibility scale, as well as content validity (Pancer, Pratt, Hunsberger, Alisat, 2007). Youth engagement is the “meaningful participation and sustained involvement of a young person in an activity” (Pancer, Rose-Krasnor, & Loiselle, 2002, p. 49). Items in the CEYE Engagement Matrix relate very closely to the definition of youth engagement. Enjoyment of an activity and how important the activity is to an individual appear to particularly represent ‘how meaningful is the activity to a particular individual?’ In the present research, regarding the inclusion of only structured extracurricular activities, Cronbach’s (1951) internal consistency reliability for scores on the Youth Engagement Matrix subjective meaning scale was .84 for both urban and rural youth on the subjective meaning or quality of engagement scale, fairly consistent with the results from the female university sample used in the CEYE validation (M. Busseri, personal communication, February 5, 2005). Youth in the present study consistently

reported the first activity they included in the measure as more meaningful than the second, third, or fourth activity they noted. Furthermore, the sample size was larger for youth who reported one activity compared to two, three, or four activities. Thus, only the first activity presented by youth was included in the subjective meaning or quality of engagement scale used in the current study.

Depressive symptoms. The BDI-II (Beck et al., 1996) is a 21-item self-report measure that assesses a two-week prevalence of behavioural, cognitive, and affective depressive symptoms in adolescents and adults, 13 to 80 years old. Items are scored on a scale ranging from 0 (not experiencing the symptom) to 3 (complete endorsement of the symptom). The coefficient alpha reliability for scores on this measure is .92 (Beck et al., 1996). Research has shown that this measure demonstrates convergent validity for adolescents in its correlations with measures of low self-esteem and suicidal ideation (Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004). The BDI-II was used to assess depressive symptoms in the present evaluation. In the current study, the Cronbach's reliability of the BDI-II scores was .93 (.94 for rural youth; .92 for urban youth).

Risk behaviours. The Checklist of Risk Behaviours for Youth (CORBY; Armstrong, *in press*, see *Appendix B*) is a measure used to examine a young person's level of health risk based on the number and type of risk behaviours in which he or she has engaged over the past 30 days. The 11-item version of the measure was used in the present research. Items reflect risk behaviours that research suggests: 1) are less likely to have an extremely negative impact on health and well-being (tried drinking, tried smoking, tried marijuana), 2) are more likely to have an extremely negative impact on health and well-being (had unprotected sexual intercourse, have gone without eating for more than 24 hours, have

thought about killing oneself, have smoked cigarettes daily), and 3) are most likely to have an extremely negative impact on health and well-being (consumed hard drugs, ingested inhalants or solvents, made oneself throw up or taken laxatives, planned suicide). A “yes/no” format is used for each item. “No” responses are scored as 0. “Yes” responses are scored from one to three, based on the level of health risk involved. As noted in Appendix B, field tests of the CORBY have found it to be concurrently related to measures of suicidal ideation and depressive symptoms, as well as inversely related to self-esteem. The CORBY was used in the present evaluation in order to assess adolescent health risk as a function of risk behaviour participation. Internal consistency reliability of the 11-item CORBY scores was found to be adequate, based on Hunsley and Mash criteria (2008), at .76 (.77 for females; .74 for males; .77 for rural youth; .73 for urban youth).

Self-esteem. Low self-esteem, or general feelings about oneself as a person, is related to multiple risk behaviour engagement, as previously described. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989) measures general feelings about oneself as a person on a 4-point scale, 1 = Strongly Disagree to 4 = Strongly Agree. The 10-item Rosenberg Self-Esteem Scale is appropriate for use with adolescents, as the original normative sample consisted of school-aged adolescents. Furthermore, the internal consistency score reliability and test-retest score reliability with school-aged adolescents are both as high as .88 (Rosenberg, 1989). The RSES has demonstrated convergent validity with other measures of global self-worth and self-esteem (Hagborg, 1993; Robins, Hendin, & Trzesniewski, 2001). Moreover, given that the Rosenberg is a brief measure for rapid administration purposes, it was deemed appropriate for the purpose of assessing self-esteem in the present evaluation. In the current study, internal consistency score reliability was .89

for rural youth and .88 for urban youth.

Social support. The antithesis of social support is social isolation. Youth who feel disenfranchised from a social group, or have a low social status, are expected to be at high risk for suicidal thoughts (Chodorow, 1974; Watt & Sharp, 2001). Social isolation was measured as ‘low perceived social support’ on the Social Support Questionnaire (SSQ; Sarason, Shearin, Pierce, & Sarason, 1987). The SSQ is a 6-item scale, a short form of the original 27-item scale, which measures the number of supportive people that an individual reports. In addition, it yields a satisfaction score. Participants are asked to write the initials of supportive people in their lives and to specify whether those initials represent one’s mother, father, other family member, or a friend. Satisfaction is measured on a scale of one to six from very dissatisfied to very satisfied with support. This short version scale is appropriate for use with both youth and adults (Sarason et al., 1987). Sarason et al. assessed the reliability and validity of scores on this measure and found both to be psychometrically acceptable. Criterion validity tests showed a significant negative correlation between the SSQ and depressive symptoms, while positive correlations were obtained between an optimism scale and the SSQ’s satisfaction score (Sarason et al., 1987). Cronbach’s alpha for this measure is .97 for the number score and .94 for the satisfaction score (Sarason et al., 1987). The 6-item measure was also highly correlated with the 27-item measure (Sarason et al., 1987). In the present study, Cronbach’s alpha was comparable at .92 for scores of rural youth and .93 for scores of urban youth for the perceived number of supportive persons score. Moreover, Cronbach’s alpha was .99 and .90 for scores of rural and urban youth, respectively, for the satisfaction with support score.

Demographic questionnaire. A brief demographic questionnaire was administered

to the adolescents so that the sample could be accurately described. Items included questions on age, ethnicity, grade, gender, parental education, and parental annual income. Ethnicity categories included a condensed version of the 2001 Canadian Census list which could be expanded to the full list given the requirement to “specify” or further describe certain ethnic categories. Geographic region, living distance from friends, living distance from a person one could talk to about concerns if upset (or whether one would talk to anyone at all), and whether one would talk to a friend about suicidal thoughts were also assessed. Youth were also asked to describe the community in which they live. Recent life events were also measured based on many of the youth items from the Life Events Scale (Holmes & Rahe, 1967). These items were simply used in the present research to compare rural and urban samples in terms of issues such as parental divorce rates, pregnancy rates, and immigration rates over the past 12 months. Stress and coping were also briefly measured by the demographic questionnaire with the inclusion of the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a 14-item measure of stress and coping in response to daily hassles assessed over a one-month period. Scores on items range from 1 (Never) to 5 (Very Often), with positive coping question scores inversely coded. Coefficient alpha reliability of this measure is good, at .85 (Cohen et al., 1983). In the present sample, scores produced a comparable alpha reliability of .83 for rural youth and .81 for urban youth.

Statistical Analyses

Data screening and cleaning. Data screening and cleaning were carried out with a trial version of PASW Advanced Statistics 18.0 for Macintosh. We conducted all subsequent analyses in this research using this statistical package, SPSS Graduate Pack 15.0 for Windows and AMOS 5. Prior to conducting statistical analyses, the data were examined.

The data were assessed for the purpose of investigating accuracy of data entry for invalid scores, identifying and making decisions on univariate outliers, evaluating the distribution of and addressing missing data and examining assumptions of normality.

Univariate frequencies were carried out in order to assess whether scores exist beyond minimum or maximum scores allowable by the measures. Missing data that were not coded as missing were also sought through SPSS Frequencies. Data errors such as these were addressed by reference to the original questionnaires and inputting of the true values or “99” for missing. For truly missing data, a Missing Data Analysis was carried out to describe the pattern of missingness. Missing data was replaced, following P.D. Allison (2002) statistical guidelines, using multiple imputation with a regression-based data augmentation method in PASW Advanced Statistics. Allison compared imputation methods and found that, when predictor variables are missing at random or missing completely at random, using a regression-based method employing the data augmentation algorithm produces estimates with little or no bias. PASW statistics were also used to compare multiple imputation methods and, similar to Allison’s findings, a regression-based multiple imputation produced the most reliable results by comparison to other imputation methods. Specifically, data appeared to be missing at random and multiple imputation using regression methods did not yield significant mean differences ($p > .01$) between imputed and non-imputed means. Furthermore, when correlations were carried out between variables in which multiple imputation had been conducted, in comparison to earlier versions of the data set where prorating was used (i.e., inserting an individual’s most common score on a given measure with a missing data point) and a data set where no missing values were replaced, results were similar. Thus, multiple imputation did not appear to significantly alter results.

Where data was not missing at random (e.g., if youth were not engaged, they should not have a frequency of engagement score), scores remained coded as not applicable, as these scores were true missing values left blank because they were not applicable to the participant.

Histograms and frequency tables were created for all variables that were used in statistical analyses in order to look for univariate outliers. For variables with extreme scores, z-scores were calculated. If the outliers were potentially true values, outlying scores were recoded to one value higher than the next highest score in the distribution, as suggested by Tabachnick and Fidell (2001). Skewness and kurtosis significance tests for normality were carried out on total scores following Tabachnick and Fidell guidelines. Significant skewness and kurtosis were found for both suicide ideation variables (i.e., BDI-II Item 9 and SIQ total scores), as well as for number of activities youth are engaged in, risk behaviours, and depressive symptoms. However, as difficulties such as heteroscedasticity of residuals were produced by transformations, and the issue of transformation is contentious in the literature (Harlow, 2005), the decision was made not to transform (based on Cohen, Cohen, West, & Aiken, 2003 recommendations). Therefore, it should be noted that, as sample sizes become smaller with between group comparisons, correlations may be slightly attenuated, as power is reduced (Cohen et al., 2003; Tabachnick & Fidell, 2001). To prevent Type II statistical errors due to potentially attenuated correlations with non-transformed variables, the Omnibus alpha for analyses was set at .05. Bonferroni corrections for multiple comparisons were included where possible. For the number of activities variable, as the majority of participants were engaged in eight or fewer activities, outlying values were recoded to one greater than this value (nine), as indicated by Tabachnick and Fidell.

Linearity and homoscedasticity were evaluated through the inspection of bivariate scatterplots, as suggested by Kline (2005). No major problems were noted. Mahalanobis distance was used to assess for multivariate outliers for the suicidal ideation variables in relation to all predictor variables. SPSS regression syntax with instruction for the creation of an outlying variables table was used to carry out the Mahalanobis distance analyses. A single individual who checked off columns down one side of every questionnaire page was removed from the data set, as were two other outliers with similarly unlikely scores.

Overall, the range of sample sizes needed for the planned analyses is 90 to more than 200, as described below. Therefore, a sample size of 813 was deemed to be adequate for the present research.

Sample representativeness. In order to describe the sample and to compare its representativeness to the local general population, descriptive statistical analyses were carried out. Specifically, median family income and parental education scores were calculated.

Definition. The Canadian Ethnicity Survey defines *traditional* heritage as Canadian, British, French, or other European ethnic origins, and excludes Aboriginal groups, as these groups warrant their own study (Statistics Canada, 2003). By contrast to those with traditional ancestries, recent waves of immigrants have reported origins aside from these countries. Such origins in the present sample included Asian (such as Japanese, Chinese, Vietnamese, Indian, Pakistani), Middle Eastern (such as Lebanese), and African. SPSS descriptive statistics were used to compare whether the percentages of “traditional” and “non-traditional” Canadians resemble the demographics of the local regions.

Descriptive statistics and correlational analyses. Prior to conducting the major

analyses of the present study, we carried out analyses of descriptive statistics and correlations between all study variables. These can be found in Tables 2 to 5.

Who is at risk: Rural-urban youth suicidal ideation by gender. A 2 x 2 between-subjects Analysis of Variance (ANOVA; Region [rural, urban] x Gender [female, male]) was performed on one dependent variable: Suicidal ideation. We used the BDI-II Item 9 as the measure of suicidal ideation. Based on Faul, Erdfelder, Lang, and Buchner (2007) guidelines, for a medium effect size ($r = .30$) in an ANOVA, a sample size of 90 per group for medium effects, with 80% power at the .05 level would be appropriate (Faul et al., 2007). It was appropriate to only seek medium or large sized effects in the present analyses as the community-based interventions which could be designed based on this research would then be based on the most salient factors for youth in rural and urban samples, by gender. The present sample sizes of 243 rural females, 215 rural males, 173 urban females, and 175 urban males (7 youth failed to specify their gender) were considered to be appropriate for the statistical analyses carried out. A Bonferroni adjustment for multiple comparisons was used to reduce the risk of a Type I error. SPSS Frequencies were also carried out in order to produce a graph highlighting rural and urban differences in suicidal ideation by gender.

Rural youth suicidal ideation: Why rural and urban differences may exist. Prior to ANCOVA calculations, correlations were carried out to determine if potential covariates were in fact related to suicidal ideation. Four 2 x 2 between-subjects Analyses of Covariance (ANCOVA; Region [rural, urban] x Gender [female, male]) were performed on one dependent variable: Suicidal ideation. The BDI-II Item 9 was used in the measurement of suicidal ideation for these analyses. For the first analysis, number of supportive persons youth indicated and perceived satisfaction with social support were included as covariates.

Descriptive statistics and correlation analyses were also carried out to determine if rural and urban youth indicated that they could seek out social support in times of need. In the second ANCOVA, as measures of socioeconomic status, parental income was the covariate (parental education was not correlated with suicidal ideation). A measure of stress and coping was included as a covariate in the third ANCOVA. For the fourth analysis, we included a measure of traditional and non-traditional ethnicity as the covariate.

Based on Faul, Erdfelder, Lang, and Buchner (2007) guidelines, for a medium effect size ($r = .30$) in an ANCOVA, a sample size of 90 per group for medium effects, with 80% power at the .05 level would be appropriate (Faul et al., 2007). Thus, the present sample sizes were considered to be appropriate for the statistical analyses carried out. A Bonferroni adjustment for multiple comparisons was used to reduce the risk of a Type I error.

What factors to target: Risk and resilience to suicidal ideation in rural and urban males and females. Structural equation modeling in Amos was conducted in order to explore protective factor models involving self-esteem and social support in the prediction of risk factors for suicide. Suicide risk is represented in the present study by self-reported suicide ideation on the Suicidal Ideation Questionnaire. Goodness-of-fit tests were conducted in a single structural equation model analysis to determine if the pattern of variances and covariances in the data was consistent with the model presented in Figure 1 (called “original model”). The goal this fitness test was to determine if other models fit the data as well or better than the original model for rural and urban youth, by gender. Thus, the two grouping variables included in the structural equation model analysis were gender and region (rural-urban setting).

For structural equation modelling, sample sizes of more than 200 per group are often

recommended (Garson, 2009). However, larger groups can inflate the possibility of Type II errors (Garson, 2009). For smaller sample sizes, Hoelter's critical N can be used to determine if the sample size is adequate (Garson, 2009). Using this measure, sample size is deemed to be adequate if Hoelter's $N > 200$. A Hoelter's N under 75 is considered unacceptably low to accept a model by chi-square (Garson, 2009). Moreover, other measures, such as Bentler's Comparative Fit Index (CFI) and Root Mean Square of Approximation (RMSEA), can be examined with smaller sample sizes, since CFI and RMSEA are the measures least affected by sample size (Fan, Thompson, and Wang, 1999). A CFI greater than .90 is conventionally used to accept the structural model (Garson, 2009). A RMSEA less than or equal to .05 represents a good model fit (Schumacker & Lomax, 2004). Thus, in addition to chi-square goodness-of-fit indices, Hoelter's N, CFI, and RMSEA were used to determine sample size adequacy and the acceptability of the structural equation model for each rural-urban and gender sample.

How to intervene: Risk prevention through youth engagement. As this is the first study to examine youth engagement as a moderator variable between risk factors for suicide and suicidal ideation, statistical analyses were initially carried out for the full sample and, later, by rural-urban setting.

Multiple regression interaction analyses were carried out with suicidal ideation as the outcome variable, as measured by the Suicidal Ideation Questionnaire. Specifically, regression analyses were conducted with hypothesized youth engagement moderator variables (meaningful engagement, as well as the number of activities in which youth were engaged – breadth of engagement). Mental health and well-being variables (i.e., depressive symptoms, risk behaviours, satisfaction with social support, number of supportive persons,

and self-esteem) were included as predictor variables. In each of these analyses, the main effects of youth engagement, as well as mental health and well-being, were considered, as was the interaction between them. Cohen, Cohen, West, and Aiken (2003), as well as Aiken and West (2000), procedures were followed for these analyses. More specifically, all variables except for suicidal ideation were centred prior to conducting interaction regression analyses, thus their means were set at zero. Following the regression analyses, as per Cohen et al. and Aiken and West guidelines, simple slope analyses were carried out where interactions were significant in order to examine the change in the relationship between mental health and well-being variable with suicidal ideation at different levels of youth engagement.

Aguinis (2004) has demonstrated that the power of moderation or interaction analyses can be very low. Therefore, large sample sizes over 200 are recommended in order to have reasonable power to detect moderator effects (Aguinis, 2004; Kenny, 2009). Thus, a sample size of 813 youth was sufficiently large for the present analyses.

Risk prevention through youth engagement by rural-urban setting and gender.

Regression analyses, comparing rural-urban and gender groups, were carried out to examine the direct inverse relationships between breadth of engagement, intensity of engagement, and meaningful engagement with suicidal ideation. We also conducted multiple regression interaction analyses, or structural equation models, with suicidal ideation as the outcome variable, comparing rural females, urban females, rural males, and urban males. Regression analyses with interactions were conducted with youth engagement (meaningfulness and breadth) moderator variables, following the procedures described in the previous section. Mental health and well-being variables (i.e., depressive symptoms, risk behaviours,

satisfaction with social support, number of supportive persons, and self-esteem) were included as predictor variables. Following the regression interaction analyses, as per Cohen et al. (2003) as well as Aiken and West (2000) guidelines, we carried out simple slope analyses where interactions were significant in order to examine the change in the relationship between mental health and well-being variable with suicidal ideation at different levels of youth engagement.

Although sample sizes of over 200 are often recommended for SEM (Aguinis, 2004; Kenny, 2009), the minimum required to detect medium effects appears to be 130 (Jaccard, Wan, & Jaccard, 1996). Specifically, to attain power of .80 where the “main effect” regression could yield a squared multiple correlation of .15 and the “main effect plus interaction” model yields a squared multiple correlation of .20 (adding 5% additional explained variance), and the interaction term consists of a single product term, the approximate sample size needed is 130 (Jaccard et al., 1996). As error increases, to attain a power of .70, sample sizes would have to be over 200 (Jaccard et al., 1996). Based on these guidelines, presuming minimal statistical error and a power of .80, the present sample sizes of 243 rural females, 215 rural males, 173 urban females, and 175 urban males (7 youth failed to specify their gender) were considered to be appropriate for the statistical analyses carried out.

Procedure

Ethical consent for carrying out this research was obtained from the Children’s Hospital of Eastern Ontario (CHEO) Research Ethics Board, the Ottawa Carleton District School Board, and the Upper Canada District School Board. Letters describing the research study and consent forms were mailed to the schools and were distributed to each of the

students. These letters and ethical consent forms can be found in Appendix C. Youth who returned the consent forms for participation, as well as those who returned parental consent forms in the case of students under the age of 16 in the rural schools and 18 in the urban schools, took part in this study. Participation in the research project took approximately 45 minutes.

Questionnaires were administered in the classroom or another large room by a team of research assistants made up of young adult facilitators from Youth Net at CHEO and a few graduate students in Clinical Psychology from the University of Ottawa. All of the research assistants had been trained in LivingWorks ASIST suicide intervention and had extensive prior experience with youth and in assessing risk. As per protocol guidelines presented in Appendix D, during the research sessions, these individuals screened the questionnaires for youth indicating suicidal ideation. All potentially at-risk youth were discretely followed-up with, appropriate on-call or on-site clinical back-up was contacted, and reports documenting this information were written. Youth were connected to relevant resources when appropriate. Other youth also had the opportunity to debrief after the evaluation session if they so desired. Anonymity and confidentiality were only breached in cases where there was serious potential risk for self-harm. Care was taken where possible to ensure that students did not discuss their responses with other students nor view the responses of others. Individuals were not compensated for participating in this project.

CHAPTER 3

Results

Methodological Sample Analysis

Income and education. Median and mean family income were reported in the range category of \$41,000 to \$60,000 for the 321 rural participants who indicated their annual household earnings. This value is comparable to the median rural family income in Ontario, Canada which was approximately \$45,000 (RBC Financial Group, 2005). Compared with the Ontario overall average of approximately 13% of adults who have less education than a high school diploma (Statistics Canada, 2007a), 12.6% of mothers and 20% of fathers of rural participants in the present study had less than a high school diploma. The average for our sample, 16.3% high school drop-out rate, was comparable to Canadian data on rural education (16.4% drop-out rate; Bowlby, 2005).

The median and mean family income category reported by 288 urban youth was in the range of \$60,000 to \$80,000. This value is comparable the median family income in the urban region where the study took place (Ottawa, Canada) which is \$69,518 (Statistics Canada, 2007b). Compared with the Ontario overall average of approximately 13% who have less education than a high school diploma (Statistics Canada, 2007a), only 9.0% of mothers and 8.4% of fathers of the urban students in the present sample had less than a high school diploma. However, the average for our sample, 8.7% high school drop-out rate, was only slightly lower than the Canadian data on urban education (9.2% drop-out rate; Bowlby, 2005). Correspondingly, Ottawa-Gatineau has higher educational attainment rates than all other metropolitan cities in Canada (Statistics Canada, 2008a). These findings have been noted for the purpose of examining generalizability of the sample.

Ethnicity. The percentage of youth in the present study who reported non-traditional ethnic origins in urban communities was 26.9% and the percentage in rural regions was 6.7%. Since many recent immigrants to Canada originate from non-traditional ancestries, the percentages of youth who reported non-traditional origins in the present study should be similar to the recent immigration values by urban and rural communities. As there were few participants in the present study who had immigrated within the 12 months prior to the study, and thus most youth may have lived in Canada for several years, the present sample was compared to both the 1996 and 2001 Census data. Immigrants made up 27% to 28% of urban communities and 6% of rural regions in 1996 and 2001 (Beshiri, 2004; Beshiri & Alfred, 2002). Given that these values may not be directly comparable with the data from the current sample, as not all youth reporting non-traditional ethnic origins were immigrants and not all immigrants are of non-traditional ethnic origins, further statistics were compared.

Census results from 2001 and 2006 (Statistics Canada, 2008b) present 14.1% to 16% of residents in urban and rural regions of Ottawa-Gatineau as belonging to visible minority groups (i.e., non-European, non-Caucasian, and non-Aboriginal groups, as defined in the Census by the Employment Equity Act of 1986). In the present study taking place between 2005 and 2007, 14.9% of participants from Eastern Ontario belonged to visible minority, non-Caucasian, non-Aboriginal groups.

Who is at Risk: Rural-Urban Youth Suicidal Ideation by Gender

A 2x2 between subjects ANOVA, by rural-urban setting and gender, was calculated on data representing suicidal ideation. Concerning an ANOVA assumption, homogeneity of variance, the variance ratio was well below the Tabachnick and Fidell (2001) criterion of 10:1, $F_{max} = 2.05$. Thus, there was no need for a formal test of homogeneity of variance,

particularly since the ratio of sample sizes was less than 4:1 (Tabachnick & Fidell, 2001). Thus, based on this and previously described assumption testing, all assumptions for an ANOVA were met.

The ANOVA produced significant findings at a critical α of .05, with a Bonferroni correction to control for statistical error, $F_{3,93}(3, 810) = 6.25, p < .001, \text{partial } \eta^2 = .02, \text{observed power} = .97$. Specifically, the main effect of rural-urban setting was significant, $F_{2,28}(1, 810) = 10.90, p = .001, \text{partial } \eta^2 = .01, \text{observed power} = .91$. This indicates that participants from rural communities reported significantly higher suicidal ideation scores ($M = .22, SE = .02$) than participants from urban communities ($M = .11, SE = .02$). In fact, on the BDI-II Item 9, only rural participants endorsed the most serious suicidal statement, “I would kill myself if I had the chance.” The main effect of gender was also significant, $F_{1,44}(1, 810) = 6.88, p = .009, \text{partial } \eta^2 = .01, \text{observed power} = .75$. Thus, females noted significantly higher suicidal ideation ($M = .21, SE = .02$) than males ($M = .12, SE = .02$). The interaction between rural-urban setting and gender was not significant, $F_{.02}(1, 810) = .10, p = .75, \text{partial } \eta^2 = .00, \text{observed power} = .06$. A bar graph representing the percentage of male and female, rural and urban youth indicating suicidal thoughts is presented in Figure 1.

Rural-Urban Youth Suicidal Ideation: Why Differences May Exist

Correlational findings for the following ANCOVA analyses can be found in Table 3. Only mother and father education were non-significant in relation to suicidal ideation, $p > .05$. Therefore, for analyses regarding socioeconomic status as a covariate in the relationship between gender or rural-urban setting and suicidal ideation, only family income was entered as a covariate.

Social support. We carried out a 2x2 between subjects ANCOVA, by rural-urban setting and gender, on suicidal ideation, with perceived satisfaction with social support and number of supportive persons entered as covariates. All assumptions for an ANOVA were met, including homogeneity of variance, $F_{max} = 2.05$. The ANCOVA produced significant findings at a critical α of .05, with a Bonferroni correction to control for statistical error, $F_{14.10}(5, 808) = 14.29, p < .001, partial \eta^2 = .08, observed power = 1.00$. With the addition of the social support covariates, the main effect of rural-urban setting was not significant, $F_{.53}(1, 808) = 2.66, p = .10, partial \eta^2 = .00, observed power = .37$. This indicates that, when social support is accounted for, participants from rural communities do not have significantly higher suicidal ideation scores ($M = .20, SE = .02$) than participants from urban communities ($M = .14, SE = .03$).

The main effect of gender was, however, significant, $F_{2.94}(1, 808) = 14.89, p < .001, partial \eta^2 = .02, observed power = .97$. Thus, when social support is accounted for, females still indicated significantly higher suicidal ideation ($M = .23, SE = .02$) than males ($M = .11, SE = .02$). The interaction between rural-urban setting and gender was not significant, $F_{.00}(1, 808) = .01, p = .91, partial \eta^2 = .00, observed power = .05$. Regarding the main effects of the covariates, perceived satisfaction of social support was not significantly related to suicidal ideation in this model, $F_{.33}(1, 808) = 1.69, p = .19, partial \eta^2 = .00, observed power = .26$, but reported number of supportive persons was a significant predictor, $F_{9.20}(1, 808) = 46.58, p < .001, partial \eta^2 = .05, observed power = 1.00$.

Descriptive statistics showed that 40% and 38% of rural females and males, respectively, indicated that they live far from their friends. By contrast, 14% and 21% of urban females and males, respectively, reported that they live far from their friends.

However, bivariate correlations revealed that living distance from peers in general was not associated with perceived satisfaction with support for either rural ($r = .00$; $p = .98$) or urban ($r = -.02$; $p = .71$) youth. Accordingly, if feeling upset about something important, only 9% of rural females, 6% of urban females, 8% of rural males, and 9% of urban males indicated that they live far from the first person they would talk to. Nevertheless, living far from friends was related to the number of supportive persons that youth identified ($r = -.18$; $p = .0001$).

Socioeconomic status. A 2x2 between subjects ANCOVA, by rural-urban setting and gender, was carried out on suicidal ideation, with parental income as a covariate. All assumptions for an ANOVA were met, as noted previously. The ANCOVA produced significant findings at a critical α of .05, with a Bonferroni correction to control for statistical error, $F_{6.38}(4, 809) = 7.70, p < .001, partial \eta^2 = .04, observed power = 1.00$. With the addition of the socioeconomic status covariate, the main effect of rural-urban setting was still significant, $F_{1.04}(1, 809) = 5.04, p = .03, partial \eta^2 = .01, observed power = .61$. This indicates that, even when socioeconomic status is accounted for, participants from rural communities indicated significantly higher suicidal ideation ($M = .20, SE = .02$) than participants from urban communities ($M = .13, SE = .03$).

The main effect of gender was significant, $F_{1.15}(1, 809) = 5.55, p = .02, partial \eta^2 = .01, observed power = .65$. Thus, when family income is accounted for, females still noted significantly higher suicidal ideation ($M = .20, SE = .02$) than males ($M = .13, SE = .02$). The interaction between rural-urban setting and gender was not significant, $F_{.04}(1, 809) = .20, p = .65, partial \eta^2 = .00, observed power = .07$. Regarding the covariate, income was significantly related to suicidal ideation, $F_{2.48}(1, 809) = 11.97, p = .001, partial \eta^2 = .01,$

observed power = .93.

Stress and coping. We carried out a 2x2 between subjects ANCOVA, by rural-urban setting and gender, on suicidal ideation, with a stress and coping covariate. All assumptions for an ANOVA were met, as noted previously. The ANCOVA produced significant findings at a critical α of .05, with a Bonferroni correction to control for statistical error, $F_{42.36}(4, 809) = 65.13, p < .001, \text{partial } \eta^2 = .24, \text{observed power} = 1.00$. With the addition of the stress and coping covariate, the main effect of rural-urban setting was still significant, $F_{1.21}(1, 809) = 7.45, p = .006, \text{partial } \eta^2 = .01, \text{observed power} = .78$. This indicates that, even when a stress and coping covariate is accounted for, participants from rural communities indicated significantly higher suicidal ideation ($M = .21, SE = .02$) than participants from urban communities ($M = .13, SE = .02$).

The main effect of gender was, however, not significant, $F_{.03}(1, 809) = .16, p = .69, \text{partial } \eta^2 = .00, \text{observed power} = .07$. Thus, when a stress and coping covariate is accounted for, females did not indicate significantly higher suicidal ideation ($M = .16, SE = .02$) than males ($M = .17, SE = .02$). The interaction between rural-urban setting and gender was not significant, $F_{.02}(1, 809) = .09, p = .76, \text{partial } \eta^2 = .00, \text{observed power} = .06$.

Regarding the covariate, stress and coping was significantly related to suicidal ideation, $F_{38.44}(1, 817) = 236.40, p < .001, \text{partial } \eta^2 = .22, \text{observed power} = 1.00$.

Ethnicity. We conducted a 2x2 between subjects ANCOVA, by rural-urban setting and gender, on suicidal ideation, with ethnicity as a covariate. All assumptions for an ANOVA were met, as noted previously. The ANCOVA produced significant findings at a critical α of .05, with a Bonferroni correction to control for statistical error, $F_{2.58}(4, 809) = 3.55, p = .007, \text{partial } \eta^2 = .02, \text{observed power} = .87$. With the addition of the ethnicity

covariate, the main effect of rural-urban setting was still significant, $F_{.89}(1, 809) = 4.88, p = .03, \text{partial } \eta^2 = .01, \text{observed power} = .60$. This indicates that, even when ethnicity is accounted for, participants from rural communities indicated significantly higher suicidal ideation ($M = .19, SE = .02$) than participants from urban communities ($M = .12, SE = .02$).

The main effect of gender was not significant, $F_{.58}(1, 809) = 3.21, p = .07, \text{partial } \eta^2 = .00, \text{observed power} = .43$. Thus, when ethnicity is accounted for, females did not indicate significantly higher suicidal ideation ($M = .18, SE = .02$) than males ($M = .13, SE = .02$).

The interaction between rural-urban setting and gender was not significant, $F_{.05}(1, 809) = .25, p = .62, \text{partial } \eta^2 = .00, \text{observed power} = .08$. Regarding the covariate, ethnicity was not significantly related to suicidal ideation, $F_{.53}(1, 809) = 2.89, p = .09, \text{partial } \eta^2 = .00, \text{observed power} = .40$.

A frequent question that we often receive is whether Aboriginal youth may explain rural-urban differences in suicidal ideation. As there were only 16 Aboriginal youth in our study, there was not enough power to conduct reliable analyses with Aboriginal vs. non Aboriginal ethnicity as a covariate (an SPSS error message was received: Type III Sum of Squares for Rural-Urban = 9.40E-007).

What factors to Target: Risk and Resilience to Suicidal Ideation in Rural and Urban

Males and Females

Structural equation models can be found in Figures 2 to 6. As noted previously, self-esteem and social support are both associated and may be inversely predictive of risk factors for suicidal ideation – depressive symptoms and risk behaviours. Depressive symptoms and risk behaviours are also associated, with depressive symptoms potentially predicting risk behaviours (Metha et al., 1998), and are also direct predictors of suicidal ideation. Given

these factors, in the structural equation model, self-esteem and social support, as protective factors, were entered as exogenous variables. Depressive symptoms and risk behaviour, as risk factors, were entered as endogenous variables. Depressive symptoms were also entered as a predictor of risk behaviour. Suicidal ideation was entered in the model as the outcome variable. In this single analysis, the original model underwent goodness-of-fit tests and the best fit statistical models for each rural-urban by gender group were derived. Specifically, gender and rural-urban setting were entered as grouping variables in the analysis.

Parameter estimates for the best-fit models can be found in Table 6. Best fit models with non-significant chi-squares, strong CFI scores, adequate parameter estimates, and good Hoelter's N scores (fitting previously described criteria) were derived for each group from the original model. Each best fit model derived was then tested with each group to see if any model could fit for more than one group. No such model was identified (i.e., chi-squares were significant, $p < .05$); thus, it was clear that each best fit model was only adequate for each specific rural-urban by gender group. The results of the best fit models depicted in the Figures were as follows: For rural females, $\chi^2(4, n=243)=5.68, p=.23, CFI =.997, RMSEA =.04, Hoelter's N = 405$. Specifically, self-esteem inversely predicted depressive symptoms, depressive symptoms predicted suicidal thoughts and risk behaviour, and risk behaviour predicted suicidal thoughts. For rural males, $\chi^2(2, n=215)=3.09, p=.21, CFI =.997, RMSEA =.05, Hoelter's N = 416$. Self-esteem inversely predicted depressive symptoms, depressive symptoms predicted risk behaviour and suicidal thoughts, and risk behaviour predicted suicidal thoughts. For urban females, $\chi^2(2, n=173)=.18, p=.92, CFI =1.00, RMSEA =.00, Hoelter's N = 5860$. Self-esteem inversely predicted depressive symptoms and risk behaviour, perceived satisfaction with social support

inversely predicted depressive symptoms and suicidal thoughts, depressive symptoms predicted risk behaviour and suicidal thoughts, and risk behaviour predicted suicidal thoughts. For urban males, $\chi^2(3, n=175)=4.13, p=.25, CFI=.995, RMSEA=.05$, Hoelter's $N = 329$. Self-esteem inversely predicted depressive symptoms and suicidal thoughts, number of supportive persons inversely predicted depressive symptoms, depressive symptoms predicted risk behaviour and suicidal thoughts, and risk behaviour predicted suicidal thoughts.

How to Intervene: Risk Prevention Through Youth Engagement

Descriptive statistics for the interaction analyses are presented in Table 2. Correlations between mental health indicators and youth engagement are presented in Tables 4 and 5. In these analyses, engagement in structured extracurricular activities that were rated by youth as personally meaningful was related to lower self-reported suicidal ideation and depressive symptoms, as well as higher self-esteem and higher number of supportive persons in one's life. Engagement in a greater number of structured activities (breadth of engagement) was related to lower self-reported suicidal ideation, depressive symptoms, and risk behaviours, as well as higher self-reported self-esteem, number of supportive persons in one's life, and satisfaction with support. Intensity, or frequency, of engagement and mental health indicators were non-significant ($p > .05$).

Concerning regression analyses, interactions were significant for meaningful engagement with depressive symptoms ($t = -5.51, p < .001$), risk behaviours ($t = -3.23, p = .001$), self-esteem ($t = 4.34, p < .001$), and perceived social support ($t = 3.28, p = .001$) in relation to suicidal ideation. Engagement in a number of extracurricular activities was a significant moderating variable between depressive symptoms ($t = -2.30, p = .02$) and self-

esteem ($t = 3.34, p = .001$) with suicidal ideation. All other interactions, such as those with engagement and number of supportive persons, as well as those with frequency of engagement and predictors of suicidal ideation, were non-significant ($p > .05$). Simple slope analyses were carried out for the significant interactions.

Simple Slopes Analyses of Interactions

All simple slopes results are presented visually in Figure 7.

Depressive symptoms. Regarding the interaction between depressive symptoms and meaningful engagement, simple slope results demonstrated that, when youth find great meaning in engagement (one standard deviation above the mean) the positive relationship between depressive symptoms and suicidal ideation is weaker ($\beta = .46, t = 11.51, p < .001$) than it is when little meaning is found in youth engagement (one standard deviation below the mean; $\beta = .74, t = 22.26, p < .001$) and at mean levels of meaningful engagement ($\beta = .56, t = 22.50, p < .001$). Specifically, at low levels of meaningful engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .74 of a standard deviation. At mean levels of meaning found in engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .56 of a standard deviation. At high meaning levels of engagement, as depressive symptoms increase one standard deviation, suicidal ideation increases by .46 of a standard deviation.

In addition to the moderating effects of meaningful engagement in relation to depressive symptoms and suicidal ideation, breadth of engagement was also a buffer between these variables. Specifically, when youth reported great breadth of engagement (one standard deviation above the mean; $\beta = .54, t = 11.10, p < .001$), depressive symptoms were lower than at mean ($\beta = .58, t = 21.78, p < .001$) or low ($\beta = .69, t = 19.34, p < .001$)

breadth of engagement. Thus, high, mean, and low breadth of engagement predict a .54, .58, and .69 increase, respectively, in suicidal ideation with a one standard deviation increase in depressive symptoms.

Risk behaviours. Regarding the interaction between risk behaviours and meaningful engagement, simple slope results demonstrated that, when youth are engaged in a highly meaningful extracurricular activity (one standard deviation above the mean) the positive relation between risk behaviours and suicidal ideation is weaker ($\beta = .43, t = 9.62, p < .001$) than it is when there is little meaning (one standard deviation below the mean; $\beta = .61, t = 17.07, p < .001$) or a mean level ($\beta = .49, t = 17.57, p < .001$). Specifically, with low meaning, when risk behaviours increase by one standard deviation, suicidal ideation increases by .61 of a standard deviation. At mean levels of meaning, when risk behaviours increase by one standard deviation, suicidal ideation increases by .49 of a standard deviation. At high meaning found in engagement, as risk behaviours increase one standard deviation, suicidal ideation increases by .43 of a standard deviation.

Self-esteem. In relation to the interaction between self-esteem and meaningful engagement, simple slope results demonstrated that, when youth indicate a high level of meaning in activity engagement (one standard deviation above the mean), the inverse relationship between self-esteem and suicidal ideation is significantly reduced ($\beta = -.34, t = -7.78, p < .001$) in comparison to at moderate (mean; $\beta = -.44, t = -15.17, p < .001$) or low (one standard deviation below the mean; $\beta = -.59, t = -14.96, p < .001$) reported levels of meaning found in engagement. Specifically, with high meaning found in engagement, when self-esteem decreases by one standard deviation, suicidal ideation increases by .34 standard deviations. At moderate and low levels of meaning found in youth engagement, when self-

esteem decreases by one standard deviation, suicidal ideation increases by .44 and .59 standard deviations, respectively.

Breadth of engagement is also a buffer between self-esteem and depressive symptoms. With little breadth of engagement (one standard deviation below the mean, including a lack of engagement; $\beta = -.58, t = -14.02, p < .001$), mean breadth engagement ($\beta = -.44, t = -15.30, p < .001$), and high breadth of engagement in a number of activities (one standard deviation above the mean up to a maximum of 8 activities; $\beta = -.36, t = -7.50, p < .001$), decreases in self-esteem by one standard deviation predict increases in suicidal ideation by .36, .44., and .58 of a standard deviation, respectively.

Number of supportive persons. Concerning the interaction between the number of supportive persons and meaningful engagement, at high levels of meaning found in engagement (one standard deviation above the mean), the inverse relationship between number of supportive persons and suicidal ideation reduced ($\beta = -.10, t = -2.24, p = .03$) in comparison to moderate and low meaning levels. At both moderate (mean; $\beta = -.20, t = -6.31, p < .001$) and low levels (one standard deviation below the mean; $\beta = -.32, t = -6.69, p < .001$) of meaning found in engagement, the simple slope results demonstrated the inverse relationship between number of supportive persons and suicidal ideation. Specifically, at high meaning levels, decreases in the number of supportive persons by one standard deviation relate to increases in suicidal ideation by .10 of a standard deviation. At moderate and low meaning levels, as the number of supportive persons decreases by one standard deviation, suicidal ideation increases by .20 and .32 standard deviations, respectively.

Engagement as a Direct Inverse Predictor of Suicidal Thoughts in Rural and Urban Youth

Regression analyses with split file comparisons between gender and rural-urban setting support a direct, inverse relationship between youth engagement and suicidal ideation for rural youth as noted in Table 7. More specifically, in rural females, meaningful engagement inversely predicted suicidal ideation, $F_{(1, 242)} = 4.74, p = .03, \eta_p^2 = .02$. In rural males, meaningful engagement and breadth of engagement inversely predicted suicidal ideation, $F_{(1, 214)} = 6.52, p = .01, \eta_p^2 = .03$ and $F_{(1, 214)} = 4.64, p = .03, \eta_p^2 = .02$, respectively. Intensity of engagement was not associated with suicidal ideation ($p > .05$). There were also no significant direct associations between engagement and suicidal ideation for urban youth ($p > .05$).

Exploring degree of rurality, specifically, with youth engagement moderating variables, we found the following: The interaction between meaningful youth engagement and degree of rurality (from urban, suburban, to rural and remote rural) was itself significant ($t = -2.21, p = .03$), as was the interaction between breadth of engagement and degree of rurality in the prediction of suicide risk ($t = -2.29, p = .02$), but intensity of engagement was not significant in its interaction with rurality ($p > .05$).

Regarding the interaction between degree of rurality (from urban central to suburban to rural and remote rural) and meaningful engagement, simple slope results demonstrated that, when youth indicated great meaning in engagement (one standard deviation above the mean) the positive relationship between degree of rurality and suicidal ideation was rendered non-significant ($\beta = .04, t = .76, p = .45$). This contrasts with the relationship between rurality and suicidal ideation when youth reported little meaning in engagement (one

standard deviation below the mean; $\beta = .16, t = 2.89, p = .004$) or a mean level of meaning found in engagement ($\beta = .10, t = 2.58, p = .01$). Specifically, at both moderate and low meaning found in engagement, but not at highly meaningful engagement, as degree of rurality increases so does suicidal ideation.

In relation to the interaction between rural dwelling and breadth of engagement, simple slope results demonstrated that, when urban youth indicated a high breadth of engagement (one standard deviation above the mean), the relationship between rurality and suicidal ideation was rendered non-significant ($\beta = .07, t = 1.42, p = .16$), by contrast to at moderate (mean; $\beta = .12, t = 3.47, p = .001$) or at low (one standard deviation below the mean; $\beta = .17, t = 3.67, p < .001$) breadth of reported engagement. Specifically, suicidal ideation increases as degree of rurality increases at both mean and low breadth of engagement, but not at high breadth of engagement.

Engagement as a Buffer for Suicidal Thoughts in Rural and Urban Youth

Concerning moderation analyses comparing rural and urban males and females, significant interactions were as follows:

- 1) For rural females, intensity of engagement interacted significantly with self-esteem ($t = 2.51, p = .01$) in the prediction of suicidal ideation.
- 2) For rural males, meaningful engagement was significant in its interaction with depressive symptoms ($t = -2.98, p = .003$), risk behaviour ($t = -2.71, p = .007$), and self-esteem ($t = 3.31, p = .001$) in relation to suicidal ideation. Also for rural males, breadth of engagement was significant in its interaction with risk behaviour ($t = -2.20, p = .03$).
- 3) For urban females, breadth of engagement interacted significantly with depressive

symptoms ($t = -2.00, p = .04$) and self-esteem ($t = 2.28, p = .02$) in the prediction of suicidal ideation.

4) For urban males, meaningful engagement was a significant moderating variable between depressive symptoms ($t = -4.84, p < .001$), risk behaviour ($t = -4.65, p < .001$), self-esteem ($t = 3.97, p < .001$), and perceived social support ($t = 2.17, p = .03$) in relation to suicidal ideation. Moreover, for urban males, breadth of engagement interacted significantly with depressive symptoms ($t = -4.73, p < .001$), risk behaviour ($t = -2.26, p = .03$), and self-esteem ($t = 3.21, p = .002$) in the prediction of suicidal ideation. All other interactions, were non-significant ($p > .05$). Simple slope analyses were carried out for the significant interactions.

Simple Slopes Analyses of Interactions: Rural Females

Self-esteem. Regarding the interaction between self-esteem and intensity of engagement, simple slope results demonstrated that, when rural female youth are intensely engaged in an activity (one standard deviation above the mean) the inverse relationship between self-esteem and suicidal ideation is weaker ($\beta = -.43, t = -6.13, p < .001$) than it is when youth are not intensely engaged (one standard deviation below the mean; $\beta = -.71, t = -8.55, p < .001$) and at mean intensity of engagement ($\beta = -.53, t = -10.66, p < .001$). Specifically, at low intensity of engagement, when self-esteem decreases by one standard deviation, suicidal ideation increases by .71 of a standard deviation. At mean intensity of engagement, when self-esteem decreases by one standard deviation, suicidal ideation increases by .53 of a standard deviation. At high intensity of engagement, as self-esteem decreases by one standard deviation, suicidal ideation increases by .43 of a standard deviation.

Simple Slopes Analyses of Interactions: Rural Males

Depressive symptoms. Regarding the interaction between depressive symptoms and meaningful engagement, simple slope results demonstrated that, when rural male youth find great meaning in engagement (one standard deviation above the mean) the positive relationship between depressive symptoms and suicidal ideation is weaker ($\beta = .44, t = 5.07, p < .001$) than it is when little meaning is found in youth engagement (one standard deviation below the mean; $\beta = .74, t = 12.89, p < .001$) and at mean levels of meaningful engagement ($\beta = .56, t = 11.06, p < .001$). Specifically, at low levels of meaningful engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .74 of a standard deviation. At mean levels of meaning found in engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .56 of a standard deviation. At high meaning levels of engagement, as depressive symptoms increase one standard deviation, suicidal ideation increases by .44 of a standard deviation.

Risk behaviours. With meaningful engagement as a moderating variable, for rural males, the relationship between risk behaviours and suicidal ideation changes as a function of youth engagement. Specifically, simple slope results indicated that, when youth find great meaning in engagement (one standard deviation above the mean), the positive relationship between risk behaviour and suicidal ideation is weaker ($\beta = .34, t = 3.88, p < .001$) than when there is little meaning found in engagement (one standard deviation below the mean; $\beta = .64, t = 8.91, p < .001$) or at mean levels of meaning ($\beta = .46, t = 8.62, p < .001$). Thus, with little meaning found in engagement, when risk behaviours increase by one standard deviation, suicidal ideation increases by .64 of a standard deviation. At mean levels of

meaning, when risk behaviours increase by one standard deviation, suicidal ideation increases by .46 of a standard deviation. At high meaning in engagement, as risk behaviours increase one standard deviation, suicidal ideation increases by .34 of a standard deviation.

Regarding the interaction between risk behaviours and breadth of engagement for rural males, simple slope results demonstrated that, when youth have a high breadth of engagement in extracurricular activities (one standard deviation above the mean) the positive relation between risk behaviours and suicidal ideation is weaker ($\beta = .38, t = 4.36, p < .001$) than it is when there is low breadth of engagement (one standard deviation below the mean; $\beta = .62, t = 8.57, p < .001$) or mean breadth of engagement ($\beta = .47, t = 8.63, p < .001$). Specifically, with low breadth of engagement (which could include no engagement), when risk behaviours increase by one standard deviation, suicidal ideation increases by .62 of a standard deviation. At mean levels of breadth, when risk behaviours increase by one standard deviation, suicidal ideation increases by .47 of a standard deviation. At high breadth of engagement, as risk behaviours increase one standard deviation, suicidal ideation increases by .38 of a standard deviation.

Self-esteem. In relation to the interaction between self-esteem and meaningful engagement for rural males, simple slope results demonstrated that, when youth indicate a high level of meaning in activity engagement (one standard deviation above the mean), the inverse relationship between self-esteem and suicidal ideation is significantly reduced ($\beta = -.29, t = -3.36, p = .001$) in comparison to at moderate (mean; $\beta = -.44, t = -7.88, p < .001$) or low (one standard deviation below the mean; $\beta = -.63, t = -9.16, p < .001$) reported levels of meaning found in engagement. Specifically, with high meaning found in engagement, when self-esteem decreases by one standard deviation, suicidal ideation increases by .29 standard

deviations. At moderate and low levels of meaning found in youth engagement, when self-esteem decreases by one standard deviation in rural males, suicidal ideation increases by .44 and .63 standard deviations, respectively.

Simple Slopes Analyses of Interactions: Urban Females

Depressive symptoms. With breadth of engagement as a moderating variable, for urban females, the relationship between depressive symptoms and suicidal ideation changes as a function of youth engagement. Specifically, simple slope results indicated that, when youth have a high breadth of engagement (one standard deviation above the mean), the positive relationship between depressive symptoms and suicidal ideation is weaker ($\beta = .32$, $t = 2.63$, $p < .001$) than rural females have low breadth of engagement (one standard deviation below the mean; $\beta = .64$, $t = 8.91$, $p < .001$) or at mean breadth of engagement ($\beta = .46$, $t = 8.62$, $p < .001$). Thus, with low breadth of engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .64 of a standard deviation. At mean breadth of engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by .46 of a standard deviation. At high breadth of engagement, as depressive symptoms increase one standard deviation, suicidal ideation increases by .34 of a standard deviation.

Self-esteem. Regarding the interaction between self-esteem and breadth of engagement for urban females, simple slope results demonstrated that, when youth indicate a high breadth of activity engagement (one standard deviation above the mean), the inverse relationship between self-esteem and suicidal ideation is non-significant ($\beta = -.18$, $t = -1.53$, $p > .05$) by contrast to at moderate (mean; $\beta = -.35$, $t = -5.28$, $p < .001$) or low (one standard deviation below the mean; $\beta = -.57$, $t = -5.32$, $p < .001$) reported breadth engagement.

Specifically, with high breadth of engagement, the relationship between low self-esteem and suicidal ideation is rendered non-significant. At moderate and low breadth of engagement, when self-esteem decreases by one standard deviation in urban females, suicidal ideation increases by $-.35$ and $-.57$ standard deviations, respectively.

Simple Slopes Analyses of Interactions: Urban Males

Depressive symptoms. For urban males, regarding the interaction between depressive symptoms and meaningful engagement, simple slope results demonstrated that, when youth find great meaning in engagement (one standard deviation above the mean) the positive relationship between depressive symptoms and suicidal ideation is weaker ($\beta = .26$, $t = 3.27$, $p = .001$) than it is when little meaning is found in youth engagement (one standard deviation below the mean; $\beta = .80$, $t = 9.45$, $p < .001$) and at mean levels of meaningful engagement ($\beta = .53$, $t = 8.74$, $p < .001$). Specifically, for urban males, at low levels of meaningful engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by $.80$ of a standard deviation. At mean levels of meaning found in engagement, when depressive symptoms increase by one standard deviation, suicidal ideation increases by $.53$ of a standard deviation. At high meaning levels of engagement, as depressive symptoms increase one standard deviation, suicidal ideation increases by $.26$ of a standard deviation.

For urban males, there was also a significant interaction between breadth of engagement and depressive symptoms in the prediction of suicidal ideation. The relationship between depressive symptoms and suicidal ideation was non-significant at high ($\beta = .07$, $t = .59$, $p > .05$) by contrast to low ($\beta = .83$, $t = 9.26$, $p < .001$) and mean ($\beta = .44$, $t = 7.08$, $p < .001$) breadth of engagement. Therefore, high breadth of engagement rendered

the relationship between depressive symptoms and suicidal ideation non-significant for urban males. At low and mean breadth of engagement, as depressive symptoms increase one standard deviation, suicidal ideation increases by .83 and .44 of a standard deviation, respectively.

Risk behaviours. The relationship between risk behaviours and suicidal ideation is moderated by meaningful engagement in urban males. Specifically, when youth engagement is highly meaningful (one standard deviation above the mean; $\beta = .28, t = 3.77, p < .001$), youth indicated partaking in fewer risk behaviours than when they reported low (one standard deviation below the mean; $\beta = .77, t = 8.98, p < .001$) or mean levels of meaning ($\beta = .58, t = 8.41, p < .001$). Therefore, when youth indicate low meaning found in engagement, for every one standard deviation increase in risk behaviours, suicidal ideation increases by .77 of a standard deviation. At mean and higher levels of engagement meaning reported, as risk behaviours increase by one standard deviation, suicidal ideation increases by .58 and .28 of a standard deviation, respectively.

Regarding the interaction between risk behaviours and breadth of engagement, simple slope results demonstrated that, when urban male youth are engaged in a number of extracurricular activities (one standard deviation above the mean) the positive relation between risk behaviours and suicidal ideation is rendered non-significant ($\beta = .21, t = 1.52, p > .05$). This finding contrasted with low breadth of engagement (one standard deviation below the mean; $\beta = .64, t = 6.23, p < .001$) or mean breadth of engagement ($\beta = .47, t = 6.02, p < .001$). Specifically, with low breadth of engagement (which could include no engagement), when risk behaviours increase by one standard deviation, suicidal ideation increases by .64 of a standard deviation. At mean levels of breadth, when risk behaviours

increase by one standard deviation, suicidal ideation increases by .47 of a standard deviation. At high breadth of engagement, there is no significant relationship between risk behaviours and suicidal ideation.

Self-esteem. In relation to the interaction between self-esteem and meaningful engagement, simple slope results demonstrated that, when youth indicate a high level of meaning in activity engagement (one standard deviation above the mean), the inverse relationship between self-esteem and suicidal ideation is rendered non-significant ($\beta = -.17, t = -1.90, p > .05$) by contrast to at moderate (mean; $\beta = -.42, t = -6.24, p < .001$) or low (one standard deviation below the mean; $\beta = -.68, t = -6.84, p < .001$) reported levels of meaning found in engagement. Specifically, with high meaning found in engagement, the relationship between low self-esteem and suicidal ideation is non-significant. At moderate and low levels of meaning found in youth engagement, when self-esteem decreases by one standard deviation, suicidal ideation increases by .42 and .68 standard deviations, respectively.

For urban males, breadth of engagement also moderated the relationship between self-esteem and suicidal ideation. The relationship between depressive symptoms and suicidal ideation was non-significant at high ($\beta = -.10, t = -.86, p > .05$) by contrast to low ($\beta = -.64, t = -6.21, p < .001$) and mean ($\beta = -.37, t = -5.33, p < .001$) number of activity engagement. Therefore, engaging in a high number of activities rendered the relationship between low self-esteem and suicidal ideation non-significant for urban males. At low and mean breadth engagement, as depressive symptoms increased by one standard deviation, suicidal ideation increased by .64 and .37 of a standard deviation, respectively.

Perceived social support. Concerning the interaction between the perceived social support and meaningful engagement, at high levels of meaning found in engagement (one

standard deviation above the mean), the inverse relationship between number of supportive persons and suicidal ideation is rendered non-significant ($\beta = -.08, t = -.92, p > .05$). At both moderate (mean; $\beta = -.24, t = -3.12, p = .002$) and low levels (one standard deviation below the mean; $\beta = -.41, t = -3.24, p = .001$) of meaning found in engagement, the simple slope results demonstrated the inverse relationship between perceived social support and suicidal ideation. Specifically, at high meaning levels, decreases in perceived support by one standard deviation do not significantly relate to suicidal ideation. At moderate and low meaning levels, as the number of supportive persons decreases by one standard deviation, suicidal ideation increases by .24 and .41 standard deviations, respectively.

Direct Inverse Relationships between Youth Engagement and Suicidal Ideation for Rural & Urban Youth

Correlational analyses yielded findings to suggest direct (non-moderated) inverse relationships between youth engagement for rural, but not for urban youth. Specifically, as presented in Table 5, for rural females and rural males, respectively, meaningful engagement inversely predicted suicidal ideation. Breadth of engagement also inversely predicted suicidal ideation for urban males. All other findings were non-significant.

CHAPTER 4

Discussion

Youth suicidal ideation: *Who* is at Greatest Risk. *What* Factors to Target. *How* to Intervene. The present research provides an in-depth rural-urban, gender-based exploration of suicidal ideation. Our study includes an examination of differences in suicidal ideation, possible explanations for such differences, factors that underlie risk and resilience, and youth engagement as a potential means of intervention before suicidal thoughts emerge.

This study is the among the first investigations to dissect rural-urban and gender differences in suicidal ideation by underlying research and theories that may predict who, or what communities, may be at greatest risk. Such an exploration will help in the targeting of streamlined prevention or intervention efforts for youth suicidal ideation. Moreover, this research also illustrates mental health and well-being indicators related to suicidal ideation that may be relevant to target for each rural-urban, gender, group, presuming populations are similar to the current samples studied. Surprisingly little attention has been given to the examination of mental health and well-being indicators based on rural-urban dwelling, particularly by gender. Related to these indicators, an examination of youth engagement as a preventative factor for youth suicidal ideation suggests the need for different approaches based on community and gender risk and resiliency profiles. Overall, results indicate that a broad brush approach to mental health promotion and prevention of suicidal ideation may be neither appropriate nor cost-effective. Findings are discussed in more detail below.

Sample

Income and education. The rural and urban samples appear to be representative of the local populations from which they were derived in terms of family income. Despite this,

rural fathers appear to be less educated and urban parents appear to be more educated than the general Ontario population. Even though this might have meant a greater discrepancy between the rural and urban samples for parental education, only family income, and not parental education, was found to be a socioeconomic status factor associated with suicidal ideation. Socioeconomic status, as noted, also did not explain rural and urban differences in ideation. Thus, some sampling discrepancies in parental education by comparison to the general population were not likely to have affected results.

Ethnicity. With caution regarding comparability of non-traditional origin and immigration data, there was no evidence from the present study to suggest that non-traditional ancestry or ethnic minority status acted as a barrier to participation in school-based survey research for the overall sample. Specifically, survey methodology in schools for research involving suicidal ideation and mental health appeared to have yielded a sample of participants with a similar ethnic composition to the general local population. Thus, current recruitment strategies, involving distribution of ethical consent forms in schools for research on mental health, well-being, or suicidal ideation, appear to be acceptable for a diverse population. Nevertheless, as the participation rate of youth in mental health research is rarely 100%, potential barriers to participation in general could be evaluated, such as stigma surrounding mental illness. Factors that enhance youth participation in research, potentially by ethnicity, could also be assessed. Gender differences in the reporting of suicidal ideation should also be examined, as recent research suggests that females from some ethnic minority groups may underreport suicidal thoughts (Haarr, 2010).

Hypothesis Testing

Who is at Risk: Rural-Urban Suicidal Ideation by Gender

More youth deaths by suicide appear to occur in contemporary rural rather than urban communities, even among mental health service users (Sankaranarayanan, Carter, & Lewin, 2010). The literature also suggests that youth who live in *remote* modern rural communities may be more at risk for suicidal ideation than urban youth, with females at particularly high risk by comparison to males (CIHI, 2006; Eskin et al., 2007). Therefore, we expected it might be possible that youth living in *non-remote* rural communities in Ontario, Canada would report more suicidal ideation than youth living in urban cities. As predicted, rural females reported the highest rate of suicidal ideation in our study.

Even though setting and gender only accounted for a small proportion of the variance in the prediction of suicidal ideation (1% each), these findings would be notable at the population level. Specifically, the main effects of rural-urban setting and gender were significant even after partialling out shared variance. In medicine and epidemiology fields, partial effects of the size observed in this study, or even smaller, are seen as useful with practical clinical applications (Rosenthal, 1990; Stewart, Zelinski, & Wallace, 2000), particularly when talking about mental health or suicidal ideation concerns where the majority of youth do not have such concerns. In society, we often talk about robust, statistically and clinical significant gender differences with regard to such concerns, even though they only account for a small explained variance. Thus, the present results concerning gender and rural-urban differences in suicidal ideation may represent a small but relevant piece of a complex multi-determined problem.

In summary, non-remote rural females appeared to be more at-risk for suicidal

ideation than their urban counterparts, as were rural males in relation to urban males. Given the gender and rural and urban differences, the present results may have implications for the need to facilitate mental health promotion strategies in rural communities, even non-remote communities, particularly for rural females.

Rural Youth Suicidal Ideation: Why Rural and Urban Differences may Exist

In addition to a description of non-remote rural and urban differences in suicidal ideation by gender, our research is among the first to provide data suggesting potential explanations for differences, as well as discrepancies in rural-urban suicidal ideation rates in the research literature. More specifically, there has been no research to date to suggest why findings may differ across rural settings and also across urban settings globally: What might make a particular rural setting more risky for suicidal ideation than other rural or urban regions?

Social support. One possible explanation for greater levels of suicidal ideation in rural communities by comparison to urban regions may relate to perceived social support and number of supportive persons. Modern rural communities are thought to be less cohesive and more isolating than urban regions (Forrest, 1988; Hall et al., 2008; Stewart et al., 1994), by contrast to the rural regions of Durkheim's time, where rural communities provided a strong social capital through a web of intergroup relations (Durkheim, 1857/1951). If a given modern rural community is more socially isolating than an urban community, Durkheim's theory would predict that suicide would be higher in the community where people experience isolation (Durkheim, 1912). A lack of social support is associated with suicidal thoughts and behaviours (Watt & Sharp, 2001). As such, we predicted that rural youth would indicate lower levels of social support and, thus, higher levels of suicidal

ideation. Indeed, in the present study, we found higher self-reported social isolation in rural communities and associated higher suicidal ideation. Furthermore, when differences in social support were accounted for, the relationship between rural setting and suicidal ideation was no longer significant. Thus, if youth indicate low levels of social support or perceived support, this might be a red flag for a community at risk for suicidal ideation.

In rural communities, many youth indicated living far from their friends, and living distance from friends was related to the number of supportive persons that youth reported. Therefore, despite the societal existence of real-time talk, text, or internet messaging technology, youth in rural regions who live far from others indicate less perceived support than those living closer to others. However, youth generally appeared to be resilient and seemed to mobilize themselves when in need to seek out social support, regardless of whether they lived in urban or rural regions. Therefore, it would appear that the day-to-day social support or isolation that youth indicate may be more relevant for the development of suicidal ideation than solely support in times of need. Thus, as an early measure of communities at risk for suicidal ideation for the purposes of prevention or intervention, general perceptions of social support, particularly in rural regions, could be examined.

Although early literature suggested social support may more important for females than males in relation to suicidal thoughts (Chodorow, 1974; Tiller et al., 1998), social support factors did not account for gender differences in suicidal ideation. As such, young females indicated higher levels of suicidal ideation than young males even after perceived satisfaction with social support or perceived number of supportive person's in one's life was controlled. Perceived social support was likely not an explanatory factor for gender differences in suicidal ideation, contrary to the early literature and hypotheses, as perceived

satisfaction with social support appears to be more relevant than perceived number of supportive persons in the prediction of suicidal ideation in the current, modern rural communities measured in our study. Rural males and females were similarly dissatisfied with social support and urban males and females were similarly satisfied with social support. One possible explanation for rural dissatisfaction: Perhaps, even with the existence of modern electronic technologies connecting more people despite geographic living distance, this may not be enough to provide the true social satisfaction that in-person support can provide. In fact, the literature suggests that, although online social networks can provide support, offline support is much more related to fewer negative psychological symptoms (Longman, O'Connor, & Obst, 2009). Further research should examine the role of internet or other technological forms of support in relation to rural-urban differences in perceived satisfaction with support and suicidal ideation, as this was beyond the scope of the present study. An examination of other quantitative or qualitative aspects of social support aside from perceived satisfaction or number of supportive persons might also yield differing results.

Socioeconomic status. One question we often received concerning urban-rural differences in suicidal ideation and mental health indicators was whether socioeconomic status might explain these differences, since rural regions have lower family incomes than urban areas. The literature did not support that socioeconomic status would account for rural-urban differences. However, as status concerns might be more relevant for males than females (Watt & Sharp, 2001), we predicted that socioeconomic status might account for gender differences in suicidal ideation. Socioeconomic status (i.e., youth-reported parental income) was found to be related to suicidal ideation, but parental education was not.

However, rural-urban and gender differences in suicidal ideation were not accounted for by parental income. Thus, regardless of setting and gender, low socioeconomic status was an independent predictor of suicidal ideation. As suggested by the literature, it may be that individuals with the lowest socioeconomic status in any community might be at elevated risk for suicidal ideation (Brownell et al., 2006). Thus, as expected, socioeconomic status did not account for rural and urban differences in suicidal ideation. By contrast to our hypothesis, however, despite the fact that “status concerns” are theoretically more problematic for males than females (Watt & Sharp, 2001), this gender distinction was not found for socioeconomic status–parental income–in the present research. Perhaps it’s not parental socioeconomic status that matters as much as other forms of social status, such as personal status (e.g., popularity). Future research should explore this issue with regard to gender differences in suicidal ideation.

Stress and coping. “Stress and coping” was a proposed factor to consider when looking at potential explanations for setting and gender differences in suicidal ideation. Stress and coping was independently predictive of suicidal ideation. However, contrary to the literature that suggests rural youth tend to use more harmful coping strategies than urban youth (Mi Sung et al., 2006), stress and coping did not account for rural and urban differences in suicidal ideation. This finding differs from our hypothesis that stress and coping would explain rural-urban differences in suicidal ideation. It is possible that a measure of specific types of coping strategies (e.g., avoidance coping) used by youth may have resulted in group differences by contrast the current measure reflecting general feelings of coping with daily hassles. Research with homeless males yielding findings to suggest disengaging (avoidance) coping was a predictor of depressive symptoms (Votta & Manion,

2004). In the present study, aside from looking at coping in general as opposed to specific types of coping, results might have also been attenuated due to a skewed outcome variable, particularly as results were divided into smaller groups. Future research should explore this issue in order to target potentially divergent coping strategies among different groups of youth that may result in greater risk.

By contrast to setting, as expected based on literature that says female youth have more difficulty than males coping with stress (Adcock et al., 1999), stress and coping did account for gender differences in suicidal ideation. Thus, interventions targeting poor coping with daily stressors in females may act to reduce the gender differences in young Canadian males and females.

Ethnicity. Given that very few youth in our study were recent immigrants, as well as research to suggest that youth tend to take on the values of the dominant ethnic groups (Arnett, 2007), we predicted ethnicity would not explain rural-urban or gender differences in suicidal ideation. Ethnicity as a main effect was not significant after shared effects were partialled out. Moreover, complementing the hypothesis, ethnicity did not account for rural-urban differences in suicidal ideation. This finding with high school youth was consistent with research from Kennedy et al. (2005) conducted with a sample of Canadian university youth. However, based on recent literature which contrasts with Arnett, females from some non-traditional backgrounds may be less likely to report suicidal ideation than youth from traditional backgrounds (Haarr, 2010). Similar to this literature, though contrasting with our initial hypothesis, ethnicity did explain gender differences in suicidal ideation. This also means that gender differences in reported ideation no longer exist if we account for ethnicity. Previous research in which there was an almost exclusively Caucasian sample contrasts with

our findings (e.g., Andrews & Lewinsohn, 1992; Lewinsohn, Rohde, & Seeley, 1996).

However, when samples are ethnically diverse and representative of the national multicultural composition (e.g., Crosby, Cheltenham, & Sacks, 1999), gender differences in suicidal ideation do not tend to be seen, as was the case for our research when we took ethnicity into account.

Also of note, qualitatively, one female youth stated, “I can’t say I’m suicidal because it would be against my religion.” Clearly, however, not all ethnic groups from “traditional” or “non-traditional” backgrounds are the same. Grouping different ethnicities into the dichotomous categories in this study may lead to the gross interpretation that all “non-traditional” females may be less likely to report suicidal ideation. A qualitative scan of the data by different ethnic groups suggests that this issue would warrant future research by specific ethnic group with a much larger sample size. Further research should also explore the issues of suicidal ideation and mental health in relation to degree of acculturation.

Summary. Overall, rural females indicated the most suicidal ideation by comparison to their rural male and urban peers. Social isolation appears to be a key explanatory factor for higher rates of rural youth suicidal ideation, while difficulties coping with daily stressors and traditional ethnicity explain higher reported female ideation. Therefore, in particular, both perceived social isolation and noted coping difficulties with daily stressors may be relevant screening factors for young people at risk for suicide. In the present study, rural females were likely at greatest risk for indicating suicidal thoughts due to lower rural perceived satisfaction with social support and greater female difficulties coping with everyday hassles.

Ethnic differences regarding traditional and non-traditional ancestries may explain

lower female reported rates of suicidal ideation. Thus, if one were to screen directly for suicidal ideation, as opposed to examining risk factors, one may miss capturing a sample of youth at risk for suicide, based on lower reporting rates of ideation. As noted in the literature, lower reporting rates do not necessarily indicate corresponding lower suicide rates in ethnic minority groups. Thus, for ethnic minority youth and, in particular, for females, examining risk and protective factors for suicidal ideation, rather than suicidal ideation itself, may be of benefit in suicide prevention efforts.

What Factors to Target: Risk & Resilience

Self-esteem and social support are known protective factors for suicidal ideation, while depressive symptoms and risk behaviours are known risk factors. However, based on the literature (e.g. Pollard et al., 1999), we predicted that these risk and protective factors would differ in importance across gender and setting groups. Indeed, in structural equation modeling of our correlational data, a best fit model for rural females suggested that self-esteem and the number of supportive persons were inversely predictive of suicidal ideation. For rural males, self-esteem was inversely predictive of suicidal ideation. For urban female youth, self-esteem and satisfaction with social support were inversely predictive of suicidal ideation. For urban male youth, self-esteem and the number of supportive persons were inversely predictive of suicidal ideation. Overall, self-esteem was an important predictor for all groups. However, a model targeting only self-esteem was not found to be a good fit for most rural-urban groups of youth, by gender. Thus, a one-size-fits-all model would not be a good fit for all groups. Indeed, our results support this hypothesis and have strong implications for prevention approaches.

How to Intervene: Risk Prevention Through Youth Engagement

Our research is among the first to explore the inverse relationship between youth engagement in structured activities and suicidal ideation. It is the first to look at youth engagement as a moderator between such variables as depressive symptoms, risk behaviour, self-esteem, and social support with suicidal ideation. Examining underlying risk factors of suicidal ideation and a possible means of precluding self-harm through youth engagement is important to the understanding, prediction, and prevention of suicide. Expanding the depth and breadth of knowledge of youth engagement into the realm of suicide prevention may help to encourage proactive interventions that can be carried out by communities.

Full sample. Overall, the literature supports depressive symptoms, risk behaviours, low self-esteem, and low social support as predictive for suicidal ideation, as previously noted. Moreover, youth engagement is inversely related to these mental health indicators. Thus, we expected youth engagement may act as a buffer for those at risk for suicidal ideation. More specifically, based on the research of Busseri et al. (2006) and other theoretical literature (Frankl, 1984), we expected that both meaningful engagement and breadth of engagement would inversely predict suicidal ideation. As predicted, the results of the present study suggested that youth engagement appears to act as a buffer between well-being concerns and suicidal ideation. Specifically, greater personal meaning found in engagement may reduce the relationships between depressive symptoms and risk behaviours with suicidal ideation, as well as reduce the inverse relationships between self-esteem and perceived satisfaction with social support in relation to suicidal ideation. Thus, for youth at risk, given depressive symptoms, risk behaviours, low self-esteem, or lack of social support, engaging youth in activities that may be personally meaningful may reduce suicide risk. These findings imply that one cannot simply engage a young person in any one activity. It seems that the activity has to be

meaningful for a particular individual in order for it to have a buffering effect in relation to depressive symptoms, risk behaviours, low self-esteem, and a perceived lack of social support. In particular, meaningful engagement of a young person, as described previously, should involve a structured recreational activity which promotes success, challenge, would be hard to give up, is believed to be important, and is experienced as fun.

In addition to meaningful engagement, breadth of engagement, or involvement in a number of activities, appeared to reduce the association between depressive symptoms and low self-esteem with suicidal ideation. Thus, for youth experiencing depressive symptoms or low self-esteem, engagement in a number of activities may act as a buffer against suicidal ideation by enhancing youth resiliency. Intensity of engagement, or frequent involvement in a single activity, was not found to be related to mental health indicators. These findings complement and extend the findings of Busseri et al. (2006) and Simon et al. (2004) into the realm of youth suicidal ideation. Moreover, the present results fit well with therapeutic literature on behavioural activation. Specifically, behavioural activation is the reinforcement of healthy behaviours, aimed at obtaining a goal, objective, or reward (Hopko, Sanchez, Hopko, Dvir, & Lejuez, 2003). These behaviours are considered to be, and have been found to be incompatible with unhealthy behaviours, such as suicidal behaviours (Hopko et al., 2003s). Thus, behavioural activation, involving engagement in pleasurable activities, is often central to therapeutic interventions for mental health concerns.

The present research provides an initial insight into the buffering of youth engagement in relation to mental health indicators and suicidal ideation, thus calling for more rigorous examinations in this area. Although current suicidal ideation was explored, thus adding credibility to time components often expected in structural equation modelling,

favourable results of the present research would support the need for longitudinal research. Examining group differences in results, types of activities in which youth engage, and factors that initiate and sustain engagement would also be of benefit. An examination of youth engagement provides a springboard to a program investigating the value of engaging at-risk youth and the application of this knowledge in day-to-day practice. However, as previously noted, a program that may be theoretically effective with one population may not be so with another. Thus, we also explored rural-urban by gender differences in relation to youth engagement.

Rural-urban & gender differences. In resiliency research, the effects of protective factors are strongest at the highest levels of risk (Pollard et al., 1999). At highest risk levels for any given concern, protective factors are often notable as buffers. The present study supports this finding. More specifically, the results of the current study demonstrated that youth engagement may act as a direct protective factor for rural youth, given that we found rurality itself to be a risk factor for suicidal ideation. Meaningful engagement appeared to be a protective factor for suicidal ideation in rural females. For rural males, both meaningful engagement and breadth of engagement appeared to be protective factors for suicidal ideation. Moreover, both meaningful engagement and breadth of engagement were buffers between degree of rurality and suicidal ideation. Baumeister's (1990) escape theory of suicide proposes that suicidal ideation begins with the perception that one is failing to live up to rigid self-strivings. Thus, for males more so than for females, engaging in activities that promote a sense of success or competence should be directly related to lower suicidal ideation. The present measure of youth engagement examined the promotion of success and competence in the measure of meaningful engagement. Thus, complementing this theory,

meaningful engagement was particularly relevant for male youth.

For youth already at risk for suicidal thoughts, due to depressive symptoms, risk behaviours, low self-esteem, or low perceived support, youth engagement also appeared to have a buffering effect – particularly for urban males. Overall, urban males in the current research reported the fewest mental health concerns by contrast to urban females or their rural peers. Thus, mental health and well-being issues such as depressive symptoms, risk behaviours, low self-esteem, and low perceived support in these youth likely rendered such males particularly at risk for suicidal ideation, as they would be more anomalous in relation to other urban males than the other groups of youths experiencing concerns would be. Research suggests that differing from others within one's community might put one at greatest risk for ideation (e.g., Brownell et al., 2006). For urban males, meaningful engagement acted as a buffer between depressive symptoms, risk behaviours, self-esteem, and perceived satisfaction with social support in relation to suicidal ideation. Breadth of engagement was also a moderator between depressive symptoms, risk behaviours, and self-esteem with suicidal ideation.

For urban females, breadth of engagement was a buffer between depressive symptoms and low self-esteem in the prediction of suicidal ideation. As noted previously, the inverse relationship between youth engagement and suicidal ideation was more direct for rural youth than for urban youth. However, meaningful youth engagement was also found to be a moderator for rural males at risk for suicidal ideation given depressive symptoms, risk behaviours, and low self-esteem. Breadth of engagement was a buffer between risk behaviours and suicidal ideation for rural males. For rural females, who were found to be the group at greatest risk for suicidal ideation, only intensity of engagement was a buffer

between self-esteem and suicidal ideation.

In summary, as noted, these findings support hypotheses and suggest that youth engagement meaning and breadth is more directly, universally beneficial for those at greatest risk for suicidal thoughts (i.e., rural youth). However, for rural males, it would appear that youth engagement also has an important buffering role, based on depressive symptoms, risk behaviours, low self-esteem, and lack of social support. In urban communities, particularly with young males, youth engagement meaning and breadth acts as a buffer for those already at risk for suicidal thoughts, based on the mental health indicators measured in our research.

Considerations for Prevention

Given that the present study is cross-sectional, we cannot establish causality. Nevertheless, in light of the present results and grounded in the research literature on prevention, we suggest the following potential considerations, if warranted by further similar research findings:

- 1) A one-size-fits-all prevention approach tends to work best for youth who least need an intervention and problems may be exacerbated in youth who are most at risk for well-being concerns (Carnahan, 1994; Nation et al., 2003). Additionally, when a prevention approach is not as relevant for a particular group, there are often problems with participant attrition (Kumpfer & Alvarado, 1995; Nation et al., 2003). Therefore, without knowledge of group differences associated with youth suicide, service delivery may not be cost effective or even beneficial for certain youth. Concerning group-targeted prevention approaches, if one were to implement a prevention program for youth suicidal ideation targeted by community, results suggests that efforts would be best served by noting regions in which rural youth have low perceived social support and females in these communities report difficulties coping.

Moreover, assessing factors related to suicidal ideation, such as social support and coping difficulties, rather than screening directly for suicidal ideation may be beneficial in reaching suicidal females, in particular, from ethnic minority groups who may underreport such thoughts.

2) Understanding group differences in risk and protective factors for youth suicidal ideation also provides different avenues for designing prevention approaches. Based on the results of our study, with regard to structural equation modelling, it would appear that specific prevention efforts might best target each rural-urban and gender group, as different protective and risk factor models fit each particular group. Specifically, a best fit model for rural females suggested that a resiliency program designed to enhance self-esteem and the number of supportive persons in the lives of these youth might be beneficial as a mental health promotion and suicide prevention approach. For rural males, a program targeting self-esteem appeared to be most beneficial in suicide prevention. For urban female youth, addressing self-esteem and satisfaction with social support would likely be a helpful resiliency-based program in suicide prevention. For urban male youth, like for rural females (but with different outcome pathways), suicidal ideation resiliency programs to enhance self-esteem and increase the number of supportive persons would likely be beneficial. Overall, self-esteem was an important predictor for all groups. However, a model targeting only self-esteem was not found to be a good fit for most rural-urban groups of youth, by gender.

If communities resemble the present regions with regard to levels of perceived social support and female difficulty coping with stressors, programs targeting the noted mental health and well-being indicators by community and gender would likely be relevant. These mental health indicators form one model through which strategies may be developed to aid

in the prevention of youth suicide. Specifically, the present models provide a foundation for differing prevention approaches across rural and urban regions, by gender. More importantly, though, these findings illustrate that one cannot assume a prevention approach for suicidal ideation that works well with one population will necessarily work equally well with all populations.

3) Therapeutic approaches aimed at specific groups may be more beneficial for youth than non-targeted approaches, as they can address issues relevant to particular groups, and thus also potentially may be more cost-effective. Such issues should be explored in public policy as society moves towards a prevention mentality. With regard to the importance of youth suicide prevention, less than half of youth who report a suicide attempt indicate that they had spoken to an adult about suicidal ideation or any form of distress prior to the attempt (O'Donnell et al., 2003). Moreover, many youth indicate dissatisfaction with current mental health treatments (Sainsbury Centre for Mental Health, 1998). Therefore, youth suicidal thoughts should be addressed before they emerge, particularly for rural youth who may be less likely to access mental health services than urban youth, as previously noted. However, to improve relevance of prevention approaches for youth, researchers recommend that those served by the prevention approaches be included in the program planning and implementation to ensure that their needs are met and that programs will be appropriate for them (e.g., Dryfoos, 1990; Janz et al., 1996). In addition to prevention efforts, public health efforts should also focus on indicators, such as depressive symptoms, risk behaviours, self-esteem, and social support, which could be used by frontline, non-clinical professionals working with youth in order to determine which youth should be further assessed for suicide risk for intervention purposes. Overall, the findings of this

research are consistent with the research literature, but the rural-urban examination and the resilience models by group represent an important contribution. Such an exploration should aid in the development of more refined youth suicide prevention and intervention initiatives.

4) Concerning youth engagement, engaging entire rural communities that may be at risk for suicidal ideation, given a profile of low perceived social support with females indicating poor coping with daily hassles, may be helpful in reducing rural youth suicidal ideation before such thoughts emerge. Moreover, encouraging engagement in personally meaningful or a number of activities for urban males already at risk for suicidal ideation may be particularly beneficial in suicide prevention efforts. Overall, our findings suggest that a universal suicide prevention strategy engaging all rural youth in personally meaningful or a number of extracurricular activities may be beneficial, if rural communities resemble the present samples. Also, as previously noted, there is greater stigma towards help-seeking in rural communities, thus a universal program may be relevant for these youth before mental health concerns arise. For rural males, it would appear that even targeted engagement approaches, based on depressive symptoms, risk behaviours, low self-esteem, and lack of social support could also be beneficial. However, we cannot simply engage youth in any one activity. Suicide prevention strategies should either involve multiple extracurricular activity engagement or engaging youth in an activity that is personally meaningful.

A sense of meaning is derived not from existing passively, but through active engagement in the world and with other people (Heidegger, 1962). As noted, through structures in society that allow for people to gather with one another, people discover meaning in life and are protected from well-being concerns, such as suicidal ideation (Durkheim, 1912). In a world of mass production and the impersonal nature of community

and business functioning, people suffer from loneliness and can lose their sense of meaning (Frankl, 1984). The problem of meaninglessness is inherent in the isolation of modern human life (May, 1983). For example, poorer developmental and mental health outcomes for youth can follow from the changing face of families in society, such as the isolation inherent in fewer family dinners eaten together (Substance Abuse and Mental Health Services Administration [SAMHSA], 2009). Through an ever isolating society, the loss of meaning is thought to be associated with psychopathology or other psychological consequences, including suicide (Frankl, 1984). Any activity that strengthens communication skills, fosters a sense of connectedness or belonging (Manion & Lee, 2004), or provides meaning or purpose (Frankl, 1984) can decrease suicide risk. Recent studies suggest that meaning in life, derived from spirituality, accounts for up to 26% of the variance in children's happiness (Holder, Coleman, & Wallace, 2010)—a key protective factor for suicide. Frankl proposed that gaining a perception that life is meaningful through engagement in any valued activity, not just spiritual activities, can promote psychological well-being and prevent despair. By contrast, the absence of meaningful pursuits or life relationships can lead to suicide (Frankl, 1984). Thus, if a sense of meaning could potentially prevent suicide, particularly as families and society become further isolating for young people, it seems crucial that youth suicide prevention strategies which promote meaningful engagement be implemented and further examined in relation to depressive symptoms, risk behaviour, self-esteem, and social support.

5) In light of the results concerning youth engagement, several questions remain: How do we engage youth? How can we encourage “meaningful” engagement? In rural communities where opportunities for engagement may be more limited, how can meaningfulness be changed at a programmatic level? Are there more cost-effective and

“youth friendly” ways of screening for mental health and well-being concerns than entering a school and surveying youth then enrolling at-risk youth in a program? These seem like formidable and cost-intensive tasks for prevention approaches.

To engage youth, the Centres of Excellence for Children’s Wellbeing (2010) suggest:

- 1) Involving youth in decisions that affect their lives, targeting the family first and expanding to school, community organizations, and governments;
- 2) Talking to young people both informally and formally about issues that are important to them;
- 3) Involving youth in decision-making processes and in developing and running youth programs;
- 4) Creating opportunities for youth-adult partnerships concerning important social problems and issues;
- 5) Encouraging youth to help other youth with their problems (e.g. peer help or mediation);
- 6) Assisting young people in developing skills that will allow them to advocate better on their own behalf and create programs and activities that will engage other youth;
- 7) Assisting youth in connecting with organizations and institutions that can support them in executing their own ideas, taking action on issues that concern them, or exploring new skills and activities;
- 8) Encouraging and funding organizations that work with youth in meaningful ways.

To encourage meaningful engagement, youth could be asked formally or informally what sorts of activities interest them and then guidance could be provided. For example, an online or paper-and-pencil system is already in place in many schools where students fill out interest inventories and are then provided with career guidance. Such an inventory of interests given during school years, perhaps at the beginning of high school, might allow for staff or peer mentors, or simply an online output, to guide young people towards activities in the school or community that might be enjoyable and meaningful for them. Particularly in

rural communities where engagement may be more limited, community attitudes that lead to the creation of opportunities for engagement, as discussed in the eight recommendations above, may also be of benefit. Moreover, public health campaigns targeted at suspected or known at-risk rural communities, or other approaches grounded in public policy that make structured activities more accessible to rural youth, may help to encourage engagement.

When wanting to target higher risk youth based on factors such as depressive symptoms or other issues measured in the present research, two innovative “youth friendly” ways to screen for mental health and well-being concerns and promote help-seeking behaviour have recently been proposed and explored. In one study, as a first example that could serve as a template for engaging youth, Santor and colleagues (2007a) proposed that a mental health literacy website presented to grades 7 to 12 students would promote self-identification and help-seeking behaviour. Visits to the website were associated with symptom screening and referrals to guidance counsellors or other mental health services. Perhaps such a resource could also be used to encourage youth engagement in addition to help-seeking, as programs (e.g., the Youth Net model; Youth Net/Réseau Ado, 2001) that combine mental health services with engagement in activities have been found to decrease suicidal ideation (Armstrong, 2009b; Ramey et al., 2010).

As a second example, a brief intervention involving two one-hour workshops in the classroom on distress and help-seeking was carried out (Santor, Poulin, LeBlanc, & Kusumakar, 2007b). Findings suggested that a brief intervention of such a nature enhances help-seeking behaviour, particularly for those with the greatest levels of distress. Adding a psychoeducational component regarding youth engagement to such workshops may facilitate both help-seeking and engagement in those with higher levels of distress. In clinical

settings, youth engagement could also be promoted potentially to maintain positive mental health and prevent suicidal ideation in those experiencing distress: Such is the foundation of “behavioural activation” in Cognitive Behaviour Therapy. Given literature to suggest that activities which provides meaning or purpose decrease the risk for suicide (Frankl, 1984), encouraging youth engagement when appropriate may be a helpful complement or an integral component of therapeutic approaches.

These suggestions to encourage youth engagement as part of a comprehensive mental health literacy or treatment program should not be carried out in a large-scale fashion until further research on youth engagement and suicide ideation is conducted. The present non-experimental, correlational research on youth engagement is a necessary precursor to more costly intervention studies. Such correlational research can be foundational in providing a rationale for the design or logic model of specific interventions, from initial smaller scale pilot research to future larger scale interventions.

6) The results of this study suggest that a broad brush approach to suicide prevention and mental health promotion may be neither appropriate nor cost-effective. Despite this, programs that are not targeted to meet specific group needs constitute the majority of prevention approaches (Shamblen & Derzon, 2009). Current debate exists in society as to whether broad verses more targeted prevention should be implemented in the prevention of problematic behaviours for youth. Often both types of prevention efforts may be desired or recommended, but time and resource costs can be significant (Shamblen & Derzon, 2009). Prevention approaches that are broad in scope are helpful in avoiding the stigma associated with singling out individuals who may be at risk for a given concern, and relatively low drop-out rates are seen when such prevention efforts are used (Horowitz & Garber, 2006;

Spence, Sheffield, & Donovan, 2003). However, at a population level, there are often very small effect sizes associated with such programming for youth given that many young people reached by the prevention approach may never initiate nor be at risk for initiating a certain problematic behaviour (Horowitz & Garber, 2006; Shamblen & Derzon, 2009). By contrast, although little research exists in this area, programs that are targeted at higher risk youth or communities have been found to produce better outcomes than broad scale prevention approaches, both in the shorter and longer term (Horowitz & Garber, 2006). Given stigma and other concerns, though, the highest risk young people may not participate in individually-targeted approaches, and grouping higher risk youth can lead to potential iatrogenic harm through reinforcement of negative behaviours (Dishon, McCord, & Poulin, 1999; Shamblen & Derzon, 2009). How, then, could a cost-effective national youth suicide prevention strategy be designed that addresses concerns associated with targeted strategies – currently viewed as selective strategies that screen and target individuals whose risk is higher (Guo & Harstall, 2004)?

One key framework which has been widely used in promoting protective factors and reducing risk factors in relation to substance use and deviant behaviour is the Communities that Care model ([CTC] Hawkins & Catalano, 2009). Such a community-targeted model might also be beneficial for youth suicide prevention policies and practices. More specifically, within the CTC system, communities are surveyed concerning individual, school, family, and community risk and protective factors for substance abuse, delinquency, mental health, and other related behaviours (Hawkins et al., 2008). CTC mobilizes community stakeholders to select an evidence-based prevention program to implement with fidelity (Hawkins et al., 2008). This program, selected from a menu of evidence-based

programs, is targeted toward the risk and protective factors within a given region. CTC provides a framework for engaging stakeholders, developing a shared community vision, assessing risk and protective factors in specific settings, as well as measuring and evaluating community goals (Hawkins et al., 2008). Such a model for youth suicide prevention may be indicated by the present research. Specifically, a CTC-type framework (perhaps screening for some of the mental health indicators noted in the present study) could be used to find rural communities that may be at elevated risk for suicidal thoughts based on social support or female difficulties coping with stressors, as well as to find pockets of urban or rural settings where several individuals are exhibiting risk factors and limited protective factors for suicidal ideation. This approach would minimize stigma associated with participation in a prevention program for higher risk individuals. However, with destigmatization or social-inclusion campaigns regarding mental health concerns and suicidal thoughts, perhaps stigma will one day no longer be a major issue in society.

Limitations and Directions for Future Research

Despite promising results of the present study, several caveats should be noted.

Design. Results of this research should be interpreted with caution, as the design was cross-sectional. One limitation of a cross-sectional design is that suicidal ideation was measured at the same time as variables thought to predict such risk. Potentially suicidal ideation might alter a young person's reporting of issues such as self-esteem and social support, or suicidal ideation might induce the emergence of depressive symptoms and risk behaviours. Causal assumptions concerning relationships among risk and protective factors for suicidal ideation cannot be made from these analyses. The observed relationships are, thus, not evidence that suicidal ideation was inhibited or caused by youth engagement, self-

esteem, social support, depressive symptoms, risk behaviours, and rural dwelling. Therefore, longitudinal studies are needed to determine the extent to which suicidal ideation may be modulated by risk and protective factors over time. Since adolescence is a time of immense change, longitudinal designs could also aid in the identification of critical time periods for different groups of youth for which intervention or prevention may be appropriate.

Favourable results of the present study would suggest the need for more costly longitudinal research or pilot prevention approaches.

In addition to the cross-sectional design, this study was also further limited by the use of self-report alone. However, self-report may be the most accurate source of information on mental health and well-being, given that a large minority of youth report that they would tell no one verbally if they were experiencing mental health concerns, but they tend to report this information if asked directly, for example, in a survey (Youth Net/Réseau Ado, 1997). In fact, approximately 50% of youth in the present study indicated that they would not tell friends or family if they were having suicidal thoughts. Such an issue would make triangulation research from multiple informants challenging. For other variables, more objective measures than self-report or the use of multiple informants (e.g., youth in the same peer groups who may observe certain risk behaviours) may also serve to add further support to the present findings in future research.

Concerning self-report, there was a potential differential response bias by gender, as males in general are less likely to disclose mental health concerns than young women (Youth Net/Réseau Ado, 1997). Thus, gender differences may be a function of reporting differences or true gender differences may indeed exist.

The set of risk and protective factors measured in the present study does not

constitute an exhaustive list of all factors that contribute to suicidal ideation. Suicidal ideation is a complex, multidimensional phenomenon involving many precipitating factors. Therefore, the issues measured in the present study are but one piece of a much larger puzzle that warrants further study. Each piece of the puzzle mentioned in the present study was not expected to be a panacea, accounting for a large proportion of the variance. Instead, like Aspirin which is often recommended to be taken daily despite only accounting for a very small percentage of the variance in preventing cardiovascular events in those at risk (United States Preventative Services Task Force, 2002), targeting each predictor of suicidal ideation in isolation may only reduce death by suicide marginally. Though, similar to the boy on the beach throwing one starfish into the ocean at a time, with sceptics saying there are too many to save them all, with suicide prevention efforts targeting risk and protective factors, it is hoped that we can also say, “Yes, but I saved this one.” Better yet, community-targeted efforts or approaches targeting youth otherwise at risk for suicidal thoughts may have larger scale impacts than broad brush approaches for all youth.

Sample. As noted in the description of the sample, the data pertain to individuals in small communities not close to cities but not living in extremely remote outposts. Data in the current sample came from mixed rural communities (i.e., students live on farms, in towns, and in villages). Further research should consider an examination of similar variables for youth who only live in farming communities versus youth who only live in rural towns and villages. Previous research suggests that differences in mental health and well-being may exist between these two different types of rural communities (Clark-Lempers et al., 1990). Other rural-urban settings, such as fishing villages, more remote urban and rural communities, communities with different cultural compositions, and other types of

communities may also be of benefit to study. For the present research, given the differing nature of rural and urban communities across Canada and globally, generalizability should be considered with caution. Further research with a larger sample will aid in the development of prevention approaches or programs that may help foster positive developmental trajectories in different groups of youth.

Similarly, results of this study were limited in that all data were derived from one region in Canada. Future research should consider an exploration urban-rural and gender, as well as other, differences in suicidal ideation models with nationally-representative samples. With a larger sample, age differences should also be explored. It seems that sample size may have been a limiting factor in the present research. With a larger sample size, it may have been possible to independently examine the highest risk subgroup for suicidal ideation—Aboriginal youth. However, it was not part of the scope of the present research to examine these youth in isolation. Several previous studies have examined this high risk population, as Aboriginal research is often a priority area for funding. However, youth engagement and its relationship to mental health indicators and suicidal ideation has yet to be studied with Aboriginal samples. Further research should address this issue with a large sample of non-remote and remote Aboriginal participants in Canada.

In addition to issues surrounding sample and generalizability, youth who participated in the study may be significantly different from youth who did not participate in the study. For example, the participating youth had to be able to read English in order to be able to take part in the study and few recent immigrants (within 12 months prior to the study) participated. Given that few youth in the present study had reported immigrating to Canada within the past 12 months, future research should explore issues concerning mental health

research participation with youth who have recently immigrated to a diverse nation. These youth could be compared to those who have lived in the country longer and those who have had roots in the country for multiple generations. Although it may be a potential limitation of this study, it was seen as unethical to collect data on non-participants. Therefore, only classroom-level data on participation rates were collected, rather than individual-level data on non-participants. Although the participating sample seemed to resemble the ethnic composition of the local region where the study was carried out, there were a significant number of youth who did not participate and non-participants may be at differential risk for mental health concerns and suicidal ideation. Stigma may have affected participation. If this were the case, non-participants would have greater rates of suicidal ideation and mental health concerns than participants, thus rendering current effect sizes smaller than they may actually be.

For future research including any ethnicity analysis with a larger sample size it would be prudent to examine the issues raised in the present study with each major ethnic group in diverse nations, by gender. For example, Canadian youth from non-traditional backgrounds such as China may exhibit very different participation and reporting rates than youth from Somalia. The current research is, thus, only a first step in the exploration of ethnic differences in this area. Additionally, future research should also consider the use of measures examining stigma toward participation and reporting of mental health concerns and suicidal ideation. Only with further research will we truly be able to gain a clear road map for youth research protocols, as well as an understanding of youth mental health and suicidal ideation within diverse nations.

Statistics. Results of the present study should also be interpreted with caution given

the potential for false positives due to multiple comparisons and an omnibus alpha set at .05. However, given potential attenuated correlations given skewness of non-transformed variables when the sample is broken down into small groups, as noted previously, the potential for such an error is less of a concern. Moreover, Bonferroni corrections for multiple comparisons were also used, where possible. Nevertheless, further research with a larger sample should include analyses with a more conservative omnibus alpha.

Measures. As over 150 youth in the sample did not indicate parental income, future research should consider the use of more objective measures of socioeconomic status, such as Census statistics on socioeconomic status by postal code (Wilkins, 1993). It may be that youth simply do not know their parents' income. Youth may also fail to answer such sensitive demographic questions, particularly since the demographic questionnaire was included at the beginning of the questionnaire booklet. A greater response rate, or more objective measures of socioeconomic status may have added more statistical power to the examination of the socioeconomic hypothesis. Thus, results presented here may underrepresent such data.

Socioeconomic status was only a minor variable of interest, included to address potential confounds in studying rural-urban differences in suicidal ideation. As such, a fairly weak measure of socioeconomic status, perceived parental income, was included in the present study, which is fairly consistent with much of the existing literature measuring socioeconomic status. Further researchers examining rural-urban differences in suicidal ideation and other mental health indicators, whereby socioeconomic status is a key variable of interest, may want to include a stronger measure, such as parental reports of income.

For greater specificity in intervention and prevention purposes, research should also consider an examination of specific risk behaviours as they differ by rural and urban communities. Moreover, questions remain about who may be at risk for suicidal ideation: Youth partaking in any risk behaviour, youth involved in many risk behaviours, or youth who participate in a specific risk behaviour. Some degree of risk-taking may be a normative part of adolescence and may not be ultimately linked to poorer developmental outcomes (e.g., Eccles & Barber, 1999; Lerner & Galambos, 1998; Paglia & Room, 1999; Williams, Holmbeck, & Greenley, 2002). However, other researchers have found that successful youth development is most highly associated with complete non-involvement in risk behaviours, by comparison to some involvement, some high-risk involvement, and predominantly high-risk involvement groups (Willoughby et al., 2007). The present research did not address this question and, thus, the exploration of youth engagement as a buffer between risk behaviours and suicidal ideation would benefit from further study.

An additional potential limitation concerning measurement and risk behaviours involves the use of a new measure for this study – the CORBY. However, this measure (both an 11 and 15 item version) has been assessed for reliability and validity with hundreds of middle and secondary school youth beyond this study in research and program evaluations in both Eastern and Northern Ontario communities (some of these results are presented in Appendix B). Thus, although the CORBY is a new measure, favourable reliability and validity findings supported its use for this research.

Final Thoughts

Acknowledging the cited limitations above, the present study contributes to our understanding of group differences in youth suicide risk, youth engagement, and other

mental health indicators for the purpose of prevention. Prevention, as opposed to intervention, is particularly relevant in relation to youth suicide: Only one in six young people who need mental health services ever receive such services (Canadian Psychiatric Association, 2006; Offord, et al., 1989) and rural youth have lower access to mental health care than urban youth (CIHR, 2011; Forrest, 1988). Many youth also appear to suffer in silence, preferring not to disclose their suicidal thoughts (Davidson & Manion, 1996; Youth Net/Réseau Ado, 2001). In support of this finding, research has found that only up to half of youth who attempted suicide had spoken to an adult about their distress (O'Donnell, Stueve, Wardlaw, & O'Donnell, 2003). Therefore, until stigma to discuss suicidal ideation is reduced, and mental health service access is increased, preventing suicidal thoughts before they emerge and promoting positive well-being appears to be particularly important.

The findings of the present research have direct relevance to prevention efforts. More specifically, results highlight that prevention policies and practices should focus both on the reduction of risk and the promotion of resiliency through targeted approaches: Targeting higher risk communities or higher risk individuals in lower risk communities. Gathering geographically-aimed epidemiological data on the presence of risk and resiliency factors for suicidal ideation and other concerns would be an important component of ongoing community-centred processes to address the prevention needs of specific groups.

With knowledge of who is at greatest risk for suicidal ideation, what factors to target, and a possible intervention road map, we can reach youth and foster resiliency in different setting and gender groups before young people experience suicidal concerns.

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Table 1

Demographic Characteristics of the Sample

Region	Rural n = 458	Urban n = 348
Gender	52.1% Female 47.7% Male .2% Unspecified	49.0% Female 49.3% Male 1.7% Unspecified
Age	$M = 16.23$ $SD = 1.16$	$M = 16.03$ $SD = 1.23$
Grade	$M = 10.70$ $SD = 1.03$	$M = 10.51$ $SD = 1.10$
Family Income	Median & $M = \$41,000$ to \$60,000 ^a	Median & $M = \$60,000$ to \$80,000 ^a
Mother Education	Completed elementary school: 1.1% Completed some high school: 11.5% Graduated from high school: 25.2% Some college or university education: 14.2% Graduated from college: 33.8% Completed a university bachelor's degree: 8.4% Some graduate work: 1.3% Completed a Master's degree: 3.3% Completed a PhD or an M.D.: 1.1%	Completed elementary school: 2.3% Completed some high school: 6.7% Graduated from high school: 16.3% Some college or university education: 12.8% Graduated from college: 24.8% Completed a university bachelor's degree: 21.0% Some graduate work: 3.5% Completed a Master's degree: 9.6% Completed a PhD or an M.D.: 2.9%
Father Education	Completed elementary school: 3.2% Completed some high school: 16.8% Graduated from high school: 25.2% Some college or university education: 12.0% Graduated from college: 26.1% Completed a university bachelor's degree: 11.1% Some graduate work: 2.3% Completed a Master's degree: 2.7% Completed a PhD or an M.D.: .7%	Completed elementary school: 1.8% Completed some high school: 6.6% Graduated from high school: 10.5% Some college or university education: 13.8% Graduated from college: 18.0% Completed a university bachelor's degree: 23.7% Some graduate work: 4.8% Completed a Master's degree: 14.4% Completed a PhD or an M.D.: 6.3%
Ethnicity	91% White, 4% Aboriginal, 1% Black, 0.4% Asian, 3.6% mixed or other descent	73% White, 9% Asian, 5% Black, 4% Middle Eastern, 0.6% Hispanic, 0.3% Aboriginal, 8.1% other or mixed descent
Living Distance in Relation to Friends	60.3% Live close ¹ 39.7% Live far ²	82.3% Live close 17.7% Live far

Could Talk to Someone if Upset	35.7% Live with person 42.7% Live close to person 8.4% Live far from person 13.2% Talk to no one	38.5% Live with person 40.5% Live close to person 7.3% Live far from person 13.7% Talk to no one
Would Talk to Someone if Suicidal	54.0% Yes	54.4% Yes
<i>Major Life Events (past 12 months):</i>		
Immigration to Canada	0.4%	1.4%
Change of School	14.3%	18.9%
Moved into New House	8.5%	15.9%
Death of Parent	1.1%	.8%
Death of Sibling	1.5%	.8%
Death of Another Close Relative	24.9%	23.4%
Death of Friend	7.0%	11.4%
Loss of Close Friendship	25.6%	25.6%
Loss of Cherished Pet	17.9%	11.4%
Parental Separation or Divorce	4.3%	5.6%
Pregnancy	1.3%	1.4%
Serious Illness of Close Family Member	23.0%	22.3%
Personal Diagnosis with Serious Illness	1.9%	1.4%
Bullied/Harassed	6.6%	3.1%
Victimized	2.1%	2.8%
Other Major Event	11.9%	13.4%

Note. Sample varied by item due to missing data described in text.^{1&2.} Self-report, no distance measured.

Table 2

Descriptive Statistics for Analyses (N = 813; n = 253 rural females, 215 rural males, 173 urban females, 175 urban males)

	<i>M^a</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	<i>Full</i>		<i>Rural</i>		<i>Rural</i>		<i>Urban</i>		<i>Urban</i>	
	<i>Sample</i>		<i>Females</i>		<i>Males</i>		<i>Females</i>		<i>Males</i>	
Suicidal ideation (Outcome variable)	.17	.46	.26	.58	.17	.48	.15	.37	.07	.28
Meaningful engagement	22.14	4.52	21.54	4.29	21.74	4.44	22.46	4.59	23.18	4.60
Breadth of engagement	2.47	2.05	2.64	2.14	2.58	2.30	2.33	1.78	2.27	1.83
Intensity of engagement	9.30	4.00	10.23	3.87	9.57	3.89	8.71	4.03	8.20	3.85
Depressive symptoms	8.42	9.29	10.24	10.81	7.20	8.64	9.51	8.10	6.44	8.47
Self-esteem	21.22	5.23	19.77	5.33	22.12	5.20	20.92	4.91	22.35	4.95
# Supportive persons	27.70	14.01	28.41	13.33	24.32	15.13	31.89	12.68	26.68	13.62
Satisfaction with support	25.50	11.20	20.34	12.26	20.59	11.48	32.90	4.22	31.29	6.00
Risk behaviours	3.49	4.04	4.96	4.83	3.58	3.86	2.80	3.59	2.07	2.62
Family income	3.45	1.07	3.16	.91	3.25	1.06	3.67	1.06	3.90	1.06
Mother education	4.52	1.69	4.17	1.49	4.27	1.54	5.02	1.85	4.86	1.80
Father education	4.61	1.89	3.92	1.57	4.12	1.65	5.24	1.97	5.52	1.95
Difficulties coping with stressors	26.01	8.08	28.20	7.81	24.63	7.15	27.09	7.86	23.61	8.82
Traditional/Non- traditional Ethnicity	1.16	.38	1.09	.29	1.06	.23	1.32	.47	1.29	.45

^a*Note.* Means of predictor variables = 0 for centred variables used in moderation analyses.

Table 3

*Intercorrelations between Suicidal Ideation, Rural-Urban Dwelling, Gender and Covariates
(N = 813)*

Variable	1	2	3	4	5	6	7	8	9	10
1. Suicidal Ideation (DV)	--	-.12**	-.10**	-.23**	-.12**	-.15**	-.03	-.05	.59**	-.09*
2. Urban-Rural Dwelling		--	.02	.10**	.51**	.27**	.21**	.36**	-.07*	.30**
3. Gender			--	-.16**	-.01	.08*	.00	.07*	-.22	-.04
4. # of Supportive Persons				--	.17**	.20**	.14**	.09**	-.30**	-.04
5. Satisfaction with Support					--	.29**	.10**	.18**	-.15**	.17**
6. Income						--	.32**	.30**	-.24**	-.09*
7. Mother Education							--	.49**	-.07	-.01
8. Father Education								--	-.11**	.09**
9. Stress and Coping									--	.04
10. Ethnicity										--

Note. * $p \leq .05$, ** $p \leq .01$

Table 4

Intercorrelations between Suicidal Ideation with Risk and Protective Factors (N = 813)

Variable	1	2	3	4	5	6	7	8	9
Full Sample (N = 813)									
1. Suicidal Ideation (DV)	--	.64**	.55**	-.49**	-.12**	-.23**	-.10**	-.03	-.14**
2. Depressive Symptoms		--	.54**	-.73**	-.07*	-.30**	-.13**	-.03	-.11**
3. Risk Behaviour			--	-.44**	-.09*	-.19**	-.10**	.01	-.09**
4. Self-Esteem				--	.07*	.32**	.18**	-.03	.21**
5. Satisfaction with Support					--	.17**	-.07*	-.16**	.10**
6. # of Supportive Persons						--	.25**	-.05	.13**
7. Breadth of Engagement							--	-.10**	.40**
8. Intensity of Engagement								--	-.28**
9. Meaningful Engagement									--

Note. * $p \leq .05$, ** $p \leq .01$

Table 5

Intercorrelations between Suicidal Ideation with Risk and Protective Factors by Rural-Urban Dwelling and Gender (N = 813)

Variable	1	2	3	4	5	6	7	8	9
Rural Females (n = 243)									
1. Suicidal Ideation (DV)	--	.71**	.60**	-.55**	-.10	-.35**	-.10	-.11	-.14*
2. Depressive Symptoms		--	.61**	-.73**	-.01	-.43**	-.17**	-.06	-.14*
3. Risk Behaviour			--	-.52**	.07	-.35**	-.21**	-.06	-.18**
4. Self-Esteem				--	-.05	.37**	.19**	-.01	.25**
5. Satisfaction with Support					--	.09	-.11	-.14*	.04
6. Number of Supportive Persons						--	.28**	-.04	.22**
7. Breadth of Engagement							--	-.03	.44**
8. Intensity of Engagement								--	-.15*
9. Meaningful Engagement									--
Rural Males (n = 215)									
1. Suicidal Ideation (DV)	--	.67**	.52**	-.52**	.01	-.17*	-.14*	-.04	-.17*
2. Depressive Symptoms		--	.56**	-.71**	.02	-.26**	-.14*	-.09	-.11
3. Risk Behaviour			--	-.37**	.07	-.12	-.06	-.05	-.05
4. Self-Esteem				--	-.01	.36**	.24**	.07	.20**
5. Satisfaction with Support					--	.09	-.03	-.04	-.05
6. Number of Supportive Persons						--	.24**	-.01	-.02
7. Breadth of Engagement							--	-.17*	.41**
8. Intensity of Engagement								--	-.26**
9. Meaningful Engagement									--
Urban Females (n = 173)									
1. Suicidal Ideation (DV)	--	.52**	.49**	-.39**	-.28**	-.20**	-.08	-.06	-.05
2. Depressive Symptoms		--	.49**	-.72**	-.42**	-.28**	-.13	.04	-.02
3. Risk Behaviour			--	-.44**	-.24**	-.13	-.14	.04	.01
4. Self-Esteem				--	.44**	.45**	.18*	-.10	.16*
5. Satisfaction with Support					--	.31**	.10	-.23**	.18*
6. Number of Supportive Persons						--	.29**	-.20**	.23**
7. Breadth of Engagement							--	-.23**	.42**
8. Intensity of Engagement								--	-.31**
9. Meaningful Engagement									--
Urban Males (n = 175)									
1. Suicidal Ideation (DV)	--	.52**	.48**	-.40**	-.11	-.20**	-.09	-.09	-.12
2. Depressive Symptoms		--	.33**	-.73**	-.26	-.36**	-.05	-.10	-.07
3. Risk Behaviour			--	-.33**	-.02	-.16*	.01	-.16*	.10
4. Self-Esteem				--	.18*	.31**	.13	.05	.12
5. Satisfaction with Support					--	.32**	.07	.02	.15
6. Number of Supportive Persons						--	.21**	.02	.15
7. Breadth of Engagement							--	-.06	.42**
8. Intensity of Engagement								--	-.31**
9. Meaningful Engagement									--

Note. * $p \leq .05$, ** $p \leq .01$

Table 6

Parameter Estimates for Best Fit Structural Equation Models (N = 813; 7 gender not specified)

Rural Females (n = 243)		Estimate	S.E.	C.R.	P
Depressive Symptoms <---	Self-Esteem	-1.352	.097	-13.992	***
Depressive Symptoms <---	# of Supportive Persons	-.152	.037	-4.081	***
Risk Behaviours <---	Depressive Symptoms	.260	.023	11.368	***
Suicidal ideation <---	Depressive Symptoms	1.660	.147	11.265	***
Suicidal ideation <---	Risk Behaviours	1.194	.335	3.566	***
Rural Males (n = 215)		Estimate	S.E.	C.R.	P
Depressive Symptoms <---	Self-Esteem	-1.188	.081	-14.749	***
Risk Behaviours <---	Depressive Symptoms	.216	.025	8.673	***
Suicidal ideation <---	Depressive Symptoms	1.859	.157	11.803	***
Suicidal ideation <---	Risk Behaviours	1.617	.371	4.354	***
Urban Females (n = 173)		Estimate	S.E.	C.R.	P
Depressive Symptoms <---	Self-Esteem	-1.091	.096	-11.360	***
Depressive Symptoms <---	Satisfaction with Support	-.272	.112	-2.423	.015
Risk Behaviours <---	Depressive Symptoms	.159	.042	3.794	***
Risk Behaviours <---	Self-Esteem	-.133	.070	-1.910	.056
Suicidal ideation <---	Depressive Symptoms	.939	.134	7.016	***
Suicidal ideation <---	Risk Behaviours	1.583	.280	5.648	***
Suicidal ideation <---	Satisfaction with Support	-.615	.233	-2.645	.008
Urban Males (n = 175)		Estimate	S.E.	C.R.	P
Depressive Symptoms <---	Self-Esteem	-1.139	.094	-12.108	***
Depressive Symptoms <---	# of Supportive Persons	-.081	.034	-2.401	.016
Risk Behaviours <---	Depressive Symptoms	.098	.022	4.455	***
Suicidal ideation <---	Depressive Symptoms	.593	.170	3.495	***
Suicidal ideation <---	Risk Behaviours	1.581	.402	3.929	***
Suicidal ideation <---	Self-Esteem	-.892	.281	-3.175	.001

Note. *** $p < .001$. C.R. = Critical Ratio, S.E. = Standard Error.

Table 7

Summary of Standard Regression for Direct Inverse Relationships between Youth Engagement and Suicidal Ideation (N = 813)

Predictor	Group											
	Rural Females			Rural Males			Urban Females			Urban Males		
	<i>R</i> ²	<i>β</i>	95% CI	<i>R</i> ²	<i>β</i>	95% CI	<i>R</i> ²	<i>β</i>	95% CI	<i>R</i> ²	<i>β</i>	95% CI
Breadth of Engagement	.01	-.10	[-.06, .01]	.02	-.14*	[-.06, -.00]	.00	-.08	[-.05, .01]	.01	-.09	[-.04, .01]
Intensity of Engagement	.01	-.11	[-.04, .00]	.00	-.04	[-.02, .01]	.00	-.06	[-.02, .01]	.00	-.07	[-.02, .01]
Meaningful Engagement	.02	-.14*	[-.04, -.00]	.03	-.17**	[-.03, -.00]	.00	-.05	[-.02, .00]	.01	-.12	[-.02, .00]
<i>n</i>	243			215			173			175		

Note. **p* ≤ .05, ***p* ≤ .01

SUICIDAL IDEATION BY RURAL-URBAN SETTING AND GENDER

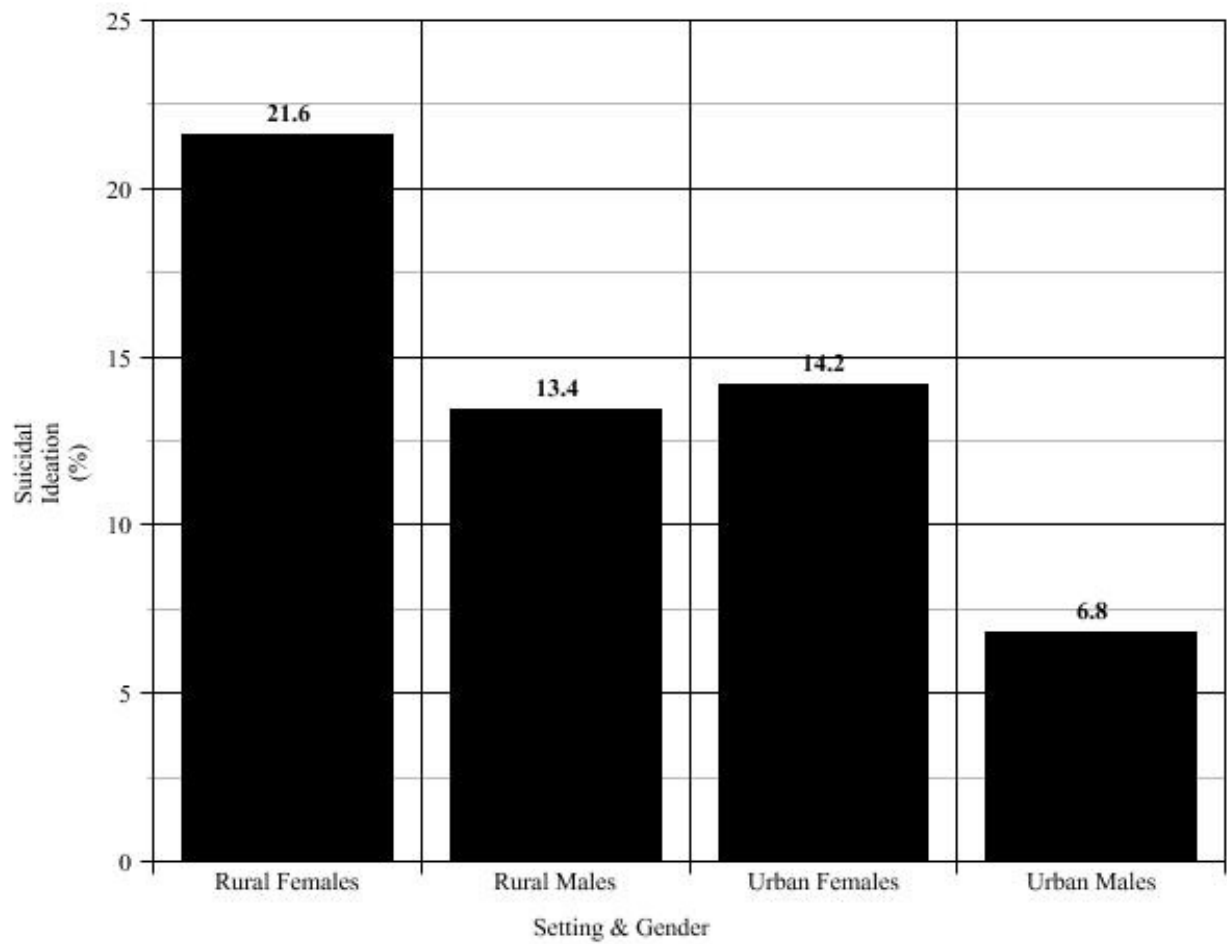


Figure 1. Suicidal ideation by rural-urban setting and gender.

SEM: ORIGINAL MODEL

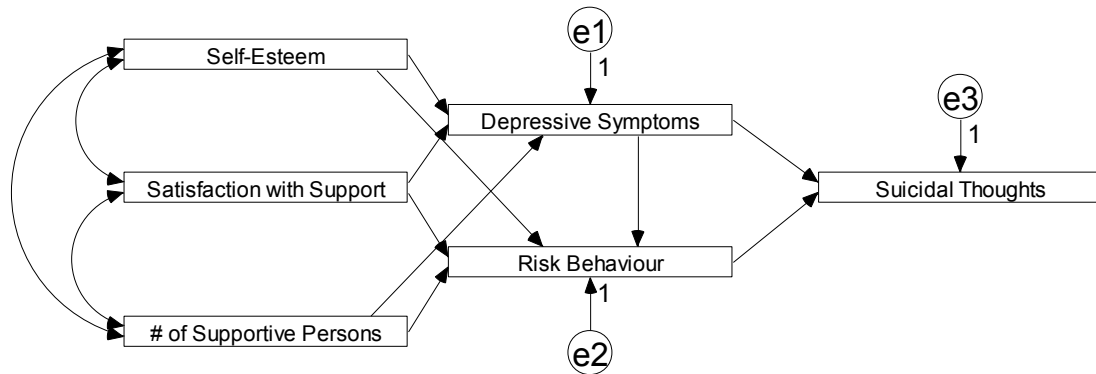


Figure 2. Original structural equation model that underwent goodness-of-fit tests with each (rural-urban/gender) group.

SEM: RURAL FEMALES

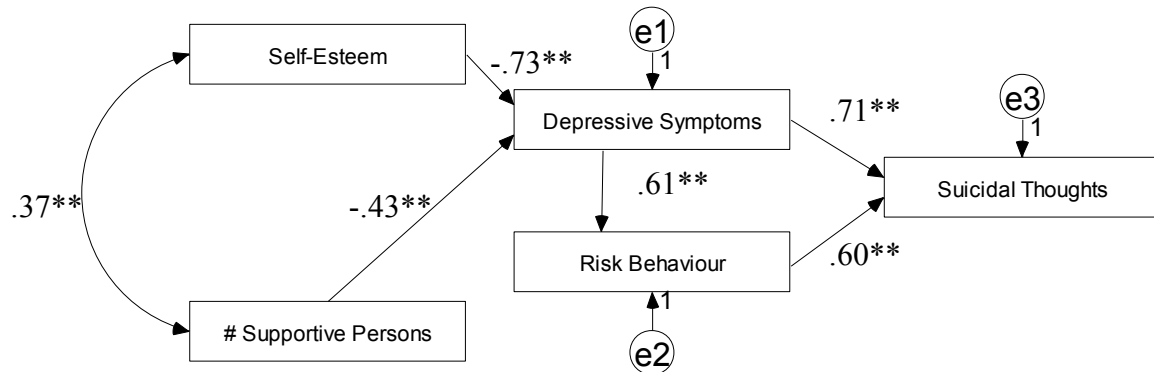


Figure 3. Resiliency-based predictor model for suicidal ideation. Identified best fit model for rural females. Correlations: $*p < .05$, $**p < .01$.

SEM: RURAL MALES

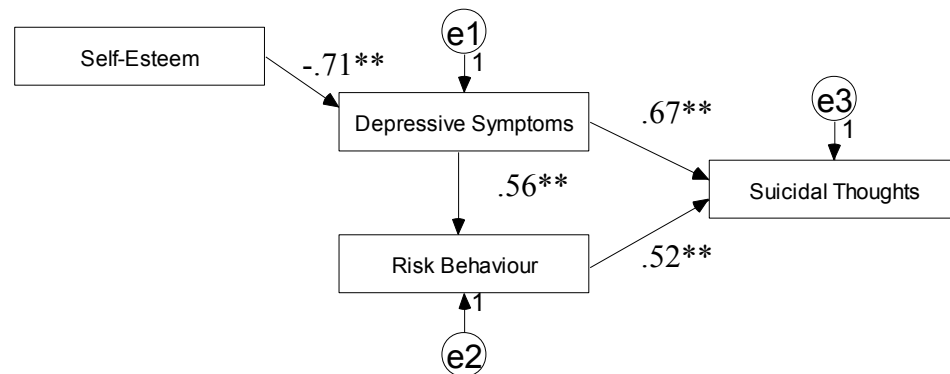


Figure 4. Resiliency-based predictor model for suicidal ideation. Identified best fit model for rural males. Correlations: $*p < .05$, $**p < .01$.

SEM: URBAN FEMALES

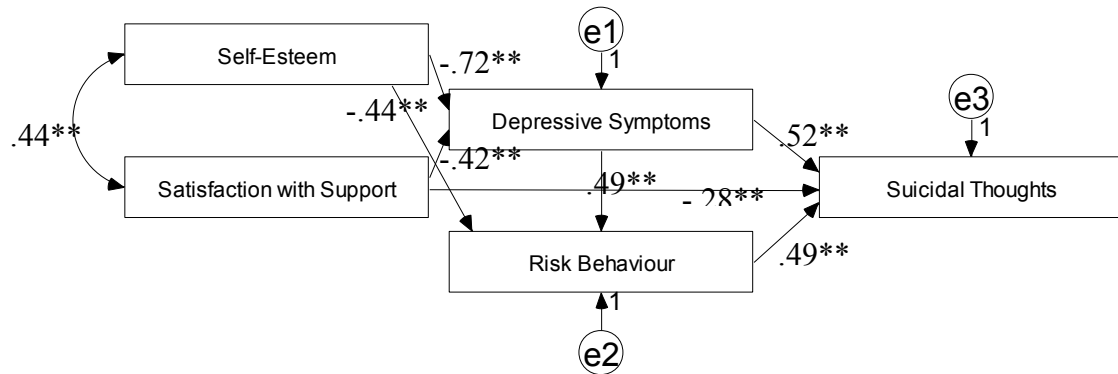


Figure 5. Resiliency-based predictor model for suicidal ideation. Identified best fit model for urban females. Correlations: * $p < .05$, ** $p < .01$.

SEM: URBAN MALES

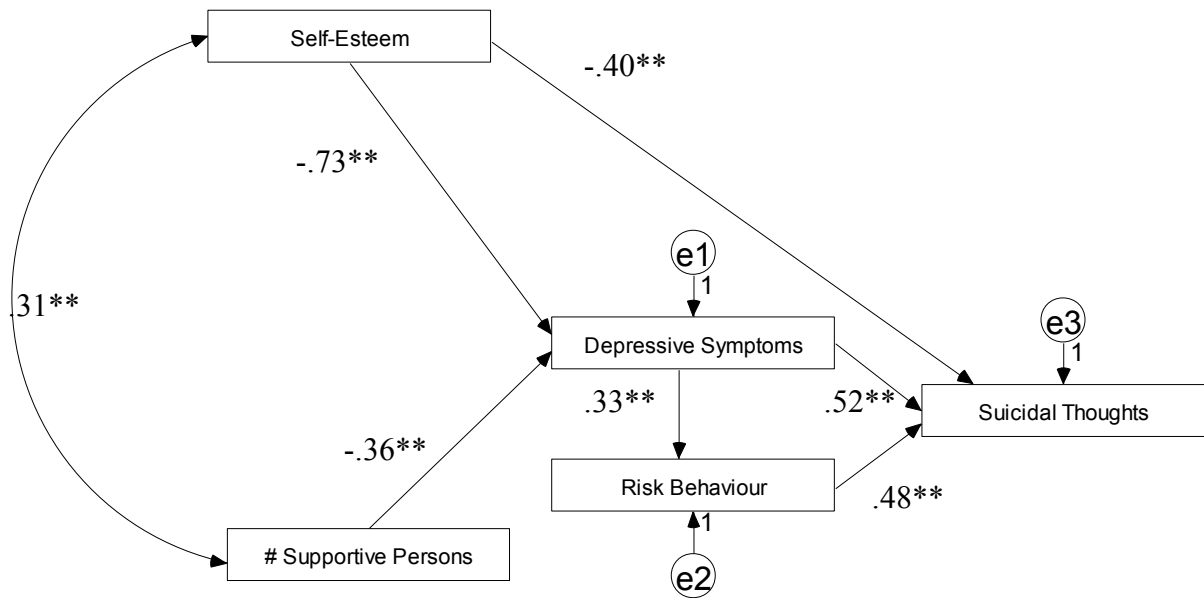
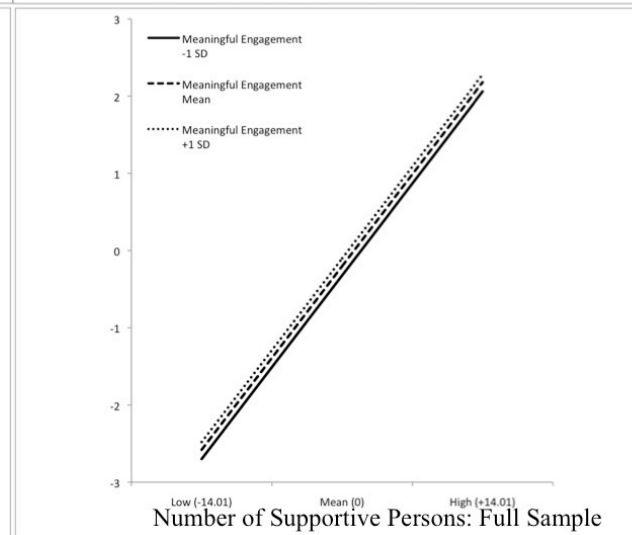
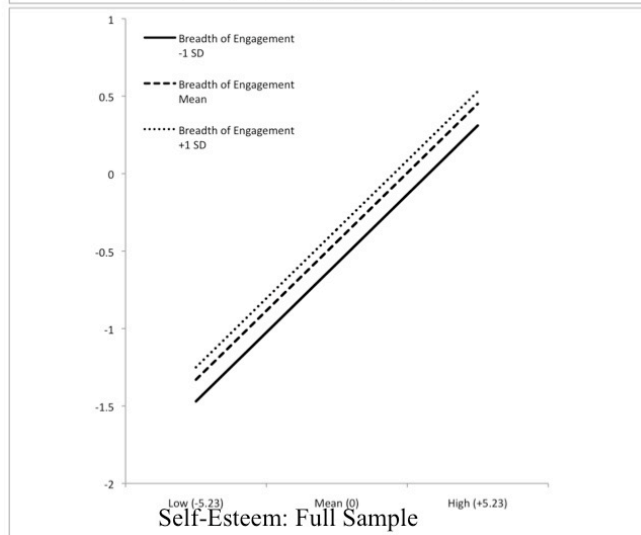
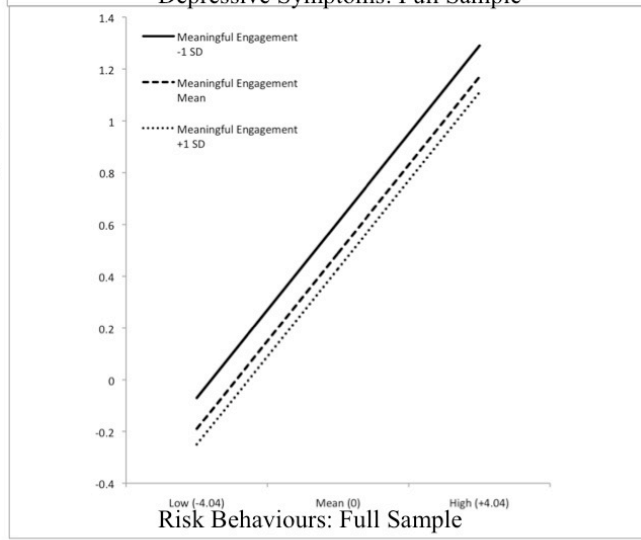
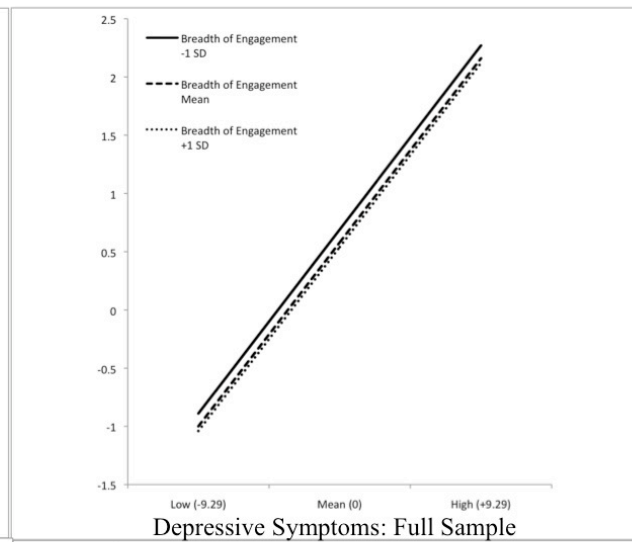
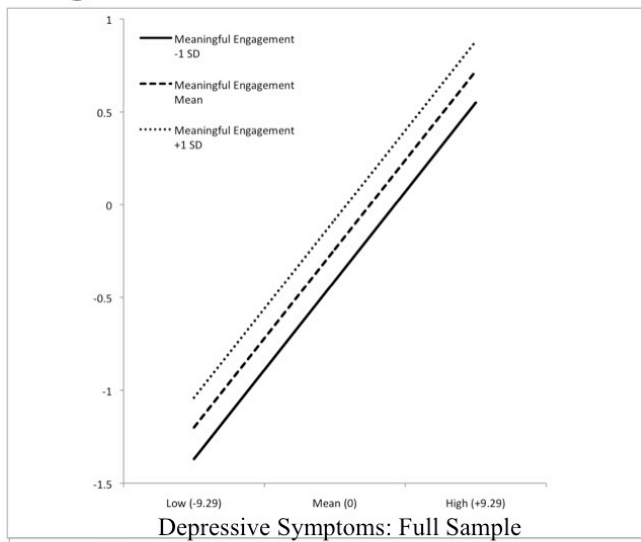


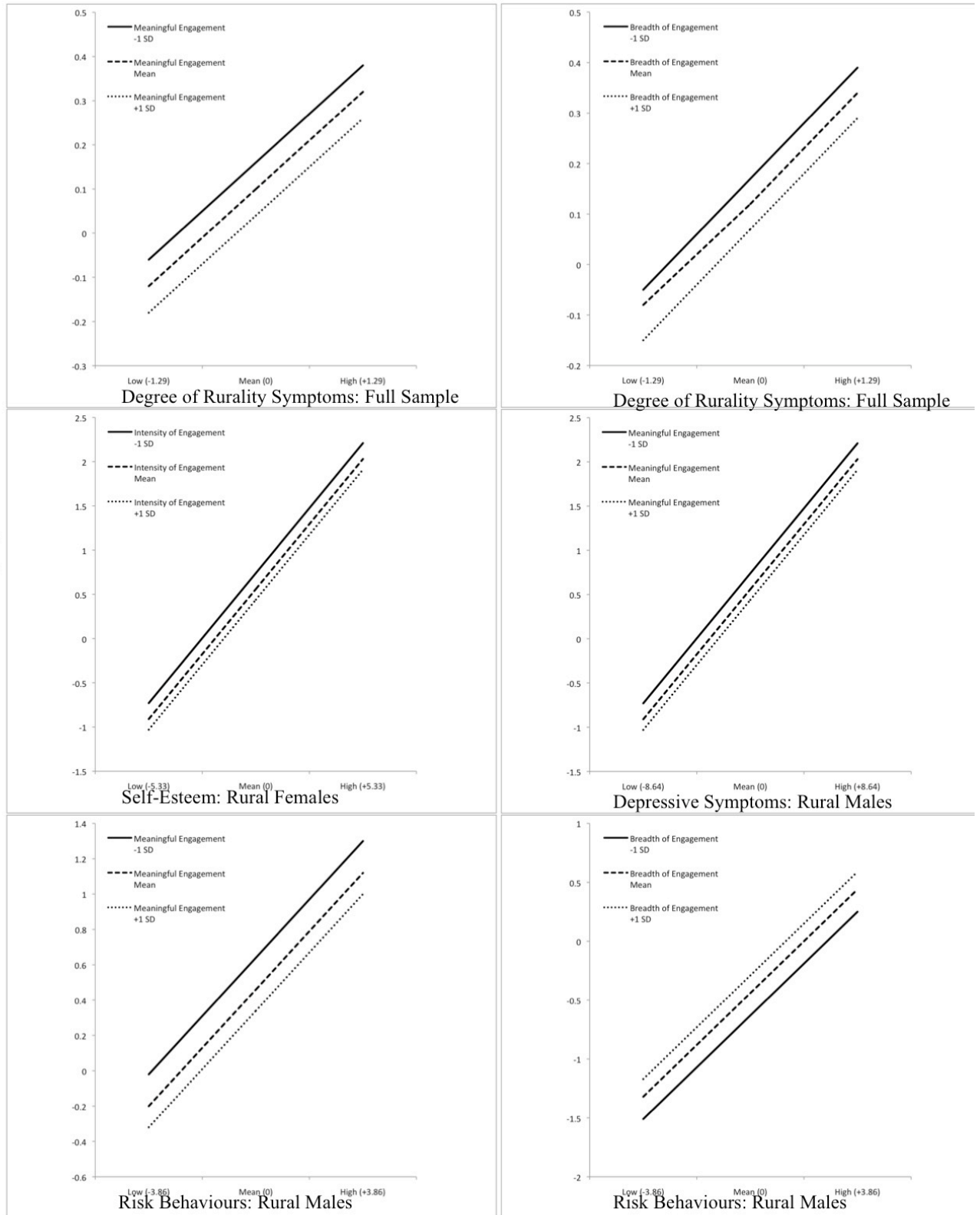
Figure 6. Resiliency-based predictor model for suicidal ideation. Identified best fit model for urban males. Correlations: * $p < .05$, ** $p < .01$.

GRAPHS OF SIMPLE SLOPES ANALYSES

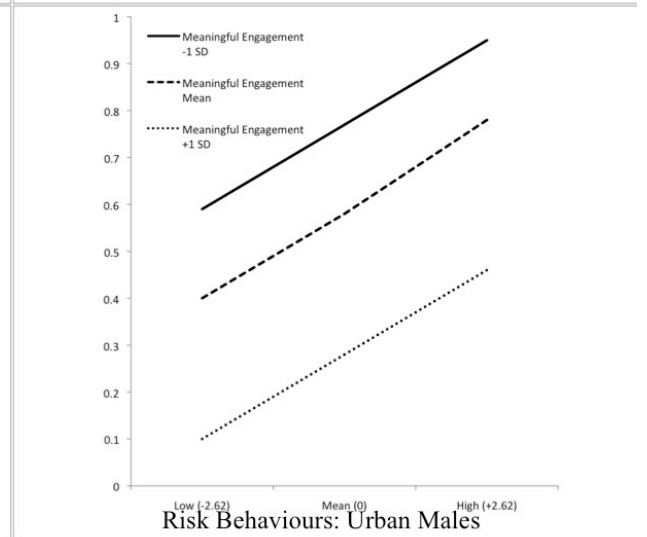
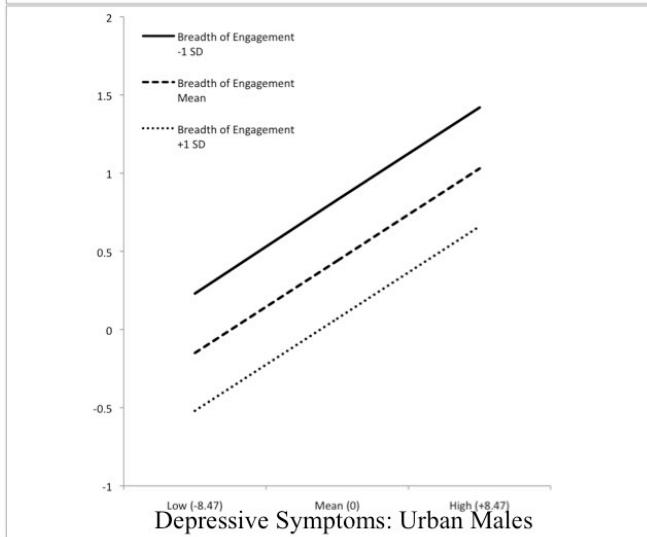
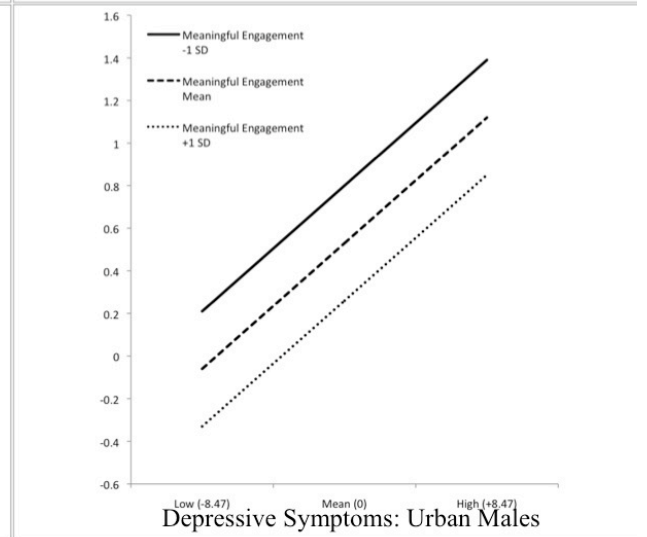
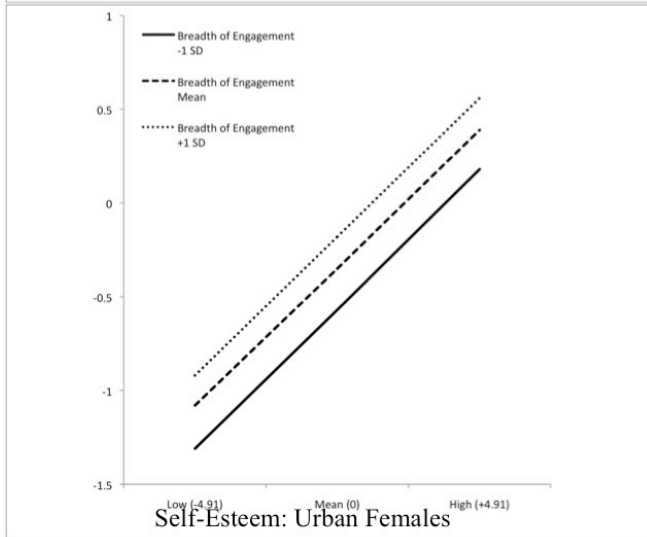
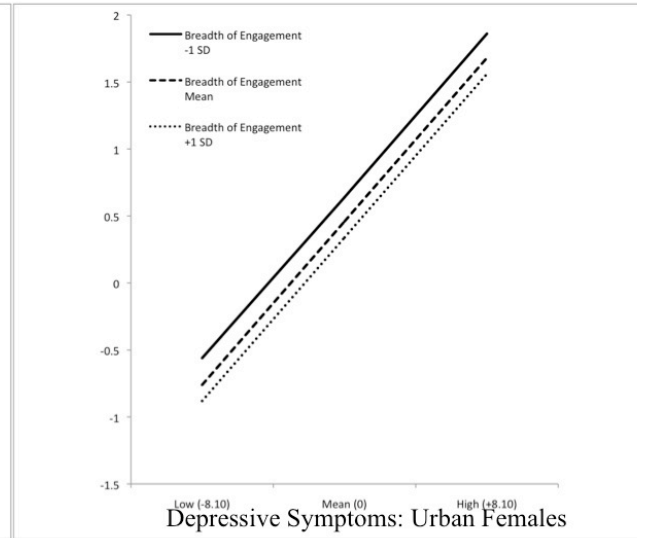
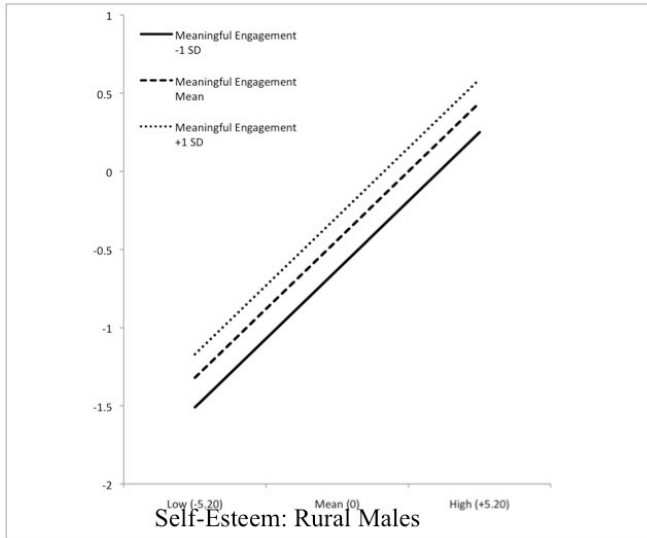
Suicidal Ideation (B)



Suicidal Ideation (B)



Suicidal Ideation (B)



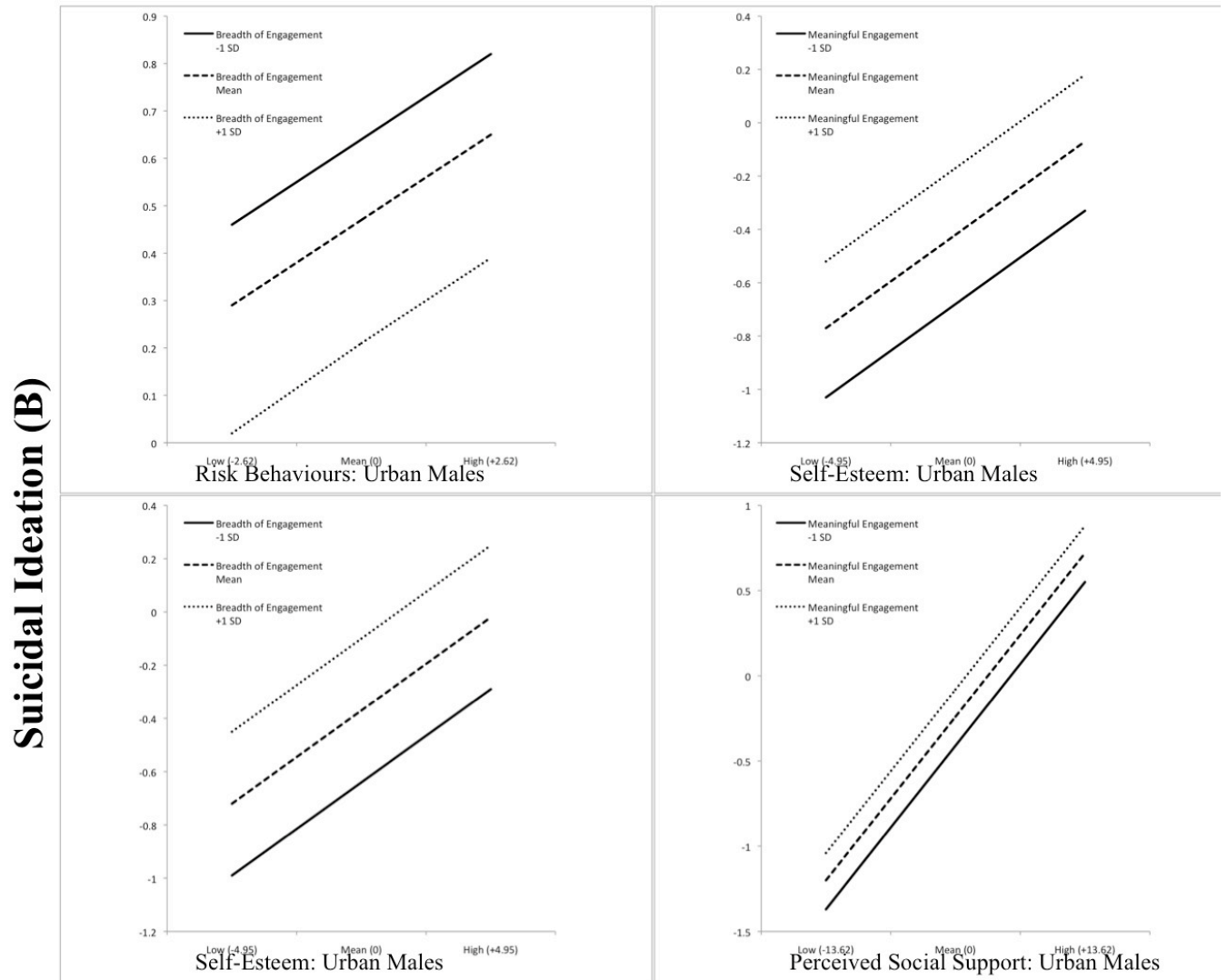


Figure 7. Graphs of simple slopes analyses for significant interactions. Each graph should be interpreted independently of other graphs, as scales differ between graphs in order to show results of each analysis with greater clarity.

APPENDIX A

Questionnaire Booklet

BACKGROUND INFORMATION

Name: _____

Gender: _____

Age: ____

Grade: ____

School name: _____

Home phone number: _____

Emergency contact name: _____ Phone # (if different from above):
_____Please check off the applicable items:Family Income (in your primary home of residence):

\$0-\$20,000 ____

\$21,000-\$40,000 ____

\$41,000-60,000 ____

\$60,000-\$80,000 ____

\$100,000+ ____

Mother's Education:

Completed elementary school ____

Completed some high school ____

Graduated from high school ____

Some college or university education ____

Graduated from college ____

Completed a university bachelor's degree ____

Some graduate work ____

Completed a Master's degree ____

Completed a PhD or an M.D. ____

Father's Education:

- Completed elementary school _____
- Completed some high school _____
- Graduated from high school _____
- Some college or university education _____
- Graduated from college _____
- Completed a university bachelor's degree _____
- Some graduate work _____
- Completed a Master's degree _____
- Completed a PhD or an M.D. _____

Please complete:

1) How would you describe yourself?

- North American Indian _____
- Métis _____
- Inuit _____
- White _____
- Chinese _____
- South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.) _____
- Black _____
- Filipino _____
- Latin American _____
- Southeast Asian (e.g., Vietnamese, Cambodian, Malaysian, Laotian, etc.) _____
- Arab _____
- West Asian (e.g., Iranian, Afghan, etc.) _____
- Korean _____
- Other minority group (describe): _____
- Mixed racial group (describe): _____

Circle the applicable response:

2) How would you describe where you live?

- A. City centre
- B. Suburbs
- C. Town
- D. Rural area, close to a town or city
- E. Rural area, far from a town or city
- F. Remote region, far from most amenities

3) How would you describe your living arrangements in relation to your friends?

- A. I live close to most of my friends
- B. I live far away from most of my friends

4) How would you describe your living arrangements in relation to your parents?

- A. I live with both of my parents
- B. I live with one parent and live close to my other parent
- C. I live with one parent and far away from my other parent
- D. I don't live with my parents, but I live close to them
- E. I don't live with my parents, and I live far away from them
- F. One of my parents is deceased, but I live with the other parent.
- G. One of my parents is deceased, I live with another caregiver.
- H. Both of my parents are deceased, I live with other caregiver(s).

5) How would you describe your living arrangements in relation to your extended family (e.g. grandparents, aunts, uncles)?

- A. I live close to most of my relatives
- B. I live far away from most of my relatives

6) If you were really upset about something, how close are you to someone who you could talk to about your concern (circle one)?

- A. I live with the first person who I would likely to talk to.
- B. I live close to the first person who I would likely to talk to.
- C. I live far from the first person who I would likely to.
- D. I probably wouldn't talk to anyone.

7) If you were having thoughts about suicide, would you talk to a friend or family member about this (circle one)?

Yes / No

8) Briefly describe your school community (i.e. is it rural or urban; do people come from far away; do many people who go to the school live in towns or on farms, a downtown city or suburbs, and whatever other information you feel you'd like to share about your school in the space provided below):

RECENT LIFE EVENTS

1) Please check off if any of these major life events have happened to you in the past 12 months:

- Immigration to Canada _____
- Change of school _____
- Moved into a new house _____
- Death of a parent _____
- Death of a sibling _____
- Death of another close relative _____
- Death of a friend _____
- Loss of a close friendship _____
- Loss of a close relationship _____
- Loss of a cherished pet _____
- Parental separation or divorce _____
- Pregnancy _____
- Serious illness of a close family member _____
- You were diagnosed with a serious physical illness _____
- You were seriously harassed/bullied at school
(describe): _____

You were victimized
(describe): _____

Other major event
(describe): _____

MY EXPERIENCES

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. For each question, circle the appropriate number.

	<u>Never</u>	<u>Almost Never</u>	<u>Sometimes</u>	<u>Fairly Often</u>	<u>Very Often</u>
1. In the last month, how often have you been upset because of something that happened unexpectedly?	1	2	3	4	5
2. In the last month, how often have you felt that you were unable to control the important things in your life?	1	2	3	4	5

3. In the last month, how often have you felt nervous and “stressed”?	1	2	3	4	5
4. In the last month, how often have you dealt successfully with irritating life hassles?	1	2	3	4	5
5. In the last month, how often have you felt that you were effective coping with important changes that were occurring in your life?	1	2	3	4	5
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	1	2	3	4	5
7. In the last month, how often have you felt that things were going your way?	1	2	3	4	5
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	1	2	3	4	5
9. In the last month, how often have you been able to control irritations in your life?	1	2	3	4	5
10. In the last month, how often have you felt that you were on top of things?	1	2	3	4	5
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	1	2	3	4	5
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	1	2	3	4	5
13. In the last month, how often have you been able to control the way you spend your time?	1	2	3	4	5
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	1	2	3	4	5

SELF-ESTEEM

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

	strongly agree	agree	disagree	strongly disagree
1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times I think I am no good at all.	SA	A	D	SD
3. I feel that I have a number of good qualities.	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I certainly feel useless at times.	SA	A	D	SD
7. I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8. I wish I could have more respect for myself.	SA	A	D	SD
9. All in all, I am inclined to feel that I am a failure	SA	A	D	SD
10. I take a positive attitude toward myself.	SA	A	D	SD

Suicidal Ideation Questionnaire & Beck Depression Inventory
(excluded due to copywrite)

INVOLVEMENT IN ACTIVITIES

****Please only include activities in which there is an activity leader (e.g. coach, play director, choir leader, etc.)**

In this questionnaire we ask you to list the extracurricular activities that matter to you and/ or that you spend most of your time doing. Here are some examples of activities that you might include:

- *neighborhood-based activities such as scouts, church youth group, music lessons, or recreational sports teams.*
- *school activities like sports teams, student council, yearbook club, theatre arts, school band*
- *community service like volunteering at an old age home, working at a tutoring centre,*
- *political/ civic involvement/ activism such as joining a protest, circulating a petition, being a member of an environmental group.*

Below are four boxes (labeled Activity 1, 2, 3, and 4). In the "Activity 1" box, briefly describe one of your activities (for example, playing basketball on a school team, playing trumpet in the school band, church youth group). Make sure that these activities are extracurricular – in other words, outside of regular class hours. In the other boxes, please describe up to three other extracurricular activities that you do. If you are not involved in any neighborhood-based, school, community, or political/ civic activities, please leave these spaces blank. If you are only involved in one or two extracurricular activities, you may leave the other activity spaces blank as well.

Activity 1:	
Activity 2:	
Activity 3:	
Activity 4:	

I am involved in more than 4 extracurricular activities: Yes / No (please circle).

If yes, how many more: _____

What are they:

PLEASE ANSWER EACH QUESTION BELOW BY CIRCLING ONE NUMBER FOR EACH QUESTION ...

Not at all	A little bit	So-so	Quite a bit	Totally
0	1	2	3	4

You are involved in an extracurricular activity: (If <u>no</u>, please go on to the SOCIAL SUPPORT QUESTIONNAIRE)	Yes	No
--	------------	-----------

1) How much fun is Activity 1?	0	1	2	3	4
2) How good are you at Activity 1?	0	1	2	3	4
3) How challenging is Activity 1?	0	1	2	3	4
4) How stressful is Activity 1?	0	1	2	3	4
5) How much is Activity 1 an important part of who you are?	0	1	2	3	4
6) How important to society is Activity 1?	0	1	2	3	4
7) How hard would it be for you to give up Activity 1?	0	1	2	3	4
8) How much influence do you have in Activity 1?	0	1	2	3	4

You are involved in a second extracurricular activity: (If <u>no</u>, please go on to the SOCIAL SUPPORT QUESTIONNAIRE)	Yes	No
--	------------	-----------

9) How much fun is Activity 2?	0	1	2	3	4
--------------------------------	---	---	---	---	---

10) How good are you at Activity 2?	0	1	2	3	4
11) How challenging is Activity 2?	0	1	2	3	4
12) How stressful is Activity 2?	0	1	2	3	4
13) How much is Activity 2 an important part of who you are?	0	1	2	3	4
14) How important to society is Activity 2?	0	1	2	3	4
15) How hard would it be for you to give up Activity 2?	0	1	2	3	4
16) How much influence do you have in Activity 2?	0	1	2	3	4

You are involved in a third extracurricular activity: (If <u>no</u>, please go on to the SOCIAL SUPPORT QUESTIONNAIRE)	Yes	No
---	------------	-----------

17) How much fun is Activity 3?	0	1	2	3	4
18) How good are you at Activity 3?	0	1	2	3	4
19) How challenging is Activity 3?	0	1	2	3	4
20) How stressful is Activity 3?	0	1	2	3	4
21) How much is Activity 3 an important part of who you are?	0	1	2	3	4
22) How important to society is Activity 3?	0	1	2	3	4
23) How hard would it be for you to give up Activity 3?	0	1	2	3	4
24) How much influence do you have in Activity 3?	0	1	2	3	4

You are involved in a fourth extracurricular activity:	Yes	No
---	------------	-----------

(If <u>no</u> , please go on to the SOCIAL SUPPORT QUESTIONNAIRE)		
---	--	--

25) How much fun is Activity 4?	0	1	2	3	4
26) How good are you at Activity 4?	0	1	2	3	4
27) How challenging is Activity 4?	0	1	2	3	4
28) How stressful is Activity 4?	0	1	2	3	4
29) How much is Activity 4 an important part of who you are?	0	1	2	3	4
30) How important to society is Activity 4?	0	1	2	3	4
31) How hard would it be for you to give up Activity 4?	0	1	2	3	4
32) How much influence do you have in Activity 4?	0	1	2	3	4

SOCIAL SUPPORT QUESTIONNAIRE

The following questions ask about people who provide you with help or support. Each question has 2 parts. For the first part (a), list all the people you know, excluding yourself, whom you can count on for help or support in the manner described (0-9 people). Give the persons' initials and their relationship to you.

For the second part (b), circle how satisfied you are with the overall support you have.

If you had no support for a question, check the words "no one", but still rate your level of satisfaction. Do not list more than nine people per question.

Example (for part 'a'):

Who do you know who you can trust with information that could get you in trouble?

- No one. 1. T.N. (Mom) 4. J.J. (friend) 7. B.B. (minister)
 2. J.N. (Dad) 5. L.N. (sister) 8.
 3. P.T. (friend) 6. P.T. (teacher) 9.

1)a) Who can you really count on to be dependable when you need help?

No one.

1. 4. 7.
 2. 5. 8.
 3. 6. 9.

1)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

2)a) Who can you really count on to help you feel more relaxed when you are under pressure or tense?

No one.

1. 4. 7.
 2. 5. 8.
 3. 6. 9.

2)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

3)a) Who accepts you totally, including both your worst and best points?

No one.

- | | | |
|----|----|----|
| 1. | 4. | 7. |
| 2. | 5. | 8. |
| 3. | 6. | 9. |

3)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

4)a) Who can you really count on to care about you, regardless of what is happening to you?

No one.

- | | | |
|----|----|----|
| 1. | 4. | 7. |
| 2. | 5. | 8. |
| 3. | 6. | 9. |

4)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

5)a) Who can you really count on to help you feel better when you are feeling generally “down in the dumps”?

No one.

- | | | |
|----|----|----|
| 1. | 4. | 7. |
| 2. | 5. | 8. |
| 3. | 6. | 9. |

5)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

6)a) Who can you count on to console you when you are very upset?

No one.

- | | | |
|----|----|----|
| 1. | 4. | 7. |
| 2. | 5. | 8. |
| 3. | 6. | 9. |

6)b) How satisfied are you with this support (circle one)?

Very satisfied ☺	Fairly satisfied	A little satisfied	A little dissatisfied	Fairly dissatisfied	Very dissatisfied ☹
1	2	3	4	5	6

CHECKLIST OF RISK BEHAVIOURS FOR YOUTH

Please circle the response that corresponds to your behaviour
WITHIN THE PAST 30 DAYS:

1) Have you tried smoking, even one or two puffs?	Yes	No
2) Have you smoked cigarettes daily?	Yes	No
3) Have you had a drink of alcohol underage with peers (not including a few sips of wine for religious purposes)?	Yes	No
4) Have you tried marijuana (otherwise known as grass or pot)?	Yes	No
5) Have you tried "hard drugs" like cocaine ('powder', 'crack', 'freebase'), heroin ('smack', 'junk', 'China White'), methamphetamines ('speed', 'crystal crank', 'ice'), or ecstasy ('E', 'MDMA')?	Yes	No
6) Have you sniffed glue, breathed in the contents of aerosol cans, or inhaled paints or sprays to get high?	Yes	No
7) Have you had unprotected sexual intercourse (vaginal or anal) without using a method (e.g. condom) to prevent sexually transmitted infections or diseases?	Yes	No
8) Have you gone without eating for 24 hours or more (also called fasting) to lose weight or keep from gaining weight?	Yes	No
9) Have you made your self throw up, or have you taken laxatives to lose weight or keep from gaining weight?	Yes	No
10) Have you thought about killing yourself?	Yes	No
11) Have you thought about how you would kill yourself?	Yes	No

ACTIVITY INVOLVEMENT – PART 2

Look back at “INVOLVEMENT IN ACTIVITIES” questionnaire at the 0, 1, 2, 3, or 4 activities that you described in the table. For those activities, please answer the following questions. If you were not involved in any extracurricular activities, then you are finished this booklet – thank you for your time.

1) How often do you do **Activity 1**?

a) In the fall:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

b) In the winter:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

c) In the spring:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

d) In the summer:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

2) I have been doing Activity 1:

- _____ 5 years or more
- _____ 2 to 4 years
- _____ around 1 year
- _____ 6 to 12 months
- _____ 3 to 6 months
- _____ less than 3 months

3) I do Activity 1 (check all that apply):

- in school
- at home
- in the community (church, parks, halls, malls)
- some other place (where?)

4) I do Activity 1 with (check all that apply):

- close friends
- brothers/sisters
- parents
- teachers
- by myself
- coach / leader
- other people my own age
- team / group
- other (who?)

5) Why did you start Activity 1 (check all that apply):

- I had to (required)
- I wanted to (voluntary)
- it was my idea
- it was someone else's idea
- my friends were doing it
- my family was doing it
- I was interested in it
- other (why?)

6) You are doing Activity 1 in order to (check all that apply and put an X beside the most important reason):

- get experience for college/resume
- personal satisfaction
- meet new people
- change society
- learn new skills
- follow my interests
- get acknowledged by others
- feel better about myself
- have some fun
- be with my friends
- make money
- be true to my values
- other reason?

If you are *not* involved in a second extracurricular activity, then you have completed this booklet. Otherwise, please answer the questions below:

7) How often do you do **Activity 2**?

- a) In the fall:
- 1 = several times a week
 - 2 = several times a month
 - 3 = about once a month
 - 4 = once every couple of months
 - 5 = a few times a year
 - 6 = never

- b) In the winter:
- 1 = several times a week
 - 2 = several times a month
 - 3 = about once a month
 - 4 = once every couple of months
 - 5 = a few times a year
 - 6 = never

- c) In the spring:
- 1 = several times a week
 - 2 = several times a month
 - 3 = about once a month
 - 4 = once every couple of months
 - 5 = a few times a year
 - 6 = never

- d) In the summer:
- 1 = several times a week
 - 2 = several times a month
 - 3 = about once a month
 - 4 = once every couple of months
 - 5 = a few times a year
 - 6 = never

8) I have been doing Activity 2:

- 5 years or more
- 2 to 4 years
- around 1 year
- 6 to 12 months
- 3 to 6 months
- less than 3 months

9) I do Activity 2 (check all that apply):

- in school
- at home
- in the community (church, parks, halls, malls)
- some other place (where?)

10) I do Activity 2 with (check all that apply):

- close friends
- brothers/sisters
- parents
- teachers
- by myself
- coach / leader
- other people my own age
- team / group
- other (who?)

11) Why did you start Activity 2 (check all that apply):

- I had to (required)
- I wanted to (voluntary)
- it was my idea
- it was someone else's idea
- my friends were doing it
- my family was doing it
- I was interested in it
- other (why?)

12) You are doing Activity 2 in order to (check all that apply and put an X beside the most important reason):

- get experience for college/resume
- personal satisfaction
- meet new people
- change society
- learn new skills
- follow my interests
- get acknowledged by others
- feel better about myself
- have some fun
- be with my friends
- make money
- be true to my values
- other reason?

If you are not involved in a third extracurricular activity, then you have completed this booklet. Otherwise, please answer the questions below:

13) How often do you do **Activity 3**?

a) In the fall:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

b) In the winter:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

c) In the spring:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

d) In the summer:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

14) I have been doing Activity 3:

- ___ 5 years or more
- ___ 2 to 4 years
- ___ around 1 year
- ___ 6 to 12 months
- ___ 3 to 6 months
- ___ less than 3 months

15) I do Activity 3 (check all that apply):

- ___ in school
- ___ at home
- ___ in the community (church, parks, halls, malls)
- ___ some other place (where?)

16) I do Activity 3 with (check all that apply):

- ___ close friends
- ___ brothers/sisters
- ___ parents
- ___ teachers
- ___ by myself
- ___ coach / leader
- ___ other people my own age

- team / group
- other (who?)

17) Why did you start Activity 3 (check all that apply):

- I had to (required)
- I wanted to (voluntary)
- it was my idea
- it was someone else's idea
- my friends were doing it
- my family was doing it
- I was interested in it
- other (why?)

18) You are doing Activity 3 in order to (check all that apply and put an X beside the most important reason):

- get experience for college/resume
- personal satisfaction
- meet new people
- change society
- learn new skills
- follow my interests
- get acknowledged by others
- feel better about myself
- have some fun
- be with my friends
- make money
- be true to my values
- other reason?

If you are *not* involved in a fourth extracurricular activity, then you have completed this booklet. Otherwise, please answer the questions below.

19) How often do you do **Activity 4**?

a) In the fall:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months
- 5 = a few times a year
- 6 = never

b) In the winter:

- 1 = several times a week
- 2 = several times a month
- 3 = about once a month
- 4 = once every couple of months

5 = a few times a year

6 = never

c) In the spring:

1 = several times a week

2 = several times a month

3 = about once a month

4 = once every couple of months

5 = a few times a year

6 = never

d) In the summer:

1 = several times a week

2 = several times a month

3 = about once a month

4 = once every couple of months

5 = a few times a year

6 = never

20) I have been doing Activity 4:

___ 5 years or more

___ 2 to 4 years

___ around 1 year

___ 6 to 12 months

___ 3 to 6 months

___ less than 3 months

21) I do Activity 4 (check all that apply):

___ in school

___ at home

___ in the community (church, parks, halls, malls)

___ some other place (where?)

22) I do Activity 4 with (check all that apply):

___ close friends

___ brothers/sisters

___ parents

___ teachers

___ by myself

___ coach / leader

___ other people my own age

___ team / group

___ other (who?)

23) Why did you start Activity 4 (check all that apply):

- I had to (required)
- I wanted to (voluntary)
- it was my idea
- it was someone else's idea
- my friends were doing it
- my family was doing it
- I was interested in it
- other (why?)

24) You are doing Activity 4 in order to (check all that apply and put an X beside the most important reason):

- get experience for college/resume
- personal satisfaction
- meet new people
- change society
- learn new skills
- follow my interests
- get acknowledged by others
- feel better about myself
- have some fun
- be with my friends
- make money
- be true to my values
- other reason?

APPENDIX B

Running head: DEVELOPMENT AND VALIDATION

Development and Validation of the
Checklist of Risk Behaviours for Youth (CORBY)

Laura Lynne Armstrong

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Abstract

The purpose of this study was to develop and begin to validate a brief self-report measure, the Checklist of Risk Behaviours for Youth (CORBY). This measure was designed to assess multiple youth risk behaviours over a 30-day period. In Study 1, an 11-item version of the CORBY was developed, feedback from youth was sought, and internal consistency and convergent validity were assessed in rural and urban secondary school samples. In Study 2, a revised 15-item version of the CORBY was examined within a sample participating in a school- and community-based mental health promotion program.

Development and Validation of the Checklist of Risk Behaviours for Youth (CORBY)

Risk behaviours contribute to leading causes of death, diminished health, educational and social problems, and reduced quality of life among youth and adults (Centers for Disease Control and Prevention [CDC], 2005a; Resnick et al., 1997). Often, risk behaviours are established in adolescence and form lasting patterns of behaviour (CDC, 2005a; Wolfe, Crooks, Chiodo, Hughes & Jaffe, 2005). However, critical health-damaging risk behaviours, such as substance use and unsafe sexual behaviours, are preventable and healthy life trajectories can be facilitated (Wolfe et al., 2005). Despite the need to examine risk behaviours for the purposes of prevention, intervention, or the development of further solutions to this major public health problem, self-report measures of risk behaviours remain a fairly contentious issue in clinical research (Riesch, 2006; Tigges, 2003).

It has become increasingly difficult to access youth samples for sensitive risk behaviour research or to have a participation rate higher than 30% to 60% when active parental consent is involved (Riesch, 2006; Tigges, 2003). Sensitive questions seen in risk behaviour surveys, which may limit site or individual-level participation, include items assessing current suicidal ideation and behaviours, damaging use of illegal substances, or sexual behaviour before the age of legality, which may require detailed follow-ups by trained professionals (Riesch, 2006; e.g., the Youth Risk Behavior Surveillance Survey [YRBSS], Grunbaum et al., 2004). Often, youth at greatest risk, academically and behaviourally, are those who are least likely to participate due to absenteeism or the requirement of active parental consent (Tigges, 2003). Given the unavoidable issue of sensitive questions in risk behaviour surveys, it is important to address other potential barriers to research involving measures of adolescent risk-taking.

Surveys of multiple youth risk behaviours for middle and high school students tend to be quite long, taking at least a full class period to complete (e.g., the YRBSS; Adolescent Health

Survey [AHS], McCreary Centre Society, 2003). It seems logical that very long surveys would tend to render research studies comparing multiple risk behaviour engagement to other potentially associated variables difficult at best, particularly if a risk behaviour factor is only a small part of a larger research question. As a result of the challenges associated with surveys of multiple risk behaviours (e.g., survey length) very few researchers have examined this topic recently (Riesch, 2006). The chasm in the scientific literature is further widened by the lack of psychometric validation regarding the most widely used, longer surveys of multiple risk behaviours, such as the YRBSS and the AHS. Validation of the multiple risk behaviour surveys as a whole has not occurred. The purpose of most of these measures is generally not to examine multiple risk behaviours but, rather, to obtain percentages of youth partaking in each type of risk behaviour (e.g., Galambos & Tilton-Weaver, 1998). Furthermore, researchers often “cherry pick” a small sampling of items from the longer, non-validated risk behaviour surveys, or a variety of surveys, to examine multiple risk behaviours in a given study, without justification for item selection or psychometric examination (e.g. Riesch, 2006; Weitzman, Guttmacher, Weinberg, & Kapadia, 2003). Valid and reliable risk behaviour surveys are generally limited to the assessment of a single behaviour (Moore, Gullone, & Kostanski, 1997), such as smoking or condom use (e.g. Hine, Honan, Marks, & Brettschneider, 2007; St. Lawrence et al., 1999). However, it appears that risk behaviours, including both minor and major risks, share many common elements (Moore et al., 1997). In fact, researchers have found high intercorrelations among a variety of risk behaviours and classes of risk behaviour (Manion & Wilson, 1995). Thus, an examination of multiple associated risk behaviours may be warranted.

The tremendous gap and limitations in youth risk behaviour research regarding measures of multiple risk behaviours, including length and the lack of psychometric validation, suggest the need to develop and validate alternative measures of multiple youth risk behaviours.

In this article, the initial development and validation of a new instrument, the Checklist of Risk Behaviours for Youth (CORBY) is described. This brief measure seeks to overcome many of the shortcomings of its longer predecessors in order to be more readily useable for researchers. Specifically, the CORBY is designed to be a brief measure examining several risk behaviours. Thus, researchers will be able to use the CORBY in studies where youth risk behaviour is not the only variable of interest, as the CORBY is concise, taking little time to complete. This measure, therefore, overcomes time-related problems associated with the standard, very long measures. Moreover, researchers will not have to rely on the use of several brief measures of risk behaviour that assess the variety of risk behaviours assessed by the CORBY.

Literature-Based Framework for the Development of the CORBY

Youth risk behaviour can be defined as the participation of young people in actions which involve potential negative consequences balanced by perceived positive consequences (Gullone & Moore, 2000). For example, although cigarette, alcohol, and drug use may have negative health-related consequences, these behaviours may have perceived positive social consequences (Gullone & Moore, 2000). Despite perceived positive consequences by youth who engage in risk behaviours, these actions pose a significant threat to both individual well-being and community health (Riesch, 2006). However, not all risk behaviours pose the same level of threat to youth. Not only do we need to understand the association between risk behaviours and health outcomes, we also need to understand the association between risk behaviours themselves.

Previous research using multiple narrowly-focused risk behaviour measures have found that youth risk behaviours of high school students such as gambling, heavy drinking, drug and other substance use, unsafe sex, violent behaviour, smoking, and disordered eating tend to cluster together (Engwall, Hunter, & Steinberg, 2004; Johnson, Powers, & Dick, 1999; Keller,

Maddock, Laforge, Velicer, & Basler, 2007; LaBrie, Shaffer, & LaPlante, 2003; Wechsler et al., 1997). Other researchers have also found that alcohol use, cigarette use, drug use, and risky sexual practices are associated (Moore et al., 1997; Smith & Rosenthal, 1995). Furthermore, suicidal thoughts, with an aim to carry out a harm-inducing behaviour, are also significantly related to smoking, drug use, and alcohol use (Manion & Wilson, 1995). Additionally, minor risks which may cause minimal harm (e.g., having tried one cigarette) also tend to be associated with, or predictive of, graduation to major risks which may result in death (Moore et al., 1997; Smith & Rosenthal, 1995). Overall, suicidal behaviour, substance use, physical fighting or other violent behaviour, as well as risky sexual and eating behaviours are all associated with impulsivity, experimentation, and mental health concerns, and thus are highly related behaviours (Galambos & Tilton-Weaver, 1998; Manion & Wilson, 1995; Moore et al., 1997; Smith & Rosenthal, 1995). Generally large national, provincial, or state-wide studies of risk behaviour tend to include such issues as suicidal thoughts and behaviours, tobacco, alcohol, inhalant and other drug use, physical fighting and violent behaviour, as well as risky sexual practices and eating behaviours (Galambos & Tilton-Weaver; Grunbaum et al., 2004; McCreary Centre Society, 2003). Therefore, based on the existing research regarding associations between risk behaviours, and risk behaviours that larger measures include, seemingly appropriate risk domains or classes to include in a measure of multiple *associated* risk behaviours appear to be those related to impulsivity, experimentation, and mental health concerns. All of these risk domains actively contribute to leading causes of death, diminished health and well-being in youth (Statistics Canada, 2004).

Measuring the range of risk behaviours that youth engage in appears to be important, as multiple risk behaviour engagement is a key determinant of poor health and well-being outcomes (Koven, McColl, Ellis, & Pickett, 2005). Multiple or often lengthy measures of risk

behaviour have been used to demonstrate such effects. Specifically, researchers using multiple measures of risk behaviours or longer measures suggest that individuals who engage in multiple risk behaviours are of particular concern, as they are more likely to experience immediate and longer-term health problems (e.g., Galambos & Tilton-Weaver, 1998). Researchers have found that increasing numbers of risk behaviour types, more so than frequency of any one type, by high school students predicts a greater likelihood of experiencing mental health concerns, such as depression (Paxton, 2007). For younger and older youth, multiple high-risk behaviour engagement is also positively associated with absenteeism, poor grade point averages, and reduced life success (Dryfoos, 1997; Greenberg et al., 2003). Additionally, research has also found that multiple youth risk behaviour engagement is associated with low self-esteem (Conor, Poyrazli, Ferrer-Wreder, & Grahame, 2004; Erickson, Patterson, Wall, & Neumark-Sztainer, 2005; Steele, Corsini, & Wade, 2007). Participation in certain risk behaviours, however, is more detrimental to mental health, academic performance, and low self-esteem than participation in other less health-harming, though still risky, behaviours. Specifically, based on a synthesis of research literature describing the impact of the risk behaviours related to impulsivity and mental health concerns on overall health and well-being (Boyce, Doherty, MacKinnon, & Fortin, 2003; CDC, 2002; CDC, 2005b; Compton, Goulding, & Walker, 2007; DeVoe et al., 2006; Dunn, Bartee, & Perko, 2003; Emans, 2000; Galambos & Tilton-Weaver, 1998; McKay, 2004; Newmark-Sztainer & Hannon, 2000; Paulozzi & Anest, 2007; Ridenour, Bray, & Cottler, 2007; Windle, 1999), the current article proposes that three levels of risk are relevant in the measurement of youth risk behaviours: *Level One* risk behaviours, which are risky behaviours least likely to lead to negative health and well-being outcomes; *Level Two* risk behaviours, which are risky behaviours more likely to lead to negative health and well-being outcomes; and *Level Three* risk behaviours, which are risky behaviours most likely to lead to negative health and well-

being outcomes.

Level One Risk Behaviours

There are certain widespread risk behaviours – such as having a drink of alcohol underage, trying smoking, trying marijuana, partaking in unprotected oral sex, and engaging in a physical fight without a weapon – that may have a negative impact on health and well-being (Boyce et al., 2003; CDC, 2005b; DeVoe et al., 2005; Dunn, Bartee, & Perko, 2003; Windle, 1999). However, these behaviours are less likely to pose a longer term or immanent health risk than more serious risk behaviours (Boyce et al., 2003; CDC, 2005b; DeVoe et al., 2005; Dunn, et al., 2003; McKay, 2004; Windle, 1999). These behaviours are, nevertheless, predictive of a trajectory involving engagement in more serious risk behaviours, and they may still result in an immanent risk to health, particularly if associated with other activities, such as driving, or a biological potential for mental health concerns (e.g., schizophrenia) that enhances the level of risk (Borowsky & Ireland, 2004; CDC, 2005b; Compton, Goulding, & Walker, 2007; Johnson, Kalaw, Lovato, Baillie, & Chambers, 2004; Pickett et al., 2005; Sosin, Koepsell, Rivara, & Mercy, 1995).

Research suggests that approximately 35% to 70% of Canadian and American middle and high school youth indicate such behaviours as occurring within the past 30 days to 12 months (CDC, 2005b; Flynn & van Dyke, 2006). Thus, potentially, a certain degree of risk-taking may be normative. As a relevant aside, risk behaviour research does not present a clear justification for the selection of a prevalence time frame, or clearly describe the short-term stability or transience of many youth risk behaviours. Furthermore, research often includes both a 30-day and 12-month time frame simultaneously within a single survey, varying by item, without a description as to why such time frames were selected (e.g., YRBSS; Galambos & Tilton-Weaver, 1998). A review of the risk behaviour literature using PsychInfo, Medline, and

Scholars Portal generally suggests that 30-day or 12-month time frames are selected most frequently in risk behaviour research. That which is described in the literature with regard to the stability of risk behaviours described here is that, if present in early high school or late elementary school, these behaviours may progress to more serious risk behaviours, described below, in later high school years (Moore et al., 1997; Smith & Rosenthal, 1995). Test-retest reliability studies have generally only been carried out over a two week period with 30-day to 12 month prevalence measures and an adequate degree of stability has been found over two weeks (e.g., YRBSS, Kappa of 62.6%, Zullig, Pun, Patton, & Ubbes, 2006).

Level Two Risk Behaviours

Certain risk behaviours, such as binge drinking, smoking daily, unprotected vaginal or anal intercourse, and fasting behaviour for diet purposes, and suicidal thoughts are slightly less common than the behaviours just discussed, but they are still highly prevalent (CDC, 2002; CDC, 2005b; Galambos & Tilton-Weaver, 1998). Approximately 13% to 40% of Canadian and American middle and high school youth endorse such behaviours as having occurred within the past 30 days to 12 months (CDC, 2005b; Galambos & Tilton-Weaver, 1998). These behaviours may or may not immanently result in death or health crises in the short term (CDC, 2002; CDC, 2005b; Galambos & Tilton-Weaver, 1998; Newmark-Sztainer & Hannon, 2000). However, there is the direct potential for these behaviours to cause longer-term health problems (CDC, 2005b; Galambos & Tilton-Weaver, 1998; DeVoe et al., 2005; Dunn, Bartee, & Perko, 2003; Newmark-Sztainer & Hannon, 2000; Windle, 1999). For example, cigarette smoking is one of the leading causes of preventable deaths, as it can cause heart disease, stroke, respiratory illness, and cancers (CDC, 2002). Furthermore, cigarette smokers are also significantly more likely than non-smokers to attempt suicide, drink alcohol, abuse other substances, and engage in physical fights (Everett, Marlarcher, Sharp, Husten & Giovino, 2000; Substance Abuse and Mental Health

Services Administration, 2005). With regard to another Level Two risk behaviour, binge drinking – involving the consumption of five or more alcoholic drinks on a single occasion (Galambos & Tilton-Weaver, 1998) – this behaviour is associated with serious outcomes, such as motor vehicle crash fatalities, which is a leading cause of death for young people (DeVoe et al., 2005; Dunn, Bartee, & Perko, 2003; Statistics Canada, 2004; Windle, 1999). Furthermore, early alcohol consumption may be an early warning sign of the potential for more damaging youth risk behaviours, such as drug use and suicide attempts, or longer term health problems associated with alcohol (Galambos & Tilton-Weaver, 1998; Silver, 1985). Another Level Two behaviour, unprotected intercourse, can result in sexually transmitted infections, unwanted pregnancy, or terminal viruses such as HIV/AIDS, all of which adversely affect health and well-being. Fasting behaviour for weight-control purposes can lead to adverse physical and psychological outcomes, or death over the long term (Newmark-Sztainer & Hannon, 2000). An additional Level Two concern, suicidal thoughts, can lead to a suicidal plan, which in turn can lead to suicide attempts or completed suicide (Kessler, Borges, & Walters, 1999). Thus, engagement in these risk behaviours, or contemplated engagement in the case of suicidal thoughts, is a serious concern.

Level Three Risk Behaviours

There are certain risk behaviours engaged in by a small but significant number of youth – such as purging or laxative use for weight control, inhalant/solvent use, hard drug use, engaging in physical fighting with a weapon, and suicide attempts – which may cause physical harm, hospitalization, or death in the short term (Emans, 2000; Paulozzi & Annett, 2007; Ridenour, Bray, & Cottler, 2007). Specifically, engaging in behaviours such as throwing up or laxative use can result in dehydration, electrolyte imbalance, and seizures in the short-term, and more serious health consequences or death with ongoing engagement in these behaviours

(Emans, 2000). Furthermore, as a class of drugs, inhalant, solvent, or glue sniffing can result in many serious illnesses and death (Ridenour, Bray, & Cottler, 2007). Illicit drug use, such as the use of cocaine, heroine, methamphetamines, or ecstasy, is associated with substantial numbers of deaths related to disease and injury as a function of drug use (Paulozzi & Annett, 2007).

Moreover, physical fighting with a weapon increases the likelihood of fatality in a conflict (Cook & Ludwig, 2002). With regard to suicide attempts, the best predictor of completed suicides is a previous suicide attempt, thus attempts are significant predictors of death (Hallfors et al., 2004).

All of these risk behaviours are a significant health concern because of their high potential for imminent health concerns or death. Approximately 5% to 10% of Canadian and American youth indicate that these behaviours have occurred within the past 30 days to 12 months (CDC, 2005b; Flynn & van Dyke, 2006).

Overall Summary

Three broad conclusions can be drawn from the risk behaviour literature. Firstly, there is no currently existing validated measure of multiple youth risk behaviours whereby the purpose is strictly to examine youth risk as a function of the total number of risk behaviours in which a young person is currently engaged. Secondly, when examining multiple youth risks collectively, there is no measure which scores risk behaviours based on severity in order to differentiate youth engaging in multiple higher risk behaviours from those engaging in multiple lower risk behaviours. Therefore, there is a strong need for a measure that is sensitive to these types of levels. Thirdly, no *brief*, validated measure of multiple risk behaviour domains exists which could be used in research studies whereby the purpose is to examine risk behaviour engagement among several other variables. As a function of these limitations in the youth risk behaviour literature, the CORBY was developed.

Study 1: Assessment of Convergent Validity & Internal Consistency Reliability in Rural and

Urban High Schools

The original CORBY was a paper-and-pencil measure consisting of 11 items designed for youth in grades 9 to 12. Each item measured risk behaviour over a 30-day period, a prevalence time frame consistent with the body of literature on risk behaviour measures. A 30-day prevalence was selected over a 12-month prevalence in order to gain an understanding of current risk behaviour participation, which could be a target for intervention. Items on the original CORBY can be found in Appendix 1.

For Study 1, it was predicted that, if the CORBY is a valid measure of risk behaviours associated with mental health and well-being concerns, that it will positively associated with measures of depressive symptoms and inversely related to a measure of self-esteem. Cronbach's internal consistency reliability was also assessed.

Methodology

Participants. The research sample consisted of 813 ($n = 416$ females; $n = 390$ males; $n = 7$ gender unspecified) students attending two rural and three urban secondary schools ($n = 459$ rural; $n = 354$ urban) in Eastern Ontario from spring 2005 to spring 2007. As part of a larger research study (Armstrong & Manion, 2007), a random sample of classes from each school were invited to participate. The mean participation rate from each classroom was approximately 50%. The mean age of participants was 16.15 years (range = 13 to 19, $SD = 1.19$). Of the 237 students who reported their ethnic classification, 83% described themselves to be Caucasian, 4% Black, 2% Aboriginal, 4% Asian, and the remainder claimed to be of other or mixed descents.

Procedure. Ethical consent for carrying out the larger research project was obtained from the Children's Hospital of Eastern Ontario (CHEO) Research Ethics Board. Youth who returned the consent forms for participation, as well as those who returned parental consent forms in the case of students under the age of 18, took part in this study during months of May

and June in the years of study. Questionnaires were administered by individuals from Youth Net at the Children's Hospital of Eastern Ontario who have been trained in LivingWorks ASIST suicide intervention. Follow-up was conducted with youth at risk and appropriate on-call clinical back-up was accessed as required. Students were not compensated for participating in this project.

Measures

CORBY. The CORBY items were designed to reflect the risk behaviour domains associated with impulsivity and mental health concerns, within Level One, Level Two, and Level Three risk categories, as proposed in the present article. Item wording generally reflects certain items included on the Youth Risk Behaviour Surveillance System (YRBSS; Grunbaum et al., 2004), as the wording of the YRBSS questions has been found to be adequate for middle and high school youth (CDC, 2005b). To assess item wording of the CORBY specifically, however, an initial meeting was carried out with 13 youth who volunteered to participate in early spring 2004. Youth of English-speaking, urban and rural backgrounds ranged in age from 13 to 16; grades 8 to 11. Youth were asked whether they had any trouble understanding the wording of specific items. Youth did not report any difficulties with regard to item wording and they thought that the survey was inclusive concerning the most important risk behaviours they saw their peers exhibit. The youth also unanimously indicated that they were comfortable answering the risk behaviour survey for research purposes, and that the items "are not too sensitive at all" for such purposes. Therefore, as a result of youth feedback, particularly on wording, no initial modifications to the survey were made. The CORBY was also assessed by Microsoft Word Readability Statistics to be at a middle school reading level.

Items on the 11-item CORBY are not arranged in any specific order of severity, but there is some clustering of similar item sub-domains. Each of the items on the CORBY

corresponds to “No” (the individual has not engaged in a particular risk behaviour over the past 30 days) or “Yes” (the individual has engaged in a particular risk behaviour over the past 30 days). A “Yes/No” format was selected to reflect the literature suggesting that the more types of risk behaviours one is engaged in the more one is at risk of various negative developmental concerns, such as depression and low self-esteem. With regard to frequency, as previously stated, there is no consistent frequency scale in the literature for multiple risk behaviours, as well as no literature to suggest what frequencies may be appropriate for selection (e.g., is heavy drinking 20 or more days in a month more harmful than 15 days?). Furthermore, when questions on one or multiple measures in the literature address frequency, items are most often dichotomized for scoring to remove frequency for the calculation of percentages or odds ratios across items, as indicated previously. Given this, the CORBY was not designed to address the frequency of engagement in risk behaviours. Instead it was designed based on the literature reflecting the health-risk severity of certain behaviours as well as research suggesting that the more risk behaviours one is engaged in, the greater the likelihood for serious potential outcomes.

Concerning the scoring of the 11-item CORBY, “No” responses are scored as “0.” “Yes” responses for items reflecting Level One risk behaviours (items 1, 3, and 4) are scored as “1,” “Yes” responses for Level Two risk items (items 2, 7, 8, and 10) are scored as “2,” and “Yes” responses for items reflecting Level Three risk behaviours (items 5, 6, 9 and 11) are scored as “3.” The maximum possible score on the 11-item CORBY is, thus, 23. This score would suggest that the examinee endorsed each item as having occurred over the past 30 days. The lowest possible score is zero, which indicates that none of the risk behaviours indicated by the items have occurred in the past 30 days.

Depressive Symptoms. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure that assesses a two-week prevalence of behavioural,

cognitive and affective depressive symptoms in adolescents and adults, 13 to 80 years old. Items are scored on a scale ranging from 0 (not experiencing the symptom) to 3 (complete endorsement of the symptom). The coefficient alpha reliability of this measure is .92 (Beck et al., 1996). Research has shown that this measure demonstrates convergent validity for youth in its correlations with measures of low self-esteem and suicidality (Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004).

Self-esteem. Low self-esteem, or general feelings about oneself as a person, is related to multiple risk behaviour engagement, as previously described. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989) measures general feelings about oneself as a person on a 4-point scale, 1 = Strongly Disagree to 4 = Strongly Agree. The 10-item Rosenberg Self-Esteem Scale is appropriate for use with youth, as the original normative sample consisted of school-aged youth. Furthermore, the internal consistency reliability and test-retest reliability with school-aged youth are both as high as .88 (Rosenberg, 1989). The RSES has demonstrated convergent validity with other measures of global self-worth and self-esteem (Hagborg, 1993; Robins, Hendin, Trzesniewski, 2001). Moreover, given that the Rosenberg is a brief measure for rapid administration purposes and it measures general feelings about oneself as a person, it will be appropriate for the purpose of assessing convergent validity with the CORBY in the present study.

Results & Discussion

Statistics were carried out using SPSS 15.0 Graduate Package. All assumptions for statistical calculations were met.

With regard to convergent validity, total scores on the CORBY were found to be significantly associated with depressive symptom scores on the BDI-II ($r = .51, p < .0001$). Furthermore, total CORBY scores were also found to be significantly inversely related to scores

on the Rosenberg Self-Esteem Scale ($r = -.42, p < .0001$). Thus, the CORBY appears to demonstrate a high degree of convergent validity with depression and self-esteem scores.

Item response endorsement was calculated by gender. Most items on the 11-item CORBY were endorsed by 5% or more respondents and, overall, matched the risk behaviour statistics previously described from existing research (e.g., CDC, 2005b; Galambos & Tilton-Weaver, 1998). More detailed information regarding item endorsement and descriptive statistics can be found in Table 1.

Internal consistency reliability of the original CORBY was found to be adequate, based on Hunsley and Mash criteria (2008), at .76 (.77 for females; .74 for males). Although .76 is an adequate internal consistency reliability, it was determined that the addition of further items could make the CORBY more internally consistent (Sax, 1997). Therefore, the CORBY was revised.

Study 2: Assessment of Convergent Validity & Internal Consistency Reliability in a Community-Based Sample

On the 11-item CORBY, items from each domain of risk are not equally balanced (e.g., there are two questions regarding cigarette smoking and only one question each on alcohol consumption and risky sexual behaviour). Furthermore, not all of the Level One, Level Two, and Level Three risk behaviours previously discussed were included, such as physical fighting, fighting with a weapon, attempted suicide, unprotected oral sex, and binge drinking. Thus, the original 11-item measure is not completely representative of all related risk behaviours associated with impulsivity or mental health concerns. Therefore, for the purpose of Study 2, five items were added to the survey from the Level One, Level Two, and Level Three health risk behaviour categories to reflect missing content and to balance domains (item wording will be based on the YRBSS and Galambos & Tilton-Weaver, 1998 questions): Have you drunk more

than 5 drinks in a row, that is, within a couple of hours? (“Yes” = 2); Have you had unprotected oral sex without using a method (e.g. condom) to prevent sexually transmitted infections or diseases? (“Yes” = 1); Have you tried to kill yourself? (“Yes” = 3); Have you been in a physical fight? (“Yes” = 1); Have you been in a physical fight with a weapon? (“Yes” = 3). The item on the original CORBY regarding a suicide plan was replaced by the added attempted suicide item, to be more representative of Level Three risk behaviours. There are, thus, two items representing each type of risk behaviour, except for inhalant/solvent use, which does not appear to have a corresponding precursory behaviour. However, this item was considered to be important for inclusion, particularly for a measure to be used in Canada, as there are communities at high risk because of this behaviour in particular, such as Sheshatshiu, a community in the province of Labrador and Newfoundland (CBC, 2004). “No” responses for the 15-item version are scored as “0.” “Yes” responses are scored as follows: Items 1, 3, and 5, 8, and 14 are scored as “1,” Items 2, 4, 9, 10, and 12 are scored as “2,” and items 6, 7 11, 13, and 15 are scored as “3.” Thus, scores range from 0 to 30. The 15-item CORBY can be found in Appendix 2.

To assess whether the 15-item CORBY appears to be a valid and internally consistent measure for youth ages 12 to 19, a second study was conducted. It was predicted that, similar to the first study, if the CORBY is a valid measure of risk behaviours associated with mental health and well-being concerns, that it will positively associated with measures of depressive symptoms and inversely related to a measure of self-esteem. It was also expected that internal consistency reliability would be enhanced by the addition of items to the CORBY.

Method

Participants. This second study of the CORBY was conducted as part of a larger quality assurance program evaluation of mental health promotion services at Youth Net/Réseau Ado, a

community-based mental health promotion service in Ottawa. The sampling frame of participants consisted of all youth participating in group activities that Youth Net offers, such as yoga, hiking, depression-prevention activity groups, as well as painting and writing groups. Youth primarily were referred to these activities by mental health professionals (50%), such as social workers, or were parent (25%) or self-referred (18%) through viewing posters in schools or community centres.

The research sample consisted of 73 youth ($n = 49$ females; $n = 24$ males; $n = 7$ gender unspecified), ranging in age from 12 to 19 years ($M = 15.38$, $SD = 1.75$). Of the 72 youth who reported their ethnic classification, 71% described themselves to be White, 7% Aboriginal or Inuit, 6% Chinese, 3% Latin American, 1% Black, 1% other minority group, and 11% of mixed ethnic descent. In addition to youth in schools, special populations of youth referred or self-selected to Youth Net activities included those receiving mental health services (40%), current street youth (8%), those in the GLBTQ community (18%), and youth living in foster or group homes (7%). Given these factors, the sample selected included a slightly higher risk sample for mental health concerns or risk behaviour engagement than a general population sample. Thus, this sample was more of a “clinical” sample than a general population sample. Data was collected between January and April 2008.

Procedure. The CORBY and other measures for the present research were administered by Youth Net staff trained in suicide, and other, risk assessment prior to participating in the first session of group activities. Young people took part in this research if written consent forms were signed for participation. Youth were connected to appropriate clinical resources, as necessary. Moreover, youth were not compensated for participating in this project.

Measures. The CORBY, BDI-II, and Rosenberg Self-Esteem Scale, described previously, were administered as part of the program evaluation. Only measures for the pre-test evaluation

were included in the following results, so that only the questionnaires, rather than program effects, were assessed.

Results & Discussion

As previously stated, statistics were carried out using SPSS 15.0 Graduate Package. All assumptions for statistical calculations were met.

As expected, total scores on the CORBY were found to be significantly associated with depressive symptom scores on the BDI-II ($r = .55, p < .0001$). Furthermore, total CORBY scores were also found to be significantly related scores on the Rosenberg Self-Esteem Scale in the expected direction ($r = -.40, p = .003$). Thus, similar to the 11-item CORBY, the 15-item CORBY appears to demonstrate a high degree of convergent validity with depression and self-esteem scores in a fairly “clinical” community sample.

Item response endorsement was calculated by gender. Most items on the 15-item CORBY were endorsed by 5% or more respondents. Certain items related to mental health (e.g., suicidality) were more elevated in the clinical sample than the school-based sample.

Internal consistency reliability of the original CORBY was found to be good, based on Hunsley and Mash criteria (2008), at .86 (.88 for females; .83 for males).

In summary, these early results support the reliability and validity of the CORBY for use with samples of youth between the ages of 12 and 19. However, the majority of the sample in Study 2 was older than 13 years of age. Furthermore, the 15-item version of the CORBY was not examined with strictly a school-based population, and schools are a strategic venue in which many risk-prevention programs are carried out. Further research should be carried out in these areas. Despite this caveat, no additional modifications to the CORBY were made, as the 15-item version appears to be a good fit with health risk engagement domains.

General Discussion

The present research is the first to describe the development and validation of a brief youth risk behaviour survey addressing multiple risk behaviours, examined across both degree and domain of health risk. Furthermore, early validation suggests that the 15-item CORBY is a psychometrically sound measure that can be rapidly administered at little cost. Strengths of the present examination included the use of youth perspectives to develop a “youth friendly” measure for research and program evaluation, as well as a strong grounding in research to aid in the CORBY development. Furthermore, the CORBY was tested in both schools and a community-based clinical mental health setting, where its use may be relevant.

Limitations should be considered when interpreting the findings of this research. One such limitation is that the majority of participants were White. However, the school sample reflected the ethnic distribution in the local regions and the mental health promotion centre sample corresponded to those typically being served by their program. However, further psychometric research should be carried out in more diverse settings with a variety of language and ethnic groups. Currently, an examination of the French version of the CORBY is underway in Northern Ontario rural and urban schools.

In addition to diversity issues, findings of the present study are also limited by the sole reliance on youth self-report. However, it may be difficult for multiple informants, such as parents, peers, or teachers to accurately report about youth risk (e.g., sexual risks, suicidal ideation, etc.). Thus, self-report appears to be relevant in the case of risk behaviour.

Future research should examine test-retest reliability and clinical utility (sensitivity to change) for program evaluation outcome investigations. This research is also currently in progress within a middle school sample in Northern Ontario and early findings are promising. The present studies, thus, represent the first two in a series of planned research to evaluate the

validity and usefulness of the CORBY.

In conclusion, the present studies provide adequate support for the psychometric properties of the CORBY, both within a school setting and within a more clinically-oriented environment. More specifically, the 15-item CORBY in particular demonstrated good internal consistency reliability. Further, both versions of the CORBY exhibited convergent validity with related mental health and well-being concerns in the samples examined. A replication of the present findings with different samples, as well as further validation and reliability explorations, will serve to strength these results. With further validation, evidence of utility, and research using this measure, the CORBY may soon serve as a useful risk assessment tool for the purposes of prevention, intervention, or the development of group-targeted solutions to this major public health problem.

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Table 1

CORBY Item Response Endorsement – Studies 1 & 2

<i>Risk Type</i>	<i>Gender</i>	<i>% Engaged in Behaviour (Study 1) High School Sample – 11 items</i>		<i>% Engaged in Behaviour (Study 2) Clinical Sample – 15 items</i>	
Tried Smoking	Female	43.5		43.8	
	Male	41.1		37.5	
Smoked Cigarettes Daily	Female	20.4		27.1	
	Male	13.7		20.8	
Drink of Alcohol Underage	Female	71.3		60.4	
	Male	67.6		41.7	
Binge Drinking	Female	N/A		33.3	
	Male			39.1	
Tried Marijuana	Female	38.2		39.6	
	Male	35.8		41.7	
Tried Hard Drugs	Female	8.4		10.4	
	Male	6.3		29.2	
Glue, Aerosol, Paint	Female	4.6		10.4	
	Male	3.0		12.5	
Unprotected Oral Sex	Female	N/A		27.1	
	Male			29.2	
Unprotected Sex	Female	16.5		18.8	
	Male	13.3		29.2	
Fasting	Female	18.5		29.2	
	Male	6.5		8.3	
Purging, Laxatives	Female	7.7		22.9	
	Male	1.2		0	
Suicidal Thoughts	Female	18.3		58.3	
	Male	10.5		25.0	
Suicide Plan	Female	6.7		N/A	
	Male	5.1			
Suicide Attempt	Female	N/A		23.4	
	Male			8.3	
Physical Fight	Female	N/A		45.8	
	Male			54.2	
Physical Fight with Weapon	Female	N/A		6.3	
	Male			25.0	
Total Score		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	Female	4.05	4.44	7.62	7.31
Male	2.86	3.34	6.96	6.27	

Appendix 1

Checklist of Risk Behaviours for Youth (Original Version)

Please circle the response that corresponds to your behaviour

WITHIN THE PAST 30 DAYS:

1) Have you tried smoking, even one or two puffs?	Yes	No
2) Have you smoked cigarettes daily?	Yes	No
3) Have you had a drink of alcohol underage with peers (not including a few sips of wine for religious purposes)?	Yes	No
4) Have you tried marijuana (otherwise known as grass or pot)?	Yes	No
5) Have you tried "hard drugs" like cocaine ('powder', 'crack', 'freebase'), heroin ('smack', 'junk', 'China White'), methamphetamines ('speed', 'crystal crank', 'ice'), or ecstasy ('E', 'MDMA')?	Yes	No
6) Have you sniffed glue, breathed in the contents of aerosol cans, or inhaled paints or sprays to get high?	Yes	No
7) Have you had unprotected sexual intercourse (vaginal or anal) without using a method (e.g. condom) to prevent sexually transmitted infections or diseases?	Yes	No
8) Have you gone without eating for 24 hours or more (also called fasting) to lose weight or keep from gaining weight?	Yes	No
9) Have you made your self throw up, or have you taken laxatives to lose weight or keep from gaining weight?	Yes	No
10) Have you thought about killing yourself?	Yes	No
11) Have you thought about how you would kill yourself?	Yes	No

Appendix 2

Checklist of Risk Behaviours for Youth (15-Item Version)

Please circle the response that corresponds to your behaviour

WITHIN THE PAST 30 DAYS:

1) Have you tried smoking, even one or two puffs?	Yes	No
2) Have you smoked cigarettes daily?	Yes	No
3) Have you had a drink of alcohol underage with peers (not including a few sips of wine for religious purposes)?	Yes	No
4) Have you drunk more than 5 drinks in a row, that is, within a couple of hours?	Yes	No
5) Have you tried marijuana (otherwise known as grass or pot)?	Yes	No
6) Have you tried “hard drugs” like cocaine (‘powder’, ‘crack’, ‘freebase’), heroin (‘smack’, ‘junk’, ‘China White’), methamphetamines (‘speed’, ‘crystal crank’, ‘ice’), or ecstasy (‘E’, ‘MDMA’)?	Yes	No
7) Have you sniffed glue, breathed in the contents of aerosol cans, or inhaled paints or sprays to get high?	Yes	No
8) Have you had unprotected oral sex without using a method (e.g. condom) to prevent sexually transmitted infections or diseases?	Yes	No
9) Have you had unprotected sexual intercourse (vaginal or anal) without using a method (e.g. condom) to prevent sexually transmitted infections or diseases?	Yes	No
10) Have you gone without eating for 24 hours or more (also called fasting) to lose weight or keep from gaining weight?	Yes	No
11) Have you made your self throw up, or have you taken laxatives to lose weight or keep from gaining weight?	Yes	No
12) Have you thought about killing yourself?	Yes	No
13) Have you tried to kill yourself?	Yes	No

14) Have you been in a physical fight?	Yes	No
15) Have you been in a physical fight with a weapon?	Yes	No

APPENDIX C

Responses from Ethical Review Boards

Laura,

We have reviewed the documentation that was requested by the Ottawa-Carleton Research Advisory Committee and I am pleased to inform you that you have been given approval to proceed with this project. I have attached copies of the consent forms and have indicated any changes in red. Please review them and let me know if they are agreeable to you. Also, I have attached a copy of the "summary for schools" and I have changed the title to match the one on the consent forms --- this title seems more positive.

I would like to remind you that you will not be able to contact schools before the next school year. In addition, although you have been given approval by OCRAC, final approval to participate must come from the principals of the schools.

I wish you all the best in your research and look forward to receiving a copy of the report when it is ready.

Regards,
Yasmin

Yasmin Sankar Khan
Research Officer, Quality Assurance
Ottawa-Carleton District School Board



Children's Hospital of Eastern Ontario
Centre hospitalier pour enfants de l'est de l'Ontario

file
05/12E

CHEO Research Ethics Board Approval Notice

Principal Investigator:	Ms. Laura Armstrong/Dr. Ian Manion
Proposal Number:	#05/12E
Protocol Title:	Protective Attributes of Youth Engagement in Rural & Urban Suicidality
Department or PSU:	Mental Health Centre of Excellence
Approval date:	April 5, 2005
Approval valid until:	April 4, 2006
Documents reviewed and approved:	REB Protocol (March 31, 2005), Consent Form (March 31, 2005); Health Canada Letter of Non-objection (Not applicable)

This is to notify you that the Children's Hospital of Eastern Ontario Research Ethics Board has granted full board approval to the above named research study for a period of one year. In fulfilling its mandate, the REB is guided by the Tri-Council Policy Statement, Health Canada Division 5 of the Food and Drug Regulations, the ICH Good Clinical Practice Practices: Consolidated Guidelines; as well as the applicable laws and regulations of Ontario. The REB approval is valid until the date referenced above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information. The protocol was approved at a meeting of the REB in which the quorum rules were met and only those REB members who are independent of the investigator(s) conducting the study voted on the final decision.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the REB except when necessary to eliminate immediate hazards to the subject. Investigators must also promptly report to the REB all adverse events that are both serious and unexpected and any new information regarding the safety of research subjects. If these changes/adverse events require a change to the information /consent document, and/or recruitment advertisement, the newly revised information/consent document, and/or advertisement, must be submitted to the office for approval. The primary investigator must produce an annual report that includes a summary of serious adverse events, any study amendments, and subject recruitment. A final report is also required at the conclusion of the trial. Finally, the primary investigator must notify the REB if one of the investigators leaves the institution or the project, and if the contractual agreement between the Sponsor and the principal investigator changes in any way.

The REB requirement for bilingual consent forms was waived in view of the fact that they will only be recruiting participants from English schools.

Wishing you success in your project.

Requested notification by University of Ottawa REB of Ethical Approval:

From/De: Dr. Ian Manion

Date: December 1st, 2008

Re: Ethics Approval

Pages: 4 (this page included)

Mr. Lalonde,

Please find attached the CHEO Research Ethics Board Approval Notice as well as ethical approval from the Research Office of the Ottawa-Carleton District School Board for the Project "**Protective Attributes of Youth Engagement in Rural & Urban Suicidality**". The project was original proposed and approved in 2005 with renewal of the approval in 2006. Data collection finished in 2007.

Please confirm receipt of this material at the e-mail address below and let me know if you require any additional information.

Letter to School Principals



**Youth Involvement in Extracurricular Activities in
Relation to Positive Mental Health**

Research contact:

Laura Lynne Armstrong or

Dr. Ian G. Manion, C.Psych.

What is this research all about:

Youth engagement in structured extracurricular activities will be examined as it relates directly to the prediction of lower rates of suicidal thoughts and behaviours. Further, specific pathways by which youth engagement may operate to prevent suicidal behaviour – through self-esteem, depressive symptom management, social support, and less participation in risk behaviours – will be assessed by gender and urban/rural dwelling. Understanding how protective factors, such as meaningful engagement, can differ by gender and geographic region will have direct relevance to school-based suicide prevention efforts for both young men and women within high-risk communities, as well as in urban settings.

Strategies to be used at the school for collecting research information:

A survey booklet will be given to participating students.

Amount of time needed at the school to complete this research:

The survey sessions are 45 minutes long. Therefore, 45 minutes is required per grade.

Preferred week/month to start:

April/May

Approximate finish date in school:

Two study days are required, so that there are only two grades participating per day, thus providing ample follow-up time for students at risk for suicide. All research assistants are trained in the ASIST suicide intervention protocol.

Additional comments:

At all times, there will be a clinician on-call for students at acute risk for suicide. Only 1% of seriously suicidal youth ever report their thoughts to a professional, many suicidal youth report these thoughts to no one – not even to peers (Youth Net, 2001). However, given the opportunity to report this in a survey, approximately 20% of youth in general report serious suicidal ideation (Youth Net, 2001; pilot results from the present study confirm this finding). Therefore, in addition to aiding in the development of future school-based primary prevention strategies, this study reaches out to suicidal students who would otherwise not have sought out assistance.

Youth Involvement in Extracurricular Activities in Relation to Positive Mental Health**Informed Consent Form for Youth**Purpose of the Study

Dr. Ian Manion from the Provincial Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario (CHEO) and Laura Armstrong, Doctoral Student in Clinical Psychology at the University of Ottawa, are carrying out a research study looking at youth participation in meaningful extracurricular activities. This research will examine youth involvement as a way of promoting good mental health and preventing suicidal behaviour. To date, no research has examined youth involvement in extracurricular activities as a means of suicide prevention. The present study will examine this issue. Key implications of this research involve gaining insight into the outcomes of youth involvement and its mechanisms within diverse settings in Canada. By studying youth involvement in relation to suicidality, this may encourage communities to set up programs for young people to lower the high youth suicide rate.

More specifically, the purpose of the present study is to examine youth involvement in activities and the ways in which it relates to a decreased risk of suicide. Things that may lead young people to participate in activities and stay involved in those activities will also be studied. Youth involvement in structured activities has been found to be related to lower levels of depression, lower involvement in risk behaviours, and higher self-esteem. It also tends to promote a meaningful connection with other individuals, as well as sense of belonging. In the development of suicidality, high levels of depression, risk behaviours, low self-esteem, and social isolation have been well documented as key contributing factors. Therefore, depression, risk

behaviour involvement, self-esteem, and social support will be examined as factors that may operate in the relationship between youth engagement and self-reported suicidality.

Procedure

If you agree to participate, a graduate student in psychology from the University of Ottawa will ask you to fill out 8 pencil-and-paper questionnaires about your involvement in extracurricular activities and risk factors associated with suicide. Specifically, these questionnaires will include measures of youth involvement, depression, risk behaviour involvement, self-esteem, social support, suicidal thoughts and behaviours, and a demographic questionnaire. The brief questionnaire discussing risk behaviours will include questions about substance use, eating behaviours, and sexuality. If you feel uncomfortable answering some of these personal questions, then you may refrain from doing so. The questionnaires will be filled out during school hours, at a time agreed upon by your principal and involved teachers. Participation in this project will take approximately 30-45 minutes of your time. Questionnaires will be filled out at the same time as other participating students in your class, but you are asked not to discuss your answers with your peers. A trained researcher will be present at all times to assure privacy and confidentiality and desks will be arranged so that answers cannot be shared.

Rights of Participants

If you decide to participate, you would be free to withdraw from the study at any time. You are also free, if you choose, to refrain from answering questions. Your participation in the study is fully voluntary. The information that you provide will help us greatly in our understanding of youth involvement in relation to positive mental health. All information collected from you will remain completely confidential and will be stored in a locked filing cabinet in the research

institute at CHEO. Your answers will remain confidential and will be used for research purposes only. Information collected in this study will be analysed as grouped data. Your questionnaires will be number-coded and your name will not appear in any publication.

Limits of Confidentiality and Benefits of Participation

You may find some of the questions to be personal and these may be upsetting if you are experiencing, for example, feelings of suicidality. If there are serious concerns about your safety or well-being, we can trace responses back to you. In the event that we receive any disclosure of physical or sexual abuse, or if we have any concerns about serious suicide risk for any participant, this will be disclosed to the clinician on-call (Dr. Ian Manion). Thus, participation in this study may be beneficial especially for at-risk youth who are in need of assistance.

Further, a list of resources in your town will also be provided to you if you would like assistance for depression, substance abuse, suicidal thoughts, or other concerns that you may have. If you wish and if you are involved with another health care professional (psychiatrist, physician, psychologist), the information that you write during this study may be shared with him/her provided that you later sign another consent form for the release of information.

Contact Information

This research proposal has been reviewed and approved by the Ottawa-Carleton Research Advisory Committee, and the principal of your school has agreed to distribute information requesting participation for this project. Also, this proposal has been approved by the Research Ethics Board at CHEO, which includes individuals from scientific and non-scientific backgrounds, who review research studies. Their goal is to ensure the protection of the rights and welfare of people involved in research. You may contact the Chair of the CHEO Research

Ethics Committee for information regarding participants' rights in research studies at XXXX, ext. XXXX. If you have any other concerns or questions, they can be directed to Dr. Ian Manion at XXXX, ext. XXXX. A summary of the results of this research will be available to you at your request.

Signed Consent

Participants under the age of 18 are also required to have the parental consent form signed.

However, this form does not need to be signed for individuals 18 years of age and older. If you agree to participate in this study, please sign below:

Participant's Signature

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Protection of Privacy Act.

Name of **Student** (please print): _____

Signature of Student: _____ Date: _____

Name of **Witness** (please print): _____

Signature of Witness: _____ Date: _____

Informed Consent Form for Parents

Purpose of the Study

Dr. Ian Manion from the Provincial Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario (CHEO) and Laura Armstrong, Doctoral Student in Clinical Psychology at the University of Ottawa, are carrying out a research study looking at youth participation in meaningful extracurricular activities. This research will examine youth involvement as a way of promoting good mental health and preventing suicidal behaviour. To date, no research has examined youth involvement in extracurricular activities as a means of suicide prevention. The present study will examine this issue. Key implications of this research involve gaining insight into the outcomes of youth involvement and its mechanisms within diverse settings in Canada. By studying youth involvement in relation to suicidality, this may encourage communities to set up programs for youth to lower the high youth suicide rate.

More specifically, the purpose of the present study is to examine youth involvement in activities and the ways in which it relates to a decreased risk of suicide. Things that may lead young people to participate in activities and stay involved in those activities will also be studied. Youth involvement in structured activities has been found to be related to lower levels of depression, lower involvement in risk behaviours, and higher self-esteem. It also tends to promote a meaningful connection with other individuals, as well as sense of belonging. In the development of suicidality, high levels of depression, risk behaviours, low self-esteem, and social isolation have been well documented as key contributing factors. Therefore, depression, risk behaviour involvement, self-esteem, and social support will be examined as factors that may operate in the relationship between youth engagement and self-reported suicidality.

Procedure

If you agree to let your son/daughter participate, a graduate student in psychology from the University of Ottawa will ask him/her to fill out 8 pencil-and-paper questionnaires about his/her involvement in extracurricular activities and risk factors associated with suicide. Specifically, these questionnaires will include measures of youth engagement, depression, risk behaviour involvement, self-esteem, social support, suicidal thoughts and behaviours, and a demographic questionnaire. The brief questionnaire discussing risk behaviours will include questions about substance use, eating behaviours, and sexuality. If your son/daughter feels uncomfortable answering some of these personal questions, then he/she may refrain from doing so. The questionnaires will be filled out during school hours, at a time agreed upon by the principal at your child's school and involved teachers. Participation in this project will take approximately 30-45 minutes of your son/daughter's time. Questionnaires will be filled out at the same time as other participating students in your child's class, but your son/daughter will be asked not to discuss answers with peers. A trained researcher will be present at all times to assure privacy and confidentiality and desks will be arranged so that answers cannot be shared.

Rights of Participants

If you decide to let your son/daughter participate, he/she will be free to withdraw from the study at any time. In addition, he/she is free to refuse to answer any question on the questionnaires. Participation in the study is fully voluntary. The information that your child provides will help greatly in our understanding of youth involvement in relation to positive mental health. All information collected from your child will remain completely confidential and will be stored in a locked filing cabinet in the research institute at CHEO. Information

collected in this study will be analysed as grouped data. Questionnaires will be number-coded. Therefore, names will not appear in any publication. Answers will remain confidential and will be used for research purposes only.

Limits of Confidentiality and Benefits of Participation

If there are serious concerns about the safety or well-being of your son/daughter, we can trace responses back to participants. In the event that we receive any disclosure of physical or sexual abuse, or if we have any concerns about serious suicide risk for any participant, this will be disclosed to the clinician on-call (Dr. Ian Manion). Thus, participation in this study may be beneficial especially for at-risk youth who are in need of assistance. Further, a list of resources in your town will also be provided to your son/daughter if he/she would like assistance for depression, substance abuse, suicidal thoughts, or other concerns that you may have. If your child wishes and if he/she is involved with another health care professional (psychiatrist, physician, psychologist), this information may be shared with the professional provided that you and your child sign a consent form for the release of information.

Contact Information

This research proposal has been reviewed and approved by the Ottawa-Carleton Research Advisory Committee, and the principal of your son's/daughter's school has agreed to distribute information requesting participation for this project. Also, this proposal has been approved by the Research Ethics Board at CHEO, which includes individuals from scientific and non-scientific backgrounds, who review research studies. Their goal is to ensure the protection of the rights and welfare of people involved in research. You may contact the Chair of the CHEO Research Ethics Committee for information regarding participants' rights in research studies at

XXXX, ext. XXXX. If you have any other concerns or questions, they can be directed to Dr. Ian Manion at XXXX, ext. XXXX. A summary of the results of this research will be available to you at your request.

Signed Consent

Individuals under the age of 18 are required to have the parental consent form signed in order to participate. However, this form does not need to be signed for individuals 18 years of age and older. If you agree to let your son/daughter participate in this study, please sign below:

Parent's Signature

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Protection of Privacy Act.

I have read and understood the request for my son/daughter to participate in this study.

_____ I give permission for my son/daughter to participate.

_____ I do NOT give permission for my son/daughter to participate.

Name of **Student**: _____

Name of **Parent/Guardian** (please print):

Signature of Parent/Guardian: _____ Date: _____

Name of **Witness** (please print): _____

Signature of Witness: _____ Date: _____

APPENDIX D

Safety Protocol

Suicide/Crisis Protocol

Suicide is usually a taboo subject that doesn't get talked about, especially among adults. For some background information about youth suicide, see Appendix C. The information provided includes some definitions of suicidal behaviour, Canada-wide statistics on suicide rates in young people compared to other age groups and some common myths about suicide.

Youth Net/Réseau Ado facilitators have found that, on average, there are one to two youth in each focus group who have thought about killing themselves recently or in the past. This doesn't mean that all of these people must be immediately rushed to the hospital...but it does mean that they are at risk. By sharing their thoughts about suicide, they are asking for support.

Your role as facilitator is: (1) to assess the level of the crisis by considering factors that put the person at risk for suicide; (2) to consider what resources they have in place to protect them; and, (3) to provide support through the crisis. By considering these factors, you will be able to make a plan with the person to ensure their safety.

Where someone has communicated they are currently suicidal (possibly by having developed a plan) you will call the clinical back-up person for support in making a plan of

action. Your role as facilitator and the role of the clinical back-up person are outlined in the table below.

Role of Facilitator	Role of Clinical Back-up
---------------------	--------------------------

Identify youth at risk for suicide

- YN/RA Screening Questions
- Comments by youth during discussion

Assess Crisis

- One-to-one follow-up
- Risk Assessment: Current Plan

Pain

Resources

+Prior Behaviour

+Mental Health

Plan for Crisis Resolution

On Call during Focus Group

If current suicidal ideation and intent

DO NOT LEAVE THEM ALONE!!!

Arrange for:

- Psychological and/or environmental support
- A lifeline

- Follow-up referral

Document where assessment required

Identify Youth at Risk for Suicide

Youth Net/Réseau Ado has developed a protocol to assist facilitators with deciding when and how to follow-up with youth at risk for suicide. The protocol sets out four different levels of risk, what actions should be taken for each level, and who should be involved. The suicide crisis protocol based on levels of risk is summarized on the following page.

Level 1: No indicators of risk No one-to-one follow-up is required.

Regardless of whether or not any youth at risk are identified through the focus group, the local resource list of youth-friendly services is provided.

Remember to explain to participants about the resource list and to hand out the resource list to each participant to ensure they have a copy. Even if they are not at risk, a friend might be!

Levels 2, 3 and 4: Indicators of Risk One-to-one follow-up is required.

Level 2: Concerns raised during the group by participant(s) (not acute)

You also may find that one or more participants make comments that suggest they might be at risk:

“I get really depressed sometimes and don’t know how to get out of it.”

“Life sucks...what’s the point anyway...”

“I’ve thought about it (suicide) before, but don’t think I could actually do it.”

Level 3: Suicidal ideation during the last 3 months on questionnaire

The Youth Net/Réseau Ado questionnaire asks three questions to assist you as a facilitator in identifying youth at risk for suicide.

At the beginning of the focus group, you will ask each youth participant to fill out the questionnaire and hand it in to you before the discussion starts. You or your partner will then go through the questionnaires to identify follow-ups, based on the answer to the three screening questions:

#12a. Have you ever had serious thoughts about killing yourself? Yes No

#12b. In the last three months, have you thought about killing yourself? Yes No

#13. Have you ever purposefully tried to kill yourself? Yes No

Level 4: Participant very distraught during the group and unable to function

A one-to-one follow-up with these youth is essential to assess the crisis and to make sure that the youth is safe. This might mean having one of the two facilitators remove the youth immediately from the group if the youth is extremely distraught or following up after the group.

Assess Crisis

When a youth is identified as at risk of suicide, you will follow-up with them one-to-one immediately after the group to ensure they are safe. You will do this by first assessing the crisis and then by planning for crisis resolution.

By sharing their thoughts about suicide, this person is asking for your help.

Your primary goal with follow-up is the preservation of life. Assume that all threats are real and remember that the youth has disclosed their thoughts about suicide to you for a reason.

This young person knew from your introduction at the outset of the group that you would follow-up if anyone indicated they were: (1) thinking of hurting themselves; (2) being hurt by someone else; or (3) thinking of hurting someone else.

Where and When To Do Crisis Assessment

It can be a real challenge to tactfully pull aside a participant for crisis assessment, but this follow-up must be done immediately after the group. Some suggestions from facilitators:

- Approach the participant while others are busy picking up resource information, talking, reading, etc.
- Be direct about wanting to talk with them
- Find a reason to pull them aside (e.g. for help finding the washroom, etc)
- Find a quiet, private space to ensure confidentiality (e.g. hallway, quiet corner of the room)

How to Assess the Crisis

Style: During the crisis assessment, the way you talk with the person at risk is as important as what you say. You will need to ask a number of questions to have enough information to make a plan to resolve the crisis.

Keep in mind the following:

- Be respectful, honest and clear about why you need to talk with them
- Let them know you are concerned and care about what happens to them
- Let them know you need to make sure they are safe
- Remain calm
- Remember that this person has disclosed for a reason
- Be prepared to listen

- Be attentive to warning signs (verbal, physical, written)
- Establish an alliance (empathy, non-judgmental acceptance, listening)
- Avoid any oath of confidentiality
- Your primary goal is the preservation of life

The greatest single factor in preventing suicide is the knowledge that at least one person cares.

Give the clear message: “I want you to live”

DO NOT LEAVE THEM ALONE

When you suspect someone is suicidal, you should:

- Ask about suicide openly
- Invite the person to talk
- Be concerned

- DON'T TRY TO CHANGE THE SUBJECT OR AGGRESSIVELY CHEER THEM UP

- Listen...people don't get more suicidal by sharing their feelings

- Don't panic

- Do a risk assessment

Risk Assessment

By listening to the person at risk, observing them and asking them questions, you will be able to make a judgement about their safety and to make a plan for crisis resolution.

Ask the questions you need to ask to satisfy yourself of how immediate the risk of suicide is.

You should consider Risk Factors for suicide and use CPR++ as the guide for risk assessment. CPR++ stands for:

Current Plan

Pain

Resources

+Prior Behaviour

+Mental Health

Risk Factors

The tables on the following pages outline the suicide risk factors that you should consider in making your assessment and the signs and symptoms to watch for. Briefly, you should keep in mind:

- Stress (what is currently going on in the youth's life)
- Signs and Symptoms (how is s/he coping with what is going on in his/her life)
- CPR++

CPR++ will assist you in asking the necessary questions during follow-up.

Current Plan

People with a current, detailed plan are more prepared.

Ideation: Are they currently thinking about suicide? in the past? recently?

Intent: Do they have an actual desire to die or to stop living? Have they thought that they might actually do something?

Plan: How? When? Where? How prepared are they? How lethal is the plan?

Pain

People with unbearable emotional pain are desperate.

Level of pain: How bad is the pain they are feeling? Ask them to relate this on a scale of 1-10 for clarity.

Relevance: If the person feels that the pain is unbearable then they become desperate to do something to not feel that way anymore.

Resources

Resources are physical and emotional systems that the person at risk feels are helping, caring or supportive.

People who are unable to identify resources are alone.

This is also based on the person's perception that they do not have resources to turn to:

External: friends, family, groups & organizations, counsellors & therapeutic supports

Internal: faith, hope, good self-esteem

+Prior behaviour

Rates of suicide among people who have previously attempted suicide are 40X greater than general population rates.

Ask: Have they tried to kill themselves in the past? When? How? Who knows about this?

Others they know, or know of, who have committed suicide may influence youth.

I.e. models for suicidal behaviour.

+Mental Health

People who have a mental health concern are more vulnerable to the risk of suicide.

Without being mental health professionals, or having all the details about the concern or illness, we can still determine whether this is an issue that may increase the person's vulnerability.

Ask: Are they currently or have they recently seen a mental health professional for any reason?

SUICIDE RISK FACTORS

AGE

- Youth are a high risk group for suicide
- The rate of youth suicide has doubled in the last 20 years and tripled in the last 30 years (Kelley, 1982). Over the past 5 years, it has stabilized with a slight dip.

Gender

- Young women are two times as likely as young men to actually attempt suicide
- Young men are three times as likely as young women to complete suicide

Long-Term Factors

- Poor physical health or chronic illness
- Poor mental health or presence of mental illness
- E.g. manic depression, schizophrenia, substance abuse/alcoholism, depression

- Family disintegration e.g. hostile separation or divorce, family violence, family tension
- Poor performance at school over a long period
- History of poor social relationships
- Transient lifestyle (i.e. family/youth has moved often)
- Lack of family support (real or perceived)
- Parental unemployment
- Physical/emotional/sexual abuse
- Family history of mental illness (e.g. alcoholism, drug addiction) or suicidal behaviour

Immediate Factors

- Conflict with parents/peers/teachers/other school officials
- Failed grade/poor performance at school
- Life stress e.g. boy/girl friend quarrel (loss of trust)
- Current models of suicide (i.e. they know someone who's attempted/completed)

Alienation or Isolation

- Social alienation e.g. visible minorities, gays and lesbians
- Living in a rural or isolated residence

Previous Attempt at Suicide

- Individuals who have tried to kill themselves in the past are 40 times more likely to try again than others. Of those that have tried to kill themselves in the past, 37% will try again.

Pain

- Individuals with an unbearable amount of emotional pain are desperate to do something to not feel that way anymore.

Current Plan to Commit Suicide

- Individuals with a current plan to kill themselves are at risk, especially when they have easy access to tools to harm themselves (e.g. firearms, rope)

If you are uncertain about the level of risk,
call the clinical back-up person for assistance.

What you learn through the risk assessment will determine your next steps and the plan of action to resolve the crisis. You will know the level of suicidal risk of the youth and will refer to the suicide/crisis protocol (p.).

You will contact the clinical back-up person to review the situation when there is Level 3 or 4 risk:

- Suicidal ideation in the last 3 months
- Current suicidal intent

The extent of involvement of the clinical back-up support person will depend on the level of risk and the specifics of the current situation.

Plan for Crisis Resolution

If current suicidal ideation or intent: Risk Levels 3 and 4

The participant cannot leave until you have:

- Provided or arranged for psychological and/or environmental support
- Arranged for a lifeline
- Arranged for follow-up referral

Explain again that you need to ensure their safety

- Let them know you are concerned and care about what happens to them
- Help them identify their uncertainty about death
- Continue to talk to the part of them that wants to live
- Focus on agreement to take a small step away from suicide and towards life
- Identify supports and resources ie. explore options with them

CONTACT THE CLINICAL BACK-UP PERSON FOR SUPPORT

- Explain your assessment of the crisis
- Explain the current situation and any options discussed with the youth
- Decide on an action plan with the clinical back-up person which includes getting them safely to clinical support

CARRY OUT ACTION PLAN WITH CLINICAL BACK-UP PERSON TO ENSURE

- Psychological and/or environmental support
- A life-line
- Follow-up Referral

A LIFE-LINE COULD BE...

Going with the youth to the hospital emergency room.

Going with the youth to a community health centre or CLSC.

Linking them up with someone at the host organization.

REMEMBER YOU ARE ONE OF THE RESOURCES...

BUT YOU'RE NOT ALONE

REPORT TO YOUTH NET/RÉSEAU ADO CO-ORDINATOR

Document

- Clear records are important whenever crisis assessment was undertaken
- Note the reasons for concern
- Record additional information obtained from the youth
- Note the people contacted (clinical back-up, focus group contact person, family member)
- List the steps taken
- Make your report as detailed as possible

NEXT DAY AND IN ONE WEEK- FOLLOW-UP WITH THE YOUTH

- Make time to call the youth the following day and one week after the initial contact (see Secondary Follow-up)
- Check-in and let them know that you are thinking about them and still concerned about them.
- By seeing them through a crisis, you will have established trust
- Facilitators have found that youth really appreciate the contact and will tell them how they are managing. The contact will also make you feel reassured that supports are in place
- Keep the YN/RA co-ordinator up-to-date on your follow-up contacts and ask for support when needed and document the results of your secondary follow-up on the Follow-Up Form.

CONNECTING AN INDIVIDUAL TO THEIR RESOURCES IS VITALLY IMPORTANT
BECAUSE:

- Being connected to resources makes a loss less severe
- Resources lessen feelings of hopelessness, helplessness and isolation
- They make implementing a suicide plan more difficult and increase likelihood of rescue

Accompanying a Youth to a Hospital Emergency Room

In a situation where a youth is at high risk of suicide, you will have contacted clinical back-up by phone for support and worked out a plan for immediate safety with the youth. In rare situations, there is no alternative but to bring the youth to the emergency room (the youth cannot contract for short-term safety and no immediate resources are identified for support).

Remember: It will be the decision of the clinical back-up person regarding the need for a visit to the hospital emergency room.

Although sometimes necessary, a trip to the emergency room is a very difficult experience for everyone involved. In your role as facilitator, you should continue in the same style and manner as you have with the one-to-one follow-up, remaining calm and reassuring.

BEFORE DEPARTURE FROM THE FOCUS GROUP SITE

- 🍏 Complete any other follow-ups required
- 🍏 Alert the contact person at the site that you are accompanying the youth to emergency, being specific about where you are taking the youth (eg. Children's Hospital of Eastern Ontario, the Cornwall General Hospital...)
- 🍏 Arrange for the contact person to call the parent or guardian and explain the situation
- 🍏 Transport the youth to emergency with a co-facilitator (if you have separate vehicles, leave one at the site and return to pick it up later)

ARRIVAL AT THE EMERGENCY ROOM

- 🍏 Assist the youth with checking in at the emergency room intake desk explaining your relationship to the youth and the arrangements that have been made for contacting the parent or guardian.
- 🍏 Explain to the intake nurse your role with YN/RA. Also explain that you have worked with clinical back-up to make the initial assessment to come to emergency and that you are available to discuss this information with the nurse or physician during the hospital assessment in the presence of the youth.
- 🍏 Wait with the youth in the emergency room waiting area (first facilitator)
- 🍏 Check-in with the YN/RA coordinator (second facilitator). At this point the second facilitator may leave.

What to expect after intake

- Be prepared for a long wait. You may want to explain this to the youth as well so they know what to expect, but try to emphasize the importance of waiting.
- A series of assessments. Usually, a nurse is the first person to do an initial assessment in one of the examining rooms. There is then a wait for an emergency room physician (usually an intern). Depending on the assessment, the physician may contact a psychiatrist (usually a psychiatric resident) to do a full psychiatric assessment. At this time, the psychiatrist will be gathering information to decide whether or not the youth will be admitted to hospital.

- Normally, the youth will be assessed on his/her own, but if the youth asks for you to accompany them, you may do so. It is important that the youth speak for him/herself and that you support and encourage them to pass on the important information that they have shared with you.
- Outcome. Either the youth will be admitted to hospital or they will be sent home, hopefully with a plan for connecting with other resources. Sometimes it can be a great disappointment that the youth has not been admitted. However, sometimes, just the process of going to the emergency room and waiting will help the youth reflect on other options so that the immediate risk of suicide passes. Although it can be frustrating to think of going through the ordeal of the emergency room (“this was just a waste of time”), it is important to not minimize the fact that the youth is no longer at immediate risk of suicide.

Secondary Follow ups

One of the outcomes of a one-to-one follow-up after a focus group may be a planned phone contact with the youth. This is called a secondary follow-up. Results should be documented on the follow-up form to track outcome. The reasons a secondary follow-up is arranged are:

- To check in with the youth to see if they have been successful in connecting with a recommended resource and to problem-solve with them if there are any access barriers that have come up (transportation, fear, concerns re: confidentiality...)

- To provide additional information about resources (you need extra time to discuss with the coordinator or to find the information)
- To follow-up with a youth at risk based on the plan worked out for crisis resolution (to see if they are okay, if they have connected with the supports identified, and to reassess risk using CPR++)

A secondary follow-up should always be done (1) in agreement with the youth and (2) at the promised time on the promised day.

By setting an ‘appointment’ type phone call you will be establishing clearer boundaries. It will say that you are not like a familiar friend who will check-in at anytime. By keeping your end of the bargain and calling them when you promised it will show that you can be trusted.

Tips: Establishing and maintaining boundaries

What are boundaries?

- Healthy limits that you put in place that help define your relationships with others.
- When doing a follow-up with a youth it is necessary that your boundaries be clear from the outset. As you know, you are not a therapist or a best friend. If the youth begins to rely on you to fulfill either of these roles it may delay them in actually hooking up with appropriate resources or connections. If you feel unclear as to your role regarding the

follow up, go back to your goals. By making boundaries clear, you are not being a ‘bad guy’ you are in fact modelling healthy communication and interaction.

Putting boundaries in action!!

- If the youth needs to contact you : give them the YN/RA phone number and let them know that the coordinator will make sure that a message reaches you. Do not give out your home phone number!!
- If a youth needs to talk and share a lot about their lives: Use active listening and reflecting back techniques as you would in a focus group. Don` t give advice or say “If I were you...” Encourage them to identify other resources, keeping in mind your bridging role.
- If they tell you that they only want to talk to you and no one else (i.e. counsellor) : Let them know that you care and are concerned about them, but that you want to help them connect with someone that has more experience and training reiterating that you are not a counsellor
- If a youth asks for a hug: Don` t give hugs. Let them know that you appreciate and understand the trust and comfort that you have together but given your job it would not be appropriate.

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