Social correlates of depression and suicide among youth: A meta-analytic review.

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Social Correlates of Depression and Suicide Among Youth:

A Meta-Analytic Review

by

Adelina Greco

A Thesis
Submitted to the Faculty of Graduate Studies and Research
through Social Work
in Partial Fulfillment of the Requirements for
the Degree of Master of Social Work at the
University of Windsor

Windsor, Ontario, Canada

2007

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ABSTRACT

Prevalent increases of depression and suicide among North American youth over the past generation may be categorized as an epidemic. The purpose of this meta-analytic study is to gain a comprehensive, integrative understanding of the social phenomena associated with such mental illness and its consequences among at-risk youth. Opposing explanations on this topic include the bio-evolutionary vs. social theoretical perspectives (nature vs. nurture dispute). This study reviewed the relative strength of the associations of various personal (race/ethnic) and social (socioeconomic factors) predictors of depression and suicide. This study focused on people who are at risk of being discriminated against in both the United States (U.S) and Canada: black or African American people (U.S.), and Aboriginal or Native Indian people (Canada). Findings support the social theoretical perspectives. Moreover, they demonstrate that ‘race’ is primarily a social construction in North American life, and are tenacious reflections of such social phenomena as differential access to key life chances. Findings support consideration for preventative, socio-structural intervention. Social policies, and future research should continue to look at independent variables (e.g. life chance, contextual, neighbourhood).
DEDICATION

To my precious children Alessio and Sophia Symons whom have inspired me to persevere, and have energized me with their beautiful spirits. You have given me the opportunity to pursue my goal and have showed me your ability to understand at a tender age. In turn, I hope I instil in you the importance of higher education, and life long learning.

To my nephew and niece, Fabio and Elysa Costante, for your unending support and words of encouragement. I hope this project will inspire you to know that you can do anything you put your mind, soul, and faith in. Remember, learn from every experience and knowledge is power.

I must gratefully acknowledge and dedicate this work to my parents Vaisina and Orlando Greco, and their contribution to my academic success. They immigrated to this country so their children could have more opportunity to succeed. They have taught me the value and importance of education—I thank you for this gift. Their confidence in my achievements and role in providing me with a privileged education has been central to my ability to pursue graduate school. This accomplishment is a testament to your unconditional love and support. I thank you with endearing love and gratitude.

Finally, to my husband Steve Symons who supported me through this journey in achieving my goal at a challenging period of time-we came through it that much stronger. I appreciate and love you.

**************************************************

iv
Ai miei figli prezzioso Alessio e Sophia Symons i quali mi hanno inspirato di perseverare e con le loro bellissime anime mi hanno fatto trovare l'energia e la forza. Mi avete dato l'opportunità di seguire mio scopo e mi avete fatto capire vostra abilità di comprendere in eta' così giovane e tenera. In ritorno, spero di darvi l'esempio dell'importanza di un'educazione a livello alto e di capire che s'impara sempre nella vita.

Ai miei nipoti Fabio ed Elysa Costante per vostro eterno appoggio e parole d'incoraggiamento. Spero che questo progetto vi inspira di capire che potete fare qualsiasi se vi mettete la mente, anima e fiducia in voi stessi. Ricordi di imparare da ogni esperienza e la conoscenza è' potenza.

Mio lavoro è' soprattutto dedicato ai miei genitori Vaisina ed Orlando Greco, e loro contributo al mio successo accademico. Immigrarono in questa nazione per dare loro figli un'opportunità migliore per riuscire. Mi hanno insegnato il valore e l'importanza dell'istruzione degli studi - Vi ringrazio per questo regalo. Loro confidenza nei miei successi e ruolo di offrirmi un'istruzione di privilegio e' stato il centrale nella mia abilità di portare avanti la facoltà universitaria che concede il dottorato. Questo conseguimento e' una dimostrazione del vostro amore incondizionato e vostro sostegno. Vi ringrazio con un bene affettuoso e riconosciuto.

Infine, al mio marito e compagno Steve Symons che mi hai dato tuo appoggio e conquistare mio scopo in un periodo sfidante. Infine ci siamo riusciti d'essere ancora più' forti. Ti adoro e amo.
ACKNOWLEDGEMENTS

First, I must gratefully acknowledge and thank my advisor, Dr. Kevin Gorey for his continuous support, guidance, and knowledge throughout the entire project. Dr. Gorey has been incredibly dedicated and understanding. As well, he has encouraged me, and provided opportunities to expand my professional abilities, and connect me with academia (paper presentation at the 132nd American Public Health Association Annual Meeting and Exposition in Washington, D.C.)—one of my professional career highlights.

Also, I would like to thank Dr. Kim Harper and Dr. Julie Hakim-Larson for their invaluable feedback and important contributions. Your suggestions and feedback have been beneficial in making this research project successful.

To all my family, friends, and colleagues for your unending words of encouragement and support. I am blessed and grateful to have you all in my life!
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CHAPTER I

INTRODUCTION

Mental illness is a prevalent public health problem, not only among the general adult populations of Canada and the United States, but also among North American children and adolescents (youth). The incidences of such sentinel mental illness/public health indicators as depression and suicide have closely followed an epidemic curve among North America's youths over the past generation or so. In the United States, the suicide rate among youth aged 15 to 24 years has tripled in the past fifty years, and for every youth completed suicide there are approximately 200 to 400 suicide attempts (Cutler, Glaeser, & Norberg, 2001). In Canada, between 1952 and 2002, the suicide rate for youth aged 15 to 19 rose from two deaths per 100,000 people to just over 10, thus a five-fold increase (BC partners, 2006). Since 1980, within the general population, the suicide rate has most rapidly increased among teenagers aged 15 to 19 years.

In Canada, suicide is the second leading cause of death among adolescents aged 15 to 19 (Health Canada, 2002). Similarly, in the United States (US) suicide is the third leading cause of death among young people 15 to 24 years of age (National Institute of Mental Health [NIMH], 2000). Aggregating the findings of a number of American studies it has been estimated that one of every 40 children and one of every 12 adolescents probably suffers from depression (NIMH, 2000). Perhaps, not surprisingly, given their public health and practical lifespace significance, research on the determinants of depression and suicide among youths has proliferated over the past two to three decades. The search for greater understanding in this field, which could ultimately lead to the prevention of much suffering and loss of life, has preoccupied theorists from a
variety of disciplinary standpoints. The present study would systematically integrate this field’s knowledge, by clarifying the complexity of the risk factors associated with depression and suicide. Specifically, the focus is to look beyond the individual risk factors, and examine the broader social determinants. By exploring the broader social determinants, the unique challenges faced by youth can be reviewed more holistically, thus a shift from individual pathology, to that of social structural factors. As well, such a shift in focus will assist in offering information to take into consideration for preventative intervention, rather than primarily an individual treatment approach. Despite competing theoretical standpoints, the present study’s ultimate scholarly aim is to practically clarify what is presently known (and unknown) empirically about the social determinants of depression and suicide among youth.

The era of conservative welfare state reforms in both Canada and the US occurred contemporaneously with increasingly popular, ‘conservative’ social scientific theorizing (e.g., Herrnstein & Murray, 1994; The bell curve). Such theorizing emphasized personal and genetic determinants of a myriad of interrelated personal and social ills, including mental health problems. Some theorists, such as the illustrious J. Philippe Rushton, even brought race, a personal characteristic that is hypothesized by him and many others to be a biological (genetic) construction, into the centre of their global theories of human behaviour (Rushton, 1997). Much of this camp’s research focuses on various manifestations of ‘social disorganization’—criminal behaviours to psychopathologies—and explains their greater prevalence among minority racial groups in terms of genetic predispositions. Depression and suicide, along with a host of other health problems and behaviours, are therefore thought to be highly heritable and relative nonmalleable
characteristics of genetically predisposed people. Essentially, the darker one’s skin, the more predisposed one is to have a mental illness, along with a host of other social, familial, and individual health problems. If true, the policy implications of such a conservative theory would clearly be quite bleak for many, but utterly hopeless for North America’s people of colour. Alternatively, social-structural theorists have emphasized the importance of socioeconomic determinants of mental illness as well as many other health problems (Gould, 1995; Wilson, 1987; 1996). Access to key opportunities or life chances, that tend still to be highly associated with socioeconomic status (SES) in North America, are central to such ‘liberal’ theorizing. Observed racial differences are thought to be the tenacious reflections of such social-political phenomena, rather than racial effects, per se. Perhaps, either view isolated oversimplifies such complex mental health problems and behaviours as depression and suicide. A holistic and systematic empirical summarization of this field’s research literature has not yet been accomplished and seems warranted. This study will systematically review this field’s knowledge.

The study of younger populations can be particularly instructive for a few reasons. First, prevalent illness among younger people quite naturally underscores its public health significance as well as its lifespase significance. Public health practitioners and researchers use a metric that exemplifies this principle—person years of life lost ([PYLL] due to a given illness, condition or behaviour). In population terms, few years of productive life are lost among older people, say 80 years of age or older, who die from heart failure. On the other hand, many productive years of life are lost, indeed nearly an entire expected lifetime are lost each time a relatively young person takes his/her own life. Second, temporal trends among young people in particular can provide a window of
theoretical integration and discovery. For example, along with the noted epidemic trends in depression and suicide among youth, there have been concomitant trends for diagnoses of depression as well as attempts and completions of suicides at earlier ages. Once observed nearly exclusively among adolescents, now regretfully, such mental illness and associated tragedies are not uncommon among mere children (Baker & Ashbourne, 2002; Wu et al., 2001). Despite its depiction of great suffering, this trend points toward a possible integration of the above-noted conservative versus liberal scholarly and political debates, and so perhaps to ways of increasing our understandings of the causes of severe mental illness among young people. As an example, take a physical illness analogue such as breast cancer. Our contemporary understanding is that at least one component cause of such illness is genetic—an oncogene. However, every woman with such a ‘breast cancer gene’ does not get breast cancer. Some such cancers seem to develop quite early in life (20 to 40 years of age), while others do not arise until much later in life (65 to 85 years of age). Many of the breast cancers that develop very early in life seem to have at least one well-known environmental cause (e.g., pesticide exposure; Brophy et al., 2001). This seems clearly to be indicative of a gene-environment interaction; genes, after all, are always expressed in environments (Rothman & Greenland, 1998; Wilson, 1999). It seems that early life exposure to a toxic environment may cause the earlier expression of breast cancer oncogenes. Similarly, with depression and suicide among youth, we may be witnessing a sort of gene-environment (social) interaction in the observation of serious mental illness among increasingly young adolescents and even children (Reiss & Neiderhiser, 2000). Differences in life chances (good education, employment opportunities, adequate familial income, and health insurance) may impact
the mental health of children. Youth that are disadvantaged early in life may be more vulnerable to mental illness. As discouraging as prevalent and severe mental illness among such young people is, our increasingly complex understanding of its causes can provide hope.

Many behavioural scientists believe that the expressions of genetic influences are very malleable and responsive to the social environment, thus gene-social environment interactions play an important role in human development (Shanahan & Hofer, 2005). Essentially, as our understandings of such interactions increase, so to will our opportunities to intervene effectively and even ultimately prevent mental illness among young and old people alike. There is no doubt that at least certain types of endogenous depression are biologically mediated through brain chemistry and so their primary cause is probably genetic. Much success has already been achieved in effectively treating such depressions with various drug therapies. But the primary causes of at least some other forms of so-called reactive depression, as well as the complimentary causes of endogenous depression, particularly among very young people, almost certainly involve social environmental toxicities or traumas. The more we can understand the influence of such social forces the more we can effectively enhance our repertoire of therapeutic and preventive interventions in this field. This systematic review then will pay particular attention to this, more neglected aspect of our understandings in this field, the main and interaction effects of social forces on mental illness among youth—depression and suicide. Specifically, an integrative synthesis of the North American studies of the associations of ‘race’ ethnicity (African American in the United States, and Aboriginal in Canada) and SES with depression and suicide among youth is needed to clarify this
field’s existing knowledge on the impact of social forces. A meta-analytic study is proposed to accomplish this analytic goal. Its accompanying practical goals will be to provide sound empirical direction for future research and policy development.

**Purpose of the Study**

Research on childhood and adolescent depression and suicide has proliferated over the past few decades. In a computer search through the Wilson Web database, approximately 40,000 articles were found related to depression and suicide in youth. Statistical methods that have been used in articles have included regression models predicting future suicide rates, the use of correlations to estimate the relationship and similarities among different birth cohorts, and analysis of variance to estimate differences in rates of suicide by age, race and gender (Bingham, Bennion, Openshaw, & Adams, 1994). Although numerous studies have attempted to define, understand, and measure relevant risk factors, research has not been adequate for guiding policy and practice because of methodologically flawed studies and conflicting findings. In addition, the method of research is usually cross-sectional with a few longitudinal studies of depression and suicide in children and adolescents. Differences in measures, sample size, characteristics of participants (particularly with respect to the range of ages) contribute to the disparate findings. In turn, the varied findings have provided more fuel for debate.

Compelling, yet conflicting theories between the personal-biologic (innate, biologically-mediated, genetically determined factors), and sociological-environmental (such as life chances e.g., adequate health care, education, income, etc.), have been the basis for a nature versus nurture perspective of the phenomena. Furthermore, this is intimately connected to debates on how race/ethnicity is related (or not) to an outcome of
depression and suicide. However, the energy spent disputing theories for the purpose of understanding this mental health issue runs the risk of greater social and personal cost of human life. Attention directed toward consilience among the natural and social science knowledge is relevant and more beneficial to understand the complexity of depression and suicide in youth (Wilson, 1998). Given the lack of any integrative study of this topic, such a scientific analysis is necessary. A method of statistical analysis to combine results of empirical studies is required. Meta-analysis is an appropriate statistical procedure.

The application of a meta-analysis as an exhaustive quantitative review of literature will assist in offering a rigorous alternative to the casual narrative discussions of research studies (Cooper, 1998). This approach allows for the examination of racial group and SES related to depression and suicide in youth across studies. Such an analysis will assist in measuring the relative strength of association amongst variables. Furthermore, a meta-analysis can be contextualized and potential sources of bias explored. Finally, moderator effects that may change the association of race/ethnicity and SES with depression and suicide in youth, and contribute to this mental health concern can be included for analysis.

The findings of studies can be misleading if not translated appropriately. Statistically significant results may not have practical or clinical significance. Thus, the use of a meta-analysis assessing the relative practical significance of personal (race) and social factors (SES) is important. That is, the present research effort intends to identify the relative strength of associations by means of an exhaustive systematic review/meta-analysis of this fields relevant empirical studies regarding race and depression and suicide as well, SES and depression and suicide. This statistical analysis will translate study
findings into practical significance measures so that they can be easily understood and used by policy makers.

The conflicting findings have ultimately led to a gap in knowledge regarding the relationship between personal (race), social factors (SES), and depression and suicide in youth. Concerning race, the gap in knowledge also includes the dearth of information on minority youth experiencing depression and suicide. The literature is, for the most part, limited to African American and white children. Thus, there is a need to broaden the focus to other racial groups. Regarding the association of SES and depression and suicide, studies have had conflicting conclusions due to methodological variability. As well, the literature suggests that after controlling for SES, race is less strongly associated with mental health problems. If this is supported through this research effort, some significant portion of youth depression and suicide could probably be prevented through planned manipulations of the environment (social welfare and economic policies).

Finally, a greater understanding of the phenomena must include an examination of third variables that have mediated the relation between race/ethnicity, SES, and depression and suicide. Although the literature suggests that age and gender act as moderators, contextual and research methodological characteristics will be analyzed as well.

For the purpose of this research effort, race and ethnicity will be used interchangeably as the primary studies often use the two terms to refer to people of color. Race/ethnicity will be understood to refer to a group of people bound together by historical contingent and socially significant factors. In reviewing the literature on childhood and adolescent depression and suicide, African Americans (blacks) in the United States and Aboriginal in Canada have attracted much attention. The research
appears mixed for African Americans as some suggest rates to be lower among this population than among whites (Garland & Zigler, 1993), yet other research indicates a marked increase in the depression and suicide rate specifically among black males (Gould, Greenberg, Velting, & Shaffer, 2003). Research on the native population indicates that aboriginal children and youth die from suicide at a higher rate than other Canadian children and youth (Health Canada, 1999). Given that the literature in the two countries primarily has reviewed these two groups, the special populations that will be observed in comparison to whites are African American (black) and Aboriginal.
CHAPTER II
LITERATURE REVIEW

Theoretical Perspectives

Researchers, policy-makers, planners and clinicians have attempted to comprehend the multi-dimensional nature of depression and suicide in youth. Theories which differ, and/or overlap in perspective verify that comprehension of depression and suicide is complicated. Furthermore, findings are typically conflicting, confusing and often times incomplete. Biological, psychological, sociological, and social psychological models have attempted to make sense of this undeniable mental health problem (Henry, Stephenson, Hanson, & Hargett, 1993). Yet these traditional theories of depression and suicide have offered singular explanations that oversimplify the complexity of the phenomena. There is no coherent and systematic theory that explains depression and suicide in youth. It is evident that a comprehensive understanding requires an integration of theoretical perspectives.

Opposing explanations that have created much debate on this topic is bio-evolutionary vs. social theoretical perspectives, or more simply put, the nature vs. nurture dispute. Theorists of the nature view support that genetic predisposition of an individual contributes to their mental health or illness (Rushton, 1988). Thus, emphasis is based on the importance of innate personal factors. Nurture proponents believe that social and environmental factors such as the interaction with the environment, and the larger structural factors are primarily responsible for one's relative mental health or illness. This competing argument poses a great challenge in studying the complicated causes of
depression and suicide. An integrative systematic analysis is necessary to avoid erroneous perspectives about the nature of depression and suicide.

Personal-biologic (genetic) theories. The personal-biologic theories allege that biology motivates human behaviour. In short, innate, heritability, and a genetic predisposition is indicative of the manner in which people think and act. To test genetic predisposition, research has used methods that include familial studies, twins, adopted children and linkage studies using genetic markers. These studies have attempted to determine the association of specific genes with psychiatric disorders, however this has been difficult to assess because of the likelihood that numerous genes may be involved and only certain individuals with certain combinations of those genes may develop disorders (Zubenko et. al., 2003). Although it has been difficult to identify specific genes, there has been a direct relation between insufficient quantities of two neurotransmitters, serotonin and norepinephrine and psychopathology (Arango, Huang, Underwood, & Mann, 2003).

Supporters of genetic predisposition argue that innate, personal factors give rise to processing differences. Proponents of evolutionary theories argue that evolutionary history provides the framework for conducting research on human cognition and behaviour (Siegert & Ward, 2002). For instance, Herrnstein and Murray (1994) considered the largely genetically determined characteristic of cognitive ability to be related to social problems and psychopathologies. Rushton's (1988) well cited theoretical analyses indicated that genetic differences exist which account for psychopathology and behavioural differences amongst racial groups. It was suggested that innate racial group differences are the key to understanding social and
psychopathologies. Different racial groups have evolved under differing environment conditions, resulting in genetic differences in behaviour. As a result, some populations are more advanced than others, and in a stable, predictable environment K-selection predominates. The between-group differences were described in an evolutionary framework along a continuum from less to greater K-selection, Negroid to Caucasoid to Mongoloid. Rushton’s work has been challenged by many scholars concerned with theoretical and methodological shortfalls (Mouat, 1992; Zuckerman & Brody, 1988). Furthermore, a quantitative replication of studies included in Rushton’s analyses inferred that behaviour differences amongst race were explained by environmental differences (Gorey & Cryns, 1995). Specifically, the review and meta-analysis conducted by Gorey and Cryns (1995) found that socioeconomic environment was a factor and after adjustment, none of the null hypotheses regarding racial differences in behaviour could be rejected, including social disorganization measures of psychopathology.

Sociological and environmental theories. The topic of environmental influences on human behaviour has been extensively documented. The sociological and environmental viewpoints emphasize the external environment and the manner in which these external factors impact on human behaviour and psychopathology. Advocates supporting nurture as psychological and sociological influences propose that the environment in which one experiences life creates vulnerability to mental health illness. Durkheim’s classic sociological theory of suicide proposed that suicide is predicted by the degree of integration into social institutions and regulation within society (Henry et al., 1993). Thus, connectedness or lack thereof to family, work/school and the larger society are predictive of one’s mental health. Social psychological approaches uphold
that identifiable situational factors relate to adolescent mental health concerns (Henry et al., 1993), thus empirically identified situations are related risk factors for mental health. This would imply that SES is interrelated to all sorts of environmental issues such as familial, neighbourhood, and community. Moreover, accesses to key opportunities or life chances tend to be associated with SES.

According to Sociologist Max Weber, a "life chance" refers to significant outcomes such as happiness, success and wealth. Life chances are determined by economic forces, primarily by the power to exchange materials and skills for income within the labour force. Theoretically, those who have similar life chances are ranked in the same hierarchy of social class. Theories of class and race identify that minority groups disproportionately tend to occupy the lowest strata of the class system with non-Hispanic white people at the top. The white people influence the conventional and the various institutions that function within the society. This suggests that those at the top of the class system have more opportunities to have successful outcomes given that they are in the position of power to influence institutions.

The relative importance of race and class in shaping the reality of African Americans and other minority groups has been highly discussed. In his book, The Declining Significance of Race, W.J. Wilson (1978) theorized that following the civil rights movement, black "life chances" were determined by "class stratification" as opposed to "racial stratification". Wilson identified that there is a sector of the job market for African Americans, and an underclass characterized by female-headed households, with high rates of unemployment and extreme poverty. Wilson claimed that
the African American middle class closely resembled that of whites thanks to advancements in white-collar occupations and affirmative action programs.

The post-modern theory of social construction undertakes the task of defining how to conceptualize and construct societal conditions. Constructionism reflects the social context as integral in the construct of one’s reality and culture. The dominant society has created race as products of social thought and relationship. Thus, race is not objective, inherent or fixed. It is defined by categories that society has created and manipulates. In defence of racial construct, Rodkin (1993) argued that race is best understood in conjunction with structural formulations. Thus, race and SES jointly influence stereotypes within differing historical and cultural contexts. This implies that race is a social construct and differences are created by society. Hence, this theory would suggest that research which has indicated race differences in depression/suicide in youth would differ if an adjustment were made for SES.

The definition of race as a label that describes human difference on the basis of physical characteristics ultimately leads to attachments of social consequences (Satzewich, 1998). The demographic variables (race, class and gender) used alone or in combination, have an effect on a group’s identity, experiences or socioeconomic position. Unquestionably, race is a culturally determined hierarchical human ranking system embodied in the western world. Those at the top often have the best physiological and psychological health while those at the bottom often suffer the damaging effects of poorer health outcomes (Byrd & Clayton, 2002).
Genetic and Environmental Vulnerabilities

Differing theoretical perspectives have attempted to understand depression and suicide in youth. However, it is evident that there is little consilience among the major theories of mental health. An integration of the natural and social science knowledge is again relevant. Genetic factors have been recognized as contributing to psychopathology, however specific genes have not been identified as related to depression and suicidal behaviour (Arango et al., 2003). Singular genetic and innate explanations result in personal and political ramifications. Personally, genetic explanations diminish a person’s capacity to choose and feel accountable for choices. Thus, individuals are vulnerable and helpless victims of biology rather than a wilful agent with some control of behaviour. Politically, biological determination feeds the public policy debates in the belief that government interventions do not work well and society cannot restore one’s mental health due to genetic predisposition (Wray, 1997). As well, a highly heritable trait can also be malleable and even completely altered by the environment. An example of the phenomena is poor vision, which is arguably highly heritable, however, it can be completely corrected with an environmental manipulation, eyeglasses. As such, some mental problems could be comparable and altered with environmental manipulations.

Wray (1997) contended that when geneticists say they have ‘found a gene’ for a particular trait, they mean that people carry an allele, a variation in a stretch of DNA that will develop that given trait in a standard environment. A given allele will not necessarily lead to that trait in every environment, thus the environment has a strong influence on whether and how a gene is expressed. Thus, genetics gives some people susceptibility to certain disorders, but the development of the behaviour or pathology
requires more, the environment. The importance of the environmental factors cannot be overlooked. The environment in shaping human behaviour has been implied by theories of evolution supporters (Wilson, 1999). The environment can actually create disadvantages for individuals by producing chemical changes in the body that affect certain genes, in turn alter brain protein, and makes a person more susceptible to depression (Wray, 1997). As a result, it is important that public discourse regarding mental illness should include the knowledge of gene relations however, should not oversimplify the complexity of the gene-environment interaction.

The ongoing debate regarding the interrelationships among race, socioeconomic status and social problems has been brought forward by biological proponents, Herrnstein and Murray (1994) in The Bell Curve: Intelligence and Class Structure in American Life and Rushton’s (1997) Race, Evolution, and Behaviour. The premise of their work is that social class is linked to inherited characteristics of intelligence, and racial groups differ according to genetic predisposition. Furthermore, personal and social problems are explained through racial group differences. This creates an assumption that racial differences are predominantly biologic rather than a social construction of life experiences (Muntaner, Nieto, & O’Campo, 1996). However, Gorey and Cryns (1995) conducted a secondary analysis of Rushton’s (1988) article Personality and Individual Differences. Once socio-economic adjustments were made, little racial group behavioural differences were found. This suggests that socioeconomic factors are better predictors of personal and social health problems than racial group membership is. Thus, an interactional and simultaneous examination of personal (race/ethnicity) and socio-
structural (SES) factors will assist in understanding the genetic and environmental influences on depression and suicide in youth.

Prevalence of Depression and Suicide among Children and Adolescents

The significance of childhood as part of human development across the lifespan is important to address. The physical, cognitive, and emotional changes that occur during the periods of infancy, childhood, and adolescence are rapid (Hammen & Garber, 2001). The developmental stages guide childhood with age appropriate challenges. Children pass through a series of physical, cognitive, social and emotional stages, and take in stimuli from the environment. Proper social environmental factors are necessary for optimal growth. If the challenges are not met with success at a given stage, one’s mental health may be compromised. Thus, due to such developmental changes that occur during different stages across the lifespan, it is important to differentiate depression and suicide by age in children and adolescents.

For children (persons between the ages of 5 and 14 years inclusive), symptoms of irritability, somatic complaints, and social withdrawal are more evident with depression (Allen-Meares, Colarossi, Oyserman, & DeRoos, 2003). Depression disorders occur among 2% to 4% of North American children, and the prevalence of depression seems similar for boys and girls during childhood (Fleming & Offord, 1990), but higher among girls during adolescence. In three studies of depression among children, the mean prevalence was 2.48%, and the rates ranged from .40% to 4.00% (Table 1). Although suicide among children under the age of 10 years is rare, suicide typically becomes more significant among the 10 to 14 year old cohort (Health Canada, 1999). The rate of suicide for children between 10 to 14 years of age has quadrupled in the last 30 years.
from 0.6 to 2.4 per 100,000 (Canadian Institute of Child Health, 1996). Within the 10 to 14 years of age, most suicides occur between the ages of 12 to 14 years, increase markedly in the late teens, and continue to rise until the early twenties (Gould, Greenberg, Velting & Shaffer, 2003). The summary of five studies found a mean prevalence of 1.1 per 100,000 for suicide among children (Table 2).

Table 1
Mean Prevalence Estimate of Depression (Percentage; 1989 or Later)

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adolescents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>2.48%</td>
<td>6.44%</td>
</tr>
</tbody>
</table>

Note. Sample summary of three studies of children and six studies of adolescents.

Table 2
Mean Incidence Estimate of Completed Suicides (Rate per 100,000; 1989 or Later)

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Adolescents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>1.10</td>
<td>11.59</td>
</tr>
</tbody>
</table>

Note. Sample summary of five studies of children and eight studies of adolescents.
Young children have received less attention in the area of depression and suicide. Although depression can occur in preschool aged children, the gap in knowledge and the nature of depression in this age group is poorly understood (Allen-Meares et al., 2003). Research from the past two decades has indicated that very young children become depressed and rates increase in the early adolescent years. Furthermore, age of first depressive episode has decreased over time (Cantwell & Baker, 1991; Kazdin, 1990).

Results of ethnic differences in depressive symptoms of preadolescents are inconsistent, however in a study that compared ethnic groups, ethnicity and gender interaction in depressive symptoms was found (Kistner, David, & White, 2003). Specifically, sex differences in depressive symptoms differed by ethnicity. As well, chronic social factors such as poverty have been linked to depression for both children and adolescents (Allen-Meares et al., 2003). Another study concluded that children who are socio-economically disadvantaged are more likely to report higher rates of depression (Samaan, 1998). It is apparent that these findings and lack of knowledge in the area of the early childhood years underscore the need for further research.

Many emotional, cognitive and physiological changes occur as a child moves along the path of development into the period of adolescence. Adolescence is a time marked by emotional turmoil, mood swings, identity formation, rebellion and heightened sensitivity. Adolescence is the period when depression and dysthymia are often recognized (Rushton, 2002). Depressive disorders typically interrupt developmental processes of adolescence, such as identity and formal operational thinking. Furthermore, the potential for suicidal behaviours increases within adolescence if developmental tasks are not met, specifically identity by obtaining intimacy versus isolation (Erikson, 1982).
If a secure identity is not met, the adolescent may become at risk of a pathological outcome such as suicidal behaviour.

Puberty and hormonal functioning during adolescence creates physiological challenges for both girls and boys. However, girls appear to respond with more symptoms of depression than boys during this period (Pullen, Modrcin-McCarthy, & Graf, 2000; Siegel, Aneshensel, Taub, Cantwell, & Driscoll, 1998). Adolescent girls appear to have more risk factors than boys such as earlier onset of puberty, introspective styles of problem solving, body image concerns, higher risk of sexual abuse, and pressure to conform to a limited range of social roles (Nolen-Hoeksema & Girgus, 1994). Research has identified the prevalence of depression as being two to three times greater for girls than boys during this period (Fleming & Oxford, 1990). Although females make more suicidal attempts, males have higher rates of completion (Health Canada, 1999).

Amongst adolescents, 4% to 8% develop depressive disorders (Fleming & Oxford, 1990). In a summary of six studies, the mean prevalence estimate for adolescents experiencing depression was 6.44%, and the rates ranged from .2% to 20% (Table 1). The rate of suicide is higher during adolescence than preadolescents. In a summary of eight studies, the mean prevalence estimate for adolescent suicide was 11.59 per 100,000 (Table 2). In these studies, the prevalence of suicide ranged from 8.2 to 13.8 per 100,000.

Few studies have included samples of children and adolescents diverse enough to test questions about the association of race/ethnic membership and depression and suicide. Furthermore, studies are conflicting as to the association of SES and depression and suicide. Therefore, integration of the available research in the hope of understanding...
the interrelationships of personal and social factors of the phenomena is necessary.

**Depression and Suicide Outcomes in Youth**

Many authors have identified an interrelationship between depression and suicide (Berman, 1987; Brage & Meredith, 1993; Dieserud, Roysamb, Ekeberg & Kraft, 2001; Rushton, 2002). Depression increases the risk for suicide or suicide attempts (American Psychiatric Association [APA], 1994). Although research has often combined depression and suicide, clear identification of each outcome is important in understanding this phenomena.

**Depression among youth.** Depression in childhood and adolescence is often identified as a mood state characterized by dysphoric affect (APA, 1994; Cicchetti & Toth, 1998). Depression manifests itself as a complex cognitive emotional disorder diagnosed based on one’s behaviour. Depressive disorders are comprised of major depressive disorders and dysthymic disorders. A major depressive disorder is defined as one or more instances of change in functioning characterized by at least two weeks of depressed mood or irritable mood or loss of interest accompanied by at least four additional symptoms such as significant weight loss/gain, fatigue or loss of energy, feelings of worthlessness or excessive inappropriate guilt, diminished ability to think or concentrate, recurrent thoughts of death (APA, 1994). Dysthymic disorder is described as depressed mood most of the day and for the majority of days for at least one year.

Criteria that have been widely used to assess depression in childhood and adolescence are found in the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) (APA, 1994). However, there is a shift in research focus from criteria-based diagnoses to a more sophisticated examination of the epidemiology, causes, course and
treatment responses of depressed youth (Birmaher et al., 1996; Cicchetti & Toth, 1998). Theoretical debates about the relative importance of personal (race/ethnicity) versus socio-structural (SES) factors in determining depression outcomes are conflicting. These associations are presented as isolated and acting alone, however the complexity of this mental health issue may be better comprehended as interactive relations contributing to the outcome of depression. Aggregating research for the purpose of understanding youth depression can be achieved through a meta-analysis.

Suicide among youth. The rates for completed suicides have increased markedly over the past few decades specifically for youth between the ages of 15 to 19 years (Watt & Sharp, 2002). The suicide rate in youth has increased 200% since 1960 (Garland & Zigler, 1993). Youth suicide has increased more significantly than the rate for the general population. When considering suicide attempts and ideation, the magnitude of this problem is alarming. Rates of suicide are considered to be low estimates of the actual prevalence due to underreporting because of religious implications, concern for the family, insurance restrictions and sudden death without any direct evidence (Garland & Zigler, 1993). Different rates of suicidal behaviours occur within various adolescent subgroups (high risk groups, inpatient/outpatient, school/community groups). Rates for suicide also vary by gender with females having higher rates of attempts, and males the highest rate of completion.

Gould, Greenbery, Velting, and Shaffer (2003) found a decrease in youth suicide during the past decade due to an increase in antidepressants being prescribed. Youth suicide attempts account for 5% to 8% of teenagers in the U.S., representing approximately 1 million adolescents of which 700,000 are being medicated for their
attempt (Grunbaum et al., 2002). It is critical that there is a comprehensive understanding of the risk factors involved in youth suicide, attempt and ideation. The risk factors should be identified through the continuum of suicide from ideation, to attempt, to the actual act of finality, suicide completion. This enables a conversant and clearer depiction of this compelling problem. In turn, policy-makers can act quickly with knowledge of the internal and external risk factors involved. Thus, developing policy that reflects the comprehensive analysis of this phenomena.

Association of Race with Depression and Suicide

Race has been identified in research in a variety of ways. It has been described as belonging to the same ethnic or cultural group and same class. Race has been defined as both a biological and social construction. As a biological construction, racial groups have differing genes that account for psychopathology and behavioural differences (Rushton, 1988). Proponents of social constructionism have challenged this inherent explanation. Social construction proposes that the dominant society has created race and it is defined by categories that society has invented and manipulates. For the purposes of this meta-analysis, race will be measured by the identified group in the independent studies.

The dearth of information on minority children experiencing depression is not surprising given the lack of community based epidemiologic studies (Roberts, Roberts & Chen, 1997). Reported findings are often times conflicting. Some studies do not substantiate ethnic differences in childhood depression (Doerfler, Felner, Rowlison, Raley & Evans, 1988; Garrison, Jackson, Marsteller, McKeowa & Addy, 1990). Other studies have shown that race is associated with depression. Moreover, these same

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authors have concluded that race is predominantly an innate, biological construction (Rushton, 2002; Schraedley, Gotlib & Hayward, 1999; Siegal, Aneshensel, Taub, Cantwell & Driscoll, 1998). Yet others have found that some minority groups have lower levels of depression (Doerfler et al., 1988).

In a large ethnically diverse study by Roberts, Roberts, and Chen (1997), over 5,400 students from grades 6 to 8 were analyzed for ethnic differences in major depression. This study found that Mexican American students have elevated risks for depression. Another large study found White and Asian American youth reporting more depressive symptoms than Black and Hispanic youth (Dornbusch, Mont-Reynaud, Ritter, Chen, & Steinberg, 1991). However, these findings should be taken cautiously because ethnicity is a complex construct and reliance on ethnic affiliation as a sole measure is limiting. Studies have sought to delineate differences in the prevalence of depression with race, or class (Twenge & Nolen-Hoeksema, 2002). However, isolating determinants such as race or class without acknowledging the complexity of the phenomena is restrictive. The convergence of knowledge is critically necessary.

An increased interest in youth suicide has led different perspectives in attempting to explain this issue. The bio-evolutionary view that personal and innate detriments are associated with suicide has been the basis of some literature. Racial and ethnic group membership has been argued as a factor involved with suicide. Theoretical and empirical arguments have suggested that process differences in race/ethnic affiliation are related to suicide. However, other researchers have challenged this and argue that suicidal behaviour does not vary by race (Davis, 1980). Watt and Sharp (2002) analyzed race differences in social strain in approximately 16,000 adolescents and found that between
2% and 6% had attempted suicide in the past year. White females reported the highest percentage for suicide attempt, and Black males the lowest percentage. This finding was consistent with gender research, however for both males and females, race differences were not statistically significant. Blacks and Whites face a different array of strains and respond differently. In this study, Blacks have not become as reactive to strains as Whites. Theoretically, this finding supports the need to look at contextual factors when studying suicide in youth.

**Association of SES with Depression and Suicide**

Socioeconomic disadvantage as a contextual risk factor in youth suicide has resulted in differing conclusions. Findings have suggested that suicide is independent of SES (Qin, Agerbo, & Mortensen, 2002). Resilience, social connectedness, and religion are seemingly better predictors of a suicidal outcome. Studies have focused some attention on evaluating effects of life circumstances and social adjustment on risk for suicide behaviour in children and adolescents by using cross-sectional studies (Pfeffer, Klerman, Hurt, Kakuma, Peskin & Siefker, 1993). Perez-Smith, Spirito, and Boergers (2002) found that depression cannot be explained by SES, and neighbourhood social networks may be an important predictor to hopelessness. However, these findings should be considered preliminary because of the small sample, and no control group to conclude that there exists a relation between hopelessness and environmental context specific to youth who attempt suicide. Others have found that lower SES youth tend to be more likely to demonstrate suicidal behaviour (Lewis, Johnson, Cohen, Garcia, & Velez, 1988). Results from a nationally representative sample found that SES was significantly associated with level of depressive symptoms, F(3, 5565)=101.1, p is less than .001., and
that higher levels of SES were associated with significantly lower levels of depression (Schraedley, Gotlib, & Hayward, 1999). However, determining the practical implication of this result by converting this study’s statistical findings to an effect size r found a minimal 1.77% may account for SES differences in the level of depressive symptoms. As evident, methodological problems plague research and the often confusing and conflicting findings make it difficult to delineate correlates of depression in youth.

The UNICEF World Summit for children in 1990 agreed on the call for action by all governments to protect children. In 1989, the House of Commons in Canada sought to achieve the goal of eliminating poverty among Canadian children by the year 2000. One of the basic goals was to improve the life chances of all children in Canada by developing social policies to respond by investing in children rather than neglecting them (Campaign 2000, 2000-2003). Although decreasing poverty is high on the national policy agenda in Canada, child poverty is worse in 2006 than 1989, and one child out of ever six children lives in poverty. Furthermore, within the aboriginal communities one in every four children is growing up in poverty. To understand poverty in America, it is important to examine the economic indicators (e.g. health insurance) of the individuals that the government classify as poor (The Heritage Foundation, 2007).

The American multi-tiered system of financing health serves is divided by those who are most capable of purchasing health care services and plans (operated by private, for-profit, corporations), Medicare (a federal health care program for older people that are able to purchase additional private insurance packages to assure themselves of higher quality health care), and Medicaid (a federal program essentially for the means-tested poor). Medicaid recipients (among whom racial/ethnic minority group members are
overrepresented) tend to receive care that is similarly less costly and sometimes known to be less effective than the care offered by their privately insured counterparts whom also receive a consistently higher quality of care than those who have no health insurance (National Institute of Health, 2007). As a result, children living in poverty are further disadvantaged due to the sometimes less effective care that is provided to her/him in comparison to privately insured individuals. With respect to mental health, poverty is associated with psychological disorders (Samaan, 1998). These disorders can lead to suicide, which is one of the top three leading causes of death in North American youth. Thus, aggregating studies through a meta-analysis would assist in understanding the strength of relation between SES and depression and suicide in youth.

The Need for a Meta-Analysis

Depression and suicide among the general population, and among younger people in particular, are clear instances where the transaction of people and environments is where the action is. A myopic focus on one set of factors (biological) or others (social-structural) will probably not bring us any closer to the truth (Wilson, 1998). This field’s study of the diverse determinants of depression and suicide among youths in North America involves more than 150 studies to date of race/ethnicity, which may be thought of as a biological or sociological construction depending upon one’s theoretical standpoint, as well as an array of other social (various socioeconomic statuses) factors. As reviewed above, this represents a fairly complex array of interrelated constructs. This researcher is unaware of any previous study (primary or review/meta-analysis) that has systematically incorporated all such factors and attempted to observe their relative
effects. This proposed meta-analysis would do so with a sample of North American
studies. In doing so, it plans to provide scholarly and practical-policy insights into the
most valid construction of race/ethnicity as well as into the relative weight of the various
social determinants of depression and suicide: racial/ethnic and socioeconomic.
CHAPTER III
RESEARCH QUESTIONS

The findings of this field's rapidly expanding research base have not yet been systematically integrated. This study will do so. Keeping up with the knowledge and various understandings produced by this field's more than 50 empirical study outcomes over the past 25 years or so can be a daunting, if not impossible, task for even the most diligent of scholars (Gorey, 2005). Unsystematically reviewing this field's studies; studies of diverse peoples and places that have been accomplished with a variety of research designs that have produced diverse and often seemingly conflicting outcomes can lead the public, clinicians, and even social scientific and biomedical researchers to rely too heavily on their own, potentially biased, world views as interpretive aids. For example, as is often the case in both scientific and political arenas, one can always emphasize a few study outcomes that tend to support one's theoretical or political position. Again, as is often the case, one can even choose to ignore that these may be the studies that have used the most suspect research methods. Clearly, the great lifespace and practical significance of this field's central issues make it imperative that we do better than that. This study will do so. It will systematically review and empirically integrate this field's knowledge by the means of a meta-analysis of its study outcomes. This meta-analytic study aims to address the following general research questions.

1. Is race/ethnicity associated with depression and suicide among youth?
   a) Are these associations stronger in America than in Canada, among adolescents (13 to 18 years of age) and young adults (19-24) than among children (5-12), among boys than girls, or more recently (1990-2004 versus 1980-1989)?
2. Is SES associated with depression and suicide among youth?

   a) Are these associations stronger in America than in Canada, among adolescents (13 to 18 years of age) and young adults (19-24) than among children (5-12), among boys than girls, or more recently (1990-2004 versus 1980-1989)?

3. Is the effect of race/ethnicity on depression and suicide primarily due to innate/biological/genetic differences between so-called racial groups or alternatively, to social/structural differences prevalently experienced by them (e.g., poverty, lack of educational opportunity, parental social position)?
CHAPTER IV
METHODS

Meta-analysis is a statistical analysis of a collection of studies. Conceptually, it is analogous to primary research, except that studies rather than people are the unit of analysis. Its methodologies for use in the social and biomedical sciences have advanced over the past generation or so contemporaneously with near exponential increases in relevant research reports (Cooper, 1998; Cooper & Hedges, 1994; Glass, McGaw, & Smith, 1981; Greenland, 1987; 1998; Light & Pillemer, 1984; Pettiti, 2000). There is a need in any field of study to periodically take pause to systematically integrate the field’s extant knowledge. The scholastic and practical purposes of doing so are to clarify what is known (e.g., to understand the determinants of a given disease/illness, the clinical significance of a given intervention/treatment or the practical affect of a given social policy) and unknown (e.g., to understand what future studies using which methods in which particular contexts are most needed) in a given topical area of study. Methodologically sound meta-analytic methods can serve these purposes well.

As with any research method, however, meta-analysis is not without its potential pitfalls. These are intimately related to the duo concerns of all research methods: internal and external validity. First, meta-analysis has been critiqued by epidemiologist and others a la the ‘garbage in-garbage out’ metaphor (Shapiro, 1994). For example, the simple averaging of the findings among a number of studies, some of which may be relatively rigorous while others may have serious methodological flaws, will most assuredly not add any helpful knowledge to a field. In fact, such a synthesis, that regrettably is not uncommon among contemporary meta-analyses, can only serve to
further muddy a field’s scholarly and practical waters. Thus, this meta-analysis will account for study methods in all of its syntheses of study outcomes. Secondly, if for some reason a meta-analytic sample were not representative of the population of studies in the field that it attempts to review, then its conclusions would again be seriously compromised. As with primary research, this potential meta-analytic flaw relates to the well-known phenomenon of researcher expectancy that can operate at any phase of the research process, at conscious or sub-conscious levels. This study will use two critical methods to protect against this particular threat to meta-analytic validity: (1) exhaustively search and retrieve all of this field’s published and unpublished studies; and (2) report the meta-analytic sampling scheme and analytic methods in sufficient detail that they are replicable by other researchers/meta-analysts.

Study Selection

Exhaustive research literature searches were conducted for conceptually and empirically relevant independent studies for inclusion in this meta-analysis. Its centerpiece was a broad computerized key word search of relevant published research literature databases over the past 25 years (1980 to 2004): PsycINFO, Index Medicus (Medline), Social Work Abstracts, and Sociological Abstracts. This field’s first study outcomes began to be published in the early 1980s. The key word search scheme was as follows: (depression OR suicide [ideation, threat OR completed]) AND (socioeconomic factors/status OR income OR poverty OR education OR occupation OR racial stocks OR race OR ethnicity OR black OR African American OR Aboriginal OR Native) AND (children OR adolescents OR youths [ages 6 to 24]) AND (Canada or United States or America). The reference lists/bibliographies of conceptually relevant retrieved study
manuscripts were then searched for other independent studies. This meta-analytic sample was restricted to African Americans in the US and Aboriginal people in Canada because they represent nearly all of the sufficiently powerful study outcomes (i.e., compared to white youths) in each instance. African American or black were used interchangeably to refer to the U.S. group that was reviewed. The terms "native" and "aboriginal" were used to refer to people whose ancestors were indigenous to Canada.

To provide some measure of protection against potential publication bias, sources of unpublished studies were similarly searched (Rosenthal, 1979): Digital Dissertations, searches of the World Wide Web. Other inclusion/exclusion criteria were: (1) studies were to be population-based investigations (relatively small clinical series were excluded); and (2) a quantitative effect estimate the r-index (Pearson's r, a scale-free measure of the strength of an association [see Analytic Plan section]) was calculable from each study's results. Qualitative studies and quantitative studies that report their findings with insufficient analytic detail were excluded.

Measures

Dependent Variables. The first outcome variable for this research effort was the child's level of depressive symptoms as measured by the operational definition identified in each study (all such variables to be included in this meta-analysis are displayed in its codebook [see Appendix A]). Thus, depression was coded as the scale or definition used in the primary study. The second outcome variable for this study was suicide as measured by the operational definition recognized by the primary study (the operational definition of suicide included in this meta-analysis is displayed in its codebook [see
Appendix A]. Suicide was coded and operationalized by the primary study’s definition of ideation, attempt, or completion.

Independent variables. The independent variable included the race/ethnic group identified in the primary study, specifically African Americans (Black), Aboriginal, White. The extent of literature is predominantly limited to these race groups as in the US, African Americans have been an exemplar of an oppressed group. In Canada, the oppressed group historically has been Aboriginal. These groups also represent most of the sufficiently powerful study outcomes used for the purpose of this meta-analysis.

Socioeconomic status as an independent variable was identified as operationalized by the primary study. Multiple indicators of socioeconomic variables were used for the purpose of this research effort (all such variables to be included in this meta-analysis are displayed in its codebook [see Appendix A]).

Analytic Plan

This meta-analysis’ unit of analysis is each unique primary study outcome within each hypothesis. For example, if a given primary study used two measures of depression and assessed the strength of the SES-depression association, its two outcomes would be combined (weighted average), as they are both relevant to the same hypothesis. If, on the other hand, a given primary study assessed the strength of two hypothetically unique associations, it would contribute ‘two lines of data’ to the meta-analysis, one each for the two relevant hypotheses, for example: race/ethnicity-suicide and SES-suicide. Each of the selected studies will have observed the strength of a particular hypothesized association within a particular Canadian and/or American context: the strength of the associations of various social/structural characteristics (race/ethnicity or SES) with
depression or suicide. Each independent study’s findings (e.g., $\chi^2$, t-test, F-ratio, Ms and SDs, Ns and p-levels) will be converted to a scale-free effect estimate—the $r$-index—through the use of straightforward statistical and meta-analytic techniques (Cooper, 1998; Greenland 1987; 1998). It is this meta-analytic study’s central statistic. The $r$-index is straightforwardly interpretable as Pearson’s linear correlation coefficient. The conversion of the diverse statistics that are typically reported in independent studies into such a scale-free metric or summary meta-analytic statistic allows for ease of across study aggregation and between-study comparisons.

**Main effects.** Next, within each research question domain the primary study $r$s will be combined by the method of weighted $z$s and each aggregate $r$’s combined probability or level of statistical significance calculated (Greenland, 1987; 1998; Rosenthal, 1978). Such analyses weight primary study $r$s by a function of their standard errors that are, in turn, functions of each study’s analytic sample size ($1/SE^2$). This means that larger, more powerful and precise studies, will be weighted more heavily in such pooled analyses than will smaller studies. These are this meta-analysis’ main effects analyses. They will provide insights into the practical strengths of the associations of each meta-analytic independent variable (race/ethnicity and SES) with each dependent variable (depression and suicide). Such main effects are really just the first level of synthesis in a sound meta-analysis. To extract more knowledge (of typically even more utility than that apparent from the main effects) from this meta-analytic sample, further syntheses must be performed (Cooper, 1998; Thompson, 1994)—moderator effects analyses.
Potential moderator effects. Within each of the sub-samples of studies relevant to each of this meta-analyses’ research questions (e.g., 10-20 primary studies each) there will most assuredly be ample variability on their r-index outcomes. To simply produce their weighted average (main effect), though sometimes informative, can result in the loss of much more useful knowledge. To extract as much of this knowledge as possible such study outcome heterogeneity will be explored with linear meta-regression models (performed and interpreted as are linear regression models in primary research). Within research question domains, primary study r-index outcomes will be regressed on other characteristics of the primary studies that may help to explain divergent study findings. Study characteristics of typical interest are research participant characteristics, research design characteristics, and various contextual characteristics related to place (all such variables to be included in this meta-analysis are displayed in its codebook [see Appendix A]). For example, it would probably be very interesting and important to know if the pooled findings from this field’s cross-sectional studies were significantly different from the pooled findings of its time-series studies, or if similarly, study findings systematically differed by other methodological characteristics such as participant response or attrition rates (relatively low versus high rates). Any of these would represent critical knowledge that is imperative for understanding the extant research in this field as well as for planning future, more valid and informative, studies. After their identification via meta-regression analysis such paired comparisons as well as their descriptive displays will be made with traditional test statistics (e.g., $\chi^2$ and t-test ). Specifically, for the purpose of this research, the moderator effects that will be explored are temporal trend (as a shift in social policy occurred regarding time frame), gender (male, female), and age group.
These moderator explorations will serve to aid in the interpretation of this study's main effects as well as to facilitate the precise exposition of this field's future research needs.
CHAPTER V
HYPOTHESES

1. Race/ethnicity (being African American [US] or Aboriginal [Canada]) is
   significantly and unfavourably associated with depression and suicide among youth.
   a) These associations are significantly stronger in America than Canada,
   among adolescents and young adults than among children, among boys than girls, and

2. Low SES is significantly and unfavourably associated with depression and
   suicide among youth.
   a) These associations are significantly stronger in America than Canada,
   among adolescents and young adults than among children, among boys than girls, and

3. The effect of race/ethnicity on depression and suicide is primarily a
   sociological, rather than a personal-biological phenomenon. The SES-adjusted
   race/ethnicity-depression and –suicide associations are both statistically and practically
   insignificant.
   a) The biological effect of race, per se, is expected to be similarly nonexistent
   across all geographic, demographic and temporal groups.
CHAPTER VI
RESULTS

Variables

The independent and dependent variables used in this meta-analysis are highlighted in Appendix B. The first aim of this study was to examine the association between race/ethnicity with depression and suicide among youth. Race as an independent variable, was coded as identified in the primary study. For the purpose of this research effort, race was comprised of African American (Black), Aboriginal, and White. The second aim of this study was to examine the association between SES with depression and suicide. The conceptual definition of SES as an independent variable was comprised primarily of four subcategories: insurance, education, income, and occupation. The health insurance category essentially coded for having insurance. Education was coded for maternal, paternal, parental, and level of education. The income category coded primarily for poverty, financial status, economic hardship, and welfare receipt. Insurance, education, and income variables were measured in the majority of the primary studies. Occupation was measured by parental occupation and employment status. Other studies evaluated SES by using composite indices, the Hollingshead measurement which combines education and income variables, and SES definitions operationalized in the primary study (see Appendix B).

The outcome measures of interest used in this meta-analysis were depression and suicide. Depression as a dependent variable was coded as identified in the primary study. Approximately, two thirds of the studies dependent measure was depression. The operational definition of depression was measured by the procedural definition given in
the primary study (see Appendix B). The Children’s Depression Inventory (CDI), and Center for Epidemiologic Studies Depression Scale (CES-D) were used in over one half of the studies measuring depression. The outcome measure of suicide was identified in one third of the studies. The operational definition of suicide was measured by the procedural definition given in the primary study (see Appendix B). The majority of studies measuring suicide identified this outcome measure either as ideation, attempts, and/or completion.

**Characteristics of the Reviewed Studies**

The descriptive characteristics of the reviewed articles are shown in Table 3. An exhaustive computerized literature search yielded a total of 64 studies that met all of the inclusion criteria and produced one hundred and seventy data points (N = 170). The studies were coded using the analytic code sheet; the primary tool used to extract information (see Appendix A). The code sheet was used for the concise collection of data that made for a thorough examination of each article. The primary study was coded by study identification (publication year, country and source of reference), research design characteristics (research design, random, sample size), characteristics of participants (% of study sample female, response rate, age, % study sample white, % study sample black, % study sample aboriginal), racial/ethnic group critical comparison, independent variable of SES, dependent variable of depression or suicide, operational definition of the dependent variable, statistical outcomes (effect size-Pearson’s $r$, study racial outcomes adjusted for SES, method of adjustment, p-level), hypothesis, data collection year, location, ecological, and level of ecological measurement. The vast majority of the studies were large, epidemiological, population based studies. Included
studies tended to be of very large, randomly selected samples with high response rate. As a result, the strength of the study was its large sample size and hence, results may have greater generalizability. All of the coded data was manually entered into the Statistical Package for the Social Sciences (SPSS) database for statistical analysis.

**Study Identification.** This integrative review's sample of 170 study outcomes accomplished over the past twenty-five years (ranged from 1980 to 2004) was predominantly of published ones (166 journal articles, 97.6%). One hundred and fifty three (90%) of the studies were accomplished in the United States, nine were carried out in Canada (5.3%), and the remainder eight were identified as within North America (4.7%).

**Research Design.** In total, the sample size ranged from 750 to 630,000+ (M=4,298.5, SD= 5,577.8) children between the ages of 5 to 24 years of age. Random selection occurred in 158 (92.9%). Eighty eight of the 113 reported study outcomes response rate were over 80%, with a mean of the original studies at 86.8. The original studies typically used cross-sectional designs (92.4%) to assess the association between the independent variables and the outcome measures of depression (64.7%) and suicide (35.3%). Longitudinal design was used in 7.6% of the sample.

**Location.** Specific location was identified in 159 of the study outcomes (urban areas consisted of 24.5%, rural areas were identified 5%, and both urban and rural combined were 70.4%).

**Characteristics of Participants.** From the population of all the 170 data points, more than four fifths of the aggregate review sample (85.3%) was represented by African American and Aboriginal children. The ethnic critical comparison group of Black-White
was prevalent in 87.6% of the articles distinguishing race as the independent variable, and the remaining studies identified the Aboriginal-White comparison group. The majority of the studies were distributed among the 10 to 19 year olds, with fewer studies at the ends of the distribution (e.g., age 5 to 9, age 20 to 24). The percentage of study sample females was a mean of 51.0, and a standard deviation of 4.4.

Findings Related to Hypothesis

The meta-analytic findings relevant to the hypothesis of an association between race and depression were identified in 52 of the study outcomes (30.6%). The relationship between race and suicide was reported in 36 of the samples (21.2%), with SES and depression recognized in 42 of the samples (24.7%), and SES and suicide in 15 (8.8%). Race with SES adjustment and depression was extracted from 17 of the samples (10%), and race with SES adjusted and suicide with a frequency of eight (4.7%). Table 4 depicts the frequency and percent of findings relevant to each hypothesis.
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<td></td>
<td>36.6 to 49.9 42.4</td>
</tr>
<tr>
<td>Cross-sectional</td>
<td>157</td>
<td>50.0 to 73.8 39.0</td>
</tr>
<tr>
<td>Longitudinal</td>
<td>13</td>
<td>All female 9.3</td>
</tr>
<tr>
<td><strong>Random Selection</strong></td>
<td></td>
<td>M= 51.0, SD= 4.4</td>
</tr>
<tr>
<td>Yes</td>
<td>158</td>
<td>Age Range</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>Children (5 to 9) 6.6</td>
</tr>
<tr>
<td>Unidentified</td>
<td>5</td>
<td>Youths (10 to 19) 66.9</td>
</tr>
<tr>
<td><strong>Sample Size</strong></td>
<td></td>
<td>Youths (20 to 24) 1.2</td>
</tr>
<tr>
<td>Less than 750a</td>
<td>42</td>
<td>Combined 25.3</td>
</tr>
<tr>
<td>750 to 1,999</td>
<td>41</td>
<td>Race/Ethnic Critical Comparison</td>
</tr>
<tr>
<td>2,000 to 9,999</td>
<td>47</td>
<td>Black – White 87.6</td>
</tr>
<tr>
<td>10,000 to 630,000+</td>
<td>40</td>
<td>Aboriginal – White 12.4</td>
</tr>
<tr>
<td><strong>Response Rate</strong></td>
<td></td>
<td>M= 86.8, SD= 8.9</td>
</tr>
<tr>
<td>10.0 to 59.9 c</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>60.0 to 79.9</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>80.0 to 89.9</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>90.0 to 100.0</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>
a Only one study had an aggregate sample less than 100.
b Missing response rate for 31.8% of the study outcomes.
c Only one study had a response rate less than 50%.
d All except one accomplished through mathematical modeling.
e One study included children less than 5 years of age.

### TABLE 4. Meta-Analytic Findings Relevant to Hypothesis

<table>
<thead>
<tr>
<th>Association</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race-Depression</td>
<td>52</td>
<td>30.6</td>
</tr>
<tr>
<td>Race-Suicide</td>
<td>36</td>
<td>21.2</td>
</tr>
<tr>
<td>SES-Depression</td>
<td>42</td>
<td>24.7</td>
</tr>
<tr>
<td>SES-Suicide</td>
<td>15</td>
<td>8.8</td>
</tr>
<tr>
<td>Race (SES adjusted)-Depression</td>
<td>17</td>
<td>10.0</td>
</tr>
<tr>
<td>Race (SES adjusted)-Suicide</td>
<td>8</td>
<td>4.7</td>
</tr>
</tbody>
</table>
Main Effects in the United States

Within each research question domain the primary study rs were combined by the method of weighted rs and each aggregate r’s combined probability or level of statistical significance calculated (Greenland, 1987; 1998; Rosenthal, 1978). Table 5 summarizes the results of the studies that included associations of African Americans and depression, African Americans and suicide, SES and depression, SES and suicide, African American adjusted for SES and depression, and African American adjusted for SES and suicide in the United States. All the study outcomes within the United States identifying an association between African American and depression, and African American and suicide resulted in r=.043, and .025 respectively, both outcomes were statistical significant at p<.05. As hypothesized, in the United States, statistical significant and unfavourable African American depression and suicide associations were observed.

The study outcomes within the United States reporting an association between SES and depression resulted in r=.093 statistical significance at p<.05. The association between SES and suicide was r=.018 approaching statistical significance at p<.10. The results support previous research from a nationally representative sample that found SES was significantly associated with level of depressive symptoms, F(3, 5565)=101.1, p is less than .001., and higher levels of SES are associated with significantly lower levels of depression (Schraedley, Gotlib, & Hayward, 1999). The SES-suicide hypothesis is also supported by the work of Lewis, Johnson, Cohen, Garcia & Velez (1988) which found lower SES youth tend to be more likely to demonstrate suicidal behaviour. Thus, as hypothesized, in 51 of the within country United States study outcomes, a statistical
significant and unfavourable association between low SES and depression (40 outcomes), and low SES and suicide (11 outcomes) were observed.

The study outcomes within the United States reporting an association between African Americans with adjustment for SES and depression resulted in 15 samples with $r = 0.059$ approaching statistical significance at $p < 0.10$. The association between African American with adjustment for SES and suicide resulted in eight samples with $r = 0.018$ approaching statistical significance at $p < 0.10$. Thus there is no significant effect of race after SES was accounted for.
TABLE 5. The Association of Race/Ethnicity and Socioeconomic Status (SES) with Depression and Suicide among Youth, in the United States

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th></th>
<th>Suicide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>r</td>
<td>n</td>
<td>r</td>
</tr>
<tr>
<td>African American</td>
<td>47</td>
<td>.043*</td>
<td>31</td>
<td>.025*</td>
</tr>
<tr>
<td>SES (low vs high)</td>
<td>40</td>
<td>.093*</td>
<td>11</td>
<td>.018a</td>
</tr>
<tr>
<td>African American</td>
<td>15</td>
<td>.059a</td>
<td>8</td>
<td>.018a</td>
</tr>
<tr>
<td>(SES adjusted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

a Approached statistical significance (p<.10)
African American effect (r) vs SES effect (r) on depression, t(85)=2.18, p<.05
African American effect (r) vs SES effect (r) on suicide, t(40)=0.11, NS
Main Effects in Canada

Within each research question domain the primary study rs were combined by the method of weighted z’s and each aggregate r’s combined probability or level of statistical significance calculated. Table 6 summarizes the results of the studies that included associations of Aboriginal and depression, Aboriginal and suicide, SES and depression, SES and suicide, Aboriginal adjusted for SES and depression, and Aboriginal adjusted for SES and suicide in Canada. There were no Canadian studies found identifying an association between Aboriginal and depression. There were five study outcomes reporting an association between Aboriginal and suicide, which resulted in r=.014, statistically significant at p<.05. The results support previous research from a review of youth suicide in Manitoba, Canada, which found a suicide rate in the Native population ten times more than that of non-Natives (Sigurdson, Staley, Matas, Hildahl, & Squair, 1994). Thus, as hypothesized, in the five study outcomes of within country Canada, a statistical significant and unfavourable association between Aboriginal youth and suicide was observed.

There were no primary studies that reported an association between SES and depression in Canada. The relationship between SES and suicide was found in four study outcomes, which resulted in r=.043, statistically significant at p<.05. The results supported previous research from a cross-sectional survey examining the association of lower SES with adolescent risk behaviours (suicide attempt) (Langille, Curtis, Hughes, & Murphy, 2003). Thus, as hypothesized, in the four study outcomes of within country Canada, a statistical significant and unfavourable association between low SES and suicide was observed.
The exhaustive search produced no Canadian studies examining the association between Aboriginal with SES adjustment and depression, and Aboriginal with SES adjustment and suicide.

The aboriginal effect (r) versus SES effect (r) on suicide is t(7)=8.05, p<.01, therefore SES is significantly larger than being aboriginal with suicide. This large of a difference is not by chance alone, there is a practical and significant four fold difference.
TABLE 6. The Association of Race/Ethnicity and Socioeconomic Status (SES) with Depression and Suicide among Youth, in Canada

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th></th>
<th>Suicide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>r</td>
<td>n</td>
<td>r</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>---</td>
<td>---</td>
<td>5</td>
<td>.014*</td>
</tr>
<tr>
<td>SES (low vs high)</td>
<td>---</td>
<td>---</td>
<td>4</td>
<td>.043*</td>
</tr>
<tr>
<td>Aboriginal (SES adjusted)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

*p<.05

Aboriginal effect (r) vs SES effect (r) on suicide, t(7)=8.05, p<.01
Lack of Moderation of Effects

At times there are differences between the studies that can create variability in study outcomes. By identifying important study characteristics, researchers can examine whether the strength of an effect has been influenced by such characteristics. The primary study outcomes (depression and suicide) were compared with study characteristics. The standard correlational and analysis of variance statistics were explored. Moderators, in this analysis include temporal trends, gender (% female), and age group.

Temporal Trends. Temporal trends were explored for possible changes in associations over time. The cohort (time span 1980 to 1989 and 1990 to 2004) was analyzed for the U.S., and Canada. In the U.S., the effect size was not moderated by the cohort. As a result, over time there is a consistent association of race and SES with depression and suicide. In Canada, there was no cohort (time span 1988 to 1995, 1996 to 1999, and 2000 to 2004) to test the comparison, thus the cohort was not a significant moderator as it did not differ by time.

Gender. Overall, the effect size was not moderated by gender, thus the relationship of gender to the effect size was not significant. However, when analyzing the individual hypothesis there appeared to be a significant correlation $p<.05$ for SES and depression. Thus, the moderator of the female gender approached statistical significance at the .05 alpha level criterion when the SES and depression relationship was analyzed ($r=-.40$, $p<.05$). As the percentage of females increase in studies, the observed effect size for SES and depression decreased. Thus, there appears to be a larger SES and depression association among boys.
Age Group. The moderator of age group was reviewed for the three groups (5 to 9 years, 10 to 19 years, 20 to 24 years) and the six hypotheses. The effect size was not moderated by age group. For the associations between race and depression, race and suicide, and SES and depression age group yielded a non-significant association. For SES and suicide, race (SES adjusted) and depression, and race (SES adjusted) and suicide, there were no groups to compare, thus no statistics were computed.

Overall, findings are consistent that the effect size did not differ significantly between moderating effects. Therefore, none of these test statistics approached statistical significance at the .05 alpha level criterion. As well, all of the other research methodological characteristics displayed in Table 3 were similarly found not to moderate any of the hypothesized effects.

Hypotheses Support

The following provides a summary of each stated hypothesis and the associated outcomes.

1. Race/ethnicity (being African American [US] or Aboriginal [Canada]) is significantly and unfavourably associated with depression and suicide among youths. These associations are significantly stronger among adolescents than among children, among boys than girls, and more recently (1990-2004 versus 1980-1989).

Outcomes:

Within the U.S. sample, being African American resulted in a significant association with depression ($r=.043$), and with suicide ($r=.025$). Within the Canadian sample, there were no studies conducted between 1980 and 2004 that met the inclusion
criteria for this analysis. Within the Canadian sample, being Aboriginal resulted in a significant association with suicide ($r=0.014$). The effect size was not moderated by age group, gender, and by the cohort (1990-2004 versus 1980-1989).

2. Low SES is significantly and unfavourably associated with depression and suicide among youth. These associations are significantly stronger in America than Canada, among adolescents and young adults than among children, among boys than girls, and more recently (1990-2004 versus 1980-1989).

**Outcomes:**

Within the U.S. sample, low SES resulted in a significant association with depression ($r=0.093$), and suicide ($r=0.018$). Within the Canadian sample, there were no studies identifying an association between low SES and depression between 1980 and 2004 that met the inclusion criteria for this analysis. Within the Canadian sample, low SES resulted in a significant association with suicide ($r=0.043$). The moderator of female gender approached statistical significance ($p<0.017$) for SES and depression. The effect size was not moderated by age group, by gender for SES and suicide, and by the cohort (1990-2004 versus 1980-1989).

3. The effect of race/ethnicity on depression and suicide is primarily a sociological, rather than a personal-biological phenomenon. The SES-adjusted race/ethnicity-depression and -suicide associations are both statistically and practically
insignificant. The biological effect of race, per se, is expected to be similarly nonexistent across all geographic, demographic and temporal groups.

Outcomes:

Within the U.S. sample, being African American with SES adjustment resulted in a significant association with depression ($r=0.059$), and with suicide ($r=0.018$). Within the Canadian sample, there were no studies conducted between 1980 and 2004 that identified an SES adjustment for being Aboriginal that met the inclusion criteria for this analysis.
Discussion

Specifically this meta-analysis reviewed variables associated with depression and high suicide risk in youth which holds important implications for prevention. The present meta-analysis included population based investigations from within the United States and Canada. Significant associations were found between African American youth and the outcomes of depression and suicide, and Aboriginal youth and suicide. Despite the growing interest in this area, as indicated by three primary studies published from 1980 to 1989, in comparison to the 61 studies conducted from 1990 to 2004, the incidence of depression and suicide has not decreased. In fact, suicide has increased in alarming rates primarily with the Aboriginal youth in Canada.

The Aboriginal population face immense odds against them. The uniqueness of the Aboriginal culture, the long history of powerlessness (colonization, marginalization, rapid cultural changes), and youth who feel they have no purpose in life are troubled by the highest suicide rates. Furthermore, they face the highest levels of poverty and unemployment, as well experience low education levels and lack of access to basic health care services. Aboriginal youth and their families need the supportive environment that encourages access to life chances (opportunities to better their quality of life).

Therefore, given the smallness of the effect size of the present meta-analysis for race, and outcomes of depression and suicide, and the prevalent increases of depression and suicide among North American youths, it would lead one to ponder which factors are possibly being overlooked. Perez-Smith, Spirito, and Boergers (2002) studied the role of
neighbourhood factors in predicting hopelessness among youth who attempt suicide. The results indicated that adolescents who live in neighbourhoods with weak social networks have increased levels of hopelessness, even after controlling for depression and SES. The findings support that environmental context may be a factor in the emotional state of youth that attempt suicide. Also, when economic hardship is prolonged and children grow up in chronic poverty, not only are their family relationships difficult, but a flood of other community risk factors threaten their mental health. Impoverished communities give rise to disorderly conduct, crime, negative peer pressure, resulting in youth growing up hopeless and angry. In such communities it is likely that the schools these children attend are of poor quality with low academic expectations and achievement, and frequent teenage drop outs (Perez-Smith, Spirito, & Boergers, 2002). Lack of education is often related to income, and employment opportunities. Income is tied to level of resource (e.g. opportunity to purchase homes in safer neighbourhoods). Thus, although intertwined, examining independent effects may yield valuable insights (Hussey, 1997).

Within the U.S., and Canadian studies, the effect size was generally not moderated by temporal trends, gender, and age group, as previous research had alluded. This finding suggests that other factors (e.g. contextual, neighbourhood, community) need to be closely examined for the purpose of understanding this epidemic. Contextual factors that have been identified as posing significant risks for completed suicide include school and work problems, as suicide attempters were more likely to have difficulties in school, or drop out of high school (Gould, Greenberg, Velting & Shaffer, 2003). As well, exploring the role of neighbourhood effects (neighbourhood disadvantage) on mental health, and whether neighbourhood variables have a direct effect or moderate the effect
of emotional distress (Herting, Snedker, & Walton, 2006) can provide further insight on depression and suicide in children. Understanding individual variables as well as the social/economic context variables leads to comprehensive knowledge of how the environment impacts mental health.

The strength of the association for SES and depression, and for SES and suicide in the U.S. was significant, as was race (African American) and depression, and race (African American) and suicide. The strength of the association for SES and suicide in Canada was significant. Of interest is that Canada’s SES main effect was larger than that for race/ethnicity. This may suggest that SES in Canada is important, in that future research efforts may want to concentrate on further exploring the implications of SES and mental health as well as other health related issues.

There was no significant effect of race after SES was accounted for in the U.S. study samples. Thus, this implies clearly that once SES was adjusted, race did not make a difference. This finding is consistent with the ‘liberal’ social welfare theory which indicates that access to key opportunities or life chances, still tend to be highly associated with socioeconomic status (SES) in North America. Observed racial differences are thought to be the tenacious reflections of such social-political phenomena, rather than racial effects. This finding is also supportive of social-structural theorists that have emphasized the importance of socioeconomic determinants of mental well being as well as many other health problems (Gould, 1995; Wilson, 1987; 1996). This demonstrates that ‘race’ is interpreted primarily as a social construction.

This meta-analysis gives credibility to a number of extremely important social and mental health policy issues. As well, it points toward future discussion of life chances
(or lack of life chances), and how this matters because social justice requires fairness, and absence of oppressive barriers (e.g. social class, persistent poverty). Thus, at a more global level, the course of eliminating poverty and social inclusion are essential to the mental (and physical) well being of individuals.

Limitations

The majority of this study sample reflects the magnitude of association between race and depression, race and suicide, SES and depression, and SES and suicide within the United States. Only nine study outcomes were within Canada, thus it is difficult to make strong generalizations about the presence of the phenomena in Canada. When compared to the United States there is a substantial lack of Canadian literature which causes inconsistencies and often contributes to an insufficient understanding of the variable associations amongst the general population and amongst the Aboriginal youth. Canada prides itself on being a multicultural country, however the lack of research recognizing the unique experiences of the aboriginal population specifically the mental health needs of aboriginal youth is alarming. Further research regarding race/ethnicity that consider many contextual variables simultaneously may provide a better understanding of mental health needs and ensure that policies are fairly implemented for all people.

Identifying areas of research that in the past received insufficient attention should direct future research priorities. The dearth of data collection on this topic has somewhat increased three-fold from the time span 1980 to 1989 to the majority of studies published between 1990 to 2004 (the previous span with 31 study outcomes, the latter span with
In review of the past 25 years, the first 10 years lack of data may be regarded as a study limitation, however it points to a significant difference in the way that the two nations produce research (Canadian data were found in two of the primary studies, United States data were evident in 62 original studies). Mental health and social policy implications may be drawn from this fact alone and may serve as a fundamental study finding. Therefore, it is apparent that a continuous need of research (Canada more so) is important to gain a better understanding of the variable associations and lead to informative policy implications.

It is also important to note that although few primary studies identified the level of ecological measurement, of the 14 reported, seven of the study’s SES variable (50%) were census based and could be scrutinized as an “ecological fallacy”. These studies provided ecological indices such as that which would be found in larger census tracts. Ecological studies tend to be much more cost effective and time efficient. Many researchers have stated that assumptions about individuals based solely upon aggregate statistics for a group create a fallacy. The fallacy infers that all individuals of the group exhibit generalized characteristics of the group, thus this creates stereotypes and misconceptions (Wikipedia, 2001). Prudence should be used with aggregate data as it may conceal variations that are not as apparent or visible at the larger level. Closer examination of results are necessary so assumptions made are not vulnerable to the ecological fallacy. For example, census tracts have been used to draw inferences that in poor neighbourhoods the poor black are poorer than the poor white. This residual confounding can lead to misconceptions and biased outcomes that may overestimate or underestimate a studies effect size. As well, it is important that future research efforts
include individual level measures of life chances (e.g. income) to provide a clearer understanding and lead to more practical policy implications.

It is imperative that researchers are rigorous with the study coding process to ensure that integrating the findings from many studies are coded similarly and can be easily replicated. For this purpose, as well as to avoid bias and to protect against the threat of validity, a complete description of the meta-analytic sampling scheme and analytic methods in sufficient detail is necessary. Providing the procedures used to locate the studies assists with an intelligent assessment of the representativeness and thoroughness of the data base for a meta-analysis (Glass, McGaw, & Smith, 1981). The present meta-analysis reports all of the studies used in the sample, coded characteristics are appended, and detail of the analytic methods are provided. This supports easy replication for further analysis.

Conclusion and Direction for Future Research

There is a need to periodically take stock of extant literature and systematically integrate the knowledge. Clarifying what is known and unknown assists with the direction of future research. In order to understand and address depression and suicide in youth, it is imperative to know about the types of youth that are at risk, and the social context in which they live. The advanced generalist practice model can lead by incorporating an across the board approach which includes micro, mezzo, and macro level plans.

The advanced generalist practice model, a social work approach to this vulnerable population (children and youth), can be implemented to ensure a comprehensive plan is developed to deal with the social correlates of depression and suicide among youth. At
the micro level, clinical implications cover a broad spectrum, all of which are necessary for addressing this issue. First, interventions are needed at all levels of society for the prevention of depression and suicide, and ultimately the improvement of mental health (beginning from the very young). Second, community resources should be made available with competent organizations to provide efficient, and quality services (e.g. best practises in mental health). It is essential that clinicians become socio-culturally sensitive to ensure that each person’s uniqueness, experiences, and history that he/she brings is respected when conducting an assessment, and providing intervention. During the intake, or assessment phase it will be important to understand the SES of the individual as this will have a significant affect on their coping strategies. At the mezzo level, it will be important to advocate for social justice, and social inclusion which in turn will assist in the elimination of the much bigger issue of ‘race’ as a social construction. Community development, networking and intersectoral collaboration (including African American members in the U.S., and partnering with Aboriginal members in Canada) will also be necessary at this level.

To address the issue of SES and improve mental health, a redefinition of all policies that directly or indirectly affect health and a new commitment to those affecting income, education, and employment is important. At the macro level, to promote global activism through education and research by helping to circulate knowledge and disseminate information. This will essentially alter misinformation regarding depression and suicide in youth, and direct future research to continue to look at independent variables (e.g. life chance, contextual, neighbourhood) in understanding depression and suicide. Young people desperately need to believe their futures have hope.
APPENDICES

APPENDIX A

Meta-Analytic Codebook for Primary Study Data Extraction

1. Study ID#:

2. Publication Year:


<table>
<thead>
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<th>Research Design Characteristics</th>
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<td>7. Random: 0-No 1-Yes</td>
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8. Sample Size:

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<th>Characteristics of Participants</th>
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<tbody>
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<td>9. % of Study Sample Female:</td>
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</table>

10. Response Rate:

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<th>3. 11-15</th>
<th>4. 16-20</th>
<th>5. 21-24</th>
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<td>13. 11-16</td>
<td>14. 13</td>
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<td>26. 14-18</td>
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<td>28. 10-14</td>
<td>29. 0-17</td>
<td>30. 8-14</td>
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</tr>
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<td>31. 12-17</td>
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<tr>
<td>36. 9, 11</td>
<td>37. 12-23</td>
<td>38. 4, 5</td>
<td>39. 17-24</td>
<td>40. 12-14</td>
<td></td>
</tr>
</tbody>
</table>
13. % study sample white:

14. % study sample black:

15. % study sample Aboriginal:

**Research Question/Hypothesis**

16. Racial/Ethnic Group Critical Comparison:  
1. white-black  
2. white-aboriginal

17. Socioeconomic Variables –Independent Variable (IV):  

   1. health insurance  
   2. maternal education  
   3. paternal education  
   4. mother’s occupation  
   5. father’s occupation  
   6. income  
   7. welfare receipt  
   8. household head education  
   9. family household poverty  
  10. combined variables to create index with 3 levels: low/med/high (a) receipt of free or reduced-price lunch, (b) parents educational attainment, (c) number of parents student reported living with, (d) number of parents working full time  
  11. per capita income unemployed, percent of population born to unmarried females, level of education  
  12. reports of much worse off, worse off than peers (family financial status)  
  13. family structure, parental education, parental employment  
  14. SES 4 questions based on money for basic needs  
  15. school level income, mean household income  
  16. parental education  
  17. parental occupation  
  18. receipt of free or reduced lunch (school SES)  
  19. Hollingshead four factor SES score  
  20. Status strain: college unlikely
21. SES coded: 1. Lower class 2. lower to middle class 3. middle class 4. middle to upper class
22. family income, father's occupation and education, mother's education
23. persistent poverty
24. recent poverty
25. economic hardship, difficulty paying for essential needs
26. poverty transition
27. education level and occupation status
28. parental education, income and occupational prestige level
29. average school income
30. school economic level/school poverty
31. employment status (not employed/employed)
32. self-report measure of SES


19. Operational Definition of the DV (measure):
   1. Children's Depression Inventory (CDI)
   2. Beck Depressive Inventory (BDI)
   3. Center for Epidemiologic Studies Depression Scale (CES-D)
   4. NIMH/DISC
   5. Suicide ideation
   6. Suicide attempts
   7. Suicide completion
   8. Behaviour Problem Index (BPI-depression)
   9. Kiddie Schedule for Affective Disorders (K-SADS)
   10. Suicide plan
   11. Depression Negative Affect & Subscale (CDI & Children's Anxiety Inventory)
   12. Suicidal behavior (ideation & attempt)
   13. Diagnostic Interview Schedule for Children's Present State (DISC-PS)
   15. DSM (DSM)
   16. Feelings of depression/stress
   17. Adult Suicidal Ideation Questionnaire (ASIQ)
   18. Columbia Suicide Screen (CSS)
   19. Hopkins Symptom Checklist (HSCL)
   20. Students Observation about Self (SOS)
   21. DSM-IV version of the Michigan Composite International Diagnostic Interview
22. Teacher Information Form (TIF) – developed from DISC and child behaviour checklist
23. Children’s Assessment by Parent (CAP)
24. Self-reported depression
25. Achenbach Behavior Problem Checklist
26. Average Center for Epidemiologic Studies Depression Scale (CES-D) score from students within the school
27. Child and Adolescent Psychiatric Assessment
28. Diagnostic and Statistical Manual of Mental Disorders Revised 3rd Edition criteria for depression
29. DSD – suicidal ideation

20. ES Study Effect Size: The r-index (Pearson’s r):
21. SES adj. Study Racial Outcomes adjusted for SES: 0 – no 1- yes
22. Adjusted how- How were studies SES adjusted: 1. Matching
2. Sample Restriction
3. Mathematical modelling

23. p-level
1. NS
2 = p<.10
3 = p<.05
4 = p<.01
5 = p<.001

24. Hypothesis
1= Race – Depression
2= Race – Suicide
3= SES – Depression
4= SES – Suicide
5= Race (SES adj.) – Depression
6= Race (SES adj.) – Suicide

25. Data collection year
1. 1982
4. 1992, 2000
7. 2000
10. 1996
13. 1992
16. 1997
19. 1983-1984
22. 1994-1995
25. 1981
2. 1998
5. 1995
8. 1993-1994
14. 1979-1989
17. 1994-1996
20. 1995-2000
12. 1994
15. 1992-1994
18. 1993
24. 1985
27. 1986-1988
26. Specific location/place

1. Southeast, USA
2. National, USA
3. Durham, Nashville, & Seattle (urban)
4. Urban University Hospitals
5. Minneapolis/St. Paul Metropolitan area
6. Georgia
7. North Carolina
8. Baltimore City
9. Phoenix area
10. Nova Scotia, (rural)
11. Philadelphia
12. Brooklyn, NY (urban)
13. Arkansas, Texas
14. Connecticut
15. Washington State
16. Houston (metropolitan)
17. Massachusetts
18. Utah (rural)
19. Northern Florida (metropolitan)
20. Los Angeles
21. Minnesota
22. South Carolina
23. NY State
24. Westchester County, NY
25. Missouri
26. Midwest
27. Chicago
28. Rural Southern Communities USA
29. South Florida
30. Alaska
31. New England
32. Manitoba, Canada
33. North Carolina (rural)
34. USA excluding South Dakota
35. Pittsburg, Pennsylvania
36. Southeast Texas, (metropolitan)

27. Ecological 0= no 1= yes

28. Level of Ecological Measurement

1. census tract
2. census subdivision
3. metropolitan area
4. county
5. state
6. province
7. low/middle income neighborhoods
Procedural Definition of the IV: See Open Code Sheet

Procedural Definition of the DV: See Open Code Sheet
APPENDIX B
Procedural Variable Definition

**Independent Variable Procedural Definitions**

**Race**
- 1. Black
- 2. Aboriginal
- 3. White

**Health Insurance**
- 4. Insured

**Income**
- 5. Income
- 6. Family household poverty
- 7. Family financial status (reports of much worse off, worse off than peers)
- 8. Money for basic needs (SES questions based on money)
- 9. School level income, mean household income
- 10. Persistent poverty
- 11. Recent poverty
- 12. Economic hardship (difficulty paying for essential needs)
- 13. Poverty transition
- 14. Average school income
- 15. School economic level/school poverty
- 16. Receipt of free or reduced lunch
- 17. Welfare receipt

**Education**
- 18. Maternal education
- 19. Paternal education
- 20. Household head education
- 21. Level of education
- 22. Parental education
- 23. College unlikely (status strain)

**Occupation**
- 24. Mother’s occupation
25. Father’s occupation
26. Parental occupation
27. Employment status (not employed/employed)

**Multiple indicators combined**

28. Index with 3 levels: low/med/high a) receipt of free or reduced price lunch, b) parents educational attainment, c) number of parents student reported living with, d) number of parents working full time
29. Per capita income, unemployed, percent of population born to unmarried females, level of education
30. Family structure, parental education, parental employment
31. Hollingshead four factor SES score
32. SES coded: 1 SES coded: 1. Lower class 2. lower to middle class 3. middle class 4. middle to upper class
33. Family income, father’s occupation and education, mother’s education
34. Education level and occupation status
35. Parental education, income and occupational prestige level
36. Self-report measure of SES

**Dependent Variable Procedural Definitions**

**Depression**
1. Children’s Depression Inventory (CDI)
2. Beck Depressive Inventory (BDI)
3. Center for Epidemiologic Studies Depression Scale (CES-D)
4. National Institute of Mental Health Diagnostic Interview for Children (NIMH/DISC)
5. Behaviour Problem Index (BPI- depression)
6. Kiddie Schedule for Affective Disorders (K-SADS)
7. Depression Negative Affect and Subscale (CDI & Children’s Anxiety Inventory)
8. Diagnostic Interview Schedule for Children’s Present State (DISC-PS)
10. Diagnostic Statistical Manual of Mental Disorders for Depression DSM (DSD)
11. Feelings of depression/stress
12. Hopkins Symptom Checklist (HSCL)
13. Students observation about self (SOS)
14. DSM-IV version of the Michigan Composite International Diagnostic Interview
15. Teacher information form (TIF)- developed from DISC and child behaviour checklist
16. Children’s Assessment by Parent (CAP)
17. Self-reported depression
18. Achenbach Behaviour Problem Checklist

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19. Average Center for Epidemiologic Studies Depression Scale (CES-D) scores from students within the school
20. Child and Adolescent Psychiatric Assessment
21. Diagnostic and Statistical Manual of Mental Disorders Revised 3rd Edition criteria for depression

**Suicide**

22. Ideation
23. Attempts
24. Completions
25. Plan
26. Suicidal behaviour (ideation and attempt)
27. Adult Suicidal Ideation Questionnaire (ASIQ)
28. Columbia Suicide Screen (CSS)
29. Diagnostic Statistical Manual Scale for Depression (DSD)- suicidal ideation
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