

**PSYCHOPATHOLOGICAL CORRELATES OF RISK
FOR ADOLESCENTS IN SECURE TREATMENT**

©ARIANA MCCULLOCH

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ABSTRACT

This research utilized data concerning adolescents at imminent risk for harm confined to the Edmonton and Lethbridge secure treatment centres in Alberta. Once screened for inclusion criteria in a single stage, non-random convenience sampling protocol, 210 files were included in the study. From these files, the adolescents' psychopathological diagnoses, Suicide Probability Scale (SPS) scores as well as other demographic data (including age, gender, ethnicity and previous suicide attempts) were recorded. This research was designed to delineate the characteristics of adolescents admitted to secure treatment, examine the overall suicide risk in this sample, investigate the relationship between study variables via crosstabulation and chi-square analysis, and to determine which independent variable/s best predicted suicide risk via ANOVA and multiple linear regression analysis.

Analysis results indicated that the sample was predominantly comprised of female adolescents, Caucasian ethnicity and was aged between 13 and 15 years. The majority of adolescents with suicide history information available in their file had previously attempted suicide. Youth demonstrated an average of 2.7 psychopathological diagnoses, the most frequent of which were conduct disorder, substance abuse, depression, adjustment disorder and parent child relational disorder. The majority of youth were in the moderate suicide risk category from SPS scores. Multiple linear regression analysis determined that the diagnoses of adjustment disorder and depression were found to be predictive of increased suicide risk scores, as was gender (females had higher risk scores), age (younger adolescents had higher risk scores) and previous suicide attempts. Those in the "other" ethnicity category demonstrated lower suicide risk scores.

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CHAPTER 1

INTRODUCTION

Adolescence is widely regarded as a time of increased risk. Youth perform many risk taking behaviours, some of which contribute to the major causes of mortality in adolescents, namely, vehicular accidents, accidents, homicide and suicide (Grunbaum et al., 2002). Despite gains made via research and through prevention programmes, increasing numbers of adolescent lives are being lost to violence and suicide. The tragedy of the loss of young lives calls for further investigation of adolescent violence and suicide in an effort to decrease future losses through better understanding of the causes behind these destructive acts.

Aggressive behaviours perpetrated by youth have shown dramatic increases (Moeller, 2001). There has been a corresponding resurgence of media attention to adolescents at risk of hurting other youth, especially since the school shooting tragedies at both Columbine High School in Littleton, Colorado, and W. R. Myers high school in Taber, Alberta. The escalation of violence is reflected in the increasing diagnosis of aggressive psychopathology among youth, including conduct disorder and oppositional defiant disorder (Grisso, 2003). According to Grunbaum et al. (2002), homicide is the ultimate violent act against another person, and ranks among the top four causes of youth mortality.

Youth suicide rates in Canada are high in comparison to other countries (WHO, 2003e) and continue to rise (Shaffer, 1996). In fact, youth comprise the fastest growing population for suicide (Jamison, 1999). Suicide rates for youth in Alberta are higher than the Canadian average thereby indicating that this is of particular concern in the province

of Alberta (Chief Medical Examiner, 2002d; Statistics Canada, 2003). The majority of the research on adolescent suicide suggests that youth suicide risk is highly correlated with the diagnosis of psychopathology, including disruptive disorders (especially conduct disorder), substance abuse, depression and affective disorders (Beautrais, Joyce & Mulder, 1998; Brent, 1995; Brent & Perper, 1995; Brent, Perper, Moritz, Allman et al., 1993; Brent et al., 1994).

Given that aggression and suicide in adolescents is an escalating problem, further study in this area may provide the needed insight to better understand its causes and therefore prevent the unnecessary loss of young lives. Secure treatment settings provide an excellent resource from which to study youth who are at risk of inflicting harm to themselves or others. The reason for this is that a secure treatment setting has a mandate to protect those adolescents who present the most imminent and severe risk.

Confinement to secure treatment requires adolescents to meet three criteria. The youth must have a mental health diagnosis, have an extremely high risk of harming themselves and/or others and demonstrate such severe risk that a period of confinement is necessary to alleviate the presenting concerns. Only those adolescents that demonstrate this severity of risk are confined in a secure treatment setting, which severely restricts youth in terms of their freedom; much like a detention facility, the youth live, eat, sleep and are schooled within the centre.

The province of Alberta has two secure treatment facilities that administer similar assessments to all referred adolescents in the determination of which youth meet secure treatment confinement criteria. Therefore, psychologists at the secure treatment centres collate data on these adolescents regarding clinical interview, personality assessment,

suicide risk assessment, diagnosis of psychopathology and collateral interview information. The highly restrictive nature of secure treatment signifies the extreme risk of adolescents confined there; severe risk must be imminent before the psychologist will recommend and a court will order an adolescent to be confined to secure treatment. Therefore, this setting constitutes a unique and thus very important population to study; youth at extreme risk.

Unfortunately, the current intake procedure at these secure treatment centres in Alberta does not produce clear indication to the underlying cause of confinement being due to risk to self, risk to others or some combination of both. This is partially due to the lack of a recording procedure (such as a database) and partially because the assessment of risk is more complex than can be noted in such an evaluation. Despite these inherent difficulties, valuable data is available through the nature of the intake procedure, including suicide risk measures, diagnosis of psychopathology as well as demographic information.

This study's aim is to take advantage of the accessibility to the data available in secure treatment centres in order to gain a clearer picture of adolescents at risk for other or self directed aggression. Specifically, it aims to gather data about adolescents confined to secure treatment, including age, gender, ethnicity, previous suicide attempts as well as the number and type of psychopathological diagnoses, in order to better understand these at risk youth. As well, this study will examine the presumptive suicide risk (from Suicide Probability Scale or SPS scores) of those confined to secure treatment to determine if the psychologists' assessment of high risk matches that given by the SPS. Furthermore, it will examine the relationship between study variables. Finally, as a means to determine

which variable/s best predict suicide risk, this study will examine the relationship between other study variables (including age, gender, ethnicity and previous suicide attempts) and suicide risk, as measured via SPS scores.

This chapter introduced the importance of studying adolescent risk in a secure treatment setting. Chapter 2 provides an in-depth review of literature on adolescent risk. An introduction to the problem of youth risk begins this review. Following this, psychopathology is delineated via definition, presentation of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) diagnoses most relevant to the current study and theoretical basis. The epidemiology, theoretical basis, risk factors, screening methods and treatment for both adolescent aggression and suicidality are presented in turn to follow. After that is the exploration of the nature of secure treatment for adolescents. A chapter summary follows. Finally, a thorough dissemination of the study's research goals, including presentation of hypotheses, concludes the chapter.

The method section (Chapter 3) disseminates information on the procedure used to conduct the study, including research design, sampling method, methods for data collection and data analysis. Discussion of potential study limitations bring the chapter to a close.

The results section (Chapter 4) presents the outcome of the research analyses. This includes presentation of the descriptive statistics of the sample, analysis of the relationship between study variables and risk via analysis of variance, crosstabulation and chi square analysis as well as multiple linear regression analysis of the same. The chapter concludes with a summary of the study's findings.

Finally, the discussion section (Chapter 5) begins with a summary of the results of the study and an evaluation of the results of the analyses relative to other pertinent research. Following this is a discussion of the limitations of the findings from study results. Implications for psychological practice and a discussion of directions for future research conclude both the final chapter and thesis.

CHAPTER 2

LITERATURE REVIEW

Adolescence involves the normal exploration of activities including those that involve risk. In order to address the various views of “normal” risk taking in this developmental age range this study explores adolescent risk in general, as well as discusses the theories that explain the prevalence of youth risk taking behaviour. The researcher then elaborates on this preliminary exploration by examining psychopathology as a major factor in adolescent risk with strong links to both suicide and aggression risk.

Inward and outward directed aggression in this age group, respectively displayed as suicidality and violence, are increasingly putting youth at risk of harm and, as such, are accelerating into an area of extreme concern for society. The problem of adolescent aggression is addressed, followed by a thorough examination of youth suicide. With the intention of fully exploring each problematic expression of risk, each aspect is presented in terms of epidemiology, theoretical basis, risk factors, screening methods and treatment. Adolescents requiring immediate and severe intervention due to imminent risk to harm themselves or others may be housed in a secure environment. The nature of secure treatment for youth, including assessment criteria for confinement, is thus presented next. A thorough dissemination of the study’s research goals and hypotheses of the results follow the chapter summary and thus conclude the chapter.

Adolescent Risk

In Western society, adolescence refers to the developmental period involving the formation of identity, values and opinions that will extend into adulthood (Rolison & Scherman, 2002). Adolescence is a construct created by society to demarcate the period

of time between childhood and the rights and responsibilities of adulthood (Melton, Petrila, Poythress & Slobogin, 1997). The quest for self during this developmental period often involves much experimentation, including risk taking behaviours, almost as an expected or “normal” right of passage (Shapiro, Siegel, Scovill & Hays, 1998). It is not surprising to note that adolescents have been found to be increasingly engaging in risky or dangerous behaviours (Stevens & Griffin, 2001). One need only turn on the television to see the sudden explosion of extreme sport and “reality TV” programmes featuring youth taking various risks. These behaviours include extreme sports representing physically dangerous situations, sexual promiscuity leading to health risk situations (such as engaging in sexual contact with multiple partners and/or without protection) and illicit drug, tobacco and alcohol use and/or abuse.

There are social, psychological and biological theories in the realm of adolescent development that attempt to explain risk-taking behaviours in youth. Research indicates that youth utilize these behaviours to help them to fit in socially (Engels & ter Bogt, 2001), obtain a goal or to meet a personal need (Shapiro et al., 1998), develop their own identity, opinions and values and for sensation seeking (Rolison & Scherman, 2002). The use of drugs and alcohol can have a dual effect on youth: they may use substances to fit in with peers or to lower inhibitions, which in turn can lead to additional risk taking behaviours that the youth would not consider if not under the influence (Milgram, 1993).

Moeller (2001) discusses two cognitive processes experienced by adolescents related to aggression: the concepts of the imaginary audience and the personal fable. The imaginary audience refers to youths’ belief that they are the centre of attention, while the personal fable speaks to adolescents’ misguided belief that they are invincible (Moeller).

Pickett et al. (2002) also discuss psychological (sensation or novel experience seeking) and biological (genetic predisposition and hormonal and psychosocial changes associated with puberty) theories to explain the increase of risk taking behaviour at this age.

Other considerations in the exploration of these behaviours are major biological changes that occur during puberty. These include changes in the brain; specifically the overproduction of grey matter as well as “pruning”, or reformation of neuroconnections, especially in the areas responsible for self-control, judgement, emotions and organization (Spano, 2003). These biological changes could help explain the psychological effects including poor decision making, recklessness and emotional outbursts in youth (Spano).

Many researchers in the field of suicide study (hereafter referred to as suicidology) have begun to express adolescent risk behaviours in the form of a continuum of self-destructiveness (King et al., 2001). This continuum describes a range of behaviour from covert (or sub-intentional) behaviours such as unprotected sex to overt (or intentional) risk behaviours including suicide attempts (King et al.). Adolescents range in the severity of risky behaviours and in rationalizations for engaging in the behaviours (Shapiro et al., 1998) as well as how often they engage in the behaviours.

Interestingly, many studies have found that those youth who experimented with performing risky behaviours, but were not at either extreme of abstaining completely or doing these habitually, were healthier in terms of their self-satisfaction (Shapiro et al., 1998), socialization skills as well as the frequency of interaction with friends and romantic partners (Engels & ter Bogt, 2001). As such, in moderation these behaviours can be considered developmentally appropriate for youth (Engels & ter Bogt), especially in terms of seeking independence from familial support (Pickett et al., 2002). The risk

taking behaviours that youth engage in must be considered in terms of developmental perspective, stresses Grisso (2003), because adolescents are undergoing behavioural and intellectual changes during this period. For example, Grisso cites that the majority of adolescent males engage in some activity that could have resulted in incarceration had they been caught, yet the great majority of youth offenders do not continue these offences into adulthood.

Extreme risk behaviours contribute to the major causes of mortality in youth, which are vehicular accidents, accidents, homicide and suicide (Grunbaum et al., 2002). To contextualize the major causes of mortality in youth, it is necessary to note that youth are unlikely to die from natural causes (Lester, 2003). Drug and alcohol use often act to provide a disinhibitory factor in youth risk taking (Milgram, 1993). Specifically examining the link between risk behaviours and suicidality, King et al. (2001) reported that even when psychopathology and demographic characteristics were taken into account, risk behaviours (including smoking, physical fighting, alcohol intoxication and sexual activity) were independently correlated with increased risk for suicide. Woods et al. (1997) report that youth who engaged in risk taking behaviours (including illicit drug and/or alcohol use prior to previous sexual activity, tobacco use and recent physical altercation) had high risk for suicide as measured by previous suicide attempts. Garnefski and de Wilde (1998) state that addiction-risk behaviours (defined as frequent use of tobacco, alcohol, marijuana, hard drugs and/or sedatives and gambling) were almost linear in their positive relation to previous suicide attempt.

In summary, increased risk taking activity in adolescents may be attributable to biological changes, cognitive distortions, social functioning, sensation seeking and/or

disinhibition due to drug or alcohol use or more likely some combination of these factors. Adolescents engage in many risk taking behaviours and it is likely that all of the aforementioned factors have some influence on youth risk taking. It is imperative to stress this increased risk taking results in many youth being hurt or dying. Adolescents are increasingly at risk to hurt others or themselves via acts of aggression and/or self mutilation to the extreme acts of homicide or suicide. As such, it becomes increasingly important to explore the causes for youth risk taking behaviours so that preventative measures can be taken to decrease the needless loss of young lives.

Research indicates that diagnosis of particular psychopathologies is strongly correlated to both aggression and suicide risk in adolescents. In order to gain a more complete understanding of youth acting out aggressively towards others or hurting themselves, psychopathology will be explored in terms of its definition, diagnosis and theory.

Psychopathology

The literature concurs that psychopathology is strongly linked to risk of aggression and suicide in youth. This discussion will begin by establishing a definition of psychopathology in order to clarify its role in adolescent risk.

A basic definition of psychopathology from the online Encarta Encyclopedia is the study of the causes and development of psychological disorders (Microsoft Corporation, 2003). Davis (1957) further elaborates that the study of psychopathology endeavours to explain disorders via psychological processes rather than merely describing symptomatology. Though psychopathology can be presented as above, Millon, a respected researcher in the field of psychopathological assessment, emphasized in his

1967 presentation of his theory of psychopathology that it is essential to understand that psychopathology must be defined in terms of the theory one employs to understand it.

In later works, Millon (1990) more comprehensively defines psychopathology as disorders of personality that represent styles of maladaptive functioning stemming from deficiencies, imbalances or conflicts in relation to self, others and/or the environment. According to Millon, it is essential to consider that the diagnosis of a psychopathology does not define the individual: the person still has unique personality characteristics in addition to his or her diagnosis. Many factors within each individual need to be considered in order to understand their unique expression of psychopathology. In fact, Millon argues that clinical categories must be considered flexible in order to permit the full range of individual characteristics. The integration of all individual aspects is entitled personologic psychotherapy with its major tenet being that the whole is greater than the sum of its parts (Millon). Personality problems are an “inextricably linked nexus of interpersonal behaviors, cognitive styles, [and] regulatory processes” (Millon, p. 164). It is necessary to examine the interrelated factors contributing to psychopathology, rather than looking at just one aspect of it in order to gain a complete picture of the individual (Millon).

The American Psychiatric Association (APA) holds a similar integrative or biopsychosocial model of psychopathology. Millon’s personality assessments including the Millon Clinical Multiaxial Inventory, third edition (MCMI-III) for adults (see Millon, Davis & Millon, 1997) and the Millon Adolescent Clinical Inventory (MACI) for adolescents (see Murrie & Cornell, 2000) were designed to help clinicians assess personality disorders and clinical syndromes based on the APA diagnostic axes. The

scales of these assessments are grouped into categories of personality and psychopathology to reflect the distinction between Axis I and Axis II disorders made in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and are based upon Millon's theory of psychopathology (Millon et al.).

Many psychologists and psychiatrists utilize the DSM as an essential aspect of their assessment process of mental disorders. The current edition of this text is the DSM-IV-TR (4th edition, text revision, 2000). According to the American Psychiatric Association (APA, 2000), psychopathologies are patterns of clinically significant behavioural or psychological difficulties. These difficulties in coping are identified with current painful symptoms or impairment in at least one area of life functioning. This response must be disproportionate to the expected societal response to the event in question and interfere with current life functioning (APA).

The American Psychiatric Association assessment of psychopathology stresses the importance of understanding the complex interaction between behavioural, psychological and biological factors, thus utilizing the biopsychosocial model of examining human conditions (APA, 2000). This model implies that mental disorders are related to physical or biological factors or processes and that general medical conditions are related to behavioural or psychosocial factors or processes. Behavioural factors refer to the way in which an individual acts in response to a certain set of conditions. Psychological factors pertain to an individual's temperament or disposition in addition to his or her associated behaviour. Biological factors refer to the physiological conditions (e.g., a general medical condition) of an individual (APA).

Most professionals in the field, including counsellors, general medical doctors, psychologists and psychiatrists, use the DSM as the primary diagnostic tool for mental disorders. The DSM as a diagnostic tool was formed via the cumulative experience and consensus of a variety of psychological, psychiatric and medical professionals. Its formulation resulted in the development of specific criteria for diagnoses (Millon, 1990). The APA (2000) posits that psychopathologies lack a consistent operational definition covering all situations and developed the DSM-IV-TR to remedy this lack.

There are five axes in the DSM-IV-TR multiaxial classification system. The APA (2000) states that the use of a multiaxial classification system “facilitates comprehensive and systematic evaluation with attention to the various mental disorders and general medical conditions, psychosocial and environmental problems, and level of functioning that might be overlooked if the focus were on assessing a single presenting problem” (p. 27). Thus, the multiaxial system provides systematic organization and is meant to communicate clinical information while simultaneously providing the means to describe individuals’ unique characteristics (APA). Diagnosis of psychopathology is generally made within Axis I or Axis II: included in Axis I are the diagnoses of schizophrenia and other psychotic disorders, mood disorders, anxiety disorders, substance-related disorders as well as eating disorders (APA). Axis II is used to report enduring personality disorders (e.g., schizotypal personality disorder, antisocial personality disorder, borderline personality disorder, histrionic personality disorder and narcissistic personality disorder) and the diagnosis of mental retardation (APA).

To provide a basis for the reader to understand the diagnoses of psychopathology found in this study, the definitions of the ten most common diagnoses are presented.

Psychopathological Diagnoses Definitions Relevant to Current Study

Forty-two distinct diagnoses were found among the adolescents included in this study. A more thorough discussion of the tabulation of the diagnoses can be found in Table 5, Chapter 4. The vast majority of the diagnoses found in the study were Axis I diagnoses, or acute clinical disorders not including personality disorders. The ten most frequent diagnoses are discussed in terms of DSM-IV-TR definitions.

According to the DSM-IV-TR (APA, 2000), the diagnosis of conduct disorder refers to a persistent pattern of behaviour which violates societal norms or the basic rights of others. These behaviours include causing and/or threatening physical harm to others (including animals), causing property damage, dishonesty or theft and significant rule violations (APA).

Essentially, the diagnosis of substance abuse refers to a maladaptive pattern of repeated use of substances related to significant adverse repercussions (APA, 2000). Consequences of this substance use could include repeated failure to fulfil role obligations, use in situations where it becomes hazardous to one's health (e.g., drinking and driving, legal concerns or difficulties in relationships) and/or when use interferes with normal functioning (APA).

A diagnosis of depression requires either a depressed mood or loss of interest or pleasure in nearly all activities, though this can be expressed as irritability rather than sadness in children or adolescents (APA, 2000). To meet DSM-IV-TR criteria for depression, the individual must also experience a minimum of four of the following symptoms: changes in sleep patterns, appetite, weight or psychomotor activity; decreased energy; difficulty in concentration or decision making; feelings of worthlessness; suicidal

ideation or previous suicide attempts. These symptoms have to be novel or become worse compared to the individual's prior mood, be prevalent for the majority of each day for at least two consecutive weeks and interfere with normal functioning (APA).

The emphasis of the diagnosis of parent child relational disorder is the interaction style between parent and child associated with a "clinically significant impairment in individual or family functioning or the development of clinically significant symptoms in parent or child" (APA, 2000, p. 737). Examples of these impairments in parenting could include diminished communication, overprotection and inadequate discipline.

The diagnosis of adjustment disorder relates to a psychological response to a stressor resulting in serious emotional or behavioural issues, developing within three months after the onset of the stressor (APA, 2000). The severity of this response is demonstrated by distress disproportionate to the stressor and an interference with normal functioning. An adjustment disorder must resolve within six months after the stressor or its consequences are resolved, unless the stressor is chronic (APA).

As per the DSM-IV-TR manual, the diagnosis of oppositional defiant disorder (ODD) refers to generally negative, defiant and hostile behaviour displayed towards authority figures that persists in duration for longer than six months (APA, 2000). For a diagnosis of ODD, the individual must also exhibit at least four of the following behaviours: inability to control temper, feelings of anger or resentment, arguing with authority figures, refusal to comply with rules, acting with the deliberate intent to annoy others, being easily annoyed by others, not taking responsibility for misbehaviour or being vindictive (APA). These behaviours must have a greater incidence than expected

for the situation, age and emotional maturity level of the individual as well as interfere with normal functioning (APA).

The diagnosis of reactive attachment disorder presents as noticeably disturbed and developmentally inappropriate social interactions (APA, 2000). This disturbance of attachment begins before the age of five years and cannot entirely be accounted for by a developmental delay (APA). “Grossly pathological care”, in the manner of recurrent disregard of the child’s basic physical and emotional needs or frequent changes of primary caregiver, which can prevent the formation of stable attachments, is presumed to be the cause of the difficulties in social relations in reactive attachment disorder (APA).

To receive a diagnosis of victim of sexual abuse, the youth have been severely mistreated in a sexual nature (APA, 2000). From other researchers’ perspectives, sexual abuse can involve any situation in which an adult or young person engages in any sexual act with a child or adolescent; examples could include incest, sexual molestation, unwanted touching and/or kissing or intercourse (Moeller, 2001).

The diagnosis of alcohol related neurodevelopmental disorder (ARND) includes the diagnoses of fetal alcohol syndrome (FAS) and fetal alcohol effect (FAE). All of these terms refer to the teratogenic effects of a pregnant female’s alcohol consumption to the fetus’ development (VSA Arts, 2003). The diagnosis of ARND, FAE and FAS are not included in the DSM-IV-TR. However, the effects on children born from mothers who drank while pregnant are becoming well known in both medical and psychological fields. These effects include mental and physical birth defects: mental retardation, growth deficiencies, central nervous system dysfunction, craniofacial abnormalities and behavioural maladjustments (Streissguth, 1997).

With a definition of psychopathology including the American Psychiatric Association interpretation as well as the definitions of the ten most frequent diagnoses in place, the theoretical basis of psychopathology will be presented.

Theoretical Basis

Millon's theory of psychopathology (particularly his theory-guided assessment instruments including the MCMI-III and the MACI), is the only theory known to the writer to parallel the APA diagnostic classification of psychopathology. As the DSM-IV-TR is the most utilized tool for psychological assessment, understanding the theory behind the other assessment tools with the same classification basis is important. A detailed exploration of Millon's theory of psychopathology follows in this review.

Millon (1969) stated that mental disorders manifest themselves in a manner unique to the individual and further that psychopathology is a complex phenomenon accessible in a variety of ways. Millon et al. (1997) posit that assessments of personality as entirely psychodynamic or biological are too restrictive and argue for the use of an integrative perspective in assessment. This perspective views personality as a "multidetermined and multireferential construct" that can be most effectively investigated and assessed across diverse content areas (Millon et al.). Consequently, Millon et al. suggest that it is necessary to assess an individual's personality across diverse aspects (including behavioural, phenomenological, intrapsychic and biophysical levels) for an assessment to be a valid representation of the integrative nature of personality.

The behavioural level refers to the manner in which a person reacts to his or her environment and within interpersonal relations (Millon et al., 1997). The phenomenological level speaks to identity and presents information relative to the

diagnosis of psychopathology (Millon et al.). The intrapsychic level refers to the strength and efficacy of an individual's personality as well as his or her motivation in terms of protection, need gratification and conflict resolution. Finally, the biophysical level refers to an individual's affect in terms of disposition (or temperament) and to both the intensity and frequency of emotional expression (Millon et al.).

Millon's theory of psychopathology explains personality structures and styles in terms of deficient, unbalanced or conflicted modes of relation to self, others and/or environment in which individuals develop polarities of existence due to the same (Millon et al., 1997). The authors describe three main possible polarities dependent upon the manner in which a person presents socialization difficulties: pleasure versus pain, passive versus active orientation and other versus self. Individuals are either oriented toward improvement in their quality of life or toward actions or environments that decrease their quality of life: this polarity is termed as pleasure versus pain (Millon et al.). The polarity referring to either a passive relationship with the environment or a tendency to modify or intervene with the environment is passive versus active orientation. Finally, the relationship with others via either self-propagating or other nurturing motivations is referred to as the other versus self polarity (Millon et al.).

These polarities coupled with personality levels serve to create a classification system of personality disorders based in theory. Millon et al. (1997) posit that some personalities exhibit a balance on the polarities while others demonstrate an imbalance on one or more polarity. Examples of personality disorders that demonstrate an imbalance in the pleasure versus pain polarity include the schizoid and avoidant personality disorders. Avoidant, histrionic, antisocial, sadistic, passive-aggressive, schizoid, dependent,

narcissistic, self-defeating and compulsive personality disorders primarily present an imbalance in the passive-active polarity. Dependent, histrionic, narcissistic, antisocial, compulsive and passive-aggressive personality disorders are often imbalanced on the other-self polarity (Millon et al.).

“Personality styles reflect deeply etched and pervasive characteristics of functioning that perpetuate and aggravate every day difficulties” (Millon et al., 1997, p. 15). These personality styles become deeply embedded in and automatic to the individual to the extent that the individual is often unaware of their existence or self-destructive consequences (Millon et al.). Under stressful conditions, these maladaptive styles of coping may progress in severity to become destructive to the individual (Millon et al.). This maladaptive coping may in fact become severe enough to lead an individual to take drastic aggressive measures, whether towards themselves or others.

The acts of self and other directed aggression may not necessarily be mutually exclusive; in fact, there is speculation that these acts are two sides of the same coin. While some youth act out solely towards themselves, some target both themselves and others and others act out only towards others (Vivona et al., 1995). The next section presents the discussion of other directed aggression, with the discussion of self directed harm following.

Aggression

In the contemplation of this section, the writer suggests that the reader direct his or her thoughts to the aforementioned Columbine school and Taber school shootings. In the emotional aftermath of both of these tragic incidents, both American and Canadian

societies took careful note of the rise of aggressive behaviour in adolescents. Aggression and violence among youth went from being a problem of large urban cities to being a potential issue in every small town and city. The need to be able to understand why violence occurs, where the aggression comes from, and seemingly most importantly, how to foresee when it could happen again and prevent its future occurrence, was suddenly centre stage. It was as though our society suddenly lost its blinders and saw for the first time that adolescent aggression and violence is a critical issue and that it is imperative that this situation be remedied.

To understand the nature of aggression and violence, it is necessary for them to first be defined. A broad definition of violence is the use of physical force to produce injury (Fraser, 1996). More specifically, violence can be defined as the deliberate and non-consensual actual, attempted or threatened physical harm of another (Douglas, Webster, Hart, Eaves & Ogloff, 2001). Violent behaviours vary greatly in terms of acquaintanceship with the victim, severity of physical or psychological harm, use of weapons, motivations, etcetera (Douglas et al.). Examples of overt violent behaviours include verbal abuse, child abuse, gang fighting, hate crimes, sexual assault, spousal abuse, suicide, terrorism and even war (Fraser). However, violence can also include less overt actions such as implicit threats that reasonably induce fear of physical harm in others (Douglas et al.).

Some acts of aggression are considered “normal” or expected and appropriate responses to certain social situations, while others are considered antisocial in that they violate the ethical, legal and/or moral standards of society (Moeller, 2001). According to Moeller, abnormal aggression differs in frequency, duration and/or intensity to normal

aggression. Examples of normal aggression could include minor physical fighting due to provocation or fighting in hockey, where society has some expectation that these acts will occur. Abnormal examples could include an increase in intensity from the previous examples such as intentionally killing a rival hockey player, or in duration and intensity such as with gang fighting where there is little or no provocation.

The nature of adolescent aggression will be further explored in terms of its epidemiology.

Epidemiology

The term epidemiology refers to “the study of the distribution and determinants of diseases and injuries...in human populations” (Maris, Berman & Silverman, 2000, p. 66). This study of aggression will include discussion of the following epidemiological aspects: prevalence, gender and ethnicity.

Prevalence

There is a general perception in our society, especially since the aforementioned school shootings, that there has been a recent historical increase in violence among youth. Supporting societal viewpoint, aggressive behaviours, as measured by victim survey as well as arrest, murder and violent crime rates, have shown dramatic increases (Moeller, 2001). Violence, in the form of homicide, is among the top four causes of mortality in youth (Grunbaum et al., 2002). Increasingly common are the diagnoses of conduct disorder, oppositional defiant disorder and antisocial personality disorder among youth (Grisso, 2003). These facets taken together with societal preoccupation with violence prevention in children and youth in schools are major indications that aggression is a concern among adolescents and therefore society as a whole.

Gender

Research on adolescent aggression is typically focussed on males (Borum, Bartel & Forth, 2003). Explicating the majority of research centring on the male display of aggressive behaviours, gender differentiation is demonstrated via males committing more offences (males commit 4 out of 5 offences committed) and aggressive acts more often producing legal involvement (Borum, 2000). According to the majority of aggression research, the general view of gender differences in aggression indicates that males and females tend to display aggression in differing manners. Males tend to physically act out aggressively while females tend to exhibit more verbal, indirect and relational aggression (Borum). However, it should be noted that female adolescents are increasingly involved in the juvenile system and are also entering it at a younger age, though female youth still tend to display conduct problems at a later age than male youth (Borum).

Borum (2000) states that many of the same risk factors apply for the development of aggression in males as in females (with the notable exception of abuse which is more likely to be in the history of a female aggressor), however, some of these factors differ in strength or the direction of their association. Experiencing difficulties in school is more indicative of future violence risk for females than males (Borum; Funk, 1999). Prior antisocial behaviour, early violence and delinquency in female youth may be less predictive of future aggression than in male youth (Borum). Substance use appears to be equally predictive for future violence among both genders (Borum).

Gabel and Shindlecker (1991) reported in their study of hospital inpatient children and youth that males were more likely to have a history of aggressive or destructive behaviour than females and that more males than females were subsequently

referred for out of home placements. In their study of adolescents in a psychiatric hospital, Day, Franklin and Marshall (1998) reported that aggression in females was associated with a history of familial violence, minority ethnicity and being on medication. They found that aggression in males was associated with diagnosis of conduct disorder, being on medication and having a prior hospitalization (Day et al.). Ellickson and McGuigan (2000) reported females in their study who displayed low self-esteem during early adolescence were more likely to display overt aggression in their later years.

Funk (1999) reports that female adolescents experience the same causes of aggressive behaviour, but to a lesser degree: female youth display less frequent and serious offences due to females experiencing the strain, association with other delinquents and weak social bonds to conventional society to a lesser degree than their male counterparts. Funk proposes that there is a complexity inherent in the correlation between gender and aggression which gives some explanation to the inconsistency and ambiguity rife in research in this area. Research in understanding the differences between gender, and in the area of female aggression specifically, is lacking (Borum et al., 2003).

Ethnicity

Moeller (2001) reports that the majority of aggression is perpetrated by Caucasian adolescents, though more homicides are committed by African American youth. Moeller asserts this discrepancy is likely attributable to poverty more than to ethnicity per se as more African American youth in the United States grow up in impoverished environments and poverty is widely attributed to the fostering of aggressive behaviours. Dodge, Bates and Pettit (1990) research contradicts this proposal: their study of risk factors for aggressive adolescents controlled for socioeconomic status and other variables

and found that socioeconomic status neither predicted nor aided in the prediction of violent behaviour in youth. Blum et al. (2000) report that both African-American and Hispanic youth in their study were more likely than White adolescents to engage in violence. These researchers also looked at other influencing factors on risk behaviours in youth (including income and family structure) and concluded that even when taken together, these influencing factors only provide limited understanding of adolescent risk behaviours (Blum et al.). These inconsistent research results demonstrate that the relationship between ethnicity and aggression may be more complex than any causal comparison can accurately relate.

Theoretical Basis

Biological theories of aggression are partially based in the study of neurotransmitters which are released via neurons in the brain. Neurotransmitters are involved in mood regulation and are associated with influencing various affective states including depression and aggression (Jamison, 1999). Violent individuals display a particular dysregulation of neurotransmitters; low levels of epinephrine, cortisol and serotonin coupled with elevated levels of dopamine and testosterone (Field, 2002).

Serotonin is involved in many brain functions, including mood, arousal, sleep, food intake, pain perception, temperature regulation, cognitive processes, sexual behaviour, neuroendocrine functions and aggression (Rotundo et al., 1999). Serotonin seems to act mainly as an inhibitor of emotional behaviour, particularly to the modulation of aggressive behaviours (Spoont, 1992). Serotonin modulates several brain areas associated with flight/fight responses; this is likely the reason that increased serotonin acts to inhibit aggression (Spoont).

Rotundo et al. (1999) state that across diverse studies, low serotonin levels have been consistently found to vary with impulsive aggression, antisocial personality disorder and attempted and/or completed suicide (see Brown et al., 1982; Kruesi et al., 1990; Zahn, Kreusi, Swedo, Leonard & Rapoport, 1996 for examples that support this relationship). Coccaro, Kavoussi, Cooper and Hauger (1997) agree with this deposition, though they stress that there have been recent studies that do not concur with these findings (see Stoff et al., 1997 for an example of this inverse correlation). The researchers posit that the discrepancies are due to the measurement of serotonin levels, rather than negating to the relationship between decreased serotonin and aggression (Coccaro et al.). Stoff et al. agree with this idea, though theirs was a study that found the inverse relationship as well. Spont (1992) puts forth that these discrepancies could indicate that low serotonin levels are not related to aggression *per se*, but rather to impulsivity; she further adds that the relation between suicidality and low serotonin gives credence to this postulation as both behaviours have impulsivity in common.

Lahey, Hart, Pliszka, Applegate and McBurnett (1993) report that low levels of serotonin have been associated with aggressive behaviours, psychopathy and recidivism among violent offenders. Low serotonin levels have also been linked with the diagnosis of particular psychopathologies associated with aggression including attention deficit/hyperactivity disorder (ADHD), conduct disorder, oppositional defiant disorder (ODD) and obsessive compulsive disorder (OCD; Lahey et al.).

Aggression has also been linked to levels of cortisol secreted by the adrenal glands (Field, 2002). Decreased levels of cortisol indicate lower than normal levels of arousal; low levels of cortisol are linked to lower inhibition of aggression in youth

(Field). Also linked to the modulation of aggression are the neurotransmitters dopamine (increased dopamine can facilitate aggression; Zahn et al., 1996) and norepinephrine (increased norepinephrine can decrease aggressive behaviours; Spont, 1992). These other neurobiological linkages to aggression are not as consistent across studies and require further study to better delineate the relationship (Coccaro, 1995; Coccaro & Kavoussi, 1996). The aforementioned theories speak to neurobiological explanations behind aggression: other theories postulate that aggression has its basis not in the brain, but rather in the mind.

Sigmund Freud's psychoanalytical theory suggested that aggression was an instinctual and innate disposition in all men (1930[1929]/1949). In early postulations, Freud expressed that aggression stemmed from frustrated pleasure seeking or pain avoidance (1917[1915]/1961a). In later works, he stated that all humans are born with a drive seeking the cessation of life, the death instinct (Freud, 1920/1961b), commonly referred to as the Thanatos, the mythic term coined by his students (Chalquist, 2004). The Thanatos, or death instinct, is one of two major instincts directing our pursuit of pleasure or avoidance of pain, the antithesis of which is the Eros or life/love instinct (Freud, 1930[1929]/1949). The death instinct "represents the organic need to return to lifelessness and stasis, the ultimate calm of lifeless non-conflict" (Chalquist).

Freud (1920/1961b) put forth that the death instinct can be directed at self (e.g., self-mutilation or suicide) or towards others (e.g., aggressive acts or homicide). Other directed harm or aggression from the tenets of Freud's theory stems from the instinct of self-destruction turned outward (Freud, 1920/1961b). The discharge of this drive outward

is seen to be protective to the person who would otherwise direct this destruction inward (Chalquist, 2004).

If these instincts are not directed outward, the aggressiveness can turn inward and be directed against the ego turning into what is termed the conscience (Freud, 1930[1929]/1949). “The tension between the strict superego and the subordinate ego we call the sense of guilt; it manifests itself as the need for punishment” (Freud, p. 105). If these tendencies are not directed inward or towards others then they could be discharged via the defense mechanism sublimation (a type of displacement) whereby the drive is channelled into socially acceptable behaviour (such as sport, art, literature, science, religion, etcetera; Moeller, 2001).

Freud postulated that aggressive drives built up over time, introducing the concept of catharsis to the discussion of aggression, and had to be released when it reached a threshold (Feshbach, 1970). According to Freud, releasing aggression is a catharsis and good for the individual; however, studies have shown that this manner of releasing aggression actually reinforces its use (Dollard, Doob, Miller, Mowrer & Sears, 1939). Freud also conceded that the positive effects of catharsis would not be long lasting or impact upon the person’s personality (Chalquist, 2004).

Dollard et al. (1939) state that their work stems from Freud’s postulations about aggression indicating that frustration occurs when pain-seeking or pleasure-avoiding behaviour was blocked and leads to aggressive behaviours as a result. These authors’ theory, entitled the frustration-aggression hypothesis, is a well-known learning theory of aggression that posits that a build up of frustration leads to aggression (Dollard et al.). These behaviours were most strongly directed against the persons or objects which

created the frustration of pleasure and progressively weaker towards less direct persons/objects or the world at large (Dollard et al.). As such, aggression is a reaction and a consequence of an individual's exposure to frustrating experiences (Dollard et al.). The authors state that the severity of the aggressive response will vary dependent upon the strength of the frustrator, the degree of interference with the frustrator, the number of frustrated-response sequences and varies in direct positive correlation to the amount of punishment anticipated to be a consequence of the aggressive behaviour (Dollard et al.).

Aggression is not an innate response to frustration, but rather this reaction is an early learned response (Dollard et al., 1939). The response of aggression is what the researchers viewed as the dominant response to frustration by those who routinely use violence as a first reaction (Dollard et al.). However, research into this area led to revision of the theory as frustration does not always lead to aggression and aggression does not always come from frustration: there is a more complex interaction (Feshbach, 1970). The frustration aggression hypothesis serves as the bridge between psychoanalytical and formal social learning theory of aggression in that it adds motivation to the discussion (Feshbach).

Social learning theories posit that aggression is learned within a social context; "psychological functioning is best understood in terms of reciprocal interaction between behavior and its controlling conditions" (Bandura, 1973, p. 43). Within the social learning context, Albert Bandura's work on modelling or observational learning of aggression is especially well known. Bandura (1973) stresses that other theories of aggression are predicated on underlying factors that influence aggression but do not take into account the influence that either social interaction or cognition have on aggression.

Bandura (1976) states that the majority of behaviours are learned observationally, some through deliberate intent and others inadvertently through example. He further asserts that aggression is not inherent, rather it is a learned behaviour (Bandura, 1973).

Bandura's experiments with children and the Bobo Doll (where children modelled viewed aggressive acts) are legend in the social sciences. Bandura's research indicated overall that children's aggressive acts dramatically increased when they first observed aggressive acts (Bandura, 1973). There are particular circumstances which increase the likelihood of the modelling of aggression: if the model was live versus on film, a human model versus cartoon and if the model was seen to be rewarded rather than punished for their aggression (Bandura).

Bandura (1973) states that within social learning theory, there are three prominent sources or social influences of aggression in modern society: familial influences, subcultural influences and symbiotic modelling (provided by the mass media). According to Bandura, aggressive behaviour is more likely to be continued if there are external instigators of aggression, direct external reinforcement for this behaviour, status or social rewards, alleviation of aversive treatment, or vicarious reinforcement (learning from the experiences of others).

Recent theories emphasize the importance of attachment, especially in infants before the age of five, in moral development (Moeller, 2001). Youth that have many disruptions in primary caregivers are more likely to display aggression, both towards self and towards others (Vivona et al., 1995). This speaks to the connection of attachment theory to adolescent aggression. From the tenets of this theory, youth sent to juvenile

detention facilities, jail or foster homes may demonstrate higher risk for subsequent aggression.

Cognitive theories of aggression focus on the thought process involved in aggressive behaviours. Attribution theory emphasizes the justification a person makes to himself or herself about his/her behaviour (Dodge, Price, Bachorowski & Newman, 1990). According to the hostile attributional bias (an important aspect of attribution theory), highly aggressive youth over-attribute hostile intentions in others and view hostile persons as deserving of forceful retribution (Dodge et al.). Dodge et al. state that aggressive children are up to fifty percent more likely to attribute hostile intent after an ambiguous encounter than their peers. This misattribution can be partially explained via deficits in understanding intent behind other's actions, even when those actions are benign (Dodge et al.).

Theories to explain youth aggression are diverse and include biological, psychodynamic, social learning, cognitive and attributional theories as well as the frustration-aggression hypothesis. Likely, a combination of all factors play a part in the development of abnormal aggression in adolescents. Other factors to be considered in the exploration in youth aggression are the risk factors of suicide, firearms, abuse/neglect, diagnosis of psychopathology and substance abuse.

Risk Factors

Particular risk factors may predispose some adolescents towards aggressive acts. Further exploration of some of the most significant risk factors for adolescent aggression will follow in this review; these include suicide, firearms, abuse and/or neglect, diagnosis of psychopathology and substance abuse.

Suicide

Suicidality is a comparatively major aspect to be considered in the discussion of aggression due to its pervasive nature among violent adolescents. Demonstrating this connection, early externalizing behaviours can be predictive of later internalizing behaviours; the aggressive youth may later present as the depressive adult (Moeller, 2001). In their study of adolescent psychiatric inpatients, Apter et al. (1995) found that violent behaviour was correlated with suicidality independent of depression. Apter et al. posit that there are two types of suicidal adolescents; those who “wish to die” (characteristically with a depressive disorder) and those that “wish not to be here for a time”, indicating poor impulse control (typically with a disruptive disorder such as conduct disorder).

Conner et al. (2001) found that suicide victims displayed more violent behaviour than accident victims did, even when alcohol use was controlled for in both groups. Similarly, Garrison, McKeown, Valois and Vincent (1993) reported that aggressive behaviour was associated with suicidality (thoughts, plans, attempts and attempts requiring hospitalization) even when alcohol and drug use were controlled for. Vermeiren et al. (2003) also found a link between suicidality and aggression in their study of male adolescents. Those youth categorized as suicidal were anxious or depressed and demonstrated more covert aggression and alcohol use (Vermeiren et al.).

Firearms

The aforementioned school shootings have made it apparent that aggression in youth is exacerbated by the presence and use of firearms in these violent acts. According to Moeller (2001), the “firearm epidemic” had its outset in the mid 1980s when there was

a sharp increase in the number of adolescents arrested with weapons charges as well as a dramatic rise in the number of gun-related homicides. However, despite recent media attention to this issue, the number of youth arrested for gun possession, adolescents bringing guns to school and youth using guns in homicides has been on the decline since its peak in 1994 (Moeller).

The increase of gun availability is likely not the main issue in the use of guns in youth violence, rather, the type of violence that is used has drastically increased the lethality of the violence (Moeller, 2001). For example, instead of youth getting into physical altercations with a low likelihood of lethality, adolescents using guns are far more likely to lethally wound their victims, whether or not this is the intention. This kind of increased lethality makes youth violence insidious in nature.

Abuse/Neglect

Both abuse and neglect are widely attributed as being causally linked to aggressive behaviours in youth (Field, 2002). These acts include neglect of basic necessities (such as food, shelter, health care and education), psychological abuse and neglect (including emotional and verbal abuse), physical abuse and sexual abuse (Field). As the abuse tends to occur within the adolescent's family environment, it likely creates an even greater emotional impact on the youth, especially in terms of shame and guilt associated with the acts.

Dodge et al. (1990) report in their study of youth aggression that adolescents who are physically abused in early childhood were three times as likely as those who are not abused to develop chronic aggressive behaviour patterns. Dodge et al.'s results are particularly noteworthy as the researchers controlled for variance that has been touted as

part of the cause of the link between abuse and later violence (including socioeconomic status, family status, marital status of parents, mother's health during pregnancy, child's health problems after birth, etcetera). Despite the general consensus implying that abuse has a greater contribution to later aggression, Moeller (2001) states that only a third of all aggressive children have experienced abuse, therefore the exact nature of the relationship of abuse or neglect on future aggressive behaviours is unclear.

Psychopathology

The diagnosis of a disruptive disorder (ADHD, conduct disorder or ODD) is linked to aggression in youth (APA, 2000; Grisso, 2003). Other diagnoses have also linked to aggressive acts, including antisocial personality disorder, intermittent explosive disorder (Moeller, 2001), mood disorders such as bipolar disorder and depression and post-traumatic stress disorder (Grisso). Early onset of aggressive behaviours often indicates continued aggression beyond adolescence (Grisso).

Though most research indicates a progression of antisocial activities, aggressive behaviours do not necessarily demonstrate a linear progression (Heilbrun, Marczyk & DeMatteo, 2002). Some children diagnosed with conduct disorder do not have later difficulties with aggression; some children or adolescents do not display any apparent problems with aggression yet end up with major issues in these areas as adults (Heilbrun et al.). However, obviously some children with a diagnosis of conduct disorder progress through the ages becoming increasingly aggressive, are diagnosed with antisocial personality disorder as youth or adults and spend their lives involved in the justice system (Moeller, 2001).

Gabel and Shindledecker (1991) report that both conduct disorder and aggressive or destructive behaviour predict poor prognosis of “recovery” in hospital treated adolescents, with aggressive acts being the best predictor of poor outcome (where poor outcome is equivalent to an out of home placement at release versus an in home placement recommendation). Swanson (1993) reported in his study of self-report surveys requesting information regarding violence (as per arrest records), alcohol abuse, major mental disorders and socioeconomic status that the diagnosis of major mental disorder was significantly associated with increased risk of violence. Swanson’s research also indicated that comorbidity of any major mental disorder with alcohol abuse significantly increased the risk of violence. In fact, according to Milgram (1993), the drug most associated with aggression is alcohol.

Substance Abuse

“Alcohol use is part of psychosocial development in society and therefore part of the adolescent world” (Milgram, 1993, p. 53). The relationship between suicidality and aggression has a linking factor: alcohol misuse plays a role for risk in both (Conner et al., 2001). The increased risk for violence among young and poorer males may be attributed to increased alcohol abuse (Swanson, 1993).

Much of the research indicates that there is a relationship between substance use and antisocial behaviour in adolescents. Many of the factors that predict aggression in youth also predict drug abuse within this group. However, Moeller (2001) stresses that the relationship between substance abuse and aggression is complex. Many other variables including poverty, familial bonds and peer relations need to be taken into consideration in the assessment of this relationship (Moeller). Another consideration is

the disinhibitive effect that many substances, such as alcohol, have on youth that could elevate the incidence of both aggressive and suicidal behaviours (Milgram, 1993).

In their study of substance use and aggression, Unger, Sussman and Dent (2003) reported that the use of physical aggression was associated with higher risk of substance use (tobacco, alcohol, marijuana and other drugs), while the use of non-physical (verbal and psychological) aggression was associated with higher risk of tobacco and alcohol use. They concluded that those youth who use non-physical aggression in response to interpersonal conflict, indicating a lack of coping skills in this area, may also lack the coping skills that would aid them in resisting substance use (Unger et al.).

Many factors have been identified to increase adolescent risk for aggression, including suicidality, firearms, abuse/neglect and diagnosis of a psychopathology, particularly a disruptive disorder or substance abuse. Assessment of adolescent aggressive behaviour risk must be performed to help identify those youth at increased risk for aggression. Aspects of screening methods for adolescent aggression risk are presented next.

Screening Methods

Adolescent assessment is particularly difficult and must be done with skill and care as youth may present as defensive, mistrustful, cold and/or remorseless when being interviewed when in fact these youth are actually displaying a difficulty in tolerating painful feelings and sensitivity to shame (Heilbrun et al., 2002). Professionals in the assessment field, including both front-line workers and researchers, utilize many differing screening methods for aggression in youth. Heilbrun et al. emphasize the importance of utilizing several different methods of information gathering in the evaluation of

adolescents to enable a full and accurate picture of the youth despite any hesitancy to confide in examiners. Mental health professionals utilize many aspects of assessment to gather information and evaluate youth, including personal interviews, psychological assessment, medical evaluation, history review and collateral interviews (Douglas et al., 2001).

Violence risk assessment has several distinct aspects that include evaluation of persons to “characterize the risk that they will commit acts of violence and develop interventions to manage or reduce that risk” (Douglas et al., 2001, p. 14). Tarter et al. (2002) are among many researchers in the field that discuss the difficulties in the prediction of youth violence. The authors express that the identification of aggression in adolescents is particularly challenging due to both the complexity of predisposing factors and how many factors youth possess compared to adults (Douglas et al.).

Douglas et al. (2001) put forth that the ultimate goal for violence risk assessment is to prevent violence; other essential goals for violence risk assessments are that they should yield replicable results, identify, evaluate and prioritize interventions to manage violence risk and be transparent so that all the details outlining the rationale behind the assessment are explicit and available to the public. However, the authors state that no single risk assessment tool would be able to maximally achieve all of these goals (Douglas et al.). Despite these inherent difficulties, there are many different methods used in the attempt to predict youth violence.

Actuarial methods of evaluation are highly utilized in the assessment of adolescent violence risk and present two main formats, the actuarial use of psychological tests which measure personal disruption and actuarial risk assessment instruments that

work to predict future violence without measuring anything (Douglas et al.). Actuarial decisions about risk are usually based on specific assessments that have been empirically tested and shown to be associated with violence risk (Heilbrun et al., 2002). These methods are highly reliable and valid and thus show high consistency and accuracy in predicting risk compared to clinical judgement alone (Heilbrun et al.). There are many assessments used in the actuarial assessment of violence risk in adolescents.

Behavioural checklists are one method used in the prediction of aggression; one extensively used example is the Child Behavior Checklist (CBCL) by Achenbach (1991). This scale was designed to be used on children aged 6 to 18, and can be filled out by parents or teachers or used as a self-report measure with youth over the age of ten (Violence Institute of New Jersey, 2004). The CBCL was designed to address the lack of empirically based definitions of behaviour problems in children and youth, it is based in literature and research and is reportedly a reliable and valid measure of behavioural assessment in children and youth (Violence Institute of New Jersey). There is both an internalizing scale (including identification of emotions such as fear, anxiety and depression) and externalizing scale (including identification of behaviours that violate social norms) within this checklist (Violence Institute of New Jersey). Grisso (2003) states that the CBCL is a particularly good assessment of risk in youth with various ethnic backgrounds and has the advantage of having three response versions (parent, teacher and youth) to compare.

Tarter et al. (2002) studied many avenues of violence prediction and discuss the Violence Proneness Scale that measures school and peer adjustment, as significantly predicting violence in the five to seven year follow-up portion of their study. The use of

the Violence Proneness Scale combined with a childhood psychiatric history effectively predicted youth violence at a 77% level (Tarter et al.). In contrast to this study, Lidz, Mulvey and Gardner (1993) studied the accuracy of clinician's prediction of violent behaviour (this study included those aged 14 to 65). They found that clinician's predictions of aggression are better than chance in males, but not in females who were underrated (Lidz et al.), perhaps due to the nature of aggression differing between the genders or lack of research specific to female aggression as previously discussed.

The Lidz et al. (1993) results indicating that clinician judgement was not particularly effective in the assessment of aggression risk seem to be contradictory to the Tarter et al. (2002) study indicating that clinician judgement did indeed aid in the accurate prediction of violence. This discrepancy speaks to the difficulty in the assessment of aggression that began this section. Perhaps this is an indication that the best possible predictor of violence is an accurate scale combined with clinician judgement, as each increases the power of the other and neither is as effective on its own. An assessment that seems to combine the best elements of both of these prediction methods is the Structured Assessment of Violence Risk in Youth.

Structured Assessment of Violence Risk in Youth

Grisso (2003) states that there is considerable need for a systematic method for adolescent violence risk assessment that would allow the clinician to collect information on youth in a manner based upon reliable research and that the Structured Assessment of Violence Risk in Youth (SAVRY), though currently under-researched, fills this void. Though the SAVRY is not part of this study, it is preliminarily proving to be a thorough, reliable and valid assessment of youth violence risk and as such, its critique follows.

The SAVRY is intended for use with adolescents 12 to 18 years of age (Borum et al., 2003). The authors of the SAVRY assert that it can be used equally well with either gender due to research suggestion that many risk and protective factors of aggression operate similarly for both genders, though they concede that the majority of research in youth violence has been with males and that systematic gender differences have not yet been assessed in the SAVRY (Borum et al., 2003; Borum, Bartel & Forth, 2004). However, to address potential gender differences, the authors provide notes in specific item descriptions in the SAVRY of areas with known gender differences.

Its authors state that the SAVRY can be used in mental health or substance abuse services, social services, schools, juvenile and criminal justice systems (Borum et al., 2004). The SAVRY is also intended to assist in intervention planning and monitoring the progress of violence reduction (examples could include the formulation of clinical treatment plans, conditions of community treatment plans, conditions of community supervision and/or release planning; Borum et al., 2003).

As the SAVRY is intended to assist the structured collection and analysis of information relevant in professional risk assessment, it does not have an administration time per se (Borum et al., 2004). Rather, once all relevant information is gathered, the only additional time necessary is that needed to record and code the items, estimated at twenty minutes (Borum et al., 2004). The SAVRY does not produce percentile based comparisons or reference group comparisons; rather the scales are coded but not given numerical value (Borum et al., 2003). Each of these risk factors is assessed as low, moderate or high risk for the individual adolescent.

The items in the SAVRY were selected to reflect the risk markers for violence found to be consistently statistically significant in an extensive review of adolescent violence literature (Borum et al., 2003). The SAVRY assesses violence risk based on 24 risk items in three categories: historical risk factors, social/contextual risk factors and individual risk factors (Borum et al.). The SAVRY considers historical risk factors because they refer to enduring traits and are associated with adolescent violence recidivism (Borum et al.). Historical risk factors assessed via the SAVRY include history of violence, history of non-violent offending, early initiation of violence, past supervision or intervention failures, history of self-harm or suicide attempts, exposure to violence in the home, childhood history of maltreatment, parental or caregiver criminality, early caregiver disruption and poor school achievement (Borum et al.).

The SAVRY's social and contextual risk factors consider the influence of both peer and family interpersonal relationships on adolescents, youths' connection to social institutions (such as their connection to school and/or religion) and also connection with the environment (Borum et al., 2003). Social and contextual risk factors considered in the SAVRY include peer delinquency, peer rejection, stress and poor coping strategies or skills, poor parental management, lack of personal and/or social support and community disorganization (Borum et al.).

Individual risk factors assessed by the SAVRY relate to the adolescent's attitudes as well as aspects of psychological and behavioural functioning (Borum et al., 2003). The SAVRY assesses the following individual risk factors for violence: negative attitudes, risk taking or impulsivity, substance use and/or abuse, anger management difficulties,

low empathy or remorse, attention deficit/hyperactivity difficulties, poor compliance and low interest or commitment to school (Borum et al.).

Research has shown that the presence of individual and contextual protective factors can act to mediate the detrimental effect of aggression risk factors or reduce the probability of violent behavioural outbursts (Borum et al., 2003; Monahan, 2003). However, protective factors tend to be overlooked in actuarial assessments of violence risk (Douglas et al., 2001). The SAVRY assesses protective factors as variables that indicate the degree to which an adolescent's actions or beliefs are in accordance with conventional societal standards, are against anti-societal activities and engaged in activities that are not in accord with anti-social activities (Borum et al.). Protective factors assessed in the SAVRY include prosocial involvement, strong social support, strong attachments and bonds, positive attitude towards intervention and authority, strong commitment to school and resilient personality traits (Borum et al.).

Additional factors that could be essential in understanding an adolescent's violence risk may come up during clinical interview or via collateral information gathering (Borum et al., 2003). These are annotated in the area on the coding form specifically allotted for their differential consideration by the assessor in the summary violence rating as his/her experience deems fit. The SAVRY also contains a section in which the assessor can make an overall or holistic final violence risk rating, referred to as the summary risk rating, of either low, moderate or high risk of violence (Borum et al.). This rating is intended to provide the assessor a place to express their clinical judgement based on the results of the entire SAVRY assessment, clinical interview, collateral

information, other assessments and additional information not specifically addressed by the SAVRY (Borum et al.).

As part of adolescent violence risk assessment, Borum et al. (2003) assert that it is necessary to assess the likelihood that the youth will commit a violent act if there is no effort put forth to manage their risk. Borum et al. also stress that it is necessary to assess the probable nature, frequency and severity of possible future violent acts, who the victims of said violence would likely be, situations and/or contexts which may exacerbate the youth's risk for violence and engage in potential steps to manage or reduce the youth's risk for violence.

Reliability and validity. The SAVRY assessment is too new to have studies that have assessed its reliability (or consistency of test results, Drummond, 1996) published though several have been conducted (Borum, 2003). The results of these diverse preliminary studies, some assessing high-risk samples, indicate that the SAVRY has consistently shown to be both reliable and valid (Borum; Borum et al., 2004). The SAVRY homepage (see Borum et al., 2004) cites the preliminary results of five studies on the SAVRY. These and other future studies will help to inform the reliability and validity of the SAVRY.

To assess validity (or whether or not a test actually measures what it purports to measure, Drummond, 1996), in its standardization, the SAVRY was compared to two known measures of youth violence; Forth, Kosson and Hare's (in press) Psychopathy Checklist: Youth Version (PCL-YV) and Hoge and Andrew's (1994) Youth Level of Supervision Inventory (YLSI). Borum et al. (2003) report that the SAVRY's total risk index and historical, social/contextual and individual/clinical risk factors as well as

protective factors showed significant correlations with the known measures in both standardization samples (Borum et al.).

To assess the SAVRY's adolescent violence risk prediction, its total risk scale was compared to the PCL-YV and the YLSI as predictors of violence via hierarchical regression analysis (Borum et al., 2003). In the analysis of violence prediction, the SAVRY was found to increase the predictive power of both measures and to account for more of the variance than the YLSI (Borum et al.). In the analysis of the SAVRY's predictive power in the number of aggressive conduct disorder symptoms, the SAVRY significantly increased the predictive power of both measures and accounted for more of the variance than either measure alone (Borum et al.).

The SAVRY is based on the HCR-20 Violence Risk Assessment Scheme (HCR-20) developed by Douglas et al. (2001) for adult violence risk assessment with content focussed on risk in adolescents. The HCR-20 and the SAVRY have the same basis: both examine historical risk factors, social or contextual risk factors and individual risk factors, protective factors, additional risk factors and leave space for professional judgement. Assuming that the SAVRY may have comparable reliability and validity to its basis, extensive research results indicate that the HCR-20 is both a valid and reliable assessment of adult violence risk across many populations, settings and countries with mainly moderate to large effect sizes in females as well as in males (see Douglas, 2001 for an overview and annotated bibliography containing all known studies utilizing the HCR-20). Douglas et al. report that results from all studies indicate that each of the scales and items in the HCR-20 is independently related to violence (see Douglas & Webster,

1999 for an example demonstrating the most consistently and significantly related scale independently related to violence; the historical scale).

Critical summary. The SAVRY is such a new assessment that a thorough search located only two articles (one by its main author) addressing the SAVRY specifically. Witt, Bosley and Hiscox (2002) state that the SAVRY is an empirically based instrument systematically assessing both 'static' and 'dynamic' risk factors statistically associated with violent recidivism in adolescents. The authors discuss the assessment of protective factors in the SAVRY as being a unique and important aspect of violent risk assessment in youth and also cite the positive nature of the preliminary validity studies in the SAVRY manual in their evaluation of this tool (Witt et al.).

The SAVRY provides a structured clinical adolescent violence risk assessment that subsequently produces a thorough and equivocal assessment of adolescent violence risk based both in research and in experience (Borum et al., 2003). Heilbrun et al. (2002) and Monahan (2003) each assert that actuarial assessments should only be used in conjunction with clinical assessments in the prediction of violence risk. Therefore, the main advantage of SAVRY is that the assessment minimizes the errors made in purely intuitive decision-making and has the advantage of the precision of actuarial assessment as well.

Limitations of the SAVRY include the lack of supporting literature reinforcing its reliability and validity, though these studies are being conducted and published in the near future. The SAVRY is still a very new instrument and it will take many studies like the ones currently being monitored by the authors to be able to assess its utility. However, since the SAVRY is based on the HCR-20, whose reliability and validity in

assessing adult violence risk is well established, this lends credence to the potential of this instrument.

The changes inherent in adolescence may make violence risk assessment in youth complex as it cannot be made as a stable assessment; adult historical risk factors are more stable and predictive of future violence. As such, any violence risk assessment of youth must be repeated over time and is limited in its predictive ability. The SAVRY compensates for the limitations inherent in assessing adolescent risk by focussing on contextual/social factors versus historical factors and by asserting that it should be administered repeatedly over time to youth to reassess risk (Borum et al., 2003).

Borum et al. (2003) assert that the SAVRY can be used with female youth due to research indications of similar risk factors for both genders despite the fact that there cannot be female adolescent norms given the SAVRY's current all male norming samples and potentially large gender variations in risk factors. Borum et al. put forth that a gender specific violence risk assessment is essential and predicated on further research into adolescent female aggression, an idea supported by Funk's (1999) study indicating that gender specific risk factors used in the assessment of adolescent female recidivism were twice as predictive of future risk. For the present, the SAVRY should be used with female adolescents with interpretational caution, keeping in mind the gender risk factor differences provided by the authors when making risk assessments.

The SAVRY is unique in that it is also intended to directly relate to the treatment of violence, in terms of intervention planning and monitoring progress (Borum et al., 2003). The SAVRY informs the treatment of youth violence; examples of treatment areas in which the SAVRY can provide aid include the formulation of clinical treatment plans

and conditions of community treatment plans (Borum et al.). Many varied treatments are utilized with the population of violent adolescents, the most common broad categories of which are presented to follow.

Treatment

The most effective therapy with aggressive youth, regardless of its particulars, begins early on, includes the family and targets the youth's cognitions as well as their overt behaviours in a number of settings (Moeller, 2001). In their paper addressing counselling incarcerated and court-involved youth, Granello and Hanna (2003) also stress a multisystemic counselling approach with at-risk youth that includes peer, family, school and neighbourhood involvement. Some interventions used in the treatment of aggressive adolescents will be discussed in this review, including medication, cognitive behavioral therapy, family therapy and massage therapy.

Medication

Preliminary studies have shown that atypical antipsychotic drugs are efficacious in the treatment of aggressive youth. In a two-part study, Schur et al. (2003) present a thorough review and Pappadopulos et al. (2003) present a guideline for the treatment of aggressive youth via prescription of atypical antipsychotic drugs and other therapies. In their review, Schur et al. suggest that atypical antipsychotic medications (such as clozapine, olanzapine, quetiapine, risperidone and ziprasidone) work well in the treatment of aggressive youth. In the treatment guidelines developed from the Schur et al. review, Pappadopulos et al. suggest that aggressive youth should be treated with a combination of psychosocial therapy, educational therapy and medication but stress the

necessity of additional controlled trial research results on atypical antipsychotic medications prior to the widespread prescription and use thereof.

Cognitive Behavioral Therapy

Most researchers and professionals in the field stress the importance and efficacy of the utilization of cognitive behavioral therapy (or CBT) with at-risk adolescents. CBT emphasizes “collaborative empiricism, the importance of socializing the patient to the cognitive therapy model, and the monitoring and modification of automatic thoughts, assumptions and beliefs” (Brent et al., 1997). CBT with aggressive adolescents works on the principle that aggressive behaviours are related to youths’ thought processes and that changing thought processes will subsequently result in behaviour change (Kazdin, Bass, Siegel & Thomas, 1989). Some successfully used CBT interventions with aggression in adolescents include social skills training, modelling, problem solving skills training, attributional retraining, token systems, social reinforcement, extinction and time out (Moeller, 2001). Any combination of these concepts can be successfully integrated in conjunction with other interventions with adolescents through many different exercises.

Another CBT intervention thoroughly explored by Granello and Hanna (2003) is what they term the “resurrection of lost empathy”. The authors view at-risk youth as having a lack of remorse related to lack of empathy and state that the establishment of empathy can be a powerful catalyst in therapeutic change. Granello and Hanna state that often these adolescents have turned off their empathy towards others in the past as a coping mechanism and that exploring the reasons behind this (stressing the act of losing empathy as a purposefully developed but now defunct skill) can be helpful in empathy restoration. Another area in the redevelopment of empathy is the exploration of models in

the youth's past with a lack of empathy and the examination of whether this person is still (or should remain) a model for them in the present (Granello & Hanna).

In their 1999 study and meta-analysis of school-based cognitive behavioral therapy, Robinson, Smith, Miller and Brownell found that CBT was effective in the long-term reduction of aggression. This is a significant finding because aggressive behaviours are typically thought to be highly resistant to change (Kazdin et al., 1989; Robinson et al.). Kazdin et al. also assert that CBT, unlike many other treatments, is effective in alleviating the poor long term prognosis of aggressive behaviour in adolescents particularly when extra-treatment practice (treatment applied to everyday life problems emphasizing skill transfer to the client's real world environment including school and home) was instituted.

Family Therapy

Henggeler, Melton and Smith (1992) indicate that family therapy may greatly increase the chances of success with the treatment of aggression in youth. Implicit in the tenets of this therapy is the suggestion that family members not directly involved with the adolescent's therapy are not as motivated to aid in changing the youth's behaviours and may in fact consciously or unconsciously sabotage the therapy (Moeller, 2001). In family therapy, all family members participate in the therapy that may occur in the home enabling maximum real world applicability. Therapeutic interventions are developed that build on strengths while focussing on areas of concern and include cognitive and behavioural techniques (such as those previously discussed), joining, reframing and enactment (Henggeler et al.).

This therapy modality addresses issues including peer relations, schoolwork and parental marital adjustment and in addition may incorporate individual treatment of the adolescent or parents (Moeller, 2001). Henggeler et al.'s (1992) research indicates that family therapy is proving to be efficacious in the treatment of violent youth. Henggeler et al. postulate that family therapy likely works well with these adolescents as it minimizes resistance to treatment or attrition as it brings the therapy to the client and actively involves a large section of the client's socialization (i.e., the familial unit).

Massage Therapy

An interesting and relatively newly introduced area in the treatment of adolescent aggression is massage therapy. Diego et al. (2002) and Field (2002) state that massage works well to reduce aggression in youth. Diego et al. discuss other studies in which massage therapy was used beneficially with adolescents diagnosed with conduct disorder and depression: these youth presented lower stress hormone levels and lowered feelings of anxiety and depression after massage therapy. In her discussion of touch deprivation in violent adolescents, Field suggests that massage therapy works to decrease aggression in youth as the physical stimulation reduces dopamine levels and increases levels of serotonin.

In the Diego et al. (2002) study, aggressive youth were assigned to either a massage or a relaxation therapy group biweekly for five consecutive weeks. Adolescents in the massage group reported lower anxiety and hostility and were perceived by parents as less aggressive at the end of the study (Diego et al.). Those in the relaxation group, however, demonstrated no significant differences, suggesting the positive impact of massage therapy in lowering youth aggression. Though this is a new area of research, the

preliminary results of research indicate that massage therapy is an alternative and potentially positive treatment for aggressive youth.

Effective treatment for aggressive adolescents includes the prescription of medication, particularly of atypical antipsychotics, which act to suppress the expression of violence. Cognitive behavioral therapy is another widely used and effective treatment of youth aggression; particular emphasis is placed on identifying and changing adolescents' faulty thought processes in order to decrease aggressive behaviour. Family therapy is also widely used in the treatment of aggressive youth as it links therapy with a major component of the adolescents' social system, provides assistance with familial relations that may influence aggression and also assists while decreasing the possibility of non-compliance with treatment. A relatively new, but preliminarily efficacious, therapy in the treatment of adolescent aggression is massage therapy. Massage works to decrease neurotransmitter levels tied to increase violent behaviour while increasing neurotransmitter levels linked to decreased aggression.

In summary, aggressive acts perpetrated by adolescents are an increasing concern in our society. Males display more physical acts of aggression while females are more prone to verbal/relational aggression. Seeming ethnic differences in aggression may be attributable to poverty rather than ethnicity per se, though the relation between ethnicity and aggression is not clear cut. There are biological, social and cognitive theories of aggression all of which likely explain an aspect of this behaviour though none definitively. Risk factors for aggression include suicidality, use of firearms, abuse or neglect, diagnosis of psychopathology (particularly the disruptive disorders) and substance abuse. Many assessments are used by professionals in the attempted prediction

of aggressive acts. The consensus is that a thorough assessment coupled with clinician interview and collateral information increases accuracy in the prediction of violence. Treatment for adolescent aggression varies, though many propose that a multi-systemic approach that begins early on, encompasses some aspect of cognitive behavioral therapy and includes the family unit demonstrate greatest benefit.

Aggression has two demonstrable outlets: it can be expressed towards others as explored above and/or be expressed towards the self in acts ranging from unintentional self harm to suicide, to be discussed in detail to follow.

Suicide

There is considerable concern about the adolescent suicide rate being above the overall average suicide rate in Canada, especially in light of the increase in these rates. Our country is losing many young persons with untapped potential to this self-destructive act. Despite the difficulties inherent in suicide prediction, it is necessary to seek a better understanding of its risk factors as suicide prevalence continues to rise in our country (Shaffer, 1996). The writer will first present a definition of suicide in order to clarify its presentation in this review.

Suicide can be broadly defined as the act of deliberately killing oneself (Microsoft Corporation, 2003). The Centers for Disease Control and Prevention author the definition of suicide utilized by scientists, public health officials, medical examiners and coroners in the United States. They specify that for a death to be deemed a suicide, there needs to be either explicit or implicit evidence that the injury was self-inflicted and that there was intentionality to the act (Jamison, 1999). Durkheim (1897/1951) similarly defined suicide as any death resulting directly or indirectly from the victim's intentional actions. Maris et

al. (2000) elaborate on Durkheim's definition by stating that suicide has four components: it is an actual death (not a suicide attempt) which is intentional in nature, done by oneself to oneself and can be indirect or passive.

These definitions of suicide have in common the intentionality of the victim. As such, the simplified definition of suicide utilized in this study is the intentional taking of one's life. With a more complete definition of suicide, the epidemiology of suicide, including prevalence, gender and ethnicity, will now be presented to elaborate on the wide spread nature of this issue.

Epidemiology

The epidemiology of suicide is an important aspect in its review as, by enhancing the understanding of the causes, development and course of their psychiatric disorders, it can improve adolescent mental health services (Costello, Burns, Angold, & Leaf, 1993).

Prevalence

Suicide is a phenomenon that does not limit itself to any particular age, but rather is prevalent throughout all the lifespan, from childhood to old age (Farberow & Shneidman, 1970). However, in general, suicide does become increasingly problematic proportionate to the advance in age (Farberow & Shneidman). As reported by Statistics Canada (2003), the age group at highest risk for suicide in Canada in 1997 was 45 to 64 with a rate of 25.5 per 100 000. In agreement to this, information provided by the Chief Medical Officer (2002a) indicates that the rate for those aged 50 to 54 was the highest risk group in Alberta in 2000 at 27.1 per 100 000. Yet, the fastest growing population for suicide is adolescents (Jamison, 1999). In Canada from the 1970s to the 1980s, youth

suicide rates rose to become almost as high as that for the elderly (Leenaars & Lester, 1995). This level has not significantly dissipated (Leenaars & Lester).

The prevalence of suicide has been increasing throughout the world (World Health Organization [WHO], 2003c), especially for males (WHO, 2003b), and increasingly, the age of suicide completers is getting younger (WHO, 2003a). Suicide rates in Canada have also increased over the years, from 7.7 per 100 000 in 1950 to 12.2 per 100 00 in 1998 (WHO, 2003h). The suicide rate in the United States has also risen, from 7.6 per 100 000 in 1950 to 10.7 per 100 000 (WHO, 2003i), a rate notably lower than Canadian prevalence. The WHO (2003d) reports that in 1998, there were 3699 total suicides in Canada, of which 79 percent were male and 21 percent were female (WHO, 2003d). As illustrated by Table 1, the highest number of suicides was in the 35 to 44 age category with 24 percent of the total suicides (WHO, 2003d).

Table 1

1998 Canadian Suicide Statistics by Age

Age	Percentage of Total Suicides
5-14	1%
15-24	15%
25-34	19%
35-44	24%
45-54	18%
55-64	10%
65-74	7%
75+	5%
Total	100%

Collapsing the first two age categories to enable an examination of suicide rates encompassing all youth, youth in the 5 to 24 age range had 16 percent of the total suicides; this age group was comprised of 80 percent males and 20 percent females (WHO, 2003d). Prevalence for youth suicide in the United States is reported as slightly lower than in Canada: the 5 to 24 age range demonstrated 14 percent of the total suicides in 1998 (WHO, 2003e). In both the United States and Canada, males of all ages have higher suicide rates than females, with prevalence at roughly 80 percent for males and 20 percent for females in both countries (WHO, 2003d, 2003e, 2003f, 2003g, 2003h, 2003i). This reflects that the 80/20 gender split in youths aged 5 to 24 in Canada is an accurate reflection of all ages of those committing suicide.

A review provided by the provincial Chief Medical Examiner provides details about suicide in the province of Alberta. The prevalence of suicide in Alberta rose from 8.9 per 100 000 in 1960 to 13.9 per 100 000 in 2000 (Chief Medical Examiner, 2002d). This rate has ranged from a low of 8.4 per 100 000 in 1963 to a high of 18.8 per 100 000 in 1991 (Chief Medical Examiner, 2002d).

In 2000, there were a total of 418 suicides reported in Alberta (Chief Medical Examiner, 2002a). The overall suicide rate per 100 000 in our province in 2000 was 13.9 (Chief Medical Examiner, 2002a) which is demonstrably higher than the Canada's overall rate of 12.3 per 100 000 reported in 1998 (Statistics Canada, 2003).

As displayed in Table 2 which outlines suicide prevalence in Alberta in 2000, those aged 10 to 19 comprised 7 percent of the total suicides while those aged 20 to 29 comprised 13 percent of the total suicides for that year (Chief Medical Examiner, 2002a).

Table 2

2000 Alberta Suicides by Age

Age	Percentage of Total Suicides
10-19	7%
20-29	13%
30-39	22%
40-49	26%
50-59	19%
60-69	7%
70-79	5%
80+	1%
Total	100%

Suicide rates are fairly equivalent throughout the province; when separated by regions in Alberta (Calgary, Edmonton, Rural North and Rural South) the rates were 26, 24, 25 and 25 percent respectively (Chief Medical Examiner, 2002b).

In her book reviewing major aspects of suicidality, Jamison (1999) proposes many potential explanations of increased youth suicide prevalence. There is an increased accuracy in the reporting of suicide as well as easier and earlier access to guns, drugs and alcohol. The age puberty begins is decreasing which may be linked to the earlier onset of depression (Jamison). The fetus sustains more damage from alcohol, nicotine, drugs transmitted invitro that may result in more children who develop mood and behaviour disorders associated with suicide (Jamison). Shaffer and Fisher (1981a) propose the

“cohort” effect (i.e., a general increase of suicidality among more recently born individuals) as another potential explanation for the rise in youth suicide.

Gender

As evidenced in the prevalence section, males are more likely than females to commit suicide (Statistics Canada, 2003; WHO, 2003b). Though males are more likely to complete suicide, females attempt suicide more often (Hider, 1998; Jamison, 1999). Over the past fifteen years, the suicide rates for adolescent females has not significantly changed, however, the rate for teenage males has tripled (Shaffer, 2001). Explanations suggested for this discrepancy in rates between the genders include the differing prevalence and types of psychological illness experienced by males and females, the differences in likelihood of seeking psychological care and lethality of suicide method chosen by either gender (Jamison).

For example, females are more likely to suffer from depression than males, which may partially explain their higher attempt rates (Jamison, 1999). Males are also less likely to seek help for their psychological problems (Jamison). With this in mind, it is also important to note that females’ depressive illnesses tend to be less violent and impulsive than those of males (Jamison). This may make females less likely to use the more violent and lethal methods of suicide attempts, allowing them to be “rescued” more often than males. Beautrais (2003b) reports that gender differences in outcome in her study were entirely contributable to method choice.

Females often overestimate the perceived lethality of suicide methods, which could imply that female suicide attempts are meant to be completed suicides more often (Jamison, 1999). Females also tend to use a greater variety of methods than males (Maris

et al., 2000). Typically, males have easier access to firearms, as they are more likely to own them and are also more comfortable using the weapons (Brent et al., 1994; Jamison). Firearms are obviously a highly lethal method of suicide, and males more frequently using them as a method of suicide means that they may complete suicide more often than females, though both genders may exhibit similar intentions of dying. Maris et al. (2000) report that males also have a greater preference for lethal shot sites; if females do use a gun in their suicide attempt, they are more likely to choose a less lethal area.

In Alberta, the Chief Medical Examiner also records suicide methods by gender. The most frequent choices of method for suicide for both genders were the same; however, they occurred in different frequencies. For females, the four most frequent suicide methods were drug overdose (35.1%), hanging (28.8%), carbon monoxide poisoning (9.9%) and firearms (8.1%; Chief Medical Examiner, 2002c). For males, the four most frequent suicide methods were hanging (28.3%), firearms (27.7%), carbon monoxide poisoning (21.2%) and drug overdose (11.7%; Chief Medical Examiner, 2002c). The reports for suicide method frequency in Alberta (Chief Medical Examiner, 2002c) are similar to those reported in the United States (Jamison, 1999).

Adolescent males are more likely to have experienced a crisis event in the 24 hours prior to their suicide (Jamison, 1999) indicating increased impulsivity. This could include a break up with a girl or boyfriend for example, an altercation with the law or an experience of a perceived humiliating event such as public failure or rejection (Jamison; Shaffer, 1996). Many male adolescents who commit suicide are aggressive, impulsive, quick-tempered, abuse substances and have difficulties in interpersonal relationships (Shaffer). According to Brent, Baugher, Bridge, Chen and Chiappetta (1999), higher

suicide prevalence among adolescent males correlates with lethality of method and the diagnosis of conduct disorder. Yet another potentially important difference is how the two genders view failed suicide attempts. Males may attach more stigma to these failed attempts than females and thus report them less than females do (Jamison).

Ethnicity

Suicide is a problem that affects all ethnic groups; however, prevalence is higher and growing faster in some populations than others. Each ethnicity's suicide rates vary greatly by country and culture (Maris et al., 2000). For example, there are wide differences in the suicide rates between Aboriginal Americans and Aboriginal Canadians, and even large variances between different tribes within each group.

Within North America, Caucasian males have the highest rates of suicide; Caucasian persons comprise more than 90 percent of all reported suicides with Caucasian males comprising 70 percent of the total (Kelly, 1996; Shneidman & Farberow, 1970). Suicide persists in being the second leading cause of death among Caucasians after accidents (Shaffer, 2001). According to Shaffer, prevalence among non-Caucasian males, though still lower than for Caucasian males, has been increasing at the most rapid rate. Shaffer reports that among African-Americans in the United States, suicide is the third leading cause of death (after homicides and accidents).

Sorenson and Golding (1988) suggest that the Hispanic adolescent suicide rate is also rapidly accelerating, making this group increasingly at risk. Maris et al. (2000) state that suicide among Asian populations is relatively low compared to Caucasian countries. Native American youth have a suicide rate almost three times that of youth of all ethnicities in the United States (Johnson & Tomren, 1999). In Canada, according to a

Survival International report issued in 1999, the reported suicide rates of the Labradorian Innu people of Davis Inlet had the highest annual prevalence of suicide in the world: 178 per 100 000 (Demont, 2000). There is considerable cause for concern in all ethnic groups as suicide rates continue to be high.

In summary, suicide rates among youth in Canada are a concern because they are higher than rates to our comparable neighbour, the United States, and rising. Within the province of Alberta, suicide rates are even higher than our national average and therefore even more cause for concern. By age, youth suicide rates are not the highest within the population; however, they do comprise the fastest growing population. Males are about four times more likely than females to commit suicide; yet, the intentionality to die may be similar between the genders. What differs between genders remains method choice, with males choosing more lethal suicide methods than females. Males' tendency to be diagnosed with violent and impulsive psychopathologies and females' tendency to demonstrate depressive illnesses likely factor in the method choice, and therefore, suicide completion discrepancies between the genders. Suicide is a concern in all ethnicities, however, Caucasian males have the highest rates. There is growing concern among Native populations, especially in Canada, as well as for Hispanic and African American male youth. With this more complete understanding of the epidemiology of suicide in place, the theoretical basis of suicide is presented.

Theoretical Basis

The eternal question asked in the study of suicide is what motivates a person to kill him or herself. Maris et al. (2000) state that we study suicide because we invariably encounter it within our lives and as such we are all touched by it in many ways, some

devastating. Many theories examine the motivations for suicide, most notably biological, sociological, psychoanalytical and psychological theories, including cognitive behavioral and Shneidman's (1996) theory. Biological theories primarily present suicide as the result of a deficiency in brain chemistry, sociological theories posit that suicide is the result of social conditions, psychoanalytical theories present suicide as an inwardly directed death wish, cognitive behavioral theories discuss suicide in terms of a high degree of hopelessness and a difficulty in solving problems and Shneidman presents a psychological theory that posits that suicide is primarily the result of intolerable psychological pain. A more thorough dissemination of each of these theories follows.

Biological theories on suicide focus on neurotransmitters, much as in the previous section on aggression. Serotonin, previously discussed as one of the body's many neurotransmitters tied to aggression, is also linked to suicidality. As with those adolescents that are aggressive, suicidal youth also have lower levels of serotonin in their systems (Brown et al., 1982). Psychiatrists emphasize the role of deficiencies or abnormalities of the serotonergic system in suicide (Maris et al., 2000). Impulsivity may be the link between serotonin and suicidality as this trait is also prevalent in aggression (Coccaro, 1995; Coccaro & Kavoussi, 1996). Those who commit suicide usually act impulsively even if plans were laid out in advance (Jamison, 1999). Suicidal persons are also more likely to present violence or aggression. The severity of both aggressive behaviours and suicide attempts are correlated with decreased serotonin levels (Coccaro). Other neurotransmitters (including norepinephrine and dopamine) have also been linked with suicidality, though less reliably than serotonin (Coccaro & Kavoussi).

Emile Durkheim is a famous social philosopher in the sociological realm and considered to be one of the earliest founders of suicidology (Maris et al., 2000).

Durkheim was the first to study completed suicide rates of groups from vital statistics and from these statistics, he produced theories that focussed on the broad social factors that play a role in suicide, such as social integration, abrupt social disruption, social isolation and altruism (Durkheim, 1897/1951). Maris et al. argue that despite how long ago this theory was conceived and the subsequent lack of knowledge of the contribution of biology in suicide in this time, Durkheim's sociological theory of suicide established the paradigm governing modern suicidology.

Durkheim (1897/1951) posited that society works to constrain individuals by either integrating or regulating them. He stated that if the integration with society was too intensive, then an individual might sacrifice himself/herself on behalf of the whole, and if the integration with society was too loose, then an individual could experience disintegration (Durkheim). Durkheim postulated that the more socially integrated an individual was, the less likely they were to commit suicide. Therefore, he put forward that suicide necessarily be examined as part of the social realm, independent of individual psychopathology or conditions of the physical environment (Durkheim). Durkheim postulated that suicide is an act that may seem to be very personal and intimate but is really an expression of the social condition that the individual experiences; despite this assertion, he did however allow that a person will not commit suicide no matter their social condition if they are not inclined to do so.

Greater social integration, according to Durkheim (1897/1951) would include religious affiliation, familial circumstances, marital status, occupational status etcetera:

those who were the most socially integrated were least likely to commit suicide due to this connection to the social realm. From this, Durkheim argued that those that are Catholic (or Jewish and thus within a very integrated, organized religion), married, in a society that has a sense of community and so forth are less likely to be at risk for suicide. To further elaborate the importance of social integration on suicide risk, he stated that if suicide is lower in females, then it is due to females being more socially integrated than males; if suicide rates increase between January and June, then it is due to there being less social activity, and therefore integration, during that time frame (Durkheim).

Later researchers argue that Durkheim's notion of social integration is not operationally defined nor can it be tested (Maris et al., 2000). Durkheim's ideas are constrained towards external factors only and do not take into account any internally driven factors of suicide or social-psychological factors such as frustration (Maris et al.). Other researchers posit that social integration cannot be causally related to suicidality as there is an interference of many other factors (particularly depression) within those who are in an impoverished social network (Shaffer & Fisher, 1981b). Depression may be the causal link to explain why those with less social integration are more likely to commit suicide (Shaffer & Fisher).

Durkheim (1897/1951) argued that there are four types of suicide: egoistic, altruistic, anomic (or without norms) and fatalistic. Durkheim's egoistic and altruistic types of suicide are polar opposites defined by the level of social integration; egoistic suicides result from excessive individualization or lack of social integration (e.g., homeless persons committing suicide) and altruistic suicides from insufficient individualization (e.g., World Trade Centre bombers). Anomic and fatalistic suicides are

also polar opposites of each other and speak to the intensity of rules and regulations imposed on an individual by society; anomic suicides result from abrupt social deregulation (e.g., suicide after stock market crash) while fatalistic suicides result from social hyperregulation (e.g., jail or prison suicides; Durkheim).

Maris et al. (2000) relate that these last two types of suicides are not well developed in Durkheim's works and are, in fact, contradictory to his main postulation that social integration protects individuals from suicide. Maris et al. state that Durkheim does not explain this anomaly and hypothesize that sometimes social integration may have a paradoxical effect on individuals if social norms are pro-suicide (such as in Jonestown) or if society is excessively socially regulated (such as in a jail). In fact, Durkheim (1897/1951) states that though there are the different types of suicide as outlined above, there may be more than one type of motivation working concurrently within an individual. The suicide types, he continues, may be opposite, but are not exclusionary from each other. Durkheim further offers examples where multiple comorbid motivations may be considered in a suicide: a bankrupt man who kills himself due both to loss of status (anomy) and to spare his family from disgrace (altruism).

According to many past and present leaders in the field of suicide research, the notion that suicide was related to aggression began with Sigmund Freud's psychoanalytical theory. Freud's psychoanalytical perspective postulated the loss of a person, ideal, and/or self-esteem, or disappointment in not achieving a desired goal could prompt an inward turning of hostility and therefore suicidal thoughts and actions (Cull & Gill, 1988; Farberow & Shneidman, 1970).

As previously addressed in the section on aggression, Freud stated that all humans are born with the death instinct (or Thanatos): the drive seeking the cessation of life that can be directed towards others or self (Freud, 1920/1961b). Freud proposed that suicide results from a breakdown of the ego defences, and the release of increased destructive, instinctual energy (Litman, 1970). His theories put forth that the death instinct served to eliminate life tension; in effect, that outward aggression was necessary to avoid inward turned aggression (Maris et al., 2000).

In his discussion of melancholia, Freud (1917[1915]/1961a) postulated that suicide results from a death wish towards another person that is internalized. He stated that “the ego can kill itself only if...it can treat itself as an object...[and] direct against itself the hostility which relates to an object and which represents the ego’s original reaction to [that object]” (Freud, 1917[1915]/1961a, p. 252). Freud (1920/1961b) further relates this similar idea in a case review where he states that “probably no one finds the mental energy required to kill himself unless...in doing so he is at the same time killing an object with who he has identified himself, and...is turning against himself a death-wish which had been directed against someone else” (p. 162). Suicide is thus explained in terms of anger directed inward in psychoanalytical theory; cognitive behavioral theory explains suicidality in terms of extreme negative self worth.

The cognitive behavioral theory of suicidality posits that the cognitive processing in those persons who are suicidal includes a high degree of hopelessness coupled with a cognitive deficit or difficulty in problem solving (Beck & Weishaar, 2000). The greater degree of hopelessness experienced, the higher the likelihood of suicide (Beck & Weishaar). “Although hopelessness accentuates poor problem solving and vice versa, the

difficulties in coping with life situations can, by themselves, contribute to the suicidal potential” (Beck & Weishaar, p. 253). Suicidal behaviours have underlying vulnerabilities including suicidal intent, feelings of worthlessness, being rejected by others, hopelessness and dysphoria (Rudd, 2000).

Cognitive behavioral theory offers five fundamental assumptions of suicide from the ten axioms of cognitive theory: the central pathway of suicide is cognition or the maladaptive meaning constructed by the individual regarding self, the environment and the future (Rudd, 2000). This is referred to as the suicidal belief system. The relationship between this belief system and other psychological and physiological systems is interactive and interdependent (Rudd). This suicidal belief system is unique to the individual person and is dependent on the context of their cognitions. There are some overlapping categories of cognitions experienced by suicidal persons; these include an overall pervasive sense of hopelessness, as well as perceptions of unloveability, helplessness and poor distress tolerance (Rudd). Suicidality is predisposed by faulty cognitive constructions or cognitive vulnerabilities, which have specific covariations with particular psychopathologies (Rudd). Suicidality and the suicide belief system exist within the automatic (preconscious), the conscious and the metacognitive (unconscious) levels (Rudd). The content of an individual’s suicidal belief system is contained within the suicidal mode.

Rudd (2000) states that the suicidal mode is the complex relationship between predisposing vulnerabilities (including psychopathologies and previous suicidal behaviour), triggers or potential stressors (both internally and externally driven), the suicidal belief system, death related intent including preparatory behaviours,

physiological system activation and arousal and the affective system (overall sense of dysphoria or mixed negative emotions). When the suicide mode is activated, it “is characterized by behaviour...expressing an intent to die by suicide” (Rudd, p. 27).

Rudd (2000) further elaborates that the suicide mode is acute or time limited and those with suicidal behaviour can shift in and out of this mode with frequency and for varying periods of time. According to this theory, the physiological arousal necessary for suicidal behaviour can only be maintained for limited periods of time dependent upon how chronic the suicidality is (multiple attempters can experience longer periods of arousal) and the complexity of the psychopathological diagnosis. It is easier to trigger the suicide mode in persons who demonstrate chronic suicidality or multiple suicide attempts due to lower activation thresholds (Rudd). According to Rudd, suicidal behaviour can also be explained via Shneidman’s psychological theory which focuses on the affective schemas (particularly intolerable psychological pain) of the cognitive behavioral theory described above.

Shneidman (1996) argues that although suicide needs to be viewed from a multifaceted perspective (including many of the aforementioned theoretical viewpoints), suicide is primarily a psychological affliction in that its “essential nature” is within an individual’s mind. In Shneidman’s theoretical model of suicide, the maximum suicide threat condition would occur when an individual’s psychache (pain), stress and perturbation (agitation) are at threshold levels (Maris et al., 2000). Shneidman asserts that suicidal instincts stem from what he terms psychache, which he defines as intolerable psychological pain. He posits that individuals commit suicide when they perceive their psychache to be unbearable; they choose death in an attempt to cease the agony of

consciousness (Shneidman). Shneidman further explains that although not every person with psychache will commit suicide, all those who do commit suicide perceive their psychological pain to be unbearable, which he posits primarily stems from frustrated psychological needs. Those individuals who commit suicide see it as the only option to end this pain; Shneidman refers to this narrowing of options or focus of attention as constriction. He eloquently states, “in suicide, the diaphragm of the mind narrows and focuses on the single goal of escape to the exclusion of all else” (Shneidman, p. 60).

According to Maris et al. (2000), Shneidman described his theory on suicide as the “theoretical cubic model of suicide” based on the ten commonalities of suicide. According to Shneidman (1996), the common psychological features of suicide include the purpose of seeking a solution, the goal of cessation of consciousness (stop mental pain), the stimulus of intolerable psychological pain, the stressor of frustrated psychological needs, the emotions of hopelessness and helplessness, the cognitive state of ambivalence, the perceptual state of constriction, the action of egression or escape from life itself, the interpersonal act of communication of intent (e.g., suicide notes or behavioural signs) and the pattern of lifetime coping or those with chronic attempts.

Suicidality theory differs in explanation of suicidal behaviour from neurobiological differences (particularly decreased serotonin), social disintegration, an inward directed death wish, extreme negative self worth and faulty cognitions to intolerable psychological pain. From the research on suicidality theory, the theme that emerges is a search for meaning: as a society, we do not understand why someone would want to kill him or herself, no matter what possible explanations or theories are reviewed. Risk factors may prove another link in understanding why adolescents make the decision

to end their own lives. This review continues with a comprehensive discussion on risk factors for youth suicide.

Risk Factors

There are many risk factors that, if experienced by adolescents, may predispose or increase the chances that they may commit suicide. Overall single predictors of suicide include major depressive illness, affective disorder, alcoholism and drug abuse, suicide ideation, prior suicide attempts, use of lethal suicide methods, isolation, hopelessness, being an older, white male, history of suicide in the family, work problems or unemployment, marital and sexual problems, negative life events, aggression, physical illness and comorbidity of any of the above factors (Maris et al., 2000). Further exploration of some of the most significant risk factors, including aggression, use of firearms, life stressors, sexual orientation, previous suicide attempts and diagnosis of psychopathology, is merited and will follow in this review.

Aggression

Aggression is often cited as a major factor in completed adolescent suicide, especially for males. Brent et al. (2003) report in their study of children of parents who attempted suicide that those children with a sibling who also attempted suicide were at highest risk for suicide themselves, and that it is likely that this risk is related to impulsive aggression. In their study of multiple suicide attempts and negative affect, Stein, Apter, Ratzoni, Har-Even and Avidzan (1998) found that multiple (or chronic) suicide attempters have higher levels of aggression than single attempters do. If youth have aggressive tendencies, then they may be more likely to choose a lethal method of suicide (Jamison, 1999). In fact, the first suicide attempt may be lethal enough in nature

to be the only attempt. Therefore, it is essential to recognise that aggressive youth are at a much greater risk for suicide completion with or without prior attempts. In Shneidman and Farberow's (1970) study of suicide attempters judged by their physicians in terms of the lethality of their intentions, 36 percent of males were judged as really wanting to die; in contrast, 40 percent of females indicated that they expected intervention (Shneidman & Farberow). This implies that males were less likely to make a suicide attempt expecting to be saved by someone, and therefore choose a more lethal method of suicide than females.

Suicide is often an impulsive act resulting from a loss of regard for one's own well-being. Individuals with impulsive traits are more likely to commit suicide (Cull & Gill, 1988). Brent et al. (1994) found that aggression and impulsive violence are at higher levels in suicide victims than in community controls. Suicide victims were rated as being more aggressive over their lifetime as well as having an increased tendency toward impulsive violence, even when differences in psychopathologies between victims and controls were controlled for (Brent et al.). Both having a diagnosis of a personality disorder and the tendency to engage in impulsive violence are critical risk factors for completed suicide (Brent et al.; Verona, Patrick & Joiner, 2001). The combination of depressive symptomology and antisocial behaviour is a common precursor to adolescent suicide (Verona et al.).

Firearms

Brent and Bridge (2003) report that firearms are the most common suicide method across all demographic groups (including age, gender and ethnicity) in the United States. A striking study by Brent et al. (1991) reports that firearms were twice as likely to be in

homes of suicide victims as in homes of adolescent suicide attempters that did not complete suicide and psychiatric controls that did not attempt suicide. Neither gun type, secure storage of gun nor storage of gun separate from ammunition affected the outcome of this study (Brent et al.). In a recent review of other case control studies, Brent and Bridge (2003) reported that all studies they reviewed (primarily consisting of adolescent studies, but also including a lifespan study) reported that the presence of a firearm in the house was highly predictive of its use in completed suicides.

Previous studies suggested that more strict regulation of gun possession would not make a difference in the rate of suicides, as victims would simply choose another method (known as method substitution). Maris et al. (2000) argue that method substitution is not often a common reaction; they refer to coal gas (the most common suicide method in Great Britain) being detoxified resulting in a great reduction of the country's overall suicide rate. Further, this does not seem to be true for adolescent populations; Brent et al. (1991) attribute this difference to the increased impulsivity found in adolescent suicides. Therefore, increased gun regulation may not play a role in typically more premeditated suicides of older persons, but may prove to have a powerful impact in the reduction of impulsive suicides, including those in adolescents (Brent et al.).

If it is the case that adolescents are particularly impulsive in their suicidality, then it is essential that firearms restriction and removal be implemented in order to reduce prevalence of suicide among youth. Maris et al. (2000) emphatically state that a huge part of suicide prevention amounts to gun control. Firearms are the most lethal method of committing suicide (Shenassa, Catlin & Buka, 2003): one suicide attempt may prove to be fatal, though intention may not be high. Limiting access to firearms is one method to

help reduce suicide mortality (Brent et al., 1991; Maris et al.; Shenassa et al.). Lethal suicide agents, such as guns, may be the most significant determinant of the lethality of impulsive suicides, especially in suicides with high impulsivity (Brent, 1987). "Persons who kill themselves have a high degree of lethality which interacts with life events to lead them to commit suicide" (Cull & Gill, p. 33).

Life Stressors

The predominant factors for completed adolescent suicide may be an interrelation of many factors in the youth's life at the time. Psychological, social role, contextual and biological changes often occur simultaneously and have a cumulative effect on adjustment during adolescence (Graber & Brooks-Gunn, 1995). Maris et al. (2000) impress that typically those who commit suicide often experience multiple stressors over long periods of time. Much of the literature has found suicidal behaviour preceded by a stressful life event, especially an interpersonal conflict, loss or legal/disciplinary problems (Beautrais, Joyce & Mulder, 1997; Brent, Perper, Moritz, Baugher et al., 1993; Graber & Brooks-Gunn; Flisher et al., 2000). These events, or life stressors, may act as a trigger in the suicide of adolescents with other underlying risk factors (Beautrais et al.; Brent, Perper, Moritz, Baugher et al.).

Beautrais (2003a) also stresses the impact of life stressors in youth suicide. Beautrais suggests that exposure to adverse childhood experiences are examples of life stressors that increase vulnerability to suicidality. Specific examples of the life stressors linked to adolescent suicide attempts and completions include parental separation or divorce, parental psychopathology, parental or family discord, history of physical or sexual abuse and impaired or neglectful parenting (Beautrais).

Slap, Vorters, Chaudhuri and Centor (1989) reported that suicidal adolescents had poorer mental health, impulse control, family relationships, school performance and higher stress and alcohol use scores, more drug use and were more likely to report previous suicide attempts and previous mental health care. Kelly, Lynch, Donovan and Clark (2001) found gender differences in other stressors: chronic stress was predictive of male suicidal ideation while low self-esteem and high family dysfunction were predictive of female suicidal ideation. Beautrais et al. (1997) reported that even when life events as well as social, family and personality factors were controlled for, interpersonal losses or conflicts and legal difficulties were significant factors in adolescent suicide risk.

Experiencing multiple and cumulative events during adolescence has been linked to higher occurrence of decreased affect (Graber & Brooks-Gunn, 1995). These factors may act together to increase suicide risk in youth.

Sexual Orientation

The majority of the literature on adolescent suicide implies that gay and bisexual male youth appear to be at greater risk for suicide (Jamison, 1999). It has been suggested that the stigmatization of persons being gay or lesbian is responsible for the high rate (Hider, 1998) and underreporting of suicide in this population (Maris et al. 2000). However, not all literature agrees that this population is in fact at greater risk (Rutter & Soucar, 2002; Shaffer, Fisher, Hicks, Parides & Gould, 1995).

Muehrer (1995) attributes the disparity of the rates of suicide risk based on sexual orientation to both the lack of reliable and valid definition of sexual orientation and what constitutes a suicide attempt, as well as methodological problems in the studies (including non-representative samples and a lack of appropriate control groups). Russell

and Joyner (2001) entirely ascribe this difference to limitations in methodology.

Similarly, Remafedi (1999) attributes the inconsistency to the small sample size of many studies, while Shaffer et al. (1995) ascribe this discrepancy to the difficulties to differentiation between suicide attempters and completers.

Russell and Joyner (2001) found a positive correlation between adolescent same-sex sexual orientation and suicidal ideation and acts. Remafedi (1999) reports that in the majority of the studies he reviewed with appropriately large sample sizes, there was a significant association between being gay and suicidality in males. Garofalo, Wolf, Wissow, Woods and Goodman, (1999) found that sexuality was linked with suicide attempts: those youth that were gay, lesbian, bisexual and those unsure of their sexual preferences were 3.4 times more likely to have attempted suicide than heterosexual youth. Garofalo et al. found this to be true for both males and females, though there was a possible mediating factor of drug use and violent background for females. Maris et al. (2000) emphasize that there has been a deficiency in the study of suicidality in lesbian females and that their suicide rates (in terms of suicide attempts) may be higher than that of gay males echoing the increased attempt rate for heterosexual females. The Shaffer et al. (1995) study found a slightly higher, though statistically insignificant, rate of gay and lesbian sexuality among youth suicide completers.

In a recent paper reviewing the literature on sexual orientation and suicide risk, Russell (2003) emphatically states that sexual minority status is a central risk factor in adolescent suicide. In response to the debate on sexual orientation being related to suicide risk, the author emphasizes that many studies throughout the years have come to the same conclusions regarding this link, despite differing settings and methodologies (Russell).

Previous Suicide Attempts

There is a debate among professionals as to whether or not previous suicide attempts are indicative of later completed suicides. It is generally accepted that prior suicide attempts are a good indication of future suicidal behaviour. Many studies indicate that prior suicide attempts are a risk factor for subsequent suicide completion (e.g., Hider, 1998; Jamison, 1999). Within suicidality, “[s]uicide is the anchor point on a continuum of suicidal thoughts and behaviors. This continuum is one that ranges from risk taking behaviors at one end, extends through different degrees and types of suicidal thinking, and ends with suicide attempts and suicide” (Jamison, p. 34). Those who die by suicide will often have made past attempts, similarly those people with suicidal ideation are at high risk for later suicidal behaviours (Hider). When compared to non-suicidal patients, suicide attempters are also more likely to make a subsequent suicide attempt, and as previously indicated in the gender section, more likely to be female (Wetzler et al., 1996).

However, Jamison (1999) reports that in long term studies (over a ten to forty year span), a relatively low percentage (ten to fifteen percent) of previous suicide attempters will eventually kill themselves. Eighty-five to ninety percent of attempters, from these reported numbers, do not later complete suicide (this percentage is similarly reported in many other sources including Maris et al., 2000). Maris et al. stress that suicide attempters and completers are overlapping populations, but not one and the same. Shaffer (1996) also asserts that examining previous suicide attempts is not predictive of suicide risk. As evidence of this, the author reports that fewer than 50 percent of completed suicides are known to have made a prior attempt and between 90 to 99 percent

of attempters will not die from suicide (Shaffer). If prior attempts were utilized as a predictor of future suicidal behaviour, there would likely be a high error rate.

Perhaps part of the explanation for the disparity are the indications that suicide completers and attempters do not necessarily share the same characteristics (Beautrais, 2003b). Maris et al. (2000) present two possible explanations for the relationship between ideators and completers; suicide ideators, attempters and completers are within a single population on a continuum of severity of attempt, or rather, are various types of self-destructive behaviours within distinct but overlapping populations sharing some commonalities. The continued discrepancy in view makes it is therefore necessary to make further examination of suicide attempter and completer characteristics.

The literature has opposing opinions regarding similarities between the characteristics of suicide attempters and suicide completers. Brent (1995) reported that adolescent attempters and completers have an equivalent level of depression and nearly equivalent rates of subsequent suicide attempts, indicating that attempters and completers are merely at different points along the same continuum of suicidal behaviour. An example of a continuum of suicidality would be a range from completely non-suicidal on one end, to fleeting suicide ideation, chronic suicide ideation, suicide-like gestures, diffuse risky lifestyle, vague or non-lethal suicide plan, specific or lethal suicide plan, low lethality or non-serious suicide attempt, serious or high lethality attempt, to completed suicide on the other extreme (Maris et al., 2000).

In contrast, Rutter and Soucar (2002) propose that suicidal behaviour and suicidal ideation are different constructs. Shneidman and Farberow (1970) echo this assertion stating that there are inherent differences between attempted and completed suicides.

Many studies have compared non-suicidal persons with a suicide group that consists of both attempters and completers, therefore assuming that they have the same characteristics. The assumption of an equivocal relationship between attempters and completers is dangerous as it presumes direction of this relationship without basis in research (Muehrer, 1995; Rutter & Soucar; Shneidman & Farberow, 1970).

Identifying the specific precursors linked to suicide risk may be difficult for many reasons. Firstly, most researchers study suicide attempters in order to understand completers, when those who attempt suicide are not necessarily likely to complete suicide. These adolescents completing suicide may have unique characteristics. It is obviously difficult to study suicide completer characteristics as it is necessary to do this via psychological autopsy methods which may not yield valid results of psychopathological correlates (Leenaars, De Wilde, Wenckstern & Kral, 2001).

The psychological autopsy is a method in which the researchers gather information about the victim from friends and/or family. Maris et al. (2000) define the psychological autopsy as the procedure suicidologists utilize to reconstruct an individual's psychological life prior to their suicide. Other researchers argue that the use of the psychological autopsy is not only the sole method available to research psychological aspects of those who have completed suicide but that it is also remarkably consistent across studies (Brent, 1989; Brent et al., 1988; Litman, 1996). These researchers assert that the data from these psychological autopsy studies are valid and reliable provided the studies are performed with competency (Brent).

Another avenue in the quest to study suicide completer characteristics would be to study those with highly lethal attempts where only unwanted intervention or luck saved

them, or find the population most closely resembling completers and study them. Brent, Perper, Moritz, Allman et al. (1993) state that progress in the understanding of the etiology of adolescent suicide will come from the intensive study of those living patients who most closely resemble suicide victims. The researchers maintain that the identification and treatment of youth with psychopathological characteristics most closely resembling suicide victims is necessary to enable pre-eminent suicide prevention (Brent, Perper, Moritz, Allman et al.).

Psychopathology

Diagnosis of a psychopathology coupled with “normal” teen life stressors may result in increased youth suicide risk (Jamison, 1999). Suicide risk is highly correlated with diagnosis of psychopathology (Tanny, 2000). Many studies (e.g., Beautrais et al., 1998; Brent, 1995; Brent & Perper, 1995; Brent, Perper, Moritz, Allman et al., 1993; Brent et al., 1994; Burgess, Hawton & Loveday, 1998; Gould et al., 1998; Hider, 1998; Slap et al., 1989) have found that between 72 and 90 percent of adolescents who make serious suicide attempts or complete suicide have at least one diagnosable mental disorder at the time of their suicidal behaviour. Which psychopathologies are most strongly linked to increased suicide risk vary depending upon individual study results. Brent, Perper, Moritz, Allman et al. (1993) also state that though most researchers agree that diagnosis of psychopathology is linked to adolescent suicide, there is little consensus as to which demonstrates the strongest or most consistent correlation.

The current literature suggests a variety of linkages between diagnosis of psychopathology and suicide risk in adolescents. While the majority of studies report a link with suicidality and major depression (e.g., Burgess et al., 1998; Kelly et al., 2001;

Slap et al., 1989), the other disorders found to be correlated with suicide are not as consistent. For example, Hider (1998) gives an overview of the differing research findings correlating affective disorders, anxiety disorders, bipolar disorder, depression, schizophrenia and substance abuse disorder with suicide. Comorbidity of diagnoses as reported by many studies may contribute to this inconsistency in findings. In their study of adolescents who took overdoses, Burgess et al. found an average of four diagnoses per youth with a range of one to eight diagnoses.

Adolescents who made serious suicide attempts had significantly higher incidences of many psychopathologies; including affective disorders, anxiety disorders, antisocial disorders, eating disorders and substance abuse disorders (Beautrais et al., 1998). Brent (1995) reported the average percentage of psychiatric conditions in suicide victims over the eight studies that he reviewed: affective disorder (55%), substance abuse disorder (38%), conduct disorder (21%), anxiety disorder (12%), adjustment disorder (9%), schizophrenia (7%), attention deficit disorder (13%) and no diagnosis (8%).

Brent (1995) also reported that substance abuse was much more likely to be a risk factor for suicide if it was comorbid with an affective illness. The author reports a high prevalence of comorbidity between affective disorders (e.g., anxiety and depression) and substance abuse disorders. In this comparison of studies, Brent discovered that youth suicide victims were more likely to have substance abuse disorder and over 30 percent more likely to have a depressive disorder than controls. Schizophrenia appeared to be more prominent in a series of completed suicides that included young adults, consistent with schizophrenia's characteristically late onset in adolescence (Brent). Personality

disorders were also found to be diagnosed more often in suicide victims than controls (Brent et al., 1994; Lambert, 2003).

In his recent review of suicide risk assessment and management, Lambert (2003) suggests that childhood sexual traumatization may also correlate with high suicide risk. Lambert presented an illuminating summary of the suicide risk factors in personality disorders. These risk factors included comorbidity with major mood disorders, addiction and some anxiety disorders; history of childhood sexual abuse, especially incest and prolonged abuse; antisocial and impulsive traits; younger age compared to general population at risk for suicide; inadequate psychiatric treatment of personality disorder and comorbid disorders; and reduction in psychiatric care including recent irregular discharges (Lambert). Bergen, Martin, Richardson, Allison and Roeger (2003) concur that sexual abuse is related to increased frequency and severity of adolescent suicide attempts, independent of a diagnosis of psychopathology, but found this to be true for female youth only.

Brent and Perper (1995) reported that the disorders most closely associated with suicide, based on four case-control studies, were affective disorders, substance abuse and conduct disorder. In their 1993 study, Brent, Perper, Moritz, Allman et al. found that bipolar disorder, conduct disorder, depression and substance abuse were the most significant risk factors in completed suicide. Gould et al. (1998) discovered that anxiety, mood and substance abuse disorders independently increased risk of suicide attempts. Adolescents who attempted suicide or had suicidal thoughts had significantly elevated prevalence of psychopathology compared with non-suicidal youths: 76.2 percent of

attempters, 70.1 percent of ideators and 29.2 percent non-suicidal youths met DSM-III-R criteria for any disorder (Gould et al.).

Brent et al. (1988) found that diagnosis of affective disorder comorbid with another disorder, diagnosis of bipolar disorder on its own, and lack of previous mental health treatment to be most predictive of suicide. Hawton, Houston, Haw, Townsend and Harris (2003) report that their subjects with comorbid psychiatric and personality disorders were more depressed and hopeless, had increased aggression and impulsivity, displayed lower self-esteem and poor problem solving skills and were more likely to have had previous suicide attempts. These authors further suggest from the results of their study that comorbidity of psychiatric and personality disorders may contribute to higher suicide risk (Hawton et al.).

Many studies cite a link between suicidality and substance use or abuse (e.g., Beautrais et al., 1998; Brent, 1995; Brent & Perper, 1995; Brent, Perper, Moritz, Allman et al., 1993; Gould et al., 1998; Lambert, 2003). The link between alcohol and suicide is substantial, as is evidenced by the frequency of alcohol consumed hours prior to attempted and completed suicides (Lester, 2000). Alcohol intoxication can play a major role in suicide in that it lowers inhibitions and therefore may make it easier for the person to carry out their suicidal thoughts; alcohol also acts to increase the lethality of other ingested substances, such as prescription drugs (Lester). "Major depression and substance abuse represent a lethal combination, although depression with almost any disorder significantly increases the likelihood of suicide" (Lester, p. 340).

Litman (1996) links the increases in adolescent suicide specifically with an increase in one subpopulation of youth: males with conduct disorder comorbid with

substance abuse. Kelly et al. (2001) assert that substance abuse and disruptive disorders affect the impact of all other risk factors in the prediction of suicide risk. In their study of adolescents with disruptive disorders, Renaud, Brent, Birmaher, Chiapetta and Bridge (1999) found that disruptive adolescents who committed suicide had higher rates of substance abuse and previous suicide attempts as well as a family history of substance abuse and physical abuse. Brent et al. (1986) report that the high correlation of problems with attention, conduct and anxiety with increased suicidality implies that impulsivity and impaired social skills may contribute to youth suicide.

To summarize, most studies found diagnosis of the disruptive disorders (especially conduct disorder), depression, substance abuse and affective disorders to be highly correlated with adolescent suicide risk. Those youth with comorbid diagnoses, especially a psychopathology coupled with substance abuse, are at particularly high risk for suicide. However, it is essential to keep in mind that, “the nature of the linkages between mental disorders and suicidal acts is complex and remains largely speculative” (Tanny, 2000, p. 340). With an understanding of the risk factors related to suicidality in adolescents more firmly established, efficacious methods for screening adolescents who may be at risk for suicide are essential in order to halt the increasing suicide rate of youth.

Screening Methods

A concerning area of dissent in the current adolescent suicide literature is whether those youth at high risk for suicide have had prior professional involvement (for example a visit to a family physician) and have not been identified as a high risk for suicide (Pirkis et al., 2003). In fact, the low rate of treatment among suicide victims could partially be due to an inadequate rate of recognition of psychological disorders by parents, teachers

and other persons in contact with adolescents (Brent & Perper, 1995). Wekstein (1979) noted that he found it particularly alarming that a large proportion of those at risk for suicide continued to be undiagnosed, untreated or improperly cared for; current research indicates that this area of concern has not dissipated in over 25 years.

If professionals such as family physicians, teachers and/or counsellors do not identify this suicide risk in youth, it significantly decreases the likelihood of these youth receiving essential treatment (Pirkis et al., 2003). The professionals who have the most access to adolescent populations are expected to have some training in assessing suicide risk, at least enough to recognize when a referral is necessary. If such professionals miss the signs of suicide risk, then at-risk youth are not likely to receive the potentially life saving help so desperately needed (Pirkis et al.). Brent (1995) states that proper suicide risk assessment is the most effective mechanism for the prevention of adolescent suicide.

Suicide attempts among adolescents are among the most common psychological emergencies (Brent, 1995). Beautrais et al. (1998) found that 78.3 percent of attempters had lifetime contact with psychological services, 72.1 percent had contact in the year before their attempt and 58.9 percent had contact with psychological services within the month prior to their attempt. They also found that 21.7 percent of attempters were admitted to hospital and that 67.4 percent had outpatient consultations during the year before their attempt. Slap et al. (1989) found that suicidal behaviour is common among youth that have received psychological care, ranging from 25 percent of outpatients to 72 percent of inpatients.

All professionals working with adolescents need to concentrate on better understanding mental disorders in youth and performing thorough suicide risk

assessments. Adolescents frequently consult a family physician close to the time of a suicide attempt (Hider, 1998). Hawton, O'Grady, Osborn and Cole (1982) report that 50 percent of adolescents saw family physicians within one month and 25 percent within one week of attempting suicide. This is a clear example of the significance of professionals being trained in adolescent suicide risk screening. However, risk of suicide among young people often goes unrecognized by their family physician (Pirkis et al., 2003). In her report regarding physicians' role in suicide prevention, Blumenthal (1990) also concedes that most youth suicide completers demonstrate discernable warning signs and that physicians are likely to have opportunities to intervene.

Experts have cited many factors as possible causes for the under-recognition of suicidality by general practitioners among adolescents. Hider (1998) suggests that physicians under-recognize suicidality due to a lack of awareness of the main risk factors for youth suicide (psychiatric illness, disadvantaged backgrounds and psychosocial stresses). According to Hider, suicide risk assessment by physicians would be most effectively undertaken by direct questioning of the adolescent's wish to die, the lethality of any plans and the consideration of any recent stressful life events. Also essential is a general assessment that includes the youth's past medical, psychological and psychosocial history, along with a mental status examination (Hider).

The under-recognition of suicidality reinforces the notion that it must be properly screened; even professionals need assistance with this. Because of the complexity in suicide risk prediction, adequate assessment should include a clinical interview and taking a comprehensive client history. Some factors for the existence of low recognition

rates have been identified and assessment tools have been created to help increase detection.

Therefore, an important adjunct to aid in diagnosis is a thorough assessment utilizing appropriate psychological tests, such as the Millon instruments and the Suicide Probability Scale (SPS) by Cull and Gill (1988). There are many assessments which assess depression (such as the well-known and often utilized Beck Depression Inventory), however depression is only one aspect (though a significant one) of suicidality. The relationship between depression and suicide intent, according to Maris et al. (2000), is the common factor of hopelessness, not depression itself.

There are few psychological assessments of suicide commonly utilized by professionals; many psychologists, for example, are unaware of the availability of suicide assessments and which of these available assessments are reliable or valid measures of suicide risk. Two suicide prediction or probability scales will be presented in this review: the Clinical Instrument to Estimate Suicide Risk and the Suicide Probability Scale.

One suicide prediction scale discussed in Maris et al. (2000) is the Clinical Instrument to Estimate Suicide Risk (or CIESR) by Motto, Helibron and Juster (1985). The CIESR is a third person prediction scale; a professional fills out information about the individual based on fifteen demographic and clinical items (Maris et al.). It includes questions about the person's age, occupation, sexual orientation, financial resources, threat of significant financial loss, special stress unique to individual's circumstances, hours of sleep per night, change of weight during current episode of stress, ideas of persecution or reference, intensity of present suicidal impulses, seriousness of intent to die in current suicide attempt (if there is one), number of previous psychiatric

hospitalizations, results of previous efforts to obtain help, presence of an emotional disorder in family history and the interviewer's overall subjective reaction to the individual (Maris et al.). Each of these questions is weighted to produce an overall risk score ranging from 0 to 1 031, with scores from 345-465 considered to indicate moderate risk, scores from 466-533 considered high risk and scores 534 and above being considered very high risk (Maris et al.). The authors state that those in the very high risk range have an approximate two year suicide risk rate of 10 percent (Maris et al.).

Since both the Lethbridge and Edmonton secure treatment centres (from which data was collected for this research) use the SPS as a screening tool for suicide risk, a thorough critique of the SPS as a screening tool for youth suicide follows.

Suicide Probability Scale

Larzelere, Smith, Batenhorst and Kelly (1996) found that SPS scores were predictive of suicide risk and state that their study results offer the first known evidence of predictive validity of any measure of suicide risk in adolescents. This critical analysis of the SPS begins with a general description of the assessment, followed by a discussion of its reliability and validity. A review of the literature about the SPS is then presented. Finally, a critical summary of the utility of the test is provided.

The SPS was designed to assist in suicide risk assessment for both adolescents and adults. Its function is to provide a quantitative self-report measure reflecting a global index of suicide risk (Cull & Gill, 1988). Its interpretation refers to the "*statistical likelihood that an individual belongs in the population of lethal suicide attempters as evidenced by his or her responses on the SPS*" (Cull & Gill, p. 14, italics in original). According to Cull and Gill, this scale was developed to address the paucity of suicide risk

assessments that are both readily available and empirically valid, as well as to specifically address concerns about the continual increase of adolescent suicide.

This assessment can also be a useful measure of changes in suicidal potentiality over time because it can be readministered to the same client. It can be sensitive to measure both the predisposition for self-harm as well as fluctuations in levels of lethality (Cull & Gill, 1988). Both of these factors can be influenced by normal changes in the person's attitudes, supports and life stressors over time.

As discussed in Cull and Gill (1988), the SPS contains 36 self-report items designed to assess the severity of suicide risk in adolescents and adults aged 14 years and older. The reading level is at about a grade four level of difficulty (Cull & Gill). The client, therefore, has to be able to read and have the cognitive capability to understand the information at this level or higher in order for the scale to be administered to them with significant results. If the young person has comprehension but not reading skill at this level, the SPS can be read to them. It is a brief test, taking approximately twenty minutes to administer and score.

The SPS assesses four dimensions of suicidality in its subscales: suicide ideation, negative self-evaluation, hopelessness and hostility. The suicide ideation subscale is a reflection of the extent to which an individual reports behaviours and/or thoughts related to self-termination (Cull & Gill, 1988). The statements linked with this subscale range from specific suicidal thoughts to less concrete statements that are nonetheless linked with suicide. There are eight items in this subscale. According to the manual, the other three subscales aid in identifying more specific dimensions of suicide risk (Cull & Gill).

The hopelessness subscale is an assessment of a person's general dissatisfaction with life and pessimistic thoughts of the future (Cull & Gill, 1988). The twelve items within this subscale include content reflecting dysphoric mood, hopelessness, loneliness and generally an external locus of control (Cull & Gill). The negative self-evaluation subscale refers to the individual's belief that significant others in their lives are uncaring, initiating beneficial actions is formidable and that generally things are not going well in their lives (Cull & Gill). Its nine statements are divided into two factors: closeness ties to significant others and feelings of self-efficacy and self-worth.

Hostility, the final subscale of the SPS, is an indication of the person's tendency to act out when angry or upset (Cull & Gill, 1988). The seven items in this subscale represent the concepts of isolation, impulsivity and hostility (Cull & Gill). This subscale therefore attempts to measure the inward direction of aggression that is a crucial component of suicidality. As previously discussed in the aggression section, those with multiple suicide attempts often have higher levels of aggression (Stein et al., 1998), especially impulsive aggression (Brent et al., 2003), and those youth with higher levels of aggression are more likely to choose more lethal methods to attempt suicide (Jamison, 1999). Therefore, aggressive youth are at much greater risk for suicide completion.

Each SPS item is rated on a four-point scale ranging from one (none or a little of the time) to four (most or all of the time; Cull & Gill, 1988). Hand or computer scoring is used to determine the three summary scores (total weighted score, normalized T score, and probability score), which together reflect an overall assessment of suicide risk. The SPS has a mean T score of 50, a standard deviation of 10 and a standard error of 3 (Cull & Gill). T scores indicate suicide risk as follows: scores from 0 to 24 indicate subclinical

risk, scores from 25 to 49 indicate mild risk, scores from 50 to 74 are considered moderate suicide risk and scores from 75 to 100 demonstrate severe risk. In general, a score of 60 or above indicates concern for suicide risk (Cull & Gill).

At the beginning of the SPS form, there is an area allocated for written response. There are blanks for the client to indicate their name, sex, age, marital status, education, ethnicity, occupation, the date as well as a question referring to stresses experienced in the past two years (Cull & Gill, 1988). Underneath this in the scoring sheet are areas where psychosocial stressors (nature, date and severity), previous history of suicide attempts (method, date and seriousness) and DSM-III indicators for major depressive episode can be indicated by the interviewer (Cull & Gill).

Individual weights for items are determined from the SPS manual from a choice of three probability scores: low, intermediate and high level of suicide risk (Cull & Gill, 1988). The distinction between low, intermediate and high risk criterion is based on the population to which the SPS is administered. The high risk category is used for clients such as those in suicide prevention centres, crisis centres and psychiatric inpatient facilities (Cull & Gill). The intermediate risk category is intended for either an outpatient population or psychological inpatients that are without either suicidal ideation or major depression. The low risk category is utilized for those in the general population (Cull & Gill).

Standardization. The SPS was normed in San Antonio, Texas, on a standardization sample of 562 randomly picked adolescents and adults, comprised of 342 females and 220 males (Cull & Gill, 1988). This would be what would be considered the “normal” or control group. Cull and Gill point out that within this sample there is an

under representation of males, middle-aged persons, and persons with a high school education or less as well as an overrepresentation of college students in their early twenties.

Two criterion groups were also assessed: a psychiatric inpatient group and a group of individuals in clinical therapy who had recent, potentially lethal previous suicide attempts. Cull and Gill (1988) report that there were 260 individuals in the clinical group, comprised of 173 females and 87 males. In the attempter group, there were 336 individuals in total; 236 females and 100 males.

Cull and Gill (1988) compared the control, clinical and attempter groups. Demographic differences between the groups included ethnographical differences; there were significantly more Hispanic people in the suicide attempter group. In addition, the two criterion groups had a broader range of age, education level and marital status than the control group. The criterion groups were also more diverse in other areas: there were more adolescents, minorities, older persons and persons with little formal education (Cull & Gill). Females outnumbered males about two to one in all of the groups. The diagnosis of major depression, affective and schizoaffective disorders were prevalent in the attempter group. In the clinical group, there was an increased incidence of the diagnosis of schizophrenia (Cull & Gill).

Theoretical basis. According to the manual, the construction and utilization of the SPS is founded upon the premise that persons with serious suicidal intentions will have feelings of isolation, hopelessness, anxiety, depression and suicidal ideation (Cull & Gill, 1988). As the SPS is a self-report measure, it assumes that these individuals are willing and able to report the affect and behaviours related to these feelings. Item responses are

expected to successfully differentiate between lethal suicide attempters and non-lethal suicide attempters, which is relevant for predicting future suicidal behaviour.

The construction of the SPS is rooted in four major theoretical concepts explaining the cause of suicide. These are anomie (rootlessness, anxiety and/or despair), introjected rage, lethality and impulsivity (Cull & Gill, 1988). Self-destructive urges may result from a lack of belongingness and/or cultural identity, the loss of a person, ideal, and/or self-esteem, or disappointment in not achieving a desired goal (Cull & Gill; Farberow & Shneidman, 1970). As previously discussed, Freud's theories initiated this idea of suicide being related to aggression: he proposed that suicide results from a breakdown of the ego defences and the release of increased destructive, instinctual energy (Litman, 1970). Relative to this, Shneidman (1981) suggested that highly lethal intentions, excessive perturbation and elevated inimicality increases suicide risk. Cull and Gill thus assert that, as suicide is often an impulsive act, persons with high levels of impulsivity in their personalities have a higher potential for suicide than persons with lower impulsivity.

Reliability. Reliability is a measure that indicates whether or not an assessment's results are consistent (Drummond, 1996). The SPS has a high degree (0.93) of internal consistency; items of the test interrelate and represent similar content (Cull & Gill, 1988). The split-half reliability for the scale is 0.93, which means that each half is essentially the same (Cull & Gill). It has a high level (0.92) of test-retest reliability in that scores for a single individual are consistent across different test settings and over time (Cull & Gill). The SPS is not subject to situational variability. The standard error of measurement for

this scale falls within three scale points above or below the theoretical true score (Cull & Gill). To summarize, the SPS is a reliable instrument.

Validity. Validity is the expression indicating if an assessment measures what it states it does (Drummond, 1996). Measures of internal consistency indicate the extent to which items on a test interrelate and represent similar content (Cull & Gill, 1988). The SPS scale items as a whole are very homogeneous, as indicated by the high internal consistency and split-half reliability estimates, which indicates high content validity.

Content validity speaks to the degree to which a test measures a defined body of knowledge (Drummond, 1996). The SPS was correlated with items of the Minnesota Multiphasic Personality Inventory (MMPI) scale designed to measure suicide intention. There is a significant overlap in the underlying constructs of both the MMPI and the SPS subscales. The SPS positively correlates with the Suicide Threat scale developed for the MMPI (Cull & Gill, 1988). According to the results of these analyses, “the size and number of these correlations provide evidence that the SPS is content relevant and substantially related to an externally developed index of suicide risk” (Cull & Gill, p. 45).

Concurrent validity is one type of criterion validity (Drummond, 1996). Criterion validity refers to items as a whole demonstrating the ability to discriminate between criterion groups of “normals”, psychiatric inpatients and suicide attempters (Cull & Gill, 1988). Most of the items in the SPS made good distinction between the suicidal and non-suicidal criterion groups, and therefore have classification accuracy (Cull & Gill).

Construct validity speaks to the extent to which a test measures an intended psychological trait (Drummond, 1996). The construct validity of the SPS was examined using two different strategies, factor analysis and scalogram analysis. In the scalogram

and factor analysis, it was found that a respondent reporting a high degree of hostility (as indicated in the hostility subscale score on the SPS) concomitant with an inward direction of hostility was more likely to be a lethal suicide attempter (Cull & Gill, 1988). The nature of the underlying constructs assessed by the subscales as well as the stability of these constructs was analyzed and a highly consistent factor structure was found to be present for SPS items (Cull & Gill). Across different samples, even those including only “normal” subjects, the SPS subscales were replicable and consistent suggesting that the SPS has “true variance in the responses of subjects rather than sample-specific variance” (Cull & Gill, p. 56).

To further assess SPS construct validity, it was compared to known psychometric measures. In a comparison between the SPS and the Berger Self-Acceptance scale, there is a moderate but significant correlation between suicide risk in the SPS and negative self-image in the Berger Self-Acceptance scale, suggesting that a person with a negative self-image could be at higher risk for belonging to the group of suicide completers (Cull & Gill, 1988). The SPS was also compared to the Suicide Threat scale developed for the MMPI and found to have a significant positive correlation with this known measure of suicide risk (Cull & Gill).

In most psychometric literature, moderator variables, such as age, sex, ethnic background and socio-economic status differentially affect test scores. Cull and Gill (1988) state that it has been demonstrated that SPS scores are relatively unaffected by moderator variables and therefore assert that separate norms tables for such groups are not required.

Literature review. Larzelere et al. (1996) explored the predictive validity of the SPS based on a study of adolescents in a group home treatment setting. They compared measures of suicide attempts, verbalization of suicidal intention and self-destructive behaviours from daily incident reports (completed by supervisors at the group home) with scores on the SPS. Larzelere et al. found that SPS scores were predictive of suicide risk, and state that their study results offer the first known evidence of predictive validity of any measure of suicide risk in adolescents. The researchers reported that the SPS has good reliability and concurrent validity.

However, Larzelere et al. (1996) also state that the SPS only assesses suicidal ideation, hopelessness and social isolation and therefore misses many other important factors of suicide risk, including previous attempts (though there is an area to record this on the assessment, it is not taken into account in the scoring), conduct disorder, substance abuse as well as reasons for living. These authors assert that the SPS would also have to consider other crucial risk factors in order to increase its predictive validity, implying that it should be used in conjunction with a clinical interview, other assessments and collateral information.

Eskin (1993) noted the importance of assessments designed to identify and predict the risk for suicide. Eskin, in his application of the Turkish version of the SPS, found that the SPS had a high level of test-retest reliability, even higher than statistics presented in the Cull and Gill (1988) manual, as well as high levels of internal reliability, content, criterion-related and construct validity across cultures. This indicates the potential for cross-cultural validation and comparisons of suicidal risk in youth.

Tatman, Greene and Karr (1993) explored the utility of the SPS based on a study of adolescents in a high school setting. The researchers found that the obtained SPS scores were not in agreement with the scores presented in the Cull and Gill (1988) manual. Rather, Tatman et al. report that their sample of adolescents bears resemblance to the psychiatric inpatient sample from the Cull and Gill normative sample; adolescents scored higher than the normative sample but lower than the suicidal sample in terms of the subscales. Consistent with Cull and Gill's findings, no gender differences in SPS item scores were obtained in this sample (Tatman et al.).

Critical summary. The results from the literature review indicate that the SPS provides good test-retest reliability, concurrent validity, high internal consistency and is the first known assessment tool to provide predictive validity of any measure of suicide risk in adolescents. One study stressed the potential for cross-cultural validation and comparisons of suicidal risk in youth. Another study stressed that the SPS must take additional risk factors (such as previous attempts, conduct disorder, substance abuse and reasons for living) into account to increase its predictive validity. Additionally, Maris et al. (2000) state that the SPS does not rate lethality of suicide intent well. These factors all stress the importance of conducting a clinical interview, taking a thorough client history, exploration of collateral information and administering other assessments along with the administration of the SPS in assessing suicide risk. Cull and Gill (1988) acknowledge this in their manual; both the Lethbridge and Edmonton secure treatment centres perform all of these crucial assessments in addition to the SPS.

The manual purports that the results from the normative sample are generalizable despite an under representation of males, middle-aged persons as well as persons with a

high school education or less as well as an overrepresentation of college students in their early twenties in the normative sample. Cull and Gill (1988) state this generalizability is evidenced by a detailed examination of the sociodemographic characteristics on the SPS subscales.

The scope of some of the questions is geared more towards adults than children (e.g., about worrying about money or work) and may need to be tailored to adolescents to be a good indicator of their risk. For example, in his 1993 study, Eskin modified two questions in his administration of the SPS to be more appropriate to adolescents. Eskin changed “I feel/felt close to my mate” to “I feel close to my friends.” Another statement, “I have trouble finding and keeping a job I like”, was altered to “I have trouble keeping friends I like” (Eskin). This is where the clinical interview becomes a necessary adjunct of this test, as addressed by Cull and Gill (1988) in the SPS manual.

The self-report style of assessment used in the SPS is susceptible to user bias, and thus may skew the results. The intent of scale is not disguised and clients could distort their responses, either consciously or unconsciously. There is an inherent risk of false negative or false positive result, or for the client to give socially desirable or undesirable responses. Duggal et al. (2000) report that self-report and interview methods can be equally valid assessments, though each has distinct advantages. Additionally, self report measures may also provide some level of security or privacy for youth that is not provided by the interview method in that it does not involve the same aspects of stating embarrassing or difficult things to an adult (Conners et al., 1997). Cull and Gill (1988) state that there is some built-in correction for a false negative response, as the item weights in the SPS do not progress numerically.

The SPS should not be administered to clients that are unable or unwilling to cooperate (e.g., clients that are hostile, uncooperative, prone to distortions, uncommunicative, disorganized in thinking or have low verbal ability). There can also be issues with cultural differences, especially in terms of attitudes towards suicide and trust of interviewers, psychologists or professionals in general.

The act of suicide is often impulsive, and a test such as the SPS can measure only one-time responses. The validity of this scale, or any other suicide risk assessment, for predicting future completed suicides has not been established (Cull & Gill, 1988). In response to the concern of predictive validity, Shaffer (1996) explained that attempting to determine whether tests for suicide are predictive is not easy because suicide is so rare that reliable results would require the study of a very large population. The intent of the SPS is to indicate *current* suicide risk, while the basis of much suicide risk assessment is an evaluation of past attempts. This could be problematic to predict risk, as many that attempt suicide do not complete suicide and therefore may not share the same traits as those who do (Shaffer). While the SPS has an area allotted to denote previous suicide attempts, this is not the main evaluation of suicide risk within the scale. Most in the field of suicide research emphasize that it is important to consider that it is practically impossible to predict suicide attempts or completions (Cull & Gill; Shaffer); the best that can be done is a thorough examination in the attempt to predict *risk* for suicide.

Important to bear in mind when evaluating the results of the Tatman et al. (1993) study is that it may have bias due to the sample consisting of students enrolled in psychology, social studies and peer counselling classes. These adolescents were likely hypersensitive to the topic tested due to the nature of the courses. It would be difficult to

discern solely from one assessment (without any contact with the student) the low percentage of high school students at risk for suicide. This study did not address the importance of contact with the youth including consideration of past actions in client history via a thorough clinical interview and/or collateral interviews, along with the administration of the SPS in assessing suicide risk, as stressed by Cull and Gill (1988) in their manual.

The SPS was designed to compliment other assessment tools, a thorough client history including collateral interviews and, crucially, a thorough clinical interview to accurately predict risk. In fact, the authors of the test (Cull & Gill, 1988) emphatically state that “the SPS should never be used as the sole method for assessing suicide potential where there is a high presumptive risk that an individual is suicidal” (p. 2). Cull and Gill further suggest that a low SPS score that is not in agreement with the clinical data should be given less weight on risk determination than the other information.

Predicting suicide risk is very complex, and requires a thorough assessment utilizing a combination of appropriate psychological tests, a clinical interview and comprehensive client history. The SPS seems to be a very good evaluation of the statistical likelihood that an individual belongs in the population of lethal suicide attempters. Through its normative sampling as well as review of current literature, this scale appears to be both a valid and reliable measure of suicide risk. In fact, it may be the first known assessment tool to provide predictive validity of any measure of suicide risk in adolescents. It does seem appropriate to utilize the SPS with its intended client base, though there may need to be some additional considerations in terms of language when being administered to adolescents. When utilized as an adjunct to a thorough clinical

interview, administration of other assessments, collateral information and client history, the SPS is a formidable and empirically sound assessment of adolescent and adult suicide risk.

The SPS assessment gives the assessor thorough information about the youth's suicidal ideation, hostility, negative self-evaluation, hopelessness and global suicide risk. This information, coupled with the historical and collateral information, is vital to begin appropriate treatment for those youth at risk for suicide.

Treatment

Treatment of suicidality usually begins in the stage of crisis or acute management, either immediately prior to an attempt with an individual expressing suicidal ideation along with a plan, method available and time chosen or immediately after an attempt with an individual who was not successful in their attempt to take their own life. Adolescents whose intervention begins prior to an attempt may express their intent to a peer, parent, teacher, physician or other trusted adult or they may call a crisis line. At this point, the treatment is in the form of prevention of a future attempt. For youth recovering from a suicide attempt, intervention usually begins in a hospital emergency room setting.

At this point, crisis intervention, both prior to and after an attempt, involves crisis management. "Crisis intervention and management approaches to the suicidal patient are designed to ensure the patient's safety and life until the precipitant crisis situation can be resolved and a precrisis equilibrium restored" (Maris et al., 2000, p. 521). Access to methods of committing suicide should first be eliminated, including access to medications, firearms, alcohol and other disinhibiting substances (Brent, 1997; Shaffer et al., 2001) as well as automobile keys. Shaffer et al. stress the importance of the

psychologist or psychiatrist seeing the adolescent in the hospital to check out several important things prior to releasing the youth from the emergency room. The mental health professional should caution both family and patient about the disinhibiting effects of alcohol and other drugs, stress that firearms and medications need to be secured or removed, check that there is a support person in the home with the adolescent and schedule a follow up appointment with the youth prior to their release (Shaffer et al.).

Some adolescents are treated in hospital while others are immediately released after their attempt and receive outpatient treatment dependent upon the therapist's evaluation of suicidal intent (Shaffer et al., 2001). Treatment of suicidal adolescents may present some unique challenges including black and white or absolute thinking, idealism, externalizing attributions (blaming others for their difficulties), disorganized attachment styles common to this stage of life, low rates of treatment compliance (both therapeutic and medication) and thus decreased rapport, that may all interfere with the development of the therapeutic alliance in counselling (Maris et al., 2000).

Shneidman (1996) emphatically states, "the single most dangerous word in all of suicidology is the four-letter word *only*" (p. 59, italics in original). Shneidman argues that the treatment of suicidal individuals needs to centre on first delineating other options in such a way that the individual can see these as viable alternatives for themselves and then, through psychotherapy, begin to work on easing the causes of the psychache. He also emphasizes that the most important question in the psychological therapeutic treatment of a suicidal individual is, "tell me where you hurt" (Shneidman).

There are several different kinds of psychotherapies commonly used with suicidal adolescents. To explore these therapies, a definition of psychotherapy will be presented

followed by a discussion of the most commonly utilized therapies. Included in this review are cognitive behavioral therapy, family therapy and supportive therapy. Medication is also frequently utilized in the treatment of suicidal adolescents and a discussion of those most commonly prescribed concludes this review.

Psychotherapy can be defined as a modality of treatment via which the therapist and client work together through the therapeutic relationship in an effort to uncover and understand the client's attitudes, beliefs, behaviours, development, affect, social context and thoughts and through this discovery lessen impairments in life functioning (Brent & Kolko, 1998). Counselling can be defined as an interaction between a counsellor and a client, for the purpose of achieving awareness, ameliorating distress in cognition, affect and/or behaviour (Corsini & Wedding, 2000), uncovering areas which may contribute to this distress, in which both client and counsellor contribute towards the client's goals, for which the client is ultimately responsible.

Specific central psychological aspects in adolescent therapy are social context (including familial interaction, neighbourhood, parental psychopathology, peers and school) and development (in terms of cognitive capabilities, familial role, social expectations and social skills; Brent & Kolko, 1998). The authors stress the importance of these aspects in youth therapy, as developmental differences will inform both the format and focus of treatment; adolescents select their peer groups as well as their environments, which become a focus of treatment. Brent and Kolko, in concurrence with many others in the field, stress the importance of empathy in the therapeutic relationship, but state that cognitive behavioral therapies have been shown to be more efficacious in

the treatment of suicidal adolescents and that a supportive relationship is a necessary, but not sufficient aspect of treatment.

Cognitive Behavioral Therapy

To address the negative cognitions experienced by some suicidal adolescents about themselves, their environment and/or their future, cognitive behavioral therapy (CBT) is often utilized (Shaffer et al., 2001). As previously described in the aggression treatment section, CBT emphasizes the importance of first exposing the client to the cognitive therapy model, then monitoring, and, with behavioural techniques, modifying automatic thoughts, assumptions and beliefs (Brent et al., 1997). In a comparison of the efficacy of CBT, family and supportive therapies used with suicidal youth, Brent et al. (1997) report that CBT was the most efficacious of the therapies, resulting in more rapid and complete treatment response. In one follow up of this study looking at the conditions that cause clients to fail in therapy, Brent et al. (1998) report CBT to be an effective therapeutic intervention even with difficult to treat clients. In the Gaynor et al. (2003) follow up of the Brent et al. (1997) study also examining the impact of sudden improvements during the course of treatment, findings concur with the previous study.

Brent et al. (1997) provide consideration to the reasons why CBT is more efficacious than other therapy modalities in the treatment of adolescent suicidality. Insistence on the treatment of the family unit in family therapy will produce a percentage of persons unwilling to participate, and the therapeutic relationship in supportive therapy is a necessary, but insufficient, aspect of treatment (Brent et al., 1997). According to the authors, both supportive and familial therapy require more time than CBT to achieve results. Important to keep in mind in this evaluation, Shaffer et al. (2001) report that over

two years time, the initial differences in treatment efficacy between the different treatment modalities decrease and even out.

Family Therapy

Shaffer et al. (2001) state that familial discord, poor communication, arguments, lack of cohesive goals and values as well as irregular routines and activities are common in the families of youth at risk for suicide. Bongar, Goldberg, Cleary and Brown (2000) state that, in the context of family therapy of suicidal adolescents, youth's suicide attempts can be perceived as symptomatic of their inability to cope with and impact a stressful, even disturbing, family environment. The authors further state that evidence exists that suicidal adolescents experience more familial discord but that the youth's psychopathology may be the cause of the familial difficulties rather than difficulties in home life being the cause of the suicidal behaviours (Bongar et al.). Family therapy involves the treatment of adolescents and their family to address these issues. When this type of treatment modality is utilized effectively with youth and their families, it addresses the dysfunctionality of a large part of the youth's social context (Bongar et al.). The family unit is often where the adolescents learned coping mechanisms and can be the root of many of their issues.

Bongar et al. (2000) describe family therapy with suicidal adolescents as a venue through which parents can address their own interpersonal issues as well as their relationship with their suicidal child. From their review, Bongar et al. describe literature that stresses the primary importance of empowering parents of suicidal youth and helping them present a unified and consistent behavioural front to their child. Another important aspect is for all of the treatment team (including physicians, psychologists, psychiatrists

etcetera) to be united in their approach with the family. These authors also stress the utilization of integrative therapy with suicidal adolescents: using other therapeutic modalities in addition to family therapy could help to keep parental issues separate from familial ones (Bongar et al.).

Brent et al. (1997) describe a particular type of family therapy that was utilized in their study in which the first treatment phase focuses on the clarification of familial concerns (bringing dysfunctional interactions to the surface) and reframing to encourage engagement in the therapeutic process. The second therapeutic phase focuses on teaching communication and problem solving skills and altering dysfunctional familial interactions uncovered in phase one. Family therapy involves psychoeducation about depression, suicide, parenting, the developmental issues experienced by adolescents and the positive practice of communication and engagement in the home (Brent et al.). Family therapy may work especially well with youth to decrease the blame that adolescents place upon themselves (Shaffer et al., 2001).

Supportive Therapy

Supportive therapy is based on the non-directive client centred therapy developed by Carl Rogers. Rogers' client centred therapy focuses on creating a safe therapeutic environment for the client by the counsellor being non-judgmental, showing genuine caring and concern for the client, demonstrating unconditional positive regard for the client and encouraging the client to own his or her emotions and experiences (Rogers, 1951). According to Brent et al. (1997), nondirective supportive therapy's main goals are the establishment and maintenance of client and therapist rapport while aiding in affect identification and expression through reflective listening and the provision of accurate

empathy. This type of therapy does not teach specific skills, give advice or set limits for clients (Brent et al.). Rather, what is necessary for change from the teachings of Rogers is the presence of a therapist who engages fully with the client meeting the four conditions set out as above. For youth who have no supportive person in their lives willing to listen to them, a supportive therapist may be the necessary catalyst for change.

Medication

A variety of medications, primarily consisting of mood stabilizers and antidepressants, are commonly prescribed in the treatment of suicidality. The differing medications prescribed for the treatment of depression act by either helping to increase the neurotransmitter's normal functions (as antagonists) or to inhibit these functions (agonists) all in an effort to keep as much serotonin in the person's system as possible (Julien, 1996) and therefore increase positive mood.

The older class of antidepressants known as tricyclic antidepressants act as agonists: they ease depression by acting on the receptor sites to increase the binding of serotonin to the site and therefore to increase the amount of serotonin being effectively utilized by the body (Julien, 1996). These medications are not as widely prescribed any longer due to negative side effects experienced including blood pressure changes, constipation, dizziness, dry mouth and weight gain (Jamison, 1999; Julien).

The most prescribed medications for adolescent depression and suicidality are Selective Serotonin Reuptake Inhibitors or SSRIs (Brent & Birmaher, 2002; Jamison, 1999). These medications act as antagonists by inhibiting the reabsorption of serotonin in the cell, therefore increasing the overall level of serotonin available to be used (Julien, 1996). These are the most prescribed medications due to ease of prescription and

decreased negative side effects; side effects include agitation, insomnia, nausea, sexual problems and weight gain (Julien). These medications are less toxic than the older tricyclic antidepressants and are therefore less likely to cause death in overdose, another good reason to prescribe them to those with high suicide risk (Brent & Birmaher; Jamison). SSRIs would be beneficial for those whose systems take up too much serotonin or do not use the serotonin quickly enough before it is taken up. Included in this category are Anafril (clomipramine), Celexa (citalopram), Effexor (sertraline), Luvox (fluvoxamine), Paxil (paroxetine) and Prozac (fluoxetine). According to Brent and Birmaher, Celexa, Paxil and Prozac have all been shown to be effective in the treatment of adolescent depression.

Anxiety disorders have been found to be related to both suicidality and aggression in youth. According to Birmaher et al. (2003), Prozac is effective in the treatment of anxious youth. Birmaher et al. also suggest that though a low dose of Prozac seems to be efficacious with low incidence of negative side effects in most adolescents, others will respond better to higher doses of this medication. Still other youth will require the prescription of another SSRI or other antidepressant, or to the addition of psychotherapy to alleviate symptoms (Birmaher et al.).

Mood stabilizing medications (developed and used in the treatment of epileptic seizures) act as agonists in serotonin production and reuptake and therefore help to stabilize mood by depressing neuronal function subsequently keeping mood stable, though depressed (Julien, 1996). Examples of these include valproic acid/valproate (Depakote), carbamazepine (Tegretol), gabapentin, lamotrigine and topiramate (Jamison, 1999). Jamison states that Depakote is now being prescribed more frequently than any

other medication in the treatment of bipolar disorder though it has yet to be proven to decrease suicidality.

Lithium is another mood stabilizer and is often cited as the “most demonstrably effective treatment against suicide” (Jamison, 1999, p. 236). It is one of the best researched “anti-suicide” medications, specifically in the treatment of those with bipolar disorder. Lithium acts doubly to decrease suicidality (Jamison). Firstly, lithium increases serotonin reuptake in the brain decreasing aggression and impulsivity. Lithium also decreases both mania and depression in those with bipolar disorder (Jamison).

Increasing serotonin uptake would be beneficial for those whose systems do not have enough reuptake with resulting unused serotonin in the synaptic space and an overall depressed system (Julien, 1996). Lithium can be problematic as a medication, and therefore less frequently prescribed, as it has many negative side effects (including blunting of emotions, slowed thinking and coordination difficulties), requires strict monitoring of blood levels for toxicity, does not work well (or at all) with some people and in the case of those with bipolar disorder, has compliance issues because it also removes the positive effects of manic episodes (Jamison). Unfortunately, those diagnosed with bipolar disorder are notorious for refusing to take their prescribed medication because though it eliminates the lows or depressive phases, it also gets rid of the highs or manic phases associated with the disorder and many people find this to be intolerable.

In their review of the treatment of suicidal adolescents, Shaffer et al. (2001) cite the efficacy of lithium on reducing suicide risk due to its central serotonin enhancing qualities, though also stress the importance of the proper monitoring of its prescription to adolescents because of the potential for lethal overdose. These authors emphatically state

that lithium be the first prescription for the treatment of bipolar youth while SSRIs should first be prescribed for depression (Shaffer et al.).

If medications can work so well with suicidality, then would psychotherapy be a treatment option for those with suicide risk? Similarly, if CBT is an effective treatment for suicidal youth, then why prescribe potentially lethal medications to a teenager? Firstly, psychotherapy is a very effective deterrent against non-compliance with medication; many people prescribed drugs never take them, take them sporadically or suddenly stop taking them (Jamison, 1999). Secondly, CBT may work well with those who have primarily thought based causes of suicidality, but may not be as effective long term with those who have biologically based depression. Since the efficacy of therapeutic intervention evens out over time, reality dictates that the best course of treatment for suicidal youth is crisis management primarily (including medication and CBT based interventions) with a follow-up or re-evaluation of medication and psychotherapy together.

This is the course of treatment for “normal” suicidal adolescents. Youth who become involved with the law because of an imminent risk to harm themselves or others may require more immediate and severe intervention. Secure treatment centres are one such place for adolescents at high risk for harm. The environment of secure treatment is now explored.

Secure Treatment

Adolescents referred to secure treatment undergo a thorough psychological assessment including clinical interview, the administration of personality and risk assessments and history collection via interview with the youth combined with a review

of collateral information and collateral interviews. From this thorough assessment, they may be identified to be of imminent risk of harm to self, whether intentional or subintentional, or harm to others. Many adolescents admitted to secure treatment have a potentially high risk for suicide. As such, study of these youth may aid in the understanding of adolescent suicide completer characteristics as well as understanding characteristics of those at high risk to harm others. The nature of secure treatment is more thoroughly explored in the following section.

The provincial government of Alberta maintains secure treatment centres throughout the province in order to address the concern of adolescent safety. The centre in Edmonton houses thirty youth, while the centre in Lethbridge can house only three youth. These centres admit youth that are identified as being a concern to either themselves or others. When an adolescent is confined to secure treatment, they have all of their rights and privileges taken from them in that they are confined in these centres for an initial 30 day order. As with youth in a detention facility, the adolescents in secure treatment live, eat, sleep and are schooled within the centre.

Recommendations for referral to secure treatment could come from a parent, a social worker, child and family services, the police, a psychologist or other professional. Once referred to secure treatment, centre psychologists assess adolescents to determine whether confinement to secure treatment is necessary. Confinement to secure treatment requires adolescents to meet three criteria. The youth must have a mental health diagnosis, have an extremely high risk of harming themselves and/or others and present such severe risk that a period of confinement is necessary to alleviate the presenting

concerns. Only adolescents deemed to be imminently at risk are admitted to secure treatment.

In order to assess whether referred adolescents meet these criteria, centre psychologists spend approximately ten hours conducting a clinical interview, collecting a comprehensive client history via a review of collateral information and collateral interviews and history review, administering psychological assessments and compiling all of this information into a comprehensive report. Within this report, the psychologist will diagnose the youth and also recommend if the youth should be confined to secure treatment and for what duration. In general, the initial confinement to secure treatment is for a period of 30 days. After this time, another assessment and report must be issued to determine continued length of confinement or release to the community.

Assessments take place over three days when an adolescent is initially referred to secure treatment. Regularly administered assessments include a suicide risk assessment (the aforementioned SPS), a violence risk assessment (the previously discussed SAVRY), a psychopathology assessment (in Lethbridge, the Millon Adolescent Clinical Inventory and in Edmonton the Minnesota Multiphasic Personality Inventory for Adolescents), a projective assessment (the Rotter Sentence Completion assessment) and a depression inventory (the Beck Depression Inventory, 2nd edition). Psychologists also conduct a clinical interview with the adolescent and gather collateral information about the youth's history and current functioning. Additional assessments may also be administered dependent upon adolescents' individual needs and/or the personal preferences of the psychologist.

Therefore, psychologists working within secure treatment centres regularly collate this data as part of the intake process. Data available from secure treatment centres is remarkable in that it allows researchers access to a population that is normally inaccessible. This is made possible because researchers can collect valuable information regarding at-risk adolescents without interacting with the youth. Analysis of this data could help to provide information on at-risk adolescents (both risk to others and risk to self) that is not readily available.

The environment of secure treatment provides unique data in that adolescents present imminent risk to themselves (whether intentional as with suicide or sub-intentional as in risky behaviours) or others because the highly restrictive nature of secure treatment means that only youth at extreme risk will be admitted. Adolescents confined to secure treatment are at extreme risk for self and/or other harm; as such, secure treatment provides a rich database to examine this risk in youth. Adolescents involved with the juvenile justice system present a critical need for a viable treatment approach (Granello & Hanna, 2003). These youth have many risk factors (including physical and sexual violence, emotional and physical neglect, illicit drug use and gang involvement) and the additional risks associated with adolescents involved with the law (Granello & Hanna). Also significant is the increased risk for youth with disruptions in primary caregivers: those with many changes in caregivers are more likely to display aggression, both towards self and towards others (Vivona et al., 1995). This could indicate that adolescents sent to secure treatment centres or other juvenile detention facilities have a higher risk for aggression and suicide.

There appears to be a gap in adolescent psychopathology and suicide risk research, as the writer was unable to find any studies within a secure treatment centre environment. Since the adolescents admitted to secure treatment have to demonstrate imminent risk of self-harm to warrant such extreme loss of freedom, they could be the group most closely related to adolescents who would in fact commit suicide. Thus, the research gathered from these centres might give the closest risk factors and psychopathological correlates associated with actual completed suicides. This study would serve to fill this paucity in the literature and present a clearer understanding of the precursors to suicide in adolescents. The Suicide Probability Scale manual recommends future research correlating the SPS assessment tool with various diagnoses of psychopathology (Cull & Gill, 1988), indicating a further void in research.

Summary

Adolescence is a developmental period during which youth are working on the development of identity, which often means taking increased risks. Unfortunately, too often increased risk taking leads to the loss of young lives through either violence or suicide. Many theories attempt to explicate the underlying causes of these destructive behaviours, working towards the hope that young lives can be saved through research. This research is the basis for the development of appropriate screening methods to determine those adolescents most at risk. Once appropriately assessed as being at risk, effective treatment, also developed from this research, is essential to provide adolescents every possible chance of receiving help and preventing this tragic loss of young lives.

This chapter provided the reader with a review of the literature related to adolescent risk, focussing on the two main aspects of youth risk: aggression and suicide.

A discussion explicating the pervasive nature and underlying theories explaining adolescent risk began this exploration. As many high risk youth demonstrate at least one diagnosis of psychopathology, the theory and diagnosis of psychopathology were examined next. The DSM-IV-TR definitions of the ten most frequently diagnosed psychopathologies from this research were presented to give the reader a basis for understanding the study's results.

Adolescent aggression was discussed, beginning with the epidemiology of youth aggression discussing its prevalence and its variance via gender and ethnicity, followed by an exploration of theories to explicate abnormal aggression in youth (including biological, psychodynamic, learning, social learning and cognitive theories). Next was a presentation of the risk factors highly prevalent among those youth most at risk for violence (including suicide, use of firearms, abuse/neglect, psychopathology and substance abuse). Appropriate screening methods (particularly the SAVRY) for aggressive adolescents were explored in terms of their applicability and utility in this population. The discussion on youth aggression was concluded with an examination of the treatments currently utilized with aggressive adolescents (including medication, CBT, family therapy and massage therapy).

A thorough examination of adolescent suicide was presented next, beginning with an introduction to the pervasive nature of this destructive act in youth. Following introduction of the problem of youth suicide was a discussion of its epidemiology explicating the prevalence of the loss of young lives, particularly in Canada and the province of Alberta, and the differences in suicide rates via gender and ethnicity. A presentation of the theoretical basis explicating the causes of suicide in adolescents

(including biological, sociological, psychodynamic, cognitive behavioral and Shneidman's psychological theory) followed. Risk factors for adolescent suicide were explored next, focussing on those factors most prevalent among this age group including aggression, use of firearms, life stressors, sexual orientation, previous suicide attempts and diagnosis of psychopathology. An examination of the screening methods which have been developed to assess and identify those youth who are at high risk for suicide (particularly the SPS) was presented next. Treatment options highly utilized in the treatment of adolescents at high suicide risk (including CBT, family therapy, supportive therapy and medication) concluded the section exploring adolescent suicide. The atmosphere within secure treatment environments (including the psychological assessment procedures) was explored next.

Research goals to be explored in this study followed by hypotheses of expected results will conclude this literature review.

Research Goals

The purpose of this research was to utilize the already collected information about adolescent risk in secure treatment centres. Specifically, the research goals are as follows:

- 1) Gather descriptive information about the adolescents admitted to secure treatment, including age, gender, ethnicity, previous suicide attempts, number and type of psychopathological diagnoses, to clarify the characteristics of these adolescents.
- 2) Examine suicide risk, as demonstrated by SPS scores, found among those confined to secure treatment.
- 3) Examine the relationship between study variables (age, gender, ethnicity, previous suicide attempts and diagnosis of psychopathology).

4) Determine which independent variables best predict suicide risk via SPS scores.

Hypotheses

Though much of the literature suggests that at the time of their attempt, the majority of youth who attempt or complete suicide had at least one diagnosable mental disorder (Beautrais et al., 1998), studies are scattered in terms of which psychopathologies relate to high suicide risk. From this literature review, the diagnoses that seem to predict youth risk are affective disorders, depression, disruptive disorders (especially conduct disorder) and substance abuse. Therefore, these disorders are predicted to be associated with risk in this study as well.

From the review of the literature on adolescent risk, it is anticipated that the following populations will be found to covary with higher suicide risk. Males are reported to complete suicide more, while females attempt suicide more often. Those of Aboriginal descent have a higher suicide rate, as do persons with a diagnosis of psychopathology (especially as indicated in the previous paragraph). As well, individuals with high aggression have a higher rate of suicide completion. Finally, those with previous suicide attempts *may* demonstrate a higher rate of suicide completion as well, though this is inconclusive.

Those admitted to secure treatment demonstrate high risk of harm, whether to themselves or to others. If one accepts clinical assessment as the best predictor of suicide risk considering the complicated nature of its prediction, how does the SPS compare to psychologists in predicting risk? It is anticipated that, if the SPS is a good predictor of

risk, those youth admitted to secure treatment (and therefore assessed by a psychologist as demonstrating high presumptive risk) will have high SPS risk scores.

Chapter 3 will provide the reader with a discussion of the methods and procedures utilized to conduct this study, including the research design, method for sampling, data collection and analysis. The chapter concludes with an exploration of the potential limitations of the study.

CHAPTER 3

METHOD

The previous chapter presented a review of the literature on adolescent risk, in terms of both inward and outward expressions of aggression: suicide and aggression. This chapter will discuss the methods and procedures utilized to conduct this study. First, the research design of the study will be presented. Second, the sample and data collection will be discussed. The method for analysis of the data is presented next. Finally, an exploration of the potential limitations of this study concludes the chapter.

Research Design

The files of a large sample of adolescents confined to secure treatment in Edmonton, Alberta and Lethbridge, Alberta were reviewed using a single stage, non-random, convenience sample to reach a target of approximately 200 files. In order for these youth to be admitted to secure treatment, they had to have a mental health diagnosis, be at an extremely high risk of harming themselves or others and demonstrate such severe risk that a period of confinement was necessary to alleviate the presenting concerns. This study explored the relationship between the independent variables (age, gender, ethnicity, previous suicide attempt and diagnosis of psychopathology) and Suicide Probability Scale (SPS) scores. As such, it was covariational in nature, based upon the independent variables (nominal data) and the dependent variable, the SPS T scores (interval/ratio data).

Sample

A single stage, non-random, convenience sampling method was utilized to produce a sample representative of the bed ratio in the secure treatment centres (thirty

beds in Edmonton and three in Lethbridge). To produce a target sample total of approximately 200 files, the goal was to use approximately 180 files from the Edmonton secure treatment centre and twenty from the Lethbridge secure treatment facility in order to represent this ratio. The files that were included were the most recently confined adolescents until the appropriate quotas were reached for each centre. The management and psychologists responsible for intake at both secure treatment facilities gave permission to the researcher to collect data from the youth's files. Consequently, there was no direct contact with the adolescents in either centre.

Data Collection

The researcher, with an assistant, reviewed files from Edmonton and Lethbridge secure treatment centres to collect the data for this investigation. To ensure anonymity for the adolescents, names and other identifying information were not recorded. Criteria for inclusion into the study included admission to secure treatment after psychological evaluation, availability of a report addressing diagnosis in terms of psychopathology and, finally, administration of the SPS and availability of all aspects of the score.

The dependent variable (i.e., the variable that measures the effect of the independent variables) was generally defined as an assessment of suicide risk from the SPS scores, according to manual indications of suicide precaution. As previously discussed in detail in Chapter 2, the SPS is an assessment of the probability of suicide risk and is routinely used by psychologists in the intake process at the Edmonton and Lethbridge secure treatment centres. The SPS raw scores (Total Weighted Scores) and individual subscale scores (comprised of suicide ideation, negative self-evaluation, hostility and hopelessness) were recorded from the SPS results included in the files. From

these Total Weighted Scores, normalized T scores and categorical risk scores were calculated as per the SPS manual recommendations for clinical, or high risk, populations.

Independent variables recorded from the adolescents' files included number and type of psychopathological diagnosis, age, gender, ethnicity and previous suicide attempts. The first independent variable, psychopathology, was defined as assessment of DSM-IV-TR diagnosis from the secure treatment psychological report. For the scope of this study, psychopathology generally refers to psychological abnormality or mental disorders. Age was recorded in years from the date of the report reviewed. Gender and ethnicity were annotated categorically from the files. Finally, files were reviewed to assess information about any known previous suicide attempts and were denoted simply as yes, no or insufficient data.

Data Analysis

The purpose of this study was to make use of the data available in secure treatment centres as a means to understand the characteristics of these high risk adolescents. Demographic characteristics, including age, gender, ethnicity and previous suicide attempts, as well as the number and type of psychopathological diagnoses were explored to provide a thorough description of youth confined to secure treatment. Second, overall presumptive suicide risk of the sample was calculated to determine if the SPS assessment of risk was in congruence with psychologists' overall risk assessment. Following this, the relationship between independent variables was explored to determine any significant relationships. Finally, the relationship between study variables (including age, gender, ethnicity, previous suicide attempts and psychopathology) and SPS scores was examined to determine which variable/s best predicted risk.

The quantitative data collected by the researcher were analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows. To obtain descriptive statistics, frequencies and percentages described the characteristics of the sample along the following variables: age, gender, ethnicity, previous suicide attempts and diagnosis of psychopathology. Second, the SPS scores (including Total Weighted Scores, T scores, categorical risk scores and subscale scores) were evaluated in terms of mean, standard deviation, range and distribution. Finally, the frequency and percentage of risk scores were also analyzed.

The relationship between study variables was subsequently examined to determine any significant interactions between variables. Crosstabulation and chi-square analyses were performed to examine correlation of psychopathology with gender, ethnicity and age. Next, crosstabulation and chi-square analyses were performed to determine the relationship between previous attempts by age, gender and ethnicity. Finally, as some adolescents were admitted to secure treatment with low SPS scores, crosstabulation and chi-square analyses were performed to examine correlation between psychopathology and low risk scores to determine if those youth admitted with low SPS therefore demonstrating low presumptive suicide risk had particular diagnoses that could instead be related to high aggression risk.

An analysis of variance (ANOVA) was utilized to determine any significant relationships between study variables (age, gender, ethnicity, previous suicide attempts and psychopathologies) and adolescent suicide risk (via SPS T scores) and search for interactions between the variables without controlling for other variance. A multiple linear regression analysis was performed to explore significant relationships between SPS

T scores and the independent variables (age, gender, ethnicity, previous suicide attempts and diagnosis of psychopathology) while simultaneously controlling for other factors. The ANOVA results were subsequently compared to multiple linear regression analysis results.

Regression analysis provides a measure of association between study variables and SPS scores (Drummond, 1996). The regression results measure the direction and size of the effect of each variable on the dependent variable (Drummond). For example, the results would show which psychopathologies simultaneously affect suicide risk (as measured by SPS scores) with all variables controlling for the effects of one another. It will also indicate the degree to which each variable is related to suicide risk (Drummond). A standard regression coefficient (β or beta) measures the effect of the control variables by dependent variable (Drummond).

Similar studies have used logistic multivariate regression to assess their data (e.g., Brent, Perper, Moritz, Baugher et al., 1993; Brent et al., 1994; Gould et al., 1998; Groholt, Ekeberg, Wichstrom & Haldorsen, 2000; Sorenson & Golding, 1988), a statistical analysis that is similar to the basic approach of multiple linear regression that is proposed to be used in this study.

Limitations

Generalizability is the main limitation of the study's findings. The narrow scope of the study, addressing mainly the psychopathological correlates related to risk in adolescents in secure treatment settings as well as convenience sampling limit the generalizability of the results of this study. Consequently, the results of this investigation are generalizable to similar populations only.

Due to the nature of the secure treatment setting, treatment records such as these tend to be of small, biased samples of individuals and yet are considered to provide valuable information to researchers (Maris et al., 2000). The unique setting within the secure treatment facility, due to the extreme factors necessitating confinement, may potentially provide invaluable information about both suicide completers and those at high risk for hurting others. Another potential limitation is that adolescents assessed for suicide risk are far more likely to be attempters rather than completers. However, in this study, because youth within a secure treatment setting necessarily demonstrate extreme risk for suicide due to the extreme caution taken in their remand to protect themselves and/or others, they are likely to represent a unique population most closely resembling suicide completers (Brent, Perper, Moritz, Allman et al., 1993). Hence, it may be possible to obtain invaluable information previously unobtainable about suicide completers. A final limitation is that the SPS can only report current risk, so there is no way to predict follow up lethality of future attempts. A more thorough discussion of this study's limitations ensues in Chapter 5.

This chapter discussed the methods and procedures used in this study, including its research design, sampling method, data collection and analysis. Exploration of the potential limitations of the study concluded the chapter. Chapter 4 will present a description of the sample and report the results of the investigation including its demographic characteristics, analyses of the relationship between study variables and SPS scores as well as multiple linear regression analysis of the same.

CHAPTER 4

RESULTS

The general intention of this research was to make use of already gathered demographic information on adolescents at high risk for self or other directed harm who have been confined to secure treatment, in order to gain a more thorough knowledge of these adolescents. First, this research explored the demographic information, including information about previous suicide attempts, age, gender and ethnicity, as well as the number and type of psychopathological diagnoses of youth admitted to secure treatment. This study examined the suicide risk, via SPS scores, of those adolescents admitted to secure treatment to compare this risk assessment to that of the assessing psychologists. This study then examined the relationship between the independent variables (age, gender, ethnicity, previous suicide attempts and psychopathological diagnoses). Finally, this research also investigated the relationship between the independent variables and SPS scores to determine which variable/s best predicted risk for suicide.

This chapter reports the results of this investigation. It contains three major sections: a description of the sample, determination of the relationship between study variables and risk, and a multiple linear regression analysis of the data. The researcher summarizes the results of the data at the end of the chapter.

In total 558 files from Edmonton and Lethbridge secure treatment centres were reviewed: 525 from Edmonton and 33 from Lethbridge. Once screened for inclusion criteria (including having the SPS assessment available and scored, a diagnosis of psychopathology present within the report and being admitted to secure treatment), 210 files were included in the study: 191 from Edmonton and 19 from Lethbridge. Admission

dates of those files fitting admission criteria were between January, 2000 and November, 2002. In many cases, as is obvious by the exclusion of 62.4 percent of reviewed files, much of the criteria inclusion information (particularly SPS scores and psychologists' report) was missing, therefore the data could not be used. In other cases, adolescents' files met other inclusion criteria but the youth were not admitted to secure treatment and therefore could not be included in the study.

Several files had all the data to fit inclusion criteria, except that the adolescent had missed questions on the SPS and therefore their scores had to be excluded after collection. For comparison purposes only, an analysis was also performed on these files (numbering 24) and, demonstrating the heterogeneity of the sample, they were found not to be significantly different from the rest of the sample. One more file was excluded after the fact as no diagnosis of psychopathology was recorded. The 210 files that strictly met inclusion criteria are the only ones included in the analysis and discussed in these results.

Descriptive Statistics

The following characteristics from both secure treatment centres were recorded: SPS scores (including Total Weighted Scores, or raw scores, from the SPS assessment, and individual subscale scores), age, gender, ethnicity, previous suicide attempts and number and type of psychopathological diagnoses. From the SPS Total Weighted Scores, normalized T scores and categorical risk scores were calculated as per the SPS manual recommendations for clinical, or high risk, populations.

Tabularized information regarding the age, gender, ethnicity and known previous suicide attempts for this study's sample is reported in Table 3.

Table 3

Demographic Characteristics of Sample

Characteristic		<i>n</i>	%
Age	9	1	.5
	10	2	1.0
	11	10	4.8
	12	20	9.5
	13	48	22.9
	14	54	25.7
	15	53	25.2
	16	19	9.0
Gender	Female	134	63.8
	Male	76	36.2
Ethnicity	Caucasian	121	57.6
	Aboriginal	77	36.7
	Other	12	5.7
Previous Suicide Attempt	Previous Attempt	52	24.8
	No Previous Attempt	35	16.7
	Insufficient Data	123	58.6

Note. *N* = 210.

The age range of the population studied was 9 to 17, with a mean age of 13.9. The results of the tabulations indicated that more than two thirds of the youth included in the study (73.8%) were between 13 and 15 years of age. Nearly two thirds of the adolescents were female (63.8%). Over half of the youth were Caucasian (57.6%), and more than a third were Aboriginal (36.7%) in ethnicity. Only 5.7 percent of adolescents did not fit into either of these ethnographical groups and were therefore grouped together as “Other” ethnicity.

Information on previous suicide attempts was not available for all files reviewed; over half of the files included in the study (58.6%) had insufficient data on previous suicide attempts. Those files with sufficient information on previous suicide attempts were compared with the sample as a whole; 24.8 percent indicated at least one known previous suicide attempt, contrasted with 16.7 percent with no known previous suicide

attempt. The importance of these numbers becomes clear when solely examining the files for which previous suicide information is available: 59.8 percent (52/87) of the youth had previous suicide attempts while 40.2 percent (35/87) did not have known previous suicide attempts.

Table 4 reports the diagnosis of psychopathology in the sample, expressed in terms of number and percentages.

Table 4

Number and Percentage of Diagnoses per Youth

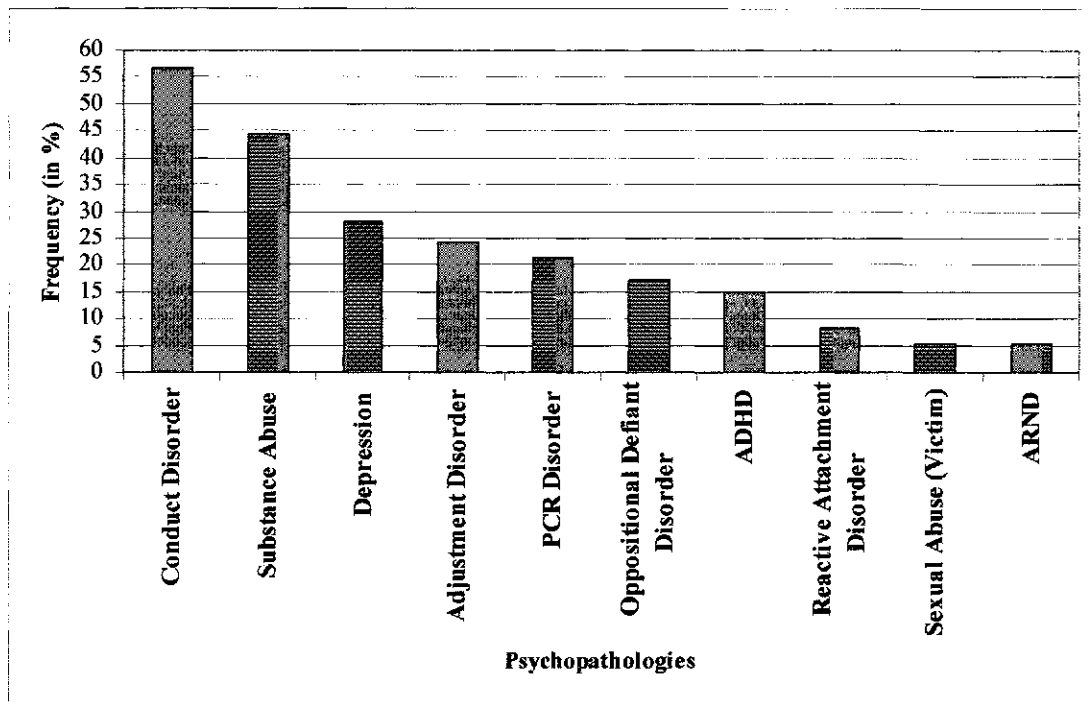
Diagnoses per Youth	<i>n</i>	%
1	18	8.6
2	84	40.0
3	68	32.4
4	31	14.8
5	6	2.9
6	1	.5
7	1	.5
8	1	.5

Note. *N* = 210.

A total of 42 distinct mental health diagnoses were recorded. These psychopathologies were often comorbid with an average of 2.7 diagnoses per youth and a standard deviation of 1.1. The number of diagnoses ranged between one and eight diagnoses per youth, with the majority (72.4%) having between two and three diagnoses.

As a graphical representation to clarify the data on diagnoses recorded, Figure 1 presents a histogram of the frequency of the top ten psychopathologies diagnosed expressed in percentages.

Figure 1



Frequency of Ten Most Frequently Diagnosed Psychopathologies

The ten most frequent diagnoses in the sample include conduct disorder, substance abuse, depression, parent child relational disorder (PCR disorder), adjustment disorder, oppositional defiant disorder, attention-deficit/hyperactivity disorder (ADHD), reactive attachment disorder, victim of sexual abuse and alcohol related neurodevelopmental disorder (ARND).

A report on the frequencies and percentages of the forty-two distinct diagnoses reported in the study follows in Table 5.

Table 5

Frequency and Percentage of Reported Psychopathologies

Psychopathology	<i>f</i>	%
Conduct Disorder	119	56.7
Substance Abuse	93	44.3
Depression	59	28.1
Adjustment Disorder	51	24.3
Parent Child Relational Disorder	45	21.4
Oppositional Defiant Disorder	36	17.1
Attention Deficit/Hyperactivity Disorder	31	14.8
Reactive Attachment Disorder	17	8.1
Sexual Abuse: Victim	11	5.2
Alcohol Related Neurodevelopmental Disorder	11	5.2
Attention Deficit Disorder	9	4.3
Dysthymia	8	3.8
Posttraumatic Stress Disorder	7	3.3
Sibling Relational Problems	6	2.9
Non-compliance with Treatment	5	2.4
Impulse Control Disorder	5	2.4
Mental Retardation	5	2.4
Bulimia Nervosa	4	1.9
Physical Abuse: Victim	4	1.9
Anxiety Disorder	3	1.4
Attachment Disorder	3	1.4
Borderline Personality Disorder	3	1.4
Learning Disorder	3	1.4
Personality Disorder NOS	3	1.4
Substance Induced Personality Disorder	3	1.4
Bipolar Personality Disorder	2	1.0
Developmental Disability	2	1.0
Suicidal Ideation	2	1.0
Tourette's Syndrome	2	1.0
Bereavement	1	0.5
Eating Disorder NOS	1	0.5
Histrionic Personality Disorder	1	0.5
Identity Disorder	1	0.5
Inappropriate Sexual Behaviour	1	0.5
Intermittent Explosive Disorder	1	0.5
Narcissistic Personality Disorder	1	0.5
Neglect of a Child	1	0.5
Psychotic Disorder	1	0.5
Receptive Language Disorder	1	0.5
Relational Disorder NOS	1	0.5
Sexual Abuse: Perpetrator	1	0.5
Social Anxiety/Avoidant Personality Disorder	1	0.5

The SPS Total Weighted Scores (TWS) and subscale scores (including suicide ideation, negative self-evaluation, hostility and hopelessness) were recorded from the SPS results included in the files. From the TWS, T scores were calculated as per the SPS manual recommendations. Categorical risk scores were also computed from the T scores for clinical, or high risk, populations. Four levels of risk are differentiated in the SPS manual: subclinical, mild, moderate or severe risk.

Table 6 reports the mean, standard deviation and range of scores on these aspects recorded from the sample.

Table 6

SPS Score Means, Standard Deviations and Score Ranges

Scale	<i>M</i>	<i>SD</i>	Observed Range	Possible Range
Total Weighted Scores	65.3	22.3	35-139	30-143
T score	63.1	10.0	40-86	0-100
Risk Scores (Categorical)	2.0	.6	1-3	0-3
Suicidal Ideation	15.8	8.6	8-39	8-39
Negative Self-Evaluation	15.8	4.4	6-25	7-27
Hostility	5.0	5.0	6-34	7-32
Hopelessness	21.3	8.8	8-49	8-45

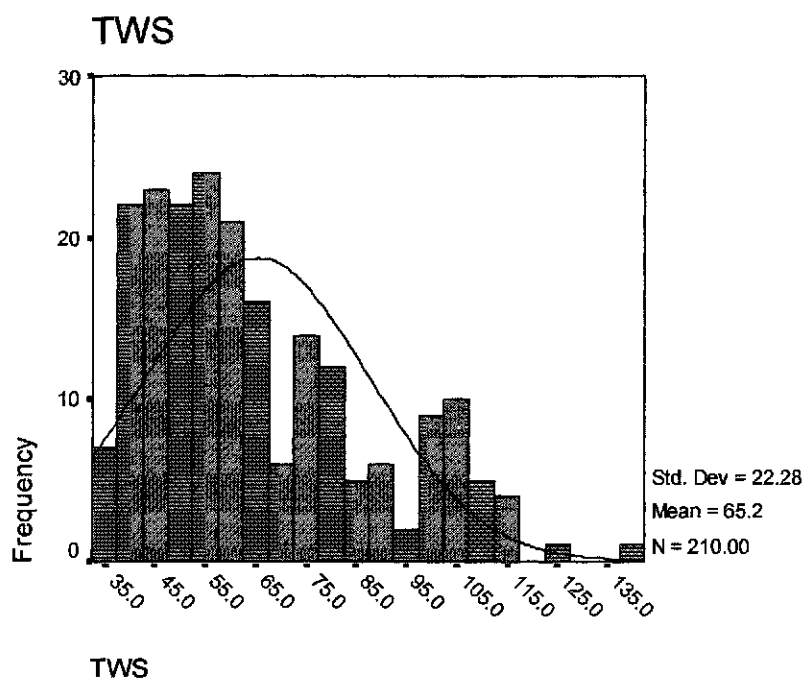
Note. $N = 210$. The range of negative self-evaluation, hostility and hopelessness subscale scores are larger than expected by the possible range given for the scale as per manual guidelines. Data was recorded from the psychologist's assessment form; the scores obtained that do not fit within these scales' possible ranges likely reflect either an error in addition by the psychologist or error in recording by researcher.

SPS raw scores, or Total Weighted Scores, presented a mean of 65.3 and a range much like the possible range of scores from manual indications. SPS T scores had a mean of 63.1; almost one and a half standard deviations above the mean from the SPS manual. Even though the sample appears to demonstrate high risk, this is not a statistically significant difference ($z=1.3, p > .10$). The range of T scores was focussed to the high end of the possible range. Categorical risk scores ranged from mild to severe risk, with the mean risk score indicating moderate risk.

Subscale score means were converted to T scores as per SPS manual indications to enable comparison as follows. Suicide ideation scores had a mean of a T score of 66.0. Negative self-evaluation scores had a mean of T score of 62.0. Hostility scores had a mean T score of 63.0. Hopelessness scores had a mean T score of 64.0.

Figure 2 offers a visual representation of the frequency of the distribution of Total Weighted Scores from the sample.

Figure 2

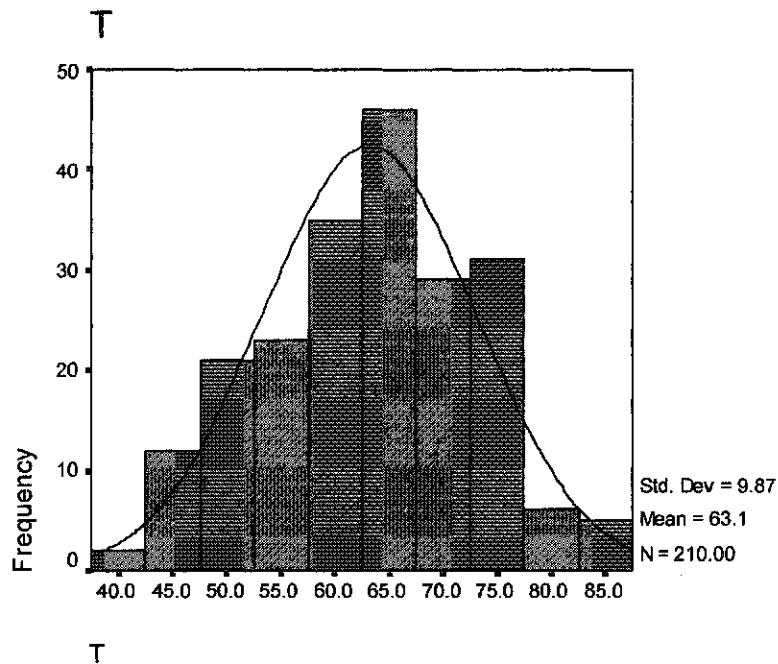


Frequency Histogram of SPS Total Weighted Scores

The scores from this sample create a positively skewed distribution.

Conversion to T scores creates a normalized sample presented in Figure 3.

Figure 3



Frequency Histogram of SPS T Scores

The T scores from this sample form a normal distribution curve. The mean T score of 63.1 falls in the moderate risk category, as do the majority of the scores (68%) from this sample. Another large portion of youth (15%) demonstrates T scores ranging from 72 to 77, and in the severe risk category.

As further clarification of the T scores from the sample, Table 7 presents the frequency and percentages of SPS categorical risk scores.

Table 7

Frequency and Percentages of Risk Scores

Severity of Risk		<i>f</i>	%
Risk Category	Risk Score		
Subclinical	0	0	-
Mild	1	36	17.1
Moderate	2	143	68.1
Severe	3	31	14.8

Note. *N* = 210.

No adolescents demonstrated scores within the subclinical risk category. The mean categorical risk score was two; over two thirds of the youth fell into the moderate risk category for suicide.

Relationship between Study Variables and Risk

A series of analyses were performed to examine the relationship between the demographic characteristics (gender, age, ethnicity, previous suicide attempts and diagnosis of psychopathology) and SPS T scores.

To explore potential gender differences between the diagnoses, crosstabulation and chi-square analysis were performed on the data. Table 8 reports the results of this analysis.

Table 8

Diagnosis by Gender Crosstabulation Analysis

Gender	Conduct Disorder	PCR Disorder	Depression	Substance Abuse	Adjustment Disorder
Female	78 (58.2)	31 (23.1)	40 (29.9)	79 (53.7)	35 (26.1)
Male	41 (53.9)	14 (18.4)	19 (25.0)	21 (27.6)	16 (21.1)
Chi-Square	.4	.6	.6	13.4*	.7

Note. $N = 210$. PCR Disorder = parent child relational disorder. Numbers in brackets indicate the percentage of persons within the group with that diagnosis and therefore do not equal 100%.

* $p < .001$.

Gender was found to be statistically significant with the diagnosis of substance abuse ($p < .001$). Females were diagnosed more often with substance abuse than males (53.7% of females versus 27.6% of males). No other statistically significant results were found in the comparison of diagnosis via gender.

Crosstabulation and chi-square analysis were again performed on the data to explore potential ethnic differences between diagnoses. The results of this analysis are reported in Table 9.

Table 9

Diagnosis by Ethnicity Crosstabulation Analysis

Diagnosis	Conduct Disorder	PCR Disorder	Depression	Substance Abuse	Adjustment Disorder
Caucasian	64 (52.9)	32 (26.4)	33 (27.3)	53 (43.8)	24 (19.8)
Aboriginal	51 (66.2)	10 (13.0)	21 (27.3)	38 (49.4)	23 (29.9)
Other	4 (33.3)	3 (25.0)	5 (41.7)	2 (16.7)	4 (33.3)
Chi-Square	6.2*	5.2	1.2	4.5	3.1

Note. $N = 210$. PCR Disorder = parent child relational disorder. Numbers in brackets indicate the percentage of persons within the group with that diagnosis and therefore do not equal 100%.

* $p < .05$.

Those of Aboriginal ethnicity were more likely to be diagnosed with conduct disorder (66.2% of Aboriginals, 52.9% of Caucasians, and 33.3% of "Other" ethnicity, $p < .05$). In this comparison, there were no other statistically significant results found.

To investigate potential age differences in diagnosis, crosstabulation and chi-square analysis were performed on the data. Table 10 presents the results from this analysis.

Table 10

Diagnosis by Age Crosstabulation Analysis

Age	Conduct Disorder	PCR Disorder	Depression	Substance Abuse	Adjustment Disorder
9	1 (100.0)	0 -	0 -	0 -	0 -
10	1 (50.0)	0 -	0 -	0 -	0 -
11	7 (70.0)	1 (10.0)	1 (10.0)	0 -	2 (20.0)
12	8 (40.0)	5 (25.0)	4 (20.0)	3 (15.0)	5 (25.0)
13	23 (47.9)	19 (39.6)	18 (37.5)	16 (33.3)	18 (37.5)
14	31 (57.4)	9 (16.7)	16 (29.6)	28 (51.9)	14 (25.9)
15	33 (62.3)	10 (18.9)	13 (24.5)	32 (60.4)	9 (17.0)
16	13 (68.4)	1 (5.3)	6 (31.6)	12 (63.2)	2 (10.5)
17	2 (66.7)	0 -	1 (33.3)	2 (66.7)	1 (33.3)
Chi-Square	7.2	15.8*	6.1	29.7**	9.3

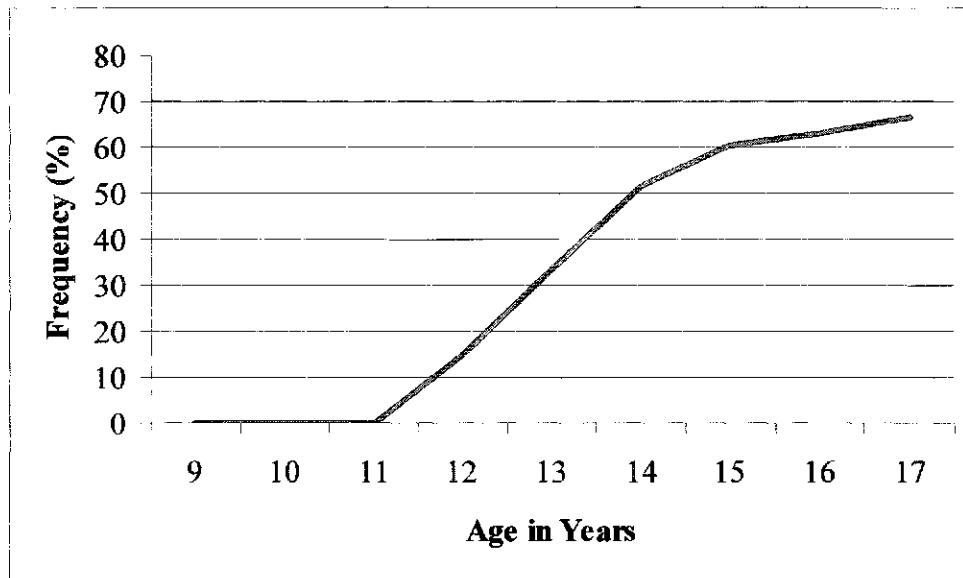
Note. $N = 210$. PCR Disorder = parent child relational disorder. Numbers in brackets indicate the percentage of persons within the group with that diagnosis and therefore do not equal 100%.

* $p < .05$. ** $p < .001$.

Diagnosis of substance abuse significantly correlated with age ($p < .001$).

Substance abuse significantly increased after age twelve as is clearly delineated via the line chart in Figure 4.

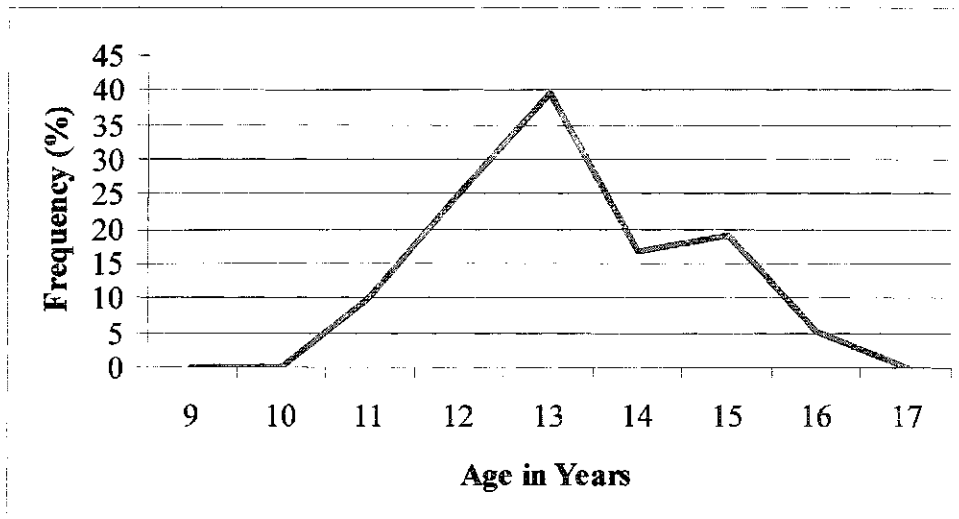
Figure 4



Frequency of Diagnosis of Substance Abuse

The diagnosis of parent child relational disorder was also significantly correlated with age ($p < .05$). Diagnosis of parent child relational disorder increases dramatically with age to peak at age thirteen then decreases significantly afterwards as illustrated in Figure 5.

Figure 5



Frequency of Diagnosis of Parent Child Relational Disorder

Crosstabulation and chi-square analysis were performed on the data to discover potential differences in age, gender and ethnicity of previous suicide attempts. Table 11 reports the results of this analysis.

Table 11

Crosstabulation Analysis of Previous Suicide Attempts by Age, Gender and Ethnicity

Variables		Previous Suicide Attempt			Chi-Square
		No Previous Attempt	Previous Attempt	Insufficient Data	
Age	9	0 -	0 -	1 (100.0)	18.2
	10	1 (50.0)	0 -	1 (50.0)	
	11	2 (20.0)	2 (20.0)	6 (60.0)	
	12	8 (40.0)	2 (10.0)	10 (50.0)	
	13	4 (8.3)	14 (29.2)	30 (62.5)	
	14	9 (16.7)	17 (31.5)	28 (51.9)	
	15	6 (11.3)	13 (24.5)	34 (64.2)	
	16	4 (21.1)	3 (15.8)	12 (63.2)	
	17	1 (33.3)	1 (33.3)	1 (33.3)	
	Gender	Female	19 (14.2)	38 (28.4)	
Male		16 (21.1)	14 (18.4)	46 (60.5)	
Ethnicity	Caucasian	16 (13.2)	27 (22.3)	78 (64.5)	6.5
	Aboriginal	15 (19.5)	21 (27.3)	41 (53.2)	
	Other	4 (33.3)	4 (33.3)	4 (33.3)	

Note. $N = 210$. Numbers in brackets indicate the percentage of persons within the group with data on suicide attempts and therefore do not equal 100%.

As indicated by chi-square analysis, there were no statistically significant results found in the comparison of previous attempts and other study variables.

Some youth were admitted to secure treatment with low SPS scores, indicating a lower presumptive risk to self. The researcher hypothesized that one possible alternative admittance rationale was diagnosis of particular psychopathology, particularly one which presented high risk to others rather than self harm. In order to investigate which diagnoses corresponded with low risk scores, risk scores were compared with the five most frequent diagnoses via crosstabulation and chi-square analysis. The results of this comparison are presented in Table 12.

Table 12

Crosstabulation Analysis of Low Risk Scores by Disorder

Diagnosis of Disorder	Conduct Disorder	PCR Disorder	Depression	Substance Abuse	Adjustment Disorder
% Diagnosed	80.6	13.9	16.7	61.1	88.9
% Not Diagnosed	19.4	86.1	83.3	38.9	11.1
Chi-Square	10.3**	1.65	3.97	8.4*	16.5***

Note. $N = 210$. PCR Disorder = parent child relational disorder. Frequency is expressed in percentages.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Those adolescents with mild categorical risk scores were significantly more often diagnosed with adjustment disorder ($p < .001$), conduct disorder ($p < .01$) and substance abuse ($p < .05$) than youth with higher risk scores. This might be an indication that diagnosis of these disorders demonstrates to psychologists an increased risk potential for youth, or that higher risk covaries with these diagnoses.

An analysis of variance (ANOVA) was performed as an initial exploration of the relationship between the study variables (age, gender, ethnicity, previous suicide attempt and diagnosis) and suicide risk (measured by SPS T scores) not controlling for other variance. The results of these analyses are reported in Table 13.

Table 13

Study Variables by SPS T Score ANOVA

Study Variables		Mean T Score	<i>n</i>	<i>SD</i>	<i>F</i>
Age	9	63.0	1	-	3.1*
	10	52.0	2	11.3	
	11	67.4	10	11.0	
	12	67.7	20	10.4	
	13	65.7	48	8.7	
	14	63.8	54	9.2	
	15	58.9	53	9.5	
	16	60.8	19	10.2	
Gender	Female	61.9	134	10.0	5.4*
	Male	65.2	76	9.4	
Ethnicity	Caucasian	63.6	121	10.0	.9
	Aboriginal	62.8	77	9.3	
	Other	59.8	12	11.6	
Previous Suicide Attempt	Previous Attempt	66.3	52	9.5	4.2*
	No Previous Attempt	63.4	35	10.7	
	Insufficient Data	61.7	123	9.5	
Diagnoses	Conduct Disorder	61.2	119	9.7	11.1***
	Substance Abuse	61.0	93	9.1	8.2**
	Depression	66.2	59	8.0	8.3**
	PCR Disorder	64.3	45	9.4	.9
	Adjustment Disorder	67.3	51	9.8	12.6***
Total		63.2	210	9.9	

Note. *N* = 210. PCR Disorder = parent child relational disorder

p* < .05. *p* < .01. ****p* < .001.

The largest statistically significant difference in T scores was found in the diagnoses of conduct disorder and adjustment disorder and T scores (*p* < .001). Those adolescents diagnosed with conduct disorder or adjustment disorder significantly

covariates with T scores. The diagnoses of substance abuse and depression were also significantly covariates with risk ($p < .01$). There was a statistically significant covariance in T scores between ages ($p < .05$); even when the age outliers were collapsed, there was a statistically significant covariance of $p < .001$. As such, age varied with risk as measured by T scores but not in any linear way, even when the very small percentage of extreme age groups were collapsed into an alternate group. The previous suicide attempt denotation also produced a statistically significant difference in T scores ($p < .05$). Gender and T scores showed significant covariance ($p < .05$). This analysis revealed that there was no statistically significant covariance in T scores and ethnicity.

Multiple Regression Analysis

In order to determine the study variables that best predicted suicide risk while simultaneously controlling for other variance, multiple linear regression analysis was performed on the data. The measure of suicide risk used in this analysis is SPS T scores. Table 14 reports the results from this multiple linear regression analysis.

Table 14

Multiple Linear Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	β		
(Constant)	78.2	7.7		10.2	<.001***
Age	-1.7	.5	-.21	-3.1	.002**
Gender	4.1	1.3	.20	3.1	.002**
Aboriginal	-.9	1.3	-.04	-.7	.509
Other Ethnicity	-6.3	2.7	-.15	-2.3	.021**
Previous Suicide Attempt	3.5	1.5	.15	2.4	.019*
Conduct Disorder	-1.7	1.4	-.08	-1.2	.213
PCR Disorder	.3	1.5	.01	.2	.857
Depression	5.0	1.5	.23	3.2	.001***
Substance Abuse	.6	1.4	.03	.4	.661
Adjustment Disorder	6.6	1.5	.29	4.3	<.001***

Note. $N = 210$. PCR Disorder = parent child relational disorder. The category of age was collapsed to exclude outliers.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Diagnosis of adjustment disorder demonstrated the most significant effect with SPS T scores ($p < .001$). The diagnosis of depression also showed a significant statistically significant relationship with suicide risk ($p < .001$). Age exhibited a significant effect with SPS T scores: decreased age demonstrated higher risk ($p < .01$). Gender also showed a significant relationship: directionally, females had higher SPS T scores than males

($p < .01$). Those adolescents categorized as “Other” ethnicity had lower SPS T scores ($p < .01$). Those with known previous suicide attempts had higher SPS T scores ($p < .05$). No other study variables had a significant effect with SPS T scores.

Summary

A total of 558 files were reviewed from both the Edmonton and Lethbridge secure treatment centres in a non-random convenience sampling method yielding 210 files that met inclusion criteria. The sample was predominantly female (63.8%), Caucasian (57.6%) and between 13 and 15 years of age (73.8%). For those with information available regarding known previous suicide attempts, the majority (59.8%) had previously attempted suicide. The vast majority of the youth (68%) were found to be in the moderate suicide risk category. The most frequent diagnoses were conduct disorder (56.7%), substance abuse (44.3%), depression (28.1%), adjustment disorder (24.3%) and parent child relational disorder (21.4%).

Crosstabulation and chi-square analysis between study variables and diagnosis revealed that females were diagnosed more frequently with substance abuse. Aboriginal adolescents were diagnosed more often with conduct disorder. The diagnosis of substance abuse increased with age; as well, the diagnosis of parent child relational disorder is significantly correlated with age, increasing dramatically to peak at age 13. Previous suicide attempts were not found to significantly vary via age, gender or ethnicity.

In order to examine the youth admitted to secure treatment with lower perceived risk to self as indicated by low SPS T scores, the relationship between SPS subscales and risk scores was also examined via crosstabulation and chi-square analysis. Adolescents with categorical risk scores in the mild range were significantly more likely to be

diagnosed with adjustment disorder, conduct disorder or substance abuse than youth with higher risk. This may indicate that the diagnosis of these particular psychopathologies may be interpreted by centre psychologists as indicating that the adolescent is at high risk to unintentionally self harm or to harm others, or that high risk covaries with these diagnoses as stated earlier.

By means of analysis of variance, it was found that the diagnoses of conduct disorder, substance abuse, depression and adjustment disorder as well as age, gender and previous suicide attempts significantly covaried with SPS T scores. A multiple linear regression analysis was also performed on the data in order to determine the study variables that best predicted suicide risk while simultaneously controlling for other variance. The diagnoses of adjustment disorder and depression had significant effects with SPS T scores. Decreased age, female adolescents and those with previous suicide attempts had significantly higher SPS T scores. Those youth in the “other” ethnicity category had lower SPS T scores.

Comparison of ANOVA and multiple linear regression analysis examining the relationship between study variables and suicide risk produced similar results with the exception of the diagnoses of conduct disorder and substance abuse. Speculation on this discrepancy is that gender and age factored in the diagnosis of substance abuse being significant in analysis of variance. Ethnicity likely played an important role in the significance of comparison of conduct disorder and SPS T scores. In both instances, utilizing multiple linear regression analysis that controls for other variance (such as age, gender and ethnicity), these results are no longer significant in and of themselves.

This chapter discussed the results of statistical analysis of the data in this study, including a description of the sample, an examination of the relationship between study variables and risk via crosstabulation and chi-square analyses and both an ANOVA and a multiple linear regression analysis of the data. Chapter 5 will present the discussion of the study's results, delineating limitations, implications for psychological practice and possibilities for future research.

CHAPTER 5

DISCUSSION

This study aimed to utilize the accessibility of rich data available in two Alberta secure treatment centres regarding adolescents at imminent risk for harm. A more comprehensive understanding of the characteristics of these youth was established via examination of the number and type of the adolescents' psychopathological diagnoses and demographic data including age, gender, ethnicity and information regarding previous suicide attempts. This thorough description of the sample was followed by a report of the adolescent's Suicide Probability Scale (SPS) scores (including T scores and subscale scores). This research next investigated the relationship between study variables via crosstabulation and chi-square analysis to determine significant covariations in age, gender, ethnicity and previous suicide attempts.

An ANOVA gave preliminary examination of the relationship between independent variables and suicide risk (as measured via SPS scores), without controlling for other variance. Finally, a multiple linear regression analysis was performed to determine which variable/s best predicted suicide risk while simultaneously controlling for all other factors. The results of the multiple linear regression analysis were subsequently compared to ANOVA results. This chapter begins with a summary of the study's results and then delineates its limitations, the implications for psychological practice and the possibilities for future research.

Results Summary

In total 558 files from Edmonton and Lethbridge secure treatment centres were reviewed, including 525 files from Edmonton and 33 from the Lethbridge secure treatment centre. Once screened for inclusion criteria (comprised of SPS scores, psychologists' report bearing diagnosis of psychopathology and admission to secure treatment), 210 files were included in the study: 91 percent from Edmonton and 9 percent from Lethbridge. Over 62 percent of the files reviewed were excluded from the study because the necessary inclusion criteria were not met.

Overall, the sample consisted of female adolescents (64%), Caucasian ethnicity (58%) and was aged between 13 and 15 years (74%). For those adolescents with available information regarding known previous suicide attempts, the majority (60%) had previous suicide attempts noted in their files. The majority of the youth (68%) fell in the moderate suicide risk category and therefore were almost one and one half standard deviations higher than the SPS normed sample standard deviation. This is, however, not a statistically significant difference ($z=1.3, p >.10$), therefore this sample does not present significantly severe risk for suicide.

Diagnoses of psychopathology were often comorbid with the majority of adolescents (72%) having between two and three diagnoses. In order of frequency, the significant diagnoses of psychopathology were conduct disorder (57%), substance abuse (44%), depression (28%), adjustment disorder (24%) and parent child relational disorder (21%). The next most frequent diagnoses were oppositional defiant disorder (17.1%), attention deficit/hyperactivity disorder (14.8%), reactive attachment disorder (8.1%), victim of sexual abuse (5.2%) and alcohol related neurological disorder (5.2%).

Crosstabulation and chi-square analyses performed to determine any significant variations in age, gender, ethnicity or prior suicidality and diagnosis revealed that females were diagnosed more frequently ($p < .001$) with substance abuse. Adolescents of Aboriginal ethnicity were diagnosed significantly more often with conduct disorder ($p < .05$). The diagnosis of substance abuse significantly increased with age after twelve years of age ($p < .001$). The diagnosis of parent child relational disorder also significantly covaried with age ($p < .05$); diagnosis of this disorder increases dramatically with age to peak at age thirteen then decreases significantly afterwards. Previous suicide attempts (when known) were not found to be significantly related to age, gender or ethnicity variations.

The relationship between SPS subscale and risk scores was also examined via crosstabulation and chi-square analyses to specifically delineate characteristics of youth admitted to secure treatment with low SPS T scores (implying a lower perceived risk to self). Those adolescents with mild categorical risk scores were significantly more often diagnosed with adjustment disorder ($p < .001$), conduct disorder ($p < .01$) and substance abuse ($p < .05$) than youth with higher risk scores. This may be an indication that diagnosis of these disorders (one diagnosis a disruptive disorder, and the other, substance abuse, both known to be related to increased adolescent aggression risk) demonstrates to psychologists an increased risk potential for these youth, or that higher risk covaries with these diagnoses.

An analysis of variance (ANOVA) performed to preliminarily examine the relationship between study variables and suicide risk, not controlling for other variance,

indicated that the diagnoses of conduct disorder ($p < .001$), substance abuse ($p < .001$), depression ($p < .01$) and adjustment disorder ($p < .01$) as well as age ($p < .05$), gender ($p < .05$) and previous suicide attempts ($p < .05$) significantly covaried with SPS T scores. Multiple linear regression analysis was performed on the data to determine the relationship between study variables and suicide risk while simultaneously controlling for other variance. The diagnoses of adjustment disorder and depression had significant effects ($p < .001$) with risk as measured by SPS T scores. Youth that were younger ($p < .01$), female ($p < .01$) and had previous suicide attempts ($p < .05$) demonstrated significantly higher risk as indicated by SPS T scores. Those adolescents in the “other” ethnicity category had significantly lower risk as measured by SPS T scores ($p < .01$).

Equivocal results were obtained from comparison of ANOVA and multiple linear regression analysis conducted between most study variables and SPS T scores. The exceptions include the diagnoses of conduct disorder and substance abuse which were found to be statistically significant by ANOVA but not through multiple linear regression analysis. Multiple regression analysis considers all other variance, and as such, the writer speculates from ANOVA results that the discrepancy between the analyses may be due to both age and gender variations in the diagnosis of substance abuse. Further speculation into this discrepancy from ANOVA results is that there were ethnic variations in the diagnosis of conduct disorder.

Demographics in this study are mainly consistent with previous literature. Females in this study have higher SPS scores ($p < .05$) and are therefore at a higher presumptive risk for suicide according to the SPS manual (Cull & Gill, 1988). In analysis of previous suicide attempts by gender, 29 percent of female youth versus 18 percent of

male youth had known previous suicide attempts. The literature states that females attempt suicide more often as a rule (e.g., Hider, 1998). According to Beautrais (2003b), there are no gender differences except for the choice of suicide method. As previously stated, females often overestimate the perceived lethality of suicide methods, which may suggest that suicide attempts were meant to be completed suicides more often (Jamison, 1999). There is also the possibility that this unique population demonstrates increased risk due to its high risk nature. Also a potential factor is that risk in adolescent females is under researched and may be higher than is now assumed (Funk, 1999). Consideration of this inaccurate perception and the increased frequency of attempts with higher risk for females from the results of this study points out the necessity of extreme caution in the interpretation of risk in female adolescents.

Results from this study indicate that youth aged eleven to thirteen years old in this sample were at significantly higher risk for suicide ($p < .05$). This is an interesting finding as the epidemiological information from the literature informs that suicide risk peaks later in adolescence, after puberty, and that there are not many suicides in this lower age range (Brent et al., 1999). This could be explained via many factors; the oldest youth in this study was 17, this age comprised a scant and non-representational one percent of youth in the study. Also, puberty is increasingly happening at a younger age (Jamison, 1999). Finally, young children demonstrate increased suicidal utterances yet decreased suicide rates; this discrepancy could be explicable to the SPS being highly sensitive to the expression of suicidality in younger children.

Those adolescents categorized as “other” ethnicity had significantly ($p < .01$) lower risk as indicated by multiple linear regression analysis. This does not support other

literature, which indicates that ethnic minorities have higher suicide risk (e.g., Shaffer, 2001; Sorenson & Golding, 1988). It is essential to understand that this sample is from a uniquely stratified population consisting mainly of two different ethnicities (Caucasian and Aboriginal) which may factor into the interpretation of these results.

Of those adolescents with file indications of previous suicide attempts, the majority (59.8%) had made prior attempts on their lives and most youth were at risk for suicide (the majority fell in the moderate category for suicide risk). In the multiple linear regression analysis, previous suicide attempts were found to be a significant predictor of SPS scores ($p < .05$). This is consistent with some, though not all as previously indicated, adolescent suicide research (e.g., Hider, 1998; Jamison, 1999; Wetzler et al., 1996) stating that previous suicide attempts are associated with future suicide risk. It is important to note that the data collected for previous suicide attempts may be convoluted because the information was not available for 59 percent of the sample. However, it is likely that if a previous suicide attempt was known, it would be noted in the report, whereas if there were no known previous attempts, this would not necessarily be recorded. Therefore, it is likely that the files with suicide attempts annotated are the only ones where youth have known previous suicide attempts.

The number of diagnoses reported per youth in this study (an average of two to three diagnoses per youth) and range of diagnoses (one to eight diagnoses per youth) were consistent with the findings of Burgess et al. (1998). Though the present study was conducted with adolescents in an inpatient-type setting, the number of diagnoses of psychopathology was consistent with Burgess et al.'s study encompassing inpatients, day

patients and outpatients. They found an average of four diagnoses per youth, with a range of one to eight diagnoses (Burgess et al.).

The diagnoses of conduct disorder, substance abuse and depression are fairly consistent with literature findings of diagnoses with suicide risk (Beautrais et al., 1998; Brent, 1995; Brent & Perper, 1995; Brent, Perper, Moritz, Allman et al., 1993; Burgess et al., 1998; Gould et al., 1998; Kelly et al., 2001; Litman, 1996; Slap et al., 1989) and as such it was not surprising that they were found in the top ten diagnoses in the present study. An interesting observation is that although the diagnoses of adjustment disorder, parent child relational disorder, oppositional defiant disorder, attention deficit/hyperactivity disorder, reactive attachment disorder, victim of sexual abuse and alcohol related neurological disorder are less commonly reported in the literature, they have been reported in the top ten reported in the present study.

From this study's results, the diagnoses that are associated with increased risk of suicide (from elevated SPS scores) may inform psychologists about the diagnoses that may indicate cause for concern. Knowledge of these particular diagnoses present in an adolescent may indicate that his/her presumptive suicide risk is also higher. The disorders found to significantly predict adolescent suicide risk via multiple linear regression analysis ($p < .001$) were adjustment disorder (females comprised 69 percent of youth diagnosed with this disorder) and depression (females comprised 68 percent of adolescents diagnosed with this disorder). These results are consistent with literature in the field: the diagnosis of depression significantly related to suicide risk is fairly equivocal in the literature (see Brent & Perper, 1995; Burgess et al., 1998; Kelly et al., 2001; Slap et al., 1989), and females are known to be diagnosed with depression more

often (Jamison, 1999). However, only Brent (1995) was found to discuss adolescent suicide risk associated with the specific diagnosis of adjustment disorder.

The diagnosis of conduct disorder significantly predicted suicide risk via analysis of variance ($p < .001$) but not multiple linear regression analysis ($p > .10$); in this research this discrepancy is likely due to ethnic variation controlled for in the regression analysis. Once the variance in ethnicity was controlled for via multiple linear regression analysis, conduct disorder no longer significantly predicted suicide risk. This result does not support previous literature (e.g., Beautrais et al., 1998; Brent, 1995; Litman, 1996) which suggests that conduct disorder is significantly correlated with suicide risk. Substance abuse was also significantly predictive of suicide risk via analysis of variance ($p < .01$) but not multiple linear regression analysis ($p > .10$) which controlled for age and gender variations. This result is also not supported by previous literature (e.g., Beautrais et al., 1998; Brent, Perper, Moritz, Allman et al., 1993; Gould et al., 1998) which suggests that substance abuse is significantly correlated with suicide risk. The writer speculates that it is possible that other variance may be responsible for the relationship reported in other research results.

In this study, females were diagnosed more often than males with substance abuse ($p < .001$), which does not support the majority of the literature indicating that male adolescents are more frequently diagnosed with substance abuse (see Litman, 1996; Shaffer, 1996). Aboriginal youth in this study were more often diagnosed with conduct disorder ($p < .05$). The cause for this finding is unknown as there is little or no research in this area regarding conduct disorder among differing ethnicities. The finding of the diagnosis of substance abuse increasing with age ($p < .001$) is logical considering that

access to alcohol increases with age. The diagnosis of parent child relational disorder had an interesting link with age ($p < .05$) in the present study and was also the fifth most diagnosed disorder in this study. This may be a significant finding as there was no research found correlating suicidality in youth and this disorder.

Though adolescents admitted to secure treatment demonstrated moderate suicide risk and were higher than the SPS manual mean, scores did not demonstrate significant differences ($z=1.3, p > .10$). This discrepancy could indicate that the SPS is not the sole determination of suicide risk in youth, which indicates that psychologists are making determination based on comprehensive risk assessment of which the SPS is a part. It could also indicate that a portion of this sample were admitted due to aggression risk and may not therefore demonstrate particularly high suicide risk.

A final note is the comparison of adolescents admitted to secure treatment with low presumptive risk for suicide as indicated by mild SPS risk scores. These youth were diagnosed significantly more often with adjustment disorder ($p < .001$), conduct disorder ($p < .01$) or substance abuse ($p < .05$) which may indicate that they have a higher risk of outward, rather than inward, directed aggression. These adolescents may therefore have been admitted to secure treatment for risk of other directed harm; however, the reason for confinement was not apparent in the adolescent's files.

Limitations

The main limitation of the study's findings relates to its limited generalizability due to the narrow scope of the study, which mainly addresses the psychopathological correlates related to risk in adolescents in secure treatment settings and the utilization of convenience sampling. That is, the results are solely generalizable to similar populations.

However, information from such a necessarily small and biased sample is nevertheless considered to provide information that is invaluable to researchers (Maris et al., 2000).

Although socioeconomic information would have been useful information to include in a study on adolescent risk, it was not available in this study. This may have informed the relationship between suicide risk and ethnicity as much of the research indicates that ethnicity is not related to suicidality per se; rather that socioeconomic status is an intervening factor that is related to increased risk. No clear information about the underlying reason for individual adolescent admittance to secure treatment was available. Currently, there is no consistent delineation for reason for admittance (e.g., intentional harm to self via suicide risk, intentional risk of harm to others, subintentional risk of harm to self via use of illegal drugs, alcohol, engaging in prostitution, etcetera).

In retrospect, it was interesting to note that though the SPS is sanctioned for use on those aged 14 and over, children or youth under the age of 14 also had the SPS administered to them. Slightly fewer than 40 percent of those younger than 14 years of age were included in this study, though the majority (23%) of these were 13 years old. This indicates a possible limitation to the findings of this study, as there is no information about the applicability or generalizability of the utilization of the SPS with children. It is also necessary to note that the data collected for previous suicide attempts may be convoluted because the information was not available for 59 percent of the sample. It is likely, however, that any known previous suicide attempts were noted in the report and not noted for all those that did not have a known previous attempt.

Another limitation of this study are the errors present in recording SPS scores as noted in Chapter 4. These errors were either the result of psychologist addition error or

researcher recording error. In either case, some scores were not correctly annotated and therefore this provides a potential limitation to the data analyses.

A potential limitation is that suicide assessments such as the SPS usually provide information on suicide attempters rather than completers, meaning that the information gathered may not resemble that of those adolescents who would eventually complete suicide and for whom the concern is the greatest. Gathering data from the unique secure treatment setting, with adolescents that may most closely resemble suicide completers because of their extreme risk, may provide data from a population that shares characteristics with those youth who commit suicide. A final note on limitations of this study is that the SPS reports current risk only, and as such, precludes knowledge of follow up lethality of future attempts.

Implications for Psychological Practice

Implications for counselling practice from the results of this study are within the prevention milieu of therapy. They are discussed in terms of impact to secure treatment, screening, and knowledge of psychopathological correlates of suicide risk and other risk factors for adolescent harm.

The present study has already impacted secure treatment protocol in that it served, to some extent, as an audit of their files. The mere process of having an impartial outsider go through adolescents' files looking for specific information provided some vital information to administration at the secure facility. That is, the researcher looked to see if the results from the SPS were in the file, had the test been administered, had it been scored, was the report in the file and so forth. More importantly, this research may indicate to the secure facility management the extent that the SPS was being given to

adolescents during the intake process, if the assessment was administered to the youth but not scored and therefore not used in the intake decision making or if the report was not included in the file. This provided potentially useful information to the facility administration about whether or not the appropriate procedures for intake were being adhered to, how often, and what steps, if any, were left out by the staff.

This study also provides insight about information that is being recorded in adolescents' files, especially in regards to denotation of previous suicide attempts. This information may correlate with increased risk of suicide and yet may not be consistently recorded by psychologists in secure treatment centres, though this is not a certainty (as previously indicated, it may be that suicide attempts are only noted when they have occurred, not when they have not). Passing on results to those in contact with adolescents indicating that there is a paucity of recorded prior suicidality information, both on the SPS form and in the filed reports, could stress the importance of recording this information consistently. This additional information could be taken into account when assessing youth suicide risk.

In order to help address this inconsistency, a database could be set up with equivalent aspects of information routinely gathered in the assessment of necessity for confinement to secure treatment for each adolescent referred. Immediately upon referral to secure treatment, an intake person could enter this information into a database. The basis for this data entry would logically follow from the remand criteria used in assessment: reason for referral (either risk to self or risk to others [intentional or subintentional]). The severity of risk to harm could be assessed as to whether the youth has harmed themselves or others before. Past diagnoses could also be entered and

considered. The final aspect of this potential database for intake could be indication of the adolescent's past medications or treatment. Once assessment for remand to secure treatment has begun, SPS scores, current diagnoses as well as elemental aspects of the youth's history and subsequent decision regarding remand could also be added to this database.

This database would potentially be very beneficial in many aspects: it would ensure that each adolescent is assessed for remand by the same criteria, the information would be readily available to all staff for future reference or subsequent referral to the facility and would also serve to offer up a rich source of information readily available for research without impact on the adolescent.

Despite the aforementioned limitations of this study, the results are significant enough to warrant considerations regarding the utility of the SPS as a meaningful tool in the assessment of risk in adolescents. In his thorough review, Hider (1998) lists the SPS as the first presentation of predictive validity of any adolescent suicide risk assessment. The present study adds to the literature as another validation that the SPS is an instrument useful in the assessment of suicide risk as the results indicated that previous suicide attempts were significantly predictive of higher suicide risk as measured by SPS T scores. Interestingly, even when the SPS was not routinely used by a particular psychologist for admittance to secure treatment, it was used to justify non-admittance by this same person. This is also a valid argument for use of SPS if a low SPS score is equal to a low overall perceived risk by a trained evaluator.

Consequently, the SPS is a tool that could be more readily utilized by psychologists, counsellors and other professionals, for screening suicide risk in

adolescents. It seems to agree with psychologist's overall assessment of risk in youth and is much quicker and easier to administer than a complete assessment for preliminary screening. For preliminary information gathering purposes, an idea for the effective utilization of such a tool in secure treatment centres could be for the psychologists to first administer this test and with results of this in hand, triage referred adolescents based on SPS scores. This is consistent with Grisso's (2003) suggestion to utilize an assessment in the evaluation of violent youth to give an indication of areas requiring further assessment. Those with high risk scores would be assumed to be in greater need of admittance to secure treatment on the intentional self-harm criterion, while adolescents with lower scores could then be triaged for primary assessment on the basis of subintentional self-harm or intentional harm to others criterion. Great care would be required with this assessment as adolescent behaviour is not always predictable and whether or not they will present future risk cannot always be inferred correctly from youth's scores. Instead, perhaps this triage procedure could indicate a starting point for psychologists in their assessment of necessity for remand to secure treatment.

As stated in Hider's (1998) extensive review of the literature on adolescent suicide, the diagnosis of psychopathology was the single best predictor of suicide risk in adolescents. Brent, Perper, Moritz, Allman et al. (1993) adamantly state that the most efficient method of suicide prevention necessitates the identification and treatment of youth with psychopathologic characteristics that most closely resemble suicide victims. As such, the psychopathologies found to be significantly related to SPS scores in this study may provide priceless data to psychologists and counsellors; the diagnosis of these

particular psychopathologies (adjustment disorder and depression) may be an indication of increased suicide risk.

Adolescents in secure treatment may present imminent risk as previously stressed, subsequently, the factors predicting high suicide risk may provide essential information on factors necessitating particular attention when screening youth for suicide risk. In addition to diagnosis of the aforementioned psychopathologies, factors associated with increased suicide risk in this study included younger age, female gender and previous suicide attempts. It is therefore imperative that those working with adolescents keep these factors in mind when making a determination of suicide risk in youth, as knowledge of these factors may increase accurate risk assessment.

For example, school counsellors and physicians are in frequent contact with youth and as such they need to be aware of the risk for suicide in youth and have tools available to assist them in the assessment of this risk. If the SPS is a good assessment of suicide risk, a physician or school counsellor concerned about a adolescent's depression level could use it in his or her assessment of the youth instead of using an instrument such as the Beck Depression Inventory as the SPS is equally facile to utilize and increases the accuracy of the assessment. In order to give this assessment, these professionals would need to have adequate training on the administration, scoring and interpretation of the instrument as well as be provided with the background in psychology and the risk factors associated with suicide risk.

Recommendations for Future Research

As previously addressed in the limitations section above, it would be beneficial to be able to gather and analyze socioeconomic status information from the adolescents in

secure treatment and see how it compares to current research as it may provide important information regarding supposed ethnic variations in suicidality. It is also important to investigate the different reasons that youth are admitted to secure treatment and perform a comparison analysis on this data, particularly in regards to overall risk, risk to self or risk to others. As this is not necessarily clear in each file, this may be difficult information to obtain. A consistent method for the indication of admittance could be implemented to accommodate this, though may not prove to be realistic in practice as adolescent risk is often too complex to attribute solely to one particular aspect.

The information gathered from this database could be utilized to develop further understanding of adolescent risk in order to prevent risk to self as well as risk to others. Other researchers could easily access the information and gain invaluable insight into the factors that are associated with increased risk in youth. Once a database for information gathered at secure treatment facilities is well established and defined then perhaps an equivalent to the SPS could be developed in order to assess risk to others with equal accuracy and facility or to validate the SAVRY assessment of violence risk in adolescents.

Future research on adolescent risk could benefit by comparing the characteristics of the youth admitted to secure treatment versus those that were not admitted (e.g., comparison of SPS scores, diagnoses etc.). In order to get an even clearer understanding of the relationship between previous attempts and future attempts or completed suicides, a long term follow up of lethality would be indicated. A study looking at recidivism of youth being admitted multiple times would also be interesting in future as some adolescents are readmitted many, many times to secure treatment.

Similar studies to this one conducted in different geographical locations would prove beneficial for comparison of the characteristics specific to region and those generalizable to other youth. A qualitative study involving a more complete analysis of fewer participants would also add much to the study of adolescent suicide and the psychopathologies associated with risk. Unfortunately, considering the age of subjects and also the nature of the youth included in this study, getting permission to do such a study would likely prove prohibitive for future researchers.

Conclusion

This study investigated adolescent suicide risk in secure treatment settings. Specifically, demographic information including age, gender, ethnicity, previous suicide attempts and diagnosis of psychopathology were gathered to illuminate characteristics of these at risk youth. Analyses were performed to examine the relationship between study variables (including age, gender, ethnicity and diagnosis of psychopathology) and also to assess the relationship between study variables that best predicted suicide risk. This study also investigated the utility of Suicide Probability Scale in prediction of youth risk by examining overall suicide risk of the sample, presumed to be high if in agreement with psychological assessment meriting confinement.

Importantly, the diagnoses of adjustment disorder and depression were significantly linked to increased suicide risk in adolescents. Also significantly predictive of suicide risk in this study were gender (females had higher risk scores), age (younger adolescents had higher risk scores) and previous suicide attempts. The diagnosis of parent child relational disorder is an interesting and new link to suicide risk in adolescents as it appears to be missing in current research. Though overall in the moderate risk range, the

sample did not demonstrate significantly severe suicide scores, though this may be due to comprehensive assessment of suicide risk of which SPS scores comprise only part, or youth being admitted to secure treatment due to risk to others.

The under-recognition of suicide risk in youth is a major component to address in the management and prevention of suicidality in adolescents (Hider, 1998). In order to effectively assess suicide risk in adolescents, it is necessary to utilize all means available to determine if the youth demonstrates increased risk. Keeping the risk factors and diagnoses that predict suicide risk in youth in mind during assessment may enable counsellors and psychologists to help lower suicide rates in adolescents. The use of an assessment such as the SPS is also an effective tool in this assessment.

Research in the area of adolescent self-directed harm focuses on understanding the motivations behind suicidal behaviour in an effort to lower its incidence. Nowhere is this concern for reducing suicidality higher than in children and adolescents. "Suicide in adolescents is a particularly poignant challenge to those of us in the helping professions, for it points out far too clearly our inability to help a child who by his own actions has made himself nonexistent" (Sabbath, 1996, p. 186). "For every moment of exuberance in the science ... there is a matching and terrible reality of the deaths themselves: the young deaths, the violent deaths, the unnecessary deaths" (Jamison, 1999, p. 310). It is this sense of a failure to help and the direct exposure to the unnecessary loss of life that motivates those in counselling and other helping professions to keep working towards a clearer understanding of adolescent risk factors for self and other directed harm. This research has hopefully added an important new dimension to the understanding of adolescent risk as well as many essential areas for future research.

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