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Gender Differences in Risk Factors Related to Suicidal Behavior Among Adolescents

Rachel A. Vannatta

GENDER DIFFERENCES IN RISK FACTORS RELATED TO SUICIDAL BEHAVIOR AMONG ADOLESCENTS

by

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ABSTRACT

The purpose of this study was to identify gender differences in self-reported suicidal behavior in relation to risk factors among seventh through twelfth grade students (N=3,461). Data were gathered from the Survey Instrument of Attitude/Behavior administered in a school district located in a medium size Midwest city. Factor analyses reduced the 100 item survey to fifteen independent factors: cigarette use, smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, over-the-counter drug use, school misconduct, academic difficulties, home environment, miscommunication with parents, unfair/strict rules of parents, sexual activity, forcible sex, and violence. The dependent variables were suicidal activity and suicidal tendency. Stepwise forward regression ordered the independent factors in predicting suicidal activity and suicidal tendency for the total, male, and female samples. In addition, logistic regression determined the probabilities of these factors in predicting suicidal tendency for the total, male, and female samples.

The comparison of regression results revealed that the independent factors accounted for more variance in male suicidal activity and tendency than in female suicidal activity and tendency. The stepwise regression results for the males and females displayed similarities in the predictors for suicidal activity. However, gender differences were revealed in the leading predictors for suicidal tendency. Although the leading predictor of school misconduct was the same, the next significant predictors for males were

forcible sex, unfair/strict rules, and home environment, whereas for females they were over-the-counter drug use, unfair/strict rules, and cigarette use.

The comparison of logistic regression results revealed several differences between gender in increasing the predictability of suicidal tendency. The leading factors for males were forcible sex , school misconduct, unfair/strict rules, home environment, over-the-counter drug use, and academic difficulties, while for females the leading factors were over-the-counter drug use, cigarette use, forcible sex, unfair/strict rules, school misconduct, home environment, and miscommunication with parents.

CHAPTER I

INTRODUCTION

In the 1950s the period of adolescence was viewed as the carefree, happy-go-lucky time in one's life—a time full of discovery and fun. However, as American society changed its emphasis from the family to that of materialism, today's adolescent has experienced more stress than at any other time (Hicks, 1990). Thus, in addition to struggling with the transition to adulthood, the adolescent now must do so with minimal family support in a competitive society that offers little security but instead provides an array of escape alternatives, such as television, sex, drugs, alcohol, and suicide (McGovern, 1991; Curran, 1987). While all of these destructive coping behaviors have increased among adolescents in the last thirty years, the most devastating increase has been in teen suicide.

In 1985, suicide was found to be the second leading cause of death among adolescents (Centers for Disease Control, 1985; Blumenthal & Kupfer, 1988). Although the overall suicide rate for the general population has remained stable since 1950, the rate for adolescents aged 15-19 has increased 400%, from 2.7 per 100,000 in 1950 to 11.3 per 100,000 in 1988 (Centers for Disease Control, 1991). In addition, an estimated 50 to 312 suicide attempts occur for every committed suicide, distinguishing adolescents as the most suicidal population (Curran, 1987, p. 15). Yet, within these statistics lie dramatic differences between male and female attempts and completions as males are four times as likely to kill themselves and females are three to nine

times as likely to attempt (Blumenthal & Kupfer, 1990). As these alarming statistics have finally come to public attention, parents, educators, and health professionals seek to develop ways in which to prevent further adolescent suicides. However, critical to the prevention of adolescent suicide is an understanding of the female and male experiences of adolescence and the many emotional demands placed upon both genders during this time.

The period of adolescence is often defined as a time of transition from childhood to adulthood during which one experiences several psychological, physical, and social changes. Erik Erikson's (1964, 1968, 1975) theory of human development has been frequently cited in the explanation of adolescent development as it outlines eight stages of human life: (1) Basic Trust versus Mistrust, (2) Autonomy versus Shame and Doubt, (3) Initiative versus Guilt, (4) Industry versus Inferiority, (5) Identity versus Identity Confusion, (6) Intimacy versus Isolation, (7) Generativity versus Stagnation, and (8) Integrity versus Despair. Each of Erikson's stages focused on a dialectical conflict between two extremes in which the individual must resolve using both psychological and social processes. The stages associated with adolescence were Identity versus Identity Confusion and Intimacy versus Isolation, through which the respective values of fidelity and love emerge. During the fifth stage, adolescents search for their role in life as sexual, responsible, and productive adults. When a sense of personal identity has been fulfilled, the adolescent is then capable of fully engaging in intimate relationships, a level which marks the sixth stage of Erikson's theory, Intimacy versus Isolation. Although the adolescent's capacity for sexual intimacy begins during early adolescence, usually these attempts at intimacy are efforts at defining oneself through another person (Kimmel & Weiner,

1985). Erikson (1968) recognized this tendency to identify oneself through relationships most often in females, however, did not suggest an alternative developmental theory for females (Gilligan, 1982).

In addition to his theory on human development, Erikson (1968) identified the period of adolescence as a time of psychosocial moratorium, a delay granted by society to youth who are unable to make the imminent adult commitments. Erikson (1968) asserted that adolescence is often "characterized by a selective permissiveness on the part of society and of provocative playfulness on the part of the youth" (p. 157). Not experiencing this socially approved period of experimentation and exploration, adolescents may not fully develop their personal identity and thus be incapable of healthy intimate relationships, both of which often lead to a low self-esteem and feelings of alienation (Hafen & Frandsen, 1986).

Since the majority of Erikson's stages were based upon separation and autonomy, Carol Gilligan viewed this theory as inapplicable to female development. Gilligan (1982) believed:

> While for men, identity precedes intimacy and generativity in the optimal cycle of human separation and attachment, for women these tasks seem instead to be fused. Intimacy goes along with identity, as the female comes to know herself as she is known, through her relationships with others. (p. 12)

These differences in how females and males address the adolescent conflicts of identity and intimacy greatly affect each gender's orientation to relationships, anger, stress, and striving for success (deJong, 1992; Gilligan, 1982; Wade, 1987).

Whatever developmental theory is adhered to, most agree that adolescence is a time of growth and change for both males and females. Hafen and Frandsen (1986) viewed these changes in terms of necessary tasks that must be accomplished by the adolescent in order to enter adulthood in a healthy manner, tasks which were identified as: becoming physically sexually mature, developing individuality, forming commitments, gaining separation, forming autonomy, outgrowing types of egocentrism, and reevaluating values. These tasks place a great deal of emotional stress on the adolescent—stress with which the majority of youth are able to cope. One's capability to fulfill these tasks of adolescence is affected not only by one's coping abilities but also by several cultural and social factors. Hafen and Frandsen (1986) have identified three external factors that affect the adolescent's developmental capacity: "the changing structure of families; the weakened tie between children and their parents and the increasing importance of the peer group; and the surrender of major responsibilities to schools, social services, and agencies" (p. 56). Consequently, because youth may lack parental/adult support as well as healthy coping abilities, many choose either to exit from adolescence through suicide or to survive by developing a repertoire of self-destructive coping behaviors, which may then be carried into adulthood (Berman, 1986; Cimbolic & Jobes, 1990).

Although risk-taking behaviors are common throughout the normal development in adolescence, it is important to differentiate between normal transitional risk-taking behaviors and self-destructive behaviors that have no positive consequences (Baumrind, 1987). Many risk-taking behaviors,

> when moderated by an ethic of care and commitment, can be associated with secondary gains such as higher self-confidence, increased stress

> tolerance, and practice in taking initiative. ... Risk-taking becomes destructive when it contributes directly or indirectly to the process of becoming alienated rather than to exploratory and experimental processes that are developmentally normal and preparatory to commitment. (Baumrind, 1987, pp. 99 & 120)

Thus, alienation is a primary outcome of self-destructive risk-taking behaviors. For example, experimentation with alcohol and sex during adolescence has become quite typical; however, if this experimentation becomes habitual and/or begins to cause problems at home, in school or with friends, adolescents may be endangering their physical and emotional health, all of which can lead to alienation.

Social isolation and feelings of alienation have been implicated in many studies as an important factor in suicidality (Farberow, 1991; Curran, 1987, Wenz, 1979; Jacobs, 1971). Wenz (1979) concluded from a study of adolescent suicide attempters that feelings of alienation instigate events that often lead to attempted suicide. He continued in stating that "adolescent attempted suicidal acts are part of an active response to a situation of alienation" (p. 28).

Since alienation is a common feeling associated with suicide, risk-taking behaviors may indicate suicidal tendency in adolescents. In a study on risk-taking behaviors and suicide, Adcock, Nagy, and Simpson (1991) found that "students who are engaging in risk-taking behavior are also at greater risk for depression and suicide" (p. 827). In addition, adolescents who are depressed or suicidal are very likely to express it through risk-taking behaviors (Emery, 1983, p. 251). This strong inter-relationship between risk-taking behaviors, alienation, and depression/suicide is possibly due to the

way in which adolescents exhibit depression, the most prominent symptom of suicidality. Unlike adults whose symptoms of depression are often lethargy, self-isolation, change in appetite, weight, or sleep patterns, depression in the adolescent "is often masked and acted out in ways that look like anything but depression" (Curran, 1987, p. 29). This difference in how depression manifests itself in the adolescent as contrasted with the adult is due to the emphasis in the adolescent culture on socializing. An adolescent is valued by peers for being fun, exciting, and easy-going, attributes that are not congruent with depression. Therefore with the motivation of gaining attention and approval from peers, youth often express depression through actions that are risky and self-destructive yet can sometimes lead to further alienation. Such behaviors are: drug and alcohol abuse, promiscuity, violence, poor academic performance, volatile outbursts, running away, and finally suicide (Curran 1987; Davis & Sandoval, 1991; Farberow, 1991). Consequently, since the most prevalent syndrome of suicidality is depression, youth may be expressing their suicidal feelings through risk-taking behaviors (Adcock et al., 1991; Emery, 1983; Hicks, 1990).

However, several studies have shown that males and females experience and express risk-taking behaviors and suicidality differently, such that "90% of all adolescent attempters are female, while 80% of adolescent suicide completers are male" (Stillion, McDowell & May, 1989, pp. 102-103). The huge discrepancies in attempts and completions for female and male adolescents have been attributed to the sex role socialization that occurs throughout childhood and adolescence. As the developmental process of the male adolescent emphasizes independence, success and strength, the male youth is not encouraged to ask for help or express any relational dependence,

since either would be an indication of weakness. In addition, males are allowed to express this strength and autonomy through aggression (Curran, 1987). Consequently, the adolescent male is more likely to use more aggressive suicide methods not only to increase the likelihood of death but also to avoid the humiliation of such a failure (Stillion et al., 1989).

On the other hand, the female experience of adolescence centers upon relationships, an emphasis that has created the societal expectation of females as dependent and emotional. In order to maintain her femininity, the female is much more likely to express depression through passive behaviors and use more non-lethal methods of suicide as a cry for help rather than as a means of death (Stillion et al., 1989). Therefore,

> Suicidal behavior is for girls more consistent with societal expectations than it is for males. For a teenage boy to attempt suicide he must step further outside the cultural norms and expectations than a female does. They must go more against the cultural grain, so they make fewer attempts. (Curran, 1987, p. 26)

The remainder of Chapter I presents this study in terms of the purpose, significance, research questions, definitions, assumptions, and limitations.

Purpose

The purpose of this study was to investigate gender differences in self-reported suicidal behavior in relation to other risk-taking behaviors as well as family and home background among seventh through twelvth grade students in a school district located in a medium size Midwest city. Specifically, the relationships between adolescents' suicidal behavior and that of substance use, problems in school, home environment, sexual activity, and

violence were investigated. Recognizing the gender behaviors that are likely to be exhibited by suicidal adolescents will assist in the identification and intervention of possible suicide victims as well as aid in the development of suicide prevention programs within schools.

Significance of Study

As long as human life has existed, so has the thought and act of suicide been present. Throughout the centuries suicide has continued to be an unspoken death until the somber statistics could no longer be ignored. Although the twentieth century saw a steady increase in adolescent suicide fatalities, the statistics did not gain public attention until 1985, when suicide became the second leading cause of death among adolescents (Centers for Disease Control, 1985; Blumenthal & Kupfer, 1990). Due to its alarming presence among adolescents, suicide has finally been taken more seriously as many parents, educators, and health professionals attempt to understand and thus prevent adolescent suicide. However, this task has not been easy since male and female adolescents express suicidality differently and often through a variety of risk-taking and self-destructive behaviors. Because risk-taking behavior has become a component of normal adolescent development, differentiating between typical transitional risk-taking behaviors and self-destructive behaviors which have no potential positive consequences is often difficult (Baumrind, 1987). Thus, investigating gender specific behaviors that are strongly related to suicidality is imperative in the prevention of further suicides among adolescents.

The significance of this study relied upon the identification of behaviors that were associated with adolescent suicidal thoughts and attempts—information that will assist parents, educators, and medical

professionals in recognizing and preventing youth who are at-risk of suicide and in creating prevention/education programs on suicide for parents and students.

Research Questions

This study investigated the following research questions.

1. What were the levels of the following risk taking behaviors/factors for the total sample: tobacco use, alcohol use, drug use, school misconduct, academic difficulties, home environment, sexual activity, violence, and suicidal behavior?
2. What risk factors were predictors of suicidal behavior among the total sample, the male sample, and the female sample?
3. What were the differences between the predictors of suicidal behavior for the male and female respondents?

Definitions

For the purpose of this study, the following terms were defined to clarify their meaning in relation to the topic at hand.

Academic Performance: Refers to how well the student is performing academically in classes, such as current grades, being held back a grade, previous course failures.

Adolescents: Males and/or females between the ages of 12-18 years of age.

Alienation: Withdrawal or separation from society and/or family.

Alpha Coefficient: A measure of internal reliability of multiple items and is often referred to as Cronbach's alpha.

Attempted Suicide: Self-inflicted injury with the intent of killing oneself or of gaining assistance.

Children: Males and/or females under the age twelve.

Completed Suicide: A death caused by deliberate actions with the intent to kill oneself.

Eigenvalue: A number used as a criterion to determine the number of factors to extract and the amount of variance accounted for by a given dimension.

Factor Analysis: Method of extracting commonly related characteristics from a larger selected set of measures to reduce the multiplicity of items into factors.

Home Environment: Guardian with whom the adolescent is living, amount of time spent with parents, ability to talk about problems with parents, frequency of getting in trouble at home, and how the adolescent perceives parental rules and parental expectations of, knowledge of, and reaction to adolescent drug and alcohol use.

Ideation: Focusing on thoughts or ideas for an extended period of time.

Individuation: The process of differentiating self from others as a distinct person.

Logistic Regression Analysis: Method to establish odds probabilities of independent dichotomous factors predicting a dependent dichotomous variable.

Multiple Regression Analysis: Method of assessing the effects of more than one independent factor on a single dependent variable.

Risk Behavior: Behavior that entails a chance of loss and no positive consequence. Although some risk behaviors lead to positive

development, unless otherwise identified, reference to risk behaviors will carry a negative connotation.

School Misconduct: Behaviors displayed in the school environment that may lead to negative consequences: poor class attendance, attending class under the influence of drugs or alcohol, little time spent studying, being sent to the principal's office, and little participation in extra-curricular activities.

Self-Concept (Self-Image): The idea, concept, or mental image of oneself in relation to physical and emotional development.

Self-Esteem: The value placed upon one's self-concept.

Sexual Activity: Behaviors regarding the practice of sexual intercourse, such as the number of partners, age of first sexual experience, contraception use.

Stepwise Forward Regression Analysis: Method to prioritize independent factors in order of their ability to contribute to the overall prediction of the dependent variable.

Substance Use: Use involving any type of substance (i.e., alcohol, tobacco, marijuana, and any other drug).

Suicidality (Suicidal Ideation): A state of mind in which one is considering suicide as an alternative to living.

Varimax Rotation: An orthogonal rotation method used in factor analysis to maximize factor loadings and independence of factors.

Violence: Behavior that is destructive of community, persons, and/or property.

Assumptions

The basic assumptions of this study were as follows:

1. The adolescents understood the survey questions and were truthful in their responses.
2. The behaviors/factors of suicide, substance use, problems in school, home environment, sexual activity, and violence were measured adequately and accurately through the survey method.
3. Instructors who administered the survey followed survey procedures as suggested by the school district.

Limitations

For the purpose of this study the adolescent sample was limited to the students who responded to the survey by attending grades seven through twelve for the academic year 1992-1993, in a medium size city located in the upper Midwest on the day the survey was administered. No attempts were taken to survey students who were absent on the day the survey was conducted. In addition, data analysis was limited to the responses gathered from the Survey Instrument on Attitude and Behaviors (SIAB), which was developed by the studied school district.

The following chapter presents a review of the literature related to the history of suicide, adolescent suicide, and the risk factors/behaviors that have been associated with adolescent suicide.

CHAPTER II

REVIEW OF LITERATURE

Chapter II presents the review of literature, which has been divided into the following sections: history of suicide, gender differences in suicide rates, gender differences in adolescent development, gender differences in suicidal behaviors, risk behaviors and factors related to suicide, and summary.

History of Suicide

The act of suicide has been present since the creation of civilization. Throughout the centuries, religious and political organizations have maintained the greatest influence upon society's view of this phenomenon—a view that has oscillated between extreme opposition to even admiration. However, this undulation ceased in 400 A.D. when the Catholic leader, St. Augustine, pronounced suicide as a violation of the Sixth Commandment, "Thou shalt not kill" (Stillion et al., 1989, p. 6-7). This belief was overwhelmingly supported by Christians and non-Christians alike until the 1900s, when the psychology of the human mind was more thoroughly investigated. Throughout the 20th century, society's attitude toward suicide continued to move to a more secular view, based upon psychological theory, which "regarded suicide less as a sin and more as a sign of mental illness" (Stillion et al., 1989, p. 11). Although society's perception of suicide changed,

its reaction to such a death did not, as suicide remained the unspoken death and was frequently concealed to avoid disgrace.

Throughout the first half of this century, such a negative response prevailed as little documentation can be found pertaining to the number of suicides that occurred during this time, such that the National Center for Health Statistics did not find suicide as one of the ten leading causes of death in 1900. "However, by 1950, following significant breakthroughs in disease control ... suicide had by then become the tenth leading cause of death" (Cimbolic & Jobes, 1990, p. 4). Since this time the suicide rate for the general population has remained relatively stable—11.0 per 100,000 in 1950 and 11.5 per 100,000 in 1985 (Cimbolic & Jobes, 1990). However, the suicide rate for adolescents had increased by nearly 400%, from 2.7 per 100,000 in 1950 to 11.3 per 100,000 in 1988 (Centers for Disease Control, 1991). Despite the dramatic rise in suicide fatalities among the adolescent population from 1950 to 1980, the shock of such atrocities did not raise public attention until 1985 when suicide became the second leading cause of death among adolescents (Blumenthal & Kupfer, 1990; Centers for Disease Control, 1985).

Gender Differences in Suicide Rates

However, further scrutiny of these statistics show apparent gender differences in suicide completions and attempts, as "90% of all adolescent attempters are female, while 80% of adolescent suicide completers are male" (Stillion et al., 1989, p. 102). Furthermore, "while both male and female adolescent suicide rates have increased, the rate of increase for males has been more than double the rate of increase for females, thus resulting in a steady growing differential suicide rate among young people" (Stillion et al., 1989, p. 102). In addition, males have also been found to "use more

aggressive methods in their suicide attempts than do females" (Stillion et al., 1989, p. 103), therefore making "males ... more successful than females with every method of committing suicide" (Stillion et al., 1989, p. 103).

To understand such huge gender discrepancies in suicide, one must analyze the gender differences that are experienced throughout adolescence. Four well-documented behavioral differences between male and female adolescents influence these gender differences in adolescence as well as in suicide: attachment (deJong, 1992; Gilligan, 1982; Wade, 1987), success orientation, aggression, and help seeking (McDowell, 1985; Stillion et al., 1989).

Gender Differences in Adolescent Development

Erikson (1964, 1968, 1975) addressed attachment dissolution in the early adolescent conflict of Identity versus Identity Confusion; he then referred to attachment development in the late adolescent conflict of Intimacy versus Isolation. However, he suggested that one must resolve the conflict of identity before addressing the conflict of Intimacy versus Isolation. Thus, Erikson asserted that one must achieve identity before intimacy. Although "Erikson (1950, 1975) acknowledged that this discrete sequence might be blurred for girls and women so that developing identity and intimacy were two inextricable elements of one process for women," he attributed this difference to women's developmental inadequacies (Bush & Simmons, 1981, p. 191). However, Nancy Chodorow (1974) accounts for these gender differences in attachment "to the fact that women, universally, are largely responsible for early child care" (p. 43). "Given that for both sexes the primary caretaker in the first three years of life is typically female, the interpersonal dynamics of gender identity formation are different for boys

and girls" (Gilligan, 1982, p. 7). Since the female identifies with and ultimately experiences more connection with her same sex parent, her identity grows out of this sense of attachment and capacity for nurturance. Therefore the female adolescent, as she strives to relate to the external-object world,just as she did with the external presence of her mother, develops a "stronger basis for experiencing another's needs or feelings as one's own" (Chodorow, 1978, p. 167). Thus the "feminine personality comes to define itself in relation and connection to other people more than [the] masculine personality does" (Chodorow, 1974, p. 43-44). This "female need for connection leads women to emphasize husband, children, and close friendship [i.e., interaction in the private sphere]" (Bush & Simmons, 1981, p. 187-188).

In contrast, because the primary caretaker is of the opposite sex, the formation of a boy's identity is dependent upon the separation from his mother. This "need for separation leads men to the public sphere of the bureaucratically organized workplace" (Bush & Simmons, 1981, p. 187-188). Thus, male adolescents tend to focus more on the public/instrumental sphere of academic and athletic success while female adolescents focus on the domestic/expressive sphere of relationships (Bush & Simmons, 1981). Consequently, this gender difference in attachment has greatly influenced male and female success orientations. Brownmiller (1983) reinforced this belief in stating, "a lack of ambition—or a proposed lack of ambition, or a sacrificial willingness to set personal ambition aside—is virtual proof of the nurturant feminine nature which, if absent, strikes at the guilty heart of femaleness itself" (p. 221). Stillion et al. (1989) similarly asserted that "Striving for success continues to be more a male than a female characteristic

... [and] is often considered to be incompatible with some of the traditionally female characteristics such as nurturance" (p. 103).

Consequently, as women have not only defined themselves through human relationships but also judged themselves on their ability to nurture, men have tended to devalue this capacity to nurture since they emphasize the instrumental components of work and achievement (Gilligan, 1982). As several researchers have concluded that girls tend to have lower self-esteem when compared to boys and that "girls have greater difficulty in coping with this life transition [adolescence] than do boys," many have asserted that this male irreverence of the female relational emphasis is directly related to the female sense of inadequacy (Bush & Simmons, 1981, p. 188; Gilligan, 1982).

These gender differences in attachment and success orientation also influence the dissimilarities in aggression and help seeking behaviors. Curran (1987) asserted that the socialization of adolescents permits girls "fewer outlets for the release of aggression externally ... [such that they] are encouraged to control angry feelings and withhold aggression" (p. 25-26). Curran (1987) also maintained that "females are allowed to cry, feel and manifest sadness, depression, grief ... [and] are encouraged to rely on others, to accept weakness and dependence on external sources of support, to not be strong internally" (p. 26). In contrast, males are encouraged to express anger and aggression toward external objects as Curran (1987) states that "males are encouraged to pull themselves up by their bootstraps ... and to respond to problems with vigor and forthrightness, or at least stoicism" (p. 26).

Gender Differences in Suicidal Behavior

Several researchers have suggested that these differences in attachment, success orientation, aggression, and help seeking behaviors are

directly related to males choosing more lethal methods in attempting suicide and ultimately to a higher completion rate of male suicides as well as to the higher rate of attempts by females (Curran, 1987; deJong, 1992; Hoberman & Garfinkel, 1988; Stillion et al., 1989; Wade, 1987). Stillion et al. (1989) indicated that "Young males may regard unsuccessful suicide attempts as 'failures' and may therefore be more highly motivated to complete the act than females" (p. 103). Hoberman and Garfinkel (1988) ascertained from a sample of completed suicides in children and adolescents that suicide completers were more likely to be older males with an affective disorder or alcohol or drug abuse. Similarly, deJong (1992) found in her study of 126 adolescents that suicidal males "had by far the lowest number of parental, mother, and significant other attachment figures" (p. 370). In a similar study of forty female attempters, Wade (1987) concluded that suicidal females "suffer from separation anxiety, are less individuated, and form more hostile attachments with significant others" (p. 176).

In addition to reviewing the evidence of gender differences in adolescent suicide attempts and completions, a researcher must also examine the risk factors and behaviors that appear to be strongly associated with suicide attempts and completions. Risk factors and behaviors that have been most consistently found related to suicidal adolescents are: substance use, home environment, problems in school, violence, and sexual activity (Brent & Kolko, 1990; Farberow, 1991; Shafii, Carrigan, Whittinghill, & Derrick, 1985).

Risk Behaviors and Factors Related to Suicide

Several recently conducted studies have shown a strong relationship between suicidal adolescents and substance use/abuse (Brent & Kolko, 1990;

Crumley, 1990; Shafii et al., 1985). Brent and Kolko (1990) determined in a study of suicide completers that "substance abuse was found in more than one-third of youthful suicide victims" (p. 258). A study by Shafii et al. (1985) noted that 70% of suicide victims also abuse drugs and alcohol. A retrospective study on 229 suicide victims in Minnesota from 1977 to 1985 conducted by Hoberman and Garfinkel (1988) concluded that 22% of suicide victims were either alcohol or drug abusers. They also noted that 45% of the studied population showed evidence of alcohol or drug abuse at the time of death. Studying 64 consecutively hospitalized suicidal adolescents, Robbins and Alessi (1985) found that "substance abuse in a depressed adolescent appears to both increase the risk of multiple attempts and add to the risk of medically serious attempts" (p. 589).

Data collected through self-reported surveys have also yielded similar finding. Gover (1991) discovered in a survey of 456 adolescents that 75.51% of the sample's attempters used alcohol, while 54.17% admitted to getting drunk regularly. In addition, Felts, Chenier, and Barnes (1992) determined from a statewide random sample of 3,064 ninth through twelfth graders that the "use of cocaine/crack, alcohol, or marijuana was significantly related to a student's report of seriously thinking about attempting suicide or making specific suicide plans" (p. 872).

Gender differences have also been found in the relationship between substance abuse and suicidality. In a study sample of 424 students eighteen to nineteen years of age, Levy and Deykin (1989) concluded that "the presence of substance abuse appeared to result in a dramatically higher rate of suicidal ideation for men over that of women" (p. 1465). Similarly, Shaffer, Garland, Gould, Fisher, and Trautman (1988) determined after a study of 104

suicide victims in New York City that 37% of males and 5% of females were abusing chemicals. They also asserted that substance abuse was the third leading risk factor for suicide in males, following previous attempts and major depression; whereas substance abuse was fourth for females, following previous attempts, major depression, and anti-social behavior. A study of adolescents by Harlow, Newcomb, and Bentler (1986) concluded that "men may turn more automatically to drugs in response to psychic discomfort than women; whereas women may turn more automatically to suicidal thoughts given psychic discomfort" (p.18). Harlow et al. (1986) further asserted this to be the reason "why others have found that women tend to have more frequent suicidal ideation than men, and males more often use drugs than do females" (p. 18).

Another risk factor that has been highly related to suicidal adolescents is a problematic home environment. In a study of a group of twenty suicide victims compared to a control group, Shafii et al. (1985), concluded that the factors of emotional problems, parental absence, physical and/or emotional abuse, and suicidal tendency significantly influenced a vulnerable youth to commit suicide. Studying 108 adolescent suicide attempters, Tischler, McHenry, and Morgan (1981) found that 52% cited family problems as a precipitating event and 50% reported that at least one of their parents had been divorced. From her study of 126 late adolescents, deJong (1992) determined that those with a history of suicidality experienced unhealthy relationships with parents as these adolescents had exhibited "the least degree of individuation in their current relationships with parents, as well as the highest incidence of parental, mother, and significant-other emotional unavailability while growing up" (p. 368). Similarly, Gover (1991) discovered

that 85% of suicide attempters reported feelings of alienation from family. In addition, 61% expressed conflict with stepfathers and 51% revealed domestic violence was present in their home. To summarize, several studies have consistently confirmed three family stressors in suicide attempters: changing family composition, such as divorce or death; family violence (i.e., physical and sexual abuse); and family depression in which parents experience depression and/or suicidal tendency (Garfinkel, Froese, & Hood, 1982; Kosky, 1983; Myers, Burke, & McCauley, 1985; Pfeffer, 1991; Pfeffer, Plutchik, & Mizruchi, 1983).

Another home-related behavior that has been associated with suicidal adolescents is the act of running away from home. Since running away is generally indicative of problems at home, running away is often times an adolescent's first attempt to escape from this plight; when this solution does not work, the adolescent may turn next to suicide. Robins (1989), in a study to identify suicide attempters, found that asking adolescents if they had ever run away from home assisted most in the identification of suicide attempters. In addition, Shaffer and Caton (1984) discovered that 33% of all runaway youth seeking help from a New York City shelter had seriously considered suicide and that 33% of females and 15% of males had attempted.

Experiencing problems in school has also been associated with adolescent suicide attempters and completers. A number of investigators have found that school failure and retention are highly related to adolescent attempters and completers. Shafii and Shafii (1982) reported that school failure was a marked characteristic of adolescent suicide attempters. Barter, Swaback, and Todd (1968) noted that 78% of attempters were performing poorly in school, while Hawton, O'Grady, Osborn, and Cole (1982) found 58%

and Garfinkel and Golombek (1983) reported 35% to 38%. Garfinkel and Golombek (1983) also indicated that more than half of attempters were failing school or were dropouts. Studies by Shaffer (1974) and Myers et al. (1985) reported students who have been identified as learning disabled more often attempt or complete suicide.

Another characteristic of suicidal adolescents is school misconduct. Shaffer (1974) found that the most frequently reported precipitant of an attempt was a disciplinary crisis at school, which occurred in 31% of his cases. Rohn, Sarles, Kenney, Reynolds, and Heald (1977) reported a similar finding of 35% of attempters experiencing disciplinary problems. Barter et al. (1968) determined that 78% of suicide attempters were experiencing disciplinary actions; they also noted that truancy was also a problem in suicidal adolescents. White (1974) found disciplinary problems to more likely occur in younger adolescents than older. Frances and Blumenthal (1991), in reviewing several studies that have noted conduct disorder as highly associated with suicide attempts, state, "Conduct disorder is much more common among male suicide victims, and the precipitating event for the episode is often a disciplinary crisis" (p. 146).

Somewhat similar to disciplinary problems in school are illegal, violent behaviors, which have also been associated with suicide attempters and completers. Violence is often seen as antisocial behavior since it is frequently instigated by aggression and hostility and may lead to time in juvenile homes. Paulson, Stone, and Sposto (1978) noted that internalized hate and anger as well as acts of violence toward family members and peers were consistently found in hospitalized suicidal children. Smith (1983), when comparing suicidal teens to suicidal adults, discovered that the teens were

more likely to express anger through overt violent behavior than adults. Shafii et al. (1985) noted that antisocial behavior such as involvement with the police, fire-setting, shoplifting, school disciplinary problems, fighting, drug selling, and prostitution were present significantly more in the suicidal group than in the non-suicidal group. Alessi, McManus, Brickman, and Grapentine (1984) indicated in a study of seriously suicidal juvenile delinquents that 63% committed one or more violent felonies and 31% had a history of assaultive behavior. In addition, Rosenberg and Latimer (1966) noted that male suicide attempters were more likely to display illegal acts such as stealing, destructiveness, and defiance of authority than girls.

Little evidence has been discovered concerning the relationship between adolescent attempters and completers and their sexual behavior. However, in a major statewide study of 3,803 adolescents, Adcock et al. (1991) found that both males and females who engaged in sexual activity and consumed alcohol in the past month were at greater risk of attempting suicide than those who abstained from both behaviors. In addition, Rosenberg and Latimer (1966) found that suicidal girls were more likely to display patterns of sexual delinquency than boys.

Summary

Several studies in the last twenty years have found suicide attempts and completions related to the following risk factors: substance abuse, problematic home environment, problems in school, violence, and sexual activity. Just as gender differences are present in the number of suicide attempts and completions, so are they present in how males and females experience these risk factors related to adolescent suicidal behavior. Many studies have found that suicidal males are more likely to display actions of

substance abuse, school misconduct and violence, while suicidal females are more likely to run away and be sexually promiscuous (Frances & Blumenthal, 1991; Harlow et al., 1986; Levy & Deykin, 1989; Robins, 1989; Rosenberg & Latimer, 1966; Shaffer & Caton, 1984; Shaffer et al., 1988).

Similarly, this study investigated the gender differences in risk factors related to suicidal behaviors among adolescents in a medium size Midwestern school district. The following chapter presents the description of the instrument and methodology utilized in this study's data collection process.

CHAPTER III

PROCEDURES

Chapter III presents the procedures utilized in this study: description of instrument, data measurement and collection, and data analysis.

Description of Instrument

The Survey Instrument on Attitude and Behavior (SIAB) was developed by a midwestern school district located in a medium size community. The studied district elicited participation from its three junior high and two high schools, totaling a population of approximately 4,100 adolescent students. The SIAB was administered to fulfill a funding requirement of the Drug-Free Schools and Community Act mandated by the State Department of Education. This state mandate required all funding recipients to assess the level of drug and alcohol usage among local adolescents. Although the state department had developed several surveys to obtain this information, the studied school district desired a broader instrument that would produce information regarding several risk-taking behaviors among the district's adolescents. Therefore, this district set into motion a one year process of developing a broader instrument to measure risk-taking behaviors of adolescents.

A survey development committee was created to represent a cross-section of the district's faculty and staff. The state department provided this committee with assistance and guidance through the educational laboratory of McRel. In addition, McRel furnished the survey development committee

with several other similar survey instruments from which to follow. When the survey was completed, the district piloted it with approximately 150 sixth grade students, after which students were interviewed to obtain information regarding the readability of the instrument and possible changes to be implemented. After this pilot study, the survey development committee concluded that the SIAB was at approximately a sixth grade reading level, was adequate in form and content, and did not require any major revisions.

The Survey Instrument on Attitude and Behavior (Appendix A) contained one-hundred multiple choice questions, which can be divided into six categories: substance use, problems in school, home environment, sexual activity, violence, and suicidal behavior. The demographics of gender, grade, race, and school were obtained through pre-survey items. Because several questions addressed two categories at a time, overlap among the categories occurred. An example of overlapping occurs in survey item 56, which addressed the categories of alcohol and school in the question, "During the past 30 days, how many times did you drink in school?"

Seventy-one of the survey items addressed the category of substance use, with specific reference to: cigarettes, smokeless tobacco, alcohol, marijuana, non-prescription inhalants, cocaine, crack, steroids, another person's prescription drugs, over-the-counter drugs, and acid. Questions 11-47, 61, 67-70, and 72-75 measured adolescents' inception of use, frequency of use in life, frequency of use in the past thirty days, source of chemicals, amount consumed at a single time, friends with whom usage occurs, and availability of the previously stated substances. Behavior while under the influence of alcohol or any other drug was evaluated in items 48, 54-60, and 95. Questions 62-66, 71, and 79 measured the adolescent's perception of

parents' knowledge of and reaction to adolescent drug/alcohol use, while questions 77, 78, and 84 measured the adolescent's perceptions of the school policy, enforcement of, and services for student drug use. The adolescent's perception of personal use of chemicals as well as use by other adolescents was revealed in items 76, 82, and 83.

The category of problems in school was addressed in twelve questions: 3, 4, 6, 8, 9, 48, 53, and 56-60. These questions assessed not only the student's academic performance, such as grades received and grade levels repeated, but also behaviors related to the school environment, such as truancy, attending class while under the influence of alcohol or marijuana, getting in trouble at school, and time spent on homework and in extra-curricular activities.

The category of home environment was addressed in sixteen questions: 1, 2, 5, 10, 50, 62-67, 71, 79-81, and 97. These questions rendered information regarding the adolescent's living situation, time spent with parents, perceptions of parents' knowledge and reaction to adolescent drug use, communication with parents, and frequency of running away.

Sexual activity was measured in ten questions, 90-99, which addressed such areas as: the age of first experiencing of sexual intercourse, the number of sexual partners, protection used during intercourse, frequency of drinking before sexual intercourse, the occurrence of being forced to have intercourse or experiencing incest, and the occurrence of pregnancy.

Acts of violence, such as the destruction of property, physically fighting, and carrying a weapon to school, were measured in questions 49, 51, 52, and 85. Suicidal considerations, plans, and attempts during the past thirty days were assessed in questions 87-89.

Since the purpose of the SIAB was to obtain a district-wide picture of the attitudes and behaviors concerning risk-taking behaviors among adolescents, all seventh through twelfth grade students were asked to participate in the survey. Parental consent was passively obtained when parents did not communicate their disapproval of participating in the survey to the respective school administration after receiving notification of the purpose and intent of the survey through several school newsletters. Both parents and students were assured anonymity in that the SIAB would not elicit identifiable information in any way.

Obtaining information from any population requires consideration of the truthfulness in the responses. However, truthfulness among the population of adolescents must be carefully weighed. Because adolescence is a time of developing one's decision-making abilities and autonomy, the adolescent may express one's independence through rebellious behavior, behavior that can take the form of untruthful responses. Mensch and Kandel (1988) have found that adolescents are more likely to answer dishonestly when asked to reveal personal involvement in socially disapproved behaviors in contrast to disclosing involvement in socially acceptable behaviors. They attribute this deceitfulness to the adolescent's perceived threat of acknowledging participation in socially unacceptable behaviors. McAllister and Makkai (1991) believe that providing complete anonymity for the adolescent respondent is critical to dispelling the adolescent's fear in responding truthfully.

In the attempt to alleviate adolescents' fear of acknowledging involvement in risk-taking behaviors, great lengths were taken in administering the SIAB to provide complete anonymity to all SIAB

participants (i.e., no identifiable information was elicited from participants). Students placed completed survey forms in a manila envelope. Therefore, for the purposes of this study, truthfulness was assumed in the adolescent's responses. However, attempts were undertaken to identify exaggerated and inconsistent response patterns, in order to eliminate these respondents from the data analysis. Twenty-three surveys were dismissed for obviously ridiculous response patterns. In addition, another 40 surveys were eliminated due to a large number of missing responses, leaving a total of 3,398 surveys for analysis.

Data Measurement and Collection

In March 1993, copies of the Survey Instrument of Attitudes and Behaviors were sent to all principals of schools that contained any students from seventh through twelfth grade in the studied district. In addition to the surveys, a handout of instructions was enclosed to assist teachers in conducting the survey (Appendix B). English instructors were chosen to administer the survey, since all students were enrolled in an English class. Principals of the individual schools were given the autonomy to decide upon the time and place the survey would be given.

The SIAB was administered throughout March of 1993 in conjunction with the Survey Instrument of Knowledge of Alcohol & Other Drugs, also developed by the studied district. Both surveys were given over a two day period under the same instructions. To assist the district in obtaining valid results, the English teachers were asked to set a serious tone in the classroom by reading several directions to the students prior to taking the survey. After receiving #2 pencils, survey booklets, and NCS forms, students were told the district's purpose in administering the survey and were

reminded that the following assessment would not be timed and that no identifiable information would be revealed through participating in the survey. Students were asked to follow along in their survey booklet while an instructor read the survey directions. The instructor guided the students through the pre-survey questions concerning the demographics of gender, grade, race, and school. Upon completion of these items, students were told to use the provided #2 pencil when blackening circles, to erase stray markings, to not write one's name on the survey booklet or NCS form, to raise a hand to ask questions, and to mark only one response for each question.

Having completed the survey, each participant placed the survey's NCS form in a manila envelope that had been set in the back of the classroom. After collecting all of the manila envelopes containing surveys from instructors, the building principals sent the envelopes to the district's assistant superintendent, who then forwarded the surveys to the Bureau of Educational Services and Applied Research at the University of North Dakota for processing and analysis. The Bureau processed 3,438 surveys.

Data Analysis

To provide frequencies and percentages of responses for individual items on the survey, a descriptive analysis was conducted. Suicidal activity and suicidal tendency were the dependent variables, while the independent variables were: tobacco use, alcohol use, drug use, school misconduct, academic difficulties, home environment, sexual activity, and violence. A factor analysis determined which items were interrelated and could thus be grouped into independent factors. Multiple regression examined which independent factors were significantly related to suicidal activity and suicidal tendency for the total sample, the male sample, and the female sample.

Stepwise forward regression prioritized the independent factors in order of their ability to contribute to the prediction of suicidal activity and suicidal tendency for the total sample, the male sample, and the female sample. Logistic regression established odds probabilities of each significant factor predicting suicidal tendency for the total sample, the male sample, and the female sample.

Chapter IV presents a further description of these analyses and the results that were produced. In addition, the studied sample is described in terms of demographics and risk behaviors and factors.

CHAPTER IV

RESULTS

The purpose of this study was to investigate gender differences in self-reported suicidal behavior in relation to other risk-taking behaviors as well as risk factors among seventh through twelfth grade students in a school district located in a medium-size Midwest city. This chapter contains the following sections: a description of the sample in terms of demographics, risk behaviors and factors; the factor analyses to establish the independent variables; and the multiple regression analyses to investigate predictors of suicidal behavior. For the purposes of this study, statistical significance was set at the .01 level.

Description of Sample

This study utilized data collected from the Survey Instrument of Attitude and Behavior (SIAB), developed by and administered in a Midwest school district of medium size. Of this district's 4,100 enrolled seventh through twelfth grade students, 3,461 completed the survey. Prior to any data analysis, twenty-three surveys were dismissed for containing exaggerated or ridiculous responses, leaving a total of 3,438. However, during the statistical analyses, forty surveys were eliminated for containing a significant number of missing responses, leaving 3,398 student surveys for analysis. Student demographic information for this sample is presented in Table 1. Grade size ranged from 453 students in twelfth grade to 696 students in seventh grade. Female respondents numbered 1,672 (49%)

Table 1

Demographic Information on Grade, Gender, Ethnicity, and Guardian for Survey Respondents (N=3,438)

Characteristics	N	%
Grade		
7th	696	20.3
8th	616	17.9
9th	598	17.4
10th	546	15.9
11th	522	15.2
12th	453	13.2
Gender		
Male	1738	51.0
Female	1672	49.0
Ethnicity		
Caucasian	2950	86.2
Native American	114	3.3
Black	85	2.5
Hispanic	85	2.5
Asian	78	2.3
Other	103	3.0
Guardian		
Both parents	2275	66.3
Mother only	436	12.7
Father only	95	2.8
Mother & Stepfather	354	10.3
Father & Stepmother	98	2.9
Guardian/Foster parents	54	1.6
Other	118	3.4

compared to 1,738 males (51%). The majority (86.2%) of the sample was Caucasian with Native American (3.3%), Black (2.5%), Hispanic (2.5%), Asian (2.3%), and "other" (3.0%) representing the remainder of the sample. In addition, the majority (66.3%) of respondents lived with both parents, while (12.7%) lived with mother only and (10.3%) lived with mother and stepfather.

Behaviors and factors analyzed in this study include tobacco, alcohol, and drug use; school misconduct; academic difficulties; home environment; sexual activity; and violence. The results of the items measuring some of these behaviors are presented in Tables 2 through 9. Table 2 presents the frequency and percentage of respondents using substances in the past 30 days. Alcohol was the most commonly used substance by the respondents, since 40.8% reported using it in the past 30 days. Cigarettes (32.4%) were the second most commonly used substance, while 15.3% of students used chewing tobacco. Approximately 15.4% of the sample used marijuana,

Table 2

Frequency and Percentage of Students Using Substances in the Past 30 Days

Substance	Frequency	%
Cigarettes	1113	32.4
Smokeless Tobacco	525	15.3
Alcohol	1392	40.8
Marijuana	526	15.4
Inhalants	264	7.7
Cocaine	233	6.8
Crack	233	5.8
Steroids	179	5.4
Prescription Drugs	356	10.4
Over-the-Counter Drugs	878	25.4
Acid	315	9.3

and 7.7% used inhalants. Percentages for hard drug use were: cocaine (6.8%), crack (5.8%), and acid (9.3%). Use of another person's prescription drugs and steroids were 10.4% and 5.4%, respectively. Over one fourth (25.4%) of all students reported using over-the-counter drugs.

Table 3 through Table 5 address students' sexual activity with respect to age of first having sexual intercourse, number of times forced to have sexual intercourse, and number of intercourse partners in life. For most of the sexually active respondents, the age of first having sexual intercourse was under 12 years (9.6%) (Table 3). Approximately 9% reported being forced to have sexual intercourse in the past 30 days (Table 4). Approximately 43% of respondents reported having sexual intercourse. Most sexually active students reported having only one intercourse partner in life (14.2% of total sample); however, 10.7% indicated six or more partners in life (Table 5).

Table 3

Frequency and Percentage of Students by Age of First Having Sexual Intercourse

Age	Frequency	%
Never	1968	57.6
Under 12	327	9.6
12	159	4.7
13	200	5.9
14	227	6.6
15	244	7.1
16	194	5.7
17 or older	96	2.8

Table 4

Frequency and Percentage of Students by the Number of Times Forced to Have Sexual Intercourse in the Past 30 Days

# of Times	Frequency	%
Never	3040	88.9
Once	132	3.9
Twice	48	1.4
3-5	30	.9
6-9	14	.4
10 or more	76	2.2

Table 5

Frequency and Percentage of Students by Number of Sexual Intercourse Partners

# of Partners	Frequency	%
Never	1941	56.8
One	485	14.2
Two	242	7.1
Three	190	5.6
Four	107	3.1
Five	81	2.4
Six or more	364	10.7

As an indicator of satisfaction with home environment, frequency of running away from home was also measured (Table 6). Nearly 13% of respondents ran away from home in the last twelve months; 7.3% ran away once or twice.

Table 6

Frequency and Percentage of Students by Number of Times of Running Away From Home in the Past 12 Months

# of Times	Frequency	%
Never	2991	87.2
Once or twice	250	7.3
3-5	69	2.0
6-10	31	.9
11 or more	87	2.5

The results of items related to violence are presented in Tables 7 through 9. Within the past 30 days, approximately 12% of students were in trouble with the law; 5.1% reported having been in trouble once while 2.7% were in trouble more than 10 times (Table 7).

Table 7

Frequency and Percentage of Students by Number of Times in Trouble with the Law in the Past 30 Days

Number of Times	Frequency	%
Never	3018	88.2
Once	175	5.1
Twice	63	1.8
3-5	55	1.6
6-9	19	0.6
10 or more	91	2.7

The responses to the frequency of physically fighting indicated that nearly 25% of the respondents fought at least once in the past 30 days (Table 8). In addition, 20.6% of students reported having carried a weapon to school at some point in time (Table 9).

Table 8

Frequency and Percentage of Students by Number of Times Physically Fought in the Past 30 Days

Number of Times	Frequency	%
Never	2576	75.1
Once	369	10.8
Twice	161	4.7
3-5	112	3.3
6-9	60	1.7
10 or more	151	4.4

Table 9

Frequency and Percentage of Students Who Have Ever Carried a Weapon to School

	Frequency	%
Yes	706	20.6
No	2689	78.9

Suicidal behavior was measured in three survey items in terms of considering suicide, planning suicide, and attempting suicide in the past 30 days. The percentage of males and females by grade level who have considered suicide are reported in Table 10. Approximately 21% of all

Table 10

Percentage of Males and Females by Grade Level by the Number of Times Considered Suicide in the Past 30 Days

Frequency	7th	8th	9th	10th	11th	12th
Never	79.6	82.4	79.1	84.0	83.8	86.7
	82.3	**68.1**	**66.9**	**73.5**	**77.4**	**79.6**
Once	8.6	6.4	9.4	7.8	5.7	5.4
	7.6	**13.4**	**14.4**	**14.8**	**12.8**	**12.3**
Twice	4.1	2.7	2.4	2.1	3.0	1.7
	3.4	**5.1**	**6.4**	**7.6**	**4.3**	**1.9**
3-5	1.7	0.7	2.1	1.8	2.3	2.1
	3.1	**4.5**	**6.0**	**1.9**	**4.3**	**1.9**
6-9	0.8	0.3	1.7	0.0	0.8	0.0
	0.9	**1.3**	**2.0**	**0.4**	**0.4**	**1.4**
10 or More	4.4	6.1	4.5	4.3	0.8	0.8
	2.4	**6.4**	**3.7**	**1.5**	**0.0**	**0.0**

*Bold face text indicates percentage for female sample.

seventh through twelfth grade students considered attempting suicide in the past 30 days. In general, female respondents thought of attempting suicide more than males, since over 25% of females considered suicide compared to 17% of males. With respect to grade level, ninth grade males and females considered suicide the most often as 20.1% of males and 32.5% of females at this grade level considered suicide at least once. Eighth grade was the next highest grade level in considering suicide; 16.2% of males and 30.7% of females in this grade level thought of attempting suicide at least once.

Frequencies and percentage of males and females who planned suicide in the last 30 days are reported in Table 11. Overall, slightly more females (15%) planned suicide than males (13.5%). In terms of grade level, seventh grade males (16.6%) reported the highest percentage of planning suicide at least once in the past 30 days. For females, eighth grade appears to be a critical year, as 23.4% in this grade level planned a suicide attempt at least once in the past 30 days. For both males and females, the percentage of those who plan suicide consistently diminishes after these peak years of the respective seventh and eighth grades.

Table 11

Percentage of Males and Females by Grade Level by the Number of Times Planned Suicide in the Past 30 Days

Frequency	7th	8th	9th	10th	11th	12th
Never	82.6 **87.5**	86.1 **76.0**	85.4 **79.6**	85.5 **87.5**	89.4 **90.7**	90.0 **89.1**
Once	7.7 **5.2**	4.7 **10.9**	5.9 **10.0**	8.5 **6.8**	3.8 **5.1**	2.5 **5.7**
Twice	1.7 **2.8**	1.0 **5.1**	2.1 **4.7**	1.1 **2.7**	2.3 **1.9**	1.7 **1.9**
3-5	1.7 **0.9**	1.4 **2.6**	1.4 **3.3**	1.1 **1.5**	0.8 **1.9**	1.7 **1.4**
6-9	1.1 **0.6**	0.3 **1.0**	1.0 **0.7**	0.4 **0.8**	0.8 **0.4**	0.8 **1.4**
10 or More	4.4 **2.4**	5.4 **3.8**	3.8 **1.3**	3.2 **0.4**	1.9 **0.0**	3.3 **0.5**

*Bold face text indicates percentage for female sample.

Respondents' reports of actual suicide attempts are presented in Table 12 in terms of frequencies and percentage of the sample. Of the total sample, males (9.6%) attempted suicide more than females (7.6%). The eighth grade contains the greatest percentage of attempters as 7.2% of males and 10.2% of females indicated an attempt of at least once in the past 30 days. After eighth grade, the percentage of male and female respondents reporting an attempted suicide generally decreases. Twelfth grade females reported the lowest percentage of attempters at 2.9%.

Table 12

Percentage of Males and Females by Grade Level by the Number of Times Attempted Suicide in the Past 30 Days

Frequency	7th	8th	9th	10th	11th	12th
Never	85.9	88.2	90.6	93.3	91.7	92.9
	90.2	**86.6**	**88.0**	**95.8**	**96.5**	**97.2**
Once	6.4	3.4	1.7	2.5	4.2	2.5
	4.6	**6.1**	**6.4**	**3.4**	**1.9**	**1.4**
Twice	1.1	1.4	2.1	1.4	0.0	0.0
	2.4	**2.2**	**3.3**	**0.4**	**0.8**	**0.5**
3-5	2.5	1.0	1.4	0.4	0.0	1.2
	0.6	**1.3**	**0.7**	**0.0**	**0.4**	**0.0**
6-9	0.6	0.0	0.7	2.5	0.8	0.4
	0.3	**0.3**	**1.0**	**0.0**	**0.0**	**0.5**
10 or More	2.8	1.4	3.1	0.0	2.6	2.9
	1.2	**0.3**	**0.3**	**0.4**	**0.4**	**0.5**

*Bold face text indicates percentage of female sample.

Results of Factor Analyses

Factor analysis was used to reduce the multiplicity of items on the SIAB to fewer variables or factors. The process of factor analysis extracts commonly related variables to create factors from a larger selected set of measures. Since the SIAB items were considered a sample of variables from all possible variables in the universe, alpha factoring was applied (Kim & Mueller, 1978). A minimum eigenvalue of one was considered critical for a factor to be included in this study. The method of Varimax, an orthogonal rotation method, was utilized to maximize factor loadings and independence of factors. This process produced 15 independent factors.

After a content analysis of the survey items, 79 items were placed into the content categories of tobacco, alcohol, drugs, school, home, sexual activity, and violence. A factor analysis of items in each category then created the following 15 independent unidirectional factors: cigarette use, smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, over-the-counter drug use, school misconduct, academic difficulties, home environment, miscommunication with parents, unfair/strict rules, sexual activity, forcible sex, and violence. The results for these factors are presented in Tables 13 to 19. High factor loadings on an item indicate high frequency of behavior or belief.

Table 13 presents the results of the factor analysis of the six tobacco-related items. Two factors were extracted: cigarette use and smokeless tobacco use. The first factor, cigarette use, contained three items which address frequency of smoking cigarettes in life and in the past 30 days as well as the starting age of smoking. Frequency of smoking during life produced the highest factor loading; the factor loadings range from .66 to .97. The

Table 13

Varimax Factor Loadings and Alpha Coefficients for Tobacco Related Items

Item #	Item Description	Loading
Independent Factor 1: Cigarette Use		
22	Life frequency of smoking	.97
33	30 day frequency of smoking	.81
11	Age of first time smoking	.66
Coefficient Alpha = .8270		
Independent Factor 2: Smokeless Tobacco		
23	Life frequency of chewing	.95
34	30 day frequency of chewing	.82
12	Starting age of chewing	.68
Coefficient Alpha = .7903		

internal consistency of these items was tested by computing coefficient alpha (Kim & Mueller, 1978). The alpha coefficient for Factor 1 was .8279. Factor 2, smokeless tobacco, contained three items which pertain to starting age, and frequencies during life and the last 30 days of using smokeless tobacco. Life frequency was again the item with the highest factor loading; factor loadings ranged from .68 to .95. The alpha coefficient for reliability of this factor was .7903. A factor analysis of the 15 alcohol-related items also generated two factors (Table 14). Factor 3, alcohol use, included eight items which generally refer to: trying to quit drinking, drinking regardless of consequences, amount drinking in one sitting, and frequencies and starting age of drinking. The item pertaining to trying to quit drinking received the

Table 14

Varimax Factor Loadings and Alpha Coefficients for Alcohol Related Items

Item #	Item Description	Loading
Independent Factor 3: Alcohol Use		
76	Tried to quit drinking	.84
64	Drink regardless of consequences	.83
45	Amount drank at one time	.81
82	Self-belief to drink too much	.79
69	Frequency of getting drunk	.78
24	Life frequency of drinking	.74
13	Starting age of drinking	.65
35	30 day frequency of drinking	.64
Coefficient Alpha = .9058		
Independent Factor 4: Behaviors While Using Alcohol		
56	30 day freq. of drinking in school	.82
57	30 day freq. of being drunk in school	.81
55	30 day freq. of driving while drinking	.74
54	30 day freq. of riding w/drunk driver	.62
95	Freq. of drinking before intercourse	.53
Coefficient Alpha = .8678		

highest factor loading. Factor loadings ranged from .64 to .84. Coefficient alpha for this factor was calculated as .9058. Factor 4, alcohol behavior, contained five items that pertain to behaviors while drinking alcohol, such as drinking and driving, drinking in school, drinking before sexual intercourse. The behavior of drinking in school in the past 30 days was entered with the highest factor loading. Factor loadings ranged from .53 to .82. The alpha coefficient for this factor was .8678.

Of the 23 items related to drug use, the factor analysis identified three Varimax rotation factors: hard drug use, marijuana use, and over-the-counter drug use (Table 15). Factor 5, hard drug use, included 18 items related to the starting age, life, and 30 day frequencies of cocaine, crack, acid, steroids, inhalants, and another person's prescription drug use. The 30 day frequency of crack use received the highest factor loading. Loadings for the 18 items ranged from .31 to .83. The alpha coefficient for this factor was computed at .9498. Factor 6, marijuana use, contained five items which refer to starting age, life, and 30 day frequencies of marijuana use. Frequency of getting stoned received the highest factor loading. Factor loadings ranged from .67 to .84. Coefficient alpha for this factor was .8858. The final drug factor, Factor 7, labeled over-the-counter drug use, included three items relating to the starting age, life, and 30 day frequencies of this type of drug. This reliability coefficient was calculated at .7371. Life frequency of use produced the highest loading. Factor loadings ranged from .71 to .79. For all of these substance related factors, high factor loadings indicate frequent or heavy use of the respective substance among respondents.

Table 16 presents the eight school-related items, from which a factor analysis determined two factors. Factor 8, school misconduct, included five items referring to skipping school, getting in trouble at school, hours without parental supervision, hours spent working, and bringing a weapon to school. The alpha coefficient for this factor was computed at .6209. Skipping school had the highest factor loading. Factor loadings ranged from .32 to .66. A high score on this factor denotes high frequency of such behaviors among respondents. The remaining three school-related items refer to academic difficulties, such as grades earned last year, hours spent per week on

Table 15

Varimax Factor Loadings and Alpha Coefficients for Drug Related Items

Item #	Item Description	Loading
Independent Factor 5: Hard Drug Use		
39	30 day freq. of crack	.83
28	Life freq. of crack	.83
29	Life freq. of steroids	.78
40	30 day freq. of steroids	.78
38	30 day freq. of cocaine	.77
17	Starting age of crack	.74
37	30 day freq. of inhalants	.73
18	Starting age of steroids	.71
27	Life freq. of cocaine	.71
41	30 day freq. of another's pres. drugs	.67
30	Life freq. of another's pres. drugs	.66
43	30 day freq. of acid	.66
26	Life freq. of inhalants	.65
16	Starting age of cocaine	.65
32	Life freq. of acid	.63
15	Starting age of inhalants	.49
19	Starting age of another's pres. drugs	.47
68	Life freq. of injecting illegal drugs	.32
Coefficient Alpha = .9498		
Independent Factor 6: Marijuana Use		
70	Freq. of getting stoned	.84
25	Life freq. of marijuana	.84
36	30 day freq. of marijuana	.78
59	30 day freq. of stoned in school	.72
14	Starting age of marijuana	.67
Coefficient Alpha = .8858		
Independent Factor 7: Over-the-Counter Drug Use		
31	Life freq. of over-the-counter drugs	.78
20	Starting age of over-the-counter	.73
42	30 day freq. of over-the-counter	.71
Coefficient Alpha = .7371		

Table 16

Varimax Factor Loadings and Alpha Coefficients for School Related Items

Item #	Item Description	Loading
Independent Factor 8: School Misconduct		
6	4 wk. freq. of skipping school	.66
53	30 day freq. of getting in trouble/sch.	.60
10	Hours/day w/o parental supervision	.56
85	Brought a weapon to school	.48
7	Hours/week working at a job	.32
Coefficient Alpha = .6209		
Independent Factor 9: Academic Difficulties		
3	Grades earned last year	.63
8	Hours/wk spent on homework	.41
9	Hours/wk spent on extra-curricular	.41
Coefficient Alpha = .4563		

homework, and hours spent in extra-curricular activities. For this ninth factor, titled academic difficulties, a reliability coefficient was calculated at .4563. Grades earned last year produced the highest factor loading. Factor loadings ranged from .41 to .63. For this factor, a high factor loading indicates high frequency of low grades and of little time spent on homework or in extra-curricular activities.

A factor analysis of the nine home-related items presented three factors (Table 17). Factor 10, labeled home environment, contained five items that refer to the guardian with whom respondent is living, being adopted, frequency of running away from home, parents' feelings about teens drinking, and family problems caused by drug or alcohol use. Frequency of running

Table 17

Varimax Factor Loadings and Alpha Coefficients for Home Related Items

Item #	Item Description	Loading
Independent Factor 10: Home Environment		
67	Year freq. of running away	.57
1	Guardian living with	.55
65	Parents' feelings of teens drinking	.54
2	Adopted	.28
66	Family problems with drugs/alcohol	.20
Coefficient Alpha = .5353		
Independent Factor 11: Miscommunication with Parents		
80	Talk w/dad about problems	.80
81	Talk w/mom about problems	.56
Coefficient Alpha = .6499		
Independent Factor 12: Unfair/Strict Rules		
79	Fairness of parents' rules	.54
50	30 day freq. trouble w/parents	.50
Coefficient Alpha = .3365		

away received the highest loading at .57; loadings ranged from .20 to .57. The reliability coefficient for this factor was .5353. The second home-related factor, miscommunication with parents, includes two items which refer to the respondent's frequency of discussing problems with one's mother or father. Miscommunication with father was entered at .80, while miscommunication with mother was entered at .56. The alpha coefficient was calculated at

.6499. Factor 12, unfair/strict rules, includes two items which address the respondent's view of parents' rules in terms of fairness and strictness as well as the 30 day frequency of getting in trouble with parents. Perceptions of parents' rules produced the highest loading at .54. Frequency of getting in trouble was loaded at .50. The reliability coefficient for this factor was computed at .3365. High factor loadings for these home-related factors indicate a poor home environment, such as not living with parents, frequently running away, miscommunication with parents, and frequently getting in trouble with parents.

Factors 13 and 14 were extracted from the six sex-related items (Table 18). Factor 13, sexual activity, includes three items which refer to starting age of sexual intercourse, number of partners, and choices made due to the threat of HIV. The number of intercourse partners in life produced the highest loading at .85. Factor loadings ranged from .66 to .81. The alpha coefficient for this factor was .8167. From the three remaining sex related items, Factor 14 was extracted and labeled forcible sex. These factor items refer to being forced to have sex, forcing someone to have sex contact, and being touched by or touching a relative. Forcing someone to have sex produced the highest factor loading. Loadings ranged from .50 to .70. The reliability coefficient for this factor was computed at .4681. High factor loadings for these factors denote high frequency of the behavior.

Since only three items on the survey were related to violence only one factor was extracted, titled violence (Table 19). These items referred to frequency of physically fighting, damaging property, and getting in trouble with the law. Frequency of getting in trouble with the law received the highest factor loading. Factor loadings ranged from .75 to .78. Items with

Table 18

Varimax Factor Loadings and Alpha Coefficients for Sex Related Items

Item #	Item Description	Loading
Independent Factor 13: Sexual Activity		
92	Life # of intercourse partners	.85
91	Starting age of intercourse	.81
96	Choices made due to HIV	.66
Coefficient Alpha = .8167		
Independent Factor 14: Forcible Sex		
94	Forcing some to have sex	.70
90	30 day freq. of being forced/sex	.55
97	Touched by/touched relative	.50
Coefficient Alpha = .4681		

Table 19

Varimax Factor Loadings and Alpha Coefficients for Violence Related Items

Item #	Item Description	Loading
Independent Factor 15: Violence		
49	30 day freq. trouble w/law	.78
51	30 day freq. of damaging property	.77
52	30 day freq. of fighting	.75
Coefficient Alpha = .8053		

high factor loadings indicate high frequency of these violent behaviors among respondents.

The dependent variable of suicidal behavior was addressed in two ways. The first method created a total score for each respondent by summing the three SIAB items that related to suicide: item 87, item 88, and item 89. Item 87 addressed the frequency of considering a suicide attempt, item 88 pertained to frequency of planning a suicide attempt, and item 89 addressed the frequency of actual suicide attempts. All three items contained frequencies for the past 30 days. Therefore, a high score refers to a high frequency of suicidal activity within the 30 day period. The range of values for this variable was a minimum of zero (no suicidal activity) to a maximum of 15 (high suicidal activity). Since levels of suicidal activity can be ascertained from this score, this first dependent variable of suicidal behavior was labeled suicidal activity.

The second method dichotomized the variable of suicidal behavior by dividing the studied sample into two groups according to their responses to items 87 to 89: those who reported no suicidal activity and those who reported considering, planning, or attempting suicide at least once in the last 30 days. Because the level of suicidal activity was not differentiated in this variable, it was labeled suicidal tendency. From the 3,398 respondents, 789 reported suicidal tendency. The reliability of this scale (items 87 to 89) was also calculated generating an alpha coefficient of .8851.

Multiple Regression for the Total Sample

Multiple regression analysis was employed to determine which independent factors were most predictive of suicidal activity. Multiple regression analysis is a method for assessing the effects of more than one

independent variable on a single dependent variable. This first analysis for the total sample entered all independent factors into the regression equation simultaneously to analyze how much these independent factors as a whole accounted for the variance in suicidal activity. The following results were generated: R=.6819, R^2=.4650, F =195.99 with df of 15, 3382, significant at p <.0001. Table 20 presents the results of the full model analysis in terms of the Beta weights for each factor when loaded into the equation, the t values for the Beta weights, the significance of these t values, and the correlation coefficients of each factor with the dependent variable of suicidal activity.

Table 20

Beta Weights, t Values, Significance of t, and Correlation Coefficients of the Independent Factors with Suicidal Activity for the Total Sample

Factor	Beta	t	Sig. of t	Corr.
Cigarette Use	.0018	0.101	.9193	.2884
Smokeless Tob. Use	- .0704	- 4.278	< .0001	.2525
Alcohol Use	.0172	0.974	.3303	.1771
Alcohol Behaviors	.0959	4.015	.0001	.5387
Hard Drug Use	.1168	5.437	< .0001	.4542
Marijuana Use	.0379	2.090	.0367	.2780
Over-the-Counter Drugs	.0844	5.339	< .0001	.3031
School Misconduct	.0696	3.488	.0005	.5280
Academic Difficulties	- .2623	- 1.883	.0597	.1796
Home Environment	.1742	9.623	< .0001	.5274
Miscomm. w/Parents	.3422	2.619	.0088	.0928
Unfair/Strict Rules	.1464	10.259	< .0001	.3754
Sexual Activity	.0484	2.901	.0037	.3368
Forcible Sex	.1850	11.713	< .0001	.4886
Violence	.0862	3.713	.0002	.5756

Full Model R^2=.4650

The factors of forcible sex, home environment, and unfair/strict rules received the highest Beta weights, respectively. An examination of correlation coefficients revealed that the factor of violence (r=.5756) exhibited the highest degree of relationship with suicidal activity; the factor of alcohol behaviors (r=.5387) was the next highest.

Table 21 presents a further analysis that shows how much variance each factor accounted for in suicidal activity, represented by R^2, and the variance unique for each factor in predicting suicidal activity. Overall, the independent factors accounted for 46.5% (R^2=.4650) of the variance in suicidal activity. Each of the following factors accounted for over 25% of the variability: violence, living situation, forcible sex, and unfair/strict rules.

Table 21

Proportion of Variance and Unique Variance of Suicidal Activity Accounted for by the Independent Variables (Factor Categories) for the Total Sample

Factor Category	R^2	Unique Variance
Cigarette Use	.0831	< .0001
Smokeless Tobacco	.0637	.0029
Alcohol Use	.0314	.0001
Alcohol Behavior	.2902	.0025
Hard Drug Use	.2063	.0046
Marijuana Use	.0773	.0007
Over-the-Counter Drugs	.0918	.0045
School Misconduct	.2788	.0019
Academic Difficulties	.0323	.0005
Home Environment	.2781	.0146
Miscomm. w/Parents	.0086	.0011
Unfair/ Strict Rules	.1409	.0166
Sexual Activity	.1134	.0013
Forcible Sex	.2388	.0022
Violence	.3313	.0021

Violence accounted for the most variance at 33.1% (R^2=.3313). Alcohol behaviors accounted for 29.0% of variance. The following factors accounted for less than 5% each: academic difficulties, alcohol use, and miscommunication with parents. In terms of unique variance, home environment had the highest value with 1.46% of variance accounted for as unique.

Because all factors were loaded simultaneously in the full model, it was difficult to determine which combination of factors produced the best prediction equation for suicidal activity. Consequently, a stepwise forward regression analysis was utilized to prioritize the independent factors in order of their ability to contribute to the overall prediction of suicidal activity. The results of this procedure are presented in Table 22. This analysis did not enter the factors of cigarette use, alcohol use, marijuana use, and academic difficulties, as these were determined to account for no significant amount of variance in suicidal activity after the other factors were entered. Violence was entered first and thus was identified as the leading predictor of suicidal activity. Home environment was the second leading predictor. To determine the best combination of predictors of suicidal activity, factors were limited to those which contributed a change in R^2 of more than 1%. The only factors that contributed a change in R^2 of more than 1% were the first four factors entered into the regression equation: violence, home environment, forcible sex, and unfair/strict rules. Therefore, the stepwise forward regression of the independent factors with suicidal activity identified the factor combination of violence, home environment, forcible sex, and unfair/strict rules as the best predictor of suicidal activity for the total sample.

Table 22

Stepwise Forward Regression Results for the Independent Factors on Suicidal Activity for the Total Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig.Chg	Corr	Beta
1	Violence	.5756	.3113	.3113	1682.37	< .001	.5756	.0900
2	Home Environment	.6179	.3818	.0505	277.52	< .001	.5274	.1766
3	Forcible Sex	.6460	.4174	.0396	207.13	< .001	.4886	.1871
4	Unfair/Strict Rules	.6622	.4385	.0211	127.80	< .001	.3754	.1429
5	Alcohol Behavior	.6689	.4475	.0089	54.84	< .001	.5387	.1114
6	Over-the-Counter	.6724	.4522	.0047	29.23	< .001	.3031	.0770
7	School Misconduct	.6747	.4552	.0030	18.82	< .001	.5280	.0763
8	Hard Drug Use	.6762	.4573	.0021	12.89	< .001	.4542	.0953
9	Smokeless Tobacco	.6780	.4597	.0025	15.43	< .001	.2525	- .0651
10	Sexual Activity	.6799	.4623	.0025	15.95	< .001	.3368	.0582
11	Miscomm. w/Parents	.6808	.4634	.0012	7.52	.006	.0928	.0354

Factors not in equation:

Cigarette Use
Alcohol Use
Marijuana Use
Academic Difficulties

Another regression analysis was completed to investigate the predictors of suicidal tendency in those who had reported any consideration, plans, or attempts of suicide. The results of this stepwise forward analysis are presented in Table 23. The following results were generated: R=.5154, R^2=.2656, F=153.24 with df=8, 3389, significant at p <.0001. The factors of alcohol use, alcohol behavior, hard drug use, marijuana use, academic difficulties, sexual activity, and violence were not entered into the regression equation, since these factors were found to account for no significant amount of variance after the other factors were entered. School misconduct was entered first and therefore was identified as the leading predictor of suicidal tendency in seventh through twelfth grade students. The best combination of predictors of suicidal tendency among this sample were school misconduct, over-the-counter drug use, unfair/strict rules, home environment, and cigarette use, since these factors contributed to a change in R^2 of more than 1%.

Logistic regression was also run to establish odds probabilities of each significant factor predicting suicidal tendency among the seventh through twelfth grade sample. Logistic regression is used when the dependent variable is dichotomous and a dichotomous outcome variable is desired as well, such as to investigate whether something will or will not happen. To simplify the analysis, the independent factors were also dichotomized into students who had and those who had not reported the respective risk behaviors. Only significant factors generated from the preceding stepwise regression of suicidal tendency were utilized in this analysis. These factors accounted for 26.5% (R^2=.2656) of variability in suicidal tendency among the total sample. Logistic regression identified activity in the following factors as

Table 23

Stepwise Forward Regression Results for the Independent Factors on Suicidal Tendencies for the Total Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig Chg	Corr	Beta
1	School Misconduct	.3873	.1500	.1500	599.47	< .001	.3973	.1183
2	Over-the-Counter	.4398	.1930	.0434	182.75	< .001	.3263	.1494
3	Unfair/Strict Rules	.4713	.2221	.0286	124.97	< .001	.3178	.1626
4	Home Environment	.4889	.2391	.0170	75.68	< .001	.3571	.1221
5	Cigarette Use	.5006	.2506	.0116	52.40	< .001	.3100	.1110
6	Forcible Sex	.5104	.2605	.0098	45.01	< .001	.3083	.1271
7	Miscomm. w/Parents	.5136	.2638	.0034	15.50	< .001	.1316	.0603
8	Smokeless Tobacco	.5154	.2656	.0018	8.37	.004	.1178	- .0485

Factors not in equation:

Alcohol Use
Alcohol Behavior
Hard Drug Use
Marijuana Use
Academic Difficulties
Sexual Activity
Violence

increasing the probability of suicidal tendency: forcible sex (45.5%), cigarette use (34.8%), over-the-counter drug use (32.7%), unfair/strict rules (31.7%), home environment (30.6%), school misconduct (26.3%), and miscommunication with parents (18.1%) (Table 24). The factor with the highest probability was forcible sex since respondents who reported this behavior were 45.5% more probable to report suicidal tendency than those who did not report forcible sex. Respondents who reported cigarette use were identified as being 34.8% more probable to report suicidal tendency than those who do not smoke. Over-the-counter drug use (32.7%) and home environment (30.6%) also generated high probabilities. Smokeless tobacco had the lowest probability at 4.7%, which indicates that those who reported use of smokeless tobacco were only 4.7% more likely to report suicidal tendency than those who do not use this type of tobacco.

Table 24

Odds Probability from Logistic Regression of Significant Factors Predicting Suicidal Tendencies Among the Total Sample

Factor	Odds Probability (%)
Forcible Sex	45.5
Cigarette Use	34.8
Over-the-Counter	32.7
Unfair/Strict Rules	31.7
Home Environment	30.6
School Misconduct	26.3
Miscomm. w/Parents	18.1
Smokeless Tobacco	4.7

Multiple Regression for the Male Sample

Identical analyses were performed for the male respondents in this study. The first analysis entered all independent factors into the regression equation simultaneously to analyze the amount of variance on suicidal activity for which these factors account. This full model (df=15, 1696) generated the following values: R=.7264, R^2=.5276, F=126.30 significant at p <.0001. Table 25 presents the results of this full model in terms of the Beta weights for each factor when loaded into the equation, the t values for the Beta weights, the significance of these t values, and the correlation coefficients of each factor with the dependent variable of suicidal activity.

Table 25

Beta Weights, t Values, Significance of t, and Correlation Coefficients of the Independent Factors with Suicidal Activity for the Male Sample

Factor	Beta	t	Sig. of t	Corr.
Cigarette Use	- .0312	- 1.403	.1607	.2856
Smokeless Tob. Use	- .0545	- 2.426	.0154	.2791
Alcohol Use	- .0098	- 0.405	.6853	.1408
Alcohol Behaviors	.1075	3.280	.0011	.5991
Hard Drug Use	.1029	3.593	.0003	.5351
Marijuana Use	.0634	2.656	.0080	.3233
Over-the-Counter Drugs	.0311	1.545	.1226	.2894
School Misconduct	.1020	3.805	.0001	.5808
Academic Difficulties	- .0130	- 0.715	.4750	.1916
Home Environment	.1922	7.558	.0001	.5892
Miscomm. w/Parents	.0110	0.637	.5243	.0408
Unfair/Strict Rules	.1238	6.440	< .0001	.3956
Sexual Activity	.0444	2.036	.0419	.3480
Forcible Sex	.1966	9.163	< .0001	.5434
Violence	.0997	3.171	.0015	.6256

Full Model R^2=.5276

The factors of forcible sex, home environment, and unfair/strict rules produced the highest Beta weights, respectively. An examination of the correlation coefficients revealed that the factor of violence (r=.6256) exhibited the highest degree of relationship with suicidal activity; the factors of alcohol behaviors (r=.5991) and home environment (r=.5892) follow closely.

Table 26 presents a further analysis that shows how much variance each factor accounted for in predicting suicidal activity and the variance unique to each factor in suicidal activity. Overall, the independent factors accounted for 52.8% (R^2=.5276) of the variance in suicidal activity. The six factors of violence, alcohol behavior, home environment, school misconduct, forcible sex, and hard drug use accounted for more than 25% of variability

Table 26

Proportion of Variance and Unique Variance of Suicidal Activity Accounted for by the Independent Variable (Factor Categories) for the Male Sample

Factor Category	R^2	Unique Variance
Cigarette Use	.0816	.0044
Smokeless Tobacco	.0779	.0016
Alcohol Use	.0198	< .0001
Alcohol Behavior	.3589	.0030
Hard Drug Use	.2864	.0036
Marijuana Use	.1045	.0019
Over-the-Counter Drugs	.0837	.0006
School Misconduct	.3374	.0040
Academic Difficulties	.0367	.0001
Home Environment	.3471	.0159
Miscomm. w/Parents	.0017	.0001
Unfair/Strict Rules	.1565	.0115
Sexual Activity	.1211	.0011
Forcible Sex	.2953	.0233
Violence	.3913	.0028

each. Violence accounted for the most variance at 39.1% (R^2=.3913). Alcohol behaviors also account for 35.9% of variance. Factors which accounted for less than 5% of variance were: academic difficulties, alcohol use, and miscommunication with parents. In terms of unique variance, forcible sex was the highest with 2.33% of variance accounted for uniquely.

A stepwise forward regression analysis was also utilized to prioritize the independent factors in order of their ability to contribute to the overall prediction of suicidal activity. The results of this procedure are presented in Table 27. This analysis did not enter the factors of cigarette use, smokeless tobacco use, alcohol use, hard drug use, marijuana use, academic difficulties, miscommunication with parents, and sexual activity as these were determined to account for no significant amount of variance on suicidal activity after other factors were entered. Violence was entered first and thus was identified as the leading predictor of suicidal activity. Home environment was the second leading predictor. To determine the best combination of predictors of suicidal activity, factors were limited to those which contributed a change in R^2 of more than 1%. The only factors that contributed a change in R^2 of more than 1% were the first five factors entered into the regression equation: violence, home environment, forcible sex, unfair/strict rules, and alcohol behaviors. Therefore, the stepwise forward regression of the independent factors with suicidal activity identified the factor combination of violence, home environment, forcible sex, unfair/strict rules, and alcohol behavior as the best predictor of suicidal activity in males.

A stepwise forward regression analysis was also completed to investigate the predictors of suicidal tendency among the male respondents (Table 28). The following results were generated: R=.5542, R^2=.3071,

Table 27

Stepwise Forward Regression Results for the Independent Factors on Suicidal Activity for the Male Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig Chg	Corr	Beta
1	Violence	.6256	.3913	.3913	1099.36	< .001	.6256	.1256
2	Home Environment	.6709	.4501	.0588	182.81	< .001	.5892	.2104
3	Forcible Sex	.7012	.4916	.0415	139.45	< .001	.5434	.2002
4	Unfair/Strict Rules	.7102	.5044	.0127	43.86	< .001	.3956	.1268
5	Alcohol Behavior	.7182	.5185	.0115	40.38	< .001	.5991	.1601
6	School Misconduct	.7218	.5209	.0051	18.09	< .001	.58.08	.1093

Factors not in equation:

Cigarette Use
Smokeless Tobacco Use
Alcohol Use
Hard Drug Use
Marijuana Use
Over-the-Counter Drugs
Academic Difficulties
Miscomm. w/Parents
Sexual Activity

Table 28

Stepwise Forward Regression Results for the Independent Factors on Suicidal Tendencies for the Male Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig Chg	Corr	Beta
1	School Misconduct	.4789	.2294	.2294	508.99	< .001	.4789	.2132
2	Forcible Sex	.5090	.2590	.0297	68.42	< .001	.3941	.1553
3	Unfair/Strict Rules	.5308	.2817	.0227	53.93	< .001	.3357	.1471
4	Home Environment	.5427	.2945	.0128	30.94	< .001	.4225	.1195
5	Over-the-Counter	.5494	.3018	.0073	17.82	< .001	.2895	.0916
6	Academic Difficulties	.5542	.3071	.0053	13.10	< .001	.2269	.0769

Factors not in equation:

Cigarette Use
Smokeless Tobacco Use
Alcohol Use
Alcohol Behavior
Hard Drug Use
Marijuana Use
Miscomm. w/Parents
Sexual Activity
Violence

F=125.96 with df=6 and 1705, p <.0001. The factors of cigarette use, smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, miscommunication with parents, sexual activity, and violence were not entered into the regression equation. School misconduct was entered first, and therefore was identified as the leading predictor of suicidal tendency among the male respondents. The best combination of predictors of suicidal tendency for male respondents was school misconduct, forcible sex, unfair/strict rules, home environment, over-the-counter drug use, and academic difficulties, since these factors contributed to a change in R^2 of more than 1%.

Logistic regression established odds probabilities of each significant factor predicting suicidal tendency among the male respondents. Each independent factor was dichotomized into males who had and those who had not reported the respective risk behaviors. Only significant factors generated from the preceding stepwise regression of suicidal tendency were utilized in this analysis. These factors accounted for 30.7% (R^2=.3071) of variability in suicidal tendency among males. Table 29 presents the results of this analysis. The probabilities of males reporting suicidal tendency when reporting the following risk behaviors/factors were: forcible sex (57.5%), school misconduct (43.2%), unfair/strict rules (38.8%), home environment (37.3%), over-the-counter drug use (27.0%), and academic difficulties (26.8%). The factor with the highest probability was forcible sex since males who reported this behavior were 57.5% more probable to report suicidal tendency than those who did not report forcible sex. Respondents who reported school misconduct were identified as being 43.2% more probable to report suicidal tendencies than those who did not report school misconduct. Perceiving

unfair/strict rules at home (38.3%) also generated a high probability of displaying suicidal tendency. Although still quite high, academic difficulties had the lowest probability of 26.8%.

Table 29

Odds Probability from Logistic Regression of Significant Factors Predicting Suicidal Tendencies Among the Male Sample

Factor	Odds Probability (%)
Forcible Sex	57.5
School Misconduct	43.2
Unfair/Strict Rules	38.3
Home Environment	37.3
Over-the-Counter Drug	27.0
Academic Difficulties	26.8

Multiple Regression for the Female Sample

Identical analyses were performed for the female respondents. The first analysis entered all independent factors into the regression equation simultaneously to analyze the amount of variance on suicidal activity for which these factors account. This full model (df=15, 1643) generated the following values: R=.6171, R^2=.3808, F=67.37, p <.0001. Table 30 presents full model results in terms of the Beta weights for each factor when entered into the equation, the t values for the Beta weights, the significance of these t values, and the correlation coefficients of each factor with the dependent variable of suicidal activity. The factors of unfair/strict rules, forcible sex, home environment, and violence produced the highest Beta weights, respectively. An examination of the correlation coefficients revealed that the factor of violence (r=.5099) exhibited the highest degree of relationship with

suicidal activity; the factors of school misconduct (r=.4671) and alcohol behavior (r=.4238) follow closely.

Table 30

Beta Weights, *t* Values, Significance of *t*, and Correlation Coefficients of the Independent Factors with Suicidal Activity for the Female Sample

Factor	Beta	*t*	Sig. of *t*	Corr.
Cigarette Use	.0608	1.915	.0557	.2919
Smokeless Tob. Use	.0036	0.128	.8983	.2447
Alcohol Use	.0076	0.279	.7802	.2243
Alcohol Behaviors	.0373	1.110	.2673	.4238
Hard Drug Use	.0917	2.760	.0058	.2849
Marijuana Use	.0150	- 0.515	.6064	.1925
Over-the-Counter Drugs	.1081	3.987	.0001	.3252
School Misconduct	.0691	2.364	.0182	.4671
Academic Difficulties	- .0294	- 1.330	.1835	.1615
Home Environment	.1330	5.098	< .0001	.4231
Miscomm. w/Parents	.0650	3.209	.0014	.1545
Unfair/Strict Rules	.1499	6.791	< .0001	.3411
Sexual Activity	.0681	2.602	.0093	.3196
Forcible Sex	.1483	6.455	.0001	.3872
Violence	.1219	3.604	.0003	.5099

Full Model R^2=.3808

Table 31 presents a further analysis that shows how much variance each factor accounts for in predicting suicidal activity and the variance unique to each factor on suicidal activity. Overall, the independent factors accounted for 38.1% (R^2=.3808) of the variance in suicidal activity. Only one factor, violence (R^2=.2600) accounted for more than 25% of the variance. School misconduct accounted for 21.8% of variance. Accounting for less than 5% of the variance each were the factors of marijuana use, academic difficulties, and miscommunication with parents. In terms of unique

variance, unfair/strict rules was the highest with 1.74% of variance accounted for uniquely.

Table 31

Proportion of Variance and Unique Variance of Suicidal Activity Accounted for by the Independent Variables (Factor Categories) for the Female Sample

Factor Category	R^2	Unique Variance
Cigarette Use	.0852	.0014
Smokeless Tobacco	.0599	< .0001
Alcohol Use	.0503	< .0001
Alcohol Behavior	.1796	.0004
Hard Drug Use	.0811	.0029
Marijuana Use	.0371	.0001
Over-the-Counter Drugs	.1057	.0060
School Misconduct	.2182	.0021
Academic Difficulties	.0261	.0007
Home Environment	.1790	.0098
Miscomm. w/Parents	.0239	.0039
Unfair/Strict Rules	.1163	.0174
Sexual Activity	.1022	.0025
Forcible Sex	.1499	.0157
Violence	.2600	.0049

A stepwise forward regression analysis prioritized the independent factors in order of their ability to contribute to the overall tobacco use, alcohol use, alcohol behaviors, marijuana use, and academic difficulties as these were determined to account for no significant amount of variance on suicidal activity after other factors were entered (Table 32). Violence was entered first and thus was identified as the leading predictor of suicidal activity. Home environment was the second leading predictor. To determine the best combination of predictors of suicidal activity, factors were limited to those which contributed a change in R^2 of more than 1%. The only factors that

Table 32

Stepwise Forward Regression Results for the Independent Factors on Suicidal Activity for the Female Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig Chg	Corr	Beta
1	Violence	.5099	.2600	.2600	582.08	< .001	.5099	.1286
2	Home Environment	.5409	.2926	.0326	76.39	< .001	.4231	.1367
3	Unfair/Strict Rules	.5682	.3229	.0303	74.05	< .001	.3411	.1459
4	Forcible Sex	.5874	.3450	.0221	55.93	< .001	.3872	.1511
5	Over-the-Counter	.5987	.3584	.0134	34.44	< .001	.3252	.1265
6	Sexual Activity	.6037	.3645	.0061	15.77	< .001	.3196	.0865
7	Hard Drug Use	.6091	.3710	.0065	17.18	< .001	.2849	.1034
8	Miscomm. w/Parents	.6123	.3749	.0039	10.31	.001	.1545	.0642
9	School Misconduct	.6148	.3780	.0031	8.20	.004	.4671	.0815

Factors not in the equation:

Cigarette Use
Smokeless Tobacco
Alcohol Use
Alcohol Behaviors
Marijuana Use
Academic Difficulties

contributed a change in R^2 of more than 1% were the first five factors entered into the regression equation: violence, home environment, unfair/strict rules, forcible sex, and over-the-counter drug use. Therefore, the stepwise forward regression of the independent factors with suicidal activity identified the factor combination of violence, home environment, unfair/strict rules, forcible sex, and over-the-counter drug use as the best predictor of suicidal activity in females.

Multiple regression analysis determined the predictors of suicidal tendency in females. The results of this stepwise forward analysis are presented in Table 33. The following results were generated: R=.4987, R^2=.2487, F=78.09 with df=7, 1651, p <.0001. The factors of smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, academic difficulties, sexual activity, and violence were not entered into the regression equation. School misconduct was entered first and therefore was identified as the leading predictor of suicidal tendency in female respondents. The best combination of predictors of suicidal tendency among this group were school misconduct, over-the-counter drug use, unfair/strict rules, cigarette use, home environment, forcible sex, and miscommunication with parents, since these factors contributed to a change in R^2 of more than 1%.

Logistic regression established the odds probabilities of each significant factor predicting suicidal tendency in the female sample. Only significant factors generated from the preceding stepwise regression of suicidal tendency were utilized in this analysis. These factors accounted for 24.9% (R^2=.2487) of variability in suicidal tendency among females. Table 34 presents the results of this analysis. For females who reported activity in the following behaviors, the probabilities of displaying suicidal tendency

Table 33

Stepwise Forward Regression Results for the Independent Factors on Suicidal Tendencies for the Female Sample

Step	Factor	R	R^2	R^2Chg	*F* Chg	Sig Chg	Corr	Beta
1	School Misconduct	.3518	.1238	.1238	234.09	< .001	.3518	.0910
2	Over-the-Counter	.4234	.1793	.0555	111.92	< .001	.3440	.1588
3	Unfair/Strict Rules	.4551	.2071	.0279	58.14	< .001	.3042	.1703
4	Cigarette Use	.4784	.2289	.0218	46.75	< .001	.3272	.1437
5	Home Environment	.4881	.2382	.0093	20.27	< .001	.3054	.1001
6	Forcible Sex	.4935	.2435	.0053	11.53	.001	.2362	.0851
7	Miscomm. w/Parents	.4987	.2487	.0052	11.47	.001	.1692	.0742

Factors not in equation:

Smokeless Tobacco Use
Alcohol Use
Alcohol Behavior
Hard Drug Use
Marijuana Use
Academic Difficulties
Sexual Activity
Violence

Table 34

Odds Probability from Logistic Regression of Significant Factors Predicting Suicidal Tendencies Among the Female Sample

Factor	Odds Probability (%)
Over-the-Counter	37.8
Cigarette Use	34.5
Forcible Sex	34.0
Unfair/Strict Rules	28.9
School Misconduct	26.7
Home Environment	26.1
Miscomm. w/Parents	17.3

were: over-the-counter drug use (37.8%), cigarette smoking (34.5%), forcible sex (34.0%), unfair/strict rules (28.9%), home environment (26.7%), and miscommunication with parents (17.3%). The factor with the highest probability was over-the-counter drug use as females who reported this behavior were 37.8% more likely to report suicidal tendency than those who did not report over-the-counter drug use. Respondents who reported cigarette use were identified as being 34.5% more probable to report suicidal tendency than those who did not use cigarettes. Respondents who reported forcible sex (34.0%) had the next highest probability of reporting suicidal tendency. Although still quite high, miscommunication with parents had the lowest probability of 17.3%.

Comparison of Regression Results for Males and Females

This section compares the stepwise forward analyses for males and females, which reveal some differences in the predictors for both suicidal activity (Table 35) and suicidal tendency (Table 36) as well as in the factors

Table 35

Comparison between Males and Females of Stepwise Regression Results for Suicidal Activity and Suicidal Tendencies

MALES					FEMALES				
Step	Factor	R^2	R^2Chg	Beta	Step	Factor	R^2	R^2Chg	Beta
Suicidal Activity:									
1	Violence	.3913	.3913	.1256	1	Violence	.2600	.2600	.1286
2	Home Environment	.4501	.0588	.2104	2	Home Environment	.2926	.0326	.1367
3	Forcible Sex	.4916	.0415	.2002	3	Unfair/Strict Rules	.3229	.0303	.1459
4	Unfair/Strict Rules	.5044	.0127	.1268	4	Forcible Sex	.3450	.0221	.1511
5	Alcohol Behavior	.5185	.0115	.1601	5	Over-the-Counter	.3584	.0134	.1265
Suicidal Tendencies:									
1	School Misconduct	.2294	.2294	.2132	1	School Misconduct	.1238	.1238	.0910
2	Forcible Sex	.2590	.0297	.1553	2	Over-the-Counter	.1793	.0555	.1588
3	Unfair/Strict Rules	.2817	.0227	.1471	3	Unfair/Strict Rules	.2071	.0279	.1703
4	Home Environment	.2945	.0128	.1195	4	Cigarette Use	.2289	.0218	.1437

Table 36

Comparison between Males and Females of Logistic Regression Results for Suicidal Tendencies

MALES		FEMALES	
Factor	Odds Probability (%)	Factor	Odds Probability (%)
Forcible Sex	57.5	Over-the-Counter	37.8
School Misconduct	43.2	Cigarette Use	34.5
Unfair/Strict Rules	38.3	Forcible Sex	34.0
Home Environment	37.3	Unfair/Strict Rules	28.9
Over-the-Counter	27.0	School Misconduct	26.7
Academic Difficulties	26.8	Home Environment	26.1
		Miscomm. w/Parents	17.3

that increase the likelihood of reporting suicidal tendency. Identified as leading predictors of suicidal activity among males, five independent variables were entered into the regression equation accounting for more than 1% of change in R^2: violence, home environment, forcible sex, unfair/strict rules, and alcohol behavior. All of the independent factors accounted for 52.8% variability in male suicidal activity. For females, this same analysis generated five factors: violence, home environment,, unfair/strict rules, forcible sex, and over-the-counter drug use. However, the independent factors only accounted for 38.1% of variability in female suicidal activity. Therefore, independent factors predicting suicidal activity for males accounted for 14.7% more variability than for females. The leading four predictors for suicidal activity among both males and females were the same, except for the order of unfair/strict rules and forcible sex. However, the fifth predictor of suicidal activity for female respondents was over-the-counter drug use, while for males it was alcohol behavior.

Leading predictors of suicidal tendency in males were identified as: school misconduct, forcible sex, unfair/strict rules, and home environment. These factors accounted for 30.7% of the variability of suicidal tendency among males (Table 35). Whereas for females, the leading predictors of suicidal tendency—school misconduct, over-the-counter drug use, unfair/strict rules, and cigarette use—accounted for only 24.9% of variability of suicidal tendency among females. Therefore, the independent factors for males accounted for 5.8% more of variability in suicidal tendency. Males and females held the common predictors of suicidal tendency of school misconduct and unfair/strict rules. Predictors unique to males were forcible sex and

home environment while predictors unique to females were over-the-counter drug use and cigarette use (Table 35).

Results of logistic regression revealed differences in the independent factors that increase the probability of reporting suicidal tendency in males and females (Table 36). For males the probabilities of reporting suicidal tendency were: forcible sex (57.5%), school misconduct (43.2%), unfair/strict rules (38.8%), home environment (37.3%), over-the-counter drug use (27.0%), and academic difficulties (26.8%). Thus, males who reported forcible sex were 57.5% more probable to report suicidal tendency than those who did not report forcible sex. For females who reported activity in the following behaviors, the probabilities of displaying suicidal tendency were: over-the-counter drug use (37.8%), cigarette smoking (34.5%), forcible sex (34.0%), unfair/strict rules (28.9%), home environment (26.7%), and miscommunication with parents (17.3%). The factor with the highest probability was over-the-counter drug use as females who reported this behavior were 37.8% more likely to report suicidal tendency than those who did not report over-the-counter drug use. The independent factor of forcible sex was the only factor which held a probability of 30% or higher and was common with both males and females.

Summary

This chapter has presented the results of factor analyses and multiple regression analyses for the total, the male, and the female samples with respect to the dependent variables of suicidal activity and suicidal tendency and the independent factors of cigarette use, smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, over-the-counter drug use, school misconduct, academic difficulties, home environment,

miscommunication with parents, unfair/strict rules, and violence. In addition, frequencies and percentages of the demographics and related risk behaviors were presented for the total sample.

Chapter V presents a summary of the study, conclusions drawn from the results, recommendations for educators and researchers.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter presents a summary of the present study within the context of previous related research and conclusions drawn from the results. In addition, recommendations to educators and to researchers are provided.

Summary

In 1985, suicide became the second leading cause of death among persons aged 15-24, a startling fact that is reflected in a suicide rate of 11.3 per 100,000 young adults (Centers for Disease Control, 1991). However, for every adolescent who commits suicide, 200-300 adolescents attempt it (Curran, 1987). While the suicide attempt is by far the most overt behavior of suicidal youth, other self-destructive behaviors, such as substance use, violent acts, truancy, and running away from home have been associated with suicidality in youth. In addition, gender differences have been identified not only in rates of suicide attempts and completions but also in the risk behaviors that are exhibited by suicidal youth. Generally, suicidal males are likely to display acts of violence, school misconduct, and substance use, whereas suicidal females are likely to run away and be sexually promiscuous (Frances & Blumenthal, 1991; Levy & Deykin, 1989; Rosenberg & Latimer, 1966; Shaffer & Caton, 1984). Several researchers attribute these gender differences in suicidal behavior among adolescents to the gender differences present in adolescent development, differences in the behaviors associated

with attachment (Gilligan, 1982; Wade, 1987), success orientation, aggression, and help seeking (McDowell, 1985; Stillion et al., 1989).

The purpose of this study was to identify gender differences in self-reported suicidal behavior in relation to risk factors among seventh through twelfth grade students. Data were gathered from the Survey Instrument of Attitude/Behavior, administered to seventh through twelfth grade students (N=3,438) in a school district located in a medium-size Midwest city. Factor analyses reduced the 100 item survey to fifteen independent factors: cigarette use, smokeless tobacco use, alcohol use, alcohol behavior, hard drug use, marijuana use, over-the-counter drug use, school misconduct, academic difficulties, home environment, miscommunication with parents, unfair/strict rules of parents, sexual activity, forcible sex, and violence. The dependent variable of suicidal activity was a sum of considering, planning, and attempting suicide while the dependent variable of suicidal tendency was the result of dichotomizing the respondents into those who had reported any consideration, planning, or attempting suicide and those who had reported none. Stepwise forward regression ordered the independent factors in predicting suicidal activity and suicidal tendency for the total, male, and female samples. In addition, logistic regression determined the probabilities of these factors in predicting suicidal tendency for the total, male, and female samples. The results of these analyses are summarized in response to the research questions posed by this study.

Research Question 1: What were the levels of the following risk behaviors/factors for the total sample: tobacco use, alcohol use, drug use, school misconduct, academic difficulties, home environment, sexual activity, violence, and suicidal behavior?

Of the eleven substances that were surveyed, alcohol (40.8%), cigarettes (32.4%), and over-the-counter drugs (25.4%) were the most widely used reported substances. Marijuana was used by 15.4% of the respondents. The hard drug used most widely was acid (9.3%).

Approximately 20% of the sample reported risk behaviors concerning school misconduct as 23% of the respondents skipped school within the last four weeks and 20% got in trouble at school at least once in the last four weeks. In addition, 21% of the sample reported bringing a weapon to school. Academically, nearly 53% reported receiving A/B during the past year, while approximately 28% received B/C, and 12% received C/D.

The majority (66.3%) of the sample reported to be living with both parents. Nearly 13% of the respondents ran away at least once in the last year. Items concerning sexual activity indicated that approximately 43% reported having sexual intercourse, most of which (14.2%) reported having sexual intercourse before the age of 12. Approximately 11% of the sample reported forcing someone to have sexual contact, while 11% reported being forced to have sexual intercourse at least once in the last 30 days.

Items concerning the respondents' propensity for violence indicated that within the past 30 days nearly 25% of the sample physically fought, approximately 19% damaged or vandalized property, and 11% were in trouble with the law at least once.

Of the 3,398 seventh through twelfth grade survey respondents, approximately 21% considered attempting suicide at least once, 14% planned suicide, and nearly 9% attempted suicide at least once in the past 30 days. More females considered and planned suicide than males; however, more males attempted suicide than females.

Research Question 2: What risk factors were predictors of suicidal behavior among the total sample, the male sample, and the female sample?

The full regression model revealed that the independent factors accounted for 46.5% of the variability in suicidal activity among the total sample. The stepwise forward model identified violence (Beta=.1675), home environment (Beta=.1918), forcible sex (Beta=.1776), and unfair/strict rules (Beta=.1339) as the leading predictors of suicidal activity for the respondents. Predictors of suicidal tendency among the respondents were also identified through the stepwise regression: school misconduct (Beta=.1183), over-the-counter drug use (Beta=.1494), unfair/strict rules (Beta=.1626), home environment (Beta=.1221), and cigarette use (Beta=.1110). Logistic regression identified activity in the following factors as increasing the probability of suicidal tendency: forcible sex (45.5%), cigarette use (34.8%), over-the-counter drug use (32.7%), unfair/strict rules (31.7%), home environment (30.6%), school misconduct (26.3%), and miscommunication with parents (18.1%).

For the male sample, the full regression model determined that the independent factors accounted for 52.8% variability in male suicidal activity. The stepwise forward model identified violence (Beta=.1256), home environment (Beta=.2104), forcible sex (Beta=.2002), unfair/strict rules (Beta=.1268), and alcohol behavior (Beta=.1601) as the leading predictors of suicidal activity among males. Predictors of suicidal tendency among the male respondents were identified as school misconduct (Beta=.2132), forcible sex (Beta=.1553), unfair/strict rules (Beta=.1471), and home environment (Beta=.1195). Logistic regression identified activity in the following factors as increasing the probability of suicidal tendency: forcible sex (57.5%), school

misconduct (43.2%), unfair/strict rules (38.3%), home environment (37.3%), over-the-counter drug use (27.0%), and academic difficulties (26.8%).

For the female sample, the full regression model determined that the independent factors accounted for 38.1% of the variability in female suicidal activity. The stepwise forward model generated five predictors of suicidal activity among females as: violence (Beta=.1286), home environment (Beta=.1367), unfair/strict rules (Beta=.1459), forcible sex (Beta=.1511), and over-the-counter drug use (Beta=.1265). In suicidal tendency among females, the independent factors accounted for approximately 24.9% (R^2=.2487) variability. The leading predictors of suicidal tendency among females were identified as school misconduct (Beta=.0910), over-the-counter drugs (Beta=.1588), unfair/strict rules (Beta=.1703), and cigarette use (Beta=.1437). Logistic regression identified activity in the following factors as increasing the probability of suicidal tendency: over-the-counter drug use (37.8%), cigarette use (34.5%), forcible sex (34.0%), unfair/strict rules (28.9%), school misconduct (26.7%), home environment (26.1%), and miscommunication with parents (17.3).

Research Question 3: What were the differences between the predictors of suicidal behavior for the male and female respondents?

The comparison of the full model regression analyses for the male and female samples indicates that the variance accounted for in suicidal activity by the independent factors was far greater for males (R^2=.5276) than for females (R^2=.3808). Thus, the predictions for male suicidal activity were higher than for females.

The stepwise forward multiple regression generated a similar leading predictor of suicidal activity for both males and females as violence accounted

for the greatest amount of variance in males (R^2=.3913) and females (R^2=.2600). The second leading predictor of suicidal activity was also the same, as the stepwise forward model identified home environment (R^2chg=.0588) for males and (R^2chg=.0326) for females. The third and fourth leading predictors were reversed for males and females. Forcible sex (R^2chg=.0415) and unfair/strict rules (R^2chg=.0127) were the respective third and fourth predictors for males, while for females unfair/strict rules (R^2chg=.0303) was the third and forcible sex (R^2chg=.0221) was the fourth predictor of suicidal activity.

The stepwise regression results also indicated that the independent variables accounted for more variability in suicidal tendency among males (R^2=.3071) than for females (R^2=.2487), thus producing stronger predictors of suicidal tendency for males than for females. In addition, considerably different predictors of suicidal tendency were identified for males and females. Although the leading predictor for both was school misconduct (R^2chg=.2294 for males, R^2chg=.1238 for females), the next significant predictors varied. For males, the second predictor was forcible sex (R^2chg=.0297), while for females it was over-the-counter drug use (R^2chg=.0555). The third predictor was again similar for both sexes: unfair/strict rules (R^2chg=.0027 for males, R^2chg=.0279 for females). The fourth leading predictor for male suicidal tendency was home environment (R^2chg=.0128) and for female suicidal tendency was cigarette use (R^2chg=.0218).

The comparison of logistic regression results revealed several differences between gender in increasing the predictability of suicidal tendency. For males, the factors of forcible sex (57.5%), school misconduct

(43.2%), unfair/strict rules (38.3), and home environment (37.3%) were better predictors of suicidal tendency, whereas for females these factors increased their probability of suicidal tendency by 34% for forcible sex, 26.7% for school misconduct, 28.9% for unfair/strict rules, and 26.1% for home environment. A predictor that was unique to the male sample was academic difficulties, as it increased their probability of reporting suicidal tendency by 26.8%. In contrast, the better predictor of suicidal tendency for females was over-the-counter drug use (37.8%); for males this factor increased the probability by only 27.0%. The two predictors of cigarette use (34.5%) and miscommunication with parents (17.3%) were unique to the female sample.

Conclusions

Several conclusions pertaining to risk factors related to suicidal activity and tendency among the total sample may be drawn from this study. Violence, home environment, forcible sex, and unfair/strict rules were identified as the highest predictors of suicidal activity, while school misconduct, over-the-counter drug use, unfair/strict rules, home environment, and cigarette use were identified as the most significant predictors of suicidal tendency. These differences in predictors were most likely due to the differences in the dependent variables, suicidal activity and suicidal tendency. As an interval/ratio variable, suicidal activity differentiates the various levels of suicidality such as considering, planning and attempting. As these levels of suicidality increase so does the level of violence; thus, many of the predictors for suicidal activity were also violence-related. Violence-related items addressed frequency of getting in trouble with the law, physically fighting, and damaging property. Such behaviors were also found related to suicidal activity by Shafii et al. (1985) and Alessi et al. (1984).

Also, Rosenberg and Latimer (1966) noted that suicidal males were more likely to display volatile acts than females.

Another leading predictor of suicidal activity was forcible sex, as the item with highest loading on this factor addressed the forcing of someone else to have sexual contact. The other predictors of suicidal activity were dissatisfaction with home environment and unfair/strict rules. The item with the highest loading for the factor of home environment was frequency of running away. Studies by Robins (1989) and Shaffer and Caton (1984) cited the act of running away as being highly related to suicidal activity in both males and females, since running away is an act of escaping an undesirable situation at home, much like suicide. Another item contributing to the factor of home environment was the guardian with whom the respondent was living, such as with both parents, one parent, one parent with stepparent, guardian, or foster home. Therefore, not living with both parents increased the risk of suicidal activity among the sample. Research by Shafii et al. (1985) concluded that high prevalences of family breakup were found in families of suicide victims. The factor of unfair/strict rules was also identified as a predictor of suicidal activity, which is highly related to the dissatisfaction of one's home environment as respondents perceived their parents' rules as unfair and strict and were in trouble with their parents on a frequent basis in the past 30 days. Youths' perceptions of their home as being unsupportive has been cited by several studies. Gover (1991) concluded from her study that the majority of suicide attempters reported feelings of family alienation. Similarly, Tischler et al. (1981) and deJong (1992) noted that suicidal adolescents reported high frequency of "parental emotional unavailability."

In contrast to suicidal activity, the variable of suicidal tendency in no way measures levels of suicidality; therefore, violence was not a leading predictor of suicidal tendency. Instead, the factors of school misconduct, over-the-counter drug use, unfair/strict rules, home environment, and cigarette use were the leading predictors of suicidal tendency. The leading predictor of school misconduct consisted of the behaviors of skipping school, getting in trouble at school, bringing a weapon to school, hours spent working at a part-time job, and hours without adult supervision. The items with the highest loading were skipping school and getting in trouble at school. Barter et al. (1968) similarly reported disciplinary and truancy problems as highly related to suicidal adolescents. However, Frances and Blumenthal (1991) found that problems in school misconduct were much more common in male suicidal victims.

The leading factors found to increase the probability of reporting suicidal tendency for the total sample were forcible sex (45.5%), cigarette use (34.8%), over-the-counter drug use (32.7%), unfair/strict rules (31.7%), and home environment (30.6%). These factors are discussed further in the following comparison of factors that increase the probability of suicidal tendency for males and females.

Several conclusions were also derived concerning risk behaviors/factors related to suicidal behaviors among males and females. In general, the SIAB was better in predicting factors related to suicidal behavior for males than for females. This may be due to the content addressed in a majority of the survey questions, as many of them dealt with overt aggressive behaviors, more often related to males than females. Therefore, despite similarities in

predictors for males and females, the predictors for males are stronger as they account for more variability in male suicidal behavior.

The stepwise regression results for suicidal activity and suicidal tendency displayed similarities between males and females. For both, the leading predictors for suicidal activity were violence and home environment. The factor, home environment, was the second leading predictor of suicidal activity among males and females. Similarities were also present in the predictors for suicidal tendency among males and females. The leading predictor for suicidal tendency among both males and females was school misconduct. However, differences exist between the remaining predictors for suicidal tendency among males and females, as the second leading predictor for males was forcible sex, which was identified as being the sixth predictor for female suicidal tendency. This may be due to the item representation for this factor, since the question with the highest loading was, "Have you forced anyone to have sexual contact?" The majority responding affirmatively to this question was male, therefore increasing the strength of this factor for males. In addition, forcing someone to have sexual contact is generally an act of violence in response to feeling out of control, an act that is quite similar to suicide. Literature supporting or negating the relation of forcible sex to suicidal behavior is very minimal.

The second leading predictor for suicidal tendency among females was over-the-counter drug use. Examples of over-the-counter drugs given in the survey were Vivarin, NoDoz, and Dexatrim. One explanation for this predictor may be that females are more likely to use diet pills for weight problems, use which often indicates poor body image and low self-esteem often associated with suicidal females. Another explanation may be that

females are more likely to overdose on over-the-counter drugs as a suicide method, whereas males, when overdosing, use harder, more lethal drugs. Almost all literature suggests that females are more likely to use less lethal methods such as overdosing or slitting their wrists in attempting suicide (Stillion et al., 1989).

Another predictor of suicidal tendency unique to females was cigarette use. Recalling that society has acknowledged few acceptable outlets for females to express anger or aggression, females may be using cigarette use as a more passive, acceptable means of expressing these feelings often related to suicidal behavior. Few studies exist relating cigarette use to suicidal behavior.

Gender differences also exist in factors that increase the probability of reporting suicidal tendency. Again for males, the factors increasing the probability of suicidal tendency were forcible sex and school misconduct, whereas for females, over-the-counter drug use and cigarette use were identified as increasing the probability of reporting suicidal tendency the most.

In summary, behaviors which display violence and school misconduct were the best predictors of suicidal behavior. In addition, running away, living with only one parent, and perceiving parental rules as strict and unfair were also strong indicators of possible suicidal intentions. These findings were supportive of previous research by Brent & Kolko (1990), de Jong (1992), Frances and Blumenthal (1991), Garfinkel and Golombek (1983), Gover (1991), Pfeffer (1991), Shaffer and Caton (1984), Shafii et al. (1985), and Tischler et al. (1981). Specific behaviors for suicidal males were those relating to forcible sex, while behaviors for females were over-the-counter

drug use and cigarette use. These findings were somewhat supportive of previous research in that suicidal males typically exhibit more violent behaviors, such as forcing someone to have sexual contact (Frances & Blumenthal, 1991; Rosenberg & Latimer, 1966). However, with respect to female adolescents, most research identifies running away from home and sexual promiscuity as the leading characteristics of suicidal females (Rosenberg & Latimer, 1966; Shaffer & Caton, 1984).

Recommendations

Recommendations to Educators

In general, the frequencies of risk behaviors indicate that schools should implement a preventative curriculum on risk behaviors to begin in the intermediate elementary grades and continue through the junior and senior high grades for students, parents, and faculty members. This curriculum would address not only suicide but also other risk behaviors, such as substance use, sexual activity, violence, and school misconduct. The preventative curriculum for students would most likely be integrated into already taught health courses, in which students would learn about: death, sexuality, stress management, coping skills, self-esteem, personal goal-setting, adolescent development, and self-evaluation of emotional well-being. In addition, students might learn how to identify and assist a peer at risk of suicide.

Educating parents is also an important role in a preventative curriculum since the presence of an unsatisfactory and unsupportive home environment increased the reporting of suicidal behavior in the studied sample. Therefore, regularly scheduled seminars are suggested for the parent education aspect of this curriculum, in which parents would learn

about parenting skills, importance of parent-school education, parenting an adolescent, identification of at-risk youth, childhood/adolescent depression, assessment strategies, communication skills, and how to seek help for at-risk youth.

Educating faculty members would also be a critical component of this plan, since the daily structure of school offers teachers the opportunity to regularly monitor student behavior and identify at-risk students. Consequently, faculty seminars would educate teachers, counselors, and administrators on identification of childhood/adolescent depression and risk behaviors, assessment strategies, communication skills, and referral techniques. Furthermore, elementary and junior high instructors would learn about the factors that link childhood behavior disorders to at-risk behavior in adolescents.

In addition to a preventative curriculum, a suicide intervention program is also recommended for the junior and senior high levels. The purpose of this program would be to assist youth in coping with the situational and/or psychological stressors precipitating the crisis, such as planning or attempting suicide. This program would incorporate teams of faculty members and students who would be trained in crisis intervention techniques, communication skills, and referral options.

Since many suicide prevention and intervention programs have been implemented throughout the nation, current research asserts that these programs are meeting their objective in preventing youth suicide (Hicks, 1990; Hals, 1985). On a final note, it is suggested that school districts invest in a suicide prevention program prior to the tragedy of a suicide occurring as implementation would be easier without the emotion and hyperbole of a

recent suicide, and such a program would be implemented without the "quick fix" attitude so often held by educators and parents after a recent suicide.

Recommendations to Researchers

As a secondary study, results were limited to those behaviors measured by the SIAB, a survey created and administered for the purpose of obtaining an overall picture of students' risk behaviors in the studied district. A primary study that addresses suicidal behavior more extensively is recommended. Such a study should integrate items which pertain not only to overt behaviors but also to feelings and covert behaviors often related to suicidal behavior. For example, feelings of inadequacy, alienation, loneliness, hopelessness, and depression would need to be addressed as well as the eating disorders, non-supportive peer relations, and self-destructive behaviors. In addition, more items addressing suicidal behavior, such as frequency in the last twelve months, methods of attempts, and reasons for attempts are recommended.

Another recommendation for further research would be to conduct a comparative study of seventh through ninth grade students who attend a junior high and those who attend a middle school (seventh and eighth grade) and high school (ninth grade). Most research has identified seventh through ninth grades as the grades of highest risk for suicide behavior. Several studies have suggested that middle school students are less suicidal since the middle school environment is less stressful for and less obtrusive upon the students when making the transition from elementary school.

In closing, suicide is the second leading killer of today's youth. Yet this distressing reality can be prevented by a cooperative effort put forth by educators, parents, and researchers to better understand this phenomenon

and implement prevention and intervention suicide programs in schools. The youth of the world are deserving of this concern.

APPENDICES

APPENDIX A

APPENDIX B

NOTE TO TEACHERS

Thank you for assisting us by administering the Knowledge Student Survey (1-35) on DAY 1, and the Attitude/Behavior Student Survey (1-100) on DAY 2. Please help us get valid results from this survey by setting a serious tone in your classroom. The responses are very important for continued alcohol/drug funding in our district. Thank you.

** Please place the manila folder addressed to at in the back of your classroom. If you have any questions or concerns about administering this survey, please contact

TEACHER DIRECTIONS TO STUDENTS FOR THE SURVEY

1) Today we are doing the District Survey. It will be given to all students in grades 7-12.

2) I will pass out the #2 pencils, the NCS forms, and the survey booklets. Please remove everything from your desk, including all pens and pencils.

3) Thank you for helping us with the survey. Remember, this is not a timed test, and no one will be able to identify your responses. Does everyone have a booklet, an NCS form, and a #2 pencil?

4) We are doing the DAY 1 Knowledge portion of the survey first. Be sure that is what your survey booklet says. Tomorrow we will be doing the DAY 2 Attitude/Behavior portion.

5) This survey was developed for students to help us obtain information about knowledge, attitude and behavior, in particular, the use of tobacco, alcohol, and other drugs. There are also some sexuality questions.

Please follow along in the booklet as I read and as we mark the grid.

DAY 1 - KNOWLEDGE SURVEY (Student's have this same information in their booklet)

This survey contains no information which identifies you. To help insure your confidentiality, do not put your name anywhere on this booklet or on the answer sheet. No one in school will see your answers. The surveys will be sent away for scoring.

This survey was developed for students to help us obtain information about behavior and, in particular, the use of tobacco, alcohol, and other drugs.

This is a section which will check your knowledge of alcohol and other drugs. It is important that you answer each question as thoughtfully and honestly as you can. If you have trouble understanding a question, please raise your hand. Please select only one response to each question, and make sure you answer every one.

Thank you very much for helping us by taking your time to answer these questions to the best of your ability.

DIRECTIONS

The first section of your booklet asks questions about background. This information will not be used to identify you.

Together we will fill out the grid.

1. Under sex, fill in the appropriate mark. "M" for male and "F" for female.

2. Under the grade grid, blacken your grade.

3. Skip birthdate section, and find the section labeled identification number. We will fill this out according to ethnic background. Listen carefully and mark only one number.

   If you are: American Indian or an Alaskan Native, blacken the 1 under column A.

   Asian or Pacific Islander, blacken the 2 under column A.

   Black, not of Hispanic origin, blacken the 3 under column A.

   Hispanic, blacken the 4 under column A.

   White, not Hispanic, blacken the 5 under column A.

   Other, blacken the 6 under column A.

4. Under column B, blacken in number _____.
   (YOUR SCHOOL'S CODE NUMBER HERE)

Are there any questions? Is anyone having trouble filling in the grid?

MARKING INSTRUCTIONS

1. Use the #2 pencil which has been provided for you.

2. Blacken completely the circle next to the answer you choose. Make sure the letter you are marking on your answer sheet corresponds to the letter in your booklet. Mark only one response to each question.

3. Erase cleanly any marks you wish to change.

4. Do not make any stray marks on the booklet or answer sheet.

ADDITIONAL DIRECTIONS TO BE READ BY TEACHER

5. Please DO NOT WRITE your name or make any other marks anywhere on the survey or the NCS forms.

6. If you have any questions while you are answering this survey, please raise your hand so that I may help you.

7. When you have completed this survey, please place your booklet and pencil on the table, and your answer form (the NCS sheet) in the manila folder at the back of the room.

8. Thank you again for helping us with this survey.

9. Now we will begin. This is not a timed test. Answers to questions 1-18 are true or false. Only mark one response for each question. Answers to questions 19-35 are multiple choice. Again, mark only one response for each question.

DAY 2 - ATTITUDE/BEHAVIOR SURVEY (Student's have this same information in their booklet)

Please follow along in the booklet as I read and as we mark the grid.

This survey contains no information which identifies you. To help insure your confidentiality, do not put your name anywhere on this booklet or on the answer sheet. No one in school will see your answers. The surveys will be sent away for scoring.

This two part survey was developed for students to help us obtain information about behavior and, in particular, the use of tobacco, alcohol, and other drugs. There are also questions pertaining to sexuality.

This is not a test. It is important that you answer each question as thoughtfully and honestly as you can. If you have trouble understanding a question, please raise your hand. Please select only one response to each question, and make sure you answer every one.

Thank you very much for helping us by taking your time to answer these questions to the best of your ability.

DIRECTIONS

The first section of your booklet asks questions about background. This information will not be used to identify you.
Together we will fill out the grid.

1. Under sex, fill in the appropriate mark. "M" for male and "F" for female.

2. Under the grade grid, blacken your grade.

3. Skip birthdate section, and find the section labeled identification number. We will fill this out according to ethnic background. Listen carefully and mark only one number.

   If you are: American Indian or an Alaskan Native, blacken the 1 under column A.

   Asian or Pacific Islander, blacken the 2 under column A.

   Black, not of Hispanic origin, blacken the 3 under column A.

   Hispanic, blacken the 4 under column A.

   White, not Hispanic, blacken the 5 under column A.

   Other, blacken the 6 under column A.

4. Under column B, blacken in number _____.
   (YOUR SCHOOL'S CODE NUMBER HERE)

Are there any questions? Is anyone having trouble filling in the grid?

MARKING INSTRUCTIONS

1. Use the #2 pencil which has been provided for you.

2. Blacken completely the circle next to the answer you choose. Make sure the letter you are marking on your answer sheet corresponds to the letter in your booklet.

3. Erase cleanly any marks you wish to change.

4. Do not make any stray marks on the booklet or answer sheet.

ADDITIONAL DIRECTIONS TO BE READ BY TEACHER

5. Please DO NOT WRITE your name or make any other marks anywhere on the survey or the NCS forms.

6. If you have any questions while you are answering this survey, please raise your hand so that I may help you.

7. When you have completed this survey, please place your booklet and pencil on the table, and your answer form (the NCS sheet) in the manila folder at the back of the room.

8. Thank you again for helping us with this survey.

9. Now we will begin. This is not a timed test. Only mark one response for each question.

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