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SUICIDE-RISK BEHAVIORS AND DRUG INVOLVEMENT AMONG POTENTIAL HIGH SCHOOL DROPOUTS

by

Elaine Walsh

A dissertation submitted in partial fulfillment
of the requirements for the degree of

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Abstract

Suicide-Risk Behaviors and Drug Involvement
among Potential High School Dropouts

by

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Chairperson of the Supervisory Committee

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Two related studies were undertaken to provide a comprehensive profile of risk and protective factors for suicide among teens at risk for school dropout. Data from 801 potential high school dropouts (54% male and 46% female) ages 14-21 years were used in both studies. In Study 1, potential dropouts who were and were not at risk for suicide (Suicide-Risk and Non-Suicide-Risk youth) were compared on direct suicide risk factors, related risk factors, and protective factors; next, key risk and protective factors influencing current suicide risk status were identified. Findings revealed that Suicide-Risk potential high school dropouts had significantly more direct suicide risk and related risk factors, and significantly fewer protective factors, than Non-Suicide-Risk potential high school dropouts. The strongest predictors of level of suicide risk were prior suicide attempts, hopelessness, high-risk behaviors, adverse drug use consequences, being female, and being of Asian American ethnicity. Sense of support was a significant protective factor. In Study 2, a model of direct and indirect influences of select risk and protective factors on the co-occurrence of suicide-risk behaviors and drug involvement was specified and tested using structural equation modeling. The model was then tested to determine whether it was equivalent for males and females in explaining the co-occurrence of

suicide-risk behaviors and drug involvement. Study 2 findings demonstrated that suicide-risk behaviors and drug involvement were influenced by common risk and protective factors. Emotional distress and high-risk behaviors had direct influences on suicide-risk behaviors and drug involvement. Personal resources had a direct negative effect on suicide-risk behaviors but not on drug involvement. Family support and peer school support enhanced personal resources. For males versus females, there were more similarities than differences. High-risk behaviors and personal resources were stronger predictors of suicide-risk behaviors, while peer school support had a stronger effect on enhancing personal resources for females than for males. Findings support the need for comprehensive assessment of risk and protective factors influencing suicide-risk behaviors and drug involvement. Prevention programs should include components that reduce emotional distress, high-risk behavior, and deviant peer bonding; and components that enhance personal resources, family support, and peer school support.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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DEDICATION

To my parents, John and Louise, and to my brother, John,
in appreciation for a lifetime of love and support;
and to my friend and "extra parent,"
Patricia McLoughlin, whom I miss.

CHAPTER 1

Introduction, Study Aims, and Significance

Adolescent suicide is a tragedy that affects teens, families, and society in general. Suicide is the second leading cause of death among young people ages 15 to 19 years (Centers for Disease Control [CDC], 1995b; 1998b). This does not reflect the complete picture of self-destructive behavior among teens, however. Suicidal behaviors such as suicide thoughts, plans, and attempts are associated with completed suicides (Brent, et al., 1988; Brent, Perper, Moritz, Baugher, & Allman, 1993; Gispert, Davis, Marsh, & Wheeler, 1987; Gould, Fisher, Parides, Flory, & Shaffer, 1996). Other key interrelated factors associated with adolescent suicide and suicidal behaviors are emotional distress (Brent, Perper, Moritz, Allman, Roth, et al., 1993; Shafii, Steltz-Lenarsky, Derrick, Beckner, & Whittinghill, 1988) and substance use/abuse (Brent, Perper, Moritz, Baugher, & Allman., 1993; Brent et al., 1988; Crumley, 1979; Shafii et al., 1988; Reynolds & Mazza, 1994). Teens having problems in school are also at risk for suicide and suicidal behaviors (Barter, Swaback, & Todd, 1968; Gispert et al., 1987; Thompson, Moody, & Eggert, 1994).

Adolescent suicide risk requires attention from nurse scientists. Because nursing is a discipline concerned with health promotion and injury prevention, understanding and preventing adolescent suicide is appropriate and necessary. Nurse scientists are in a position to examine the phenomenology of adolescent suicide and to develop preventive models to guide practice. Health care professionals from all disciplines can benefit from such research.

There is considerable consensus among suicidologists that those who seek to explain and prevent adolescent suicide and suicidal behaviors must attend to multiple interrelated factors (Berman & Jobes, 1991; Davis & Sandoval, 1991). Focusing on suicidal behaviors alone is insufficient to determine risk; rather, associated and interrelated phenomena must be examined simultaneously (Eggert, Thompson, & Herting, 1994; Lewinsohn, Rohde, & Seeley, 1996). The relationships of these interrelated

phenomena—or risk and protective factors—to suicide-risk behaviors must be better understood in order to advance explanatory models of suicide risk among youth.

Another issue is whether models developed and tested explain suicide risk equally well for males and females. There is ample evidence that more females than males attempt suicide (Kerfoot, Dyer, Harrington, Woodham, & Harrington, 1996; Lewinsohn, Rohde, & Seeley, 1993; Ohring, Apter, Ratzoni, Weizman, Tyano, & Plutchik, 1996; Reynolds & Mazza, 1992) but that males have a higher rate of completed suicide (Berman & Jobes, 1995; Brent et al., 1988; Brent, Bridge, Johnson, & Connolly, 1996; Kachur, Potter, James, & Powell, 1995; Shafii et al., 1988). There is also mounting evidence to suggest there are more gender similarities than differences in explanatory models of suicidal behavior (Reynolds & Mazza, 1994; Thompson et al., 1994).

Accordingly, the goals of this dissertation study are to: (1) compare high-risk youth—defined as potential high school dropouts—who are also at risk for suicide with high-risk youth who are not at risk for suicide, (2) determine key predictors of these youths' current suicide risk, (3) specify and test a model explaining the co-occurring problem behaviors of suicide risk and drug involvement, and (4) determine whether the model developed explains suicide risk and drug involvement equally well for males and females.

Adolescent Suicide: Scope of the Problem

Suicide is a leading cause of death for teens (CDC, 1998b). While the national suicide rate was relatively stable, suicide rates for teens and young adults increased dramatically from 1950-1990. Rates among teens ages 15-19 years increased by 28.3% from 1980-1992, making suicide the second leading cause of death for this age group (CDC, 1995a). The incidence of suicide among 15- to 19-year-olds increased from 5.9/100,000 in 1970 to 11.1/100,000 in 1990 (Baker, O'Neill, Ginsberg, & Guohua, 1992). A recent study (CDC, 1998a) determined that the suicide rate among

Black youths was a growing problem. While suicide rates increased 19% among White teens, the rates among Black teens increased 126%.

Diekstra and Garnefski (1995) noted that, despite a general increase in the standard of living and physical health of teens, it does not appear that there have been such gains in the areas of mental health and social well being. The increase in completed suicides is alarming, as is the increase in suicidal behaviors (thoughts, plans, and attempts). The prevalence of suicidal behavior among high school students has been estimated as 9% (CDC, 1992), but underreporting makes it difficult to determine actual rates of suicidal behaviors (Group for the Advancement of Psychiatry, 1996). Suicide attempts made by adolescents frequently go unreported (CDC, 1992; Smith & Crawford, 1986). The most recent Youth Risk Behavior Survey (CDC, 1998b) revealed that 7.7% of high school students nationwide attempted suicide.

In addition to the obvious tragedy of the death or injury of a young person, adolescent suicide and suicide-related behaviors place a burden on the health care system (Spirito, Brown, Overholser, & Fritz, 1989). While hospitalization for suicidal behavior is common, it is expensive and has little impact on future suicidal behavior (Hawton, 1989); thus, it is usually not cost-effective (Safer, 1996).

Though hospitalization is not necessary for many suicidal adolescents, it is clear that suicidal teens require intervention because adolescents who attempt suicide are at increased risk for repeated suicide attempts, long-term psychiatric symptoms, and academic/social/behavioral problems (Shaffer & Piacentini, 1994). Thus, prevention programs are essential. In order to design such programs, interrelated factors influencing suicide risk must be examined, especially across known high-risk groups. This requires specifying and estimating models building on prior work and using state-of-the-art analytic methods such as structural equation modeling. Before discussing specifics about suicide and suicide-related behaviors, it is necessary to be clear about the terms used.

Defining Suicide and Suicidal Behavior

A critical part of advancing our understanding of adolescent suicidal behavior is arriving at some consensus for the definition of terms. O'Carroll and his colleagues (1996) described the need for a common language to explicate suicide thoughts and behaviors. They stressed the importance of this in comparing data obtained in different studies, noting that findings are more useful if others are clear about how suicide thoughts and behaviors were operationalized.

Figure 1.1 depicts the classification of suicide thoughts and behaviors based on O'Carroll and colleagues' (1996) definitions. Suicide ideation involves "any self-reported thoughts of engaging in suicide-related behavior." A suicide threat is "any interpersonal action, verbal or nonverbal, stopping short of a directly self-harmful act, that a reasonable person would interpret as communicating or suggesting that a suicidal act or other suicide-related behavior might occur in the near future" (p. 247).

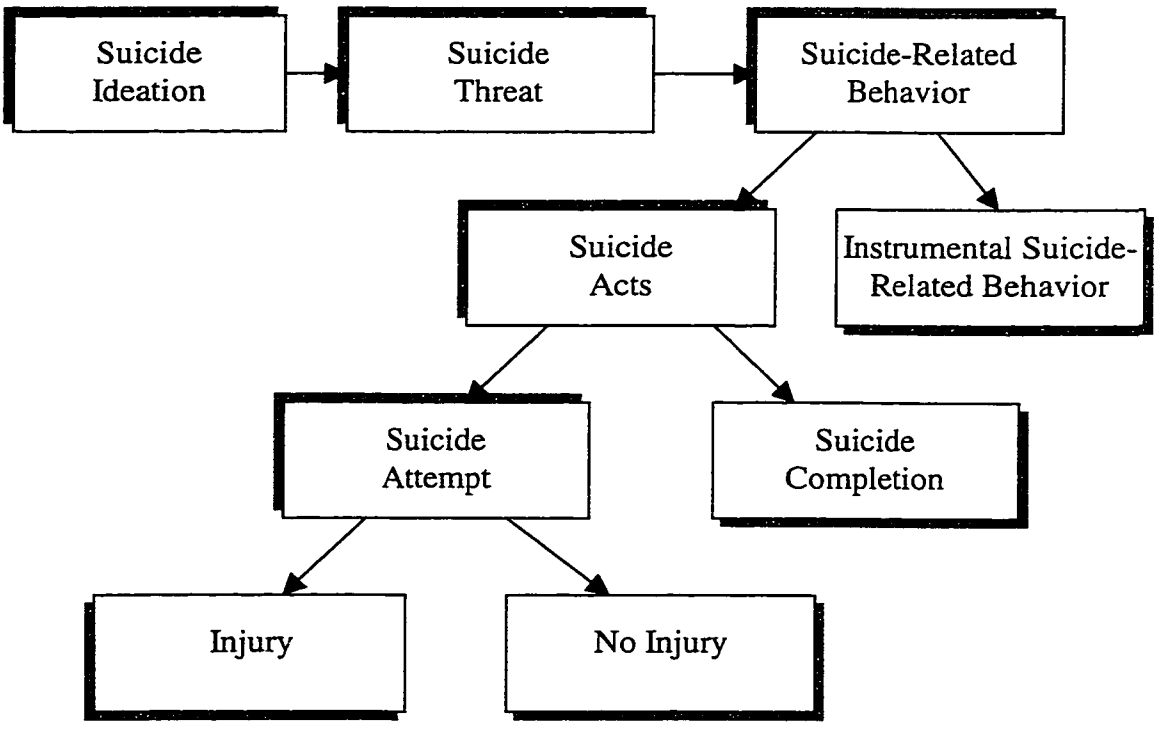


Figure 1.1. **Interpretation of Nomenclature Proposed by O'Carroll et al., 1996.**

Suicide-related behavior is "potentially self-injurious behavior for which there is explicit or implicit evidence either that (a) the person intended at some (nonzero) level to kill himself/herself or (b) the person wished to use the appearance of intending to kill himself/herself to attain some other end" (p. 247).

Suicide-related behavior is then divided by O'Carroll and colleagues (1996) into two categories—instrumental suicide-related behavior and suicide acts. Instrumental suicide-related behavior is "potentially self-injurious behavior for which there is evidence (either explicit or implicit) that (a) the person did not intend to kill himself/herself (i.e., had zero intent to die), and (b) the person wished to use the appearance of intending to kill himself/herself in order to attain some other end (i.e., to seek help, to punish others, to gain attention)" (p.247). A suicide act is a "potentially self-injurious behavior for which there is evidence (either explicit or implicit) that the person intended at some (nonzero) level to kill himself/herself. A suicidal act may result in death (completed suicide), injuries, or no injuries" (p. 247). Suicide acts can then be categorized as suicide completion, suicide attempt with injury, or suicide attempt without injury.

O'Carroll and colleagues (1996) define a suicide attempt as a "potentially self-injurious behavior with a nonfatal outcome, for which there is evidence (either explicit or implicit) that the person intended at some (nonzero) level to kill himself/herself. A suicide attempt may or may not result in injuries" (p. 247). A suicide attempt with injuries is an "action resulting in nonfatal injury, poisoning, or suffocation where there is evidence (either explicit or implicit) that the injury was self-inflicted and that the decedent [*sic*] intended at some (nonzero) level to kill himself/ herself" (p. 247). Completed suicide is defined as "death from injury, poisoning, or suffocation where there is evidence (either explicit or implicit) that the injury was self-inflicted and that the decedent intended to kill himself/herself" (pp. 246-7).

O'Carroll and colleagues (1996) noted that the results of suicide-related behavior may or may not produce the results intended by the person. For example,

death may result when the goal of the behavior was really to get attention or convey a level of distress. On the other hand, a person who truly intended to end his/her life may not be injured. An example of this is the use of a drugs or medications. A person who did not understand the pharmacology of a particular prescription drug might take what he/she considers to be an overdose and fully intend to die when in fact the amount taken was not lethal. Or, a person may not want to die at all but may combine a medication with alcohol or another drug/medication and have fatal results.

O'Carroll and his colleagues' nomenclature has advanced the field by providing clear definitions of terms which can resolve the controversies that exist about the meaning of these various suicidal behaviors. What is needed in current studies of youth suicide and suicidal behaviors is the application of this nomenclature. Currently few comparative studies have been conducted using this comprehensive conceptualization. In part such work has been hampered by a paucity of reliable and valid instruments suitable for comprehensively measuring suicidal behaviors, especially among representative populations of youth. One exception is the *Measure of Adolescent Potential for Suicide* (*MAPS*) created and tested by Eggert, Thompson, and Herting (1994). Definitions used in the questionnaire and interview are comparable to the definitions put forward by O'Carroll and colleagues (1996). The data obtained by using the *MAPS* captures the complexity of multiple interrelated correlates and predictors of suicide-risk behaviors. The merging of student reports with interviewer judgment adds to the accuracy of classifying a behavior.

The *MAPS* has demonstrated reliability and validity (Eggert, Thompson, and Herting, 1994) and is currently undergoing advanced tests with a large random sample to validate earlier findings of its reliability and construct validity (Eggert, Thompson, Herting, & Nicholas, 1995). Its use in descriptive and explanatory studies to compare suicidal versus non-suicidal youth, and to enhance our understanding of key predictors of the current level of suicide risk among various populations of youth has only

become possible recently. Accordingly, the present study capitalizes on the large database of potential high school dropouts who were interviewed with the computer-assisted *MAPS*.

Specific Aims

Two related studies were undertaken to achieve the goals stated above: that is, to provide a comprehensive, descriptive profile of the risk and protective factors evidenced by potential high school dropouts who are and are not also at risk of suicidal behaviors. The intent in Study 1 was to conduct an in-depth descriptive analysis, then identify key predictors of current suicide risk. Study 2 involved the use of prior empirical evidence and the findings from Study 1 to specify and test an explanatory model of the co-occurrence of suicide-risk behaviors and drug involvement among these high-risk youth. The specific aims of the two related studies were as follows:

Study 1 aims. This study was descriptive in nature and the aims were to:

1. Compare potential high school dropouts who are and are not at suicide-risk on three dimensions: (a) direct suicide risk factors, (b) related risk factors, and (c) protective factors; and
2. Identify key related risk and protective factors that influence current suicide-risk status among potential high school dropouts.

Study 2 aims. This study followed from Study 1, representing a logical next step in theory construction and testing. The aims were to:

1. Specify and test a model of the direct and indirect influences of select risk and protective factors on the co-occurrence of suicide-risk behaviors and drug involvement; and
2. Determine whether the estimated model is equivalent for males and females in explaining the co-occurrence of suicide-risk behaviors and drug involvement.

The two related studies used a common database from the *Reconnecting Youth Prevention Research Program.* Study 1 is entitled "Potential High School Dropouts:

Suicide-Risk Versus Non-Suicide-Risk Youth." Study 2 is entitled "Risk and Protective Factors Influencing Suicide-Risk Behaviors and Drug Involvement among High-Risk Youth."

Significance

These two studies were expected to have potential theoretic and clinical significance. First, Study 1 was expected to add to our understanding of how potential high school dropouts who are identified as being at risk for suicide compare to their counterparts who are not at risk for suicide in terms of a comprehensive picture of direct suicide risk factors, related risk factors, and protective factors. Little is currently known about this population although they are acknowledged to be at risk for suicidal behaviors. Also, the findings of this study were expected to provide empirical support for the *MAPS* conceptual framework, illuminating those correlates and predictors presumed to be important in assessing adolescent suicide potential.

Second, Study 2 serves to extend and test the boundary conditions of existing explanatory models of adolescent suicide potential. The model specified was grounded both in empirical findings from prior research, as well as in those from Study 1. Specifically, the study extends prior work by modeling the co-occurrence of drug involvement and suicidal behavior, and positing key individual, interpersonal, and social factors assumed to be important in leading to drug involvement and suicidal behavior.

Finally, the study findings were expected to have clinical significance for both (1) the assessment of suicidal behaviors and drug involvement among high-risk youth and (2) the design and/or refinement of existing suicide preventive interventions. By isolating key predictors of current suicide-risk levels among high-risk youth, the present study was expected to contribute to increasing precision in assessing youth thought to be at risk for suicide. Also, by illuminating key factors and the pathways by which these factors influence both suicidal behaviors and drug involvement, this study was

expected to provide implications for the design of indicated preventive interventions to reduce suicide potential and drug involvement among high-risk youth.

The subsequent chapters are organized around the two studies. Chapters 2 and 3 contain the theoretical framework, methods, findings, and discussion for Studies 1 and 2, respectively. Chapter 4 contains the summary and conclusions drawn from the findings in both studies, a discussion of strengths and limitations, and implications for future research directions and clinical practice.

CHAPTER 2

Study 1:Potential High School Dropouts: Suicide-Risk Versus Non-Suicide-Risk Youth

In Chapter 1 the problem of youth suicide was introduced, definitions of suicidal behaviors were explicated, and the specific aims and potential significance of this dissertation study were detailed. In this chapter, the first of two studies is presented. First, a comprehensive conceptual framework for the study is discussed; then the study design, methods, and procedures are detailed, and the findings are explicated. The chapter ends with a summary discussion of the findings.

The central purposes of Study 1 were: (1) to test the general hypothesis that potential high school dropouts identified as being at risk for suicide, compared to potential dropouts not at risk for suicide, will evidence greater levels of direct suicide-risk and related-risk factors and lower levels of protective factors; and (2) to determine key predictors of current levels of suicide risk from among the related risk and protective factors in the conceptual model.

Conceptual Framework

Recent advances in exploring the potential for suicidal behaviors among youth involved use of a public health model of risk and protective factors (e.g., Coie et al., 1993). A variable is considered a risk factor if an elevated status of the variable increases the possibility that a disorder will develop in an individual (Lewinsohn, Rohde, & Seeley, 1993). Using Lewinsohn and colleagues' definition of risk factors as a guide, a protective factor can be considered a variable whose increased status decreases the potential for suicide and suicidal behaviors.

Eggert, Thompson, and Herting (1994) conceptualized suicide potential in terms of risk and protective factors in their *Measure of Adolescent Potential for Suicide* (*MAPS*). The conceptual framework for the *MAPS* consists of three hierarchical constructs: direct suicide risk factors, related risk factors, and protective

factors. Direct suicide risk factors include exposure to suicide, attitudes and beliefs about suicide, suicide thoughts, expressed suicide threats, planning and preparation for suicide, prior suicide attempts, lethality of prior attempts, and level of current risk. Related risk factors include emotional distress (depression, hopelessness, anxiety, anger), stress, family distress, high-risk behaviors, violence/victimization, and drug involvement. Protective factors include personal resources (personal control, self-esteem, positive coping skills) and social resources (the amount and availability of social support from family, friends and adults and peers at school; and family support satisfaction). This *MAPS* measurement theory was confirmed by Eggert and her colleagues using traditional psychometric tests and confirmatory factor analysis (Eggert, Thompson, & Herting, 1994; Thompson, & Eggert, 1999), demonstrating its construct and predictive validity in reflecting levels of adolescent suicide potential.

In the present study, the *MAPS* framework was used as the basis for comparing suicide-risk and non-suicide-risk teens. The literature reviewed and discussed in the next sections adds to the mounting evidence in support of the *MAPS* conceptual framework. The framework is used for describing the youth and is further tested by identifying key predictors of suicide-risk behaviors among potential dropouts. Suicide-risk behaviors are a more useful outcome measure than completed suicides alone due to the relatively low occurrence of suicide completions in the population.

Direct Suicide Risk Factors

Direct suicide risk factors are closely related to completed suicides. These include suicide thoughts, plans, and attempts (Brent et al., 1988; Brent, Perper, Moritz, Baugher, & Allman, 1993; Gispert, Davis, Marsh, & Wheeler, 1987; Gould et al., 1996). These factors are consistent with O'Carroll and colleagues' (1996) conceptualization of risk and protective factors for suicide. (See Figure 1.1 in previous chapter.) Other factors addressed include attitudes and beliefs about suicide and exposure to suicide.

Exposure to suicide. There is evidence that exposure to someone who has attempted or completed suicide is linked with suicide ideation and suicide attempts. For example, Conrad (1992) studied 473 high school students and found that knowing someone (family member, friend, schoolmate) who attempted or completed suicide was significantly more likely to be present in suicidal students than in those who were not. Wagner, Cole, and Schwartzman (1995) conducted another school-based study of students ages 12-21 years who were in the 7th through 12th grades. Knowing someone who completed suicide was more common among teens who had attempted suicide than in those who had not attempted suicide.

In a study comparing physically abused teens to controls, Kaplan, Pelcovitz, Salzinger, Mandel, and Weiner (1997) found that, among the abused teens, exposure to suicide attempts by family members and friends was significantly more common among those who had attempted suicide than in those who had not attempted suicide.

Simonds, McMahon, and Armstrong (1991) conducted a study with 50 suicide attempters between the ages of 15 and 30 years and a control group consisting of volunteers who were non-attempters. They found that having a family member who had attempted suicide was more common among suicide attempters than non-attempters.

Evidence to the contrary is provided by Brent, Moritz, Bridge, Perper, and Canobbio (1996), who conducted a three-year follow up study on teens exposed to suicide (n = 166) and controls who were not exposed to suicide (n = 175). They found no evidence that teens exposed to suicide were at increased risk for suicide attempts; however, those exposed to suicide continued to show high rates of depression, anxiety, and post-traumatic stress disorder.

Thus, while evidence is not conclusive, it is appropriate to consider suicide exposure when assessing suicide risk. Exposure to suicide may influence teens' attitudes about suicide, which are discussed next.

Attitudes and beliefs about suicide. Attitudes about life, death, and suicide were examined in several studies. There is evidence that beliefs about life and death were different for those who thought about suicide than for those who had not thought about suicide. In studies of inpatients and high school students, teens with positive attitudes about suicide evidenced a history of prior suicide attempts (Guttierez, King, & Ghaziuddin, 1996) and suicide ideation (Cotton & Range, 1996).

These findings are supported by those of Pinto, Whisman, and Conwell (1998), who examined attitudes about suicide in 253 inpatients. Forty percent of the sample had attempted suicide, while 30% had suicide ideation and 30% were not suicidal. Those teens with decreased moral objections to suicide were more likely to be suicidal. Decreased fear of suicide, and a decreased fear of failure and social disapproval, were more common among those who attempted suicide than among those who had suicide ideation only. Attaching less importance to life-oriented beliefs and expectations was more common among suicidal adolescents than their non-suicidal peers.

It is difficult to draw conclusions about the effect of attitudes and beliefs on suicide-related behavior without prospective data. That is, it is difficult to determine whether attitudes and beliefs about suicide were developed as a result of past suicidal behavior, or whether attitudes and beliefs about suicide led to the suicidal behavior. However, studies to date provide support for the need for inclusion of attitudes and beliefs about suicide in studies of suicide potential.

Suicide thoughts, threats, and plans. Studies focusing on high school students provide some insight into the prevalence of suicide thoughts and plans among teens. Sample sizes vary, but it is clear that many high school students think about suicide, and suicide thoughts and plans have been linked to suicidal behavior (Gould, King, et al., 1998; Kann et al., 1996; Smith & Crawford, 1986; Wagner et al., 1995).

Suicide ideation has been linked with suicide completion. Grøholt, Øivind, Wichstrøm, and Haldorsen (1998) compared younger children (less than age 15 years) with older teens (ages 15 to 19 years) who completed suicide and found that 68% of

older adolescents either expressed suicide ideation, attempted suicide in the past, or left a farewell note. In a psychological autopsy study of 7 suicide completers with no apparent psychiatric disorder, 60 suicide completers with definite or probable psychiatric problems, and 38 community controls with no psychiatric disorder (Brent, Perper, Moritz, Baugher, & Allman, 1993), suicide ideation in the week before suicide completion was displayed more frequently among those suicide completers with psychiatric disorder than those without. Completers without disorder were more likely to display suicide ideation than were community controls. Another psychological autopsy study by the same group (Brent et al., 1988) compared 27 suicide completers to 56 psychiatric inpatients. They found that suicide intent was much higher among suicide completers than among inpatients.

Inpatient studies also confirm the importance of suicide ideation, threats, and planning in relation to suicide attempts. For example, in a study of 81 inpatients by Gispert and colleagues (1987), more serious suicide intent was reported by those who made repeated attempts as compared to those who did not. Deykin and Buka (1994) studied 300 teens who were in residential treatment for alcohol/other drug dependence. They found that as the number of suicide thoughts experienced by a teen increased, the proportion of subjects attempting suicide increased.

Studies of outpatients provide evidence that suicide ideation and suicide threats are linked with suicide attempts. For example, Wetzler and colleagues (1996) conducted a study involving four groups of outpatients: 84 teens who made suicide attempts requiring medical attention, 57 who made attempts that did not require medical attention, 40 teens who had suicide ideation but had never made an attempt, and 44 non-suicidal teens. They conducted multivariate analysis of variance and found significantly higher lifetime suicide ideation and lifetime suicidal plans/actions among those who made suicide attempts as compared to those who were not suicidal.

School-based studies also provide information about suicide ideation, threats, and plans and their relationship to suicide attempts. Kienhorst and colleagues (1990)

studied 9393 Dutch students and found increased thoughts about suicide among those who did versus those who did not make suicide attempts. Along those lines, Kann and colleagues (1996) reported that suicide ideation was observed among those students who had made a suicide plan (17.7% of the 10,904 surveyed). In another study of 1542 adolescents ages 12-14 years (Garrison, Jackson, Addy, McKeown, & Waller, 1991), 1.9% of males and 1.5% of females had made suicide attempts. Suicide ideation was reported by all of those who made attempts.

Thus, it is clear that addressing suicide ideation, threats, and plans is appropriate and necessary when studying suicide potential.

Prior suicide attempts. Another clear indicator of suicide risk is prior suicide attempts. A number of studies (CDC, 1998b; Gould, King, et al., 1998; Kann et al., 1996; Lewinsohn et al., 1993; Smith & Crawford, 1986; Wagner et al., 1995) have addressed prior suicide attempts among high school students. The incidence of prior suicide attempts reported ranges from 3.3% to 14%. There is compelling evidence across studies that youth who have made suicide attempts are at risk for making attempts in the future.

Using a psychological autopsy approach, Brent, Perper, Moritz, Allman, and Roth (1993) found that a previous suicide attempt had been made by 25.8% of those who completed suicide. In addition, evidence of past suicidal gestures, threats, or ideation with a plan was present for 20.9% of these youth. When Brent and colleagues (1988) compared inpatients who attempted suicide or seriously considered suicide (n = 56) with those who completed suicide (n = 27), completers were found to have had higher suicide intent than did those who attempted suicide with nonfatal outcomes. In the 1988 study, 22% of those who completed suicide had made previous suicide attempts. Interestingly, however, 39% of inpatients had made prior suicide attempts.

Other studies of inpatients and outpatients demonstrate that those who make suicide attempts are at risk for making repeated attempts. Beautrais, Joyce, and Mulder (1996) studied 129 youth who had made serious suicide attempts; 54% had

made a prior suicide attempt. Gispert and colleagues (1987) studied 81 teens who were admitted to an inpatient unit for suicide attempts and serious threats or ideation related to suicide. Of the 38 teens who made suicide attempts, 47% (n = 18) had made at least one other attempt. Barter, Swaback, and Todd (1968) followed 45 patients who were admitted for suicidal behavior. Forty-two (93%) of these patients went on to make suicide attempts after being discharged from the hospital. In a similar type of study, Gispert and colleagues (1987) found that 1/2 of the patients had made prior attempts and that 1/3 went on to make attempts after hospitalization. Greater intent was found among those who made repeated attempts. King and colleagues (1995) studied suicidal behavior in teens after inpatient hospitalizations and found that 18% (5 of 28) of those who were hospitalized for suicidal behavior engaged in suicidal behavior during the follow-up period.

In Crumley's (1979) study of outpatients, a history of numerous prior suicide attempts was present in 40% of those seen for current suicidal behavior. In a follow-up study involving adults who had depression in adolescence (Harrington et al., 1994), it was determined that 32% (19 of 60) of depressed adolescents went on to make suicide attempts as adults. Of those who made suicide attempts, 63% (12 of 19) made more than one suicide attempt.

Hence, a history of prior suicide attempts is related to current suicide risk and is predictive of future suicide attempts and/or suicide completion. In addition to examining the relationship of these direct suicide risk factors to suicide potential in high-risk teens, related risk factors are included in the *MAPS* comprehensive framework of adolescent suicide potential (Eggert, Thompson, & Herting, 1994).

Related Risk Factors

Research evidence indicates that several related risk factors are associated with suicide potential, though not as strongly as direct suicide risk factors discussed in the foregoing section (Eggert, Thompson, Randell, & McCauley, 1995). Potential related

risk factors include depression and other indicators of emotional distress, stress, high-risk behaviors, violence/victimization, and substance use/abuse.

Emotional distress has been associated with suicide completion (Brent, Perper, Moritz, Allman, Roth, et al., 1993; Brent, Perper, Moritz, Baugher, & Allman, 1993; Shafii et al.,1988), suicide attempts (Fergusson & Lynskey, 1995; Gispert, Wheeler, Marsh, & Davis, 1985; Lewinsohn et al., 1993; Simonds et al., 1991), and suicide ideation (Thompson et al., 1994). Aspects of emotional distress included in this study are depression, anxiety, hopelessness, and anger; these are discussed next.

Depression. Depression is one indicator of emotional distress and is linked with suicide risk. There is ample evidence in the literature that depression or depressed mood influence suicide and suicide-related behaviors. For example, Brent, Perper, Moritz, Baugher, and Allman (1993) studied teens who completed suicide and found that those with psychiatric diagnoses such as major depression were more likely to have shown signs of suicide ideation than those without such diagnoses. The authors suggested that those who were not emotionally disturbed may have killed themselves as an impulsive reaction to a stressor rather than as an outcome of a chronic psychiatric disorder. In another retrospective study led by Brent (Brent, Perper, Moritz, Allman, Friend, et al., 1993) major depression was found to be the single most significant predictor of completed suicide. The odds ratio (OR) of having major depression was 27.0, while the odds of having other disorders were lower (bipolar mixed disorder OR = 9.0, substance abuse disorders OR = 8.5, conduct disorder OR = 6.0). In a longitudinal study by Rao, Weissman, Martin, and Hammond (1995), those patients with early onset major depressive disorder had a much higher rate of completed suicide than those with early onset anxiety and normal controls.

Studies of clinical samples provide added evidence about the relationship between depression and suicidal behavior. Wetzler and others (1996) concluded that depressed mood was fundamentally associated with suicidality, even months and years after the suicidal behavior was exhibited. In a similar vein, depression was found to be

associated with prior suicide attempts in a clinical population (Simonds et al., 1991). King, Hill, Naylor, Evans, and Shain (1993) found severity of depression to be the strongest predictor of suicide ideation, accounting for 28% of the variance.

Information particularly relevant to the current study concerns community samples of high school populations. In a study of 352 typical high school students, Martin, Rozanes, Pearce, and Allison (1995) conducted regression analyses and found that depression accounted for 34% of the variance in suicide ideation, 24% of the variance in suicide planning, and 37% of the variance in suicide attempts. Depression was found to be associated with prior attempts in another study of 1710 students ages 14 to 18 years (Lewinsohn et al., 1993). In this study, the co-occurrence of depression with disruptive behavior disorders increased the risk of suicidal behavior beyond that associated with a single diagnosis. Thompson and colleagues (1994) had similar findings with high school students at risk for school failure. Depression was the best predictor of suicide ideation, and those with greater psychological distress had more suicidal ideation. In contrast, Reynolds and Mazza (1990) studied a school-based population (N = 330) and found that not all depressed teens contemplated suicide; moreover, not all teens who exhibited suicidal ideation were depressed.

The majority of information presented provides clear support for inclusion of depression in studies of suicide potential. Another aspect of emotional distress is anxiety; evidence supporting the inclusion of anxiety is provided next.

Anxiety. Most evidence supports the hypothesis that anxiety is an important factor influencing adolescent suicidal behavior. For example, in a study of 43 suicide victims and 43 controls, Brent and colleagues (1994) found that a history of anxiety disorder was significantly more likely among those who completed suicide than among controls.

Other evidence comes from studies of inpatients. Anxiety was found to be related to suicide ideation in a study by Pinto & Whisman (1996). Stein, Apter, Ratzoni, Har-Even, and Avidan (1998) studied 32 first-time attempters, 19 teens who

had attempted suicide 5 or more times, 109 non-suicidal inpatients, and 85 controls ages 12-18 years. They found increased state and trait anxiety in both suicidal groups as compared to controls. Further, Ohring, Apter, Ratzoni, Weizman, Tyano, and Plutchik (1996) found significantly higher levels of state and trait anxiety among hospitalized teens who made suicide attempts than among non-attempters. Because state and trait anxiety were highly correlated with depression, an analysis of covariance was conducted to control for depression. While there were no differences between groups on state anxiety, those who made suicide attempts scored significantly higher on measures of trait anxiety, suggesting that trait anxiety has an effect independent of depression on suicidal behavior.

While data from the study by Ohring and colleagues (1996) suggested that chronic anxiety was related to suicidal behavior, Gupta, Singh, and Godiyal (1987) concluded that anxiety in 42 inpatients who attempted suicide was more of a transient reaction than a syndrome. Conclusions in this study were based on clinical impressions of interviewers rather than on measures of anxiety, however.

Some studies involving inpatients argued that anxiety was not a factor in suicide attempts. Enns, Inayatulla, Cox, and Cheyne (1997) worked with 77 teens who attempted suicide and found that anxiety did not predict suicide intent. In another study of 269 inpatients ages 12-19 years, there were no differences in rates of anxiety disorder among first-time attempters, repeat attempters, previous attempters (those who made attempts in past but attempt did not precipitate current hospitalization), and non-attempters (Goldston et al., 1996).

Studies of high school students also demonstrate that anxiety is an important factor in suicide attempts. Keane, Dick, Bechtold, and Manson (1996) conducted a longitudinal study involving 163 Native American teens ages 13-20 years. They found anxiety scores to be a significant predictor of suicide attempts. Gould, King, and colleagues (1998) found that panic attacks were a significant correlate of suicide risk in a sample of 1285 teens.

While different aspects of anxiety were explored in the studies reviewed, the evidence clearly supports the inclusion of anxiety in studies of suicide potential.

Hopelessness. Another emotional distress indicator that appears to influence suicide potential is hopelessness. In studies of inpatients and of high school students, most evidence supports this hypothesis. Pinto and Whisman (1996) studied inpatients (68 with suicide ideation, 90 suicide attempters, and 70 who were not suicidal) and found significantly more hopelessness among those who had suicide ideation versus non-suicidal youth. In a study of 40 inpatients with similar levels of depression (Morano, Cisler, & Lemerond, 1993), hopelessness was more prevalent in the 50% who had made suicide attempts than in the 50% who had not. In a study that combined the responses of 84 high school students and 15 inpatients, Cotton and Range (1996) found that hopelessness was correlated with suicidality (r = 0.48).

In Canada, Enns and colleagues (1997) compared Caucasian and Aboriginal teens who had made suicide attempts (N = 77, 80% female) and found differences between the two groups. For Caucasians, hopelessness was a predictor of suicide intent, while the severity of depression did not predict intent. Interestingly, for Aboriginal teens, hopelessness was not a predictor of suicide intent.

In studies of high school students, results are mixed. Allison, Pearce, Martin, Miller and Long (1995) studied 307 students, ages 13-17 years; hopelessness accounted for 13% of the variance related to suicidality. However, Reifman and Windle (1995) examined 2 cohorts (Ns = 698 and 283) over time and found that hopelessness at time one did not predict suicidal behaviors at a later time. In contrast, Mazza and Reynolds (1998) studied 374 high school students over time and found that changes in hopelessness for females (but not males) were moderately related to changes in suicide ideation (r = 0.35). When regression analyses were conducted, increases in hopelessness made a significant contribution to increases in suicide ideation (β= 0.42) but only for females.

Despite these mixed findings, the positive and more recent findings highlight the importance of hopelessness as a risk factor for suicidal behavior. The demonstrated links between hopelessness and suicide thoughts and attempts clearly warrant inclusion in studies of youth suicide potential.

Anger. There is evidence that anger, another indicator of emotional distress, is an important risk factor for suicidal behavior. Brent and colleagues' (1994) psychological autopsy study of 43 youth who completed suicide and 43 controls, all ages 13-19 years, contained the conclusion that assaultive behaviors were more common among those who completed suicide than among controls.

Studies of inpatients provide additional evidence. Grosz and colleagues (1994) studied 76 consecutive admissions to an inpatient unit. Among these 12- to 18-year-old subjects, 40 were violent and 36 were not violent. Those who were violent had significantly higher rates of suicide attempts than did those who were not violent. In addition, it was concluded that impulsivity was an important mediator of violent behavior. In a study by Wetzler and colleagues (1996), elevations in hostility were found among suicide attempters who required medical treatment as compared to suicide attempters who did not require treatment. In another study (Simonds et al., 1991), hostility was found to be elevated in teens who had made a suicide attempt. Further evidence is provided by Lehnert, Overholser, and Spirito (1994), who found that anger and hostility were common among adolescents who attempted suicide. Stein and colleagues (1998) noted that measures of aggression were the only measures that differentiated patients who had made one suicide attempt from those who had made multiple attempts. They stressed that, for patients who were already severely depressed and anxious, high levels of aggression might be the parameter that significantly predicts multiple attempts. Clinical observations of teens in India determined that explosive behavior patterns were present in one third of the group of 43 who attempted suicide (Gupta, Singh, & Godiyal, 1987).

The studies reviewed in this section argue strongly for inclusion of anger in assessment of suicide risk. Anger has been linked with suicide attempts and suicide completions. The four indicators of emotional distress—depression, anxiety, anger and anger—may be accompanied by risk factors from other domains discussed next.

Stress. Another factor influencing adolescent suicidal behavior is stress. Brent and colleagues (1988) determined that interpersonal conflict was the precipitant for the suicide attempt 70% of the time in a study of suicide completers and hospitalized suicide attempters. Gould and colleagues (1996) found that suicide completers (n = 120) had significantly more stressful life events than did community controls (n = 147).

In studies of teens who attempted suicide, stress was associated with suicide risk and suicidal behavior (deWilde, Kienhorst, Diekstra, & Wolters, 1992; Gispert, Wheeler, Marsh, & Davis, 1985; Simonds et al., 1991). Stress ranged from a specific precipitant—such as the breakup of a romantic relationship—to chronic lifetime stress.

Studies of inpatients and outpatients provide added evidence linking stress and suicidal behaviors. Morano, Cisler, and Lemerond (1993) compared 20 inpatients who made serious suicide attempts with 20 non-attempters, finding that one type of stress—loss—was a predictor of suicide attempts (β= 0.44). In a study by Wilson and colleagues (1995) comparing 20 suicide attempters with 20 nonpsychiatric controls, significantly more stressful life events were reported by the suicide attempters as compared to controls, and the stressful life events reported by attempters were more severe. Swedo and colleagues (1991) had similar findings when they studied 21 adolescent suicide attempters, 15 at-risk students (known to have risk factors but no recent suicide attempt), and 34 community controls. Increased environmental stress was present among those who had attempted suicide when compared with controls. However, there were no significant differences in stress between attempters and at-risk teens. Similarly, Wetzler and colleagues (1996) found no significant differences in stressful life events among three groups of outpatients: suicide attempters who

required medical treatment (n = 84), suicide attempters who did not require medical treatment (n = 57), and teens with suicide ideation who had not made an attempt (n = 40). Nonsuicidal patients (n = 44), however, had fewer stressful life events than each of the other groups.

In contrast to this, Windle and Windle (1997) studied 975 high school students and found that, for girls only, a greater number of stressful life events was present for suicide attempters as compared to suicide ideators. Rohde, Seeley, and Mace (1997) studied 554 teens (457 males and 97 females) in a juvenile detention facility and found that, for males, stressful life events was a unique correlate of suicidal behavior. The authors acknowledged that males were over-represented in the sample.

Wagner and colleagues (1995) studied three groups of high school students (N = 1050). After conducting multivariate analysis of variance, they found increased daily stress to be linked with prior suicide attempts. Another study of high school students ages 11-18 years (N = 558) by deMan, Leduc, and Labréche-Gauthier (1992) found moderate negative correlations between negative stressors and suicide ideation.

Some studies provide important but less definite evidence about the role of stress in suicide risk. For example, Mazza and Reynolds (1998) examined the relationship of social-environmental factors to suicide ideation over a one-year period for 374 high school students. While not significant, trends were found for the relationship between changes in daily hassles and changes in suicide ideation—for males only. For females only, non-significant trends were found for the relationship between changes in negative life events and changes in suicide ideation.

In another community-based study of 123,132 teens, Neumark-Sztainer and colleagues (1997) examined correlations between number of concerns (from a list of 20 stressful events) and suicide risk. Correlations were low but significant for males (r = 0.06) and for females (r = 0.15). The authors acknowledged, however, that all correlations were significant due to the large sample size.

The role of stress may also be mediated by other variables. Lewinsohn and colleagues (1993) studied 1710 high school students and found that stressful events were no longer associated with past suicide attempts after controlling for depression. They suggested that stressful events are related to past attempts through depression. In a similar vein, a follow-up study on the same sample (N = 1507) (Lewinsohn et al., 1996) found that interpersonal problems and stressors did not directly effect suicidal behavior. However, the effect of interpersonal problems through cognitions and coping ($\beta = 0.40$) was the strongest indirect effect in the structural model.

The information discussed here supports the inclusion of stress in studies of suicide potential. Family distress is one type of stress that requires specific focus when assessing adolescent suicide potential. This is discussed next.

Family distress. The specific stressor of family distress has been addressed in a number of studies related to youth suicide and suicidal behaviors. For example, Marttunen, Aro, Henriksson, and Lonnqvist (1994) studied teens ages 13-19 years who completed suicide (N = 53) and divided their psychiatric symptoms/diagnoses into three categories: alcohol use, depression, and "other." A history of family discord was found in 50% of those who had alcohol use problems, in 39% of those with depressive disorders, and in 29% of those with "other" diagnoses.

In a follow-up study of 45 teens who had attempted suicide, Barter and colleagues (1968) concluded that living apart from parents and the loss of a parent were risk factors for future attempts. More recent findings from a study by deWilde and colleagues (1992) are congruent; 48 teens who attempted suicide had more episodes of separation from their parents than did 43 controls.

In a study of 42 inpatients who attempted suicide, Gupta and colleagues (1987) interviewed patients and family members, and observed patients; they determined that family maladjustment contributed to suicidal behavior.

In other studies of inpatients, both poor communication with parents, and family distress were noted to be common among those who had attempted suicide.

For example, Khan (1987) studied 40 hospitalized suicidal teens, 40 hospitalized nonsuicidal teens, and 40 outpatients who were not suicidal and had never been hospitalized. Through interviews with teens and their families, they found that 74–86% of teens in all three groups perceived their family relationships as poor. In a similar study, Topol and Reznikoff (1982) studied 30 hospitalized suicide attempters, 35 nonsuicidal inpatients, and 35 matched community controls. Serious family problems were experienced most frequently in the suicidal group. The control group experienced family discord least frequently, with the hospitalized nonsuicidal group falling between these two groups. Analysis of variance was used to determine that there were significantly fewer family problems for the control group and that the other groups did not differ significantly from one another.

Studies of high school students also provide evidence that family discord may be related to suicide risk. Wagner, Cole, and Schwartzman (1995) studied 1050 junior and senior high school students, who were divided into three categories: those who had attempted suicide, those who had high levels of depression or suicide ideation but had not made attempts, and those who were not depressed or suicidal. Teens who attempted suicide reported increased difficulties indicative of disrupted or troubled homes as compared to the other two groups.

In two reviews of the literature, one concurs with the aforementioned research while the other challenges it. Pfeffer (1988) determined that problematic family interpersonal relations were an important factor influencing adolescent suicidal behavior. On the other hand, Wagner (1997) conducted an extensive review of studies related to family dysfunction and concluded that there was no strong evidence that poor family communication or problem solving was a risk factor for suicidal symptoms or behavior. He cited flaws in studies, including use of cross-sectional data rather than longitudinal data, as an important factor in his review.

While Wagner's critique is valid, it is clear that further exploration of the effect of family distress on suicide potential is necessary. Although methodological

improvements are needed, there is evidence that family distress is a risk factor influencing suicide potential. Another risk factor—high-risk behaviors—is described next.

High-risk behaviors. High-risk behaviors are potentially hazardous or lethal actions; some such behaviors are illegal. Those who engage in these high-risk behaviors may have disciplinary or legal problems. Links have been found between high-risk behaviors and suicide-risk behaviors.

Retrospective studies of those who completed suicide provide evidence that problems with discipline and/or legal issues were often present. Brent, Perper, Moritz, Baugher, and Allman (1993) found that legal or disciplinary problems were present in equal amounts among 60 young people who completed suicide; there were no differences in legal/disciplinary problems between teens with and without psychiatric disorders. In a different led study by Brent (Brent, Perper, Moritz, Allman, Roth, et al., 1993) it was noted that there was an increased incidence of conduct disorder among 67 youth who completed suicide. In addition, discipline problems and/or a history of prior arrest were often present among teens hospitalized after making a suicide attempt (Barter, Swaback, & Todd, 1968; Simonds et al., 1991). Thus, there is evidence that those who have engaged in high-risk behaviors that challenge personal or social limits and norms may also have engaged in suicidal behavior.

Unsafe use of firearms is a high-risk behavior strongly associated with suicide completion. In a study of adolescents who completed suicide (Brent, Perper, Moritz, Baugher, and Allman, 1993), firearms accounted for the majority of deaths in those teens with (n = 60) and without (n = 7) psychiatric diagnoses. Those without a psychiatric diagnosis were more likely than those with diagnoses to have a loaded gun in the home. When Brent and colleagues (1988) compared 27 adolescents who completed suicide with 56 adolescent psychiatric inpatients, firearms accounted for over half of the deaths, and firearms were more likely to be found in the homes of those who completed suicide.

A related though less dramatic issue was addressed by Lewinsohn and colleagues (1995), who tested the *Life Attitudes Scale.* This scale assesses life-threatening and life-enhancing behaviors. They found that low levels of positive behaviors (e.g., maintaining a healthy balance between work and play, "I would never play Russion roulette") were associated with an increased risk for life-threatening behaviors, and they suggested that attention must be paid to those who do not engage in positive behaviors as well as to those who engage in negative behaviors.

This information describes a type of lifestyle (rather than specific behaviors or symptoms) that involves placing oneself in, or being placed in, situations that may be hazardous. Studies reviewed here provide support for the inclusion of high-risk behaviors in studies of suicide potential.

Violence/victimization. There is conflicting evidence in the literature about the role of violence/victimization in adolescent suicidal behavior. Some researchers found associations between abuse and suicidal behavior, while others did not.

Studies of high school students have linked victimization and suicide risk. In an epidemiological study of 123,132 students in 6th, 9th and 12th grades (Neumark-Sztainer et al., 1997), physical abuse and sexual abuse were found to be correlated with suicide risk (r = 0.27), which was defined as suicide ideation and behaviors. Choquet and Menke (1990) used a random sample of 1601 high school students ages 13-16 years and found that being a victim of violence was associated with suicide ideation for both males and females. Garnefski and Diekstra (1997) studied 1490 high school students ages 12-19 years, 745 of whom had a history of sexual abuse and 745 of whom did not. They found that males with a history of abuse had increased suicidality when compared with their female counterparts.

Hunter (1990) studied gay and lesbian youth who were clients at a community center. She reviewed the intake records of 500 teens and found that 44% of those who had experienced violent assaults (46% of the assaults were determined to be gay-related) had suicidal ideation. A weakness in this study, however, was that these youth

were not compared with gay and lesbian teens who had not experienced violent assaults.

Beautrais, Joyce, and Mulder (1996) studied 129 inpatients and 153 matched controls and found increased odds of having experienced physical and/or sexual abuse in childhood for inpatients ages 13-24 years who had made suicide attempts as compared to community controls. Deykin (1989) compared 396 inpatients who were divided into four categories (had displayed suicide ideation, self-destructive behavior, suicide gestures, or made suicide attempts) with 792 controls hospitalized on medical units. They found that, for all categories but suicide ideation, those who displayed suicide-related behaviors were significantly more likely to have had contact with the Department of Social Services (DSS) than controls. Though the researchers were not permitted to know the reason for contact with the DSS, they reasoned that contact with the DSS was likely to have involved some sort of abuse given the very high percentage of cases handled by DSS that involve abuse. On the other hand, Kaplan and colleagues (1997) failed to find differences in suicide attempts between 99 teens who had DSS contact and 99 teens who did not. In the Kaplan study, physical abuse was confirmed by the DSS.

A study of inpatients by Brand, King, Olson, Ghaziuddin, and Naylor (1996) involved comparing 24 teens who were depressed and had a history of abuse with 24 teens who were depressed and did not have a history of abuse. As was the case with the previous study, they did not find significant differences in suicidality in this group of 13 to 17-year-olds. Similarly, Cohen and colleagues (1996) found no differences in suicidal behavior between inpatients ages 12-18 years who had experienced physical and/or sexual abuse and those who did not. They concluded that abuse was not an independent risk factor for suicidal behavior.

Because findings are equivocal, it is important to include violence/victimization in studies of youth suicide to investigate its role as a risk factor

for suicidal behavior. An area that is more clearly linked with suicide and suicidal behaviors is drug involvement, which is discussed next.

Drug involvement. A substantial number of teens who complete suicide (Brent et al., 1988; Brent, Perper, Moritz, Allman, Roth, et al., 1993; Shafii et al., 1988), attempt suicide (Crumley, 1979; Lewinsohn et al., 1993), and think about suicide (Reynolds & Mazza, 1994; Thompson et al., 1994) have a history of substance use/abuse.

A number of retrospective studies provide evidence that substance use/abuse is a factor influencing suicide completion. In a study led by Brent with 67 teens who completed suicide verses 67 matched controls, there were elevated rates of substance abuse in those who completed suicide (Brent, Perper, Moritz, Allman, Roth, et al., 1993). An important finding was that substance abuse, combined with an affective disorder (such as depression), resulted in a much higher risk for suicide than did substance abuse alone. Another study led by Brent compared suicide completers with inpatients; while 33% of those who completed suicide had a blood alcohol level greater than 0.1%, only 7.3% of the inpatients had a blood alcohol level greater than 0.1% (Brent et al., 1988). Shafii and colleagues (1988) found that criteria for primary or secondary diagnosis of alcohol and/or drug abuse were met by 62% of those who completed suicide. Marttunen, Aro, Henriksson, and Lonnqvist (1994), studied 53 youth who completed suicide and found a history of alcohol abuse in all but one of the victims; almost half of those with depressive disorder were under the influence of alcohol at the time they completed suicide.

Evidence from studies of inpatients is equivocal. Swedo and colleagues (1991) studied 21 hospitalized teens who had attempted suicide, 15 at-risk teens who had not attempted suicide, and 34 controls. They found significantly more alcohol/drug use among those who had attempted suicide as compared to controls, but alcohol and other drug use was similar for suicide attempters and the at-risk group. In another study, King and colleagues (1993) found that alcohol was not a significant predictor of

suicide ideation but that, for those with depression, alcohol consumption was the only predictor significantly associated with the severity of suicidal behavior over the past six months. Crumley's (1979) review of his private outpatient clients' charts indicated that a history of substance abuse was present in 50% of those who were suicidal.

In contrast to these findings, researchers who conducted a study in Israel of hospitalized teens found that no suicide attempts were made while the teen was under the influence of alcohol or drugs (Stein et al., 1998). They noted, however, that alcohol/drug use is much less prevalent in Israel than it is in the United States.

Studies focusing on community-based samples of high school students provide consistent evidence of links between drug involvement and suicidal thoughts or intent. Kienhorst, deWilde, Van den Bout, Diekstra, & Wolters (1990) found that use of "soft" drugs [which were differentiated from "hard" drugs and alcohol but not specifically defined] made the second largest unique contribution (after suicide ideation) to the prediction of suicide attempts. Students at risk for school dropout who also screened in at suicide risk in the Thompson, Moody, and Eggert (1994) study had significantly higher drug involvement than did non-suicide-risk potential dropouts and typical students. In a study of 2213 high school students, Reynolds and Mazza (1994) found low but significant correlations between substance abuse and suicidality. In addition, Lewinsohn and colleagues (1993) studied 1070 high school students and found an association between substance use and a prior suicide attempt.

In sum, use of alcohol and/or drugs has been associated with completed suicides, suicide attempts, and suicide thoughts. Deykin and Buka (1994) made an interesting point: that chemical dependency can put teens in close proximity with drug dealers and users who have easy access to hand guns. Hence, drugs may exacerbate depression or suicidal behaviors, may decrease inhibitions, may be used to cope with suicidal ideation, or may provide youth with greater access to lethal means for suicide acts. For these and other plausible reasons, it is essential to include drug involvement in studies of adolescents' suicide potential.

Thus, there is evidence supporting inclusion of all related risk factors identified by Eggert, Thompson, and Herting, and included in their conceptual framework (1994); emotional distress, stress, family distress, high-risk behaviors, violence/ victimization, and drug involvement influence adolescent suicide potential. While risk factors increase suicide potential, protective factors decrease suicide potential.

Protective Factors

Protective factors are buffers against suicide and suicidal behavior. While the *presence* of risk factors increase suicide potential, the *absence* of certain personal life skills and social resources appears to increase adolescent suicide potential. Protective factors include self-esteem, personal control, coping skills, and support.

Self-esteem. A personal resource that decreases the risk for suicidal behavior is self-esteem. Studies of high school students highlight the importance of self-esteem in preventing suicidal behavior. deMan, Leduc, and Labréche-Gauthier (1992) found a moderately high negative correlation (r = -0.54) between self-esteem and suicide ideation in their study of 558 teens ages 11 to 18 years. In an epidemiological study of 123,132 students in 6^{th}, 9^{th}, and 12^{th} grades (Neumark-Sztainer et al., 1997), high emotional well being and high self-esteem were the strongest negative correlates of suicide risk (r = -0.44 and –0.43, respectively).

Pinto and Whisman (1996) studied 228 inpatients ages 13-18 years. The sample consisted of 68 teens with suicide ideation, 90 who had made suicide attempts, and 70 who had no suicide ideation and no history of suicide attempts. They found lower levels of self-concept for those with suicide ideation as compared to those who were not suicidal. The measure of self-concept [Piers-Harris Children's Self-Concept Scale] involved teens evaluating their own behaviors and attitudes. Areas addressed appear to overlap with self-esteem and include ratings of happiness and satisfaction. Interestingly, the group who had a history of suicide attempts did not differ from the other two groups on self-concept.

Thus, high self-esteem appears to protect against suicide thoughts and behaviors, and is important to include in studies of adolescent suicide potential. Closely related to the concept of self-esteem is that of personal control, discussed next.

Personal control. Several hospital-based studies provide insight into the relationship between personal control and suicidal behavior. Summerville, Kaslow, & Doepke (1996) studied 295 teens ages 12 to 18 years, 85% of whom were African American, who received emergency room services. They found that, compared to non-depressed suicidal African American youth, depressed suicidal African American youth had a more maladaptive attributional style. This included having internal, stable, global attributions for negative events; and external, unstable, specific attributions for positive events.

Along similar lines, Wilson and colleagues (1995) found that, compared to 20 controls, 20 suicidal patients were more inclined to accept responsibility for situations over which they had no control and also may have felt victimized by situations that they actually had a role in causing. There were, however, no differences between groups in their estimates of the extent to which they had control over events.

Topol and Reznikoff (1982) studied 30 hospitalized teens who had attempted suicide, 30 nonsuicidal inpatients, and 35 controls. They found that an external locus of control was more apparent in the suicidal patients than in controls.

Studies reviewed here provide additional support for the inclusion of personal resources in studies of adolescent suicide potential. Another personal resource that is important to include is coping, which is discussed next.

Coping and problem solving skills. In the literature, coping and problem solving are less clearly linked with suicidal behavior, but there is evidence that supports the importance of examining teens' coping abilities. Coping and problem-solving ability influenced suicidal behavior in teens hospitalized for suicidal acts (Khan, 1987). The ability to cope with anger and sadness, and the cognitive capacity to think through consequences of actions was reduced in these teens as compared to

nonsuicidal inpatients and outpatients. Rotherham-Borus, Trautman, Dopkins, and Shrout (1990) found that female patients hospitalized after making suicide attempts (n = 77) differed from outpatient non-attempters (n = 39) and from high school students (n = 23) on interpersonal problem-solving ability, generating significantly fewer solutions than did the other two groups. On the other hand, Wilson and colleagues (1995) found that teens did not have difficulty generating solutions in problem-solving situations; however, they used fewer of the strategies generated and were more likely to identify maladaptive strategies. Pinto, Whisman, and Conwell (1998) determined that decreased survival and coping beliefs were present among suicidal inpatients when compared to nonsuicidal inpatients.

Another study involving inpatients provides somewhat different information. Puskar, Hoover, and Miewald (1992) compared 30 inpatients who had recent suicidal behavior with 16 inpatients who had no history of suicidal behavior. They found that both groups were no different on overall coping; teens used a limited number of coping methods and were more likely to use affective problem-solving methods than problem-oriented problem-solving strategies. The suicidal teens, however, were more likely to use affective-oriented methods in anxiety-provoking situations, whereas nonsuicidal teens used both affective-oriented and problem-oriented strategies.

Evidence can also be found in studies of high school students. Windle and Windle (1997) studied 975 sophomores and juniors and found that ineffective problem solving was characteristic of those who engaged in suicidal behavior.

While findings about specific aspects of coping are not consistent throughout the literature, coping appears to be an important protective factor and thus appropriate to include in assessment of suicide potential.

Family support and communication. Family plays an important role in teens' risk for suicide. While family distress is a risk factor discussed earlier in this chapter, family support and communication is an important protective factor.

Studies of those who attempted suicide provide evidence that family support may mediate against suicidal behaviors. Beautrais, Joyce, and Mulder (1996) found increased odds of having experienced childhood separation from parents (OR = 3.0) and poor parental relationships (OR = 6.3) among teens who attempted suicide as compared to community controls. Similarly, Morano, Cisler, and Lemerond (1993) found that inpatients who had attempted suicide (n = 20) reported significantly less family support than non-attempters (n = 20) who had similar depression scores.

Other vulnerable populations have provided information about family support and suicidal behavior. Kaplan and colleagues' (1997) study of 99 physically abused teens found that those who made attempts (n = 8) perceived their mothers as less caring and their families as less cohesive than did abused teens who had not made attempts (n = 91).

A number of studies of high school students involved examining the issue of family support. In an epidemiological study, Neumark-Sztainer and colleagues (1997) found low family connectedness to be correlated with suicide risk. deMan, Labréche-Gauthier, and Leduc (1993) studied 558 high school students and found that those with increased suicidal ideation seldom counted their mothers or fathers among those they could rely on; they also came from families characterized by high parental control. In this study, low maternal support was the best predictor of suicide ideation, accounting for 10.2% of the variance. Eskin (1995) found that perceived family support was a predictor of adolescent suicidality in a study of 1306 Turkish and Swedish teens (β = -0.38 and -0.25, respectively). Windle and Windle (1997) found that significantly lower family social support was reported by female high school students who had attempted suicide as compared to female students with suicide ideation only; this was not the case for males.

Resnick and colleagues (1997) studied harmful behaviors in 11,572 teens in middle and high schools. The family context variables accounted for 5 to 7% of the variability in suicidality for all adolescents. Parent-family connectedness was the most

influential family context variable; it was the only family context variable that was a significant predictor of adolescent suicidality (β = -0.17 for 7th and 8th graders and –0.24 for 9th to 12th graders).

Two studies addressed parents' knowledge of teens' suicidal behavior. Kashani, Goddard, and Reid (1989) reported on a community sample of 8-, 12-, and 17-year olds (N = 210). They found that 5.7% of 12-year-olds and 8.6% of 17-year-olds had suicidal tendencies; 86% of parents were unaware of these tendencies in their children. Velez and Cohen (1988) conducted a follow-up study on child caretakers originally interviewed in 1975. In the 1988 study, parents (usually mothers) and selected children were interviewed. The follow-up group consisted of 724 families, which was 75% of the original sample. Twenty-five of these teens reported making a total of 40 suicide attempts, meaning that many who made suicide attempts made more than one. For the entire sample, mothers reported that their children had made a total of only four attempts; only two of the attempts were reported consistently between the teen and parent. Though these mothers were not aware of their teens' suicide attempts, they usually were aware of psychiatric problems.

Some contrary evidence was provided by Reifman and Windle (1995), who examined social support in two cohorts of high school students (Ns = 698 and 283). Social support was not a factor in suicidal behavior over time, but family support was negatively related to suicidal behaviors when cross-sectional data were examined.

As presented above, there is strong evidence that personal resources such as self-esteem and personal control reduce the risk for suicide. Another personal resource, coping and problem-solving abilities, is addressed in different ways in the literature, making it somewhat more difficult to determine its influence as a protective factor. It is, however, appropriate to continue to assess the role of coping in protecting against suicidal behavior. Social resources such as support from family and peers have been documented as protective factors.

Summary of Literature Reviewed

Current incidence and prevalence rates of completed suicides and suicidal behaviors among teens make a strong case for the importance of understanding factors influencing suicidal behavior among youth. While poor or inadequate surveillance makes it difficult to determine the actual percentage of teens who have attempted suicide, the literature cited here provides evidence that thoughts of suicide are frequent among high school students. A substantial number of high school students have made plans related to suicide, but fewer have attempted suicide.

Further research about teens and suicide will provide a more complete picture of the phenomenon of adolescent suicide and suicidal behavior. Specific areas requiring attention include exploration of the relationship among direct suicide risk factors (suicide thoughts, threats, plans, attempts, exposure, and attitudes/beliefs) related risk factors (emotional distress, stress, high-risk behaviors, violence/victimization, and drug involvement), and protective factors (personal and social resources).

Use of retrospective and secondary sources for information about the youth is a limitation of the studies of suicide completers. It could also be argued that studies of inpatient records could have some bias given that justification for hospitalization usually requires an Axis I diagnosis such as major depressive disorder. Studies of high school students provide information about those who were not identified based upon suicidal behavior.

The literature reviewed in this section reflects the numerous factors that have been associated with adolescent suicidal behavior and provides additional support for Eggert, Thompson, and Herting's (1994) conceptualization of adolescent suicide potential. Risk factors for suicide that seem clear include prior suicide attempts, suicide ideation, access to firearms, depression and other forms of mental illness, and substance abuse. Other factors include intense or chronic stress, legal or school problems, lack of support from significant others, poor coping skills, cognitive distortions, and anger problems. A lack of protective factors such as support from

family and close friends, problem-solving skills, self-esteem, and coping skills appears to increase the likelihood of suicidal behavior.

Methods and Procedures

Data for this study came from an ongoing research program called the *Reconnecting Youth Prevention Research Program.* The specific grant from which the data were drawn is entitled *Measuring Adolescent Potential for Suicide* (National Institute of Nursing Research, RO1 NR 03548). The grant was awarded to Drs. Leona Eggert (Principal Investigator) and Elaine Thompson (Co-Principal Investigator). The focus of the NINR-funded grant is advanced analytic assessments of the measurement properties of the *Measure of Adolescent Potential for Suicide* (*MAPS*).

Design and Subjects

A descriptive survey design was used in this study. Students meeting criteria for the definition of potential high school dropouts (detailed below) were identified. Students were randomly selected from the pool of eligible students for invitation to the study. The study took place in seven urban high schools in the Pacific Northwest.

The sample consisted of 801 students for whom data were available. All students in the study were at risk for school dropout. They were ages 14-21 years and in grades 9-12. On average, the typical youth in the study was 16 years old and in 10^{th} or 11^{th} grade. The sample was 54% male and 46% female. Ethnic backgrounds represented were Caucasian/White (40%), African American/Black (15%), Asian/Pacific Islander (13%), Hispanic (10%), Native American (3%), mixed ethnicity (14%), and other (4%).

Data from 801 high-risk students were used to accomplish the aims of this study. Of these 801, 372 (46%) were determined to be suicide-risk (SR) youth. The other 429 students at risk for dropout did not screen in as being at risk for suicide and thus were classified as non-suicide-risk (NSR) youth.

Recruitment and Data Collection Procedures

In this section, subject selection, invitation, and consent procedures are described. Next, the questionnaire and interview are described.

Subject Selection

Subject selection occurred in two stages: (1) identifying potential high school dropouts, and (2) determining whether students were suicide-risk or non-suicide-risk.

Stage 1: Identifying high-risk students. School districts made school record data available to the Principal Investigators for the purpose of creating a high-risk pool of potential high school dropouts. Next, subjects were randomly selected from this pool of students at risk for school dropout. In creating the pool of high-risk youth, students were deemed at risk for school dropout if they met either Criterion A or B:

A. *all of the following*— below expected credits for grade, top 25th percentile for days absent per semester, and GPA 2.3 or less and/or a pattern of slipping grades; *or*

B. *both of the following*— referred by school staff for high-risk status *and* meeting one or more A criteria.

Stage 2: Identifying suicide-risk youth. All students participating in the study took the *High School Questionnaire: Profile of Experiences* (Eggert, Herting, & Thompson, 1989; 1995) as a baseline measurement. The brief *Suicide Risk Screen* (Thompson & Eggert, in press), embedded in the *High School Questionnaire*, served to determine which students at risk for school dropout were also at suicide-risk. Students at suicide-risk met at least one of the four following criteria:

A. *any one of the following*—1 or more suicide attempts in the last month, 2 or more suicide attempts in the last year, suicide ideation of 3 or more (on a scale of 0-6), suicide ideation due to drug use of 3 or more (on a multi-item summary scale of 0-6) in the last month, depression of 3.4 or more (on a brief, 5-item scale score of 0-6); *or*

B. *two or more of the following*—1 or more suicide attempts in the last month, 1 or more suicide attempts in the last year, 2 or more direct suicide threats in the last month, 2 or more direct suicide threats in the last year, suicide ideation of 2 or more (on a scale of 0-6), suicide ideation due to drug use of 2 or more (on a scale of 0-6) in the last month, depression of 2.0 or more (on a brief, 5-item scale score of 0-6); *or*

C. *one or more of the B criteria plus drug use*— high drug use, polydrug use, or drug use control problems; *or*

D. any one of the B criteria alone.

Invitation and Consent Procedures

Students meeting the study criteria were individually invited by research staff to participate in a "High School Study" in order to avoid negative labeling students who participate in the research. Invitations were conducted in random order during a regular school day. Most students were invited during class time if permitted by classroom teachers. Others were more difficult to locate; research staff talked with other students, school security personnel, teachers, and staff to ask where students might be if they were not in class.

After a student verbally consented to participate in the study, a member of the research staff called a parent/guardian to explain the study, address questions/ concerns, and obtain verbal consent. Written consent was then obtained from a parent/ guardian and the student.

Questionnaires and Suicide-Risk Screening

The *High School Questionnaire: Profile of Experiences* (Eggert, Herting, & Thompson, 1989; 1995) was developed, refined, and evaluated over a 10-year period, from 1985-95. Validity and reliability studies were conducted with 600 typical (not at risk for school dropout) and 600 high-risk youth (Eggert, Thompson, & Herting, 1994).

Uniform procedures were used for questionnaire administration. Students took questionnaires in small groups, and they were informed that their answers were confidential and would not be seen by high school personnel. Students were given code numbers so that their names would not appear with their answers. They were assured that responses would be reported as group data, and that they were free to skip questions they did not want to answer. Each student's completed questionnaire was sealed by the student in an envelope with the student's code number on the front; questionnaires were returned immediately to the University of Washington for scanning and screening. Vulnerability for suicide was determined by a student's questionnaire responses to the *Suicide Risk Screen.* (See previous section for specific criteria.) All students determined to be at risk for suicide (SR youth) participated in a suicide assessment interview. (*MAPS* Interviews are described below.) Approximately 75% of NSR youth were randomly selected to complete the interview. [Not all NSR teens participated in interviews since the goal was to have equal numbers of SR and NSR students complete *MAPS* interviews, and more of those who took the questionnaire were NSR than were SR .]

Suicide Assessment Interviews

The SR teens were interviewed within 1-10 days of questionnaire administration to provide a prompt comprehensive assessment and crisis intervention due to the risk for suicide. The NSR students were interviewed within 30 days of taking the questionnaire, because they were not at risk for suicide.

The *MAPS* interview was conducted by a research staff member with experience and training in working with high-risk youth and suicidal behavior. This computer-assisted interview lasts 1-1/2 to 2 hours and allows the interviewer to give the student feedback about responses throughout the interview.

Areas addressed in the interview include direct suicide risk factors (e.g., suicide ideation, suicide attempts, suicide exposure), related risk factors (e.g., drug use, depression, stress), and protective factors (e.g., coping skills, family support, total

network support, personal control). After the interview, the student was introduced to a case manager at the school, and a phone call was made to a parent/guardian of the student's choice. The student and the interviewer negotiated what would be shared with the guardian and the case manager. [At the initial consent, students and guardians were told that all answers are confidential, but that any worries about the student's or another person's safety must to be shared, ideally with the student's assistance, with the case manager and a parent/guardian.] A goal of the post-interview connections was to increase support for the student at school and at home.

Measurement

The approach to measurement, utilized in the *Reconnecting Youth* studies from which data for this study was accessed, is based on a multi-trait, multi-method philosophy in which the central concepts of the theory underlying the intervention are assessed. Obtaining reliable and valid baseline and follow-up assessments with a high-risk population is challenging. Dr. Eggert and her colleagues have addressed this by: (1) using a small number of items to represent each subconcept of the central dimensions in order to reduce subject burden, and (2) constructing developmentally appropriate and culturally relevant instruments for these youth.

Background Work on Psychometrics

From 1985-1995, Dr. Eggert and colleagues developed, tested, and refined the *High School Questionnaire (HSQ)* and the *MAPS* instruments. Items for the *HSQ* were derived from well-established scales (e.g., Rosenberg's Self-esteem Scale) and from scales constructed specifically for the Reconnecting Youth projects (e.g., the *Drug Involvement Scale for Adolescents* [*DISA*] and the *Suicide Risk Screen*) (Eggert, Herting, Thompson, 1996). The instruments were pilot-tested among students for clarity (of directions and questions) and relevance to the adolescents' life events. Youth from ethnic minorities were sought for help with this evaluation. Both the *MAPS* and the *Suicide Risk Screen* have demonstrated high reliability (α = .71 to .93) and validity. The results were generally strong across high-risk youth, typical youth,

and suicide-vulnerable youth. The "causal modeling" multiple indicator approach to measurement (Eggert, Thompson, Herting, Nicholas, & Dicker, 1994; Eggert, Seyl, & Nicholas, 1990), and use of traditional summed indices have demonstrated consistently high reliability and construct validity for the central theoretic concepts in the *HSQ* (Eggert, Thompson, & Herting,1989; 1995). The conceptual advantages of the multiple indicator approach are documented (Bentler & Newcomb, 1992; Blalock, 1969; Blalock, 1985; Cole, 1989).

Risk and Protective Factor Dimensions

The dimensions measured in this descriptive study were direct suicide risk factors, related risk factors, and protective factors. Risk and protective factors are as follows:

Direct suicide risk factors—suicide exposure, attitudes and beliefs about suicide, suicide ideation, suicide threats, planning/preparation, number of prior suicide attempts, lethality of prior suicide attempts, and level of current risk;

Related risk factors—emotional distress (depression, anxiety, hopelessness, anger), stress (number of stressors, effect of stressors, family distress), risky behaviors (high-risk behaviors, violence/ victimization), and drug involvement (alcohol use, marijuana use, hard drug use, drug use control problems, adverse drug use consequences);

Protective factors—personal resources (self-esteem, personal control, problem-solving coping, ratio of positive to total coping strategies), and social resources (amount of support, sense of support, availability of support, and family support satisfaction).

For each dimension, data reduction was accomplished by averaging items into one or two composite scores. Dimensions of each risk and protective factor dimension of the *MAPS* are described in the next sections and are summarized in Table 2.1. All scale scores ranged from 0–6 (unless otherwise noted). The reliability coefficients presented here are for the current sample of 801 youth.

Measurement of Direct Suicide Risk Factors

Suicide exposure. This four-item scale tapped both suicide attempts and suicide completions among close friends and family. Questions asked whether a family member or close friend had made a suicide attempt or had completed suicide. The 6-point scale is computed by adding (1 x family member suicide attempt) + (1 x friend suicide attempt) + (2 x family member suicide completion) + (2 x friend suicide attempt). When students reported being exposed to more than one person/category (e.g., two family members have made suicide attempts), they were asked to choose the person they knew best.

Attitudes and beliefs. The attitudes and beliefs scale was comprised of five items and captured suicide as an acceptable solution to life's problems, beliefs that life will end in suicide, and reasons for dying outweighing reasons for living. Some items were adapted from ideas from Beck (1979) and Rudd (1989). Reliability for this scale was moderately high ($\alpha = .83$).

Suicide ideation. This 11-item scale tapped both the frequency and intrusiveness of suicide thoughts. Items included questions about the number of thoughts in the past 24 hours, past two weeks, and past year. Questions about intrusiveness included asking how long thoughts lasted and how much the suicide thoughts interfered with students' daily lives. This scale was developed by Eggert and colleagues and based on ideas from Beck (1979), Derogatis and colleagues (1976; 1977), Hoff (1984), Linehan and colleagues (1983), and Rudd (1989). Scale reliability was moderately high ($\alpha = .87$).

Suicide threats. The suicide threats scale contained three items—two about direct threats about suicide (i.e., threatened suicide in last month, threatened suicide in last year) and one about indirect threats of suicide (i.e., drawings or poetry suggestive of suicide). Reliability for this scale was good ($\alpha = .77$).

Planning/preparation. The planning/preparation scale consisted of 14 items. These items addressed specificity of suicide plans, availability of the method, lethality

Table 2.1: Description of Scales for Direct Suicide Risk Factors, Related Risk Factors, and Protective Factors

DIRECT SUICIDE RISK FACTORS	DESCRIPTORS OF CONTENT MEASURED IN THE SCALE	# of items	α	SR α	NSR α
Exposure to suicide	Suicide attempts/completions among family/close friends	4	n/a	n/a	n/a
Attitudes and beliefs about suicide	Suicide is acceptable, belief that life will end in suicide, reasons for dying outweigh reasons for living	5	.83	.84	.66
Suicide ideation	Frequency and intrusiveness—e.g., how many times thought of suicide, length of thoughts, how much thoughts interfered	11	.87	.85	.78
Suicide threats	Threatening to kill self, drawings/poetry suggesting suicide	3	.77	.71	.82
Suicide planning/preparation	Specificity, availability of method, and lethality of method	14	.92	.92	.87
Prior suicide attempts	Number of suicide attempts in lifetime	1	n/a	n/a	n/a
Lethality of prior suicide attempts	Severity of prior attempts, alcohol/drug use during attempt, repeated suicide attempts	15	.91	.90	.90
Current risk	Current situation/feelings compared to prior suicide attempt	6	.75	.73	.77
RELATED RISK FACTORS					
Emotional Distress		16	.91	.88	.83
Depression	Depressed affect, vegetative signs, cognitive impairment				
Anxiety	Frightening thoughts, uneasiness, worries, fears	13	.87	.86	.82
Hopelessness	Feeling discouraged, nothing works out, no solutions to problems, no future plans, pessimism about life and future	14	.89	.86	.89
Anger	Internalized (holding grudges, blaming self, hiding anger) and externalized (fighting, losing control, property damage)	15	.86	.85	.84
Stress		32	n/a	n/a	n/a
Number of stressors	Issues common to teens-conflicts, school problems, daily hassles; more stressful issues-death of friend/family member, violence, abuse				
Effect of stressors	Rating of how much each endorsed stressor has bothered student during past 2 weeks	32	n/a	n/a	n/a
Family distress	Parental drug use, conflicts with parents, teen has thoughts of running away from home	3	.61	.57	.53

Table 2.1 (cont'd): Description of Scales for Direct Suicide Risk Factors, Related Risk Factors, and Protective Factors

RELATED RISK FACTORS (Cont'd)	DESCRIPTORS OF CONTENT MEASURED IN THE SCALE	# of items	α	SR α	NSR α
High-risk behaviors	Fights, life-threatening risks, thrill-seeking, unprotected sex	11	.78	.80	.73
Violence/victimization	Physically injured, witness violence, physical/sexual abuse	5	.71	.73	.67
Drug Involvement					
Alcohol use	Beer/wine and hard liquor use in past month	2	.71	.67	.75
Marijuana use	Marijuana use in past month	1	n/a	n/a	n/a
Hard drug use	Hard drug use in past month	7	.72	.72	.72
Drug use control problems	Using more than intended, feeling pressured to drink/use drugs, using alcohol/drugs to solve problems	4	.71	.74	.62
Adverse drug use consequences	Negative consequences at home, school, with friends, and with the law due to use	8	.74	.73	.75
PROTECTIVE FACTORS					
Self-esteem	Feeling useful, self-respect, positive attitude toward self	4	.79	.75	.61
Personal control	Using skills to best advantage, feeling in control of life, adjusting and coping with problems	9	.86	.84	.80
Problem-solving coping	Facing the problem head on, imagining self solving problem; range of cognitive, behavioral & social strategies	5	.73	.72	.72
Ratio of positive coping strategies	Number of positive coping strategies generated for hypothetical problem divided by total strategies generated	1	n/a	n/a	n/a
Amount of support	Amount of care and help (vs. hindrance) from parents, siblings, school personnel, friends, classmates, and "others"	9	n/a	n/a	n/a
Sense of support	Feeling well-integrated into peer group vs. feeling alone, having close vs. strained family ties, caring from others	6	.76	.73	.69
Availability of support	Availability of parents, siblings, school personnel, friends, classmates, and "others"	10	n/a	n/a	n/a
Family support satisfaction	Open communication, time together, acceptance, & support	5	.89	.85	.89

of the method, and communication to others about suicide planning. These items were skipped if the student did not endorse suicide plans, resulting in a "0" for this risk factor. Scale items were developed by Eggert and colleagues and based on ideas from Beck (1979), the Los Angeles Suicide Prevention Center (1982), and Rudd (1989). Reliability for this scale was high ($\alpha = .92$).

Prior suicide attempts. The prior attempts score was derived from one question about the number of suicide attempts ever made. The scale was developed by Eggert and colleagues, and based on ideas from Beck (1979), Hoff (1984), and Rudd (1989).

Lethality of prior attempts. This 15-item scale involved student and interviewer ratings of prior suicide attempts, use of alcohol/drugs during the attempt, repeated suicide attempts, severity of prior attempts, and communication to others about prior attempts. Again, if there were no prior suicide attempts, items were skipped and scored "0." This scale was developed by Eggert and colleagues based on ideas from Beck (1979) and the Los Angeles Suicide Prevention Center (1982). Scale reliability was high ($\alpha = .91$).

Level of current risk. This six-item scale involved asking students to compare their current situation and feelings to when they made a prior suicide attempt. If there were no prior suicide attempts, items were skipped and scored "0." The scale was developed by Eggert and colleagues, and tapped increased hopelessness and escalation in seriousness of attempts. Scale reliability was good ($\alpha = .75$).

Measurement of Related Risk Factors

Depression. The 16-item depression scale addressed feelings, cognitive functioning, and daily functioning. The brief, 5-item depression scale in the *High School Questionnaire* was taken from Radloff (1977) and tapped depressed affect. Additional items included in the interview were adapted from Derogatis and colleagues (1976, 1977) and Thompson & Leckie (1989). These items captured

vegetative signs, cognitive functioning difficulties, and interference with daily activities. Scale reliability was high (α = .91).

Anxiety. The anxiety scale consisted of 13 items and captured frightening thoughts and dreams, uneasiness, worry, fears, and somatic complaints. Items were adapted from Thompson & Leckie (1989). Scale reliability was moderately high (α = .87).

Hopelessness. This 14-item scale included items related to feeling discouraged, that nothing works out, that there are no solutions to problems, and that life is meaningless. Other items addressed having no future plans, getting no satisfaction or enjoyment from life, and feeling hopeless/pessimistic about life and problems. The scale was derived from items adapted from Beck (1979), and items developed by Eggert and colleagues based on ideas from Crumbaugh (1986). The reliability for this scale was high (α = .89).

Anger. The anger scale consisted of 15 items addressing two different manifestations of anger: 1) anger directed outward (i.e., losing control, irritability, hitting something or someone out of anger, exploding, and property damage), and 2) holding anger in (i.e., blaming oneself, hiding anger, and holding grudges). Scale items were adapted from Baer and colleagues (1979), Buss & Durkee (1957), Siegel (1986), and Thompson & Leckie (1989). Reliability for the scale was moderately high (α = .86).

Number of stressors. This score involved a count of stressors common to teens, as well as room for teens to include items that were not on the list (for a total of 32 possible items). Items were adapted from McCubbin and Thompson (1987) and Newcomb, Huba, & Bentler (1981). Areas addressed included depression, conflicts with family/friends/ boyfriend/girlfriend, school problems, daily hassles piling up, serious weight gain or loss, and not having enough money to buy or do desired things. More difficult items were also included such as death of a friend or family member, a parent losing a job or abusing alcohol/drugs, being a victim of violence/physical

abuse/sexual abuse, drug/alcohol abuse, and thoughts of being gay/lesbian. The number of items endorsed as having been experienced in the student's lifetime was the scale value; thus it was not appropriate to conduct reliability analysis on this scale.

Effect of stressors. This scale contained students' ratings (on a scale of 0–6) of how much the specific stressors they had ever experienced were bothering them during the past two weeks. Stressors endorsed as a level of 1 or greater were included in this scale. This scale is comprised of students' perceptions of their individual stressors and thus is not appropriate for reliability analysis.

Family distress. The family distress scale was comprised of three items, tapping parental drug use, conflicts with parents, and things being so bad at home that they had thought of running away. Scale reliability was fair, especially for a 3-item scale (α= .61).

High-risk behaviors. The high-risk behaviors scale consisted of 11 items that captured behaviors such as getting into fights, taking life-threatening risks, thrill-seeking activities, having unprotected sex, being disciplined at home or at school, and getting into trouble with the law. Items were developed by Eggert and her colleagues. Scale reliability was good (α = .78).

Violence/victimization. This five-item scale addressed witnessing violence, being physically injured, and being physically and/or sexually abused. Items were developed by Eggert and colleagues. Scale reliability was good (α = .71).

Alcohol use. This two-item scale tapped the frequency of use of beer, wine, and hard liquor (combined) in the past month. Because this was a two-item scale, it was not possible to compute a reliability coefficient; however Pearson's correlation demonstrated a moderately strong association between items (r = .71).

Marijuana use. The one-item scale tapped the frequency of marijuana use in the past month. Reliability analyses were not applicable for this single-item scale.

Hard drug use. The seven-item hard drug use scale captured the frequency of use of hard drugs (cocaine, opiates, tranquilizers, stimulants, depressants, hallucinogens, inhalants) in the past month. Scale reliability was good ($\alpha = .72$).

Drug use control problems. Drug use control problems involved a 4-item scale that tapped the students' experiences in controlling their drug use such as using more than they had intended, feeling pressured by friends to drink/use drugs, and using alcohol/drugs to solve problems. Scale reliability was good ($\alpha = .71$).

Adverse drug use consequences. This 8-item scale captured negative consequences at school, home, with friends, and with the law related to alcohol/drug use. Examples are conflicts with family/friends, feeling depressed, skipping classes, and being late to work. Scale reliability was good ($\alpha = .74$).

Measurement of Protective Factors

Self-esteem. This four-item scale was taken from the Rosenberg Self-esteem Scale (1965) and taps feeling useful, having self-respect, and having a positive attitude toward oneself. Reliability for this scale was good ($\alpha = .79$).

Personal control. The personal control scale captured the students' perceptions of the degree to which they had a positive outlook, used their skills to their best advantage, were in control of their lives, adjusted and coped with problems, and were able to handle things in a new situation. Some items were adapted from Coppel (1981), and Linehan and colleagues (1983); others were developed by Eggert and colleagues. Scale reliability was moderately high ($\alpha = .86$).

Problem-solving coping. This five-item scale addresses different aspects of problem solving such as facing the problem head on and imagining oneself solving the problem, as well as the range of cognitive, behavioral, and social strategies. The scale was adapted from Patterson & McCubbin (1987). Scale reliability was good ($\alpha = .73$).

Ratio of positive to total coping strategies. This scale was computed by dividing the number of positive coping strategies generated in a hypothetical situation by the total number of coping strategies generated in the situation. Reliability analysis

was not appropriate for this score, since scale computation did not involve using the mean of items.

Amount of support. The amount of support scale involved students' ratings of support received from specific network members (i.e., parents, siblings, school personnel, friends, classmates, and "others"). The scale developed by Eggert and colleagues allowed students to rate positive support (i.e., caring and help) or negative support (i.e., hindrance) on a scale of -10 to +10. Each source of support rating constituted a separate scale, thus it was not appropriate to conduct reliability analysis.

Sense of support. The six-item scale was developed by Eggert and colleagues. It captured the students' overall sense of support from friends and family such as feeling supported vs. feeling there is no one to turn to, feeling well-integrated into a peer group vs. feeling alone, having close vs. strained family ties, and feeling caring from others vs. feeling that no one cares. Scale reliability was good ($\alpha = .76$).

Availability of support. In this scale developed by Eggert and colleagues, students were asked to rate on a scale of 0–6 the availability of parents, siblings, school personnel, friends, classmates, and "others" for providing support,. As was the case with the amount of support ratings, each score constituted a separate scale; thus, it was not appropriate to conduct reliability analyses.

Family support satisfaction. This scale contained 5 items that captured satisfaction with family ties, open communication, time together, acceptance, and support from the family. Items were taken from Smilkstein, Ashworth, & Montano (1982). Scale reliability was high ($\alpha = .89$).

Data Analysis

Preliminary Analyses

Frequency data were examined for each variable. Data were checked for entry errors and missing data. Data entry errors were corrected by returning to the original questionnaire or interview data to determine correct values. The amount of missing

data was low. For this descriptive study, a case was deleted if 75% of the items necessary for computing the specific scale were not present.

Major Analyses to Test Aim 1

Step 1. Descriptive statistics were computed for demographic variables, including age, sex, grade, and ethnicity. Next, *t*-tests were conducted to determine whether there were differences between the SR and NSR groups on these demographic variables.

Step 2. Descriptive statistics were computed for the complete sample (youth at risk for school dropout) and for the SR and NSR groups. T-tests were then conducted between the SR and NSR groups to determine group differences in mean levels of each direct suicide risk factor, each related risk factor, and each protective factor. Because of the large number of *t*-tests conducted, a Bonferroni correction was utilized. The significance level was computed by dividing the alpha level of 0.05 by the number of *t*-tests in each domain (e.g., 0.05/8 for the direct suicide risk factor domain).

Major Analyses to Test Aim 2

Step 1. Correlations between and among direct suicide risk factors, related risk factors, and protective factors were then computed. Prior to reporting results for SR youth and NSR youth, each group was divided into males and females so that correlations could be examined by gender.

Step 2. Block recursive modeling was utilized to formulate regression equations to examine the ability of related risk factors and protective factors to predict risk status. In all models, the dependent variable was risk status, which was comprised of the mean of 16 direct suicide risk factor items from the *MAPS* interview portion of the assessment. The models tested involved use of linear regression to systematically test contributions of related risk factors and protective factors in explaining a student's risk status. A final model was then developed utilizing the best indicator from each risk and protective factor block.

Model 1 had one block in which demographic variables were entered. In Model 2, the first block was the same as the Model 1; prior attempts was entered into the second block. Model 3 built on the previous model, with blocks one and two the same as in Model 2; A third block was then entered, comprised of indicators of emotional distress.

In Model 4 through Model 8, the first two blocks were the same as in Model 3. The third block of variables entered into the equation were indicators of stress, risky behaviors, drug involvement, personal resources, and social resources, respectively. Standardized beta weights were examined after the third block was added to the first (demographics) and second (prior attempts) blocks. The item with the largest beta weights in each block was entered into the third block of the final regression model. The regression models tested provided direction for the development of a structural equation model, which was used in the next study (Chapter 3).

Findings and Discussion

Presented in this section are findings related to direct suicide risk factors, related risk factors, and protective factors evidenced among the study participants. The goal of this study was to compare suicide-risk and non-suicide-risk potential high school dropouts on each risk and protective factor.

For each of these major constructs—direct suicide risk factors, related risk factors, and protective factors—comparisons between suicide-risk (SR) and non-suicide-risk (NSR) youth are discussed. SR youth were teens at risk for school dropout who also screened in as being suicide vulnerable (n = 372). NSR youth were teens at risk for school dropout who did not screen in at risk for suicide (n = 429). Next, results of regression analyses to explore the effects of each related risk factor and protective factor domain on a variable constructed to represent current risk of suicide are presented. Last, the results of a final regression model including the strongest predictors from each block are reviewed. The demographic characteristics are

discussed first in order to compare the SR youth and NSR youth participating in this study.

Demographic Characteristics of the Suicide-Risk and Non-Suicide-Risk Youth

Demographic characteristics of the study participants are summarized in Table 2.2. The SR group was comprised of more males than females, while the reverse was true for the NSR group. Differences in sex distribution between groups were significant [χ^2 (1, N = 801) 14.20, $p < 0.0001$]. The majority of the youth in both groups were between the ages of 15 and 17, with 14- to 18-year-olds comprising all but 1.3% of the participants. There were no significant differences between groups related to age distribution. (See Table 2.2.)

Tenth graders represented at least 1/3 of the sample in each group, with 11th graders the next highest of those represented. Percentages of 9th and 12th graders were similar in both the SR and NSR groups. Differences between groups based on grade distribution were not significant. (See Table 2.2.)

Ethnic distribution was similar among the SR and NSR groups. The groups were 40% Caucasian. For the SR group, those who identified themselves as Hispanic/Latino, Asian/Pacific Islander, African American, or of mixed ethnicity were almost equally represented (about 13% each). The NSR group was distributed in a similar manner, though there were more African American students than those of mixed ethnicity, and fewer Hispanic/Latino students. In both groups, Native American and "Other" ethnic groups were represented to a lesser extent (between 3–4%). A chi-square test between groups for ethnicity revealed no significant differences (see Table 2.2).

As shown in Table 2.2, the groups reflected a variety of family constellations and living situations. Most students, however, lived with at least one biological parent. For single parent or stepfamilies, the biological parent was usually the mother. Differences between SR and NSR groups were not significant. Similarly, there were no significant differences between parent/guardian's level of education for either the male or female parental figure. As a group, male parents had more years of schooling

Table 2.2: Comparison of Suicide-Risk Youth (n = 372) and Non-Suicide-Risk Youth (n = 429) on Demographic Variables

	SR youth		NSR youth		
	n	%	*n*	%	
SEX					
	176	47.3	260	60.6	
Female	196	52.7	169	39.4	
Total	372	100.0	429	100.0	χ^2 =14.20 (1 df) p = < 0.0001
AGE IN YEARS					
12	1	0.3	0	0.0	
14	34	9.1	54	12.6	
15	106	28.5	130	30.3	
16	109	29.3	103	24.0	
17	84	22.6	101	23.5	
18	34	9.1	35	8.2	
19	0	0.0	6	1.4	
20	2	0.5	0	0.0	
21	2	0.5	0	0.0	(full sample mean=15.93)
Total	372 (mean	99.9 = 15.98)	429 (mean	100.0 = 15.89)	t = 1.07 (799df) p = 0.28
GRADE IN SCHOOL					
9	72	19.4	84	19.6	
10	134	36.0	144	33.6	
11	90	24.2	109	25.4	
12	75	20.2	90	21.0	
Missing	1	0.3	2	0.5	
Total	372	100.1	429	100.1	t= -0.37 (796 df), p = 0.71
ETHNICITY					
African American	49	13.2	72	16.8	
Asian/Pacific Islander	47	12.6	56	13.1	
Caucasian	148	39.8	174	40.6	
Hispanic/Latino	50	13.4	33	7.7	
Native American	13	3.5	11	2.6	
Mixed Ethnicity	49	13.2	65	15.2	
Other	16	4.3	18	4.2	
Total	372	100.0	429	100.2	χ^2 = 9.26 (6 df), p = 0.16

Table 2.2 (cont'd)

	SR youth		NSR youth		
	n	%	*n*	%	
LIVING SITUATION					
Both Biological Parents	130	34.9	178	41.5	
Mother OR Father only	125	33.6	154	35.9	
Bio parent & Stepparent	76	20.4	55	12.8	
Foster or Adoptive Parent	12	3.2	12	2.8	
Other Relatives	10	2.7	16	3.7	
Non-relative, Alone, Other	12	3.2	12	2.8	
Missing	7	1.9	2	0.5	
Total	372	99.9	429	100.0	χ^2=*10.46 (5 df), p = 0.06*
MOTHER'S EDUCATION					
Never finished high school	71	19.1	90	21.0	
Finished high school	51	13.7	45	10.5	
Some college	40	10.8	70	16.3	
Finished 2-year college/voc	54	14.5	73	17.0	
Graduated 4-year college	42	11.3	41	9.6	
Went beyond college	67	18.0	69	16.1	
Don't Know	47	12.6	41	9.6	
Total	372	100.0	429	100.1	χ^2=*8.18 (5 df), p = 0.15*
FATHER'S EDUCATION					
Never finished high school	61	16.4	63	14.7	
Finished high school	26	7.0	39	9.1	
Some college	37	9.9	60	14.0	
Finished 2-year college/voc	65	17.5	77	17.9	
Graduated 4-year college	55	14.8	53	12.4	
Went beyond college	76	20.4	102	23.8	
Don't Know/Missing	52	14.0	35	8.2	
Total	372	99.9	429	100.0	χ^2=*5.32 (5 df), p = 0.38*

than female parents, with more female parents/guardians not finishing high school and more male parents/guardians going beyond four years of college.

On average, students in this sample identified themselves as being in a minority ethnic group, lived with both biological parents, had a mean age of 16 years, and were in the 10^{th} or 11^{th} grade. More SR youth were female, while more NSR youth were male.

Comparison of Direct Suicide Risk Factors

Direct suicide risk factors were tapped broadly and comprehensively. These factors included experiences and beliefs that might influence a teen's suicidal behavior (i.e., suicide exposure, attitudes, and beliefs about suicide), suicide ideation, suicide threats, planning/preparation for suicide, suicide attempts (i.e., prior suicide attempts, lethality of prior attempts), and level of current risk. To provide a complete picture of direct suicide risk factors experienced by the two groups, definitions of each factor and an overview of related findings are presented.

Figure 2.1 provides the basis for comparing SR youth and NSR youth on direct suicide risk factors. The SR group had higher prevalence of all direct suicide risk factors. Chi-square tests between SR students and NSR students for the presence (score > 0 on a 0–6 scale) or absence (score = 0) of direct suicide risk factors were significant for all scales. Table 2.3 contains descriptive statistics and *t*-test results for SR and NSR groups. Comparisons related to each direct suicide risk factor are summarized next.

Suicide exposure. This factor was defined as the degree to which study participants were exposed to family members and close friends who attempted and/or completed suicide. The 0-6 suicide exposure scale is calculated in this way: an attempt by a family member or close friend received a score of 1, while completed suicide by a family member or close friend received a score of 2. As shown in Figure 2.1, a higher percentage of SR youth (51%) than NSR youth (36%) were exposed to family and friends who attempted or completed suicide [χ^2 (1, N = 800) = 16.12 , p <

0.0001]. As shown in Table 2.3, the mean levels of exposure were low but significantly different across groups. On average, both groups had been exposed to one or fewer family members or close friends who had attempted suicide.

Attitudes and beliefs. This scale captured students' beliefs about the issue of suicide. Students were asked how much they agreed or disagreed on a 0–6 scale (0=strongly disagree, 3 = neutral, 6 = strongly agree) with statements such as, "Suicide is a poor solution to problems in life," and "Kids who attempt suicide are trying to get revenge or get back at people." As shown in Figure 2.1, a higher percentage of SR youth were likely to endorse a more accepting attitude toward suicide than were NSR youth [66% vs. 26%; χ^2 (1, N = 801) = 125.89, $p < 0.0001$]. In general, teens in this study did not endorse suicide as an acceptable option, as can be seen in Table 2.3. The mean levels of attitudes and beliefs toward suicide were significantly different, indicating that the SR youth had a more accepting attitude toward suicide than did the NSR youth.

Suicide ideation. The suicide ideation factor captured both the frequency and intensity of a teen's suicide thoughts. Figure 2.1 demonstrates that a higher percentage of SR youth experienced thoughts of suicide than did NSR youth [80% vs. 34%, χ^2 (1, $N = 775$) = 175, $p< 0.0001$].

As shown in Table 2.3, both groups endorsed low but significantly different levels of current suicide ideation. Because the screening protocol used to differentiate between SR and NSR students includes suicide ideation, the fact that there were significant differences between groups is not surprising.

Suicide threats. Suicide threats encompassed direct communication (e.g., verbal) and indirect communication (e.g., poetry or drawings) that a teen is thinking about trying to kill himself/herself. Differences were significant between the SR and NSR groups (Figure 2.1); 59% of SR teens had made a suicide threat, compared with only 7% of the NSR teens [χ^2 (1, $N = 801$) = 250, $p < 0.0001$].

It is evident in Table 2.3 that suicide threats among teens were not a frequent

Figure 2.1. Prevalence of direct suicide risk factors for suicide-risk youth (n = 372) and non-suicide-risk youth (n = 429).

Table 2.3: Comparison of Suicide-Risk Youth (*n*= 372) and Non-Suicide-Risk Youth on Direct Suicide Risk Factors (*n*= 429)

Direct Suicide Risk Factor	Group	*n*	Mean	*SE*	*SD*	Range	Min	Max	Kurt	Skew	*t* (*df*)	2-tailed sig
Suicide Exposure	SR	372	1.03	0.07	1.32	6.00	0.00	6.00	0.97	1.28	4.53 (708)	< 0.0001
	NSR	*428*	*0.64*	*0.05*	*1.06*	*6.00*	*0.00*	*6.00*	*4.23*	*1.97*		
Attitudes/Beliefs	SR	369	1.01	0.06	1.22	5.60	0.00	5.60	0.90	1.25	11.02 (537)	< 0.0001
	NSR	*429*	*0.23*	*0.03*	*0.64*	*5.40*	*0.00*	*5.40*	*31.49*	*4.93*		
Suicide Ideation	SR	372	1.03	0.04	0.95	4.45	0.00	4.45	1.18	1.22	15.34 (493)	< 0.0001
	NSR	*429*	*0.22*	*0.02*	*0.41*	*2.82*	*0.00*	*2.82*	*10.02*	*2.81*		
Suicide Threats	SR	372	0.95	0.006	1.27	6.00	0.00	6.00	2.12	1.61	13.09 (421)	< 0.0001
	NSR	*429*	*0.06*	*0.02*	*0.35*	*4.67*	*0.00*	*4.67*	*99.03*	*9.39*		
Preparation/Planning	SR	368	0.65	0.05	1.00	4.50	0.00	4.50	2.11	1.77	10.41 (431)	< 0.0001
	NSR	*426*	*0.08*	*0.02*	*0.32*	*3.14*	*0.00*	*3.14*	*47.05*	*6.26*		
Prior Attempts	SR	372	0.61	0.06	1.24	6.00	0.00	6.00	7.96	2.76	7.05 (483)	< 0.0001
	NSR	*429*	*0.12*	*0.02*	*0.52*	*6.00*	*0.00*	*6.00*	*62.68*	*7.04*		
Lethality of Attempts	SR	372	0.59	0.04	0.88	3.47	0.00	3.47	0.06	1.21	8.60 (551)	< 0.0001
	NSR	*429*	*0.15*	*0.02*	*0.47*	*3.20*	*0.00*	*3.20*	*14.25*	*3.74*		
Current Risk	SR	368	0.23	0.03	0.53	3.83	0.00	3.83	10.00	2.95	6.01 (493)	< 0.0001
	NSR	*426*	*0.04*	*0.01*	*0.24*	*2.67*	*0.00*	*2.67*	*50.86*	*6.64*		

occurrence. Whereas the average SR youth made just over one suicide threat, the NSR youth were significantly less likely to have done so. Here again, these findings validate the screening algorithm used to differentiate SR and NSR youth.

Planning/preparation. This factor encompassed the presence and specificity of suicide plans, intent to attempt suicide, and the lethality of the planned method. As can be seen in Figure 2.1, while 57% of SR students had engaged in some degree of suicide planning/preparation, only 13% of NSR students reported having done so [χ^2 (1, $N = 771$) = 163, $p < 0.0001$].

Mean scores for SR and NSR youth shown in Table 2.3 further reflect the significant differences between these groups. That is, while the intent to attempt suicide was low among the SR youth, it was almost non-existent among NSR youth.

Prior suicide attempts. This factor was defined as the number of times a student attempted to end his/her own life. As can be seen in Figure 2.1, a higher percentage of SR students reported having made a suicide attempt (31%) than did NSR students (8%), and these differences were significant [χ^2 (1, $N = 801$) = 68.28, $p < 0.0001$].

Both groups endorsed low incidence of prior suicide attempts. Table 2.3 reveals that the mean levels of prior attempts were significantly different between the two groups. Multiple suicide attempts were rare in this population; both groups averaged fewer than one attempt in the last year.

Lethality of prior suicide attempts. This factor tapped both the clinician's ratings and the youth's perceptions of the seriousness of each prior suicide attempt, such as whether attempts made involved a lethal weapon or involved drug/alcohol use. In Figure 2.1, the differences in percentages of lethal (score > 0 on a scale of 1-6) and non-lethal (score = 0) behaviors can be seen. For the SR group, 42% had some degree of lethality associated with prior suicide attempts, compared to only 17% of the NSR group [χ^2 (1, 780) = 59.69, $p < 0.0001$].

Overall, in both groups the lethality of prior attempts rating was low (i.e., below 0.6 on a 0–6 scale). As is shown in Table 2.3, however, mean levels of lethality of prior attempts were significantly different among the SR youth and NSR youth.

Level of current risk. Current risk included the student's perceptions of increased feelings of hopelessness, belief that suicide was a reasonable solution to problems now, and escalation in the seriousness of suicide attempts. Differences between the SR and NSR youth are shown in Figure 2.1; 22% of SR youth had at least some level of current risk, compared to only 5% of the NSR youth [χ^2 (1, 794) = 52.66, $p < 0.0001$]. As was the case with a number of other direct suicide risk factors, overall levels of current risk were low; however, differences between the two groups were significant. (See Table 2.3.)

Summary

It is clear that direct suicide risk factors occurred more frequently and at higher levels for SR youth than for NSR youth. SR youth, compared to NSR youth, were exposed to more completed and attempted suicides by family members and close friends, had more accepting attitudes toward suicide, thought about suicide more often, made more suicide threats, and engaged in more planning related to a suicide attempt. Importantly, SR youth made significantly more suicide attempts, and these attempts were more lethal in nature. It is therefore not surprising that the SR youth reported a significantly higher level of current risk for suicide than did the NSR youth, indicating greater increases in seriousness of attempts, hopelessness, and emotional pain.

Mean levels of direct suicide risk factors were low for both the SR and NSR youth, suggesting that, while teens vulnerable for school failure experience these risk factors at a distressing frequency, their intensity is relatively low on a 0–6 scale.

In addition to profiling the youth in terms of direct suicide risk factors, this study also captured their experiences related to a number of factors known to be associated with suicidal behaviors. These Related Risk Factors are discussed next.

Comparison of Related Risk Factors

Unlike direct suicide risk factors, related risk factors are not actual suicidal behaviors. They are, however, known correlates and/or predictors of adolescents' suicidal behaviors. Related risk factors captured in this study include the youths' levels of emotional distress (i.e., depression, anxiety, hopelessness, anger), stress (i.e., number of stressors, perceived effect of stressors, and family distress), high-risk behaviors, violence/victimization, and drug involvement (i.e., alcohol use and other drug use frequency, drug use control problems, and adverse drug use consequences).

Emotional Distress

Emotional distress included four separate indicators or elements: depression, anxiety, hopelessness, and anger. Each is discussed separately below in terms of the levels endorsed by the youth.

Depression. The depression scale tapped several aspects of depression besides depressed affect (e.g., feelings of sadness, loneliness, etc.). The other aspects included cognitive (e.g., inability to concentrate), social (e.g., avoiding friends), and physiological (e.g., appetite or sleep changes) elements. Scale scores (0–6) ranged from 0.06–5.63 for SR youth and from 0.00–3.81 for NSR youth. (See Table 2.4.) This indicates that the NSR youth had a more narrow range of scores than the SR youth.

Mean levels of depression were significantly different between the SR and NSR groups. (See Figure 2.2 and Table 2.4.) The typical SR youth was more depressed than the typical NSR youth. Because the suicide-risk screening protocol included depression, it was expected that the SR group would be more depressed than the NSR group.

Anxiety. The anxiety scale included items related to fears, worries, and somatic complaints (e.g., feeling physically anxious). Scores for the SR youth ranged from 0.15–5.31, while those for NSR youth revealed a narrow range of 0.00–3.92 (see Table 2.4). Anxiety was more intense and significantly different for the SR youth than for the NSR youth (Figure 2.2 and Table 2.4). While the typical SR youth endorsed feeling

anxious some of the time, the typical NSR youth endorsed feeling anxious only occasionally. Some NSR youth, however, endorsed "usually" feeling anxious.

Hopelessness. This scale tapped decreased expectations and hopes, as well as pessimism about the future. The SR group scale scores ranged from 0.14–4.93, while the NSR group's scale scores ranged from 0.00–5.14. (See Table 2.4.) Thus, the range of scores was similar for both groups, with the NSR group having a broader range.

The mean scores for hopelessness reflected significant differences between groups (2.15 for SR youth and 1.14 for NSR youth). (See Figure 2.2 and Table 2.4.) Although both groups generally experienced a low level of hopelessness, SR youth had a stronger sense thereof.

Anger. The anger scale includes indicators of anger turned inward, outward expressions thereof, and witnessing aggression by others. Scale scores ranged from 0.33–5.80 for the SR youth and from 0.00–4.67 for the NSR youth. This demonstrates that the SR youth had a broader range of scores than did the NSR youth, with maximum scores higher for SR youth. (See Table 2.4.) The SR and NSR groups were significantly different in their experienced levels of anger. (See Figure 2.2 and Table 2.4.) This indicates that, on average, the typical SR youth endorsed feeling angry sometimes, whereas the typical NSR youth endorsed feeling angry only occasionally.

Stress

The stress domain included the number of stressors ever experienced by the teen, the current effect of stressors experienced in the past two weeks, and the level of family distress.

Number of stressors. The number of stressors ever experienced by youth was derived from a list of 30 possible stressors that were commonly named by high school students, as well as space for 2 stressors that could be added by the student. Thus, a total of 32 stressors could be endorsed. The number of stressors endorsed as ever experienced ranged from 0–29 for the SR group and from 1–25 for the NSR group. The mean number of stressors for those in the SR youth group was 14.10, while the

mean for the NSR group was 11.17. SR students experienced a significantly higher number of stressors than did NSR youth. [Because the items were counted (rather than scaled 0–6), this factor is not included in Figure 2.2.] (See Table 2.4.)

Effect of stressors. This scale was derived from items rated as greater than zero in terms of how much the particular stressor bothered the student during the past two weeks. Scale scores ranged from 1.20–5.65 for the SR group, and from 1.00–5.76 for the NSR group. Ranges of scores were similar for both groups yet slightly greater for the NSR group. (See Table 2.4.)

The groups were significantly different in terms of the current perceived effect of stressors. (See Figure 2.2 and Table 2.4.) This indicates that youth in both groups endorsed feeling the effects of stressors between "sometimes" and "often," with the SR group coming closer to "usually" feeling stressed (scale score of 4).

Family distress. This scale captured the students' perceptions of family distress in terms of parental drug use, conflicts with parents, and things being so bad at home that they had thought of running away. For both the SR and NSR groups, scale scores ranged from 0–6, indicating that these youth endorsed the full range of possible responses. (See Table 2.4.) Significant differences between the SR youth and NSR youth were apparent. (See Figure 2.2 and Table 2.4.) The mean for the SR group was 2.54, while the mean for the NSR group was 1.30. Thus, while family distress was not highly problematic for these groups, students in the SR group endorsed experiencing family distress at almost twice the level as the NSR group.

High-Risk Behaviors

This factor tapped a range of potentially harmful behaviors, including fighting, unsafe thrill-seeking activities, unsafe sex, and taking chances while under the influence of alcohol/drugs. For the SR group, scores ranged from 0.00–4.73, while scores ranged from 0.00–3.73 for the NSR group. Thus, the SR group had a broader range of scores and a higher mean level than did the NSR group. (See Table 2.4.) As was the case with drug involvement, the mean levels for both groups indicated a low

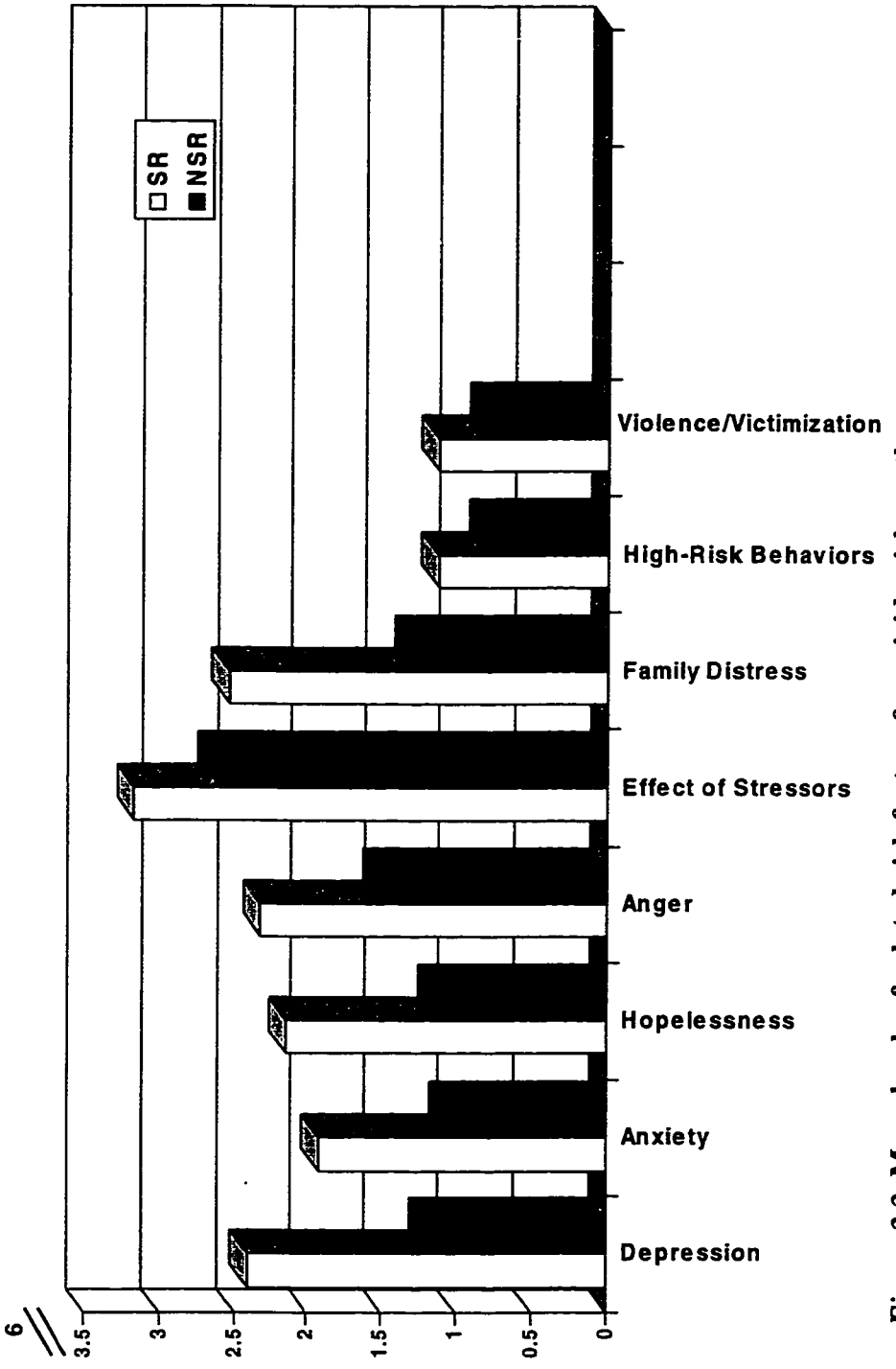


Figure 2.2. **Mean levels of related risk factors for suicide-risk youth (n = 372) and non-suicide-risk youth (n = 429).**

Table 2.4: Comparison of Suicide-Risk Youth (n=372) and Non-Suicide-Risk Youth (n=429) on Related Risk Factors

Related Risk Factor	Group	*n*	Mean	*SE*	*SD*	Range	Min	Max	Kurt	Skew	*t* (*df*)	2-tailed sig
Depression	SR	367	2.41	0.06	1.09	5.56	0.06	5.63	-0.17	0.41	18.25 (625)	<0.0001
	NSR	*426*	*1.19*	*0.04*	*0.73*	*3.81*	*0.00*	*3.81*	*0.84*	*0.92*		
Anxiety	SR	370	1.92	0.05	1.05	5.15	0.15	5.31	0.04	0.74	12.96 (664)	<0.0001
	NSR	*427*	*1.06*	*0.04*	*0.77*	*3.92*	*0.00*	*3.92*	*1.62*	*1.26*		
Hopelessness	SR	368	2.15	0.05	0.94	4.79	0.14	4.93	-0.14	0.34	17.06 (658)	<0.0001
	NSR	*426*	*1.14*	*0.03*	*0.68*	*5.14*	*0.00*	*5.14*	*2.75*	*1.05*		
Anger	SR	371	2.33	0.06	1.08	5.47	0.33	5.80	-0.39	0.40	11.67 (714)	<0.0001
	NSR	*429*	*1.51*	*0.04*	*0.88*	*4.67*	*0.00*	*4.67*	*0.76*	*0.82*		
Number of Stressors	SR	372	14.10	0.29	5.59	29.00	0.00	29.00	-0.52	-0.05	7.67 (799)	<0.0001
	NSR	*429*	*11.17*	*0.25*	*5.22*	*24.00*	*1.00*	*25.00*	*-0.74*	*0.13*		
Effect of Stressors	SR	371	3.17	0.04	0.83	4.45	1.20	5.65	-0.32	0.06	9.43 (796)	<0.0001
	NSR	*427*	*2.63*	*0.04*	*0.78*	*4.76*	*1.00*	*5.76*	*0.14*	*0.42*		
Family Distress	SR	372	2.54	0.09	1.76	6.00	0.00	6.00	-0.79	0.47	11.30 (675)	<0.0001
	NSR	*429*	*1.30*	*0.06*	*1.30*	*6.00*	*0.00*	*6.00*	*2.17*	*1.46*		
High-Risk Behaviors	SR	369	1.12	0.05	1.02	4.73	0.00	4.73	0.83	1.13	4.85 (691)	<0.0001
	NSR	*427*	*0.80*	*0.04*	*0.79*	*3.73*	*0.00*	*3.73*	*1.07*	*1.23*		
Violence/Victimization	SR	370	1.12	0.06	1.16	6.00	0.00	6.00	1.48	1.35	4.34 (675)	<0.0001
	NSR	*429*	*0.80*	*0.04*	*0.87*	*4.80*	*0.00*	*4.80*	*3.00*	*1.62*		
Alcohol Use	SR	370	0.94	0.06	1.13	4.00	0.00	4.00	-0.04	1.02	1.36 (796)	0.17
	NSR	*428*	*0.84*	*0.05*	*1.08*	*5.00*	*0.00*	*5.00*	*0.61*	*1.21*		
Marijuana Use	SR	368	1.20	0.09	1.75	6.00	0.00	6.00	0.47	1.30	0.08 (791)	0.45
	NSR	*425*	*1.11*	*0.08*	*1.69*	*6.00*	*0.00*	*6.00*	*0.92*	*1.42*		
Hard Drug Use	SR	370	0.13	0.02	0.38	3.33	0.00	3.33	30.65	5.02	2.33 (642)	0.02
	NSR	*428*	*0.08*	*0.01*	*0.26*	*3.00*	*0.00*	*3.00*	*50.82*	*6.26*		
Drug Use Control Problems	SR	370	0.57	0.05	0.94	5.25	0.00	5.25	6.40	2.37	4.14 (620)	<0.0001
	NSR	*426*	*0.33*	*0.03*	*0.62*	*4.25*	*0.00*	*4.25*	*9.47*	*2.76*		
Adverse Drug Use Consequences	SR	370	0.49	0.04	0.74	3.50	0.00	3.50	3.45	1.88	4.79 (691)	<0.0001
	NSR	*426*	*0.28*	*0.03*	*0.54*	*4.25*	*0.00*	*4.25*	*18.88*	*3.76*		

degree of high-risk behaviors. This also resulted in a significant difference between groups. (See Figure 2.2 and Table 2.4.)

Violence/Victimization

This factor captured the degree to which the youth witnessed and experienced physical violence, as well as physical and sexual abuse. Table 2.4 reveals that the SR youth experienced a broader range of violence/victimization (0.00–6.00) than did NSR youth (0.00–4.80); maximum scores were higher for the SR youth. Students in both groups reported being victimized infrequently; however, these mean scores for the SR youth and NSR youth were significantly different.

Drug Involvement

Instead of examining just the frequency of use, the *Drug Involvement Scale for Adolescents* (*DISA*) also permits examination of drug use control problems and adverse drug use consequences (Eggert, Herting, Thompson, 1996). The drug involvement dimension is comprised of alcohol use frequency, marijuana use frequency, hard drug use frequency, drug use control problems, and adverse drug use consequences.

Alcohol use. Alcohol use included frequency of beer, wine, and hard liquor use in the past month. Scale scores ranged from 0.00–4.00 for the SR youth, and from 0.00–5.00 for the NSR youth. (See Figure 2.3 and Table 2.4.) Teens in both groups reported similarly low levels of alcohol use (0.94 and 0.84 for SR youth and NSR youth respectively), and differences were not significant (Table 2.4); thus, alcohol use frequency was essentially the same for these teens.

Marijuana use. This variable reflected the amount of marijuana used in the past month. The use score level ranged from 0.00–6.00 for both the SR youth and NSR youth. (See Table 2.4.) As can be seen in Figure 2.3, both groups reported low use of marijuana (1.20 for SR youth and 1.11 for NSR youth). Differences between SR youth and NSR youth were not significant. (See Table 2.4.)

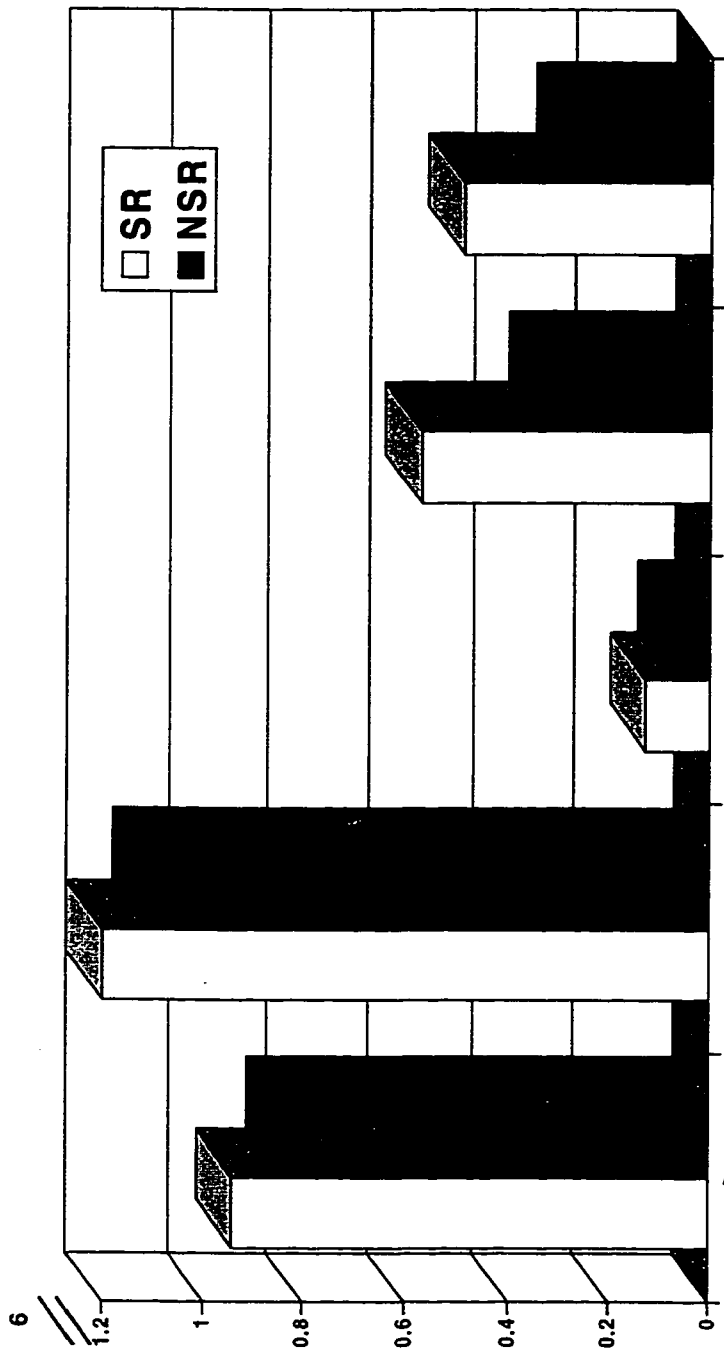


Figure 2.3. Mean levels of drug involvement scale items for suicide-risk youth (n = 372) and non-suicide-risk youth (n = 429).

Hard drug use. Hard drug use measured use of substances other than alcohol and marijuana. These were cocaine, stimulants, depressants, tranquilizers, hallucinogens, inhalants, and opiates. The range of scale scores for SR youth was 0.00–3.33; the range for NSR youth was 0.00–3.00. (See Table 2.4.) On average, youth in both groups reported low levels of hard drug use frequency. The mean scale score for the SR group was 0.13, while the mean for the NSR group was 0.08. Differences between groups were not significant at the pre-set 0.01 level (0.05/5 *t*-tests in the drug involvement domain = 0.01). (See Figure 2.3 and Table 2.4.)

Drug use control problems. This factor tapped issues related to the levels of drug use control problems endorsed by the youth. Items included drinking/using more than planned, being upset with oneself for using too much, and being told by someone else to cut down on use. For SR youth, the range of scores was 0.00–5.25. The range of scores for NSR youth was 0.00–4.25. (See Table 2.4.) As can be seen in Figure 2.3 and Table 2.4, mean levels of drug use control problems were significantly different between groups. Thus, while drug use control problems were low for both groups, SR youth were more likely to have problems with controlling their use.

Adverse drug use consequences. This factor consisted of information about problems experienced due to the use of alcohol and/or other drugs in intrapersonal, interpersonal, and social contexts (e.g., feeling guilty, getting into fights, or missing a test at school). The range of scores for SR youth was 0.00–3.50, while NSR youth had a broader range of 0.00–4.25. (See Table 2.4.) Mean values for SR youth and NSR youth groups were significantly different. (See Figure 2.3 and Table 2.4.) This indicates that the SR youth reported more adverse consequences due to their alcohol and other drug use than did NSR youth.

Summary

SR youth experienced significantly higher levels of related risk factors than did NSR youth. Compared to NSR youth, SR youth experienced more emotional distress (i.e., depression, anxiety, hopelessness, anger), higher levels of stress (i.e., number of

stressors, effect of stress, family distress), and more high-risk behaviors, violence/victimization, and drug involvement.

On average, levels of emotional distress, stress, high-risk behaviors violence/ victimization, and drug involvement were endorsed at relatively low levels overall. For SR youth, emotional distress was typically experienced "sometimes," while NSR youth experienced this less frequently. Emotional distress is the dimension of related risk factors in which the SR youth and NSR youth differed most. Of the stress elements, family distress was the factor on which SR youth and NSR youth differed most. The SR and NSR groups were most similar in terms of drug involvement, high-risk behaviors, and violence/victimization, and these behaviors were low overall. SR youth, however, were significantly more likely than the NSR youth to engage in high-risk behaviors, endorse having experienced violence/victimization; and experience adverse drug use consequences, and drug use control problems. Frequency of alcohol use and marijuana use were essentially the same for SR youth and NSR youth.

Comparison of Protective Factors

Protective factors were posited to mitigate the likelihood that a teen will engage in suicidal behavior. Important protective factors examined here were: 1) personal resources such as self-efficacy (i.e., self-esteem and personal control) and coping (problem-solving coping and percentage of positive coping strategies); and 2) social resources, such as total network support (i.e., amount of support and availability of support from specific persons), the general sense of support perceived from family and friends, and family support satisfaction.

Personal Resources

Self-esteem. Self-esteem items addressed feeling useful and having a positive attitude toward oneself. As shown in Table 2.5, scale scores ranged from 0.00–6.00 for both groups, indicating that these high-risk youth evidenced the full range of scores.

Shown in Figure 2.4 and Table 2.5, the SR group had a significantly lower level of self-esteem than did the NSR group. SR youth "sometimes" felt positive about themselves, while NSR youth "usually" felt positive about themselves.

Personal control. This factor addressed having a positive outlook, feeling in control and using skills to their best advantage, and feeling that one can handle new problems and situations. The two groups experienced a similar range of scores (i.e., from 0.89–6.00 for the SR youth and from 1.33–6.00 for the NSR youth). (See Table 2.5.) Levels for personal control were similar to those of self-esteem. (See Figure 2.4 and Table 2.5.) Teens in the SR group had a significantly lower sense of personal control than did NSR youth.

Problem-solving coping. This scale captured the use of strategies such as facing a problem head on and working at it until it is solved, imagining oneself solving a problem and then doing it for real, and thinking about options before taking action. As can be seen in Table 2.5, scale score ranges were similar for the SR and NSR groups (0.00–6.00 and 0.40–6.00 respectively).

The mean level of problem-solving coping was 2.69 for the SR group and 3.26 for the NSR group (Figure 2.4 and Table 2.5). These differences were significant; both groups endorsed the use of problem-solving coping, but neither did so frequently.

Ratio of positive to total coping strategies. This factor was computed by dividing the number of positive coping strategies a youth named by the total number of coping strategies named in response to a hypothetical problem presented in the interview. The problem was stated as follows: "It is early afternoon and ever since you woke up this morning you have been in a bad mood. You feel empty, sad, and a little angry, all at the same time. What would you do to get out of this bad mood?". For both groups, the ratio ranged from 0.00–1.00. (See Table 2.5.)

Differences between groups in terms of ratio of positive to total coping strategies were not significant. (See Table 2.5.) [The ratio of positive to total coping strategies was not included in Figure 2.4 because it is computed differently and ranges

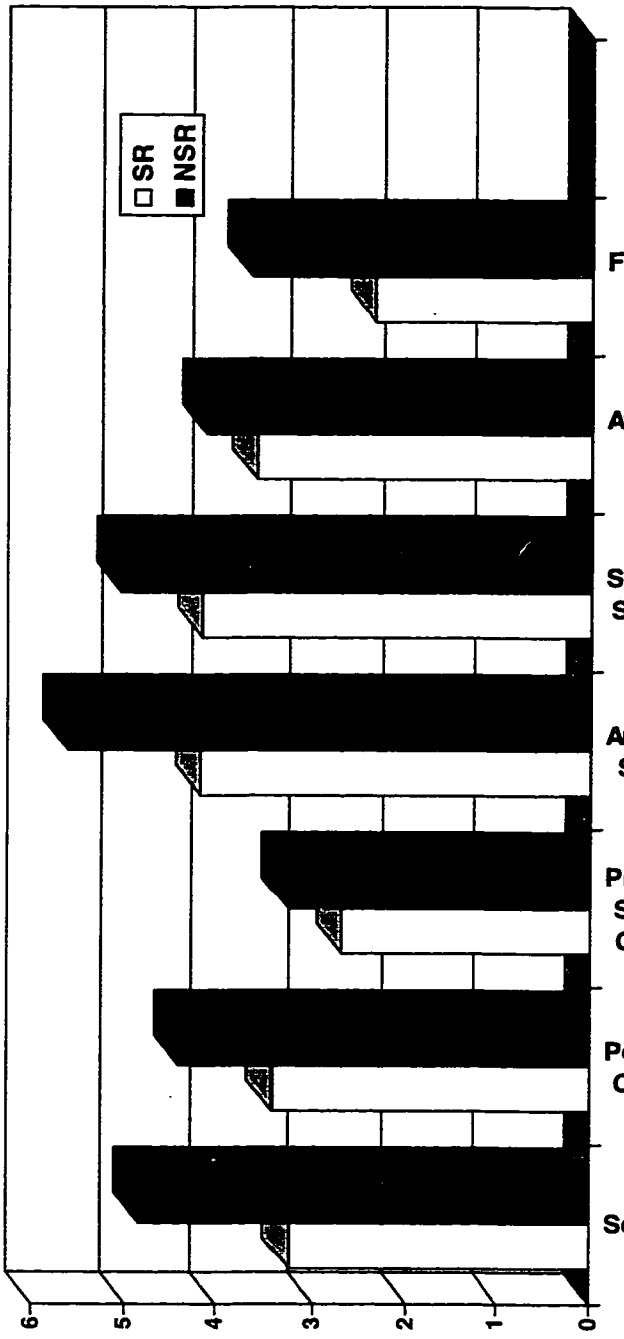


Figure 2.4. Mean levels of protective factors for suicide-risk youth (n = 372) and non-suicide-risk youth (n = 429).

Table 2.5: Comparison of Suicide-Risk Youth (n = 372) and Non-Suicide-Risk Youth (n = 429) on Protective Factors

PROTECTIVE FACTOR	Group	*n*	Mean	*SE*	*SD*	Range	Min	Max	Kurt	Skew	*t* (*df*)	2-tailed sig
Self-Esteem	SR	372	3.25	0.07	1.40	6.00	0.00	6.00	-0.68	0.00	-18.42 (648)	<0.0001
	NSR	*429*	*4.85*	*0.05*	*0.97*	*5.00*	*0.00*	*6.00*	*0.83*	*-0.90*		
Personal Control	SR	370	3.42	0.06	1.10	5.11	0.89	6.00	-0.72	0.12	-13.56 (723)	<0.0001
	NSR	*427*	*4.40*	*0.04*	*0.92*	*4.67*	*1.33*	*6.00*	*-0.20*	*-0.51*		
Problem-Solving Coping	SR	372	2.69	0.06	1.20	6.00	0.00	6.00	-0.52	0.20	-6.71 (798)	<0.0001
	NSR	*428*	*3.26*	*0.06*	*1.18*	*5.60*	*0.40*	*6.00*	*-0.41*	*-0.03*		
Ratio of Positive to	SR	372	0.84	0.02	0.31	1.00	0.00	1.00	2.27	-1.92	-1.93 (748)	0.053
Total Coping Strategies	*NSR*	*429*	*0.88*	*0.01*	*0.28*	*1.00*	*0.00*	*1.00*	*4.80*	*-2.46*		
Amount of Support	SR	372	4.18	0.14	2.74	17.53	-7.78	9.75	0.79	-0.46	-7.73(799)	<0.0001
	NSR	*429*	*5.62*	*0.12*	*2.51*	*15.44*	*-5.44*	*10.00*	*1.54*	*-0.85*		
Sense of Support	SR	366	4.16	0.06	1.09	5.17	0.83	6.00	-0.16	-0.50	-13.07 (644)	<0.0001
	NSR	*426*	*5.05*	*0.04*	*0.77*	*3.83*	*2.17*	*6.00*	*0.68*	*-0.95*		
Availability of Support	SR	369	3.58	0.06	1.10	6.00	0.00	6.00	0.36	-0.30	-7.21 (796)	<0.0001
	NSR	*429*	*4.12*	*0.05*	*1.02*	*6.00*	*0.00*	*6.00*	*0.86*	*-0.59*		
Family Support	SR	366	2.36	0.08	1.51	6.00	0.00	6.00	-0.59	0.44	-11.53 (783)	<0.0001
Satisfaction	*NSR*	*423*	*3.65*	*0.08*	*1.63*	*6.00*	*0.00*	*6.00*	*-0.74*	*-0.40*		

from 0.00–1.00 (as opposed to the other scales, which are from 0.00–6.00).] The mean for the SR group was 0.84, while the mean for the NSR group was 0.88.

Social Resources

Social resources tapped social support broadly by addressing different elements of support. These include the amount of support as well as the availability of support from the youths' networks; their general sense of support; and their satisfaction with support from their families.

Amount of support. The amount of support encompassed both positive and negative support (or hindrance) that a teen received from persons at home, at school, and from friends. The scale was from -10 to +10. Scale scores for SR youth and NSR youth ranged from -7.78 to 9.75, and -5.44 to 10.00 respectively. (See Table 2.5.) These ranges indicate that some teens in the SR group experienced greater negative support (or hindrance) from persons in their networks than did youth in the NSR group.

In general, teens in this study experienced a good deal of support from special persons in their social network (Figure 2.4 and Table 2.5). On average, however, the SR youth and NSR youth were significantly different. Thus, teens in the SR group usually felt a moderate amount of support, while the NSR group felt more support from specific persons in their networks.

Sense of support. This scale captured the degree to which teens felt they had someone to turn to, were integrated into a group, felt that someone cared, and had comfortable and close family ties. Scores ranged from 0.83–6.00 for SR youth and from 2.17–6.00 for NSR youth. Thus, NSR youth felt supported at least "sometimes," while there were some SR youth who never felt this sense of support. (See Table 2.5.)

As shown in Figure 2.4 and Table 2.5, SR youth experienced a significantly lower sense of support than did NSR youth. As was the case with the amount of support, teens in both groups usually felt a moderate sense of support, with the SR group having a lower sense of support than the NSR group.

Availability of support. Availability of support tapped the degree of access to sources of support. For both groups, scale scores ranged from 0.00–6.00 (see Table 2.5). Figure 2.4 and Table 2.5 reveal the mean levels and significant differences between the SR youth and NSR youth in terms of the availability of support. Thus, on average, NSR youth usually felt that support was available, while SR youth felt that support was less available from specific persons identified in their support networks.

Family support satisfaction. Family support satisfaction captured the youth's feelings of close and comfortable family ties, time spent together, and of being accepted and supported by their family. As revealed in Table 2.5, scale scores ranged from 0.00–6.00 in both groups. In Figure 2.4 and Table 2.5, significant differences between groups are displayed (M = 2.36 for SR youth and M = 3.65 for NSR youth). Both groups felt satisfied with family support between "sometimes" and "usually."

Summary

The SR youth and NSR youth differed significantly on all of the personal resource protective factors except the ratio of positive to total coping strategies. That is, the SR group had a lower sense of self-efficacy and lower levels of positive coping abilities. Problem-solving coping was more difficult for both groups than was generating positive (vs. negative) coping strategies. Regarding social resources, lower levels of amount and availability of support from members of their social network, a lower general sense of support, and family support satisfaction. Overall, both groups usually felt supported and that the support was available. Satisfaction with family support was somewhat lower for both groups. The area in which the two groups differed most was self-efficacy, with sense of support and family support satisfaction the next most divergent; however, zero-order correlations between protective factors and prior attempts and current risk were generally weak or non-existent.

Correlations among Risk and Protective Factors

Appendix A contains a summary table of the correlations among all risk and protective factors for the full sample of youth (the SR and NSR groups combined).

Similarly, Appendix B contains summary tables of the correlations among all risk and protective factors for suicide-risk teens—males versus females; while Appendix C contains summary tables revealing the correlations among all risk and protective factors for non-suicide-risk males versus females. Important findings were as follows: Factors that were most likely to be linked with self-destructive behavior were prior attempts and current risk. These two factors were the most highly correlated among the direct suicide risk factors. Lethality of prior attempts was the direct suicide risk factor most highly correlated with prior attempts and current risk, while suicide ideation was the next highest. Planning/preparation and attitudes/beliefs were moderately correlated with prior attempts and current risk, but only for the SR group. Examining correlations by gender yielded some important differences within the NSR group only. For male NSR youth, suicide threats and planning/preparation were moderately correlated with both prior attempts and current risk. For females, these correlations were weak.

When correlations between the related risk factors and prior suicide attempts and current suicide risk were examined, with one exception (adverse drug use consequences for NSR teens), the drug involvement dimensions were not correlated with prior attempts or current risk. When gender was considered, the correlations between other drug use and prior attempts were weak but significant for females in the SR group. Correlations between drug use control problems and current risk were weak but significant for females in the NSR group. The other factors (emotional distress, stress, high-risk behaviors, and violence/victimization) correlated weakly.

Correlations between these protective factors and the key indicators of suicide risk differed for some factors when males and females were examined separately. For family support satisfaction, correlations with prior attempts were weak but significant for males and not females. In all other instances where there were differences, the relationship was weak but significant for females though not for males. These included the links between personal control and prior attempts, and between personal

control and current risk for females in the SR and NSR groups, amount of support and current risk for females in only the NSR group, and between sense of support and current risk for females in both the SR and NSR groups.

Predictors of Current Suicide Risk

Block recursive modeling was utilized to formulate regression equations to examine the effect of related risk factors and protective factors on suicide-risk status. The risk status variable was comprised of direct suicide risk factor items taken from the interview portion of the *MAPS*. This risk scale involved a total of 16 variables that were conceptually related to immediate risk. Items included aspects of all direct suicide risk factor scales. Because prior suicide attempts were used as a predictor in the models, indicators related to prior attempts were not included in the suicide-risk status scale. The models tested involved use of linear regression to systematically test contributions of demographic characteristics, prior suicide attempts, and related risk factors and protective factors in explaining a student's suicide-risk status. A final model was developed utilizing risk and protective factor indicators that were the strongest predictors in each block.

Results of individual blocks are displayed in Table 2.6. The first model had one block in which demographic variables were entered. The adjusted R^2 for this model was .079. All other factors being equal, being female (β = .19), being less well off financially (β = -.15), and being of Asian American ethnicity (β = .10) increased suicide risk. Being African American decreased risk (β = -.08, $p < 0.05$). (All $p <$ 0.01 unless otherwise noted.)

In the second model, the demographic variables remained the same, and prior suicide attempts were entered into the second block. The adjusted R^2 improved to .396, indicating that prior suicide attempts (β = .58, $p < 0.01$) had a significant impact on suicide-risk status. In model three, the first two blocks were as in model two, and the third block entered was comprised of the four indicators of emotional distress (depression, anxiety, hopelessness, and anger). In models four through eight, the first

Table 2.6: Standardized Coefficients and Test Statistics for Preliminary Regression Models Predicting Suicide Risk

	Model 1 R_a^2 = .079		Model 2 R_a^2 = .396		Model 3 R_a^2 = .568		Model 4 R_a^2 = .467		Model 5 R_a^2 = .423		Model 6 R_a^2 = .416		Model 7 R_a^2 = .489		Model 8 R_a^2 = .493	
Demographics	β	t	β	t	β	t	β	t	β	t	β	t	β	t	β	t
Sex-Female	.19	5.50***	.10	3.53***	.02	0.88	.04	1.29	.12	4.34***	.12	4.24***	.04	1.60	.07	2.46***
Age	.04	1.20	.05	1.73	.04	1.59	.03	0.98	.04	1.61	.05	1.92	.05	2.02**	.05	1.86
Family Finances	-.15	-4.46***	-.09	-3.19***	-.01	-0.48	-.04	-1.68	-.07	-2.50***	-.09	-3.22***	-.04	-1.58	-.03	-1.21
Ethnicity																
African American	-.08	-2.17**	-.04	-1.24	-.00	-0.12	-.02	-0.78	-.02	-0.78	-.03	-1.14	.01	0.35	-.02	-0.54
Asian American	.10	2.84***	.12	4.04***	.08	3.04***	.15	5.09***	.15	4.99***	.12	3.95***	.11	3.87***	.12	4.26***
Hispanic	.06	1.66	.05	1.64	.03	1.30	.05	1.72	.05	1.70	.03	0.96	.05	1.88	.05	1.65
Native American	.06	1.70	.04	1.24	.03	1.08	.04	1.60	.03	1.07	.03	0.94	.04	1.40	.05	1.75
Mixed Ethnicity	.06	1.54	.04	1.49	.02	0.98	.04	1.22	.04	1.30	.04	1.30	.03	1.18	.03	1.05
Other	.02	0.60	.02	0.80	.02	0.80	.04	1.28	.03	1.18	.02	0.69	.01	0.36	.03	1.14
Prior Suicide Attempts			.58	20.18***	.45	17.77***	.50	17.93***	.52	17.92***	.56	19.56***	.53	19.59***	.51	18.20***
Emotional Distress:			Depression		.02	0.38										
			Anxiety		.11	2.55***										
			Hopelessness		.33	8.73***										
			Anger		.04	1.29										
Stress:					# of Stressors		.13	4.24***								
					Effect of Stress		.17	5.61***								
					Family Distress		.09	3.19***								
Risky Behaviors:							High-Risk Behaviors		.14	4.61***						
							Violence/Victimization		.10	3.14***						
Drug Involvement:											Alcohol Use					
											Marijuana Use					
											Hard Drug Use					
											Control Problems					
											Adverse Consequences		.17	4.36***		
Personal Resources:													Self-esteem		-.15	-4.18***
													Personal Control		-.19	-4.78***
													Problem-Solving		.06	1.70*
													Positive Coping		-.09	-3.18**
Social Resources:															Amount of Support		-.05	-1.69*
															Sense of Support		-.28	-9.02***
															Availability of Support		.07	2.20**
															Family Support Satisfaction		-.07	-2.40***

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$

Table 2.7: Standardized Coefficients and Test Statistics for Final Regression Model Predicting Suicide Risk

Final Model $R_a^2 = .563$		
	β	t
Sex-Female	.06	2.38**
Age	.04	1.54
Family Finances	-.00	-0.12
African American Ethnicity	.00	0.98
American Indian Ethnicity	.02	0.35
Asian American Ethnicity	.09	3.27***
Hispanic Ethnicity	.03	1.20
Mixed Ethnicity	.02	0.70
Other Ethnicity	.03	1.06
Prior Suicide Attempts	.44	17.02***
Hopelessness	.41	8.52***
Effect of Stressors	.03	1.08
Adverse Drug Use Consequences	.04	1.47*
High-Risk Behaviors	.07	2.66***
Personal Control	.06	1.58
Sense of Support	-.06	-1.82**

*** $p < 0.01$ ** $p < 0.05$ * $p < 0.10$

two blocks were as in model two, and the third block of variables entered into the equation were indicators of stress, risky behaviors, drug involvement, personal resources, and social resources, respectively. The adjusted R^2 for models three through eight ranged from .416 to .568, with model three (which included emotional distress indicators) explaining the greatest portion of the variance in suicide risk. Standardized beta weights were examined after the third block was added to the first (demographics) and second (prior suicide attempts) blocks.

The items with the largest beta weight in each individual block were entered into a final regression model. (See Table 2.7.) The adjusted R^2 for this model was .563. The strongest predictors ($p < 0.01$) were prior suicide attempts (β = .44), hopelessness (β = .41), high-risk behaviors (β = .07) and being of Asian American ethnicity (β= .09). The other significant factors being female (β = .06, $p < 0.05$) and

adverse drug use consequences ($\beta = .04$, $p < 0.10$). Sense of support was a signficant protective factor ($\beta = -1.82$, $p < 0.05$). Notably, while indicators of stress, violence/victimization, and personal resources were significant predictors in models four to seven respectively, they dropped out of the final model when all indicators were entered.

Summary and Conclusions

This study had two specific aims. The first was to compare suicide-risk (SR) and non-suicide-risk (NSR) teens on direct suicide risk factors, related risk factors, and protective factors. The second aim was to test the predictive value of key related risk and protective factors on the dependent variable of level of suicide risk. A summary discussion here highlights the major findings, limitations, and implications of Study 1.

First, when the SR and NSR youth were compared on levels of risk and protective factors, SR youth clearly evidenced more frequent and significantly higher levels of direct suicide risk factors. SR youth had been exposed to more suicidal behaviors—attempted and completed suicides—by family members and close friends, had more accepting attitudes toward suicide, thought about suicide more frequently, expressed more threats of suicide, and engaged in more planning related to a suicide attempt. Importantly, SR youth made significantly more suicide attempts, and these attempts were more lethal in nature. Not surprisingly, SR youth revealed higher levels of current risk for suicide, indicating greater increases in seriousness of attempts, hopelessness, and emotional pain. These suicidal thoughts and behaviors were relatively infrequent and/or low in intensity among all the youth in the study; nonetheless, potential dropouts who screened in as being at risk for suicide evidenced significantly more suicidal thoughts and behaviors than did their counterparts who did not screen in as being at risk for suicide.

Second, this study also demonstrated that SR youth experienced significantly higher levels of related risk factors than did NSR youth. Compared to NSR youth, SR

youth experienced more emotional distress (i.e., depression, anxiety, hopelessness, anger), higher levels of stress (i.e., number of stressors, effect of stress, family distress), and more high-risk behaviors, violence/victimization, and drug involvement. SR youth and NSR youth differed most in terms of emotional distress, with family distress being the factor for which the next greatest differences were observed. The SR and NSR groups were most similar in terms of drug involvement, high-risk behaviors, and violence/victimization; SR youth were significantly more likely to engage in high-risk behaviors, endorse having experienced violence/victimization, and report more hard drug use, drug use control problems, and adverse drug use consequences. Frequency of alcohol use and marijuana use were essentially the same for SR youth and NSR youth.

Third, in terms of protective factors, SR youth, compared to the NSR youth, evidenced significantly lower levels of almost all personal resources (the exception being ratio of positive to total coping strategies)—that is, a lower sense of self-esteem, personal control, and problem-solving coping strategies. Regarding social resources, both groups usually felt supported and felt that the support was available. Satisfaction with family support was somewhat low for both groups. SR youth, however, evidenced lower levels of actual support and help and less availability of support from members of their social network. They also endorsed a lower sense of support in general and less family support satisfaction. Where the two groups differed most was in self-efficacy (i.e., self-esteem and personal control), with sense of support and family support satisfaction being the next most divergent variable.

In short, the findings from Aim 1 of this study further demonstrated the vulnerability of potential high school dropouts. Compared to potential dropouts not identified as being at suicide-risk, those youth who screened in at suicide-risk evidenced more suicidal thoughts and behaviors, revealed greater levels of a wide array of related risk factors, and experienced lower levels of personal assets and social support resources. These findings add to the mounting evidence that potential dropouts

represent a high-risk group for youth suicide and suicidal behaviors (Eggert, Thompson & Herting, 1994; Thompson et al., 1994). These study findings also provided additional support for the validity and reliability of the *Suicide Risk Screen* by the fact that the SR youth differed significantly from the NSR youth on all factors in the *MAPS* conceptual model of suicide potential.

Also of interest in this study was identifying which of these risk and protective factors have strong influences on these youth's level of suicide risk. The findings revealed that the strongest predictors of level of suicide risk were prior suicide attempts, hopelessness, high-risk behaviors, adverse drug use consequences, being of Asian American ethnicity, and being female. A significant protective factor was sense of support. Within each domain, key risk and protective factors could be identified. That is, hopelessness and anxiety were key emotional distress indicators influencing suicide risk; similarly, all three stress indicators were significant predictors and both risky behaviors and violence/victimization explained suicide risk. Of the drug involvement indicators, the only significant predictor was adverse drug use consequences. Regarding the personal and social resources, significant predictors in order of strength were the youth's overall sense of social support, personal control, self-esteem, positive coping strategies, family support satisfaction, amount of support, and availability of support.

These findings clearly add to prior studies, both confirming prior claims and extending others; however, limitations of the study warrant some discussion in order to clarify the boundary conditions of the findings. Particularly for the findings from Aim 2, a clear limitation of the study is the cross-sectional nature of the data. While temporal spacing between the questionnaire and interview may have helped somewhat, this study would be enriched by tracking behaviors over time. Another limitation is that this study was conducted with a particular population—teens at risk for school dropout. Thus, generalization of results to other populations is not possible. This

study does, however, lay the groundwork for future studies with other groups, since findings provide important information about a high-risk population.

Despite these limitations, this study supported the general hypothesis that, among teens at risk for school dropout, those who also screen in as being at risk for suicide display significantly higher levels of direct suicide risk factors and related risk factors, as well as significantly lower levels of protective factors, than those high-risk teens not screening in as being at risk for suicide. Tests of the relative effect of all the risk and protective factors in predicting suicide risk also illuminated key predictors, especially prior suicide attempts, hopelessness, and high-risk behaviors.

Thus this study advances prevention science and nursing science in at least two ways. First, the comparisons of risk and protective factors among adolescents at risk for school dropout with and without accompanying signs of suicide risk increased the body of knowledge about this high-risk population. These phenomena and their interrelationships have implications for the design of programs aimed at reducing suicide-risk behaviors among potential high school dropouts. Second, knowing more about key risk and protective factors that influenced adolescent suicide risk can guide both screening and assessment protocols as well as program planning and development or selection of preventive interventions. It can also inform researchers who seek to explain adolescent suicide potential, as is the case here. The findings of Study 1 provide a stepping stone to specifying an empirically-based model and to estimating it for its power in explaining both suicide-risk behaviors and drug involvement among potential high school dropouts. These were the aims of Study 2 undertaken and reported in the next chapter.

CHAPTER 3

Study 2: Risk and Protective Factors Influencing Suicide-Risk Behaviors and Drug Involvement among High-Risk Youth

In Study 1 (Chapter 2) 372 high-Risk youth—defined as potential high school dropouts—who were also at risk for suicide were compared to 429 potential dropouts who were not at risk for suicide. Each group was profiled in terms of a comprehensive set of risk factors and protective factors. Key predictors of these youths' current level of suicide risk from each risk and protective factor domain were then identified. What is known from Study 1 is that the suicide-risk youth differed significantly from the non-suicide-risk youth in levels of nearly all risk and protective factors. Also, key predictors of their current level of suicide-risk included the number of prior suicide attempts, levels of hopelessness, high-risk behavior, being female, and being of Asian American ethnicity. The results of Study 1 were limited, however, by the regression analyses used and by identifying only predictors of suicide risk. Yet we know from other studies that high school dropouts are also at risk of drug involvement (Eggert & Herting, 1993; Herting, Eggert, & Thompson, 1996; Kandel, Raveis, & Davies, 1991; Powell-Cope & Eggert, 1994). Moreover, drug involvement has been linked with suicide-risk behaviors (Brent, Perper, Moritz, Allman, Roth, et al., 1988, 1993; Crumley, 1979; Lewinsohn et al., 1993; Mazza & Reynolds, 1994; Shafii et al., 1988; Thompson et al., 1994).

Accordingly, the central purposes of this study were to:

1. specify and estimate an empirically-based explanatory model of direct and indirect influences from key risk and protective factors on the co-occurrence of suicide-risk behaviors and drug involvement among 801 potential high school dropouts; and
2. determine whether the estimated model was the same for males and females in explaining the co-occurrence of suicide-risk behaviors and drug involvement.

The focus of this chapter is Study 2. More specifically, in the theoretic framework, an explanatory model of suicide-risk behaviors and drug involvement is

specified and defended with empirical support. The methods and procedures are then detailed, with special attention to how these differed from Study 1, given that the same sample was used for Study 2. Finally, the findings of the structural equation modeling analyses are presented and discussed in light of the study purposes.

Theoretic Framework

Theoretically, both adolescent suicide and suicidal behaviors as well as drug involvement are likely to result from a complex interaction of factors at the individual, interpersonal, and socioenvironmental levels. In recent years, several scholars argued that a common set of these factors influence a number of adolescent problems behaviors, including, for example, both suicide-risk behaviors (*cf.*, Felner & Felner, 1989) and drug involvement (*cf.*, Huba, Wingard, & Bentler, 1980; Jessor & Jessor, 1977). The premise is that while the specific problem behavior(s) evidenced by youth may vary, the influencing factors and mechanisms are likely to be similar.

Historically, however, theoretic models advanced have typically been discipline-specific, emphasizing either psychological explanations of adolescent suicidal behaviors (e.g., Zilboorg, 1936), or social explanations (e.g., Durkheim, 1897/1951). For example, interactional and intrapsychic explanatory models posited that sustained emotional distress—typically defined as depression, hopelessness, or anger—led to suicidal behaviors (*cf.*, Beck, 1986; Freud, 1957; Menninger, 1938). Whereas Durkheim's sociological model stressed the importance of ties with people and society, intrapsychic and interactional models stressed the influence of psychopathology, interpersonal struggles, and anger or rage. Similarly, the development and testing of explanatory models of adolescent drug involvement can be traced from early discipline-specific examples to the current emphasis on integrating biological, psychological, interpersonal and socioenvironmental factors (e.g., Elliott, Huizinga, & Ageton, 1985; Huba, Wingard, & Bentler, 1980).

The challenge undertaken in this study was to integrate theoretic perspectives explaining adolescent suicide-risk behaviors and drug involvement. After conceptualizing these dependent dimensions, particular attention was given to constructing an empirically based model of key independent factors within individual, interpersonal, and social domains. Individual factors influencing these outcomes of interest included emotional distress, high-risk behavior, and personal resources. Family support, peer school support, and peer bonding were key interpersonal and social factors influencing suicide-risk behaviors and drug involvement. Only recently have the mechanisms by which suicide-risk behaviors and drug involvement occur jointly been empirically tested (e.g., Harlow, Newcomb, & Bentler, 1986; Reifman & Windle, 1995; Thompson, Mazza, Herting, & Eggert, 1999). Thus, guided primarily by empirical evidence, the model advanced and the selection of factors included were those central in predicting either adolescent suicide-risk behaviors and/or drug involvement; that is, the model represents an attempt to integrate explanatory evidence common to both youth suicidal behaviors and drug involvement.

Hypotheses and Rationale

The posited model for this study is illustrated in Figure 3.1. Each path in the model represents a specific hypothesis to be tested in this study. Hypotheses are as follows:

- H_1 High-risk behavior will have a direct positive influence on (a) suicide-risk behaviors and (b) drug involvement.
- H_2 Emotional distress will have a direct positive influence on (a) suicide-risk behaviors, (b) drug involvement, and (c) high-risk behavior, and thereby (d) an indirect influence on suicide-risk behaviors and drug involvement through high-risk behavior.
- H_3 Personal resources will have a direct negative effect on (a) suicide-risk behaviors, (b) emotional distress, and (c) high-risk behavior; and thereby (d) an indirect effect on suicide-risk behaviors and drug involvement through emotional distress and high-risk behavior.

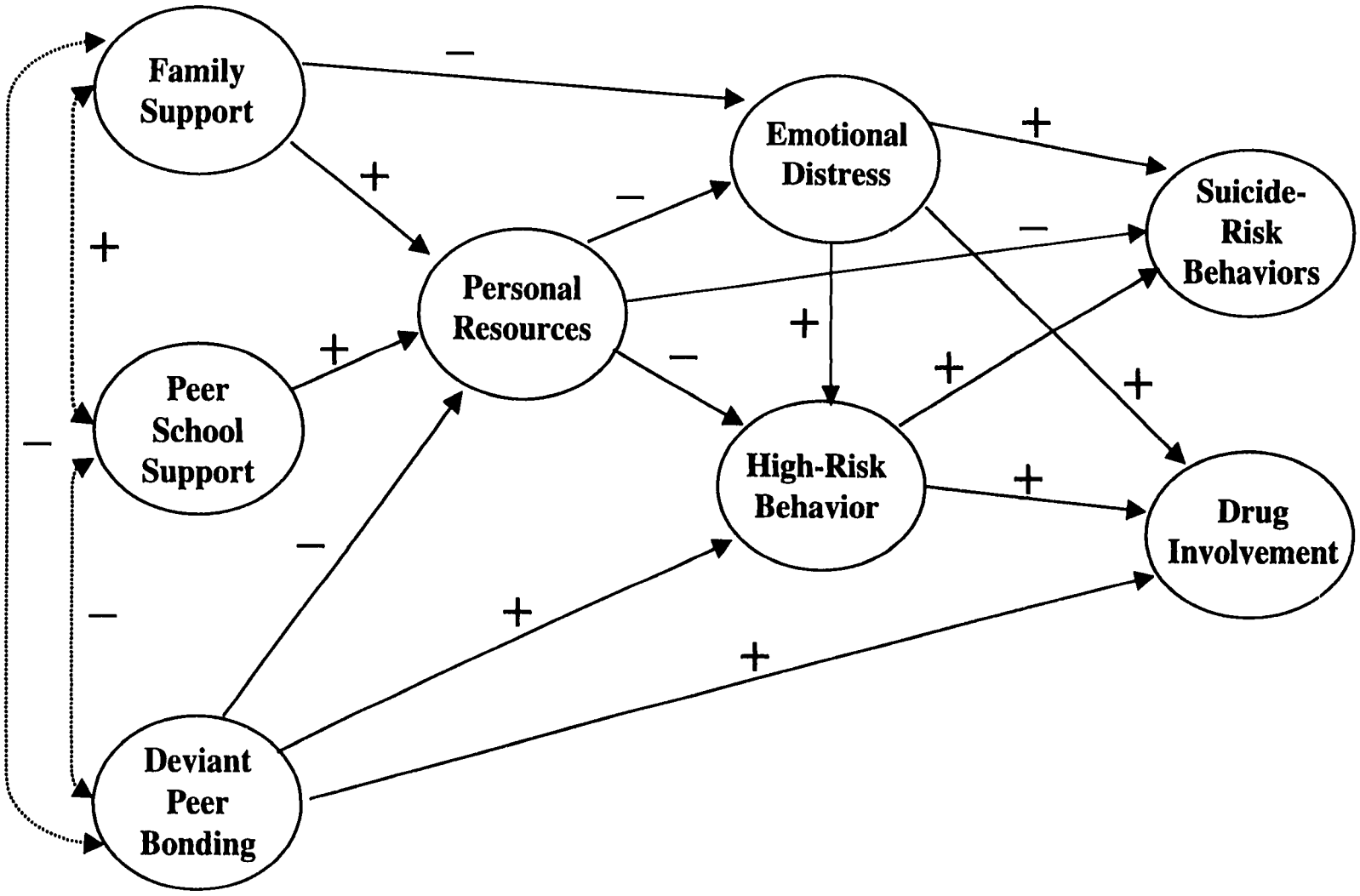


Figure 3.1. **Theoretic model of factors influencing suicide-risk behaviors and drug involvement.**

H_4 Family support will have (a) a direct positive effect on personal resources; (b) a direct negative effect on emotional distress; (c) an indirect effect on emotional distress, high-risk behavior, and suicide-risk behaviors through personal resources.

H_5 Peer school support will have (a) a direct positive effect on personal resources, (b) an indirect effect on emotional distress and high-risk behavior through personal resources, and thereby (c) an indirect negative influence on suicide-risk behaviors and drug involvement.

H_6 Deviant peer bonding will have (a) a direct positive effect on drug involvement, (b) a direct positive effect on high-risk behavior, and (c) a direct negative effect on personal resources; and thereby, (d) indirectly influencing emotional distress and high-risk behavior through personal resources, and indirectly influencing (e) suicide-risk behaviors and drug involvement through high-risk behavior.

In the ensuing sections, each of these hypotheses is defended. Provided first is evidence to support the co-occurrence of suicide-risk behaviors and drug involvement, the outcome dimensions shown on the right in Figure 3.1. Next, evidence for the direct and indirect pathways influencing both outcomes is provided, beginning with the most proximal dimensions and ending with a set of correlated family, school, and peer support/bonding factors.

Suicide-Risk Behaviors and Drug Involvement

In the model specified in Figure 3.1, suicide-risk behavior was defined by five elements. These were positive attitudes/beliefs about suicide, suicide ideation, suicide threats, planning/preparation for suicide, and prior suicide attempts (comprised of the actual number of prior suicide attempts, the lethality of these attempts, and present versus past threat of a suicide attempt). Thus, suicide-risk behavior was defined broadly and comprehensively; this conceptualization was confirmed in prior studies (Eggert, Thompson, & Herting, 1994; Thompson & Eggert, 1999; Thompson, Connelly, & Eggert, 1999).

The co-occurring outcome of drug involvement was conceptually defined in a comprehensive manner similar to that of suicide-risk behaviors. Five facets reflected drug involvement: frequency of alcohol, marijuana and hard drug use; drug use control problems; and adverse drug use consequences. The validity of this conceptual perspective of drug involvement has been demonstrated (Eggert, Herting, & Thompson, 1996; Herting, Eggert, & Thompson, 1996). These broad and comprehensive definitions of the two outcomes—suicide-risk behavior and drug involvement—are an assumed strength of the posited model.

A major premise in the specified model is that suicide-risk behaviors and drug involvement are co-occurring problem behaviors. Longitudinal studies of junior and senior high school students provide support for the links between suicide-risk behaviors and drug involvement. For example, Sussman and his colleagues (1994) found that suicide attempts and drug overdoses were correlated (r = .62); further, Reifman and Windle (1995) found that alcohol consumption influenced (a) suicide thoughts, (b) suicide communication, and (c) suicide attempts (b = .05 for all three paths). [Note: "b" represents an unstandardized beta, while "β" represents a standardized beta.] Cross-sectional studies also provide evidence that suicide-risk behaviors and drug involvement co-occur. Odds ratios of substance abuse/dependence in suicide attempters as compared to controls ranged from 3.0 to 5.6 (Beautrais, Joyce, & Mulder, 1996; Gould, King, et al., 1998). In a confirmatory factor analysis of co-occurring problem behaviors among high-risk high school students, alcohol use and other drug use correlated with suicide-risk behaviors at .18 and .19 for males, and at .00 and .40 for females (Thompson, Connelly, & Eggert, 1999). In another study led by Thompson (Thompson et al., 1994), drug involvement was a key discriminator of suicide ideation among high-risk students with suicide ideation, high-risk students without suicide ideation, and "typical" students (s = .42). Finally, the results of Study 1 (see Chapter 2) revealed that suicide ideation was correlated with hard drug use and adverse drug use consequences for suicide-risk youth (SR) and non-suicide-risk youth

(NSR) with Pearson's correlations ranging from .14 to .17. Suicide threats correlated with hard drug use, drug use control problems, and adverse drug use consequences for SR and NSR youth ($r = .17$ to .45).

There is clear evidence that suicide-risk behaviors and drug involvement co-vary, but there is an absence of strong evidence to suggest that one causes the other. This might suggest modeling a reciprocal relationship, but such a model poses problems of identification in a structural equation model. For this reason, the model proposed here specifies suicide-risk behaviors and drug involvement as co-occurring.

Key factors influencing the dependent dimensions of suicide-risk behaviors and drug involvement are explicated next. Discussed will be the theoretic rationale and empirical evidence for the direct and indirect influence of commonly identified independent dimensions on suicide-risk behaviors and drug involvement.

The Influence of High-Risk Behavior

In Hypothesis 1, high-risk behavior was posited to have a direct positive influence on suicide-risk behaviors (H_{1a}) and drug involvement (H_{1b}) among potential high school dropouts. High-risk behavior was defined in this model as those behaviors that challenge personal and social limits and that could result in negative personal consequences (e.g., physical injury, legal or disciplinary problems). Hoff (1984) claimed that engaging in high-risk behavior might represent a passive suicide attempt.

High-Risk Behavior and Suicide-Risk Behaviors

There is some, albeit limited, empirical support linking high-risk behavior and suicide-risk behaviors. For example, among junior and senior high school students, a risk-taking disposition was associated with suicide risk for males ($r = .21$) and for females ($r = .28$) (Neumark-Sztainer et al., 1997). Shafii and colleagues (1988) found an increased risk of conduct disorder diagnoses among young people who had completed suicide. Also, Resnick and colleagues (1997) found that exposure to recent suicide attempts or completions by family members was associated with an elevated risk of early initiation of sexual activity. In Study 1 of this dissertation, high-risk

behavior predicted the level of current suicide risk ($\beta = .07$, $p < 0.001$). Also, high-risk behavior was correlated with the specific suicidal behaviors of suicide ideation, threats, and planning/preparation ($r = .16$ to .32 for suicide-risk and non-suicide-risk youth respectively). Thus, based on the above empirical evidence as well as arguments by Hoff and others, high-risk behavior was posited to have a direct positive influence on suicide-risk behaviors (H_{1a}).

High-Risk Behavior and Drug Involvement

High-risk behavior may also influence drug involvement, in that risk-taking activities that challenge personal and social limits may be linked to behaviors such as substance use or abuse. Moreover, there is evidence that engaging in high-risk behavior may be linked with increases in drug involvement. In a longitudinal study of high school students, vanKammen and Loeber (1994) found that a history of one property offense influenced illegal drug use (b = 1.05) and initiation of drug dealing (b = .66). Having more than one property offense predicted illegal drug use (b = 1.45) and initiation of drug dealing (b = 1.33). A history of person-related offenses also influenced the initiation of drug use (b = 1.19).

Cross-sectional data provide added support for the link between high-risk behavior and drug involvement. For example, risk-taking or sensation-seeking behaviors have been linked with alcohol/drug use among students in regular and continuing education high schools (Neumark-Sztainer et al., 1997; Simon, Stacy, Sussman, & Dent, 1994). Correlations in these studies ranged from .34 to .47. In addition, Kumpfer and Turner (1991) found that participation in antisocial acts predicted drug use among high school students.

The evidence cited here provides evidence that high-risk behavior may lead to drug involvement. Thus, it was hypothesized that high-risk behavior would have a direct positive influence on drug involvement (H_{1b}).

The Influence of Emotional Distress

In Hypothesis 2, emotional distress was posited to directly and positively influence levels of suicide-risk behaviors (H_{2a}) and drug involvement (H_{2b}), as well as influencing a proximal factor: the youth's level of engagement in high-risk behavior (H_{2c}). In addition, emotional distress was expected to indirectly influence suicide-risk behaviors and drug involvement through high-risk behavior (H_{2d}). There is empirical evidence to support each of these paths.

Emotional Distress and Suicide-Risk Behaviors

Multiple and recent empirical studies demonstrate that the primary correlates of both youth suicide and suicidal behaviors are levels of depression, hopelessness, anger, and anxiety. For example, signs and symptoms of emotional distress have been associated with suicide completion (Brent, Perper, Moritz, Allman, Roth, et al., 1993; Brent, Perper, Moritz, Baugher, & Allman, 1993; Shafii et al., 1988), suicide attempts (Fergusson & Lynskey, 1995; Gispert, Wheeler, Marsh, & Davis, 1985; Lewinsohn, Rohde, & Seeley, 1993; Simonds et al., 1991), and suicide ideation (Thompson et al., 1994). Hence, emotional distress is conceptualized in this study as consisting of four elements or indicators: depression, anxiety, hopelessness, and anger. In Study 1, bivariate correlations among these indicators ranged from 0.52 to 0.82.

There is a great deal of evidence that depression predicts suicide-risk behaviors. In longitudinal studies of high school students several investigators found that depression predicted suicide ideation (Mazza & Reynolds, 1998; Reifman & Windle, 1995) and that childhood depression predicted suicide attempts in adulthood (Harrington et al., 1994). Cross-sectional data from studies of high school students also provide evidence that depression predicts or is correlated with suicide-risk behaviors (Cole, 1989; Martin et al., 1995; Thompson, Connelly, & Eggert, 1999; Thompson, Mazza, Herting, & Eggert, 1999). In addition, depression was the best discriminator of suicide ideation among high-risk and typical high school students (Thompson et al., 1994). Evidence from clinical samples also supports the links

between depression and suicide-risk behaviors (Cole, 1989; King et al., 1993; Pinto & Whisman, 1996).

There is also evidence that anxiety, another indicator of emotional distress, contributes to suicide-risk behaviors. For example, in a cross-sectional study of inpatients (Pinto & Whisman, 1996), anxiety influenced suicide ideation ($b = 2.69$). Additional evidence can be found in Study 1. Anxiety predicted suicide-risk behaviors ($\beta = .11$, $p < 0.01$). In another study of inpatients (Stein et al., 1998), patients who had made single and multiple prior suicide attempts displayed significantly more state and trait anxiety than did controls. These groups, however, did not differ significantly from nonsuicidal inpatients.

Hopelessness is another aspect of emotional distress that is a well-documented contributor to suicide-risk behavior. In a longitudinal study of high school students (Mazza & Reynolds, 1998), changes in hopelessness predicted changes in suicide ideation among females ($\beta = .42$). Cross-sectional studies also provide evidence. For example, hopelessness accounted for 13% of the variance in suicidality in one study (Allison et al., 1995) and influenced suicide-risk behaviors in other studies (Cole, 1989; Thompson, Mazza, et al., 1999). Studies of inpatients also support the links between hopelessness and suicide-risk behaviors. For example, hopelessness was the best discriminator between attempters, at-risk teens, and controls in a study by Swedo and colleagues (1991). When hopelessness was entered into a regression equation second—after repulsion by life—37% of the variance related to suicide behaviors was explained (Cotton & Range, 1996). In addition, Enns and colleagues (1997) found that hopelessness predicted suicide intent ($\beta = .39$) for Caucasian (but not Aboriginal) teens in Canada. Findings from Study 1 (Chapter 2) provide additional support. Hopelessness was a predictor of suicide risk ($\beta = .41$), and was correlated with suicide ideation, threats, planning/preparation, prior attempts, and lethality of prior attempts (Pearson's *r* ranged from .22 to .60 for SR youth and non-SR youth).

Anger, the fourth element of emotional distress, has also been found to contribute to suicide-related behaviors. In a study of high school students (Thompson et al., 1994), anger discriminated suicide ideation (s = .49) among high-risk teens with suicide ideation, and both high-risk teens and typical teens without suicide ideation, and typical teens. In another study by the same group (Thompson, Connelly, & Eggert, 1999), aggressive tendencies were correlated with suicidal behaviors among high-risk teens (r = .39 for males and r = .43 for females). Although not a significant predictor of suicide risk in Study 1 of this dissertation, anger was associated with suicide ideation, threats, planning/preparation, number of prior attempts, and lethality of prior attempts (r = .15 to .33 for SR and NSR youth).

Hence, given the evidence above of the relationship between each of the elements of emotional distress—depression, anxiety, hopelessness, and anger—and suicide-risk behaviors, the hypothesis that emotional distress will have a direct positive effect on suicide-risk behaviors seems warranted (H_{2a}). Moreover, few if any explanatory models of suicide and suicidal behaviors would omit the influence of emotional distress. In terms of the directional relationship posited, distress logically occurs before suicide risk is warranted.

Emotional Distress and Drug Involvement

Emotional distress was also posited to have an impact on drug involvement. While initiation of drug use may likely result from social influences, abuse of drugs is more likely an attempt to "medicate" emotional distress (Belfer, 1993). The path from emotional distress to drug involvement (as opposed to the reverse) is also appropriate given this population of teens, many of whom are at risk for suicidal behavior. One indicator of emotional distress—depression—was part of the suicide-risk screen used to identify youth in this study. Others have hypothesized that anxiety—social anxiety in particular—leads teens to deal with these feelings by using alcohol and other drugs (Botvin & Botvin, 1992; Brook, Brook, Gordon, Whiteman, & Cohen, 1990; Jessor & Jessor, 1977).

Evidence from research studies supports this viewpoint. For example, depression was associated with the initiation of drug use in several studies (Brook, Whiteman, & Gordon, 1985; Harlow, Newcomb, & Bentler, 1986; Paton, Kessler, & Kandel, 1977). Brook and colleagues (1990) found that poor intrapsychic functioning, which can be represented by a depressed mood, was related to increased drug use. Findings from Study 1 also provide some support. There were associations between anxiety and hard drug use for suicide-risk and non-suicide-risk youth (r = .14 and .18, respectively), between anger and drug use control problems (r = .14 and .23 respectively), and between anger and adverse drug use consequences (r = .14 and .26, respectively).

The evidence above supports the premise that emotional distress can lead to drug involvement. Thus, as represented in Figure 3.1, it was hypothesized that emotional distress would have a direct positive effect on drug involvement (H_{2b}).

Emotional Distress and High-Risk Behavior

Both high-risk behavior and emotional distress were hypothesized to impact each of the outcomes of interest: suicide-risk behaviors and drug involvement. A relationship between these important precursors to problem behaviors was expected. Aspects of emotional distress may cause a teen to engage in high-risk behavior. For example, depression may lead to intentional or unintentional risk-taking behavior.

There is empirical evidence to support this claim. In a cross-sectional study of junior and senior high school students (Neumark-Sztainer et al., 1997), correlations were found between emotional well being and delinquency (r = -.25 for males and -.26 for females). Deliberate self-harm was associated with higher depression scores in another study (Rozanes, Pearce, & Allison, 1995). Findings from Study 1 also support the link between emotional distress and high-risk behavior. Associations were found between anxiety and high-risk behavior for suicide-risk youth (r = .15) and non-suicide-risk youth (r = .29). In addition, associations were found between anger and high-risk behavior (r = .42 and .50, respectively, for SR and NSR youth). Thus, it was

hypothesized that emotional distress would increase the level of high-risk behavior (H_{2c}). In turn, high-risk behavior was also posited to influence the outcomes of interest; the rationale for this claim is discussed next.

The Influence of Personal Resources

In Figure 3.1 personal resources were posited to have a direct negative effect on suicide-risk behaviors (H_{3a}), and an indirect effect on suicide-risk behaviors through both emotional distress (H_{3b}) and high-risk behavior (H_{3c}). Personal resources were also posited to indirectly influence suicide-risk behaviors and drug involvement by decreasing emotional distress and high-risk behavior (H_{3d}). Personal resources were conceptualized as consisting of three "protective" elements at the individual level: self-esteem, personal control, and problem-solving coping skills.

Personal Resources and Suicide-Risk Behaviors

The claim that personal resources have a direct effect on suicide-risk behaviors stems from theoretic arguments about the protective nature of personal competencies, and conversely, the risk of having few personal coping skills. That is, suicide-risk behaviors may stem from feeling out of control or from an inability to engage in problem-solving behaviors. Thus, a teen with deficits in these areas may see suicide as the only option for dealing with perceived insurmountable problems. Evidence to support this premise comes from a longitudinal preventive-intervention trial with suicide-risk teens (Thompson, Eggert, and Herting, 1999). In a school-based preventive intervention designed to enhance personal resources or competencies; personal control had a direct, significant ameliorating effect on suicide-risk behaviors for both youth in the intervention group (β = -.22, $p<.005$) and the assessment-only control group (β = -.11, $p<.025$). A cross-sectional study by the same group (Thompson et al., 1994) found that low self-esteem discriminated suicide ideation among high-risk teens with suicide ideation, high-risk teens with no suicide ideation, and typical high school students without suicide ideation (s = .60). In a study of juvenile delinquents (Cole, 1989), survival-coping beliefs accounted for 5–12% of the variance in suicide ideation,

prior suicide attempts, and expectations of attempting suicide in the future. It was therefore hypothesized that personal resources would have a direct negative effect on suicide-risk behaviors (H_{3a}).

Personal Resources and Emotional Distress

It was expected that personal resources would directly influence lower levels of emotional distress. Theoretical support can be found in Beck's (1988) explanation of the causes of depression and hopelessness: a negative view of self, the world, and the future. A negative view of self is readily linked with low self-esteem, and a negative view of the world implies a lack of personal control. It may also be argued that a negative view of the future could involve difficulty in problem-solving coping—e.g., in generating a number of potential solutions that would influence positive outcomes. Others have argued for similar mechanisms to explain anxiety and anger, two other indicators of emotional distress (e.g., deWilde, Kienhorst, Diekstra, & Wolters, 1993; Spielberger, 1985) linked with suicide-risk behaviors.

Strong evidence for the influence of personal resources on emotional distress comes from the same longitudinal preventive-intervention trial with suicide-risk teens noted above (Thompson, Eggert, & Herting, 1999). The intervention, designed to enhance personal control and self-esteem, had a direct, ameliorating effect on depression for youth in both intervention groups ($\beta = -.32$, $p<.05$ for Group 1 and $\beta = -.71$, $p<.05$ for Group 2). In contrast, personal control had no effect on depression among the assessment-only control group. Further empirical support can be found in the work of Resnick and colleagues (1997), which demonstrated that self-esteem (a facet of personal resources in the present study) was inversely related to emotional distress among junior and senior high school students. Also, findings from Study 1 (see Chapter 2) provide further evidence to support the link between personal resources and emotional distress. Self-esteem was correlated with elements of emotional distress (depression, anxiety, hopelessness, anger) for both suicide-risk youth and non-suicide-risk youth (Pearson's r = -.22 to -.61). Correlations between personal control and

dimensions of emotional distress ranged from -.23 to -.71, and those between problem-solving coping and three of the four elements of emotional distress (depression, hopelessness, anger; but not anxiety) ranged from -.13 to -.44. Thus, based on theoretic premises and empirical evidence it was hypothesized that personal resources would directly and negatively influence emotional distress (H_{3b}).

Personal Resources and High-Risk Behavior

According to Jessor and Jessor (1977), problem behaviors (e.g., high-risk behavior, delinquency, drug involvement, unwanted teen pregnancy) may be a way of coping with low self-esteem and/or a lack of self-efficacy. There is some empirical evidence to support this premise. In cross-sectional community-based samples, self-esteem was related negatively to a type of high-risk behavior—delinquency (r = -.22 for males, r = -.26 for females) (Neumark-Sztainer et al., 1997), and negative coping behaviors were displayed more often in those with deviant behavior (White & Labouvie, 1994).

Other studies provide additional support. For example, in a study of 140 high school students in Australia, Gordon and Caltabiano (1996) found that those who reported the most substance use had lower scores on self-esteem and higher scores on sensation-seeking behaviors. In addition, Arnett (1992) studied music preferences and reckless behavior, and found that higher levels of sensation seeking and low self-esteem were common correlates of preference for hard rock or heavy metal music, which were found to be associated with reckless behavior. Therefore it was hypothesized that personal resources would have a direct and negative impact on high-risk behavior (H_{3c}).

To this point, factors representing thoughts and behaviors at the individual level have been discussed. These were considered more proximal to the outcomes of interest. However, more distal factors were also predicted to impact suicide-risk behaviors and drug involvement, primarily indirectly through the individual influences

already discussed. The rationales for key interpersonal and social influences are discussed next.

Interpersonal and Social Influences

The domains of family, school, and peers are a teen's major interpersonal and social environments theoretically posited to influence their behavior both positively and negatively (Elliott, Huizinga, & Ageton, 1985; Felner & Felner, 1989; Hawkins, Catalano, & Miller, 1992; Powell-Cope & Eggert, 1994; Resnick et al., 1997). Positive factors are likely to be linked with increased personal and decreased negative personal resources, while negative environmental factors are likely to be linked with decreased positive and increased negative individual factors. Correlations among family, school, and peer environmental factors were also expected.

The interpersonal and social factors considered in the model were family support, peer school support, and deviant peer bonding. Family support was defined as satisfaction with rules, time spent together, and open communication with parents. Peer school support was conceptualized as help and support received from classmates in the youth's favorite class as well as all in their classes in general. Deviant peer bonding was defined as associating with peers who engage in unsanctioned social behaviors.

Family Support, Personal Resources, and Emotional Distress

In Figure 3.1 family support was posited to have a direct positive effect on personal resources (H_{4a}), and a direct negative influence on emotional distress (H_{4b}). Family support was also posited to have an indirect effect on suicide-risk behaviors, emotional distress, and high-risk behavior through personal resources (H_{4c}).

Family support and personal resources. The expectation that family support would increase personal resources was grounded in the theoretic premise that family support provides a secure base (Bowlby, 1988), emotional security, and a sense of safety for teens. This sense of security provides the necessary and favorable

environment for the development and maintenance of self-esteem, self-efficacy and personal control.

There is empirical evidence to support this theoretic premise; for example, family support was found to prevent teens from making a suicide attempt ($\beta = .44$) in a study by Morano and colleagues (1993). Also, perceived family support was negatively related to current risk of suicide for Swedish ($\beta = -.25$) and Turkish ($\beta = -.38$) students (Eskin, 1995). Further, findings from Study 1 (see Chapter 2) support a link between these dimensions. Associations were found between family support satisfaction and the personal resources of interest in this study (self-esteem, personal control, problem-solving coping). Pearson's correlations ranged from .31 to .51 for both the suicide-risk youth and non-suicide-risk youth.

Links between family support and personal resources are clear, and it follows that personal resources would result from family support rather than the reverse. Thus, it was hypothesized that family support would have a direct positive effect on personal resources (H_{4a}).

Family support and emotional distress. There are substantial arguments and recent empirical evidence in support of the premise that caring and supportive relationships with one's family (typically defined as one's parents) influence a teen's emotional distress and well being. For example, supportive family relationships with one's family were found to be absent for depressed and aggressive persons (Dryden, 1981; Gotlib & Whiffen, 1991; LaGaipa & Wood, 1981). Also, an adolescent's connection to family was linked with lower levels of emotional distress (Resnick et al., 1997). Further, findings from Study 1 (in Chapter 2) revealed links between family support and emotional distress. Family support satisfaction was correlated with depression (-.23 for suicide-risk [SR] youth and -.18 for non-suicide-risk [NSR] youth), anxiety (-.18 for SR youth and -.10 for NSR youth), hopelessness (-.42 for SR youth and -.45 for NSR youth), and anger (-.17 for SR youth and -.22 for NSR youth). Compelling evidence comes from a model testing the mediating influences of

depression, hopelessness and anxiety on suicide-risk behaviors among high-risk youth (Thompson, Mazza, et al., 1999). Family support negatively influenced depression (β= -.26 for males and females), anxiety (β = -.24 for males and -.27 for females), and hopelessness (β = -.28 for males and -.27 for females). It was therefore hypothesized that family support would have a direct negative effect on emotional distress (H_{4b}), thereby also indirectly influencing suicide-risk behaviors and drug involvement (H_{4c}).

Peer School Support and Personal Resources

In H_5 peer school support was predicted to have a direct positive effect on personal resources (H_{5a}) and thereby, an indirect effect on emotional distress and high-risk behavior through drug involvement (H_{5b}), thus having an indirect effect on suicide-risk behaviors and drug involvement (H_{5c}). A major premise of social resources theory is that support from multiple sources in one's network works to enhance personal resources and decrease emotional distress (Lin, Dean, & Ensel, 1986). Just as family support increases a teen's personal resources, it is expected that support in another area of a teen's life—school—would also serve to increase personal resources. School is a central, potential source of support for adolescents. Because one of the roles of teens is being a student, positive experiences in school, with both teachers and classmates are likely to increase self-esteem and personal control. There is empirical evidence supporting this assumption from a longitudinal study of teens receiving an intervention to increase social support. Peer support was found to increase the adolescent participants' sense of personal control (β = .43) (Thompson, Eggert, & Herting, 1999). Moreover, this peer support was directly enhanced by the teachers' support, indicating that these teachers shaped the level of support youth received from their classmates in school. In another study, teachers' active instruction and direct supervision of learning was linked to student achievement gains (Brophy & Good, 1986), which likely involve self-esteem and personal control issues. The results from Study 1 (in Chapter 2) also provide evidence linking peer school support and personal resources. For suicide-risk youth, correlations ranged from .22 to .30 between school

support and the individual facets of personal resources (i.e., self-esteem, personal control, and problem-solving coping). For non-suicide-risk youth, correlations ranged from .18 to .28. It was therefore hypothesized that school support would have a positive influence on personal resources (H_{5a}). Thus it was also hypothesized that this support from one's classmates in school would indirectly influence suicide-risk behaviors and drug involvement through its positive impact on enhancing personal resources (H_{5b}).

While family and school support were predicted to have positive influences, deviant peer bonding was hypothesized to have a negative influence on the outcome dimensions. These predicted negative effects of deviant peer bonding are discussed next.

The Influence of Deviant Peer Bonding

In H_6 deviant peer bonding was hypothesized to have a direct positive effect on drug involvement (H_{6a}) and a direct positive effect on high-risk behavior (H_{6b}), a direct negative effect on personal resources (H_{6c}), thereby indirectly influencing emotional distress and high-risk behavior through personal resources (H_{6d}), and indirectly influencing suicide-risk behaviors and drug involvement through high-risk behavior (H_{6e}).

Deviant peer bonding and drug involvement. Deviant peer bonding is likely to influence drug involvement through mechanisms described in social learning theory (Bandura, 1977). These include modeling and social reinforcement of drug use. There is ample and compelling empirical support that deviant peer bonding is one of the strongest influencing factors on adolescent drug involvement. For example, in longitudinal studies with junior and senior high school students, as well as community samples, β values range from .14 to .42 (Curran, Stice, & Chassin, 1997; Eggert, Thompson, Herting, & Nicholas, 1994; Hoffman & Su, 1998; Randell, Herting, Eggert, & Thompson, 1999; Rohrbach et al., 1994). A cross-sectional study of high school students (Zastowny, Adams, Black, Lawton, & Wilder, 1993) found that peer

drug use contributes to initiating marijuana use (β = .15). It was also shown that bonding with prosocial peers is a protective factor against drug involvement in a cross-sectional study by Kumpfer and Turner (1991). They demonstrated that bonding with positive peers had a negative effect on drug use (β = -.66). It was therefore hypothesized that deviant peer bonding would have a direct positive effect on drug involvement (H_{6a}).

Deviant peer bonding and high-risk behavior. Bandura's social learning theory (1977) explains the hypothesized effect of deviant peer bonding on high-risk behavior. According to social learning theory, behaviors that are modeled and reinforced become part of a person's repertoire. Therefore, associating with peers who engage in behaviors that are socially disapproved makes a teen more likely to engage in high-risk behavior.

Empirical support for this theory also exists. In a cross-sectional study of junior and senior high school students, Resnick and his colleagues (1997) found that deviant peer bonding was associated with involvement in violence. Findings from Study 1 (in Chapter 2) also revealed that correlations between deviant peer bonding and high-risk behavior were .50 for the suicide-risk and non-suicide-risk potential high school dropouts. It was therefore hypothesized that deviant peer bonding would have a direct positive effect on high-risk behavior (H_{6b}). It was also predicted that deviant peer bonding would indirectly influence increased drug involvement through high-risk behavior as well as through the direct effect hypothesized in H_{6a}.

Deviant peer bonding and personal resources. Social learning theory (Bandura, 1977) also provides the basis for another hypothesized effect of deviant peer bonding. A negative relationship is expected between deviant peer bonding and personal resources (H_{6c}). One aspect of personal resources, coping, can be influenced by the behaviors of others. Modeling and reinforcement of behavior are ways to develop behavior patterns. It was expected that teens who associated with deviant peers would develop negative coping strategies (e.g., lying, stealing) and have greater

deficits in problem-solving coping and personal control. This is because deviant peers may cope with problems in negative or antisocial ways, and model or reinforce these behaviors among their friends.

Another aspect of personal resources in the present study is self-esteem. There is some evidence in the literature that self-esteem and deviant peer-bonding correlate. O'Donnell (1979) assessed self-esteem in 261 students in 8th and 11th grades and found that those whose peers had higher self-esteem were more likely to report high self-esteem. In addition, in a study of 330 high school students with normal intelligence and 50 mildly mentally retarded high school students (Stager, Chassin, & Young, 1983), within the deviant group, students who had a negative evaluation of their peer group had low self-esteem. Moreover, evidence from Study 1 (Chapter 2) revealed that deviant peer bonding was linked with self-esteem for non-suicide-risk youth (r = -.09, $p < 0.10$), though this was not so for suicide-risk youth. It was therefore hypothesized that deviant peer bonding would have a direct negative effect on personal resources (H_{6c}). Thus, it was also predicted that through this direct effect on personal resources, deviant peer bonding would also indirectly influence suicide-risk behavior (H_{6d}).

Correlations among Family, School, and Deviant Peer Factors

It was expected that the above key environmental factors would be correlated. Evidence for this assumption was revealed in Study 1. Correlations between family support satisfaction and school support were .24 and .35 for suicide-risk youth and non-suicide-risk youth respectively. For non-suicide-risk youth, correlations between family support satisfaction and deviant peer bonding and between school support and deviant peer bonding were -.22 and -.20 respectively; these correlations were not significant for suicide-risk youth. Based on these findings it was expected that the environmental factors would be correlated such that: (a) the greater the family support, the greater the peer school support; (b) the greater the family support, the less the deviant peer bonding; and (c) the greater the peer school support, the less the deviant peer bonding.

Summary of the Theoretic Framework

Based on theoretical arguments and empirical evidence discussed in this section, a heuristic model was developed for estimation using structural equation modeling. The specified model hypothesizes that the co-occurring outcomes of suicide-risk behavior and drug involvement will be influenced by individual, interpersonal, and social factors.

The specified model is as follows: The individual factors of emotional distress and high-risk behavior will have direct positive effects on the occurrence of suicide-risk behaviors and drug involvement; emotional distress will also have indirect effects on suicide-risk behaviors and drug involvement through high-risk behavior. Personal resources will influence suicide-risk behaviors directly; personal resources also will influence suicide-risk behaviors and drug involvement indirectly through emotional distress and high-risk behavior. The antecedent interpersonal and social factors of family support, school support, and deviant peer bonding will be correlated. Specifically, family support will have a direct influence on personal resources and emotional distress, thereby also indirectly influencing suicide-risk behavior, emotional distress, and high-risk behavior. Support from school classmates will directly influence personal resources and thereby indirectly influence emotional distress, high-risk behavior and suicide risk through personal resources. Finally, deviant peer bonding will have direct influences on drug involvement, high-risk behavior and personal resources thereby indirectly influencing emotional distress, high-risk behavior, and suicide-risk behaviors through personal resources, and indirectly influencing suicide-risk behaviors and drug involvement through high-risk behavior.

Methods and Procedures

The data set used in Study 1 was also utilized for Study 2. These data came from the ongoing *Reconnecting Youth Prevention Research Program* and were drawn from a project entitled *Measuring Adolescent Potential for Suicide* (National Institute

of Nursing Research, RO1 NR 03548). The grant was awarded to Drs. Leona Eggert (Principal Investigator) and Elaine Thompson (Co-Principal Investigator). The focus of this NINR-funded grant is on advanced analytic assessments of the measurement properties of the *Measure of Adolescent Potential for Suicide* (*MAPS*).

Design and Subjects

A structural equation model was used to estimate the posited explanatory model of factors influencing both suicide-risk behaviors and drug involvement. The cross-sectional sampling design, subjects, recruitment, and data collection procedures were as for Study 1 and are detailed in Chapter 2 under "Design and Subjects." In short, the sample for Study 2 consisted of 801 students, of which 372 (46%) were suicide-risk and 429 (54%) were non-suicide-risk. All 801 were identified as potential high school dropouts. In this study testing the specified model, the data from both suicide-risk and non-suicide-risk youth were included.

Measurement

The measurement for this study varied somewhat from Study 1 in that two dimensions were added (Peer School Support and Deviant Peer Bonding) and others were not included. Also, both single indicators and multi-item indices were used to reflect the dimensions in the model. All indicators of the respective dimensions in the model to be estimated came from the *High School Questionnaire: Profile of Experiences* (Eggert, Herting, & Thompson, 1989; 1995) and the *Measure of Adolescent Potential for Suicide* (Eggert, Thompson, & Herting, 1994).

Confirmatory factor analysis was used to estimate the specified measurement model. This procedure tested whether the dimensions and their respective indicators were structured as posited (Bentler & Wu, 1995). This involved four steps as follows:

1. estimating each dimension separately (these results were presented in the measurement section above and in Table 3.1);

2. estimating only the endogenous dimensions—Suicide-Risk Behaviors and Drug Involvement together;
3. estimating all the specified exogenous dimensions together; and finally,
4. estimating all dimensions and their respective indicators simultaneously, respecifying the model as indicated to improve the overall fit statistics.

Because the theoretic factor structure used in this study had been established, it was appropriate to use confirmatory factor analysis to evaluate the degree to which the theoretic model fit the covariance structure of the data that provided the validity test of the model. The statistical program EQS (Bentler, 1995) was used for the structural equation modeling analyses. In this section, the specified measurement model is detailed.

Factors in the heuristic model were chosen based on theoretical and empirical support provided by the literature and results of Study 1 (Chapter 2). The rationale for the independent factors chosen and the relationships modeled were as stated above. The co-occurring outcomes of interest were suicide-risk behaviors and drug involvement. It was hypothesized that these outcomes would be influenced by personal factors (emotional distress, high-risk behavior, and personal resources) as well as interpersonal and social factors (family support, peer school support, and deviant peer bonding).

To provide the multiple indicators needed for structural equation modeling, some of the constructs were represented by several indices (computed scale scores), while others were represented by single items. Multiple indicators were used to reflect each latent dimension in the model, with three to five indicators specified to reflect each dimension. Confirmatory factor analysis was conducted for each individual dimension using EQS (Bentler, 1995), prior to undertaking the confirmatory factor analyses of the full measurement model. The CFA analysis for each dimension in the specified measurement model is summarized in Table 3.1.

Prior to undertaking the confirmatory factor analyses, frequency data were examined for each measured indicator or index. Data had been checked previously for

entry errors and corrected. Missing data were random and infrequent; however, missing cells present a problem in structural equation modeling (Bentler & Wu, 1995). One case was deleted due to a relatively high percentage of missing data on the variables of interest (> 15%). Mean imputation was used to substitute for missing cells.

The data were also examined for outliers and both univariate and multivariate normal distributions (Bentler & Newcomb, 1992). Where results suggested non-normal distributions and a significant positive skew, square root transformations were performed on indicators or indices showing such departures from normality, thereby substantially reducing the skew.

Detailed next is the specification for the measurement model. In all instances, unless otherwise noted, individual items used as indicators or to create indices all employed a 0 to 6 response set. The higher the score, the greater the level of the element measured—for example, greater suicide-risk behaviors, drug involvement, personal control, and so forth.

Suicide-Risk Behaviors

Reflectors of the suicide-risk behaviors dimension were positive attitudes/beliefs about suicide, suicide ideation, suicide threats, planning and preparation for suicide, and the mean of three items related to suicide attempts. These three items comprising the suicide attempt index were (1) number of prior suicide attempts, (2) lethality of prior suicide attempts, and (3) level of current risk for making a suicide attempt. All reflectors of suicide-risk behaviors were indices; they are described briefly below and in Table 3.1.

Attitudes and beliefs. This index consisted of the mean of five items. It captured the degree to which suicide was perceived as an acceptable solution to life's problems, beliefs that the youth's life would end in suicide, and the extent to which reasons for dying outweighed reasons for living. Some items were adapted from ideas

from Beck (1979) and Rudd (1989). Reliability for this scale was moderately high (α = .83).

Suicide ideation. This 11-item index tapped both the frequency and intrusiveness of suicide thoughts. Individual items included questions about the number of thoughts in the past 24 hours, past two weeks, and past year. Questions about intrusiveness included asking how long the suicidal thoughts lasted and how much they interfered with students' daily lives. This scale was developed by Eggert and colleagues, based on ideas from Beck (1979), Derogatis and colleagues (1976; 1977), Hoff (1984), Linehan and colleagues (1983), and Rudd (1989). Scale reliability was moderately high (α = .87).

Suicide threats. The suicide threats index contained three items—two tapping direct threats about suicide (i.e., verbally threatened suicide in last month, threatened suicide in last year) and one tapping indirect threats of suicide (i.e., drawings or poetry suggestive of a suicide threat). Reliability for this scale was good (α = .77).

Planning and preparation. The planning/preparation index consisted of the mean of 14 items. These items captured the specificity of suicide plans, availability of the method, lethality of the method, and communication to others about planning for suicide. In the *MAPS* interview, items were skipped if the student did not first endorse having a suicide plans, resulting in a "0" for planning/preparation. Individual items were developed by Eggert and colleagues and based on ideas from Beck (1979), the Los Angeles Suicide Prevention Center (1982), and Rudd (1989). Reliability for this scale was high (α = .92).

Prior suicide attempts and level of current suicide risk. This index consisted of the mean of three scales—prior attempts, lethality of prior attempts, and level of current risk. The level of prior attempts was derived from one question about the number of suicide attempts ever made. The scale was developed by Eggert and colleagues and based on ideas from Beck (1979), Hoff (1984), and Rudd (1989).

The 15-item lethality of attempts index involved both student and interviewer ratings about prior suicide attempts, use of alcohol/drugs during the attempt, repeated suicide attempts, severity of prior attempts, and communication to others about prior attempts. Again, if there were no prior suicide attempts, these items were skipped and scored "0." Eggert and colleagues developed this scale based on ideas from Beck (1979) and the Los Angeles Suicide Prevention Center (1982). Scale reliability was high ($\alpha = .91$).

The six-item level of current risk indicator captured the students' perceptions of their current feelings compared to when they made a prior suicide attempt. If there were no prior suicide attempts, items were skipped and scored "0." The scale was developed by Eggert and colleagues and tapped feelings of increased hopelessness and escalation in seriousness of attempts. Scale reliability was good ($\alpha = .75$). Individual scores for each of the above three indices (number of prior attempts, lethality of attempts, and level of current risk) were averaged to operationally define the meaning of "prior attempts" as a reflector of suicide-risk behaviors.

Confirmatory factor analysis for the suicide-risk behaviors dimension. Scale scores for suicide threats, planning/preparation, and prior attempts were positively skewed at 2.5 or greater. Square root transformation was used to transform these variables into normal distributions. Confirmatory factor analysis revealed a good fit with a χ^2 (5, $N = 800$) of 5.73 ($p = 0.33$). The comparative fit index (CFI) was 1.00. (See Table 3.1)

Drug Involvement

The second outcome dimension in the specified model was drug involvement. Indices of drug involvement were the same as those utilized in Study 1, including the frequency of alcohol use, marijuana use, and hard drug use; the degree of drug use control problems; and the level of adverse drug use consequences. Prior structural equation analyses confirmed the factor structure of this *Drug Involvement Scale for Adolescents*, the *DISA* (Eggert, Herting, & Thompson, 1996), and its higher-order

multidimensional perspective on adolescent drug involvement (Herting, Eggert, & Thompson, 1996). All indices for the separate elements of drug involvement were measured on a scale of "0" to "6" and are explicated below.

Alcohol use. A two-item index tapped the frequency of use of beer/wine and hard liquor (combined) in the past month. Pearson's correlation between these two items with the current study sample demonstrated a moderately strong correlation (r = .71), thereby justifying combining them as an index of alcohol use.

Marijuana use. A single indicator tapped the frequency of marijuana use in the past month. A higher scale score indicted greater frequency of marijuana use in the past 30 days.

Hard drug use. A seven-item index captured the frequency of use of hard drugs (i.e., cocaine, opiates, tranquilizers, stimulants, depressants, hallucinogens, and inhalants) in the past month. Scale reliability with the current sample was good (α = .72).

Drug use control problems. Drug use control problems involved a 4-item index that tapped the students' experiences in controlling their drug use such as using more than they had intended, feeling pressured by friends to drink/use drugs, and using alcohol/ drugs to solve problems. Scale reliability with the current sample was good (α = .71).

Adverse drug use consequences. Three facets of adverse consequences—intrapersonal, interpersonal and social—were tapped by an 8-item index that captured the level of negative consequences at school, home, with friends, and with the law related to alcohol/drug use during the past month. Examples of items included conflicts with family/friends, feeling depressed, skipping classes, and being late to work. Scale reliability was good (α = .74).

Confirmatory factor analysis for the drug involvement dimension. Square root transformation was used for the indicators with extreme skewness, including hard drug use, drug use control problems, and adverse drug use consequences.

Table 3.1: Results of Confirmatory Factor Analyses for Individual Factors in the Theoretic Model of Suicide-Risk Behaviors and Drug Involvement

FACTOR	INDICATORS	b	β	χ^2 (df)	CFI
Suicide-Risk Behaviors	Positive attitudes and beliefs	.91	.69		
	Suicide ideation	1.00[b]	.94		
	Suicide threats[a]	.58	.75		
	Planning/preparation[a]	.54	.84		
	Prior attempts/Current risk[a]	.39	.65		
				5.73(5) [ns]	1.00
Drug Involvement	Alcohol use	1.78	.73		
	Marijuana use	2.31	.61		
	Hard Drug use[a]	.36	.57		
	Drug use control problems[a]	1.00[b]	.85		
	Adverse drug use consequences[a]	.76	.74		
				100.43(5)**	.935
High-Risk Behavior	Took life-threatening risks	1.00[b]	.58		
	Disciplined at school for fighting	.63	.56		
	Stole, shoplifted	.86	.54		
	Got into trouble with police	.79	.66		
				4.75(2)*	.994
Emotional Distress	Depression	1.00[b]	.96		
	Anxiety	.82	.86		
	Hopelessness	.69	.76		
	Anger	.65	.64		
				40.47(2)**	.980
Personal Resources	Personal Control	1.00[b]	.96		
	Self-esteem	.96	.72		
	Problem-Solving Coping	.66	.58		
				N/A	N/A
Family Support	Satisfaction with sharing problems	.98	.81		
	Satisfaction with time shared	.92	.76		
	Satisfaction with expression of emotions	.96	.81		
	Parents support activities	.77	.71		
	Can turn to family for help	1.00[b]	.81		
				48.43(5)**	.979
Peer School Support	Support from classmates in favorite class	1.42	.50		
	Classmate encouragement/help-general	1.00[b]	.91		
	Classmate advice/information-general	.92	.82		
				N/A	N/A
Deviant Peer Bonding	Friends drink alcohol	1.00[b]	.92		
	Friends use drugs	.92	.85		
	Friends have gotten drunk	.89	.81		
	Friends get into trouble at school	.40	.47		
				10.14(2)**	.995

[a] Variables with skewness of ≥ 2.5 were re-scaled using a square root transformation.
[b] Parameter set to 1.0
ns p value not significant
N/A model was identified so value not computed
* $p < 0.05$
** $p < 0.01$

Confirmatory factor analysis revealed a good fit (CFI = .935; see Table 3.1). The χ^2 (5, N = 800) was 100.43 (p <0.001).

High-Risk Behavior

Single-item indicators were chosen for the high-risk behavior dimension. These were selected from the high-risk behavior index in the *MAPS* by examining item-to-total correlations from the reliability analyses. The four items used were: (1) taking life-threatening risks, (2) getting disciplined at school for fighting or threatening fights, (3) stealing or shoplifting, and (4) getting into trouble with the police.

Confirmatory factor analysis of the high-risk behavior dimension. A confirmatory factor analysis was conducted for this dimension of high-risk behavior, as was done for each of the dimensions in the model. The results revealed a very good fit with a χ^2 (2, N = 800) of 4.75 (p = 0.093) and a CFI of .994 (see Table 3.1).

Emotional Distress

The latent dimension of emotional distress was defined in this study as consisting of indices of depression, anxiety, hopelessness, and anger. An index score was derived for each dimension by computing the mean of the individual indicators. The resulting scale scores (each ranging from 0–6) constituted the four indices reflecting emotional distress. Each index is described below.

Depression. The 16-item depression index captured depressed feelings, cognitive functioning, and behaviors. The brief, 5-item depression scale in the *High School Questionnaire,* taken from Radloff (1977) tapped depressed affect. Additional items included in the *MAPS* interview were adapted from Derogatis and colleagues (1976, 1977), and Thompson and Leckie (1989). These items captured "vegetative signs," of depression, cognitive functioning difficulties, and interference with daily activities. Scale reliability was high (α = .91).

Anxiety. The index for anxiety consisted of the mean of 13 items and captured frightening thoughts and dreams, uneasiness, worry, fears, and somatic complaints.

Items were adapted from Thompson and Leckie (1989) and developed by Eggert and colleagues. Scale reliability was moderately high ($\alpha = .87$).

Hopelessness. This 14-item index tapped the degree to which youth felt discouraged, that nothing works out, that there are no solutions to problems, and that life is meaningless. Other items captured the extent to which youth had no future plans, got no satisfaction or enjoyment from life, and felt hopeless or pessimistic about life and their problems. Eggert and colleagues developed the scale with items adapted from Beck (1979), and others based on ideas from Crumbaugh (1986). The reliability for this scale was moderately high ($\alpha = .89$).

Anger. The anger index reflecting emotional distress consisted of the mean of 15 items that captured two different manifestations: (1) anger directed outward (i.e., irritability, losing control, exploding, hitting something or someone out of anger, and damaging property), and (2) holding anger in (i.e., blaming oneself, hiding anger, and holding grudges). Individual items were adapted from ideas from Baer and colleagues (1979), Buss and Durkee (1957), Siegel (1986), and Thompson and Leckie (1989). Reliability for the scale was moderately high ($\alpha = .86$).

Confirmatory factor analysis for the emotional distress dimension. This analysis of the emotional distress dimension, reflected by depression, anxiety, hopelessness, and anger revealed a good fit with a CFI of .980 (see also Table 3.1 for the specific fit statistics). The χ^2 $(2, N = 800)$ was 40.47 $(p < 0.001)$.

Personal Resources

Three indices were used to reflect the dimension of personal resources, including self-esteem, sense of personal control, and problem-solving coping skills. A mean scale score was used for each index. Thus the latent dimension of personal resources was defined by these three individual protective elements, detailed below.

Self-esteem. This four-item index was taken from Rosenberg's Self-esteem Scale (1965) and tapped feelings of being useful, having self-respect, and having a positive attitude toward oneself. The reliability for this scale was good ($\alpha = .79$).

Personal control. This index captured the students' perceptions of the degree to which they had a positive outlook, used their skills to their best advantage, were in control of their lives, adjusted and coped with problems, and were able to handle things in a new situation. Eggert and colleagues developed this scale with some ideas from Coppel (1981), and Linehan and colleagues (1983). The reliability was high ($\alpha = .86$).

Problem-solving coping. This five-item index tapped aspects of problem-solving coping skills, such as facing the problem head on and imagining oneself solving the problem. Eggert and her colleagues developed the scale with ideas from Patterson and McCubbin (1987). Scale reliability was good ($\alpha = .73$).

Confirmatory factor analysis of the personal resources dimension. The results of the CFA for the personal resources dimension revealed reasonable factor loadings (see Table 3.1 above). The χ^2 and CFI were not computed because the model was saturated.

Family Support Satisfaction

Five single indicators that captured the youth's satisfaction with family ties, open communication, time spent together, as well as acceptance and support from the family reflected the dimension of family support. Items were taken from Smilkstein, Ashworth, and Montano's (1982) well-known "Family Apgar" scale. Reliability analysis for this 5-item scale was moderately high ($\alpha = .89$).

Confirmatory factor analysis of the family support dimension. The results of the confirmatory factor analysis conducted with this dimension revealed that the five indicators accurately reflected the dimension of family support (see Table 3.1). There was also a good fit with the data. The χ^2 (5, $N = 800$) was 48.43 ($p < 0.001$), with a CFI of .979.

School Support from Peers

Traditional factor analysis was used to select indicators for the school support factor. The three indicators chosen were: (1) support from classmates in their favorite class—on a scale of -10 (meaning "non-supportive, makes things worse") to +10

(meaning "supportive, makes things better"); (2) encouragement and support from classmates in all their classes in general—on a scale of 0 (meaning "never") to 6 (meaning "always"); and (3) advice and information received from classmates in all their classes in general—also on a scale of 0 to 6.

Confirmatory factor analysis of the peer school support dimension. The results of the confirmatory factor analysis conducted with this dimension revealed that the three indicators posited as reflectors of "peer school support" had acceptable factor loadings (see Table 3.1). The χ^2 and CFI were not computed because the model was saturated.

Deviant Peer Bonding

Exploratory factor analysis was also used to determine indicators to be used for the deviant peer-bonding dimension. There were nine questionnaire items addressing deviant peer bonding, and four were chosen based on examination of item-to-total correlations from the reliability analyses and exploratory factor analysis. The four items specified to reflect the latent dimension of deviant peer bonding were: (1) number of friends who drink alcohol, (2) number of friends who use drugs other than alcohol, (3) number of friends who have gotten drunk, and (4) number of friends who get into trouble in school.

Confirmatory factor analysis of the deviant peer bonding dimension. The results of the confirmatory factor analysis conducted with this dimension revealed that the four indicators accurately reflected the dimension of deviant peer bonding (see Table 3.1 above). Confirmatory factor analysis revealed a good fit with the data. The χ^2 (2, $N = 800$) was 10.14 ($p = 0.006$) and the CFI was .995.

Data Analytic Procedures

Structural Equation Modeling Procedures

Step 1. After the confirmatory factor structure was estimated and accepted, the hypothesized model, as shown in Figure 3.1, was estimated with the full sample of 800

youth. Maximum likelihood estimation was utilized. This initial estimation of the model provided a baseline and involved no correlated error terms or shared indicators. Results of the model were examined, as were Lagrange Multiplier statistics for suggested parameters to add to the model for improving the overall fit. Also, a saturated model was estimated to determine whether pathways specified as zero were in fact zero (i.e., not statistically significant). The model was then respecified and estimated, examining the fit statistics after each respecification was made.

Step 2. Once the model was fit for the full sample, it was then re-estimated with the sub-samples of males (n = 436) and females (n = 364). After each of these sub-models was fit, a multisample analysis was conducted to determine whether the model fit was significantly different for females versus males. This was accomplished by (1) estimating a model that constrained all parameters to be equal between the two groups and (2) estimating the model without constraining any parameters thus allowing the parameters to be freely estimated. Diagnostics from each of these models were examined to determine model fit and whether certain parameters were different for males and females.

Assessments of the goodness-of-fit of both the confirmatory factor analyses and the structural models included chi-square measures, which indicated the degree to which the data fit the hypothesized model. The lower the chi-square, the better the fit of the model to the data. Ideally, a hypothesized model will have a non-significant p value, indicating that the hypothesized model and the actual data do not differ significantly. The chi-square statistic is sensitive to sample size, however, and this limits its value in assessing model fit (Byrne, 1994). Other indices provide additional criteria on which to base comparisons between models. The Normed Fit Index (Bentler & Bonett, 1980) was formerly the criterion used to evaluate the adequacy of model fit. It was determined, however, that the Normed Fit Index underestimates model fit with small samples. Thus, the Comparative Fit Index (Bentler, 1990) was developed to take sample size into account (Byrne, 1994). Fit statistics range from 0–1.0 and are based on

fit of the hypothesized model with the null model (Byrne, 1994). Values of .90 or better typically indicate a good fit of the model to the data (Bentler, 1992; Bentler & Bonett, 1980; Bollen, 1989).

Results and Discussion

The goals of this study were to: (1) specify and estimate a model explaining the co-occurring problem behaviors of suicide-risk behaviors and drug involvement among potential high school dropouts, and (2) determine whether the estimated model explained suicide-risk behaviors and drug involvement similarly for males and females. Steps undertaken to accomplish these goals included conducting a confirmatory factor analysis to estimate the hypothesized measurement model, along with respecification of the model based on diagnostic test results. Once a good-fitting measurement model was achieved, the structural model specified in Figure 3.1 was estimated and respecified based on results of diagnostic statistics. The final model was then estimated for males and females, and the two models were compared.

In this section, results of the confirmatory factor analysis and structural equation modeling procedures are presented. First the baseline measurement model is presented, and then each respecification is detailed, providing the rationale for each modification made. Second, results of the structural equation model explaining suicide-risk behaviors and drug involvement are presented. Third, the original model fit statistics are summarized, and the rationale for modifications made is discussed. Finally, the results of the comparison analysis between models for males and females are explicated.

Results of the Confirmatory Factor Analysis (CFA)

Results of Baseline Measurement Model

A measurement model with an acceptable fit was achieved. The hypothesized model was estimated first, and indications from post-hoc tests were considered and implemented when theoretically appropriate. The final measurement model included three shared indicators and one correlated error term. General fit statistics are

presented in Table 3.2. As can be seen in the table, fit statistics were significantly improved in a respecified model after one error term was correlated. Fit was again improved by respecifying the model to include three shared indices among three factors. The CFI of the final model was good at .944 The significant χ^2 is understandable given the large sample size.

Table 3.2: Summary Fit Statistics for the Hypothesized and Respecified Measurement Models (N = 800)

Global Fit Statistics	Hypothesized Model	Respecified Model (with one correlated error term)	Respecified Model (with correlated error & 3 shared indicators)
χ^2	2010.09	1892.68*	1282.89*
df, *p* value	467, < 0.001	466, < 0.001	463, <0.001
Bentler-Bonett Normed Fit Index	.868	.875	.916
Bentler-Bonett Non-normed Fit Index	.881	.890	.936
Comparative Fit Index	.895	.903	.944

* Significant change in χ^2 between models

Associations among Dimensions in the CFA Model

Table 3.3 displays the covariances and correlations between factors in the final measurement model. Overall, most factors included in the hypothesized model were significantly correlated with all other factors. As expected, correlations between the outcome dimensions of suicide-risk behaviors and drug involvement were significant (r = .22, p<. 01). Factors posited to influence suicide-risk behaviors directly were significantly correlated with it in the expected directions; similarly, correlations between drug involvement and the factors posited to influence drug involvement were significant. As was expected, correlations among factors posited to influence both suicide-risk behaviors and drug involvement were significant. Peer school support and deviant peer bonding were not correlated, but each was correlated with family support as posited. In turn, these antecedent factors (i.e., family support, peer school support, deviant peer bonding) were significantly correlated with the factors they were posited

to influence directly, with one exception—deviant peer bonding was not correlated with personal resources.

Table 3.3: Factor Covariances (above diagonal) and Correlations (below diagonal) for the Final Measurement Model (N = 800)

	SRB	DI	ED	HRB	PR	FS	PSS	DPB
Suicide-Risk Behaviors (SRB)	–	.06	.54	.28	-.46	-.52	-.27	.15
Drug Involvement (DI)	.22**	–	.05	.24	-.05	-.09	-.01	.45
Emotional Distress (ED)	.67**	.14**	–	.28	-.63	-.69	-.42	.06
High-Risk Behavior (HRB)	.28**	.54**	.20**	–	-.23	-.60	-.25	1.26
Personal Resources (PR)	-.60**	-.15**	-.60**	-.17**	–	1.14	.55	-.15
Family Support(FS)	-.40**	-.15**	-.38**	-.27**	.66**	–	.92	-.56
Peer School Support (PSS)	-.24**	-.02	-.27**	-.13**	.37**	.36**	–	-.14
Deviant Peer Bonding (DPB)	.09*	.62**	.02	.45**	-.07	-.15**	-.04	–

* $p < 0.05$; ** $p < 0.01$

Associations between Indicators and Dimensions

Figure 3.2 illustrates the measurement model of all dimensions included in the specified theoretic model. As was discussed above, post-hoc diagnostic tests led to respecification of this hypothesized measurement model. Both unstandardized and standardized coefficients are presented in the figure. While unstandardized coefficients allow for examination of changes across different samples, standardized coefficients help determine relative importance among predictors (Schumaker & Lomax, 1996).

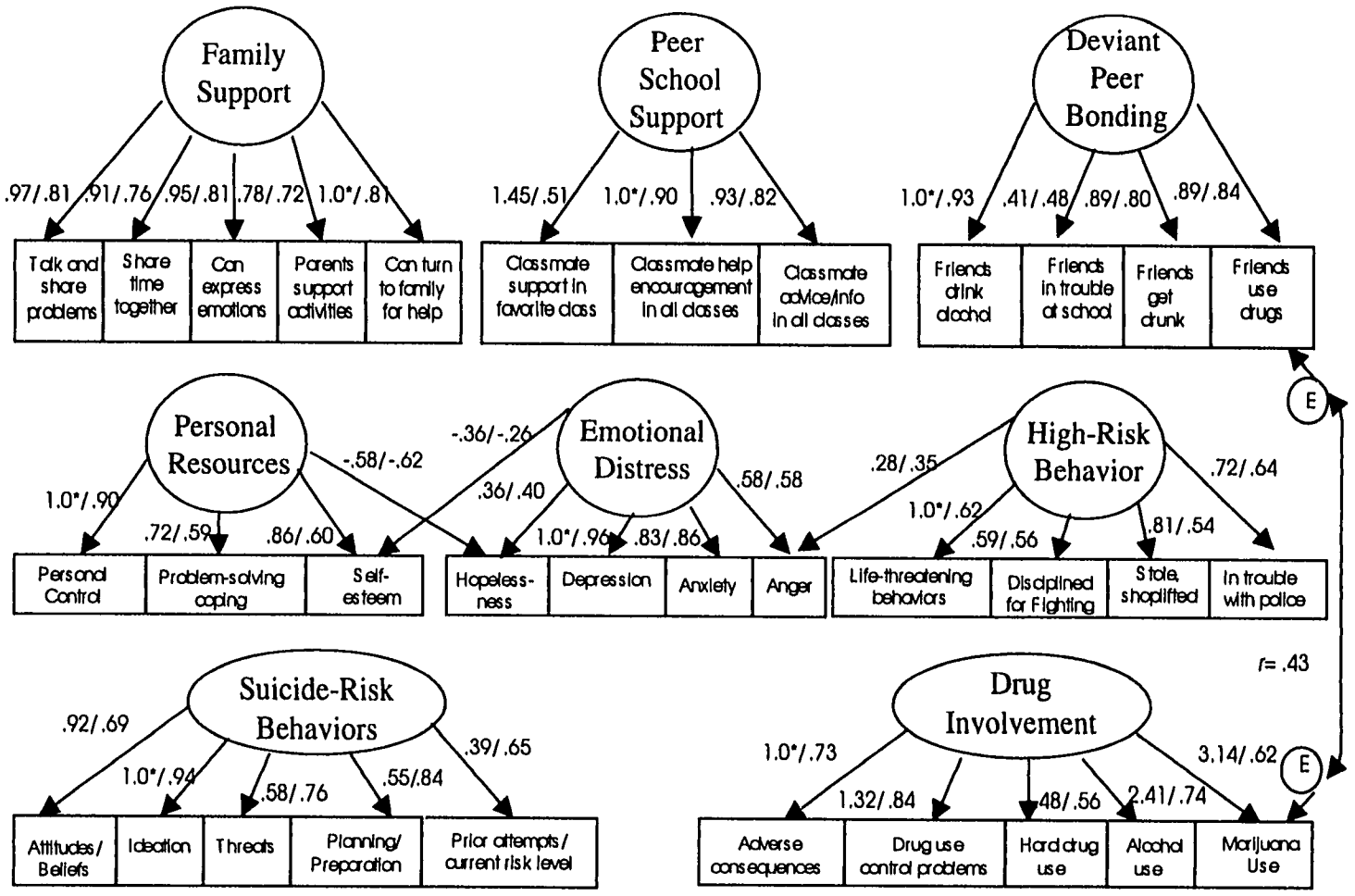
As can be seen in Figure 3.2, standardized coefficients ranged from .26 to .96. The lowest value was for self-esteem as a negative reflector of emotional distress, while the highest value was for depression as a reflector of emotional distress. In general, most dimensions tended to have strong indicators (i.e., greater than .80) along with some weaker indicators. The dimension with the most consistently high indicators was family support, with loadings ranging from .72 to .81. The indicators reflecting the high-risk behavior dimension were the weakest, with loadings ranging from .54 to .64. Overall, however, the model fit was good, and reflectors were accurate and reliable as specified. Therefore, the construct validity of the *MAPS* measurement

was extended in this study. Few respecifications were necessary. Those included were correlating two error terms and specifying three shared indicators. Details about these respecifications and the rationale for including them are discussed next. Error terms of two indicators were correlated; these were marijuana use and peer drug use. This is a reasonable relationship to expect given the influence of peer drug use on teens' own drug use. Correlating the error terms of these indicators means that there is a common source of some unexplained variance in these two indicators. That is, some other common influence helps explain both the teens' drug use and peers' drug use. It is likely that a teen's perception of peers' drug use is linked with his/her perception of peers' drug use.

Next, three indices were respecified as "shared indicators" between three dimensions as suggested by the post-hoc model diagnostics. The model fit was significantly improved after each respecification was made. First, the hopelessness index, which reflected emotional distress as hypothesized, was respecified to also reflect the dimension of personal resources (negatively with a loading of -.26). This was conceptually sound in that some of the indicators of hopelessness reflected a lack of meaningful influence on events that take place. Because this may be likened to a lack of self-efficacy or personal control, the sharing of the hopelessness indicator is justified.

The second shared index was self-esteem, a reflector of the personal resources dimension as originally hypothesized. It was respecified to also be a negative reflector of the emotional distress dimension. The complex interrelationship between emotional distress and self-efficacy was evident here as well. The self-esteem index could be viewed as connoting a sense of feeling worthwhile or useful, the lack of which could reflect emotional distress. That is, emotional distress could cause or be reflected by poor self-esteem.

Anger was the third shared indicator added to the respecified model. It reflected emotional distress (as hypothesized) and was respecified to reflect high-risk



* parameter set to 1.0

Figure 3.2. **Unstandardized/standardized factor loadings for measurement model components.**

behavior as well. It seemed reasonable to include anger as an indicator of high-risk behavior because some of the high-risk behavior indicators contained aspects of anger (e.g., taking life-threatening risks, stealing, getting into trouble with the police). That is, a teen who is angry may engage in risk-taking behaviors due to an "I don't care" attitude or to demonstrate his/her anger to others such as parents or teachers. Also, a person who breaks the law may be motivated by anger toward an individual or institution (such as school).

In summary, the final measurement model was similar to the hypothesized measurement model. Changes that were theoretically sound and improved the model fit included adding one correlated error term (between those of marijuana use and friends' drug use). It also included three shared indicators—i.e., self-esteem and hopelessness as reflectors of both the personal resources and emotional distress dimensions, and anger as reflecting both the dimensions of emotional distress and high-risk behavior.

Results of Structural Equation Modeling (SEM)

Structural equation modeling with the EQS program (Bentler, 1995) was utilized to estimate the hypothesized explanatory model for the co-occurrence of suicide-risk behaviors and drug involvement. This involved initial estimation procedures, then respecifying and re-estimating the model based on post-hoc diagnostic tests. The final analysis involved comparing how the model fit for males versus females.

Goodness-of-Fit of the Hypothesized Structural Model

The hypothesized model as initially specified had an acceptable fit (CFI = .943). In order to determine whether paths that were *not* hypothesized were truly non-significant, a saturated model, allowing possible direct effects of exogenous and causally prior endogenous variables to be estimated, was then tested. The CFI for this model was .944, indicating an improved fit of the model to the data. A significant parameter that was not specified in the hypothesized model was the negative influence

of family support on high-risk behavior. This pathway was added; the model was then re-estimated and the CFI remained at .944. Importantly, however, the chi-square change between the hypothesized model and the model with the additional pathway was significant for using an additional degree of freedom (i.e., chi-square change > 3.84). The additional pathway provided a significantly better fit to the data, albeit with a fairly small change in chi-square. Thus, the final model included one pathway that was not included in the hypothesized model. Though the saturated model had a lower chi-square than the final model, the change in chi-square was not significant for the additional use of 10 degrees of freedom. Thus, the final model chosen was preferred because it was more consistent with theoretical and empirical evidence about the links among factors and is more parsimonious. Table 3.4 displays the global fit statistics for each of the models tested: hypothesized, saturated and final model. Overall, the percentage of variance explained was 53 % in suicide-risk behaviors and 48 % in drug involvement.

Table 3.4: Goodness of Fit Measures for the Hypothesized, Saturated, and Final Structural Equation Models Explaining Suicide-Risk Behaviors and Drug Involvement (N = 800)

Global Fit Statistics	Hypothesized Model	Saturated Model	Final Model
χ^2	1305.64	1282.90	1296.65
df, *p* value	474, < 0.001	463, < 0.001	473, < 0.001
Bentler-Bonett Normed Fit Index	.914	.916	.915
Bentler-Bonett Non-normed Fit Index	.937	.936	.937
Comparative Fit Index	.943	.944	.944

Factors Influencing Suicide-Risk Behaviors and Drug Involvement

In addition to the overall model fit, each pathway in the final model was examined. As shown in Figure 3.3, most pathways in the final model were significant. Both unstandardized and standardized path coefficients are shown for each estimated path in the final model; the findings related to each path are discussed below in terms

of the standardized effects. Three hypothesized pathways (one involving the outcome dimension of drug involvement and two involving exogenous dimensions) were non-significant.

Influence of High-Risk Behavior

In H_{1a} and H_{1b}, high-risk behavior, as defined by anger, life-threatening behaviors, stealing, being disciplined for fighting, and getting into trouble with the police was hypothesized to have a positive impact on both suicide-risk behaviors and drug involvement. Results of the structural equation modeling supported this hypothesis. Details about the specific effects of high-risk behavior are described next.

The effect of high-risk behavior on suicide-risk behaviors. The expected positive relationship between high-risk behavior and suicide-risk behaviors was confirmed in the model, with a standardized coefficient of .14 ($p < 0.01$). Thus, high-risk behavior increased the likelihood of suicide-risk behaviors among potential high school dropouts. This finding confirms and extends others' findings of the link between high-risk behavior and suicide risk (Hoff, 1984; Neumark-Sztainer et al., 1997). The present findings revealed that engaging in high-risk behavior can positively influence the extent to which potential high school dropouts evidence suicide-risk behaviors.

The effect of high-risk behavior on drug involvement. As hypothesized in H_{2b}, there was a significant positive influence of high-risk behavior on drug involvement ($\beta = .31$, $p < 0.01$). This finding extends evidence from correlational studies (Neumark-Sztainer et al., 1997; Simon et al., 1994) by using SEM with a large sample of high-risk youth and a comprehensive measure of drug involvement. That is, engaging in high-risk behavior influenced the frequency with which the youth used alcohol, marijuana, and hard drugs, as well as the degree to which they had drug use control problems and experienced adverse drug use consequences. Taken together, high-risk behavior significantly increased the likelihood of both suicide-risk behaviors and drug involvement among potential high school dropouts.

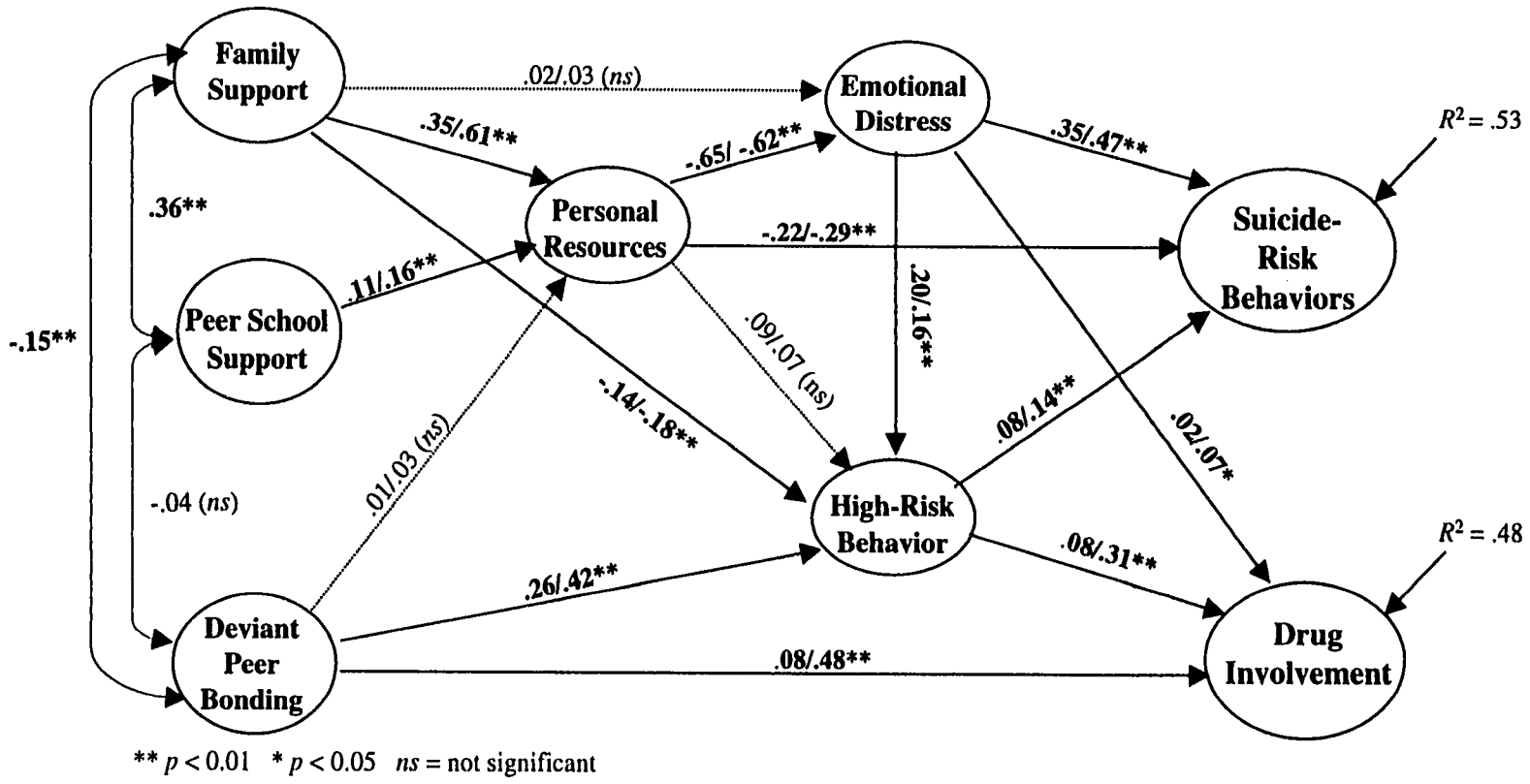


Figure 3.3. **Unstandardized/standardized coefficients for the final structural model explaining the co-occurring outcomes of suicide-risk behaviors and drug involvement.**

Influence of Emotional Distress

In hypothesis 2, emotional distress was hypothesized to have a direct effect on the two co-occurring outcomes—suicide-risk behaviors (H_{2a}) and drug involvement (H_{2b})—as well as on high-risk behavior (H_{2c}). Emotional distress was also expected to have indirect influences on suicide-risk behaviors and drug involvement through emotional distress and high-risk behavior (H_{2d}). This hypothesis was fully supported as revealed in Figure 3.3.

The effect of emotional distress on suicide-risk behaviors. As was predicted, the effect of emotional distress on suicide-risk behaviors was significant. The significant positive coefficient supports the hypothesis put forth in this study and adds mounting evidence for the claim that emotional distress influences suicide-risk behaviors. The standardized path coefficient ($\beta = .47$, $p < 0.01$) is generally consistent with that reported in the literature related to non-clinical populations ($\beta = .33$ to $.42$). [The use of β throughout the discussion of results herein indicates the standardized path coefficient.] Emotional distress also had an indirect effect on suicide-risk behaviors through high-risk behavior ($\beta = .02$, $p < 0.01$). While some studies examined more than one aspect of emotional distress such as depression, anxiety, hopelessness, or anger (e.g., Cole, 1989; Mazza & Reynolds, 1998; Reifman & Windle, 1995; Rotherham-Borus & Trautman, 1988), a strength of this study is that it combined these elements as reflectors of emotional distress. The somewhat stronger effect in this study may be due to the comprehensive nature of how the emotional distress dimension was defined—that is, it captured the youth's feelings not only of depression, but also hopelessness, anxiety, and anger. These findings suggest that for the youth in this study emotional distress directly increased suicide-risk behaviors (i.e., positive attitudes/beliefs about suicide, suicide thoughts, threats, plans/preparation, suicide attempts, and current level of suicide risk) as well as indirectly increasing it by influencing more high-risk behavior.

The effect of emotional distress on drug involvement. The hypothesis that emotional distress would have a positive effect on drug involvement was also supported in the model ($\beta = .07$, $p < 0.05$). In addition, emotional distress had a significant indirect effect ($\beta = .05$, $p < 0.01$) through high-risk behavior. What this suggests is that emotional distress directly influenced greater drug involvement as well as indirectly increasing it through high-risk behavior. This finding adds to the body of knowledge about the influence of emotional distress on drug involvement (e.g., Brook et al., 1985; Brook et al., 1990; Harlow, Newcomb, & Bentler, 1986). In the present study with a large sample of both suicide-risk and non-suicide-risk youth, emotional distress had a greater impact on increasing suicide-risk behaviors than it did on increasing drug involvement. Continuing to examine this relationship in other high-risk groups of youth as well as in adolescent populations in general is essential for determining the impact of emotional distress on drug involvement. In short, the findings here suggest that emotional distress significantly influenced greater drug involvement, as reflected by not only the frequency of alcohol, marijuana, and hard drug use, but also drug use control problems and adverse drug use consequences.

The effect of emotional distress on high-risk behavior. Model results confirmed the hypothesis (H_{2c}) that emotional distress has a positive impact on high-risk behavior ($\beta = .16$, $p < 0.01$). What this means is that among potential high school dropouts, emotional distress increased high-risk behavior—that is, engaging in life-threatening behaviors, stealing/shoplifting, getting into trouble for fighting and with the police, as well as having problems controlling anger/aggression. The significant positive influence of emotional distress on high-risk behavior is consistent with the literature on high school populations (Neumark-Sztainer et al., 1997; Rozanes et al., 1995). Again, the comprehensive nature of the emotional distress dimension, reflected by depression, hopelessness, anxiety, anger, and poor self-esteem, adds depth to current knowledge about the influence of this dimension on high-risk behavior.

Indirect effects of emotional distress. Emotional distress was expected to have indirect effects on suicide-risk behavior and drug involvement (H_{2d}). Emotional distress had an indirect effect on suicide-risk behavior ($\beta = .02$, $p < 0.01$) as well as on drug involvement ($\beta = 05$, $p < 0.01$).

In summary, H_2 was fully supported: among potential high school dropouts, emotional distress directly and significantly influenced increased suicide-risk behaviors and drug involvement. Emotional distress also significantly increased high-risk behavior and, thereby, also indirectly influenced greater suicide-risk behaviors and drug involvement.

Influence of Personal Resources

The influence of personal resources, as defined by levels of personal control, problem-solving coping, self-esteem, and hopefulness (hopelessness reversed), was posited to have a central role in directly protecting against suicide-risk behaviors (H_{3a}). It was also hypothesized to reduce both suicide-risk behaviors and drug involvement indirectly by ameliorating emotional distress (H_{3b}) and high-risk behavior (H_{3c}). Personal resources were also expected to have an indirect effect on suicide-risk behaviors and drug involvement through emotional distress and high-risk behavior (H_{3d}). Findings regarding each of these hypotheses are discussed below.

The effect of personal resources on suicide-risk behaviors. The hypothesized negative effect of personal resources on suicide-risk behaviors was confirmed in the model ($\beta = - .29$, $p < 0.01$). This finding is congruent with others from the *Reconnecting Youth Prevention Research Program* (Eggert, Thompson, Herting, & Nicholas, 1994; Thompson, Eggert, & Herting, 1999). It also extends prior work by testing the influence of the personal resources protective factor with a larger sample. What this means is that having greater personal resources decreased the likelihood of suicide-risk behaviors among potential high school dropouts.

The effect of personal resources on emotional distress. Personal resources had the expected negative effect on emotional distress ($\beta = -.62$, $p < 0.01$), thus

confirming literature reviewed in this study (Beck, 1988; Resnick et al., 1997). This finding extends our existing knowledge by including multiple aspects of personal resources (i.e., self-esteem, personal control, and problem-solving coping). Further, the finding that personal resources decreased emotional distress means that it indirectly influenced less drug involvement ($\beta = -.06$, $p < 0.05$) and lower levels of suicide-risk behaviors ($\beta = -.30$, $p < 0.01$) by dampening the effects of emotional distress. Hence, the counteracting effect of personal resources on suicide-risk behaviors was both direct and indirect as hypothesized.

The effect of personal resources on high-risk behavior. This hypothesized pathway was not confirmed in the final model. One possible explanation is that the effect of personal resources on high-risk behavior is solely indirect through emotional distress as was revealed by the standardized β coefficient of -.10, $p < 0.01$ (see Figure 3.3). This finding suggests that for potential high school dropouts (suicide-risk and non-suicide-risk), deficits in personal resources were likely to lead to more suicide-risk behaviors and emotional distress, rather than to high-risk behavior. This also suggests that high-risk behavior is more a function of social networks than individual deficits.

Indirect effects of personal resources. The hypothesized indirect negative effect of personal resources on suicide-risk behaviors was supported ($\beta = -.30$, $p < 0.01$). The expected indirect effect on drug involvement (H_{3d}) was also supported ($\beta = -.06$, $p < 0.05$). This indicates that, while the effect of personal resources on high-risk behavior was not significant, it impacted suicide-risk behaviors and drug involvement through another means. Because the other indirect effect modeled was through emotional distress, and that indirect effect was significant, it appears that the effect of personal resources on drug involvement was through emotional distress rather than through high-risk behaviors.

The Effect of Family Support

Family support was posited to have a positive impact on personal resources (H_{4a}) and a negative impact on emotional distress (H_{4b}) as well as an indirect effect on

suicide-risk behaviors emotional distress, and high-risk behavior through personal resources (H_{4c})

Family support and personal resources. In the final model, family support had a significant positive impact on personal resources ($\beta = .61$, $p < 0.01$), supporting H_{4a}. This strong effect provides further support to accompany the evidence presented earlier in this paper (i.e., Eskin, 1995; Morano et al., 1993); in fact, the standardized coefficient reported here is stronger than the standardized coefficients reported in these other studies. Because family support has been measured a number of ways, measurement differences may account for different outcomes. It is also possible that family support has a stronger impact for this high-risk population.

Family support and emotional distress. The expected negative effect of family support on emotional distress was not significant; thus H_{4b} was not supported. This is in contrast to the work of others cited in the theoretic framework (e.g., Dreyden, 1981; Gotlib & Whiffen, 1991; LaGaipa & Wood, 1981). The discrepancy in findings may be due to the broad and comprehensive measurement of emotional distress used herein which included levels of depression, hopelessness, anxiety, anger/aggression, and poor self-esteem. For example, empirical evidence in support of the hypothesis that family support reduces adolescents' emotional distress reviewed in the theoretical framework section involved examining the influence of family support on separate aspects of emotional distress (e.g., depression only, hopelessness only). In the present study, however, five elements accurately reflected the latent dimension of emotional distress. This comprehensive factor of emotional distress may have negated the effect of depression alone, for example. Examination of zero-order correlations provides some support for this possibility. For example, while correlations between hopelessness and family support satisfaction were -.43 and -.45 for SR and NSR youth, respectively, correlations between anxiety and family support satisfaction were more modest (-.18 for SR youth, -.10 for NSR youth). The findings revealed that the

influence of family support on emotional distress is indirect through enhancing personal resources ($\beta = -.38$, $p < 0.01$) rather than direct.

Family support and high-risk behavior. This pathway was not specified in the hypothesized model but was added when the path coefficient proved to be significant when the saturated model was tested. In the revised model, it was expected that family support would have a negative effect on high-risk behavior. The standardized coefficient was significant ($\beta = -.18$, $p < 0.01$), confirming that family support had a direct counteracting effect on high-risk behavior. What this means is that perceived family support worked to diminish high-risk behavior among the potential high school dropouts in this study. This is consistent with theories of the positive effects of family support on behavior (Bowlby, 1988), as well as with theoretical and empirical evidence that a lack of family support/attachment results in problem behaviors (Elliott & Voss, 1974; Hawkins, Catalano, & Miller, 1992). Findings are consistent with those in Study 1 (see Chapter 2) that family support was negatively correlated with aspects of emotional distress.

Indirect effects of family support. Family support was expected to have indirect effects on emotional distress, high-risk behavior, and suicide-risk behavior. The indirect effect of family support on emotional distress was significant ($\beta = -.38$, $p < 0.01$). The expected indirect of family support on high-risk behavior was not found; as noted above, however, family support had direct effects on high-risk behavior. There was a significant indirect negative effect of family support on suicide-risk behaviors ($\beta = -.36$, $p < 0.01$). Thus, the impact of family support on decreasing suicide-risk behaviors was through its effect on enhancing personal resources. In essence, family support indirectly lowered suicide risk by enhancing the protective elements of the youth's personal resources: self-esteem, sense of personal control, problem-solving coping skills, and hopefulness.

The Effect of Peer School Support

In H_{5a}, peer school support—as reflected by the youth's perceived support from classmates in their favorite class as well as the help, encouragement, advice, and information from classmates in all their classes—was posited to have a direct positive impact on personal resources; this hypothesis was confirmed ($\beta = .16$, $p < .01$). The expected indirect effect on emotional distress was confirmed ($\beta = -.10$, $p < 0.01$), while the expected indirect effect on high-risk behavior was not significant. Further, the influence of peer school support was also hypothesized to indirectly decrease suicide-risk behaviors through personal resources; this hypothesis was also confirmed ($\beta = - .09$, $p < 0.01$). These findings add to the literature about the effect of positive peer contacts on enhancing personal resources such as self-esteem, personal control, problem-solving coping and hopefulness (Brophy & Good, 1986; Thompson, Connelly, & Eggert, 1999).

The Effect of Deviant Peer Bonding

In H_6 it was hypothesized that deviant peer bonding would have a direct positive effect on drug involvement (H_{6a}) and high-risk behavior (H_{6b}), and a direct negative effect on personal resources (H_{6c}). In turn, deviant peer bonding was also predicted to indirectly influence emotional distress and high-risk behavior through personal resources (H_{6d}). as well as indirectly influence suicide-risk behaviors and drug involvement through high-risk behavior (H_{6e}). These hypotheses were partially supported: deviant peer bonding directly influenced greater drug involvement and high-risk behavior, but did not have a direct influence on personal resources. Furthermore, there were no significant indirect effects on emotional distress or drug involvement, nor were there indirect effects on indirect influences on either suicide-risk behaviors. The indirect effect on drug involvement was significant. These results are detailed below.

Deviant peer bonding and drug involvement. It was hypothesized that deviant peer bonding would have a positive effect on drug involvement, and this hypothesis was supported ($\beta = .48, p < 0.01$). This is consistent with data from studies of high school students (Curran et al., 1997; Eggert, Thompson, & Herting, 1994; Hoffman & Su, 1998; Randell et al., 1999; Rohrbach et al., 1994); the findings herein confirmed the strong effect deviant peer bonding has on drug involvement. The strength of the effect is most similar to those studies in which a comprehensive measure of drug involvement was utilized (e.g., Eggert, Thompson, & Herting, 1994; Randell et al., 1999), as was the case in the present study.

Deviant peer bonding and high-risk behavior. The second hypothesis related to deviant peer bonding was that it would have a direct positive effect on high-risk behavior. This hypothesis was also confirmed ($\beta = .42, p < 0.01$), providing evidence consistent with that demonstrated by others (e.g., Resnick et al., 1997). While increasing the likelihood of high-risk behavior, deviant peer bonding did not have a significant indirect influence on suicide-risk behaviors or drug involvement. This provides partial support for H_{6d}.

Deviant peer bonding and personal resources. While positive peer influences enhanced personal resources, the predicted negative effect of deviant peer bonding on personal resources was not significant ($\beta = .03$, n.s.). Thus H_{6c} was not supported and, therefore, deviant peer bonding did not indirectly influence suicide-risk behaviors through personal resources. While a theoretical argument was made in positing this pathway, supporting empirical evidence was scant. Thus, the absence of a significant negative effect of deviant peer bonding on personal resources suggests that deviant peer bonding does not have a direct impact on lowering personal resources such as self-esteem, problem-solving coping and personal control. Also, it is interesting to note that while the two dimensions of support—from family and peers—enhanced personal resources and, thereby, ameliorated suicide-risk behaviors, the effect of deviant peer bonding was primarily on drug involvement, influencing greater

drug involvement directly. Evaluation of the effect of deviant peer bonding on both drug involvement and suicide-risk behaviors using longitudinal data is likely to shed more light on the nature of the relationships between and among suicide-risk behaviors, drug involvement, and high-risk behaviors.

Indirect effects of deviant peer bonding. Expected indirect effects of deviant peer bonding on emotional distress and high-risk behavior were not significant. The indirect effect of deviant peer bonding on suicide-risk behaviors was significant at the 0.10 level (β = .04); expected indirect effects on drug involvement were not significant.

Associations among the Interpersonal and Social Factors

In the hypothesized model, correlations were expected among the three interpersonal and social influencing factors of family support, peer school support and deviant peer bonding. Two of the three relationships were significant: family support correlated with peer school support ($r = .36$, $p < 0.01$), and with deviant peer bonding ($r = -.15$, $p < 0.01$). Thus, the greater the family support, the greater the support from peers at school, and the less the deviant peer bonding. Peer school support and deviant peer bonding were not correlated and, therefore, had independent effects on the other factors in the model.

Summary of the Final Structural Model

The hypothesized model fit the data adequately, as was demonstrated by the Comparative Fit Index of .944. The effects of all the dimensions in the model when estimated simultaneously explained 53% of the variance in suicide-risk behaviors and 48% in drug involvement. Most of the hypothesized paths were significant, indicating that the specified explanatory model of suicide-risk behaviors and drug involvement was supported. More specifically, emotional distress and high-risk behavior each had a significantly positive effect on suicide-risk behaviors and drug involvement, with emotional distress having a stronger influence on suicide-risk behaviors and high-risk behavior having a stronger influence on drug involvement. Personal resources had a

direct negative effect on suicide-risk behaviors and also indirectly influenced suicide-risk behaviors and drug involvement through emotional distress and high-risk behavior. The two social network support factors—family support and peer school support—increased personal resources, while deviant peer bonding did not. Deviant peer bonding, however, increased drug involvement and indirectly influenced greater suicide-risk behaviors and more drug involvement by increasing high-risk behavior.

Evaluating the Final Model for Males and Females

The second aim of this study was to evaluate whether the structural model explaining the co-occurring outcomes of suicide-risk behaviors and drug involvement fit equally well for males and females. In order to evaluate this, a multiple sample analysis was conducted. The first step in this process involved constraining the parameters to be equal for males for females and assessing the model fit of the final model (Model A). Diagnostic tests for this structural model then were reviewed in order to see whether some paths needed to be unconstrained because they were not equal across genders. Next, an unconstrained model was evaluated to see where males and females differed, if at all, when all pathways were set to be estimated (Model B).

As can be seen in Table 3.5, the fit of a model in which all parameter values were constrained to be equal for males and females was reasonable. The fit of the unconstrained model, assuming that there were differences between males and females, was better, as indicated by the significant chi-square change per degrees of freedom. [A change of 30 in the chi-square is significant for 15 degrees of freedom at the 0.05 level of significance..] Thus, the unconstrained model fit the data better than the constrained model. This indicated that there were some significant differences in the model between males and females.

To determine where the differences or inequalities in path coefficiants were likely, post-hoc diagnostic tests on the fully constrained model were examined. Differences in three parameters were indicated, and these were:

1. the effect of personal resources on suicide-risk behaviors,

2. the effect of high-risk behavior on suicide-risk behaviors, and
3. the effect of school support on personal resources.

Table 3.5: Summary Fit Statistics for Testing Gender Differences in the Explanatory Model of Suicide-Risk Behaviors and Drug Involvement (N = 800)

Global Fit Statistics	Model A Constrained (Male = Female)	Model B Unconstrained (Male ≠ Female)	Model C 3 Parameters Unconstrained
χ^2	1933.45	1903.11*	1920.90*
df, p value	961, < 0.001	946, < 0.001	958, < 0.001
Bentler-Bonett Normed Fit Index	.876	.878	.877
Bentler-Bonett Non-normed Fit Index	.926	.926	.927
Comparative Fit Index	.933	.934	.934

* Indicates significant differences in χ^2 between models

These parameters were then freed to be estimated constraining all other pathways to be equivalent between males and females (Model C). The resulting model fit the data better than the constrained model (change of $\chi^2 > 11.34$ for 3 degrees of freedom is significant at $p < 0.01$). That is, comparing Model B to Model C indicates that Model B does not significantly reduce the χ^2.

Table 3.6 depicts the unstandardized values for pathways modeled. This permitted determining which pathways were significantly different for males and females.

Overall, the final models for males and females were remarkably similar; of 15 paths estimated, only 3 were significantly different (shown in Table 3.6 in italics). In all three instances, the influencing factor had a significantly stronger effect for females than for males. As shown in Table 3.6, (1) engaging in high-risk behavior had a stronger effect on suicide-risk behaviors for females as compared to males (b = .14 and .07 respectively—in Model C); (2) personal resources counteracted suicide-risk behaviors more so for females than males (b = -.26 and -.18 respectively—in Model C); and (3) support from one's classmates had a greater impact on enhancing personal

resources for females than males (b = .18 and .08 respectively in the model with three parameters constrained.

Table 3.6: Unstandardized Coefficients for Testing Gender Differences in the Explanatory Models of Suicide-Risk Behaviors and Drug Involvement (*N* = 800)

Independent Variable		Dependent Variable	Constrained Male=Female	Parameters Unconstrained
Emotional Distress	→	Suicide-Risk Behaviors	.34**	.33**
High-Risk behavior	→	*Suicide-Risk Behaviors*	*.09***	*m=.07**, f=.14***
Personal Resources	→	*Suicide-Risk Behaviors*	*-.22***	*m=-.18**, f=-.26***
Emotional Distress	→	Drug Involvement	.02	.02
High-Risk Behavior	→	Drug Involvement	.08**	.08**
Deviant Peer Bonding	→	Drug Involvement	.08**	.08**
Family Support	→	Emotional Distress	-.002	-.003
Personal Resources	→	Emotional Distress	-.59**	-.59**
Emotional Distress	→	High-Risk Behavior	.36**	.35**
Personal Resources	→	High-Risk Behavior	.12	.12
Family Support	→	High-Risk Behavior	-.11**	-.11**
Deviant Peer Bonding	→	High-Risk behavior	.26**	.26**
Family Support	→	Personal Resources	.35**	.34**
Peer School Support	→	*Personal Resources*	*.12***	*m=.08**, f=.18***
Deviant Peer Bonding	→	Personal Resources	.02	.02

Italics represent parameters that were different for males vs. females (m = males; f = females)
** $p < 0.01$ * $p < 0.05$

Summary and Conclusions

The aims of this study were (1) to specify and estimate a model of the direct and indirect influences of select risk and protective factors on the co-occurrence of suicide-risk behaviors and drug involvement, and (2) to determine whether the estimated model was equivalent for males and females in explaining the co-occurrence of suicide-risk behaviors and drug involvement.

Several major steps were involved in accomplishing these aims. First, confirmatory factor analysis was utilized to specify and estimate the proposed

measurement model. Next, structural equation modeling was used to estimate the theoretic model. Respecifications were made to the hypothesized model based on post-hoc diagnostic tests; the resulting final model demonstrated a good fit with the data. This final model was then estimated further to determine whether there were differences between males and females in the explanatory pathways of the model.

The measurement model established utilized indicators that were developed and tested by the *Reconnecting Youth Prevention Research* team in previous studies; thus, fitting the measurement model required few changes. Modeling one correlated error term (marijuana use and peer drug use) and three shared indicators (hopelessness, anger, and self-esteem) significantly improved the fit of the model to the data. Conceptualizing hopelessness and self-esteem as reflecting both the dimensions of emotional distress and personal resources, and permitting anger to reflect both emotional distress and high-risk behavior, made theoretical sense.

Though hopelessness and anger were initially viewed as indicators of emotional distress only, and self-esteem was viewed as an indicator of personal resources only, examining other possible relationships extended the utility of these indicators in measuring risk and protective factors. Hopelessness reflected emotional distress, but it also served as a negative indicator of personal resources. Anger reflected not only emotional distress but also an aspect of high-risk behavior. Aspects of high-risk behavior utilized in the model involved antisocial behaviors (e.g., stealing, getting disciplined for fighting and into trouble with the police), and anger can be an aspect of antisocial behavior. Because self-esteem is theoretically related to moods (e.g., Beck, 1988), it also made sense that low self-esteem would reflect emotional distress.

Thus, specification and estimation of the measurement model not only provided a solid foundation to use in testing the theoretical model, it also provided insights about the nature of aspects of emotional distress, personal resources, and high-risk behavior. Such information should be helpful in guiding future model

specification and testing. Significant associations between factors in the model also extended the findings in Study 1—that key risk and protective factors correlate significantly with both suicide-risk behaviors and drug involvement among potential high school dropouts.

The final structural model of risk and protective factors influencing the co-occurring outcomes of suicide-risk behaviors and drug involvement fit the data well, as evidenced by the Comparative Fit Index of .944 and by explaining 53% and 48% of the variance in suicide-risk behaviors and drug involvement respectively. Most major hypotheses were confirmed, though three pathways specified were not significant. Model results support the hypothesis that suicide-risk behaviors and drug involvement are co-occurring outcomes in that they are influenced by common risk and protective factors. Findings in this study confirm and substantially extend the findings from Study 1 about the influences of risk and protective factors on suicidal behavior when drug involvement is specified as a co-occurring problem. Risk factors found to increase suicide-risk behaviors and drug involvement directly were emotional distress and high-risk behavior. The protective factor of personal resources had a direct counteracting effect on suicide-risk behaviors but not on drug involvement. Effects of family support and peer school support also confirmed the importance of these protective factors in indirectly counteracting suicide-risk behaviors by enhancing personal resources.

Though the estimated structural model explained the co-occurrence of suicide-risk behaviors and drug involvement well for the group as a whole, there were some differences between males and females. For three paths in the model, differences were related to factors having more influence for females than for males. For females, high-risk behavior and personal resources were stronger predictors of suicide-risk behaviors. Also, peer school support had a stronger effect on enhancing personal resources among females versus males. Importantly, however, the estimated model and the pathways whereby factors influenced suicide-risk behaviors and drug

involvement were remarkably similar for both males and females; only three of fifteen effects were significantly different. This means that when explaining the risk and protective factors and how they influenced suicide-risk behavior and drug involvement among potential high school dropouts in this study, the explanations generally hold for both males and females.

These findings have implications for assessment protocols and for prevention programs. First, study findings highlight the importance of assessing for both substance abuse and suicide-risk behaviors among potential high school dropouts. If one of these issues is the presenting problem, common factors may be influencing the other problem behavior. For example, a teen who reveals thoughts of suicide should be asked about substance use/abuse. Similarly, any teen who is using drugs or alcohol should be assessed for suicide-risk behaviors. Though assessment for both of these problem behaviors should be part of any evaluation, study findings highlight the importance of probing for the co-occurrence of suicide-risk behaviors and drug involvement. High-risk behavior and emotional distress are also key factors that suicide-risk behaviors and drug involvement may be present or may develop.

Another key finding is related to the importance of the protective factor of personal resources in mitigating suicide-risk behaviors and drug involvement. Influences of personal resources—such as self-esteem, personal control, problem-solving coping, and hopefulness—on suicide-risk behaviors are both direct and indirect, while the counteracting effects on drug involvement are indirect through diminishing emotional distress; this means that personal resources can be manipulated without manipulating family support in order to have an effect on suicide-risk behaviors and drug involvement. Family support and peer school support both are other key protective factors that can be enhanced in order to reduce the risk for suicide-risk behaviors and drug involvement. Personal resources mediate the effects of each of these on study outcome variables.

In addition to explaining suicide-risk behaviors and drug involvement among potential high school dropouts in general, this study illuminated similarities and differences among males and females. By far, more common factors and pathways influencing suicide-risk behaviors and drug involvement exist among these male and female high-risk youth, but the effects of some factors are stronger for females than for males. High-risk behavior had a stronger effect in influencing suicide-risk behaviors in females. This indicates that a female who displays moderate high-risk behaviors might be at higher risk than a male with the same level of behaviors. In addition, support from peers at school enhanced personal resources more strongly in females versus males. While it appears appropriate to focus on these areas for both males and females in suicide and drug abuse prevention efforts, there may be some slight differences in responses by gender.

These findings add to prior studies of suicide-risk behaviors and drug involvement by identifying common precursors of suicide-risk behaviors and drug involvement, as well as identifying where differences between males and females exist. Such information can guide assessment and prevention programs and provide further support for the importance of addressing suicide-risk behaviors and drug involvement simultaneously.

In summary, we know from this study that suicide-risk behaviors and drug involvement are co-occurring phenomena that are influenced by common factors. High-risk behavior and emotional distress impact both outcomes directly; personal resources impact suicide-risk behaviors directly and indirectly, and impact drug involvement indirectly. Family support and peer school support are also important due to their direct effects on personal resources and, thus, indirect effects on suicide-risk behaviors. In addition, deviant peer bonding directly influences drug involvement and also influences high-risk behavior. Pathways to suicide-risk behaviors and drug involvement are more alike than different for males and females, thus confirming the importance of developing prevention programs specific to the needs of adolescents in general.

CHAPTER 4

Conclusions, Strengths and Limitations, and Implications

This dissertation study was undertaken to advance prevention science and nursing science by studying teens at risk for school dropout. Potential dropouts at risk for suicide were compared with potential dropouts who were not at risk for suicide on a comprehensive set of risk and protective factors; then factors influencing the co-occurrence of suicide-risk behaviors and drug involvement were identified. The central hypotheses of the study were generally supported. That is, in comparing suicide-risk potential high school dropouts with non-suicide-risk potential high school dropouts on a comprehensive set of risk and protective factors, suicide-risk teens were significantly worse off than their non-suicide-risk counterparts. Also, in examining the co-occurrence of suicide-risk behaviors and drug involvement, there were more common pathways than not for both males and females. Key individual factors influencing these outcomes were emotional distress, high-risk behavior, and personal resources; influences of family and school support and deviant peer bonding were also important.

Specifically discussed in this chapter, first, are conclusions that can be drawn from (1) the comparative, exploratory study of the suicide-risk and non-suicide-risk youth and (2) the common pathways that explained the co-occurrence of suicide-risk behaviors and drug involvement among these youth. The purpose is to clearly explicate the major findings from these two studies and how they advanced our understanding of suicide potential among youth. Second, strengths and limitations of the study are detailed for the purpose of establishing the boundary conditions of the conclusions drawn. Generalizations are primarily limited due to the cross-sectional nature of the design and the specific population of potential high school dropouts. Third, important implications from the study findings are derived for future research and clinical practice. These include the need to replicate the findings with other populations of youth known to be at greater-than-average risk for suicide potential, and

that risk and protective factors common to both suicide-risk behavior and drug involvement include emotional distress, high-risk behavior, family support, and peer support at school and deviant peer bonding.

Summary and Conclusions

It is clear from the literature that, despite decreases in the rate of suicide in the total population, suicide and suicidal behaviors among teens continue to occur at alarming rates, and potential high school dropouts are known to be at greater risk than the general population of adolescents. Thus, it was argued in Chapter 1 that studying potential high school dropouts is necessary. It was considered important to compare the subgroups of potential high school dropouts who were and were not at risk for suicide as well as to test a model explaining the co-occurring problems of suicide-risk behaviors and drug involvement. The findings presented in Chapter 2 establish a starting point by illuminating similarities and differences between suicide-risk and non-suicide-risk potential high school dropouts. The analyses and findings in Chapter 3 isolate and suggest common factors and pathways explaining the co-occurrence of these problem behaviors in males and females. To draw conclusions from the study findings, the theoretic framework is systematically followed in this chapter. Particular attention is paid to the findings in light of the study design and central questions addressed.

Comparing Suicide-Risk and Non-Suicide-Risk Youth

Eggert , Thompson, and Herting (1994) developed the conceptual framework used to compare suicide-risk versus non-suicide-risk youth. This involved a comprehensive set of direct suicide risk factors, related risk factors, and protective factors. Direct suicide risk factors include various stages of suicide-related behaviors, from attitudes about the issue of suicide to the lethality of prior suicide attempts and the current risk for making a suicide attempt. Related risk factors increase the likelihood of suicidal behaviors and include emotional distress, stress, risky behaviors,

violence and victimization, and drug involvement. On the other hand, protective factors reduce the likelihood of suicidal behaviors, and include personal resources and social resources. Thus the nature of how suicide-risk and non-suicide-risk potential dropouts were similar and different was explored from within these three domains—direct suicide risk factors, related risk factors, and protective factors.

A sample of 801 teens at risk for school dropout were recruited to complete the *Measure of Adolescent Potential for Suicide* (Eggert, Thompson, & Herting, 1994) questionnaire and interview. This sample of high-risk teens was 54% male and 46% female. Teens were classified as suicide-risk or non-suicide-risk based on responses to a brief suicide screen embedded in the questionnaire. Of the 801 teens in this study, 372 (46%) were suicide-risk and 429 (54%) were non-suicide-risk.

Profiles of Direct Suicide Risk Factors

Comparisons between suicide-risk and non-suicide-risk teens revealed significant differences between the two groups on each direct suicide risk factor. That is, suicide-risk teens were significantly more likely than non-suicide-risk teens to have accepting attitudes toward suicide and to have been exposed to an attempted or completed suicide by a family member or close friend. Suicide-risk teens were more likely to have thought about suicide, threatened suicide, made a suicide plan, and attempted suicide. It is therefore not surprising that the suicide-risk group reported a significantly higher level of current risk for suicide than did the non-suicide-risk group, indicating greater increases in seriousness of attempts, hopelessness, and emotional pain. Mean levels of direct suicide risk factors were low for both the suicide-risk and non-suicide-risk groups. This suggests that, while teens vulnerable for school failure do experience these risk factors at a distressing frequency, the intensity is relatively low on a 0–6 scale. Nonetheless, these findings clearly demonstrate that potential high school dropouts who were identified as being at suicide-risk experienced direct suicide risk factors at a greater frequency and intensity than their non-suicide-risk counterparts.

Profiles of Related Risk Factors

In addition, suicide-risk teens had significantly more emotional distress, stress, risky behavior, drug use control problems, and adverse drug use consequences than their non-suicide-risk counterparts. Levels of emotional distress, stress, high-risk behavior, violence/victimization, and drug involvement were endorsed at relatively low levels overall for both groups. Emotional distress was the related risk factor on which the suicide-risk and non-suicide-risk groups differed most. They were most similar on measures of drug involvement, high-risk behavior, and violence/victimization. However, suicide-risk youth were significantly more likely than the non-suicide-risk youth to endorse engaging in high-risk behavior, report having experienced violence/victimization, as well as drug use control problems and adverse drug use consequences. Frequencies of alcohol and other drug use were essentially the same for suicide-risk and non-suicide-risk groups.

Profiles of Protective Factors

On the other hand, suicide-risk youth, compared to non-suicide-risk youth, had significantly lower levels of personal resources (self-esteem, personal control, problem-solving coping), and social resources (amount of support, availability of support, and family support satisfaction). Thus, suicide-risk teens felt worse about themselves and their ability to control events in their lives, were less able to cope with problems effectively, and felt support was less present for them from both inside and outside of the family unit.

Key Predictors of Current Suicide Risk

Once comparisons were made between groups, the full sample was utilized to test key risk and protective factors influencing suicide risk. Each risk and protective factor domain (e.g., emotional distress, stress, personal resources) was entered as a block into a regression equation to test the effects of each variable in the block (e.g., depression, anxiety, hopelessness, and anger for the emotional distress block) on suicide risk. Significant predictors in each block were:

Demographics:	being female, having lower family finances, and being of Asian American ethnicity increased risk; whereas being of African American ethnicity decreased risk
Risk Factors:	
Prior suicide attempts	the actual number of suicide attempts made
Emotional distress	particularly hopelessness and anxiety
Stress	number of stressors ever experienced, effect of stress in last two weeks, and family distress
High-risk behavior	particularly risky life-threatening behavior, and violence and victimization
Drug involvement	especially the degree of adverse consequences experienced due to alcohol and other drug use
Protective Factors:	
Personal resources	personal control, self-esteem, and problem-solving coping
Social resources	sense of support, family support satisfaction, amount of support, and availability of support

Predictors that remained significant when one variable within each domain was entered in the final model were:

- Being female
- Asian American ethnicity
- Prior suicide attempts
- Hopelessness
- High-risk behavior
- Adverse drug use consequences
- Sense of support

In summary, Study 1 provided support for a comprehensive perspective of multiple risk and protective factors that are linked with adolescent suicide potential. Potential dropouts who were at risk for suicide were significantly different from those not at risk for suicide in terms of direct suicide risk factors, related risk factors, and protective factors—both personal and social. Key factors that appear particularly important include the number of prior suicide attempts, hopelessness, high-risk behavior, being female, and being of Asian-American ethnicity. This was true across all ages of youth in the study. These findings informed Study 2, the conclusions of which are discussed next.

Explaining Suicide Risk and Drug Involvement

The focus of Study 2 (detailed in Chapter 3) was on explaining the co-occurring problems of suicide-risk behaviors and drug involvement. The same data set as in Study 1 was used to estimate a theoretically specified model with 800 potential high-risk dropouts. [One case was deleted from the sample due to a large amount of missing data.] Based on theoretic premises and empirical evidence, an explanatory model was advanced and defended. Key dimensions at the individual level posited to influence both suicide-risk behaviors and drug involvement were emotional distress, high-risk behavior, and personal resources. Key interpersonal and social antecedent factors included in the theoretic model were family support, school support from classmates, and deviant peer bonding. Before this hypothesized model was tested, a good fit was achieved for the measurement model (CFI = .944) using confirmatory factor analysis with EQS (Bentler, 1995). The final model included one correlated error term (between the indicators for the teens' level of marijuana use and their peers' drug use) and three shared indicators (between the dimensions of emotional distress, personal resources and high-risk behavior). This established the construct validity of the dimensions in the model and, with the exception of the three shared indicators, revealed the accuracy of the posited indicators as specified.

Structural equation modeling served to estimate the hypothesized explanatory model of the co-occurring problems of suicide-risk behaviors and drug involvement. An adequate fit was achieved for the hypothesized model (CFI = .944). In general, the majority of the hypotheses specified in the model were supported as follows:

1. High-risk behavior had a direct positive influence on (a) suicide-risk behaviors ($\beta = .14$, $p < 0.01$) and (b) drug involvement ($\beta = .31$, $p < 0.01$) as predicted. Thus, H_1 was fully supported.
2. Emotional distress had a direct positive influence on (a) suicide-risk behaviors ($\beta = .47$, $p < 0.01$), (b) drug involvement ($\beta = .07$, $p < 0.05$), and (c) high-risk behavior ($\beta = .16$, $p < 0.01$) as predicted. It also had (d) an indirect effect on

suicide-risk behaviors (β = .02, $p < 0.01$) and drug involvement (β = .05, $p < 0.01$). Thus, H_2 was fully supported.

3. Personal resources had a direct negative effect as predicted on (a) suicide-risk behaviors (β = -.29, $p< 0.01$) and (b) emotional distress (β = -.62, $p< 0.01$), but not (c) high-risk behavior (β = .07, ns). Also as predicted, personal resources had (d) an indirect effect on suicide-risk behaviors (β = -.30, $p< 0.01$) and drug involvement (β = -.06, $p< 0.01$) through emotional distress but not high-risk behavior. Hence, H_3 was supported for the most part except for the predicted effects of personal resources on high-risk behavior.
4. Family support had a direct positive effect on (a) personal resources (β = .61, $p< 0.01$, but not (b) emotional distress (β = .03, ns). Expected indirect effects on emotional distress were found (β = -.38, $p< 0.01$), but there were no indirect effects of family support on high-risk behavior. Family support indirectly influenced suicide-risk behaviors (β = -.36, $p< 0.01$). Thus, H_4 was supported with the exception of having no direct influence on reducing emotional distress. Family support also had a direct, negative influence on high-risk behavior (β = -.18, $p< 0.01$), which was not predicted.
5. Peer school support as predicted had (a) a direct positive effect on personal resources (β = .16, $p< 0.01$) and thereby, (b) indirectly influenced emotional distress (β = -.10, $p< 0.01$) but not high-risk behavior and (c) indirectly influenced suicide-risk behaviors (β = -.09, $p< 0.01$) but not drug involvement. Thus H_5 was partially supported.
6. Deviant peer bonding had (a) a direct positive effect on drug involvement (β =.48, $p< 0.01$) and (b) a direct positive effect on high-risk behavior (β = .42, $p< 0.01$); deviant peer bonding did not have (c) a direct negative effect on personal resources (β = .03, *ns*). It did not have (d) indirect effects on emotional distress or high-risk behavior. Deviant peer bonding (e) indirectly influenced suicide-risk behavior (β = .02, $p< 0.10$), thus it did not indirectly influence suicide-risk behaviors through personal resources. Thus, H_6 was partially supported.

These findings demonstrated strong support for considering suicide-risk behaviors and drug involvement as co-occurring problem behaviors. Common factors having a direct influence on suicide risk were emotional distress and high-risk

behavior. Personal resources directly lessened suicide-risk behaviors as well as indirectly decreasing drug involvement by lessening high-risk behavior. Of the interpersonal and social factors, family support and peer school support influenced personal resources. Family support indirectly lowered suicide-risk behaviors by enhancing personal resources. While deviant peer bonding did not have a significant impact on personal resources, it directly influenced greater drug involvement and high-risk behavior.

Testing the model for similarities and differences across males and females using a multi-sample analysis resulted in an acceptable fit (CFI = .934) and revealed remarkable similarities. There were only three pathways that were significantly different between males and females. The difference in each case was a stronger effect for females; these included a stronger ameliorating effect of personal resources on suicide-risk behaviors, a stronger influence of high-risk behavior on increasing suicide-risk behaviors, and a stronger positive effect of peer school support on enhancing personal resources.

In summary, what we know from this study is that suicide-risk behaviors and drug involvement are co-occurring phenomena that were influenced by common factors as posited. Emotional distress and high-risk behavior influenced both outcomes directly; personal resources counteracted suicide-risk behaviors—both directly and indirectly—by reducing emotional distress. Family support and peer school support were also important by directly enhancing personal resources and thus, indirectly reducing the potential for suicide-risk behaviors. Also, deviant peer bonding directly influenced greater drug involvement as well as increasing high-risk behavior.

In short, Study 1 and Study 2 each made scientific contributions that expand our understanding of youth at risk for school dropout. In addition, knowledge gained from the two studies when considered together has important implications. Before explicating these, however, it is necessary to address strengths and limitations of the study.

Strengths and Limitations

This study has several strengths and limitations that warrant discussion. Strengths of the study include the large sample size, a comprehensive and valid measurement of risk and protective factors, and the willingness of high-risk teens to cooperate in the questionnaire and interview process. The large randomly selected sample of potential high school dropouts adds confidence in the generalizability of the study findings to this special population of suicide-risk youth. The large sample also permitted the use of structural equation modeling with multiple indicators, which added confidence in the parameter estimates (Schumaker & Lomax, 1996). In addition, it was possible to test the estimated model with subsamples of males and females, adding to our understanding that the model, for the most part, holds for potential dropouts across both sexes.

Use of a comprehensive and valid measurement structure was also a strength of the study. It permitted drawing more accurate conclusions about the sample and the relationships hypothesized between the groups of suicide-risk and non-suicide-risk youth, as well as the hypotheses represented in the theoretic model. *The Measure of Adolescent Potential for Suicide* (Eggert, Thompson, & Herting, 1994) measurement properties were further validated in this study. This permitted an in-depth exploration of risk and protective factors among potential high school dropouts, as well as estimating the common factors and pathways influencing both suicide-risk behaviors and drug involvement among these youth. Without teens' willingness to share information, however, our understanding about this at-risk group would be seriously restricted. The recruitment procedures established by the *Reconnecting Youth Prevention Research* team, as well as the "teen-friendly" design of the *MAPS*, facilitated access to information about a potentially elusive group—potential high school dropouts.

In addition to strengths of the study, some important study limitations must be acknowledged. First, the cross-sectional nature of the sampling design is a

shortcoming for theory testing. Without a longitudinal design, the effects demonstrated in Study 2 remain tentative; causal relationships cannot be claimed. Also, a relationship that was not significant in this cross-sectional study may in fact be significant over time. The reverse may also be true: a relationship that was significant within the context of this cross-sectional study may not be significant over time. Thus, longitudinal studies must be constructed to develop a more precise picture of the factors that were demonstrated to influence suicide-risk behavior and drug involvement in the present study.

Another limitation is that information may be sample-specific—i.e., applicable to only potential high school dropouts—and therefore not generalizable to other at-risk populations or to teens in general. The large sample size and variability provided by use of suicide-risk and non-suicide-risk teens may reduce this problem somewhat. Also, the fact that the theoretic model was advanced with empirical support from studies of both clinical and community-based populations may further diminish the problem; however, replication of results with other high-risk populations and random samples of high school students in general is an important next step.

Implications

As was anticipated in Chapter 1, findings from this study contribute to prevention science and nursing science. Knowledge gained in this study enhances our understanding about adolescent suicidal behavior and its co-occurrence with drug involvement. Study findings have implications for both research and clinical practice.

Research Implications

Research implications include replicating the present study and estimating key predictors of suicide-risk behaviors and the co-occurring problem behavior of drug involvement using a longitudinal study design. Continued use of large samples is essential, as is utilizing a comprehensive and accurate measurement protocol such as the *MAPS*. This study added further empirical support for the conceptual model

developed and tested by Eggert, Thompson, and Herting (1994). Thus this model of risk and protective factors can serve as a basis for making comparisons of levels of risk and protective factors among other potential suicide-risk groups (e.g., chronically ill teens, gay and lesbian youth, ethnic groups such as Native American youth), and with young adults in general. This would extend the boundary conditions of the current findings beyond potential high school dropouts. The effect of being of Asian American ethnicity indicates that exploration of the model with different ethnic and cultural groups is warranted.

The explanatory model addressing the co-occurrence of suicide-risk behaviors and drug involvement should also be tested with other populations of youth. Testing the generalizability of these models should take place with youth who are not identified as being at risk for school dropout, as there are likely to be youth at risk for suicidal behaviors and drug involvement in random samples of the adolescent population who would be missed when sampling only potential dropouts. In addition, the model should be tested across age groups, with young adults being the next group examined. Also testing the model with youth in different ethnic groups and in other regions of the country will provide further tests of the utility of the model for explaining suicide-risk behaviors and drug involvement.

Continuing to explore the influence of the identified dimensions as well as other salient factors with longitudinal designs is essential. Other potential factors to consider include risk factors such as stress, violence and victimization, and protective factors such as social network support from others (e.g., school personnel, important adults such as coaches, best friends) besides family members and classmates at school. Including these variables may alter current findings and may also provide a greater level of specificity.

Finally, it is essential to investigate whether suicide-risk behaviors and drug involvement have a reciprocal relationship or whether one causes the other.

Clinical Implications

In terms of clinical implications, findings provide information for both suicide-risk assessment and prevention programming. As was stated in Chapter 1, addressing suicidal behaviors alone is insufficient. In addition to focusing on suicide-risk behaviors, related risk factors and protective factors are important to address. Findings from this study confirm this in that suicide-risk and non-suicide-risk teens differed on direct suicide risk factors, related risk factors, and protective factors. Because suicide-risk behaviors and drug involvement co-occur, and similar pathways lead to these problem behaviors, the presence of either suicide-risk behaviors or drug involvement should alert the clinician to assess for the other behavior while assessing common pathways. Also because males and females were more alike than different in terms of factors influencing suicide-risk behaviors and drug involvement, it seems appropriate to design co-educational prevention efforts as well as to use the same means of assessment for suicide-risk behaviors and drug involvement.

More specifically, the findings from Study 1 point to key predictors within each domain that should be included in clinical suicide assessment interviews. These include prior suicide attempts, hopelessness, high-risk behavior, adverse drug use consequences, being female and being of Asian American ethnicity, as well as the protective factor of sense of support. Furthermore, findings from Study 2 illuminated the importance of key individual factors and their influence on suicide risk and drug involvement. These include the protective factor of personal resources (i.e., self-esteem, personal control, problem-solving coping, and hopefulness) and two key risk factors: emotional distress (i.e., hopelessness, anxiety, depression, anger, and low self-esteem), and high-risk behavior. Within the interpersonal and social domains, the findings imply that suicide assessments would be incomplete without taking into account the influence of family support and school classmate support as protective factors and deviant peer bonding as an important risk factor.

The comprehensive assessment of suicide risk provided by the *Measure of Adolescent Potential for Suicide* (Eggert, Thompson, & Herting, 1994) provides a "teen-friendly" approach to the assessment of risk and protective factors associated with suicidal behaviors, and it is clear that teens are open and willing to talk about these topics. This willingness to talk about topics such as suicide and drug involvement bodes well for those who fear asking youth about their suicidal thoughts and behaviors, and drug involvement.

Prevention programs need to address suicidal behaviors directly. The findings from the present study imply that reducing emotional distress and high-risk behavior is likely to decrease suicidal behaviors and drug involvement. Enhancing personal resources is also important, due to the direct ameliorating effects this protective factor had on suicide-risk behaviors, emotional distress, and high-risk behavior. Family support is another factor that indirectly influenced both suicide-risk behaviors and drug involvement through personal resources and high-risk behavior. The implication for prevention programming would seem to be that adolescent suicide-risk behaviors could be reduced by teaching parents how to better support their teens in ways that would enhance self-esteem, personal control, and problem-solving coping. Parents could also be coached in creative support strategies that engage teens in healthy, fun activities that would counteract the need to engage in high-risk behavior. Because support from peers at school was another protective factor, whereas bonding with deviant peers was a risk factor, preventive intervention programs need to address creative ways of increasing support from classmates in school for potential school dropouts and decreasing deviant peer bonding among these youth.

In short and in addition to comprehensive assessment of teens, prevention of suicide and drug abuse should involve direct behavioral interventions with suicide-risk youth to reduce emotional distress and high-risk behavior, and enhance personal resources. Preventive intervention programs with these youth, based on the findings from this study, also need to address and enhance support from the family and school

environments. A similar approach for both males and females is appropriate. Testing the efficacy of programs that have these design elements is critical to our understanding of what works to prevent both youth suicide potential and drug abuse, especially among potential high school dropouts.

Significance

As a discipline, nursing is concerned with health promotion and injury prevention. Thus, it necessary and appropriate for nurse scientists to address the issue of adolescent suicide to guide clinical practice. In addition to providing guidance for practice, nurse scientists who study the issue of adolescent suicide can develop and evaluate prevention programs, thus contributing to both prevention science and nursing science.

This study contributes to the literature on adolescent suicidal behaviors in at least two primary ways: (1) by confirming or extending previous findings and (2) by providing new knowledge about suicide risk, drug involvement, and potential high school dropouts. In terms of existing knowledge, this study extends the work of Eggert, Thompson, and Herting (1994) by confirming the validity of the *MAPS* as an assessment protocol that effectively differentiates suicide-risk teens from non-suicide-risk teens. The *MAPS* is firmly based in theoretical and empirical literature, and the current study contributes to an in-depth understanding of how suicide-risk and non-suicide-risk potential high school dropouts differ in terms of direct suicide risk factors, related risk factors, and protective factors. An unexpected and interesting measurement-related finding is that hopelessness (as defined in this study) was indicative of lower personal resources in addition to its expected efficacy as an indicator of emotional distress; and that another emotional distress indicator, anger, also functioned as an indicator of high-risk behavior. Also, lower self-esteem served as an indicator of emotional distress. While there is disagreement in the literature about using "negative" items to reflect the lack of a particular construct, findings about

hopelessness and self-esteem provide support for the judicious use of negative indicators of constructs, especially when these are not merely the reverses of positive indicators. Importantly, this provides information about hopelessness as a feature of control rather than distress, suggesting that the way hopelessness is conceptualized and measured should be scrutinized.

For direct suicide risk factors, knowledge gained from this study is consistent with that of other populations of youth. Potential dropouts at risk for suicide experienced more exposure to suicide and had more accepting attitudes toward suicide (e.g., Cotton & Range, 1996; Guttierez et al., 1996; Kaplan et al., 1997; Wagner et al., 1995). Findings confirm that suicide thoughts, threats, plans, and attempts are important indicators of risk (e.g., Beautrais et al., 1996; Brent et al., 1988; Brent, Perper, Moritz, Baugher, & Allman, 1993; Gispert et al., 1987; Gould et al., 1996; Smith & Crawford, 1986).

Findings about related risk factors confirm and extend the existing evidence about the importance of emotional distress in determining risk for suicide. While a major focus of the literature is on depression (e.g., Brent, Perper, Moritz, Baugher, & Allman, 1993; King et al., 1993; Lewinsohn et al., 1993), this study also highlights the importance of including hopelessness, anger, and anxiety in assessing current risk. A risk factor whose effect on suicide and suicidal behavior has received less empirical study but considerable debate is violence and victimization. Suicide-risk and non-suicide-risk teens differed significantly on violence/victimization. Because of this, and because this study defined violence/victimization broadly as witnessing and being a victim of violence, the findings in this study are some of the first to demonstrate an association between violence/victimization and suicidal behaviors. A final related risk factor that requires comment is drug involvement. Though suicide-risk and non-suicide-risk teens did not differ in their use of alcohol or drugs, there were differences in terms of control problems and adverse consequences. This provides some support

for the harm reduction models (Marlatt, 1998) of substance abuse prevention. In these models, the goal is to reduce consequences/harm rather than to achieve abstinence .

The body of literature about protective factors and its influence on emotional well being is quite clear: teens (and adults) do better on a myriad of health outcomes and developmental tasks when personal competencies are strong and with the help of family and friends (Cauce & Srebnik, 1989; Cohen & Syme, 1985). This has been shown quite clearly despite the different definitions of terms. This study adds important findings by providing evidence that self-esteem, personal control, and problem-solving coping skills differentiate suicide-risk from non-suicide-risk teens. In addition, suicide-risk and non-suicide-risk teens differed on social network support. Suicide-risk teens had a significantly lower amount of support, sense of support, availability of support, and family support satisfaction than non-suicide-risk teens.

The regression analyses in Study 1 highlight the importance of demographic factors, such as being female and being of Asian American ethnicity. Also, the well-documented importance of prior suicide attempts on risk for future attempts (e.g., Brent et al., 1988; Beautrais et al., 1996; Harrington et al., 1994) was confirmed in the regression model: the number of prior suicide attempts was the strongest predictor of current suicide risk. Significant related risk factor predictors were hopelessness, anxiety, stress (number of stressors, effect of stressors, and family distress), high-risk behaviors, violence/victimization, and adverse drug use consequences. Important protective factors were the individual resources of self-esteem, personal control, and positive coping strategies. Social resources that were important predictors were sense of support, availability of support, and family support satisfaction. Moreover, these personal and social assets and ways of thinking strongly counteracted emotional distress and suicide-risk behaviors in the explanatory model tested in Study 2.

This explanatory model addressing common antecedents that lead to both suicide-risk behaviors and drug involvement contributes to knowledge about each of these behaviors. Findings extend the literature that documents drug involvement as a

factor leading to suicide attempts or completions, while at the same time adding a different perspective to the drug involvement literature (i.e., that suicide-risk behaviors co-occur with drug involvement). Rather than the usual focus on drug involvement as a factor influencing suicide and suicidal behaviors, it seems appropriate to investigate mutual effect on drug involvement and suicidal behaviors.

As has been clearly demonstrated and despite the limitations identified, this study confirms, extends, and provides new knowledge about suicide-risk behaviors, drug involvement, and potential high school dropouts.

The comprehensive description of potential high school dropouts demonstrated that those at risk for suicide differ from those not at risk for suicide in terms of having more suicide-related thoughts and behaviors, distress, and risky behaviors; as well as having fewer personal and social resources. In addition, it was demonstrated that suicide-risk behaviors and drug involvement do not occur in isolation; rather, these co-occurring behaviors are a function of high-risk behaviors, emotional distress, and associations with problem peers. Efforts to counteract these influences must address the individual as well as interpersonal and social contexts; thus, suicide and drug abuse prevention programs must reduce high-risk behavior and emotional distress, enhance personal resources, promote bonding with positive peers, and strengthen support from family and classmates.

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Appendix A: Pearson's Correlations for Suicide-Risk (SR) Youth and Non-Suicide-Risk (NSR) Youth [SR correlations are in bold type]

A.1. Correlations among Direct Suicide Risk Factors for SR Youth (n = 372) and NSR Youth (n = 429)

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning & Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Exposure to Suicide	--							
	--							
Positive Attitudes & Beliefs	**.076**	--						
	.069	--						
Suicide Ideation	**.211****	**.665****	--					
	.234**	.219**	--					
Suicide Threats	**.202****	**.459****	**.616****	--				
	.116*	.242**	.560**	--				
Preparation/ Planning	**.184****	**.538****	**.688****	**.483****	--			
	.107*	.190**	.515**	.450**	--			
Number of Prior Attempts	**.174****	**.399****	**.441****	**.304****	**.373****	--		
	.242**	.116**	.512**	.316**	.368**	--		
Lethality of Prior Attempts	**.173****	**.415****	**.502****	**.316****	**.361****	**.717****	--	
	.200**	.176**	.559**	.193**	.308**	.686**	--	
Level of Current Risk	**.168****	**.430****	**.475****	**.262****	**.431****	**.643****	**.615****	--
	.131**	.223**	.454**	.336**	.280**	.707**	.518**	--

* $p < .05$, ** $p < .01$

Appendix A (cont'd)

A.2: Correlations among Related Risk Factors for SR Youth (n = 372) and NSR Youth (n = 429) [SR Youth in BOLD Type]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Depression	--													
	--													
2.Anxiety	**.787****	--												
	.775**	--												
3.Hopeless-ness	**.662****	**.530****	--											
	.594**	.466**	--											
4.Anger	**.488****	**.529****	**.390****	--										
	.533**	.534**	.417**	--										
5.Number of Stressors	**.365****	**.412****	**.237****	**.426****	--									
	.385**	.385**	.258**	.434**	--									
6.Effect of Stress	**.572****	**.505****	**.404****	**.416****	**.298****	--								
	.584**	.495**	.361**	.333**	.252**	--								
7.Family Distress	**.265****	**.269****	**.327****	**.328****	**.152****	**.271****	--							
	.267**	.227**	.264**	.306**	.202**	.221**	--							
8.High Risk Behaviors	**.052**	**.148****	**.073**	**.425****	**.382****	**.071**	**.202****	--						
	.250**	.294**	.202**	.500**	.374**	.208**	.334**	--						
9.Violence/ Victimization	**.245****	**.332****	**.145****	**.504****	**.421****	**.252****	**.165****	**.331****	--					
	.305**	.332**	.155**	.488**	.388**	.197**	.100*	.357**	--					
10.Alcohol Use	**-.077**	**.006**	**-.045**	**.047**	**.053**	**-.028**	**.012**	**.285****	**.032**	--				
	.111*	.109*	.092	.210**	.258**	.085	.190**	.355**	.057	--				
11.Marijuana Use	**-.070**	**-.016**	**-.014**	**.025**	**.167****	**.096**	**.015**	**.269****	**.043**	**.470****	--			
	.105*	.084	.065	.134**	.235**	.164**	.143**	.360**	.115*	.528**	--			
12.Hard Drug Use	**.067**	**.143****	**.096**	**.074**	**.087**	**.070**	**.037**	**.117***	**.099**	**.365****	**.342****	--		
	.130**	.181**	.079	.138**	.224**	.134**	.122*	.324**	.121*	.339**	.441**	--		
13.Drug Use Control Problems	**-.002**	**.070**	**-.020**	**.143****	**.099**	**.040**	**.164****	**.277****	**.087**	**.549****	**.383****	**.453****	--	
	.157**	.212**	.136**	.226**	.242**	.164**	.281**	.442**	.098*	.609**	.473**	.464**	--	
14.Adverse Drug Use Consequences	**.058**	**.114***	**.067**	**.142****	**.155****	**.076**	**.174****	**.368****	**.103***	**.409****	**.371****	**.464****	**.660****	--
	.200**	.253**	.155**	.257**	.243**	.249**	.216**	.411**	.162**	.378**	.420**	.632**	.583**	--

*$p < .05$, ** $p < .01$

Appendix A (cont'd)

A.3. Correlations among Protective Factors for SR Youth (n = 372) and NSR Youth (n = 429) [SR Youth in BOLD Type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Self-esteem	--							
	--							
Personal Control	**.608****	--						
	.582**	--						
Problem-Solving Coping	**.382****	**.561****	--					
	.315**	.482**	--					
Ratio of Positive to Total Coping Strategies	**.037**	**.205****	**.302****	--				
	.022	.086	.186**	--				
Amount of Support	**.334****	**.341****	**.277****	**.095**	--			
	.276**	.228**	.317**	.105*	--			
Sense of Support	**.365****	**.391****	**.240****	**.180****	**.361****	--		
	.335**	.466**	.186**	.105*	.236**	--		
Availability of Support	**.154****	**.189****	**.099**	**.104***	**.401****	**.402****	--	
	.174**	.270**	.141**	.158**	.313**	.434**	--	
Family Support Satisfaction	**.314****	**.432****	**.376****	**.070**	**.424****	**.220****	**.155****	--
	.367**	.513**	.407**	.039	.416**	.335**	.269**	--

* $p < .05$, ** $p < .01$

Appendix A (cont'd)

A.4:. Correlations between Direct Suicide Risk Factors and Related Risk Factors for SR Youth (n = 372) and NSR Youth (n = 429) [SR Youth in BOLD Type]

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning/ Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Depression	**.114***	**.320****	**.461****	**.320****	**.378****	**.238****	**.237****	**.261****
	.282**	.230**	.429**	.267**	.284**	.234**	.260**	.220**
Anxiety	**.199****	**.276****	**.415****	**.337****	**.371****	**.235****	**.246****	**.266****
	.270**	.219**	.398**	.285**	.276**	.146**	.225**	.178**
Hopelessness	**.049**	**.584****	**.596****	**.348****	**.465****	**.270****	**.274****	**.321****
	.081	.322**	.381**	.275**	.247**	.183**	.223**	.258**
Anger	**.153****	**.168****	**.330****	**.271****	**.316****	**.145****	**.210****	**.189****
	.283**	.124**	.301**	.148**	.264**	.215**	.245**	.194**
Number of Stressors	**.317****	**.091**	**.341****	**.249****	**.305****	**.304****	**.336****	**.258****
	.317**	.082	.261**	.164**	.166**	.145**	.163**	.129**
Effect of Stressors	**.142****	**.176****	**.295****	**.197****	**.246****	**.120***	**.115***	**.170****
	.255**	.166**	.277**	.220**	.173**	.170**	.156**	.152**
Family Distress	**.042**	**.235****	**.230****	**.262****	**.168****	**.148****	**.135****	**.190****
	.117*	.088	.161**	.281**	.113*	.094	.077	.136**
High-Risk Behaviors	**.132***	**.027**	**.206****	**.324****	**.211****	**.119***	**.136****	**.107***
	.175**	.151**	.161**	.258**	.198**	.162**	.198**	.184**
Violence/ Victimization	**.253****	**.035**	**.183****	**.154****	**.245****	**.302****	**.295****	**.305****
	.321**	.168**	.208**	.029	.094	.148**	.211**	.130**
Alcohol Use	**.219****	**.038**	**.055**	**.078**	**.026**	**-.017**	**-.028**	**-.022**
	.137**	.122*	.138**	.172**	.168**	.035	.059	.074
Marijuana Use	**.227****	**.058**	**.126***	**.116***	**.066**	**.066**	**.067**	**.037**
	.086	.115*	.055	.115*	.128**	.015	.012	.001
Hard Drug Use	**.170****	**.077**	**.136****	**.187****	**.129***	**.073**	**.050**	**.135****
	.151**	.113*	.168**	.323**	.049	.037	.083	.025
Drug Use Control Problems	**.274****	**-.019**	**.063**	**.166****	**.032**	**-.001**	**-.020**	**-.019**
	.123*	.142**	.213**	.450**	.124*	.012	.020	.092
Adverse Drug Use Consequences	**.154****	**.074**	**.161****	**.257****	**.068**	**-.004**	**-.007**	**.008**
	.124*	.247**	.168**	.347**	.120*	.039	.093	.128**

* $p < .05$, ** $p < .01$

Appendix A (cont'd)

A.5. Correlations between Direct Suicide Risk Factors and Protective Factors for SR Youth (n = 372) and NSR Youth (n = 429) [SR Youth in BOLD Type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Suicide Exposure	**-.077**	**-.012**	**.011**	**-.044**	**-.008**	**-.046**	**-.085**	**-.032**
	.055	.066	.078	-.042	-.004	-.117*	-.013	.024
Positive Attitudes & Beliefs	**-.280****	**-.407****	**-.274****	**-.162****	**-.191****	**-.296****	**-.140****	**-.286****
	-.170**	-.303**	.019	-.098*	-.066	-.254**	-.344**	-.054
Suicide Ideation	**-.328****	**-.379****	**-.260****	**-.186****	**-.251****	**-.387****	**-.121***	**-.287****
	-.258**	-.207**	-.038	.011	-.171**	-.320**	-.135**	-.128**
Suicide Threats	**-.235****	**-.280****	**-.233****	**-.145****	**-.232****	**-.181****	**-.014**	**-.280****
	-.254**	-.140**	.000	.010	-.093	-.194	-.001	-.103*
Planning/ Preparation	**-.233****	**-.259****	**-.115***	**-.147****	**-.140****	**-.300****	**-.047**	**-.189****
	-.169**	-.109*	-.062	-.019	-.044	-.107*	-.024	-.043
Number of Prior Attempts	**-.103***	**-.180****	**-.092**	**-.047**	**-.118***	**-.147****	**-.107***	**-.155****
	-.067	-.093	-.074	-.067	-.084	-.191**	-.123*	-.128**
Lethality of Prior Attempts	**-.092**	**-.175****	**.123***	**-.040**	**-.113***	**-.173****	**-.080**	**-.134***
	-.057	-.114*	-.009	-.087	-.126**	-.159**	-.169**	-.137**
Level of Current Risk	**-.100**	**-.231****	**-.065**	**-.109***	**-.082**	**-.221****	**-.046**	**-.172****
	-.124	-.140**	-.094	-.121*	-.130**	-.186**	-.138**	-.115*

* $p < .05$, ** $p < .01$

Appendix A (cont'd)

A.6: Correlations between Related Risk Factors and Protective Factors for SR Youth (n = 372) and NSR Youth (n = 429) [SR Youth in BOLD Type]

	Self-esteem	Personal Control	Problem Solving Coping	Ratio of Positive to Total Coping	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Depression	**-.419****	**-.463****	**-.241****	**-.136****	**-.240****	**-.561****	**-.173****	**-.228****
	-.350**	-.376**	.132**	-.039	-.214**	-.474	-.163**	-.176**
Anxiety	**-.344****	**-.311****	**-.132***	**-.129***	**-.127***	**-.464****	**-.505****	**-.179****
	-.301**	-.262**	-.019	-.037	-.071	-.357**	-.171**	-.101*
Hopelessness	**-.614****	**-.713****	**-.445****	**-.201****	**-.357****	**-.585****	**-.305****	**-.429****
	-.576	-.698**	-.374**	-.116*	-.321**	-.589**	-.318**	-.453**
Anger	**-.220****	**-.227****	**-.158****	**-.193****	**-.212****	**-.410****	**-.130***	**-.167****
	-.285**	-.299**	-.152**	-.110*	-.176**	-.320**	-.179**	-.224**
Number of Stressors	**-.086**	**-.084**	**-.013**	**-.116***	**-.061**	**-.186****	**-.033**	**-.059**
	-.162**	-.117*	.031	-.083	-.079	-.199**	-.145**	-.051
Effect of Stressors	**-.201****	**-.249****	**-.075**	**-.102***	**-.097**	**-.336****	**-.113***	**-.176****
	-.221**	-.180**	-.026	-.076	-.122*	-.300**	-.133**	-.152**
Family Distress	**-.241****	**-.267****	**-.262****	**-.212****	**-.312****	**-.174****	**-.078**	**-.556****
	-.294**	-.221**	-.161**	.003	-.193**	-.200**	-.109*	-.460**
High-Risk Behaviors	**-.001**	**-.009**	**-.054**	**-.113***	**-.068**	**.005**	**.047**	**-.183****
	-.111*	-.078	-.062	-.094	-.179**	-.116*	-.163**	-.155**
Violence/ Victimization	**-.036**	**-.045**	**.099**	**-.042**	**-.096**	**-.181****	**-.052**	**-.084**
	-.048	-.084	.072	-.025	-.097*	-.230**	-.232**	-.121*
Alcohol Use	**.027**	**-.054**	**-.091**	**-.125***	**-.012**	**.089**	**.076**	**-.063**
	-.060	-.094	-.159**	-.034	-.133**	.035	.012	-.103*
Marijuana Use	**.032**	**-.037**	**-.072**	**-.102**	**-.110***	**.067**	**-.001**	**-.079**
	-.050	-.035	-.121*	-.074	-.171**	-.013	-.036	-.133**
Hard Drug Use	**-.085**	**-.124***	**-.108***	**-.177****	**-.137****	**-.108***	**-.063**	**-.066**
	-.091	-.066	-.056	.009	-.140**	-.083	-.069	-.058
Drug Use Control Problems	**-.043**	**-.042**	**-.035**	**-.194**	**-.099**	**.083**	**.077**	**-.051**
	-.186**	-.079	-.058	-.013	-.119*	.044	.014	-.089
Adverse Drug Use Consequences	**-.115***	**-.123***	**-.083**	**-.154****	**-.103***	**-.004**	**-.009**	**-.115***
	-.180**	-.104*	-.013	-.058	-.122*	-.068	-.054	-.035

* $p < .05$, ** $p < .01$

Appendix B: Pearson's Correlations for Male and Female Suicide-Risk (SR)Youth (N = 372) [Male correlations are in bold type]

B.1: Correlations among Direct Suicide Risk Factors for Male (n = 176) and Female (n = 196) SR Youth

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning& Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Exposure to Suicide	-- --							
Positive Attitudes & Beliefs	**.060** .074	-- --						
Suicide Ideation	**.150*** .229**	**.632**** .689**	-- --					
Suicide Threats	**.195**** .192**	**.360**** .525**	**.577**** .638**	-- --				
Preparation/ Planning	**.132** .185**	**.426**** .607**	**.653**** .705**	**.432**** .506**	-- --			
Number of Prior Attempts	**.166*** .149*	**.421**** .379**	**.436**** .432**	**.352**** .264**	**.376**** .349**	-- --		
Lethality of Prior Attempts	**.142*** .168*	**.423**** .404**	**.511**** .483**	**.338**** .293**	**.418**** .303**	**.740**** .697**	-- --	
Level of Current Risk	**.167*** .132	**.378**** .459**	**.495**** .463**	**.252**** .257**	**.431**** .415*	**.600**** .653**	**.605**** .633**	-- --

* $p < .05$, ** $p < .01$

Appendix B (cont'd)

B.2: Correlations among Related Risk Factors for Male (n = 176) and Female (n = 196) SR Youth [Male correlations are in bold type]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Depression	--													
	--													
2.Anxiety	**.707****	--												
	.816**	--												
3.Hopelessness	**.645****	**.434****	--											
	.665**	.566**	--											
4.Anger	**.425****	**.534****	**.304****	--										
	.548**	.537**	.449**	--										
5.Number of Stressors	**.326****	**.408****	**.210****	**.479****	--									
	.382**	.411**	.247**	.374**	--									
6.Effect of Stressors	**.470****	**.437****	**.376****	**.383****	**.314****	--								
	.588**	.504**	.397**	.449**	.264**	--								
7.Family Distress	**.244****	**.311****	**.317****	**.406****	**.192***	**.296****	--							
	.252**	.219**	.321**	.260**	.103	.224**	--							
8.High Risk Behaviors	**.098**	**.219****	**.055**	**.508****	**.429****	**.175***	**.241****	--						
	.197**	.253**	.192**	.415**	.438**	.138	.258**	--						
9.Violence/ Victimization	**.133**	**.237****	**.085**	**.557****	**.452****	**.237****	**.193***	**.454****	--					
	.311**	.386**	.171*	.467**	.399**	.257**	.140	.283**	--					
10.Alcohol Use	**-.090**	**-.005**	**-.019**	**.044**	**.018**	**.046**	**.062**	**.253****	**.056**	--				
	-.019	.057	-.045	.060	.111	-.050	-.017	.297**	.019	--				
11.Marijuana Use	**-.105**	**-.030**	**-.003**	**.040**	**.112**	**.094**	**.119**	**.230****	**.058**	**.419****	--			
	-.027	.009	-.014	.013	.236**	.128	-.077	.337**	.035	.532**	--			
12.Hard Drug Use	**.034**	**.091**	**.048**	**-.043**	**.039**	**.046**	**.006**	**.023**	**.020**	**.352****	**.258****	--		
	-.143*	.244**	.176*	.249**	.174*	.134	.092	.318**	.211**	.396**	.491**	--		
13.Drug Use Control Probms	**-.043**	**.039**	**-.037**	**.147**	**.060**	**.072**	**.187***	**.219****	.090	**.419****	**.303****	**.389****	--	
	.068	.125	.007	.145*	.153*	.047	.158*	.359**	**.093**	.614**	.469**	.572**	--	
14.Adverse Drug Use Consequences	**.047**	**.108**	**.061**	**.099**	**.139**	**.096**	**.192***	**.300****	.079	**.450****	**.358****	**.476****	**.633****	--
	.159*	.198**	.117	.210**	.205**	.137	.194**	.437**	**.145***	.336**	.385**	.449**	.697**	--

* $p < .05$, ** $p < .01$

Appendix B (cont'd)

B.3: Correlations among Protective Factors for Male (n = 176) and Female (n = 196) SR Youth

[Male correlations are in bold type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Self-esteem	-- --							
Personal Control	**.555**** .635**	-- --						
Problem Solving Coping	**.318**** .430**	**.596**** .537**	-- --					
Ratio of Positive to Total Coping Strategies	**-.078** .106	**.131** .255**	**.361**** .257**	-- --				
Amount of Support	**.356**** .331**	**.240**** .432**	**.159*** .371**	**.071** .117	-- --			
Sense of Support	**.390**** .328**	**.250**** .476**	**.208**** .263**	**.074** .255**	**.311**** .410**	-- --		
Availability of Support	**.168*** .154*	**.085** .285**	**.036** .150*	**.023** .174*	**.360**** .436**	**.438**** .388**	-- --	
Family Support Satisfaction	**.339**** .306**	**.416**** .450**	**.356**** .389**	**.105** .050	**.295**** .514**	**.197**** .233**	**.113** .185**	-- --

* $p < .05$, ** $p < .01$

Appendix B (cont'd)

B.4: Correlations between Direct Suicide Risk Factors and Related Risk Factors for Male (n = 176) and Female (n = 196) SR Youth [Male correlations are in bold type]

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning/ Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Depression	**.105**	**.298****	**.437****	**.301****	**.390****	**.182***	**.211****	**.205****
	.054	.326**	.461**	.320**	.337**	.222**	.212**	.237**
Anxiety	**.177***	**.182***	**.326****	**.320****	**.327****	**.183***	**.195****	**.128**
	.166*	.331**	.453**	.336**	.367**	.232**	.253**	.283**
Hopelessness	**.050**	**.519****	**.538****	**.237****	**.376****	**.287****	**.283****	**.305****
	.015	.622**	.627**	.403**	.500**	.239**	.249**	.308**
Anger	**.249****	**.152***	**.311****	**.188***	**.319****	**.194***	**.310****	**.200****
	.073	.177*	.340**	.329**	.312**	.103	.114	.183*
Number of Stressors	**.338****	**.086**	**.278****	**.229****	**.305****	**.317****	**.335****	**.259****
	.288**	.088	.387**	.261**	.296**	.285**	.324**	.254**
Effect of Stressors	**.200****	**.131**	**.205****	**.146**	**.194***	**.063**	**.082**	**.106**
	.039	.196**	.331**	.212**	.235**	.110	.092	.143*
Family Distress	**.010**	**.140**	**.143**	**.134**	**.125**	**.050**	**.103**	**.068**
	.035	.302**	.281**	.342**	.177*	.199**	.142*	.235**
High-Risk Behaviors	**.221****	**.002**	**.150***	**.334****	**.219****	**.161***	**.180***	**.158***
	.169*	.103	.397**	.430**	.348**	.186**	.190**	.216**
Violence/ Victimization	**.184***	**-.048**	**.102**	**.095**	**.229****	**.232****	**.242****	**.280****
	.291**	.086	.232**	.186**	.248**	.339**	.333**	.316**
Alcohol Use	**.128**	**.055**	**.006**	**.022**	**-.056**	**-.071**	**-.085**	**.001**
	.348**	.034	.127	.144*	.124	.054	.059	-.009
Marijuana Use	**.264****	**.111**	**.066**	**.090**	**-.028**	**.002**	**.032**	**.038**
	.222**	.012	.194**	.147*	.155*	.134	.114	.051
Hard Drug Use	**.116**	**.029**	**.043**	**.154***	**.053**	**.084**	**.029**	**.117**
	.275**	.154*	.281**	.255**	.249**	.081	.094	.200**
Drug Use Control Problems	**.272****	**-.054**	**-.043**	**.106**	**-.033**	**-.063**	**-.053**	**-.032**
	.307**	.020	.176*	.229**	.103	.066	.029	.008
Adverse Drug Consequences	**.138**	**.055**	**.065**	**.221****	**.032**	**-.043**	**-.004**	**.049**
	.230**	.117	.304**	.329**	.151*	.070	.027	.029

* $p < .05$, ** $p < .01$

Appendix B (cont'd)

B.5: Correlations between Direct Suicide Risk Factors and Protective Factors for Male (n = 176) and Female (n = 196) SR Youth [Male correlations are in bold type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Exposure to Suicide	**-.104** -.022	**-.024** .029	**-.014** .033	**-.041** -.031	**-.083** .040	**-.081** .011	**.025** .123	**.003** -.055
Positive Attitudes & Beliefs	**-.205**** -.325**	**-.303**** -.481**	**-.330**** -.231**	**-.161*** -.160*	**-.114** -.257**	**-.237**** -.328**	**-.182*** -.109	**-.289**** -.287**
Suicide Ideation	**-.293**** -.334**	**-.243**** -.466**	**-.229**** -.283**	**-.204**** -.164*	**-.208**** -.293**	**-.338**** -.408**	**-.179*** -.083	**-.268**** -.305**
Suicide Threats	**-.087** -.316**	**-.200**** -.325**	**-.200**** -.255**	**-.130** -.151*	**-.136** -.307**	**-.071** -.241**	**.012** -.037	**-.270**** -.288**
Planning/ Preparation	**-.205**** -.227**	**-.119** -.333**	**-.042** -.163*	**-.113** -.161*	**-.071** -.197**	**-.234**** -.322**	**-.031** -.067	**-.160*** -.207**
Number of Prior Attempts	**-.119** -.066	**-.119** -.202**	**-.097** -.087	**-.022** -.054	**-.121** -.125	**-.075** -.165*	**-.135** -.095	**-.193*** -.137
Lethality of Prior Attempts	**-.065** -.084	**-.127** -.194**	**-.135** -.112	**-.153*** -.068	**-.084** -.146*	**-.155*** -.164*	**-.118** -.055	**-.209**** -.089
Level of Current Risk	**-.130** -.054	**-.124** -.268**	**-.160*** -.017	**-.191*** -.059	**-.076** -.097	**-.116** -.250**	**-.093** -.033	**-.170*** -.178*

* $p < .05$, ** $p < .01$

Appendix B (cont'd)

B.6: Correlations between Related Risk Factors and Protective Factors for Male (n = 176) and Female (n = 196) SR Youth [Male correlations are in bold type]

	Self-esteem	Personal Control	Problem Solving Coping	Ratio of Positive: Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Depression	**-.496****	**-.379****	**-.287****	**-.085**	**-.252****	**-.588****	**-.260****	**-.274****
	-.465**	-.457**	-.215**	-.161*	-.260**	-.529**	-.134	-.213**
Anxiety	**-.260****	**-.244****	**-.146**	**-.098**	**-.149***	**-.478****	**-.137**	**-.210****
	-.365**	-.331**	-.122	-.138	-.128	-.435**	-.006	-.171*
Hopelessness	**-.608****	**-.632****	**-.423****	**-.141**	**-.310****	**-.508****	**-.319****	**-.383****
	-.609**	-.760**	-.464**	-.235**	-.404**	-.622**	-.309**	-.457**
Anger	**-.131**	**-.082**	**-.080**	**-.161**	**-.191***	**-.330****	**-.149***	**-.152****
	-.280**	-.336**	-.220**	-.216**	-.233**	-.465**	-.118	-.179*
Number of Stressors	**-.070**	**-.002**	**.032**	**-.056**	**-.086**	**-.196****	**-.116**	**-.097**
	-.081	-.142*	-.085	-.163*	-.043	-.159*	.041	-.035
Effect of Stressors	**-.142**	**-.211****	**-.140**	**-.103**	**-.092**	**-.284****	**-.201****	**-.166***
	-.196**	-.242**	-.024	-.086	-.120	-.338**	-.067	-.196**
Family Distress	**-.201****	**-.256****	**-.242****	**-.302****	**-.304****	**-.195***	**-.122**	**-.479****
	-.250**	-.261**	-.278**	-.132	-.327**	-.140	-.048	-.616**
High-Risk Behaviors	**.031**	**.027**	**-.016**	**-.147**	**-.082**	**.060**	**.080**	**-.219****
	-.132	-.134	-.124	-.120	-.038	-.142	.038	-.177*
Violence/ Victimization	**.027**	**.033**	**.050**	**-.091**	**-.067**	**-.079**	**-.074**	**-.042**
	-.066	-.091	.134	-.005	-.119	-.239**	-.040	-.109
Alcohol Use	**.030**	**-.106**	**-.145**	**-.143**	**-.031**	**.095**	**.047**	**-.099**
	-.000	-.027	-.044	-.121	.012	.061	.113	-.037
Marijuana Use	**-.011**	**-.072**	**-.105**	**-.109**	**-.191***	**.100**	**.000**	**-.153**
	.060	-.013	-.044	-.102	-.027	.030	.000	-.025
Hard Drug Use	**-.131**	**-.126**	**-.096**	**-.085**	**-.158***	**-.090**	**-.096**	**-.064**
	-.052	-.144*	-.136	-.322**	-.115	-.156	-.018	-.078
Drug Use Control Problems	**-.101**	**-.089**	**-.078**	**-.206****	**-.219****	**.071**	**.029**	**-.060**
	-.012	-.014	.001	-.193**	.020	.081	.129	-.045
Adverse Drug Use Consequences	**-.174***	**-.212****	**-.152***	**-.205****	**-.240****	**-.001**	**-.017**	**-.184***
	-.104	-.070	-.020	-.121	.054	-.046	.048	-.063

* $p < .05$, ** $p < .01$

Appendix C: Pearson's Correlations for Male and Female Non-Suicide-Risk (NSR) Youth (N = 429) [Male correlations are in bold type]

C.1 . Correlations among Direct Suicide Risk Factors for Male (n = 260) and Female (n = 169) NSR Youth

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning& Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Exposure to Suicide	-- --							
Positive Attitudes & Beliefs	**.074** .051	-- --						
Suicide Ideation	**.135*** .295**	**.149*** .291**	-- --					
Suicide Threats	**.016** .181*	**.116** .366**	**.397**** .664**	-- --				
Planning/ Preparation	**.048** .129	**.220**** .152*	**.502**** .510**	**.486**** .422**	-- --			
Number of Prior Attempts	**.140*** .305**	**.125*** .106	**.550**** .478**	**.552**** .175*	**.621**** .193*	-- --		
Lethality of Prior Attempts	**.190**** .184*	**.209**** .140	**.594**** .521**	**.240**** .154*	**.301**** .294**	**.730**** .654**	-- --	
Level of Current Risk	**.043** .155*	**.183**** .258**	**.420**** .480**	**.573**** .261**	**.609**** .153*	**.774**** .704**	**.524**** .528**	-- --

* $p < .05$, ** $p < .01$

Appendix C (cont'd)

C.2: Correlations among Related Risk Factors for Male (n = 260) and Female (n = 169) NSR Youth

[Male correlations are in bold type]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Depression	--													
	--													
2.Anxiety	**.725****	--												
	.790**	--												
3.Hopeless-ness	**.561****	**.442****	--											
	.615**	.469**	--											
4.Anger	**.503****	**.549****	**.436****	--										
	.566**	.524**	.387**	--										
5.Number of Stressors	**.324****	**.327****	**.186****	**.425****	--									
	.416**	.421**	.321**	.442**	--									
6.Effect of Stressors	**.557****	**.472****	**.292****	**.320****	**.278****	--								
	.586**	.492**	.419**	.338**	.169*	--								
7.Family Distress	**.193****	**.189****	**.209****	**.260****	**.104**	**.185****	--							
	.302**	.230**	.301**	.346**	.298**	.238**	--							
8.High Risk Behaviors	**.232****	**.299****	**.131***	**.472****	**.393****	**.194****	**.312****	--						
	.404**	.418**	.358**	.594**	.434**	.321**	.422**	--						
9.Violence/ Victimization	**.214****	**.274****	**.107**	**.449****	**.410****	**.191****	**-.027**	**.348****	--					
	.370**	.369**	.189*	.524**	.352**	.182*	.208**	.426**	--					
10.Alcohol Use	**.023**	**-.008**	**.016**	**.185****	**.256****	**.098**	**.153***	**.372****	**.089**	--				
	.261**	.282**	.215**	.260**	.286**	.089	.259**	.317**	.022	--				
11.Marijuana Use	**.052**	**.016**	**-.016**	**.143***	**.249****	**.187****	**.154***	**.357****	**.153***	**.576****	--			
	.193*	.179*	.182*	.128	.230**	.149	.139	.367**	.076	.442**	--			
12.Hard Drug Use	**.096**	**.197****	**.031**	**.100**	**.262****	**.129***	**.108**	**.322***	**.120**	**.338****	**.427****	--		
	.204**	.193*	.160*	.207**	.167*	.158*	.155*	.335**	.132	.340**	.470**	--		
13.Drug Use Control Problems	**.029**	**.125***	**-.010**	**.163****	**.267****	**.111**	**.186****	**.449****	.162**	**.626****	**.537****	**.439****	--	
	.307**	.319**	.303**	.303**	.233**	.251**	.384**	.440**	**.040**	.599**	.389**	.520**	--	
14.Adverse Drug Use Consequences	**.127***	**.251****	**.067**	**.229****	**.274****	**.245****	**.184****	**.403****	.210**	**.332****	**.417****	**.646****	**.543****	--
	.326**	.310**	.290**	.320**	.209**	.289**	.287**	.429**	**.105**	.474**	.429**	.599**	.669**	--

* $p < .05$, ** $p < .01$

Appendix C (cont'd)

C.3: Correlations among Protective Factors for Male (n = 260) and Female (n = 169) NSR Youth

[Male correlations are in bold type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Self-esteem	--							
	--							
Personal Control	**.547****	--						
	.617**	--						
Problem Solving Coping	**.266****	**.477****	--					
	.409**	.514**	--					
Ratio of Positive to Total Coping Strategies	**.045**	**.087**	**.250****	--				
	-.010	.089	.083	--				
Amount of Support	**.231****	**.231****	**.329****	**.012**	--			
	.371**	.252**	.286**	.259**	--			
Sense of Support	**.259****	**.417****	**.162****	**.068**	**.217****	--		
	.415**	.520**	.245**	.166*	.298**	--		
Availability of Support	**.203****	**.234****	**.117**	**.095**	**.293****	**.440****	--	
	.142	.332**	.176*	.258**	.344**	.436**	--	
Family Support Satisfaction	**.316****	**.484****	**.424****	**.066**	**.407****	**.250****	**.200****	--
	.436**	.558**	.386**	.003	.429**	.453**	.363**	--

* $p < .05$, ** $p < .01$

Appendix C (cont'd)

C.4: Correlations between Direct Suicide Risk Factors and Related Risk Factors for Male (n = 260) and Female (n = 169) NSR Youth [Male correlations are in bold type]

	Exposure to Suicide	Positive Attitudes & Beliefs	Suicide Ideation	Suicide Threats	Planning/ Preparation	Number of Prior Attempts	Lethality of Prior Attempts	Level of Current Risk
Depression	**.162****	**.248****	**.320****	**.168****	**.157***	**.185****	**.202****	**.115**
	.348**	.192*	.486**	.324**	.348**	.238**	.263**	.235**
Anxiety	**.170****	**.228****	**.290****	**.229****	**.107**	**.086**	**.168****	**.085**
	.318**	.208**	.448**	.309**	.366**	.151	.227**	.181*
Hopelessness	**.031**	**.274****	**.235****	**-.003**	**.146***	**.095**	**.183****	**.107**
	.103	.363**	.496**	.485**	.317**	.236**	.238**	.336**
Anger	**.226****	**.167****	**.244****	**.105**	**.204****	**.150***	**.210****	**.162****
	.333**	.062	.346**	.178*	.309**	.262**	.268**	.218**
Number of Stressors	**.264****	**.131***	**.221****	**.112**	**.036**	**.054**	**.136***	**.042**
	.357**	-.007	.281**	.208**	.277**	.212**	.164*	.165*
Effect of Stressors	**.181****	**.185****	**.246****	**.140***	**.116**	**.175****	**.170****	**.145***
	.307**	.126	.281**	.285**	.199**	.145	.109	.141
Family Distress	**.023**	**.115**	**.052**	**.184****	**.101**	**.099**	**.050**	**.125***
	.185*	.050	.231**	.344**	.103	.075	.078	.133
High-Risk Behaviors	**.171****	**.187****	**.110**	**.273****	**.162****	**.197****	**.184****	**.252****
	.249**	.121	.290**	.300**	.303**	.185*	.283**	.244***
Violence/ Victimization	**.318****	**.165**	**.098**	**-.012**	**-.016**	**.028**	**.127***	**-.042**
	.310**	.166*	.289**	.051	.172*	.227**	.267**	.202**
Alcohol Use	**.117**	**.119**	**.018**	**.052**	**.112**	**-.005**	**.006**	**.043**
	.186*	.133	.310**	.323**	.260**	.090	.138	.125
Marijuana Use	**.079**	**.158***	**-.029**	**.097**	**.088**	**.030**	**-.040**	**.012**
	.108	.054	.160*	.146	.186*	.009	.076	.003
Hard Drug Use	**.166****	**.117**	**.122**	**.467****	**-.008**	**.008**	**.020**	**-.006**
	.144	.108	.250**	.208**	.128	.078	.175*	.056
Drug Use Control Problems	.069	**.095**	**-.043**	**.245****	**.016**	**-.115**	**-.080**	**-.042**
	.194*	.207**	.453**	.610**	.211**	.086	.114	.159*
Adverse Drug Consequences	**.126***	**.304****	**.013**	**.391***	**-.011**	**-.040**	**.051**	**-.037**
	.140	.151	.395**	.401***	.254**	.117	.166*	.244**

* $p < .05$, ** $p < .01$

Appendix C (cont'd)

C.5: Correlations between Direct Suicide Risk Factors and Protective Factors for Male (n = 260) and Female (n = 169) NSR Youth [Male correlations are in bold type]

	Self-esteem	Personal Control	Problem-Solving Coping	Ratio of Positive to Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Exposure to Suicide	**.109** -.080	**.042** -.008	**.032** .119	**-.033** -.055	**.058** -.119	**-.128*** -.076	**.002** -.039	**.057** -.022
Positive Attitudes & Beliefs	**-.183**** -.146	**-.218**** -.427**	**.013** .022	**-.024** -.212**	**-.027** -.141	**-.221**** -.284**	**-.367**** -.313**	**-.022** -.100
Suicide Ideation	**-.174**** -.321**	**-.192**** -.205**	**-.083** -.009	**.029** -.009	**-.091** -.303**	**-.303**** -.325**	**-.247**** -.027	**-.165**** -.104
Suicide Threats	**-.110** -.368**	**-.036** -.224	**-.030** .019	**.032** -.009	**-.023** -.183*	**-.137*** -.241**	**-.072** .062	**-.158*** -.066
Planning/ Preparation	**-.159*** -.160*	**-.107** -.095	**-.128*** -.011	**-.052** .014	**-.006** -.115	**-.110** -.085	**-.114** .065	**-.171**** .068
Number of Prior Attempts	**-.077** -.041	**-.035** -.130	**-.056** -.113	**.017** -.153*	**.012** -.208**	**-.148*** -.221**	**-.108** -.151	**-.184**** -.093
Lethality of Prior Attempts	**-.109** .011	**-.120** -.092	**-.010** -.028	**-.007** -.177*	**.000** -.297**	**-.175**** -.127	**-.183**** -.170*	**-.134*** -.152*
Level of Current Risk	**-.112** -.123	**-.026** -.200**	**-.093** -.138	**-.044** -.199**	**-.006** -.261**	**-.100** -.240**	**-.113** -.186*	**-.147*** -.125

* $p < .05$, ** $p < .01$

Appendix C (cont'd)

C.6: Correlations between Related Risk Factors and Protective Factors for Male (n = 260) and Female (n = 169) NSR Youth [Male correlations are in bold type]

	Self-esteem	Personal Control	Problem Solving Coping	Ratio of Positive:Total Coping Strategies	Amount of Support	Sense of Support	Availability of Support	Family Support Satisfaction
Depression	**-.283****	**-.397****	**-.150***	**-.067**	**-.116**	**-.528****	**-.202****	**-.199****
	-.392**	-.339**	-.167*	-.015	-.209**	-.406**	-.145	-.183*
Anxiety	**-.259****	**-.269****	**-.002**	**-.053**	**-.038**	**-.376****	**-.224****	**-.128***
	-.318**	-.235**	-.074	-.026	-.166*	-.322**	-.144	-.096
Hopelessness	**-.512****	**-.682****	**-.425****	**-.146***	**-.334****	**-.512****	**-.310****	**-.441****
	-.637**	-.712**	-.340**	-.083	-.346**	-.674**	-.340**	-.483**
Anger	**-.231****	**-.323****	**-.127***	**-.147***	**-.136****	**-.277****	**-.159***	**-.214****
	-.338**	-.261**	-.201**	-.061	-.215**	-.364**	-.212**	-.241**
Number of Stressors	**-.080**	**-.073**	**.070**	**-.075**	**-.015**	**-.150***	**-.172****	**.001**
	-.247**	-.152*	-.059	-.099	-.223**	-.242**	-.116	-.133
Effect of Stressors	**-.135***	**-.143***	**.003**	**-.042**	**-.162****	**-.261****	**-.093**	**-.134***
	-.301**	-.202**	-.099	-.128	-.109	-.326**	-.205**	-.192*
Family Distress	**.032**	**-.128**	**-.048**	**-.066**	**-.119**	**-.157***	**-.074**	**.024**
	-.373**	-.242**	-.170*	.009	-.281**	-.254**	-.150	-.570**
High-Risk Behaviors	**-.018**	**-.049**	**.010**	**-.104**	**-.091**	**-.089**	**-.141***	**-.100**
	-.295**	-.165*	-.162*	-.081	-.298**	-.205**	-.197*	-.231**
Violence/ Victimization	**.018**	**-.069**	**.073**	**-.014**	**-.025**	**-.215****	**-.197***	**-.044**
	-.103	-.088	-.060	-.040	-.213**	-.234**	-.283**	-.210**
Alcohol Use	**.049**	**-.055**	**-.114**	**-.052**	**-.026**	**.053**	**.004**	**-.090**
	-.236**	-.167*	-.234**	.000	-.317**	-.002	.028	-.121
Marijuana Use	**.019**	**-.007**	**-.129***	**-.115**	**-.166****	**.044**	**-.053**	**-.151***
	-.154*	-.083	-.104	-.008	-.172*	-.105	-.007	-.106
Hard Drug Use	**-.039**	**-.047**	**-.023**	**-.012**	**-.095**	**-.124***	**-.098**	**-.052**
	-.181*	-.102	-.116	.049	-.226**	-.019	-.015	-.070
Drug Use Control Problems	**-.011**	**-.004**	**-.029**	**-.044**	**-.054**	**.147***	**-.027**	**-.077**
	-.392**	-.175*	-.090	.029	-.199**	-.088	.068	-.100
Adverse Drug Use Consequences	**-.088**	**-.069**	**.030**	**-.089**	**-.085**	**-.072**	**-.113**	**-.009**
	-.345**	-.174*	-.091	.000	-.190*	-.069	.058	-.075

* $p < .05$, ** $p < .01$

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