The use of a prospective longitudinal study to predict adaptive outcome in a middle school population

Jennifer A. Simon-Thomas

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The Use of a Prospective Longitudinal Study to Predict Adaptive Outcome in a Middle School Population

By

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Abstract

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The Use of a Prospective Longitudinal Study to Predict Adaptive Outcome in a Middle School Population

Director: David Schuldberg, Ph.D.

This study explored the relationship between risk and protective factors as they combined and interacted to affect adaptive outcomes. Risk and resiliency research was reviewed, and an attempt was made to clarify the distinction between risk and protection. The data under investigation in this study were obtained as part of the Flagship Project Evaluation that occurred at CS Porter and Polson Middle Schools in Montana from Fall 1997 to Spring 1999. A number of protective factors were examined as potential moderators and mediators of the relationship between risk and adaptive outcome. Within this group of protective factors, self-esteem, internal locus of control, and the ability to cope were hypothesized to be the most important protective factors in their ability to buffer the effects of risk. However, the ability to cope was predicted to stand apart from this group and demonstrate the greatest interaction with risk.

A path model (see Appendix D), tested with multiple regression analyses, was proposed to explain the relationship between risk and protective factors. Overall, the strongest support was found for the protective value of internal locus of control and self-esteem; these two variables were predicted by risk and were in turn predictive of adaptive outcome. In addition, both of these factors demonstrated mediation effects between risk and adaptive outcome. No moderation effects were found for individual protective factors or for the presence of higher levels of protective factors; none of the protective factors provided greater benefit for subjects specifically exposed to greater levels of risk. This is a helpful finding for school-based interventions as these programs have little control over a child's exposure to risk; yet they can directly target mediating variables to interrupt the influence of risk on adaptive outcome. Findings did not support the hypothesis that the ability to cope played a moderating or mediating role in the relationship between risk and adaptive outcome. However, one coping strategy, Expressing Feelings/Avoiding, demonstrated significant relationships with the other protective factors and with adaptive outcome, as well as mediating the relationship between social support and Time 2 level of anxiety. Thus, this study provided some evidence that coping plays a role, not between risk and adaptive outcome, but rather between other protective factors and adaptive outcome. Methodological difficulties with the measurement of protective factors, particularly coping, are addressed and recommendations are made for school-based interventions targeting students with varying degrees of exposure to risk.
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Overview

Over the past two decades considerable growth has occurred in the study of risk and resiliency. Many disciplines within and outside of the field of psychology have joined forces to understand the complex relationship between environmental, biological, and psychological stressors that affect individual development. At the forefront of this effort has been the field of developmental psychopathology, which is defined as, “the study of origins and course of individual patterns of behavioral maladaptation” (Sroufe & Rutter, 1984, p.18). Within this field, risk and resiliency research has lead the investigation to identify factors that inhibit adaptive development and, more recently, factors that foster resiliency.

Initially, risk studies directed their efforts at identifying individual differences that separated people who developed psychological disorders from those who do not. This early research ascertained the scope of the variability in individual development, and concluded that it was not possible to identify single, specific risk factors that caused a disorder, or to identify characteristics that universally led to adaptive outcomes (Masten, 2001). In fact, many people at risk for the development of a disorder actually prospered in the presence of risk factors. These individuals were termed resilient (Benard, 1991) and risk research broadened to incorporate not only those who do succumb to the effects of risk but also those who do not. In particular, risk and resiliency research is interested in differentiating the factors that increase risk (risk factors) as well as the factors that inhibit or counteract risk (protective factors).
A number of fields have attempted to explain how these processes of risk and resiliency might work, including personality theory, psychoanalytic theory, and stress and coping theories (Masten, 1989). These efforts have generated a substantial amount of information regarding risk for positive versus negative adaptations and outcomes (Masten, 1989). A number of risk and protective factors have been identified, and considerable research has been conducted to determine their influence on the development of disorders. However, it is widely accepted that the interaction of multiple risk factors is more important than any one single risk factor (Rutter, 1979b). Rutter (1990) identified that risk and resiliency research needs to move away from studying individual factors to focus on the process or mechanism by which these factors operate to impact an individual's development. Currently, this has caused a paradigm shift from the focus on the effects of single risk factors towards multifactorial theories of the effects of risk on outcomes. In addition, the inter-relatedness of risk and protective factors and intra-individual variability in these factors has been shown to be key components to resiliency research, which again suggests a multifactorial approach to examine the different causal factors.

The study of the effects of risk on mental health is not a new area of research, as there is evidence dating back to the mid 1900's that life stressors influence mental health (Coddington, 1972b; Holmes & Rahe, 1967; Selye, 1956). Stress and coping literature has been influential in providing the basis for understanding the relationship between stress and mental health, and risk and resiliency research has attempted to apply these findings to the study of risk and protective factors.
The stress and coping literature has provided the direction for risk and resiliency research, but it has also passed along certain methodological difficulties. These include the use of retrospective, problem-focused accounts, few longitudinal studies (and if there is a follow up, there is not enough time between assessment points), lack of control groups, inappropriate choice of measures, too few assessment measures with limited breath, reliance on one informant, and no clear definition of what constitutes risk or protective factors (Garmezy, 1996). In addition, it is difficult to generalize from one study to another because of the lack of controls, questionable validity of measures, and self-selecting samples. However, the greatest difficulty in this research has been the lack of consensus on key terms, such as outcome, stress, risk factors, vulnerability, protective factors, resources, etc.

Although efforts have been made to reach agreement (Rutter, 1990), there is still much variability in how these terms are used and what differentiates one term from another. This is particularly striking with risk and protective factors. Rutter (1990) advocates the point of view that risk and protective factors exist on a continuum and should not be viewed as distinct categories. This approach is accepted by many and has recently been advocated by Masten (2001). She claims that “most risk factors actually index continuous bipolar dimensions that have a positive end associated with positive outcomes, as well as a negative end associated with negative outcomes” (p. 228).

However, most researchers (including Masten) do not investigate factors as both risk (negative end) and protective (positive end), therefore making the continuum idea difficult to empirically test. Often it is not possible to investigate every possible role a
variable can play across differing levels of intensity. In order to address this problem, researchers investigate the most common factors that increase or decrease risk, and as a result, a classification of factors (as either risk or protective) has emerged. This does not directly address the problem of whether all potential risk factors are also potential protective factors, but it does allow for investigation into the interplay between factors that tend to increase risk and factors that tend to decrease the effects of risk.

Definition of Key Terms

One goal of this paper was to clarify key terms commonly employed in risk and resiliency research. The meaning of these terms will be reviewed in greater detail later in this paper, but for the purposes of this study the following definitions will be used. The terms adaptive and maladaptive will be used to refer to positive and negative outcomes. Outcome will be considered as “downstream” from and temporally later than risk and protective factors. A stressor is “any action or situation that places special physical or psychological demands upon a person; anything that serves to unbalance an individual’s equilibrium or homeostasis” (Garmezy, 1981, p. 238). Vulnerabilities are personal attributes that foster life challenges, risk factors, or anything that may hinder adaptation (Masten, 1989). Stressors and vulnerabilities together represent risk factors, which are “those characteristics, variables, or hazards that, if present for a given individual, make it more likely that this individual rather than someone selected at random from the general population, will develop the disorder” (Munoz, Mrazek, & Haggerty, 1996, p. 119).

Protective factors are “those factors that modify, ameliorate, or alter a person’s response to some environmental hazard that predisposes to a maladaptive outcome”
Predicting Adaptive Outcome

(Rutter, 1985, p.600). They can be internal (personal) or external. This study explored this distinction and found evidence that the protective factors investigated did fall into two groups, Environmental and Personal protective factors. These findings will be reviewed in the Results section.

Protective factors have been found to have both direct and indirect effects on outcome (see Figures 1 and 2), as well as functioning with both main effects and buffers (interactions). However, some studies have distinguished protective factors from resource factors, where protective factors have an indirect effect and resource factors have a direct effect on outcome (Masten, 1989). In order to avoid confusion in this study, protective factors will be used to refer to variables with either or both direct and indirect effects on outcome (see Figure 3).

As previously mentioned, Rutter (1990) describes vulnerabilities and protective factors as opposite ends of the same construct (viewed as a continuum), where vulnerabilities result in the intensification and protective factors in the amelioration of the effects of stressful life events. Personal protective factors and vulnerabilities can be innate or acquired, internal, external or transactional, specific or general (Masten, 1989). When protective factors exert a stronger influence on outcome than risk factors, the individual is often labeled resilient. Resilient individuals have also been referred to as “invulnerable”, “stress-resistant”, “hardy”, “ego-resilient”, and “invincible” (Benard, 1991), even as “super-kids”. They are defined as individuals who have been exposed to the severe stressors and deprivations typically associated with an increased risk of psychiatric disorder who are expected to have poor outcomes, but who have nevertheless
developed relative health and competence (Garmezy, 1985).

Figure 1. Direct Effect

Figure 2. Indirect Effect

Figure 3. Direct and Indirect Effects

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There are many protective factors that lead to resilience, and these will be explored in more detail later in this paper. However, one personal protective factor, coping, will be the focus of this study. Coping is defined by Lazarus and Folkman (1984) as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Coping, risk factors and other protective factors (other than coping) are all considered to be multifactorial in nature.

**Protective factors as moderators and/or mediators.**

Protective factors have also been called buffering agents, moderators and mediators of the relationship between risk or the independent variable and outcome or the dependent variable. A buffer is a factor or variable that lessens the effects of one thing on another but only in the presence of a second independent variable (in this case risk). A buffer is similar to a moderator, and the terms will be used interchangeably in this paper. A moderator "is a qualitative or quantitative variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (Baron & Kenny, 1986 p. 1174; see Figure 4). Thus, "buffer" and "moderator" refer to statistical interactions.

A mediator explains how some external event can take on internal, psychological characteristics that intervene between the independent and dependent variables. A mediator is caused by the independent variable and causes the dependent variable (Baron & Kenny, 1986; see Figure 5). There are several criteria that must be met before a variable can be considered a mediator (Baron & Kenny, 1986): 1) the independent
Figure 4. Moderation Effect

Figure 5. Mediation Effect
variable accounts for variations in the presumed mediator, 2) the mediator accounts for changes in the dependent variables, and 3) when conditions 1 and 2 are met, the relationship between the independent variable and the dependent variable is not significant. Therefore, in order for a variable to be a mediator, it must significantly reduce the relationship between the independent and dependent variables (Baron & Kenny, 1986). Thus, a "mediator" is involved when a factor has both a direct and an indirect effect on outcome, and where the indirect effect makes a contribution over and above the direct effect.

Moderators and mediators are often confused with one another, and to further confound the differences, some variables can be both moderators and mediators. However, it is important to keep in mind the major difference between a mediator and a moderator. A moderator influences the degree of the effect that the independent variable has on the dependent variable, as the effect varies depending on different levels of the moderator variable (Gogineni, Alsup, & Gillespie, 1995). The moderator interacts with the independent variable, so that varying levels of the moderator interact with varying levels of the independent variable to influence the dependent variable. This is contrasted with a mediator, which is "a third variable that accounts for all or part of the effects of a given independent variable on a dependent variable" (Gogineni, et. al., 1995, p.58). In this case, there is no interaction. The mediator does not affect the dependent variable differently depending on the levels of the mediator, rather the mediator transmits the influence of the independent variable to the dependent variable. With full mediation, the mediator conveys all of the influence of the independent variable to the dependent
variable. Partial mediation allows the independent variable to have a direct effect on the
dependent variable and an indirect effect on the dependent variable through the mediator
(James & Brett, 1984). Protective factors were explored as both moderators and
mediators in this study.

Models and interactions.

In addition to the terms defined above, a number of models have been proposed to explain the relationship between risk and protective factors. The models that will be specifically discussed in this paper will be described briefly. First, three types of causal pathways are referred to in the literature. A Dose-Effect relationship refers to the cumulative (or additive) effects of the independent variable on the dependent variable and accounts for the beneficial effects of multiple factors acting cumulatively. A Main Effect describes a relationship between risk and protective factors, when an individual is high on protective factors, regardless of level of risk, s/he will have better outcome. However, individuals in the low-risk group should also consistently have better outcomes than individuals in the high-risk group. An Interaction refers to a relationship between risk and protective factors where individuals low on protective factors, regardless of risk, have maladaptive outcomes. Yet, when individuals are high on protective factors, the high-risk group should have better outcomes than the low-risk group. This is based on the idea that protective factors should exert more of an influence for high-risk individuals than low-risk individuals (Rutter, 1990). The three relationships described above are equivalent to statistical interactions.

Garmezy (1985) proposed several models to describe the ways in which risk and
predictive factors act, interact and combine to affect competence. His models explain the potential effects of increasing levels of stress exposure on levels of competence, given varying degrees of positive attributes or assets (Masten, 1989). Garmezy uses the terms attributes, assets, and resources to refer to positive factors or variables that increase the likelihood of the individual demonstrating competence. These terms will all be referred to in this paper as protective factors. Competence is the dependent or outcome variable in these models and reflects adaptive outcome. Four of Garmezy’s models will be reviewed.

The first model is the Compensatory model. This model claims that stress and protective factors contribute cumulatively to affect competence. In this model, individuals who are higher on levels of protective factors will have higher levels of competence than individuals with lower levels of protective factors. This should hold true at both high and low stress exposure levels. This represents a main effect for protective factors and also for stress exposure.

The second model is the Cumulative model. This model explains that some stress is tolerated with little effect on competence, but accumulated stressors result in decline of competence. This is based on the idea that the more exposure to risk results in higher levels of maladjustment. This is a dose-effect relationship.

The third model is the Challenge model. According to this model, moderate levels of protective factors, more than either low or high levels of protective factors, are associated with higher levels of competence. This is a dose-effect relationship, but one with a nonlinear (curvilinear or inverted U shape) relationship between protective factors
Garmezy's fourth model is the Protective versus Vulnerability model. This model is an interaction, moderator or buffer model (see Figure 6). Individuals high on protective factors will supposedly demonstrate competence despite exposure to risk. Higher levels of protective factors serve a protective function and lower levels of protective factors create vulnerability when stress is high. According to this model there should be no significant difference between individuals possessing protective factors or not possessing protective factors when risk factors are not present.

Another model that is central to this study is the Diathesis-Stress model. It is based on the idea that “stress activates a diathesis, transforming the potential or predisposition into the presence of psychopathology” (Monroe & Simons, 1991, p. 406). Stress has typically been viewed as continuous and nonspecific, and the diathesis as discontinuous and implying a threshold that must be exceeded to be activated (Monroe & Simons, 1991). The amount of this continuity and discontinuity has been the subject of debate (see diathesis-stress section of this paper). The interactive model of diathesis-stress interactions with a quasi-continuous diathesis will represent the diathesis-stress model applied to this study (see Figure 7). The diathesis-stress model is very similar to buffering models, in that the diathesis or the buffer, alters the effects of one independent variable on the dependent variable. However, there is a distinction between these two models. A diathesis typically is seen as an internal risk factor (i.e., genetic vulnerability), and a buffer is viewed as an external protective factor (i.e., social support). In addition, in the diathesis-stress model there are two independent variables and one dependent
variable. Stress is often one of the independent variables.

Although there are differences between the two models, it was hypothesized that the protective versus vulnerability and the diathesis-stress models tested the same moderating relationships; one looking at the effects of many protective factors and the other focusing on the absence of protective factors. This study sought to investigate this hypothesis using multiple regression analyses.

Figure 6. Protective versus Vulnerability Model
The current study was designed to investigate the factors that serve to moderator or mediate the effects of risk and the factors that increase vulnerability to risk during transition through middle school, while also addressing the methodological problems in previous research mentioned by Garmezy (1996). This study attempted to identify where interventions should focus their efforts by exploring the role of different protective factors, singly and in combination. It was hypothesized that the ability to cope with stressors would be the most important, all-encompassing, protective factor that should be the target of intervention efforts. In particular the goals of this study were to:

1) Clarify definitions of key terms used in stress and coping, and risk and resiliency
2) Analyze data from a prospective longitudinal study to examine the process and mechanism by which risk and protective factors exert their influence on adaptive outcome.

3) Explore the contextual meaning of risk and protective factors, and attempt to differentiate risk from protective factors.

4) Attempt to predict adaptive outcomes by identifying protective factors that occur in the presence of risk factors.

5) Explore the similarities between the diathesis-stress and the protective versus vulnerability models, and examine their ability to explain the relationship between risk, protection, and adaptive outcomes.

6) Finally, investigate the role of coping, and its effects on risk level. How does increased risk affect coping? What role does coping play in resiliency?

**History of Risk and Resilience Research**

**Measurement of stress and stressors.**

Risk and resiliency research is an outgrowth of investigations into the effects of stress on mental health and coping (Gore & Eckenrode, 1996). It is important to base the origin of risk and resiliency research within stress and coping research, because they both are concerned with identifying the underlying effect of stressors (all kinds) on the development of disorder or health. Both physical and mental health have been investigated in stress and coping literature. Mental health will be the focus of this paper. The main population under study in stress and coping research has been adults, yet
findings from this work are essential to providing clues about the way in which stress affects children and adolescents.

The relationship between stress, mental health and coping has been studied extensively since the early 1900's (Masten, 1989). However, investigations into the relationship between stress, mental health and coping have been difficult due to the variable, complex, and contextual nature of stress. Perhaps the greatest difficulty is the ability to measure stress due to the lack of agreement on one universal definition of stress, and the fact that stressors are rarely single events but rather the effects of environmental and biological influences (Garmezy and Masten, 1994). Stress has been differentiated by the following: intensity, duration, how normal or abnormal it is to an individual (Compas, Orosan & Grant, 1993), the magnitude and qualities of critical events (Monroe & Simons, 1991), and context (Lazarus & Folkman, 1984).

Stress and stressors have been studied in a number of ways including a count of positive and negative life events, every day hassles, specific life events, socioeconomic status (SES) or through multiple indices of risk (see Luthar & Zigler, 1991). This paper will not go into detail about these specific methods but will note trends, problems with measurement methods, and identify how the present study measured stressors.

Stress as a measure of global life events.

Initially, stress research involved clinical case studies and investigations into the effects of large-scale disaster. Stress was undifferentiated and viewed as a general construct. (Monroe & Peterman, 1988). The first assessment to measure stress was designed by Holmes and Rahe (1967) for adults, and later applied to children by
Coddington (1972). Holmes and Rahe developed the Social Readjustment Rating Scale to assess stressful life events. They designed this instrument to measure the number, the type, and the magnitude of life events. They used a weighting system to identify the magnitude of the life event [most stressful (100)= death of a spouse, through least stressful (11)= minor violations of the law]. Both Holmes and Rahe, and Coddington viewed stress as nonspecific and common in everyday life (Monroe & Simons, 1991).

Adult and child life events measures provided a heterogeneous list of stressful life events with little attention to how the individual perceived the event or to how much it affected them (Luthar & Zigler, 1991; Monroe & Peterman, 1988).

**Stress as a measure of everyday hassles.**

In response to this first wave of stress measurement, there was a shift from measuring global life stressors that were undifferentiated to measuring more minor stressors that characterized everyday life. Lazarus and Folkman (1984) proposed a transactional model to describe a process where a stimulus and a response are incorporated into a sequence of stimulus and response alterations that are continuously being affected by experience and consequences. In this model, stress is viewed as the result of cognitive appraisal of environmental events. If the demand (due to stress) exceeds available resources (resource refers to the skills to handle stress), then the demand is seen as a threat. However, if an individual has resources that match the demand, then it is viewed as a challenge. Stress is specific to the individual, so different stressors have different meanings and importance to the individual. Lazarus and his colleagues found that hassles demonstrated a stronger relationship to outcome than life
events, even when life events were controlled for (Lazarus, DeLongis, Folkman, & Gruen, 1985). This introduced the idea that the context in which stressful life events or transitions occur, plays a role in determining the impact a stressful event will have on an individual's functioning.

**Stress as a measure of specific life events.**

In addition to measuring stress as global life events and everyday hassles, stressors have also been assessed by identifying specific life circumstances that are stressful, such as socioeconomic status (SES). This was an easy way to measure stressors because this information could be quickly obtained, and often without soliciting information directly from each individual (i.e., school records). However, it became clear that there was no way to identify a single stressor that was not impacted by other stressors, as it was not possible to separate out the agent of change from the interconnection of stressors (i.e., maternal mental health from poor parenting, from marital discord, etc.; Luthar & Zigler, 1991).

Research on single stressors indicated that it was important to assess stressors in multiple areas of an individual’s life and to have multiple measures of different stressors. This finding has been supported by evidence that it is not one specific stressor that leads to maladaptive outcome but rather the culmination of stressors (Rutter, 1979b). In an effort to address the complexities of the relationship between stress and coping, there was a call to move away from measuring specific stressors, to the examination of individual processes and resources used to buffer the effects of adverse life experiences (Garmezy, 1988). In order to understand the impact stressors have on a developing person it is
necessary to identify the stressor as well as the resources to which an individual has
access. Stress research has explored this relationship for the past decade. In the next
section, the history of stress research, specifically stress and schizophrenia research, will
be reviewed.

**Early Stress Research**

Early stress and schizophrenia research attempted to understand the nature and
cause of schizophrenia (Masten, 1989). These were referred to as high-risk studies
because of the emphasis on identifying a group of individuals at risk for the development
of a disorder due to a genetic predisposition. The majority of these early studies
followed offsprings of people diagnosed with schizophrenia, yet high-risk studies have
also investigated the effects of family SES and mental health disadvantages in general.

High-risk studies with psychosis prone populations have demonstrated that there
is a range of possible outcomes from presence of clinical symptoms to complete absence
of clinical symptoms, including some who “flourish” (Schuldberg, 1993). The outcomes
that are of interest to this paper are the “true positives” and “true false positives.” True
positives refer to outcomes in which an individual who is at risk for the development of a
disorder actually develops the disorder. True false positives refer to those individuals
who are at risk for a disorder but do not develop the disorder (Schuldberg, 1993). The
positive characteristics that intervene between risk and maladaptive outcomes are the
same as protective factors referred to in this paper.

Although the cause of schizophrenia is still unknown, a number of variables have
been identified that increase an individual’s vulnerability for adapting favorably or
unfavorably to his/her environment, including developing schizophrenia. Factors that increase an individual’s risk for psychological disturbance (will be referred to here as risk factors) include severity of parents’ mental health, chronic stress, low socioeconomic status, the quality of the caregiving environment, the level of family discord (Masten, 1989), and being male (Rutter & Garmezy, 1983). Although each of these factors alone is an important indicator of vulnerability, overwhelming evidence suggests that as the number of risk factors increases, individuals are more likely to have negative outcomes. This has been referred to as a dose response relationship. In addition, there is support that genetic vulnerabilities often need an environmental trigger (referred to here as a stressor) to activate the vulnerability and ultimately lead to the development of disorder. This ability of vulnerabilities and stressors, individually and in combination, to impact mental health will be explored in the next section.

**Interaction of vulnerabilities and stressors.**

There is convincing research that both vulnerabilities and stressors affect the development of schizophrenia (Nuechterlein, 1987). A vulnerability model to explain the etiology of disorders like schizophrenia has been proposed. This model is based on findings that concordance rates for the development of schizophrenia in identical twins are equal to 40% or 50%, not the expected 100%. In addition, there is evidence that during the course of schizophrenia there are periods of psychosis and remission. Thus, genetics play a role in the development of schizophrenia, but they are not the sole determinant of the disorder.

The diathesis-stress model was originally proposed to explain the ways in which
vulnerabilities interact with the environment to lead to the development of schizophrenia (Monroe & Simons. 1991). This model proposed a social etiology of stress that links stressful life events to the onset of distress and disorder. The more stressful the life events, the greater the vulnerability to disorder. The diathesis-stress model has been used to explain the development of schizophrenia given that an individual had a genetic vulnerability (i.e., offspring of a schizophrenia parent: Meehl, 1962), which is activated by an environmental stressor. In this model, stress interacts with a diathesis, which then brings about the onset of the disorder.

Recently, there has been increased support for this theory as more current studies have demonstrated the need to take into account environmental factors that may hinder or aid the manifestation of problem behaviors. Evidence has been found that both psychiatric disorders (Tienari, Wynne, Moring, Lahti, Naarala, Wahlberg, Saarento, Seitma, Kaleva & Lasky, 1994) and criminal behavior (Bohman, 1996) are more likely to be displayed in dysfunctional families, regardless of genetic risk. Children of schizophrenia parents and children of criminal parents are both more likely to develop problems when adopted into a dysfunctional family than when adopted into a healthy, functional family. These studies provide support that genetic vulnerabilities may need an environmental trigger (or stressor) to manifest themselves. Thus, vulnerabilities (genetic) and stressors (environmental) can combine or interact to trigger the development of psychopathology (Nuechterlein, 1987).

A great deal has been learned from high-risk studies, yet there are two limitations. The three most common variables under investigation in these studies are family history
of schizophrenia. SES and mental health disadvantages. These categories are broad, and it is almost impossible to identify the one or two most important stressors from the multitude of possible stressors. While it is helpful to know that family history of schizophrenia, SES and mental health disadvantages are important to the development of risk, it is equally as important to identify the extent and nature of the individual stressors. This is essential to the study of risk, because what might be a stressor for one person may actually buffer the effects of risk for another (Rutter, 1990). As highlighted by Folkman and Lazarus' (1980) transactional model, it is essential to take the individual into account.

In addition, when investigating the effects of a broad category such as SES, there is a tendency to blame the family structure for increase in risk. For example, when studying poverty, it is difficult to separate low income from the factors associated with it (i.e., poor housing conditions, poor nutrition, etc.). It may be the variables associated with SES that are the cause of increased risk, not SES itself (Gore & Eckenrode, 1996).

Although there are problems with high-risk research, findings from this work have significantly contributed to our understanding of the effects of the accumulation of risk. Overwhelming evidence suggests that the combination of risk factors is more detrimental than any one specific risk factor. In addition, during the course of these early studies it became apparent that the majority of children, whether raised in high stress or low-stress environments, or who have a genetic vulnerability for psychological disorders, do not display problematic outcomes (Garmezy & Masten, 1994; Werner, 1992). The idea that some individuals are vulnerable to the development of disorders but do not
develop the disorder caused a shift in risk research from a focus on risk factors to an emphasis on the process by which individuals successfully negotiate risk situations (Rutter, 1990). This was the beginning of risk and resiliency research. The next section will examine the influence of stress research on early risk and resiliency research.

Risk and Resiliency Research

Risk and resiliency research with schizophrenic subjects.

Risk and resilience research has focused on identifying the factors that enable an individual to overcome risk and factors that protect an individual from the effects of risk (Luthar & Zigler, 1991; Masten, 1989). Again, originally the population under study was people diagnosed with schizophrenia and their offspring. A number of variables were investigated to determine their role in the development of schizophrenia. Although characteristics that separated families with a schizophrenic member from families with a non-schizophrenic were identified, such as Expressed Emotion, Affective Style, and Communication Deviance (Brown, Birley, & Wing, 1972; Goldstein, 1984; Goldstein & Miklowitz, 1995; Haley, 1959; Miklowitz, 1994; Vaughen & Leff, 1976), little information was found regarding risk factors that cause schizophrenia.

Manfred Bleuler (1974) conducted one of the largest studies of this nature. He studied 184 offsprings of 104 schizophrenic patients through early adulthood. Only 10 of these 184 children were diagnosed as definitely suffering from schizophrenia, and 5 of these 10 recovered during the course of the study. Thus, the large majority of these children did not succumb to genetic vulnerability. This finding and others like it caused a change in the way researchers conceptualized the relationship between risk and disorder.
Over the past two decades, research has shifted from a focus on maladaptive outcomes to an emphasis on adaptive ones (Luthar & Zigler, 1991). It is posited that an incomplete picture is obtained if one studies only negative outcomes. In fact, with psychologists' acceptance of the medical field's disease model, the field of psychology has shown a bias towards seeing and studying maladaptation over adaptation. The need to also study positive outcomes has gained strength over the years, and today an entire field of psychology has come forth to focus on positive psychology (Seligman & Csikszentmihalyi, 2000). Although risk and resiliency research does not focus solely on positive outcomes, the shift from a disease model to a health model substantially changed the field of developmental psychopathology. Therefore, this study will primarily focus on identifying factors that lead to adaptive outcomes.

Risk and resiliency research with non-schizophrenic subjects.

Risk and resiliency research with non-schizophrenic subjects has typically been studied in two ways. The first is by conducting epidemiologic studies of acute life stress and mental health in adult population, and the second involves identifying single stressors and following the effects of these stressors over time (Gore & Eckenrode, 1996). Evidence from epidemiological studies supports early high-risk research findings (previously noted) that the more exposure to risk (of all kinds) results in higher levels of maladjustment, including the development of psychopathology in children (Gore & Eckenrode, 1996). The epidemiologic approach specifically focuses on the cumulative (additive) effects of stressors over an individual's lifetime. An important component of this approach is that disadvantaged people may be more vulnerable to undesirable life
events (Gore & Eckenrode, 1996). People exposed to disadvantaged conditions early in life may develop maladaptive coping styles that further increase their level of risk.

Emmy Werner’s classic study into the lifetime effects of biological and psychological risks among Hawaiian youth is a tribute to this line of research (Werner, 1992). The epidemiological approach takes into account multiple stressors and is a cumulative approach. It is important to note that the cumulative and longitudinal approach used in Werner’s study is far advanced in relation to the cross-sectional approaches used in previous studies; it involves both longitudinal and dose-response concepts. This type of cumulative approach will be a focus of the current study.

Although the cumulative approach offers many benefits, one limitation to these studies is the lack of attention to the role and impact of individual stressors. In response to this approach, the second type of risk and resiliency research involves identifying single stressors and then assessing their role in the development of child and adolescent mental health (Gore & Eckenrode, 1996). A number of studies have investigated the role of stressors (such as divorce, death of family member, imprisonment of family member, etc.), and found that by using this technique one is able to compensate for problems with the cumulative approach. Although this strategy is able to identify the role and nature of particular stressors, there is controversy regarding the categorization of stressors as single versus multiple. It is difficult to determine whether a stressor, like divorce, is singular or multidimensional as it affects multiple areas of a person’s functioning and may combine with other stressors to cause an effect on an individual’s behavior.
Clearly there is no simple way to study risk and resiliency. Much has been learned from the above-mentioned approaches, but each is also plagued by validity problems. The present study will attempt to combine the cumulative and single stressor approaches by tracking a number of risk factors with an emphasis on the interactions between risk and protective factors and their influence on outcome.

The greatest area of interest in risk and resiliency research has focused on identifying factors that increase risk (i.e., risk factors) and factors that inhibit (also referred to as buffer or moderate) the effects of risk (i.e., protective factors). Also there is interest in variables that have a simple main-effect on positive outcomes. Efforts have been directed at identifying the types of life stressors that are more likely to exacerbate an existing vulnerability, and why some individuals are not as greatly affected by the same life stressors. In particular, the following questions have been targeted: Why do some people succumb to the effects of stress and others do not? What factors prevent the development of psychopathology? In other words, what serve as protective factors. A great deal of information has been generated, but there is still confusion regarding what differentiates risk factors from protective factors and how these interact to effect outcome. First, risk and protective factors will be examined as they interact or combine with one another. Then, effort will be made to differentiate and provide examples of each, with a particular emphasis on how these terms will be used in this paper.

Interaction and Contrast between Risk and Protective Factors

A great deal of effort has been invested to determine the most common and influential risk and protective factors. However, as findings accumulate, there seems to
be less certainty about what differentiates risk from protection and more support for a continuous relationship between these factors (Masten, 2001). Masten (2001) recently referred to risk and protective factors as bipolar dimensions of the same variable. This refers to a linear relationship where risk is lack of a characteristic and protection is presence of a characteristic (i.e., risk is low self-esteem and protection is high self-esteem). Risk and protective factors have also been viewed as having a curvilinear relationship; lack of a characteristic is a risk factor, moderate levels are a protective factor and excessive levels are again a risk factor. Schema research describes a similar curvilinear relationship; negative and positive inflexible schemas are more alike than integrated flexible schemas (see Elliott & Lassen, 1997 for a review of this work).

Seifer and Sameroff (1987) stress that there is no definite criterion which differentiates risk from protection. Others have joined in the debate regarding the lack of clarity in distinguishing what role a factor plays in an individual's life (Catterall, 1998; Garmezy & Masten, 1994; Masten, Garmezy, Tellegren, Pellegrini, Larkin, and Larsen, 1988; Rutter, 1990). More and more studies are finding that the context in which risk and protective factors exert their influence is the key to whether or not the factors are protective or increase risk. This indicates that there is an interaction between risk and protective factors where the presence of one affects the presence of the other. For example, at one time high IQ was suggested to be a protective factor and low IQ a risk factor. However, evidence is controversial regarding the consistent protective value of IQ (Losel & Bliesener, 1990). Masten et. al. (1988) found that IQ and parenting quality could be either risk or protective factors depending on a number of variables, including
gender, perceived level of competence, family socio-economic status, and level of family discord. Thus, IQ and parenting quality interaction with a number of other variables, and this interact determines whether they are a risk or a protective factor.

Socioeconomic status (SES) has also been viewed as both a risk and a protective factor. In general, SES has been heralded as the most revealing factor in terms of identifying how children spend their lives. It allows a glimpse at environmental factors that are affecting an individual. However, SES has been found to be less important than what a parent does with a child (SES interacts with parenting quality). Income level does not necessitate poor parenting, although there are a number of risk factors that are associated with low SES. It seems that SES is a good indicator of stress when families are either very affluent or very underprivileged, but should not be used as the sole indicator of risk (Luthar & Zigler, 1991).

In addition to IQ and SES, evidence has been found for interaction effects of peer relations and social support depending on the gender and level of antisocial behavior of the individual. Bender and Losel (1997) found that peer relations and social support can have very different effects on the development of antisocial behavior. In the antisocial group, individual’s who reported that they were not involved in a clique and had less of a social network, had less problem behaviors. For the less antisocial group, findings were the opposite; not being involved in a clique and having few social supports were associated with increased problems. In addition, protective factors for girls, but not boys, included having a heterosexual relationship. Therefore, there is evidence for both positive and negative types of social support and peer relations (Bender & Losel, 1997;
Although there is evidence that some variables can play both a protective and risk-enhancing role depending on contextual factors (i.e., interaction effects), there is support that many variables are best conceptualized as either a risk factor or a protective factor. The ability to observe the inter-relatedness of risk and protective factors was highlighted by a study conducted by Seifer, Sameroff, Baldwin, & Baldwin (1992). These authors investigated child and family factors that created a positive change in cognitive and socio-emotional functioning from 4 to 13 years of age. There was evidence that both child factors and family factors mediate the impact of risk on outcome (i.e., carry the influence of risk to outcome). However, they found that risk factors did not occur in isolation, and the presence of more risk factors was associated with a more negative outcome.

This study also found that a number of protective factors served to buffer (again, buffer is synonymous with interact with, moderate, etc.) the effects of exposure to risk: self-esteem, social support, low external and unknown locus of control, self-directing parenting values, low rates of parental criticism, and lack of maternal depressed mood. Perhaps the greatest contribution of this study was the demonstrated interaction effects between risk and protective factors. For example, children in the high-risk group (as determined by the number of 10 possible individual risk factors) who showed more perceived competence (school, social, and total) at age four were less at risk at age 13 years. This is a substantial finding, as it demonstrates that one can measure the relationship between risk and protective factors. Perhaps more importantly, it highlights
the need to investigate the context within which risk and protective factors exert their influence on an individual. It appears that it is this context that is key to deciphering whether or not a variable is a risk or a protective factor.

Currently, it is not possible to definitively end the debate on what differentiates risk from protection. This is similar to the larger issue in health psychology surrounding health as the absence of illness, but this topic is beyond the scope of this paper. In the next section, research regarding risk and protective factors will be explored and the most common risk and protective factors will be highlighted for use in this study.

Risk Factors

A number of studies have attempted to address the characteristics that place children at risk for the development of problems. Risk factors typically include indicators of environmental context (i.e., SES, crime, etc.), parental background, family structure, and parent-child interactions (Rutter & Garmezy, 1983). Rutter (1979b) identified six risk factors that are highly associated with the development of disorder. These include low socioeconomic status, maternal psychiatric disorder, overcrowding or large families, martial distress, paternal criminality and admission to care of local authority. Other risk factors that appear to be important are gender (being male is a risk factor) and reading difficulties (Rutter & Garmezy, 1983; Williams, Anderson, McGee, & Silva, 1990).

The majority of the above mentioned risk factors are external or environmental, and it is generally thought that environmental risk factors are more influential than internal or personal risk factors in determining maladaptive outcomes (Sameroff &
Chandler, 1975). However, there are internal or personal risk factors that are equally as important as external risk factors, such as genetics, physical impairment, gender (being male), temperament, and attachment style (Blum, 1998; Rutter, 1990). In general, little attention has been paid to the internal versus external distinction as the overwhelming evidence is that one risk factor does not appear to be more detrimental than another, but rather the accumulation of risk is the most important variable (Rutter, 1979b). It is important to identify all potential risk factors and investigate interactions among them and the resulting effects on outcomes. This idea was also supported by Werner's (1992) studies. She found that lower socioeconomic status, difficult temperament, poor health, more children in the family, less spacing between children, and less social support in combination were associated with poorer outcome.

Researchers have attempted to differentiate risk factors for behavioral versus emotional problems (Williams et. al., 1990) and for different ethnic groups (Patterson, Kupersmidt, & Vaden, 1990). These studies have had little success at the individual risk factor level, but they have shed light on how risk factors combine to exert their influence on outcome. As previously mentioned, it is difficult to single out the one or two risk factors that cause the development of one disorder over another. Williams et. al. (1990) were not able to differentiate risk factors for emotional versus behavioral disorders. However, they were able to identify factors that distinguished children who developed disorders from children who did not develop disorders. These included being male, history of maternal depression, marital status (single parent homes), and reading problems.
Patterson et. al. (1990) conducted a study to investigate the predictive value of four risk factors on three aspects of school-based competence (academic achievement, conduct, and peer relations) in samples of black and white elementary school children. The four risk factors were single parent families, male gender, socioeconomic status (measured by income level) and ethnicity. They found that all risk factors, except gender, were highly correlated with one another. Income and gender were better predictors than ethnicity and household composition of children’s conduct and peer relations. Income level and ethnicity were the best predictors of academic achievement. Overall, income level and gender were the strongest predictor of children’s competencies. These results are correlational, thus making no claim about the causal nature of risk factors.

Rutter (1990) has emphasized that risk factors do not exert their influence in a straightforward, direct manner, but rather through the interaction of risk factors with one another and with other characteristics of an individual’s life. Thus, at this point, it seems futile to focus research efforts on identifying the risk factor(s) that causes a disorder. Rather, efforts should be directed at understanding the effects of multiple risk factors and the interaction between risk and protective factors. Research on protective factors will be reviewed next.

Protective Factors

At a basic level protective factors appear to be the opposite of risk factors, although as previously reviewed this distinction remains unclear. However, research has revealed that protective factors involve the interaction of biological, environmental and
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psychosocial spheres. Masten (1989) claims that protective factors affect outcome in three ways: 1) by reducing the likelihood of risk factors occurring at all (indirect effect), 2) by increasing the availability of protective factors (indirect effect), and 3) by reducing the impact of the challenge (direct effect). Protective factors have also been viewed as the ability to successfully engage risk rather than the elimination of risk (Rutter, 1990; a type of #3 above). In addition, Gore & Eckenrode (1996) highlighted the fact that an individual's attempt to cope at any level with life stressors is more important than any other characteristic of protective factors. Thus, protective factors are not unidimensional, but rather multifactorial and can change over time depending on context and presence or absence of other protective and/or risk factors.

Examples of protective factors and resiliency.

A number of protective factors have been identified, including: 1) stable care (emotional and physical), 2) problem-solving abilities, 3) attractiveness to peers and adults, 4) manifest competence and perceived efficacy, 5) identification with competent role models, 6) temperament, 7) social support and 8) playfulness and aspiration (Garmezy, 1985; Rutter, 1985). These protective factors involve personal disposition, personal attributes, available social support, genetics, as well as the role of experience. Protective factors can also be divided into those that involve internal or personal factors and those that involve external factors (Brooks, 1994; Gore & Eckenrode, 1996). Internal protective factors include: easy temperament, intelligence, increased problem solving skills, increased social skills, increased coping skills, greater cognitive abilities, increased self-esteem, increased sense of control and increased sense of hopefulness. External
protective factors consist of the following: greater family warmth, greater affection, greater emotional support, increased structure and limits within the family, and presence of one person who cares about the child.

Research regarding protective factors has lead to a great deal of knowledge on what fosters resiliency, and there seems to be some consensus on this topic. Factors that enhance an individual’s ability to overcome adversity are: presence of one adult who cares, sense of ownership and control over one’s life, self-discipline, receives encouragement and positive feedback from adults, mistakes are encouraged and learned from, and good problem solving skills (Brooks, 1994). Garmezy (1981) adds that social skills, coping skills, parental involvement, having clearly defined roles, and encouragement of self-direction are also characteristics of resiliency.

**Interactions between protective factors.**

Thomas and Chess (1977) stressed the importance of the interactional nature of protective mechanisms as an interplay between environmental demands and the resources available to an individual. Gore & Eckenrode (1996) specify that this interactional nature of protective factors needs to be examined in the following ways: 1) the degree of overlap between protective factors, 2) the ability of protective factors to combine in a nonadditive fashion, and 3) the temporal occurrence of protective factors. There is considerable evidence that protective factors are highly correlated (Gore & Eckenrode, 1996). This has caused much confusion as there have been claims that one protective factor, examined in isolation, is more influential than another protective factor also examined in isolation. In many cases, it is the combination of the two (or more) factors that exerts the
An example often cited in the literature is the association between self-esteem and social support (Gore & Eckenrode, 1996). The reciprocal nature of these two factors is well established: as a child develops, his/her relationships with others directly influenced his/her view of him/herself (e.g., Cassidy, 1988). Thus, the interaction of these factors is more significant than either alone. Along the same lines, there is evidence that certain protective factors are more likely to occur together. For example, if a person has multiple resources available s/he also has the opportunity for social support and increased self-esteem. Of course there are exceptions to these findings, but it appears that protective factors typically occur or do not occur with one another (i.e., self-esteem with social support or lack of self-esteem with lack of social support).

Jenkins and Smith (1990) found that protective factors can act together additively (each has an independent effect on outcome) or can combine together interactively (one factor can multiple or divide the impact of the other factors to which it comes in contact). They studied the benefits of protective factors that combine additively versus ones that combine interactively within the context of harmonious and disharmonious marriages. Protective factors that act together in an additive fashion tend to effect both kinds of children regardless of their living situation. These included: mother-child relationship, father-child relationship, having a best friend, and the quality of that friendship. On the other hand, protective factors that were more interactive in nature were associated with lower levels of disturbance but only when under stress. They referred to these types of factors as “true” protective factors because they differentiated children, who despite
stress, were able to adapt favorably. These included: having a relationship with an adult outside of the family, receiving positive recognition, and having a close sibling relationship.

**Protective factors as moderators and/or mediators.**

Protective factors that interact with stress are the same as moderators. In fact, protective factors are often investigated as either moderators or mediators of a relationship between two variables. As previously reviewed, a moderator is equivalent to a buffer or interaction effect (see Figure 4), in that it changes the influence of one variable on another. Investigations into whether or not a relationship between two variables is moderated by a third variable are typically conducted if the relationship between the independent and dependent variables is weak, inconsistent, and the focus is on the predictor variable itself (Baron & Kenny, 1986).

A mediator explains how some external event can take on internal, psychological characteristics that come between two variables (see Figure 5). Mediating variables are typically explored when the relationship between the independent and dependent variables is strong and the focus is on the relationship between the predictor and criterion variables (Baron & Kenny, 1986). The moderating and mediating effects of protective factors on adaptive outcome, particularly the outcome of “competence”, have been studied extensively.

As risk and resiliency research moved from the focus on maladaptive outcomes to adaptive outcomes, competence was often used as a manifest variable measuring the latent variable of adaptive outcome (Luthar & Zigler, 1991). Social and academic
competence are the most common types explored. Masten et. al. (1988) studied moderating effects of individual and family variables on children's stress and competence levels. Competence was the outcome measure in their study. They found that there was individual variability, but in general, children with lower intellectual abilities, lower socioeconomic status and fewer positive family qualities were at risk for lower competence as rated by teachers, by peers, and by academic performance. In addition, children with a larger network of assets (high quality parenting, high IQ, high SES, etc.) showed greater competence in school, were more achievement focused, and were less disruptive. Girls were more socially competent than boys, but gender did not have an affect on academic competence.

Given the evidence that protective factors are highly correlated, some researchers claim that competence in one area is equal to competence in all areas, and that if a child demonstrates competence in one area, s/he is resilient. To test this idea, Luthar, Dorenberger & Zigler (1993) investigated “whether or not children who maintain high overt competence despite high stress at one point in time are vulnerable to high emotional distress later in the academic year” (p. 704). Luthar et. al. questioned whether competence in one area warrants a label of resilience, and sought to differentiate the type of competence, particularly social from emotional. It is important to note that, in general, outcome areas may be relatively independent and uncorrelated (Strauss & Carpenter, 1972), so different types of outcomes should not be expected to be strongly correlated in every situation.
Luthar et. al. (1993) categorized children as either high or low-risk and either resilient or not resilient at Time 1. Six months later they re-evaluated these children to determine if the resilient children still demonstrated resilient qualities. This study found that only 15% of the 25 children identified at Time 1 as high-risk and resilience were still classified as resilient as Time 2. They concluded that resilience is not an all or none phenomena and is not unidimensional. Children who are identified as high-risk may appear competent in one area (such as social competence) but this does not generalize to all areas that make up how a child feels about him/herself. There is also evidence that resilient children may be externally resilient but may suffer from internalizing symptoms, such as depression and anxiety (Luthar & Zigler, 1991). This highlights the need for risk and resiliency studies to address both internalizing and externalizing symptoms and to have internalizing and externalizing outcome measures.

As previously mentioned, competence is frequently targeted as an important protective factor. However, manifest competence is often viewed in terms of having the coping skills necessary to meet the demands of life stressors (Garmezy & Masten, 1994). Thus, competence includes both outcome and protective factor components. The role of coping as buffering agent against risk will play a central role in this study. Coping will be explored in the next section.

Coping

Coping has been referred to as the process that occurs after a stressor has been introduced. A number of researchers have identified coping as a protective factor, usually described in terms of an individual’s ability to successfully handle stressors (see
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Losel & Bliesener. 1994). Coping is proposed to serve two functions, to alter the environment and to regulate emotions. These two purposes of coping have been referred to as Problem-focused coping and Emotion-focused coping, respectively (Folkman & Lazarus, 1980). Problem focused coping attempts to address the event that caused the emotional reaction, while emotion focused coping is directed at the emotional reaction rather than the actual event. Compas et. al. (1993) reviewed findings regarding the development of Problem and Emotion-focused coping in childhood and adolescence. There is substantial evidence that as age increases individuals use more Emotion or Dual-focused coping (both Emotion and Problem-focused coping) than Problem-focused coping. This increase is particularly great during late childhood and early adolescence with less of a shift into adulthood (Compas et. al., 1993).

Although the categorization of coping strategies into Problem and Emotion-focused coping has been widely used, there is increasing evidence of the problems associated with combining a number of coping strategies into overarching categories (Carver, Scheier, & Weintraub, 1989). In addition, Folkman and Lazarus (1988) acknowledge that coping may be better understood when specific strategies are investigated rather than conducting analyses with two overarching categories. There have also been inconsistent findings regarding the adaptive value of Problem and Emotion-focused coping, as the context of the situation seems to determine whether or not a coping strategy is adaptive or maladaptive. There is even less consistency in the emergence of Problem and Emotion-focused coping in child and adolescent research. In fact, few studies replicate these two categories.
Child and adolescent coping research.

Adolescence is viewed as an important time in the development of coping styles. Stressors are increasing and the individual is forced to use internal and external resources to manage increasing stressors (Peterson, Kennedy, & Sullivan, 1991). There is evidence that there are significant gender differences emerging in the use of strategies to cope with life events during this period (Bush & Simmons, 1987; Dise-Lewis, 1988; Patterson & McCubbin, 1987; Rossman, 1992). Bush and Simmons (1987) found that there were gender variations in the extent to which stress was encountered and availability of coping resources. They reported that girls had more difficulty coping earlier in adolescence while boys struggled later. For both boys and girls, having positive self-esteem was associated with effective coping during adolescence.

Research indicates that there is a delicate balance between healthy and unhealthy reactions to external and internal events (i.e., healthy versus unhealthy coping; Cicchetti, Ackerman, & Izard, 1995). In the past ten years a substantial body of information has confirmed that there is a relationship between behavioral problems and deficits in both emotional understanding and emotional coping styles (i.e., coping with emotional states; Buchsbaum, Toth, Clyman, Cicchetti, & Emde, 1992; Cook, Greenberg, & Kusche, 1994; Hay, Zahn-Waxler, Cummings, & Iannotti, 1992; Tarullo, 1994). The inability of children to experience and label their emotions (deficits in emotional understanding) can cause significant impairment in multiple areas of functioning. Problems can manifest in the form of overt aggression and externalizing behaviors (e.g., violation of the rights of others, little empathy, etc.; Klimes-Dougan, Simon-Thomas, McBride, Osman, Buchalter,
& Welsh, 1997; Huesmann, Eron, Lefkowitz, & Walder, 1984), as well as internalizing behaviors (e.g., self-harm, inability to act in one's best interest, anxiety, somatizing, worrying, etc; Zahn-Waxler, 1993). It is essential to identify coping styles that may increase children's vulnerability to the development of later maladjustment and to follow these styles forward in time longitudinally (Simon-Thomas, 1999).

Individual differences in the interpretation of behaviors, and the expression and regulation of emotions have been well-documented (Campos, Campos, & Barrett, 1989; Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Folkman & Lazarus, 1985). It appears that individuals learn a number of coping strategies, and they implement these strategies in different ways and for different purposes. The majority of these studies have attempted to identify coping strategies in adults, but recently there has been increased interest in the development and identification of coping strategies of children and adolescents.

General coping styles in children and adolescents.

A number of studies have attempted to identify specific coping styles that children and adolescents utilize (Dise-Lewis, 1988; Groer. Thomas, & Shoffner, 1992; Rossman, 1992), and there seems to be much overlap among the coping styles identified by these studies. Dise-Lewis (1988) assessed the way that young adolescents, 11 to 14 years old, experience and cope with stressful events. She based her study on Garmezy's research that found that "children have very different perceptions of what constitutes a stressful event and of how stressful it is for them" (Dise-Lewis, 1988, p.485). She developed the Life Events and Coping Inventory (LECI) to investigate children's use of different coping
styles. She identified five factors of coping strategies that accounted for 49% of the total variance in her subjects’ reporting of coping strategies. She included factor loadings .30 and above. These factors were Aggression, Stress-recognition, Distraction, Self-destruction, and Endurance. Aggression involved hitting someone, getting into a fight, yelling, screaming, etc. (internal consistency was .86). Stress-recognition involved seeking social support from family members, crying, writing or drawing, etc. (internal consistency was .79). Distraction included strategies involving engaging in an activity, sleeping, relaxing, etc. (internal consistency was .81). Self-destruction coping involved either directly trying to hurt oneself (i.e., thinking about suicide) or taking an action to impair functioning (i.e., stop doing schoolwork). This category achieved an alpha of .76. Finally, Endurance behaviors included trying not to think about a particular behavior or eating or watching TV to forget about something (internal consistency was .62).

The LECI was validated using the State-Trait Anxiety Inventory for Children, the Children’s Depression Inventory, and an inventory that assessed distress in different realms of the subject’s life. It appeared that the LECI was able to capture a large range of coping styles, but perhaps the biggest contribution of this study was that it demonstrated that adolescents are aware of and can report multiple coping styles.

Although children are aware of the existence of multiple coping styles, they appear to be consistent about the ones that they use, even if these are maladaptive. Dise-Lewis (1988) found that the use of “negative” coping strategies (“Aggression” and “Self-destruction”) was significantly related to negative outcome assessed by students’ self-reports. From these results, it was suggested by Dise-Lewis that it may not be the
number of positive coping strategies that is important as an indicator of problem behaviors but rather the presence of negative coping strategies. In addition, there were significant gender differences in reported use of coping strategies and in the correlations among parents’ reports of behavior problems and the subjects’ report of coping. Girls tended to rate life events as more stressful and endorsed more stress-recognition strategies than boys. Parents’ ratings on the CBCL were more congruent with girls’ self-assessment of stress than they were for boys. This is consistent with documented differences in socialization of boys and girls.

Rossman (1992) found similar results in his study of children’s perceptions of coping with distress. He asked school-aged children, 6 to 12 years old, open-ended questions about the behaviors they used to cope with distressing situations. He identified six emotion regulation (ER) coping factors which accounted for 42.6% of the variance (factor loadings of .20 and above were accepted): Use of caregiver, Use of distraction/avoidance, Use of communicating distress to elicit aid from others, Use of peers, Self-calming behaviors, and Anger. He found that emotion-focused coping behavior increased with children’s age, and that boys and girls used ER coping differently. Boys used anger to cope, while girls coped by communicating their level of distress. Rossman claimed that ER coping behaviors continue to play a role in children’s adjustment, and it appears that late childhood is a particularly critical period because children are seeking autonomy and forming their own identities. This is consistent with the typical view of late childhood as a time of intense stressors and pressures both from
peers and families. Research indicates that coping styles that emerge during this period of late childhood/early adolescence remain into adulthood (Valliant, 1977).

Patterson and McCubbin (1987) describe adolescence as a time of competing demands and explain coping as "cognitive and behavioral strategies directed at eliminating or reducing demands, redefining demands so as to make them more manageable, increasing resources for dealing with demands, and/or managing the tension which is felt as a result of experiencing demands" (p. 163). Adolescents who are able to use their resources to deal with life's stressors and strains are more likely to develop coping styles that help them to maintain a sense of stability in this time of transition.

Patterson and McCubbin (1987) also examined how adolescents learn to cope with distress and defined four categories of experience from which coping styles are acquired: "(a) Previous personal experience in handling similar situations, (b) Vicarious experience associated with observing the success or failure of others, (c) Perception of their own physiology and inferences they make about their vulnerability, and (d) Social persuasion, particularly by parents, peers, and significant others" (p. 169). They developed a self-report inventory, the Adolescent Coping Orientation for Problem Experiences (ACOPE), which identified 12 coping strategies that accounted for 60% of the variance in subjects' responses. Factor analyses were performed on the 54 coping behaviors, with factor loadings of about .40 used to determine the 12 factors. These factors are: 1) Ventilating feelings, 2) Seeking diversion, 3) Developing self reliance, 4) Developing social support, 5) Solving family problems, 6) Avoiding problems, 7) Seeking spiritual support, 8) Investing in close friends, 9) Seeking professional support,
10) Engaging in demanding activities. 11) Being humorous. and 12) Relaxing (Patterson & McCubbin, 1987). It appears that adolescents acquire coping styles from multiple sources, and this results in the display of a wide range of coping behaviors. The ACOPE is used in the present study.

Consistent with the previously mentioned studies (Dise-Lewis, 1988; Rossman, 1992), Patterson and McCubbin (1987) found gender differences in the use of coping strategies. Girls used more Developing of social support, Solving family problems, Investing in close friends, and Developing self-reliance. Boys used significantly more Humor to cope with stressful events. Again, these findings are consistent with generally agreed-upon differences in socialization of boys and girls.

Overall, there appears to be consistency among the studies reviewed regarding what coping strategies children and adolescents use to deal with stressful events (Dise-Lewis, 1988; Groer, et. al. 1992; Halstead, Johnson, & Cunningham, 1993; Patterson & McCubbin, 1987; Rossman, 1992). This has resulted in a number of different strategies being recognized. The most prevalent coping styles used by adolescents when faced with stressful events appear to be: 1) Aggression. 2) Distraction (both active and passive), 3) Seeking social support from family or friends, 4) Avoidance, 5) Self-reliance, 6) Self-destructive behavior. 7) Humor, 8) Relaxing, 9) Seeking spiritual support, and 10) Withdrawal.

Research shows that adolescents are aware of multiple coping styles, yet they are become more persistent about the ones they use. It has been shown that by the time children reach school age they are able to distinguish between their emotions and those of
others. They are also able to understand more complex social emotions, such as "pride" and "shame". However, as the child increases in age, s/he experiences more and more life stressors and, thus, has to use his/her coping strategies more frequently (Simon-Thomas, 1999). During adolescence, presumably, a more "mature sense of self... one that is more inward and psychological than in early childhood develops" (Seifert & Hoffnung, 1991, p. 495). According to Patterson and McCubbin (1987) adolescent coping involves "flexible orchestration of cognitive, social, and behavioral skills in dealing with situations that contain elements of ambiguity, unpredictability, and stress." (p. 164). Adolescence is also a time when many forms of psychopathology manifest themselves (Wenar, 1994). Thus, this is a critical time to investigate the relationship of coping strategies to the development of adaptive or maladaptive behaviors.

Coping has been highly correlated with other protective factors such as social support and internal locus of control (Peterson et. al., 1991), but the effects of coping above and beyond these associations have not been fully explored. Given the high intercorrelations among protective factors it is essential to tease apart the effects of different protective factors to identify which are most important to foster to decrease vulnerability to risk. It is also essential to investigate the ways in which risk and protective factors interact to lead to adaptive outcome. The effects that risk and protective factors have on development are constantly changing as other risk and protective factors are present or absent. Thus, there are interaction and contrast effects between risk and protective factors. Two models were highlighted in the present study to explain the ways that risk and protective factors influence one another to lead to adaptive outcome.
Models of Possible Relationships between Risk and Protective Factors

A number of models have been proposed to describe the process by which multiple influences impact an individual and affect outcome. This paper focused on two models, the diathesis-stress model and the protective versus vulnerability model.

The diathesis-stress model.

As previously reviewed, early stress and coping research in the area of mental health involved people diagnosed with schizophrenia (Luthar & Zigler, 1991; Masten, 1989). The goal of these early studies was to investigate the effects that stressful life events had on the development of schizophrenia. The diathesis-stress model was proposed to explain how a genetic vulnerability to schizophrenia could interact with an environmental stressor and lead to the development of schizophrenia. Typically stress is viewed as activating the diathesis. In the case of schizophrenia, stress comes in the form of an environmental stressor which activates a genetic vulnerability (i.e., the diathesis). Recently, there has been confusion about whether the effects that stress has on the diathesis is simply due to the additive effects of stress, the interaction between stress and the diathesis, or both. In addition, there have been questions about what stress and diathesis represent, in terms of continuity and specificity. Monroe and Simons (1991) present four models to explain the possible interactions between stress and diathesis. The first three models view the diathesis as dichotomous, either present or absent. The fourth model describes the diathesis as continuous, loading from minimal to high.

In the first model, the effects of stress are dependent on the loading of the diathesis. If the diathesis is high and stress is high, then there is maladaptive outcome.
The second model is an additive model; if an individual has a high diathesis, s/he needs low stress levels to activate this diathesis. The opposite is also true, an individual low on the diathesis needs higher levels of stress to activate the diathesis. The third model is an interaction model in which outcome is affected only if stress and the diathesis are present. If stress is high and the diathesis is present then maladaptive outcome is likely. The fourth model takes the interaction model one step further. In this model, stress and the diathesis need to be present, but there are varying degrees of the diathesis; once the threshold is reached, there are continuous effects. This model is called the interactive model of diathesis-stress with a quasi-continuous diathesis and will be tested in the current study with multiple regression analyses (see Figure).

Diathesis-stress models have also been used to explain a number of disorders beyond schizophrenia. Monroe and Simons (1991) proposed a diathesis-stress model to describe the development of depression. They explained that the type of stress that is needed to initiate a depressive episode is uncommon, but the diathesis for depression is common. Thus, once a stressor is present, depression is relatively likely. In their work on depression, they found that diathesis-stress models are plagued by a number of difficulties (Monroe and Simons, 1991). These include vague definitions of the type of the stressor involved and lack of clear delineation of types of interactions that are possible. As previously mentioned, stress can be ambiguous to defined and is often measured by the number of stressful life events. Monroe and Simons (1991) advocate that the stress score should not be a composite score because this prevents the
identification of particular types of stressors (i.e., chronic, acute, hassles, major life events etc.; Monroe & Peterman, 1988).

The diathesis-stress model can also be applied to risk and resiliency research, where risk is analogous to stress and protective factors are a component of the diathesis. It was hypothesized that the diathesis-stress model tests the same underlying relationships as Garmezy's protective versus vulnerability model. This was investigated in the current study in order to provide a further link between fields investigating the same underlying relationships but using different labels.

Protective versus vulnerability model.

Garmezy (1984) suggests a protective versus vulnerability model to describe the relationship between stress and competence. Rutter (1985) has advocated for a similar model to explain the relationship between risk and vulnerability. The protective versus vulnerability model is an interaction or buffer model that describes the relationship between stress and personal attributes. Again, Garmezy uses the term attributes to refer to what this paper considers to be protective factors. According to the protective aspect of this model, when an individual has a high level of protective factors, his/her level of competence is unaffected by increasing stressors. Alternatively, the vulnerability aspect claims that when an individual has few protective factors, his/her competence level decreases with increasing stressors.

This model has dose-response and interaction components; as the dose of protective factors increases so should adaptive outcomes, despite exposure to increasing levels of risk. It is essential to ensure that the dose response relationship is applied to
differences in response to a given dose, not to less exposure to risk (Rutter, 1990). This model is investigated in the current study (see Figure 14).

The diathesis-stress and protective versus vulnerability models were used to attempt to explain the process by which risk and protective factors influence adaptive outcome.

The Present Study

Research into the area of risk and resiliency has provided a number of possible explanations regarding an individual’s susceptibility to negative life events. However, no one approach has been able to identify what factors are most important as buffers to the exposure to risk or what type of risk is the most detrimental to the individual. There is an increasing need to address risk as both multivariate and unique to the individual, as well as to identify specific domains that serve to protect an individual from the negative effects of risk (Seifer et. al., 1992). Rutter (1983) set an agenda for research on stress in which he called for “research on the interplay between stress and development, with attention to the various sets of indirect linkages between important events and later functioning” (p. 19). This suggests a longitudinal and essentially dynamic approach (refers to the ever changing relationships due to the presence or absence of other variables).

Stroufe and Rutter’s (1984) perspective of developmental psychopathology has been instrumental in setting the tone for risk and resilience research. They highlight the need to take into consideration the following points: 1) intergenerational risks may not be specific, 2) risks may occur simultaneously from multiple sources and effect the
individual in many ways, and 3) context and family systems may help or hinder an individual's development, particularly the impact that risk has on the individual. In addition, Schuldberg (1993) advocates for outcome assessments that are: 1) studied across multiple, independent and dependent domains of an individual's functioning, 2) measured on many levels (broad based, have a range and are sensitive), and 3) distinguish between positive and negative behaviors. There has been an overwhelming call for 'broad-band' assessments that tap into a number of different domains of an individual's functioning (Waters & Sroufe, 1983).

Furthermore, Garmezy (1988) specified that longitudinal data is needed in order to investigate the long term effects and predictors of risk in a child's life. It appears that the only way to accomplish this is to collect prospective data. The majority of early studies of risk and resiliency were retrospective and cross-sectional. Garmezy notes that the following factors must be included in any investigation into risk and resilience: 1) prospective approach, 2) a matched control group, 3) multiple measures at different points in an individual's life, 4) measures change and what moderates change, 5) study process and mechanisms of changes rather than identifying specific risk or protective factors, 6) short-term and intensive studies, 7) need more than one outcome measure, 8) need to evaluate stressors within the context of the individual's environment, and 9) need to focus on maintenance not etiology (no evidence that one factor or stressor always leads to risk). The most important of these points are the need to study the process or mechanism of change, the need to take context into account, and the need to focus on maintenance not etiology. The other recommendations are no less important, but they
represent the controls to ensure the validity of risk and resiliency studies. There is a need to move away from studying the effects of risk factors to focusing on how the individual successfully engages with, and copes with risk (Rutter, 1990).

The primary purpose of the present study is to investigate the effects of protective factors on adaptive outcomes: adaptive outcomes are the focus of this paper. Initially protective factors were divided into personal and environmental protective factors, based on the agent of change, but this differentiation was not possible to tested due to the sample size. Instead, protective factors were explored individually as buffers between risk factors and adaptive outcome. Within this set of protective factors, it was predicted that the manifest variable of coping would demonstrate the strongest relationship with adaptive outcome. One overall model was proposed to integrate and organize the above-mentioned hypotheses and to attempt to conceptualize how risk and protective factors may interact in this middle school-aged sample.

In addition, this study attempted to show the feasibility of integrating Garmezy’s (1988) nine points mentioned above into a study of risk and resiliency. Specific ways in which Garmezy’s points are addressed include: this study was prospective, involved a matched control group, included multiple measures at two different points, was short-term and intensive, and had more than one outcome measure. Additionally, the following points are addressed at least in part by this study: effort was made to measure change, to study process and mechanism, to evaluate stressors in the individual’s environment, and to focus on maintenance not etiology.

The information used for this study was obtained from the CS Porter Flagship
Project Evaluation. The evaluation was prospective and longitudinal, based on an interrupted time series design. Information regarding risk and protective factors was obtained at the start of sixth grade, and then a number of prevention activities were introduced. The same measures of risk and protective factors were collected in November of 1997 and May of 1999. Information assessing both risk factors and protective factors was obtained from approximately 134 students.

Specific hypotheses regarding the proposed path model and hypotheses tested with more traditional analyses (Pearson product moment correlations, Multiple Regressions, etc.) are outlined below.

**Hypotheses**

The purpose of the present study was to examine the process and mechanism by which risk and protective factors exert their influence on adjustment.

1) **Risk Factors:**

   a. It was expected that fewer risk factors would be associated with more adaptive outcomes, as measured by Time 2 student GPA and the following Time 2 teacher measures: Teacher Report Form of the Child Behavioral Checklist (Total, Internalizing and Externalizing scales) and the Social Skills Rating Scale.

   b. It was expected that boys would show higher numbers of risk factors than girls.

**NOTE:** Hypotheses 1c and 1d were changed after the prospectus meeting and were not tested in the analyses. Risk factors were no longer conceptualized as internal (vulnerabilities) versus external (stressors), but rather one continuous variable of risk was created (see Risk Classification section in the Methods).
c. It was proposed that all manifest variables associated with the hypothesized latent variable of stressors would be highly correlated.

d. It was expected that all manifest variables associated with the hypothesized latent variable of vulnerabilities would be highly correlated.

2) Protective Factors:

a. It was predicted that Time 1 and Time 2 protective factors would be uncorrelated.

b. It was predicted that subjects with a greater number of protective factors would demonstrate more adaptive outcomes, as measured by Time 2 GPA and the following Time 2 teacher measures: Teacher Report Form of the Child Behavioral Checklist (Total, Internalizing and Externalizing scales) and the Social Skills Rating Scale. Given the overall high functioning of this sample of middle school-aged students, it was expected that many students would demonstrate high levels of protective factors and, as a result, would show a strong relationship to adaptive outcome.

c. Protective factors were expected to correlate with one another but were proposed to best fit into one of two categories, environmental or personal (dispositional) protective factors.

d. After the prospectus meeting, environmental protective factor were hypothesized to consist of Social skills, Family environment, Social support and Peer relations. It was expected that all manifest variables associated with the latent variable of environmental protective factors would be highly correlated.
e. Personal protective factors were expected to include Coping, Self-esteem, and Internal locus of control. It was hypothesized that all manifest variables associated with the latent variable of personal protective factors would be highly correlated.

f. In addition, environmental and personal protective factors were hypothesized to significantly correlate with measures of adaptive outcome. In particular, it was predicted that personal protective factors would be more highly correlated with adaptive outcome than would environmental protective factors.

g. It was also expected that girls would display higher levels of protective factors than boys.

3) Coping

a. It was hypothesized that Coping strategies would be correlated with all protective factors, but the associations of interest were between Coping, Self-esteem, and Internal locus of control.

b. It was also expected that Coping strategies would show a relationship to adaptive outcome over and above the effects of Self-esteem and Internal locus of control. It was hypothesized that the ability to cope would demonstrate the strongest association to adaptive outcome of all personal protective factors.

c. One model of the possible role that coping may play between protective factors and outcome was proposed. It was expected that coping would be predicted by protective factors and would be predictive of outcome.
d. Coping was also hypothesized to play a moderating and/or mediating role between protective factors and adaptive outcome (In addition, coping was expected to potentially mediate or moderate the relationship between risk and outcome, and this was examined under hypothesis #4).

4) Interactions between Risk and Protective Factors: It was hypothesized that there would be a number of interactions between risk and protective factors that would affect adaptive outcome. The model originally proposed (see Appendix A) was changed considerably after the prospectus meeting (see Appendix B), and then again after data reduction (see Appendix C). The new model (Appendix D) is not a structural equation model, but rather a path model containing all manifest variables. Thus, no division of internal and external protective factors was made. The hypotheses outlined below were not tested in the manner originally proposed, but rather through tests of the relationships between the manifest variables themselves. The new model will be explained in more detail in the Data Reduction section of the Methods and in the Results section.

**Original hypotheses regarding the path model:**

It was initially hypothesized that stressors would interact with environmental protective factors to lead to adaptive outcome.

It was initially hypothesized that stressors would interact with personal protective factors to lead to adaptive outcome.

It was originally expected that vulnerabilities would interact with environmental protective factors to lead to adaptive outcome.
It was initially expected that vulnerabilities would interact with personal protective factors to lead to adaptive outcome.

In addition, it was predicted that stressors and vulnerabilities would be correlated.

**New hypotheses for the path model:**

a. First the new path model (see Appendix D) was investigated with multiple regression analyses. It was predicted that Personal protective factors (Self-esteem, Internal locus of control, and Coping) would be most predicted by risk and would be most predictive of adaptive outcome.

b. More specifically, the ability of protective factors to moderate the relationship between Risk and outcome was proposed to be important in determining the direction of future intervention projects. It was predicted that Personal protective factors would demonstrate moderating effects.

c. In addition, the ability of protective factors to mediate between Risk and outcome was investigated and, again, it was predicted that Personal protective factors would demonstrate mediating effects.

5) **Specific Models:** Two specific models were tested as possible explanations of how protective factors influence adaptive outcome.

a. **Diathesis-Stress Model:** In this model the diathesis was lack of protective factors, and stress was greater presence of risk factors. The dependent variable was adaptive outcome, as measured by Time 2 GPA and the following Time 2 teacher measures: Teacher Report Form of the Child Behavioral Checklist (Total, Internalizing and Externalizing scales) and the Social Skills Rating Scale. This
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model was a multiplicative model of the diathesis-stress interaction. As a subject had more protective factors available, it was proposed that s/he would be less susceptible to risk factors and would have more adaptive outcome.

b. Protective versus Vulnerability Model: This model was examined for only those subjects who have been exposed to risk as defined by the risk classification section of this study (see Methods). Subjects who had high levels of protective factors were predicted to have adaptive outcome in the face of increasing risk factors. It was expected that all protective factors would serve to buffer increasing risk, but coping strategies were predicted to be the most powerful buffering variable. Buffer is used here to refer to an interaction or moderator effect.

Method

Participants

Before describing participants it is important to differentiate the Flagship Project from the evaluation of the Flagship Project. This study is concerned with the evaluation of the Flagship Project and will report on data obtained from the evaluation. The Flagship Project consisted of a number of prevention activities that were implemented in the Fall of 1997 into the curriculum at CS Porter Middle School, in Missoula, Montana. All sixth grade students at CS Porter were exposed to increased opportunities to participate in activities at their school (i.e., drama group, game hour at lunch, Big Brother/Big Sister mentoring which took place in the school, etc.), increased opportunities for their families to get involved in their school (i.e., family advocate in the
school, GED and parenting classes offered, etc.), and increased opportunities for both
students and their families to get involved with community organizations (volunteering at
the Humane Society or with Habitat for Humanity and parenting classes and adolescent
groups at the Child Family Resource Center, etc.).

The Flagship Project was a 2-year study funded by the Montana Prevention
Coalition. CS Porter was chosen for this large school-based prevention project because
of its unique composition of students. It offered a wide range of SES, ethnicity and
academic achievement. Although the majority of people living in the neighborhood
around CS Porter are Caucasian, the area is one of the most ethnically diverse
neighborhoods in Missoula. In the neighborhood surrounding CS Porter, 37 residents are
black, 261 are Native American, 204 are Asian, and 137 are Hispanic. CS Porter has a
high percentage of students receiving reduced fee or free lunch (47% for whole school).
Twenty-four percent of families with children between the ages of 6 and 17 live below
the poverty line. CS Porter has a high student turnover rate. 65% for the 1995-1996
school year (Montana Interagency Coordinating grant, 1996).

The Flagship Project evaluation involved assessing the effects of these prevention
activities (the increased opportunities) on CS Porter students' level of risk and protective
factors and on student outcomes. Polson Middle School in Polson, Montana served as the
control school for the evaluation of the Flagship Project, and received none of the above
mentioned interventions. Polson was chosen as the control school based on the similar
number of students receiving free and reduced lunch (46% for whole school). In
addition, both schools are in large rural towns and are comparable in terms of socioeconomic status of the surrounding community.

Participants for the evaluation of the Flagship Project were recruited from all CS Porter and Polson Middle School 6th grade students. Again, it is important to differentiate participants in the Flagship Project from participants in the evaluation of the Flagship Project. Subjects needed parental permission to participate in the evaluation of the Flagship Project, but not to participate in the activities offered by the school. The Flagship Project evaluation received Institutional Review Board approval from the University of Montana in the Spring of 1997. Consent for participation was obtained from parents and students in the Fall of 1998. The evaluation of the Flagship Project was introduced at new student orientation for all sixth grade students and their families. Then, letters were mailed to every parent of a CS Porter or Polson sixth grade student. The letter offered a description of the project and asked the parents to talk to their child about participating in the evaluation and decide whether or not the parent(s) and child wanted to be involved. If parent and child agreed to participate, they were asked to check the 'yes' box and return the letter. If not, they were asked to check the 'no' box and return the letter. A competition was set up between all sixth grade classrooms so that the classroom that returned the most permission slips, regardless of whether they said 'yes' or no' to participation, received an ice-cream party. In the end, all students were provided an ice-cream party.

Two weeks after letters were mailed, phone calls were made to parents who had not returned permission slips. A script was used for the phone calls, and parents were
encouraged to voice their concerns/questions surrounding the project. If a parent did not want to have his/her child participate, record of the call was made and the child was removed from the 'active' list. Parents were informed that their child could participate in the activities at his/her school without participating in the evaluation. In addition, children could participate in the evaluation without their parents' completing measures. If both the parent and the student agreed to participate, they were asked to sign the permission slip and return it in the self-addressed envelope. Parents and subjects were instructed that all information obtained from the school, the subject, and the parent(s) was confidential. However, parents and subjects were informed that confidentiality would be broken if the subject indicated that s/he was being harmed or s/he intended to harm him/herself or someone else. In addition, parents and subjects were told they had the opportunity to terminate their participation at any time without adverse consequences. It is important to note that no student(s) or parent(s) experienced distress while participating in the evaluation.

At the start of Time 1 data collection there were 190 students (mean age =11.2, SD=.40) participating in the evaluation of the Flagship Project (95 from CS Porter Middle School and 95 students from Polson Middle School). At Time 2, 158 children participated in the evaluation (81 from Porter and 77 from Polson). Over the course of the two years, 32 children were lost to the evaluation due to a variety of reasons. Independent sample t tests were conducted for all Time 1 risk and protective factors comparing students who participated in Time 2 data collection to those who did not. Students who did not participate in Time 2 data collection reported higher levels of all
but one risk factor (number of siblings): socioeconomic status ($t(188) = -5.10, p<.01$), number of parents in the home ($t(188) = -4.71, p<.01$), number of suspensions ($t(188) = 3.97, p<.01$), number of absences ($t(189) = 2.68, p<.01$), number of detentions ($t(188) = 3.89, p<.01$), and GPA ($t(190) = -5.20, p<.01$). In addition, these students displayed lower levels of protective factors: social skills ($t(160) = -2.88, p<.01$), less self-esteem ($t(161) = -3.27, p<.01$), less social support ($t(168) = 2.84, p<.01$), more peer distress ($t(170) = 1.91, p<.01$), external locus of control ($t(155) = 3.33, p<.01$), less family cohesion ($t(168) = -2.44, p<.05$), and more family conflict ($t(168) = 2.35, p<.05$).

These results indicate that the more ‘at-risk’ students did not participate in the evaluation at Time 2. The greatest source of attrition was relocation of families (as indicated by reports from both principals and teachers), but also some children or parents asked not to participate in the second wave of testing. It appears that the more ‘at-risk’ students come from less stable homes with a tendency to move frequently. However, the Flagship evaluation did not investigate these findings any further so it is difficult to identify reasons for attrition. However, one conclusion can be draw from these findings, the sample used in this study may not reflect the true difficulties that many CS Porter and Polson students face, and may (most likely) over-represent the higher functioning students at both CS Porter and Polson Middle Schools.

It is important to again differentiate between the Flagship Project and the evaluation of the Flagship Project. It is also possible that more high-risk students participated in the prevention activities at CS Porter, but were not involved in the evaluation. Conclusions cannot be drawn about the effects of participation on outcome.
for students who did not complete measures. Although it is possible that these students participated in more activities and there is no record of the effects of this participation, it is unlikely because participation in activities for all students at CS Porter was low. Many different explanations are possible but the most compelling is the lack of recruitment specifically directed at children who normally were not involved in activities. The majority of prevention activities were introduced directly into the curriculum and appeared to draw from students who were already connected to resources. The prevention activities were designed to provide many resources to all students, but unfortunately, they did not target the students who needed the resources most. The Flagship coordinators at CS Porter did attempt to recruit students who lacked resources or who were at-risk due to family situations and behavior problems, but they did not have the financial resources to do so in the most effective way. Another problem was the lack of recruitment of family participation in helping students become more connected to their school and their communities. Due to the lack of participation in prevention activities, the effects of the prevention activities will not be a factor in the present study.

Measures

The following measures were administered at both Time 1 (November 1997) and Time 2 (May 1999) to all participants from CS Porter and Polson Middle Schools:

1) Social Skills Rating Scale (SSRS)
2) Piers-Harris Children's Self-Concept Scale (CSCS)
3) Self-Perception Profile for Children (SPPC)
4) Revised Children's Manifest Anxiety Scale (RCMAS)
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5) Index of Peer Relations (IPR)

6) Nowicki-Strickland Internal locus of control Scale (NSLCS)

7) Children’s Appraisal of Social Support (CASS)

8) Classroom Environment Scale (CES)

9) Family Environment Scale (FES)

10) Adolescent Coping Orientation for Problem Experiences (ACOPE)

11) Attachment Style Questionnaire (ASQ)

12) Friendship Questionnaire (FQ, time 1 only)

The SPPC, CES, ASQ and FQ are not be used in the present study. There was a problem in administration of the SPPC and CES at Time 1. The SPPC calls for the student to make two decisions. First, s/he must decide which type of child they are more like. Second, s/he must rate how true that is for him/her. The student has four boxes to choose from but only marks one. Two administrators did not understand the directions correctly and asked students to endorse two boxes. Thus, much of the data from these measures are invalid. The problems with the administration of the CES involved one teacher at CS Porter. She became upset with the questions on the CES and refused to have her class complete the measure. Students were asked a number of questions regarding their feelings about school in general, however, questions were phrased “rate this teacher.” We had informed both students and teachers that we were not interested in any one teacher or one student, but how children this age feel about school in general. Unfortunately this teacher was not willing to have us re-administer this measure. The ASQ and FQ were administered as part of another graduate students thesis and were not

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used in this study.

Parents and teachers were also asked to complete measures at both Time 1 and Time 2. Parents were asked to complete the Child Behavioral Checklist (CBCL), the Conflict Behavior Questionnaire (CBQ) and the Family Inventory of Life Events and Changes (FILE). These measures were not used in the present study due to the fairly low return rate (39% at Time 1 and 35% at Time 2). Teachers were asked to complete the Teacher Report Form (TRF) of the Child Behavioral Checklist and the Social Skills Rating Scale (SSRS). Both of these measures were used for this study. The next section describes in detail the measures used in this study.

Social Skills Rating Scale.

The Social Skills Rating Scale (SSRS) was developed by Gresham and Elliot in 1990. This scale was constructed to screen and classify children thought to have social behavioral problems. The SSRS is a self-report measure that takes about 15-20 minutes to complete and higher scores reflect more social skills. The SSRS was developed from the Teacher Ratings of Social Skills (Gresham, 1984). It was standardized on a national sample of 4,170 children who rated their own social skills, and had parents (N=1,027) and teacher (N=259) rate their social skills. Internal consistency for all forms ranged from .83 to .94 for Social Skills, .73 to .88 for Problem Behaviors and .95 for Academic Competence. Test-retest reliability was .85 for teachers and .68 for students. There is support for content, construct and criterion-related validity for the teacher and student forms of the SSRS (Gresham & Elliot, 1990).

There are three different forms of this measure, the parent, teacher, and student...
forms. The student and teacher forms were used in this study. The teacher form has three scales, two of which are broken into subscales. The first scale, the Social Skills scale, is composed of five subscales: Cooperation, Assertion, Responsibility, Empathy, and Self-Control. The second scale is the Problem Behaviors scale, which consists of three subscales: Externalizing, Internalizing, and Hyperactivity. The third scale is the Academic Competence scale, which does not have subscales. The student form is composed of only the Social Skills scale. There are two student forms keyed to grades. One form is used with grades three through six and the other form is used with grades 7 through 12. Children in this study were right on the cusp and due to the desire to use the same instrument at both testing periods, it was decided to administer the student form for grades 7 through 12.

The Piers-Harris Self-Concept Scale.

The Piers-Harris Self-Concept Scale (CSCS) is a self-report questionnaire designed to assess how children and adolescents (ages 8 to 18 years) feel about themselves. It took about 10 minutes to complete. The CSCS is composed of 80 first-person statements, such as "I can be trusted," and the subject is asked to respond by endorsing either, 'yes that's true for me' or 'no that's not true for me.' The CSCS focuses on children's conscious self-perceptions and is considered to be interchangeable with 'self-esteem' or 'self-regard'. This measure is composed of six scales that address self-concept: Behavior, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction. In addition, there is a Response bias and an Inconsistency index. The Response bias examines positive and
negative response tendencies, whereas the Inconsistency index examines internal consistency across items. This measure is scored positively so that higher scores reflect greater self-esteem.

Test-retest reliabilities have varied from .42 (over an eight-month period) to .96 (over a 3 to 4 week period), with a median test-retest reliability equal to .73 (Piers, 1984). Internal consistency was investigated with a sample of 297 sixth and tenth grade students and reliability estimates for the total score ranged from .88 to .93 (Piers, 1973). Evidence for both convergent and discriminant validity have been found (see Piers, 1984).

The Index of Peer Relations.

The Index of Peer Relations (IPR) is a short, easy to administer instrument that is designed to assess severity or magnitude of an individual's problems in experienced peer relations. It is a 25-item self-report that takes about 10 minutes to complete. The IPR asks subjects to use a Likert scale to rate how they feel about their peer group. It has demonstrated test-retest reliability as high as .90 and it has been shown to have support for construct, discriminant and content validity (Klein, Beltran, & Sowers-Hoag, 1990; Hudson, Nurius, Daley, & Newsome, 1988).

The Nowicki-Strickland Internal Locus of Control Scale.

The Nowicki-Strickland Internal locus of control Scale (NSLCS) assesses adolescents' perception of the degree of external control that they have over their lives. This measure is negatively scored so that higher scores indicate external Internal locus of control. It is a 40 item questionnaire that asks the subject to circle 'yes' or 'no' as the question applies to him/her. The NSLCS takes about 10 minutes to complete. Internal
consistency was investigated using a split-half method, corrected by the Spearman-
Brown formula, and yielded an estimate of $r = .68$ for grades 6, 7, and 8. Test-retest
reliability, over a six-week interval, was .66 for the seventh grade sample. Studies of
construct validation were conducted with diverse groups of children and support was

The Children's Appraisal of Social Support.

The Survey of Children's Social Support (SOCSS) was developed to assess three
aspects of social support in elementary school: 1) the frequency of supportive behaviors
available from the child's support network (Scale of Available Behaviors, SAB), 2) the
child's subjective appraisals of family, teacher, and peer support (APP), and 3) the size of
the child's social support network (NET; Dubow & Ullman, 1989). The scale that was of
interest to this study was the APP scale. This scale is also called the Children's Appraisal
of Social Support (CASS) and will be referred to as such. The CASS is a 41-item
measure used to assess perceived social support from peers, family and teachers. The
CASS uses the "structure alternate format" (Harter, 1985) to describe two types of kids:
'Some kids feel left out by their friends, but other kids don't. Do you feel left out by
your friends?'”. The child is asked to respond to each question using a 5-point Likert
scale from never (1) to always (5). CASS items are negatively scored so that higher
scores indicate lower perceived social support. The CASS takes between 10 and 15
minutes to complete.

This scale has been tested on samples of children in grades three through seven.
For sixth graders, the APP scale achieved a one-week test-retest reliability of .88 for the
total scale. .79 for the peer subscale. .87 for the family subscale, and .84 for the teacher subscale.

**Family Environment Scale.**

The Family Environment Scale (FES; Moos, 1974) is one of the Moos Social Climate Scales. It is a 90-item questionnaire that assesses three dimensions of perceived family functioning: Relationship, Personal Growth and System Maintenance. The three dimensions are composed of ten scales: Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control. Individual items were placed into one of these dimensions by the original authors of the scale based on the following criteria: No more than 80% of respondents should answer an item in one direction, items should correlate more highly with their own subscale than with any other, each subscale should have a nearly equal number of items scored true and scored false, subscales should have low to moderate intercorrelations, and each subscale should discriminate significantly among families (Moos & Moos, 1994). No factor analysis or other such procedure were conducted to determine these groupings. Internal consistency estimates were reported based on coefficient alpha.

The dimension most valuable to the present study is the Relationship Dimension, which consists of the Cohesion, Expressiveness, and Conflict scales. Cronbach’s alphas for the three scales, as reported by the FES manual, are .78 (Cohesion), .69 (Expressiveness), and .75 (Conflict). Test-retest stability was assessed with 47 family members, in 9 families, over an eight week interval and varied from $r=.68$ to $r=.86$ (Moos...
Moos and Moos stress that the internal consistency of the subscales could have been higher, but their goal for the FES was to measure a relatively broad construct of family environment, so items were dropped if they were highly intercorrelated with one another.

The normative data for the FES were obtained from 1,432 normal and 788 distressed families. Families were recruited from a variety of backgrounds, including single and multigenerational families, families from racial minority groups, families with minors of different ages, families with young children, and families with children who had left home. Distressed families who showed lower Cohesion, Expressiveness, Independence, Intellectual, and Recreational Orientation scores were also higher on the Conflict scale (Moos & Moos, 1994).

Numerous studies have investigated the construct and content validity of the FES, and results provide evidence that children who report higher family Cohesion also perceive more social support (Vaux, Phillips, Holly, Thomson, Williams, & Stewart, 1986), more parental care, and less parental overprotection (Sarason, Shearin, Pierce, & Sarason, 1987). In addition, children who report more family conflict indicated less constructive ways to handle conflict (Dancy & Handel, 1980).

Although there is some evidence for the validity and reliability of the FES, a number of other studies have drawn into question the psychometric properties of this measure, particularly the validity and reliability of the 10 scales identified by Moos (Fowler, 1982; Sanford, Bingham, & Zucker, 1999). In addition, a few researchers have gone so far as to advocate for a complete "boycott" of the FES (Roosa & Beals, 1990).
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Tutty, 1995). In general, reliability and validity information presented in the FES manual has not been replicated. Given that the Relationship dimension is of interest to this study, particular attention is paid here to evidence for the validity and reliability of the Cohesion, Expressiveness, and Conflict scales.

Fowler (1982) was the first to demonstrate the lack of validity of the 10 FES scales. He found support for only a single cohesion versus conflict bipolar dimension. In addition, Robertson and Hyde (1982) investigated the validity of the FES factor structure and found seven factors that had adequate reliability. They also replicated the existence of these seven factors with a second sample. In the Robertson and Hyde study, Expressiveness did not emerge as a factor, but Cohesion and Conflict did, although with slightly different items loading than in the scales proposed by Moos. Two additional studies found that 6 of the 10 scales had alphas in the expected range, while four demonstrated low factor loadings and poor internal consistencies (Sanford, et. al., 1999). The four problematic scales were identified as the Expressiveness, Independence, Achievement, and Control scales. Roosa and Beals (1990) also found that the Expressiveness scale was problematic, achieving an alpha of only .46. The Cohesion and Conflict scales have received substantial support in terms of both validity and reliability (Schmid, Rosenthal, & Brown, 1988; Roosa & Beals, 1990; Sanford et.al., 1999). Based on the evidence presented above, the Expressiveness scale was dropped and the Cohesion and Conflict scales were retained for analyses in this study.
Revised Children's Manifest Anxiety Scale.

The Revised-Children's Manifest Anxiety Scale (RCMAS) is a 37 item, self-report instrument designed to assess anxiety in children and adolescents from ages 9 to 19 years. This measure was used to assess overall “internalizing” symptoms and was the only child self-report internalizing measure in this battery. There was one other internalizing score available for this study, the Child Behavioral Checklist, Teacher Report Form Internalizing scale. However, this measure was combined with other teacher reported assessments of social and behavioral problems and included as an outcome measure. This will be discussed in more detail in the Data Reduction section.

The RCMAS is easily administered in groups for children 9 and a half years and older. Instructions are printed on the front sheet, and the child responds to each question by circling ‘Yes’ or ‘No’ to a series of statements. This scale was originally developed from Taylor's (1951, as cited in Reynolds & Richmond, 1985) Manifest Anxiety Scale for adults, developed from items on the original MMPI. Castaneda, McCandless and Palermo (as cited in Reynolds & Richmond, 1985) developed a 42-item Children's Manifest Anxiety Scale (CMAS) which was used almost exclusively for measuring anxiety in children for the past 20 years. The RCMAS was developed to address problems with the CMAS, in particular to 1) create an objective measure of children's anxiety suitable for group administration, 2) keep administration time to a minimum, 3) promote clarity of items and adjust reading level for use with elementary school populations, 4) meet more contemporary psychometric standards, 5) develop large-scale
norms on diverse populations, and 6) determine whether anxiety is unidimensional or multidimensional.

Participants for test development were 329 school-aged children in grades 1 through 12. Using results from this first test session, a second group of 167 children from 2nd, 5th, 9th, 10th, and 11th grades was tested with the finalized version. Teachers and clinicians were asked to review the CMAS and to suggest additional items to tap anxiety in children and adolescents. Twenty new items were generated, and the resulting 73 items were submitted to reading specialists so that all questions were adjusted to the third grade reading level. For all 73-items both a difficulty index, \( p \), and biserial correlations of the test score, \( r_{bis} \), were conducted. Items that met the criteria of \( .3 < p < .7 \), and \( r_{bis} > .4 \) were included in the final RCMAS. Lie items that correlated .30 or higher with the Total Anxiety score or failed to correlate significantly with any other lie scale item were not included. This resulted in 28 anxiety items and 9 lie items used to detect spurious responding (Reynolds & Richmond, 1985).

The RCMAS was standardized on 4,972 Caucasian and African American children between the ages of 6 and 19 years. Reliability was assessed using coefficient alphas, which ranged from .42 (African American females) to .87 (African American males) and .86 (Caucasian males) for the Total Anxiety score. Test-rest reliability information is only available for the Total Anxiety scale (.98 for boys and girls) and the Lie scale (.94 for boys and girls; Reynolds & Richmond, 1985).

Numerous studies have been conducted to investigate the convergent and divergent validity of the RCMAS, with results providing strong evidence for a
relationship between the RCMAS and the State Trait Anxiety Inventory for Children (STAIC; \(r=0.78\)). In addition, Reynolds and Pagat (1981, as cited in Reynolds & Richmond, 1985) conducted a factor analyses with varimax rotation and found that the 28 anxiety items fell into 3 factors, while the 9 lie items separated into two lie factors. The Lie scale proved to be a good indicator of the subject's desire to either fake good or fake bad. In general, caution should be used when both the Lie score and the Total Anxiety score exceed the test mean by one standard deviation (i.e., Lie scale >13 and the Total Anxiety T-score >60: Reynolds & Richmond, 1985).

The Adolescent Coping Orientation for Problem Experiences.

The Adolescent Coping Orientation for Problem Experiences (ACOPE) was developed by Patterson and McCubbin (McCubbin, Thompson, & McCubbin, 1996) to "identify the behaviors adolescents find helpful in managing problems or difficult situations" (p.537). This instrument was developed using three separate samples of adolescents. The first sample, consisting of thirty 10\(^{th}\), 11\(^{th}\), and 12\(^{th}\) graders, participated in structured interviews investigating what they do to relieve stress and discomfort for: "a) the most difficult stressor event they experienced. b) the most difficult stressor event experienced by their families, and c) difficult life changes in general" (McCubbin et. al., 1996, p.538). From adolescents' responses, 95 coping behavior items were generated. The second sample of adolescents (no ages provided in manual) were asked to rate on a 5-point Likert scale, how often they used the 95 coping behaviors when faced with stress or difficulties in life. The third sample, consisting of 13 to 18 year olds, served to provide evidence for the validity of the ACOPE.
Two levels of coping styles were examined in the development of the ACOPE, coping behaviors (operationally defined through the 95 specific items), and coping patterns (combinations of coping behaviors into specific patterns; McCubbin et al., 1996). Initially, the 95 items were rationally grouped into the following patterns: 1) developing and maintaining a sense of competence and self-esteem. 2) investing in family relationships and fitting into the family lifestyle. 3) investing in extra-familial relationships and seeking social support. 4) developing positive perceptions about life situations. 5) relieving tension through diversions. 6) relieving tension through substance abuse and/or expression of anger, and 7) avoiding confrontation and withdrawing. However, these groups were not used beyond providing a conceptual basis from which to investigate the factor structure of the ACOPE. The 95 coping behaviors were then subjected to Principal Component Analysis, which resulted in 54 coping behavior items. These items achieved factor loadings of .40 or above on 12 factors (all with eigenvalues equal to or greater than 1.0). These 12 factors accounted for 60% of the variance in the items (McCubbin, et al., 1996). These factors are: 1) Ventilating Feelings, 2) Seeking Diversion, 3) Developing Self Reliance, 4) Developing Social Support, 5) Solving Family Problems, 6) Avoiding Problems, 7) Seeking Spiritual Support, 8) Investing in Close Friends, 9) Seeking Professional Support, 10) Engaging in Demanding Activities, 11) Being Humorous, and 12) Relaxing (Patterson & McCubbin, 1987).

Patterson and McCubbin (1987) investigated support for concurrent validity of the ACOPE by examining the relationship between nine of the coping factors (Seeking Diversions, Relaxing, Being Humorous and Avoiding Problems were not included in this
analysis) and substance use. Degree of use of cigarettes, beer, wine, liquor, and marijuana was regressed on the coping patterns for males and females separately. When controlling for age, males seemed to use four coping patterns (not all together but in different combinations): Investing in Close Friends, Engaging in Demanding Activity, Ventilating Feelings, Solving Family Problems, and Seeking Spiritual Support. These coping behaviors accounted for 18% of variance in cigarette use, 32% of variance in beer use, 29% of variance in use of liquor, and 19% of variance in marijuana use. For females the same coping patterns were used, but they tended to account for a greater amount of variance in substance use: 31% of cigarette use, 35% of beer use, 17% of wine use, 29% of liquor use and 25% of marijuana use. Females had significantly ($p < .005, n=241$) higher scores on Developing Social Support, Solving Family Problems, Investing in Close Friends, and Developing Self-Reliance. Males had a mean score significantly ($p < .005, n=185$) higher than females on the coping pattern of Being Humorous.

The ACOPE's concurrent validity was further tested by McCubbin, Knapp, & Thompson (1993). They found that Relaxation, Friend Support, and Ventilating Feelings were negatively related to completion of a residential program for families of youth at risk. In contrast, Spiritual Support, Professional Support, and Passive Appraisal were positively related to program completion. In addition, the ACOPE has been used to investigate the benefits of coping for children with insulin-dependent diabetes (Grey, Cameron, & Thurber, 1991). This study found that children who had poorer adjustment were more likely to use Ventilating Feelings and Avoidance coping techniques.
The majority of the above mentioned studies focus on validity. Patterson and McCubbin report internal consistency reliabilities for the 12 subscales, but there is no test-retest reliability information provided in the literature (this issue will be addressed in the Data Reduction section). In addition, the factor structure of the ACOPE has been called into question. Factor loadings presented in the manual, for some scales, are quite low (e.g., .084 for item #36, .181 for item #1, .261 for item #8, etc.), and internal consistency of the 12 scales, as measured by coefficient alpha, are considerably lower than desirable (i.e., the highest alpha is .75, and the lowest is .50). Another potential problem concerns the number of items loading on each scale; six scales have four or less items loading on them, and as previously mentioned, some of the loadings are minimal. Given the wide spread use of the ACOPE, it is surprising that only a few studies have investigated the reliability of its factor structure. This seems to further speak to the need for a valid and reliable adolescent coping measure as little attention has been paid to these issues in the past (Fanshawe & Burnett, 1991).

Although, few studies have examined the factor structure of the ACOPE, the ones that have fail to replicate the 12 scales originally presented by Patterson and McCubbin (1987). Jorgensen and Dusek (1990) investigated the link between adjustment and coping and hypothesized that two factors could be found that are consistent with prior research, one comprising more salutary, mature coping, and the other less mature and more outward. They obtained two factors, one directed at alleviating distress and the second composed of angry reactions. They named these two factors, "Salutary Effort and"
Stress Palliation. In addition they found that adolescents who were more optimally adjusted demonstrated more Salutary coping as opposed to their less adjusted peers.

Another study that investigated the factor structure of the ACOPE was conducted by Kluwin, Blennerhassett, and Sweet (1990). They investigated the factor structure of the ACOPE with a hearing impaired adolescent sample. They found poor reliability and poor concurrent validity for the original 12 factors. They conducted a Confirmatory Factor Analysis limiting the number of factors to three, a number they felt was suggested by an intercorrelation matrix of 12 scales, and by their desire to increase the number of items on each factor. They found three coherent factors that they labeled Seeking Personal Solutions (i.e., talk to family members or friends, try to improve yourself, try to see the good in things, sleep, etc.), Seeking Diversions (i.e., go shopping, go to a movie, drink beer, wine or alcohol, play video games, etc.), and Emotional Response (i.e., cry, get angry and yell at people, say mean things to people, etc.). Internal consistency reliabilities for these three factors were .83, .73, and .70, respectively. They also found concurrent validity of these three factors when compared to a measure of self-image and a measure of social adjustment.

Fanshawe and Burnett (1991) also sought to address the problem of the lack of reliability and validity information on the ACOPE. They combined questions from the ACOPE with questions from the Kohn and Frazer's (1986; as cited in Fanshawe & Burnett, 1991) Academic Stress Scale and Strutynski's (1985; as cited in Fanshawe & Burnett, 1991) list of problems. Theses 122 items were administered to 1699 adolescents (ages 12 to 18 years old) in Southeast Queensland, Australia. Two factor analyses were
conducted on this data, one with items measuring stressors and one with the original ACOPE items. The second factor analysis will be described here. A Principal Components Analysis (PCA) with Varimax rotation was conducted and factors with five or more items loading at .4 or above were retained. Next the factors were examined with the following criteria in mind: There should be an equal number of items on each factor, the item should have face validity, and the items should have high inter-item correlations. Finally, the resulting set of items was subjected to another PCA and factors were chosen based on the eigenvalue-greater-than-one-rule. The factors extracted from the second PCA replicated the first PCA and accounted for 51% of the variance. These factors were labeled Negative Avoidance (i.e., smoke, use drugs, try to stay away from things as much as possible, etc.), Anger (say mean things to people, let off stream by complaining, get angry and yell at people, etc.), Family Communication (talk to my mother or father, do things with my family, etc.), and Positive Avoidance (i.e., try to think of the good things in life, spend time with someone I care about, say nice things to others, etc.). The alpha coefficients for these factors were .74, .77, .74, and .67, respectively. Fanshawe and Burnett claimed that Family Communication was the only effective coping mechanism (however, they do not define what they mean by effective) out of the four that they identified. They advocated that schools develop programs to foster this type of coping and to develop strategies to lessen the occurrence of the other three coping strategies.

These studies provide evidence that the factor structure of the ACOPE, as presented by Patterson and McCubbin, may not represent the most reliable grouping of items. Alternative factor structure, with more items per scale, demonstrate considerably
improved reliabilities. One purpose of the present study was to investigate further the reliability of the ACOPE factor structure with a middle school-aged sample. It was predicted that factors would emerge that are similar to the ones derived from the above-mentioned studies, rather than the 12 factors proposed by Patterson and McCubbin.

The Teacher Report Form.

The Teacher Report Form (TRF) is one of the measures developed by Achenbach (1991). There are three such measures, which include the Child Behavioral Checklist (CBCL) completed by parents, the TRF completed by teachers, and the Youth Self-Report (YSR) completed by the child or student. Only the TRF will be used for this study, although the CBCL was also administered as part of the Flagship Project. The TRF was completed by a teacher who had known the student for at least two months. The homeroom teachers at CS Porter and Polson Middle Schools filled out a TRF for every student in his/her homeroom who was participating in the Flagship Project. The TRF produces scores on the same eight CBCL syndrome scales that are divided into Internalizing and Externalizing scales. The Internalizing scale consists of three subscales with factor loadings of .65 or greater (indicated in parentheses): Withdrawn (.784), Somatic complaints (.690), and Anxious/depressed (.650). The Externalizing scale includes Delinquent behavior (.778) and Aggressive Behavior (.791). The Internalizing score is the sum of the three subscales and the Externalizing score is the sum of the two subscales. There is no overlap between the Internalizing and Externalizing scores, although high scores on one tend to occur with high scores on the other (r=.35 for referred sample, and r=.41 for the nonreferred sample; Achenbach, 1991).
Test-retest reliability for the Internalizing and Externalizing scores in the referred and non-referred validation sample were .77 (2 months) and .68 (4 months), and .78 (2 months) and .60 (4 months) respectively. Content validation demonstrated that referred subjects scored significantly higher than did a nonreferred sample, thus indicating that the TRF does tap mental health issues. In addition, construct validation was assessed by comparing the TRF to the Conners Revised Teacher Rating Scale. Although the Conners scales assess hyperactivity and more externalizing behaviors, there were significant correlations between the Conners scales and Aggressive behaviors ($r=.67$) and the Externalizing scale ($r=.63$). In order to provide further cross validation, TRF scores were compared to actual observed and rated classroom behavior. These correlations were significant at the .05 level (Achenbach, 1991).

**Procedure**

The flagship project evaluation.

All measures were administered to students, parents and teachers in November of 1997 (Time 2) and May 1999 (Time 2). Testing involving paper and pencil measures. Measures were coded with a number so that there was no identifying information on the individual measures. The master list linking students to code numbers was housed at the University of Montana in a locked file cabinet. No individual information was shared with school personnel or students and families, but general findings from Time 1 and Time 2 were shared with principles and teachers at both schools.
Time 1 data collection.

Time 1 data collection was conducted in five sessions at CS Porter Middle School and in three sessions at Poison Middle School. The difference in time for test administration was due to differences in the length of class periods and willingness of different teachers to give up class time for testing. One teacher in particular at CS Porter was concerned about testing and some students in her class were less willing to participate. Typically, testing lasted one hour. Students who were not participating in the evaluation were taken into one room where an undergraduate had a number of games for them to play. Testers included two graduate and four undergraduate students. The undergraduate students were trained to administer the measures. One graduate student 'floated' between testing rooms to answer questions that arose during testing. All measures were read to the students to ensure their understanding of the information.

Parents were asked to complete four measures, but their participation was not required for their child to participate. The following measures were sent to parents: the CBCL, the FILE, the CBQ, and an exploratory measure investigating the difference between Conduct Disorder and Oppositional Defiant Disorder. Follow-up phone calls were conducted two weeks after measures were mailed to answer any questions and to encourage parents to return the measures. A total of 39% of parents returned all three measures. As previously mentioned, parent measures were not used in this study due to the low return rate. Teachers were asked to complete two measures, the Social Skills Rating Scale (SSRS) and the Teacher Report Form (TRF) of the Child Behavioral
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Checklist. Teachers returned these measures for the majority of the participants (87%), and they will be used for the current study.

In the Spring of 1998, all measures were scored, checked and entered into computer data files. A team of six undergraduate research assistants worked with the two graduate student investigators. The undergraduate team was broken into three pairs. First, each pair was trained to score a measure. Then the pair scored approximately 10 measures and accuracy was assessed. Corrections were made if there were errors and the pair scored another set of cases to assess accuracy. If there were no further problems, the pair divided the measures in half and each member scored half of the measures individually. If there were additional problems, further reliability cases were scored. All training cases were re-scored once reliability was achieved. When scoring was complete, scores were entered on to custom-made scantron forms. Each subject had his or her own scantron form. Once all measures were on the scantron forms, the pair double-checked that the scores had been transferred correctly. This process was repeated for each measure. When all scoring and double-checking was complete, forms were scanned into the computer. This process involved eight people's efforts for the majority of one semester.

Time 2 data collection.

At Polson Middle School, data collection was staggered across five sessions with each student participated in approximately 2 to 2 ½ hours of testing. There was one testing room and participating students were sent from other classes to the testing room. Non-participants stayed in their normal classrooms. At CS Porter, testing occurred in
two, one and a half-hour sessions. Four classrooms were designated for testing and all non-participants were taken to other rooms by their regular teachers. Students completed measures on their own after instructions were provided to the class as a whole. All participants were given a coupon for a free ice cream from the school cafeteria. In addition, raffles were held midway through testing to break up the testing period.

Teachers and parents were asked to complete the same measures as time 1. Teachers completed measures for 92% of the students who were participating in the Flagship evaluation. Again, these measures will be used in the proposed study. Parents were sent the same three measures as Time 1. Follow-up phone calls were made to answer any questions and ensure parents had received measures. Parental return rate for Time 2 data collection was 35%. Again, due to the low return rate, these measures were not used in the present study.

Time 2 measures were scored similarly to Time 1, except that scantron forms were not used. All scores were entered manually into computer data files, and then pairs of research assistants double-checked their entry into the computers. Scoring took place in the Fall of 1999 and involved the two graduate student investigators and seven undergraduate assistants.

Data Reduction

Due to the complexity of the relationships proposed and the limits of sample size, efforts were made to reduce the number of variables and to ensure the placement of variables was optimal in relation to the constructs of interests. Placement of variables
will be addressed first, and then specific decisions regarding risk and protective factors will be examined in more detail.

**Placement of variables as risk, protection or outcome.**

There were a number of questions regarding the placement of variables in the categories of risk, protection, and outcome. The Family Environment Scale (FES) was originally proposed as a protective factor, but there was some concern that this measure may be a better indicator of risk than of protection. Typically in the literature, family environment has been viewed as a protective factor and investigated as a moderator of risk and outcome (Garmezy, 1985; Masten et al., 1988; Rutter, 1985; Werner, 1993). However, due to the lack of clarity in the literature on what differentiates risk from protection, deficits in a supportive and cohesive family environment have also been conceptualized as risk factors. For example, Rutter (1971) found that a good parent-child relationship was protective for children living in a disharmonious home, but Jenkins and Smith (1990) found that a positive parent-child relationship did not have a differential effect for children living in harmonious or disharmonious homes. They suggest that a good parent-child relationship may be better classified as an absence of risk rather than as a protective factor. As Garmezy (1985) eloquently stated, “searching for protective factors in children under stress is a catch-as-catch-can situation. There is no single source or even multiple sources” (p. 218). Losel and Bliesner (1994) also address the problem of differentiating protective from risk factors, stating, “In resilience, as in research on stress and coping, it has to be assumed that there are many feedback processes and that almost everything is related to everything else” (p. 770).
In order to shed some light on the debate of the placement of the FES, Pearson Product Moment Correlations between risk factors and the FES Cohesion and Conflict scales, and protective factors and the FES Cohesion and Conflict scales were computed with this sample. The FES Cohesion scale correlated with only two risk factors, socioeconomic status and GPA. FES Conflict scale did not significantly correlate with any risk factors (see Table 1). Both the FES Cohesion and the FES Conflict scales correlated with all protective factors at an alpha level of .05, with the majority at $p < .01$ (see Table 2). Based on these findings, with support from past literature, the FES was retained as a protective factor.
Table 1

Pearson Product Moment Correlations among the Family Environment Scale (FES) Cohesion and Conflict Subscales and the Eight Risk Factors

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>FES Cohesion</th>
<th>FES Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic Status</td>
<td>.229**</td>
<td>-.057</td>
</tr>
<tr>
<td>(168)</td>
<td>(168)</td>
<td></td>
</tr>
<tr>
<td>Number of Permanent Parents</td>
<td>.080</td>
<td>.015</td>
</tr>
<tr>
<td>(168)</td>
<td>(168)</td>
<td></td>
</tr>
<tr>
<td>Number of Siblings in the Home</td>
<td>-.143</td>
<td>.132</td>
</tr>
<tr>
<td>(166)</td>
<td>(166)</td>
<td></td>
</tr>
<tr>
<td>Suspensions in the Last Year</td>
<td>.019</td>
<td>.066</td>
</tr>
<tr>
<td>(169)</td>
<td>(169)</td>
<td></td>
</tr>
<tr>
<td>Absences in the Last Year</td>
<td>-.097</td>
<td>.113</td>
</tr>
<tr>
<td>(169)</td>
<td>(169)</td>
<td></td>
</tr>
<tr>
<td>Disciplinary Actions in the Last Year</td>
<td>.050</td>
<td>-.027</td>
</tr>
<tr>
<td>(169)</td>
<td>(169)</td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>.163*</td>
<td>-.043</td>
</tr>
<tr>
<td>(170)</td>
<td>(170)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.039</td>
<td>-.181*</td>
</tr>
<tr>
<td>(170)</td>
<td>(170)</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

n is in parentheses.
### Table 2

**Pearson Product Moment Correlations among the Family Environment Scale, Cohesion, and Conflict Subscales and the Eight Protective Factors**

<table>
<thead>
<tr>
<th>Protective Factors</th>
<th>FES Cohesion</th>
<th>FES Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>.205*</td>
<td>-.299**</td>
</tr>
<tr>
<td></td>
<td>(147)</td>
<td>(147)</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.461**</td>
<td>-.377**</td>
</tr>
<tr>
<td></td>
<td>(155)</td>
<td>(155)</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.416**</td>
<td>.368**</td>
</tr>
<tr>
<td></td>
<td>(160)</td>
<td>(160)</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.183*</td>
<td>.166*</td>
</tr>
<tr>
<td></td>
<td>(161)</td>
<td>(161)</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>-.283**</td>
<td>.272**</td>
</tr>
<tr>
<td></td>
<td>(151)</td>
<td>(151)</td>
</tr>
<tr>
<td>Self-Care/Distraction Coping</td>
<td>.226*</td>
<td>-.305**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(113)</td>
</tr>
<tr>
<td>Seeking Support from Family or Church Coping</td>
<td>.360**</td>
<td>-.265**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(113)</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
<td>.370**</td>
<td>-.277**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(113)</td>
</tr>
</tbody>
</table>

**Notes:**
- * Correlation is significant at the 0.05 level (2-tailed).
- ** Correlation is significant at the 0.01 level (2-tailed).
- n is in parentheses.
The placement of anxiety was also investigated. Initially, the Revised Children's Manifest Anxiety Scale (RCMAS) was proposed as a protective factor. This was based on the idea that it was necessary to have a child-reported measure of internalizing symptoms. A number of studies have found that children may be labeled resilient due to the absence of externalizing problems. However, when both internalizing and externalizing symptoms are assessed, many children not displaying externalizing problems do manifest internalizing difficulties (Garmezy, 1985; Luthar & Zigler, 1991). Thus, it is important to assess both child-reported internalizing and child-reported externalizing behaviors before labeling a child as resilient. It was originally thought that lack of anxiety may protect against risk, but anxiety is not reported in the literature as a protective factor. Rather it is appears that a more substantial argument can be made for the need for a child self-report outcome measure that addresses internalizing behaviors. Therefore, in this study, Time 2 RCMAS was used as an outcome measure.

A few additional notes about the RCMAS are warranted here. The RCMAS contains a Lie Scale, which when used in conjunction with the RCMAS total score can identify inconsistent responding. A total of three subjects were identified as potentially problematic with Lie scores greater than 13 and RCMAS Total scores greater than 60. Upon review of these subject's scores, it became apparent that each score deviated from the cutoff, on either the Lie or the Total score, by only one to two points. Given this slight variation, all subjects' scores on the RCMAS were retained.

At the end of this process of assigning manifest variables to their constructs, outcome measures consisted of student GPA at Time 2, RCMAS at Time 2, and the
following Time 2 teacher measures. Teacher Report Form (TRF) of the Child Behavioral Checklist (Total, Internalizing, and Externalizing Scales), and the total score of the Social Skills Rating Scale-Teacher Form. Again, with the goal of reducing the number of variables, a total teacher outcome measure was proposed. This involved computing a new score, Time 2 teacher rated Behavioral Adjustment, which consisted of obtaining a mean score of all four teacher scales (TRF-Internalizing, TRF-Externalizing, TRF-Total and SSRS-Total). Subjects needed to have a non-missing score on each of the four measures to obtain a combined mean score. The TRF scales were reverse scored so that the new combined variable was positively coded (i.e., higher scores indicated better adjustment as rated by the teacher). This variable was subjected to a reliability analysis and obtained an alpha equal to .82 over the 4 "items." At the conclusion of this process, Time 2 teacher rated Behavioral Adjustment, Time 2 student GPA, and Time 2 student-rated RCMAS were decided upon as the study's measures of outcome.

Risk classification.

The principle investigators of the Flagship Project derived risk categories based on literature regarding risk and resiliency. The following categories were identified as placing a child at elevated risk: 1) low socioeconomic status as measured by qualification for free and reduced lunch, 2) homes with either one or no permanent parent, 3) three or more siblings in the home, 4) any suspensions in the last year, 5) five or more absences in the last year, 6) two or more disciplinary actions in the last year, 7) a grade point average of 2.0 or below, and 8) gender (male corresponding to greater risk). However, one purpose of the overall study was to attempt to clarify how risk should be defined. In the
present study, risk was investigated first as a dichotomous variable (high versus low risk), then as a polychotomous scaled variable (high, middle, and low risk), and finally as a nearly-continuous variable based on all eight risk indicators. The third variable is nearly-continuous or dimensional because the scale is not a perfectly smooth interval scale.

After some consideration, the dichotomized variable of risk was discarded based on Cohen’s (1983) demonstration that this process results in underestimating effects sizes and reducing the power of hypothesis tests. Cohen claims that “the cost in the degradation of measurement due to dichotomization is a loss of one-fifth to two-thirds of the variance that may be accounted for on the original variables, and a concomitant loss of power equivalent to that of discarding one-third to two-thirds of the sample” (p. 253). Also, the polychotomous scaled risk variable was not utilized here, as there is little evidence for a three-tiered differentiation of risk. After much deliberation and careful referring to the literature, it was decided that all eight risk factors would be used as a nearly-continuous measure of risk. This variable was used for all of the analyses.

It is important to note that this new risk variable is skewed in the direction of subjects having fewer rather than more risk factors. In fact, 91% of this sample had 4 or fewer risk factors, 60% had three or fewer, with the greatest percent having 0 or 1 risk factors (42%; see Figure 8). Thus, this sample reflects relatively few students with high levels of risk factors.
Protective factors.

Protective factors were also reviewed with the hope of reducing the sheer number that was originally proposed. As previously mentioned, the RCMAS was removed as a protective factor and moved to the outcome measures. The remaining measures of protective factors were examined for the benefit they could add to this study, weighed against the reduced power that results from more independent variables due to the small sample size. First, measures that addressed core aspects of this study (i.e., coping, self-esteem, family environment, etc.) were retained. There was one measure that did not meet this criterion, the score on the Attachment Style Questionnaire. Attachment was not an original focus of this study, so this measure was dropped.

The next step in reducing the number of protective factors involved deciding whether or not to use a measure's subscale scores or the total score (if one was available).
Predicting Adaptive Outcome

For the most part, only a total scale was available or it made intuitive sense to use the total scale. However, for two measures subscales were used. As previously mentioned, two subscales of the FES, Cohesion and Conflict, were included in the analyses. In addition, three scales from the ACOPE were used to measure the construct of coping (see next section for details).

At the end of this process, the following protective factors remained under study:

1) the Social Skills Rating Scale (SSRS) Total score. 2) the Piers-Harris Children’s Self-Concept Scale (CSCS) Total score, 3) the Index of Peer Relations (IPR) Total score, 4) Norwicki-Strickland Locus of Control Scale (NSLOC) Total score, 5) the Children’s Appraisal of Social Support (CASS) Total score, 6) the Adolescent Coping Orientation for Problem Experiences (ACOPE), using three new factors (see next section), and 7) the Family Environment Scale (FES) Cohesion and Conflict scales.

**Count of protective factors.**

A new variable was computed that reflected a count of Time 1 protective factors. The coping factors were not included in this count because it was not possible to determine if exhibiting one coping strategy over another was protective. Scores on protective factor measures were examined and a cutoff was determined above or below which a score was considered to be protective. This calculation involved adding or subtracting, depending on whether the measure was positively or negatively scored, one standard deviation from the mean: ph_tot>40, FES-Cohesion>40, FES-Conflict<60, IPR<42.5, LOC<13.62, CSS_T>85, CASS_A<2.88. If a subject’s score exceed the ‘protective’ level for the measure, the subject received a score of 1. This process
continued for all of the protective factors and a combined score was computed, indicating the total level of protection for each subject. This new protective factor variable was similar to the nearly-continuous risk variable and was used in the analyses.

**Investigating the factor structure of the ACOPE.**

As previously mentioned, concerns regarding the validity and reliability of the ACOPE have arisen in the literature and in previous work with this sample (Simon-Thomas, 1988). There is no test-retest information presented in the manual, and the reliability and validity of the factor structure has been called into question. This study hoped to investigate the psychometric worth of the ACOPE, and more specifically, to obtain test-retest reliability coefficients and to determine whether a more reliable factor structure could be obtained. It was expected that fewer, more integrated factors that resemble the adult literature on coping would emerge.

Test-retest reliabilities were computed for the ACOPEs administrated as part of this study. The ACOPE was administered three times to this sample, once as part of Time 1 data collection for the Flagship Project (ACOPE #1- Fall 1997), then as part of a masters thesis (ACOPE #2- Spring, 1998), and finally during Time 2 data collection for the Flagship Project. Test-retest reliability was assessed between the Fall, 1997 and Spring, 1998 administrations (these two times were used because Time 2 data collection had not occurred yet). The ACOPE total score test-retest reliability was low (r=.329). Personal communication with the developers of the ACOPE (H. I. McCubbin, personal communication, January 20, 1999) indicated that other studies have also found low test-
retest reliabilities. This information calls into question the stability of ACOPE and needs to be kept in mind in the analyses of the ACOPE reported later.

Next, the factor structure of the ACOPE was investigated. A few studies have been conducted that assess the factor structure of the ACOPE (Fanshawe & Burnett, 1991; Kluwin et al., 1990; Jorgensen & Dusek, 1990), and, consistently, these studies do not replicate the original 12-factor structure. Fanshawe and Burnett (1991) identified four factors. Negative Avoidance (i.e., smoke, drink, use drugs, etc.; \( \alpha = .74 \)), Anger (i.e., say mean things, get angry and yell, etc.; \( \alpha = .77 \)), Family Communication (i.e., talk to my mother or father, do things with my family, etc.; \( \alpha = .74 \)), and Positive Avoidance (i.e., try to think of the good things in my life, say nice things to others, etc.; \( \alpha = .67 \)), which accounted for 51% of the variance in the items. Kluwin et al. (1990) found three factors. Seeking Personal Solutions (i.e., do what your parents tell you, talk to a friend, work hard on school work, etc.; \( \alpha = .828 \)), Seeking Diversions (i.e., go shopping, go to a movie, play video games, etc.; \( \alpha = .734 \)), and Emotional Responses (i.e., cry, swear, complain to family members, etc.; \( \alpha = .629 \)). As noted earlier, Jorgenson and Dusek (1990) identified two coping factors, Salutary Effort and Stress Palliation. No reliability coefficients were reported for these scales. Overall, these three studies found more reliable factors (i.e., greater internal consistency) than the 12 factors presented in the ACOPE manual.

In addition, the factors identified in all of the three studies mentioned above identified coping strategies similar to those reported in the adult coping literature. An Emotion-focused coping factor (Folkman & Lazarus, 1980) consistently emerged.
although it may have been labeled differently. Stress Palliation, Negative Avoidance plus Anger, and Emotional Responses are focused on managing tension as a result of demands, essentially similar to the construct of Emotion-Focused coping (Folkman & Lazarus, 1980).

Salutary Effort, Family Communication plus Positive Avoidance, and Seeking Personal Solutions are directed at eliminating or reducing demands or increasing resources. These factors resemble Folkman & Lazarus' Problem-Focused coping, but differ in that not all of the strategies are focused on addressing the problem or stressor directly; some strategies are focused on distancing or distracting. These coping strategies may be better conceptualized as tapping Self-Care/Distraction. However, in general, the coping factors identified in the above-mentioned studies are similar to Emotion and Problem-focused coping. Although there are problems with these two dichotomized coping strategies (this will be addressed in the Discussion section), the emergence of similar factors in child and adolescent research is viewed as a piece of validation for the ACOPE. At the least, this suggests that the factor structure of the ACOPE may be a more useful measure of coping when limited to fewer, more reliable factors.

Originally, it was proposed that a new Principal Component Analysis (PCA) would be conducted in this study to investigate the factor structure of the ACOPE. All of the factor analyses conducted in the ACOPE studies cited above utilized PCA. While PCA is a useful technique, it extracts factors that account for both error and reliable variance. In addition, most of these studies used the eigenvalue-greater-than-one-rule to determine the number of factors to rotate and interpret. Cliff and Caruso (1998) have
called into question the eigenvalue-greater-than-one-rule, noting that it is based on two flawed assumptions. First, it has been suggested that factors that have an eigenvalue greater than one account for more variance than a single variable. However, applying the eigenvalue-greater-than-one-rule to unrotated components can result in missing other components that would also account for more variance than a single variable. Second, Lord (1958) claimed that any factor with an eigenvalue greater than one would have positive internal consistency reliability. Cliff (1988) demonstrated that this is not the case, as eigenvalues smaller than one can have positive internal consistency reliability; factors with eigenvalues smaller than one can be reliable. Thus, it is possible that by using PCA and the eigenvalue-greater-than-one-rule one could miss reliable components.

Deciding on the number of factors to rotate is perhaps the most crucial step in a factor analysis. This question is often answered inconsistently by different researchers and could explain why different factor structures emerge from factor analyses of the same instrument (the ACOPE is a good example of this), as well as why the eigenvalue-greater-than-one-rule is still being used. Cliff and Caruso (1998) advocate for an alternative method of factor analysis that provides a much-needed answer to the question of how many components to rotate. They propose Reliable Component Analysis (RCA), which identifies orthogonal composite scores based on their maximized reliability. The researcher can investigate the weights that define these composites and decide whether or not the reliability is substantial enough. The reliable components can then be rotated to enhance interpretability. Estimated reliabilities of the rotated components are then determined in a similar manner to the original composites (Cliff & Caruso, 1998).
end RCA provides: "a) the maximally reliable composite, b) the number of uncorrelated composites in the battery that have acceptable proportions of true variance, c) the factor loadings, rotated as well as unrotated, on these composites, d) the weights that define the composites, rotated and unrotated, and e) the proportions of true variance in the rotated composites." (Cliff & Caruso, 1998, p. 292).

Given the controversy over how many reliable factors to extract from the ACOPE (as well as how many can be extracted), RCA was chosen over PCA. This decision was based on a desire to obtain uncorrelated factors that accounted for the maximum proportion of reliable variance, and the desire to implement a rational decision regarding the number of components to examine. Additionally, PCA and RCA can produce similar results if the reliabilities of all measures are the same (Cliff & Caruso, 1998). Since this is not the case with the ACOPE scales, RCA was the selected method to investigate the factor structure of the ACOPE.

RCA was conducted on the 12 subscales of the ACOPE. The subscales were used rather than the individual items due to sample size limitations and the need to have existing reliabilities for the analyses. There were published reliabilities available for the subscales, but no reliabilities for the individual items. While it was proposed that test-retest reliabilities could be obtained from the administrations of the ACOPE at Time 1 and Time 2, this was not practical due to attrition that occurred between Time 1 and Time 2: the sample size for subjects having completed both ACOPEs was reduced from 137 to 102. Therefore, it was decided that internal consistency reliabilities should be computed for the 12 subscale scores at Time 1. It is important to note, however, that by conducting...
the RCA at the subscale level, it is possible that problems regarding initial placement of items was perpetuated. However, this issue is addressed by RCA in that items that do not fit on a particular scale should cause that scale to receive a low reliability coefficient, meaning that the subscale would be likely to receive a low weight in the RCA solution.

Based on a reliability criterion of .80, three coping factors were retained from the RCA. Factor 1 was comprised of Developing Self-Reliance (i.e., try on your own to figure out how to deal with your problem, try to see the good things in a difficult situation, etc.), Developing Social Support (i.e., try to help people solve their problems, talk to a friend about how you feel, cry, etc.), Investing in Close Friends (i.e., be close with someone who you care about, be with a boyfriend or girlfriend, etc.), Engaging in Demanding Activity (i.e., do strenuous physical activity, get more involved in activities at school, etc.), Being Humorous (i.e., joke and keep a sense of humor, try to be funny and make light of it all, etc.), and Relaxing (i.e., daydream about how you would like things to be, listen to music, etc.). Factor 2 consisted of Solving Family Problems (i.e., talk to your mother or father about what bothers you, do things with your family, etc.) and Seeking Spiritual Support (i.e., go to church, pray, talk to a minister/priest/rabbi, etc.). Factor 3 included Ventilating Feelings (i.e., get angry and yell at people, swear, say mean things to people, etc.) and Avoiding Problems (i.e., use drugs, drink beer, wine, liquor, smoke, etc.). The reliabilities for the three factors were .83, .81, and .80 respectively.

The first factor is consistent with previous factors found in the child and adolescent coping literature that reflect a combination of social support, self-reliance and distraction. This factor will be referred to as Self-Care/Distraction. Factor 2 is similar to
the Family Communication category found by Fanshawe and Burnett (1991), but also contains a spiritual component. This factor will be labeled Social Support from Family or Church. Factor 3 is similar to Folkman and Lazarus' (1980) Emotion-Focused coping but differs, as there seems to be more of an emphasis on expression of feelings. This factor will be referred to as Expressing Feelings/Avoiding.

It was proposed that coping be considered as a protective factor and also as a moderator and/or mediator between other protective factors and outcome. The three coping strategies will be examined in these ways.

Analyses

Path Model

One large structural equation model (see Appendix A) was originally proposed to account for the relationships between risk factors, protective factors and outcome. In this model, protective factors were divided into those that were influenced by the environment (Environmental) and those that reflected inner feelings about oneself (Personal). A number of hypotheses were made about the ways in which these variables interacted. However, it quickly became apparent that the size of this sample was not sufficient to investigate a model of this complexity. Thus, a simpler path model (see Appendix D), with all manifest variables, was constructed and tested using multiple regression analyses. AMOS was not used due to its requirement of complete data sets (i.e., no missing variables), which significantly further reduced the sample size in this study. Although the original model was not tested, the distinction between environmental
and personal protective factors was still investigated, as the existence of two types of protective factors could be useful for intervention projects.

Appendices A-D show the progression of the models investigated. Appendix A is the original model proposed at the prospectus meeting. In this model, there are divisions between internal and external risk and protective factors. The latent variable of vulnerabilities represents internal risk factors and was hypothesized to be measured by lack of personal protective factors. In the model in Appendix B, this high versus low distinction was removed and gender was added as a stressor. Appendix C’s model shifts the Family Environment Scale from an Environmental protective factor to a risk factor (formerly called stressors) and moves suspensions, absence, and detentions from risk factors to outcome measures. Also, GPA is added as an outcome measure. Appendix D presents the model that was tested in the current study. This model is no longer a structural equation model, as all latent variables were removed. This new path model (called a path model because comprised of all manifest variables) is essentially a combination of the models in Appendices B and C. The original risk factors plus gender, constitute the continuous risk variable described in the Data Reduction section. The high versus low risk distinction was removed and GPA was added to outcome measures. Student-rated Anxiety was also added to the outcome measures; this decision was also discussed in the Data Reduction section.

The model in Appendix D (will be referred to henceforth as the ‘path model’) was tested with multiple regression analyses (MRA) to investigate, 1) the relationship between and the amount of variance accounted for by Risk in relation to all nine
predictive factors, and 2) the ability of the nine protective factors to predict Adaptive outcome. MRA were conducted individually for each of the relationships under investigation. Thus, this model was not tested in the classic sense that a path model is tested, where the fit of the entire model is examined at once. MRA were used because of the lack of a complete data set (criteria for AMOS), and because the R and R$^2$'s from MRA are identical to path coefficients obtained from AMOS using the least squared method.

Findings will be reviewed briefly here to identify the most significant relationships, but will then be discussed in more detail in the Results section. Risk accounted for the most variance in Self-Esteem (Adjusted R$^2$=.145), Locus of Control (Adjusted R$^2$=.107) and Social Support (Adjusted R$^2$=.113; see Table 16). Adjusted R$^2$ was used over R$^2$ in these analyses because this statistic takes sample size and the number of predictors into consideration. These same variables (Self-Esteem, Internal Locus of Control and Social Support) also accounted for the most variance in the three outcome measures (see Table 17). This model identified that Self-Esteem, Internal Locus of Control and Social Support were most predicted by, and in turn were most predictive of, Adaptive Outcome. These protective factors were then selected to be included in tests of moderation investigated in the Results section.

In addition to the large path model, two smaller models, one derived from the schizophrenia literature and one from risk and resiliency research, were proposed to explain the interaction of risk and protective factors on adaptive outcome. The diathesis-stress and the protective versus vulnerability models were expected to test the same
relationship of moderation. The main difference between the models appears to be the meaning of terms diathesis and protective. Diathesis is typically used to refer to a genetic vulnerability, whereas protective factors describe both positive genetic and environmental traits. In the present study, the only biological or genetic information that was available was subject's gender. Thus, this study was not able to conceptualize diathesis in the classic sense of representing a genetic vulnerability. Instead, diathesis referred to a lack of protective factors and stress was conceptualized as higher levels of risk factors. Protection was conceptualized as higher levels of protective factors, which would interact with greater risk. Clearly, the differences between these two models, when they are framed in this way, are difficult to find. In addition, the ways in which both of these models are tested are one and the same, namely through the use of MRA, in the same manner one would test for moderation effects. Therefore, a decision was made that both models would be tested by examining the moderating effects of higher levels of protective factors, in the presence of risk factors, on adaptive outcome.

**Tests of Moderation, Mediation and Indirect Effects**

In order to address more specifically the interactions between risk and specific protective factors and their influence on adaptive outcome, individual protective factors were also investigated as potential moderators of and mediators between risk and Time 2 outcome. Also, the three Coping factors were examined as potential moderators and/or mediators of the relationship between other protective factors and Time 2 outcome. Testing for moderation and mediation effects has become increasingly popular, and it is
important to clarify how to conduct these analyses. In addition, tests of indirect effects are discussed.

**Moderation effects.**

In this study, moderators are tested in the manner presented by Baron and Kenny (1986). The first step involves entering the independent variable and moderator together to predict the dependent variable. Then, in a second block, the interaction between the independent variable and the moderator is entered. This is done by using a variable created by multiplying the independent variable by the moderating variable. Moderation is determined by the significance of the $F$ change score when this interaction term is entered.

It was not possible to test every combination of interactions between protective and risk factors or protective factors with every Coping factor. As previously stated, a decision was made to choose protective factors that were predicted by Risk and that were also predictive of Adaptive Outcome as determined by relationships investigated as part of the path model. It was acknowledged that one does not need significant relationships between variables to test for moderation effects, but testing all possible moderating effects would have resulted in a larger number of tests and potential inflated Type I error rate. Also, two of the protective factor that were identified by the path model, Self-Esteem and Internal Locus of Control, were of particular interest to this study, as they were hypothesized to comprise, along with Coping, the Personal protective factor composite variable. Even though the three Coping factors were not as highly predicted by Risk or as predictive of Adaptive Outcome as Self-Esteem or Internal Locus of
Predicting Adaptive Outcome

Control, the Coping factors were included in this study due to the lack of information that exists on the role that coping plays in the process of risk and resiliency.

Mediation effects.

Interest in variables that potentially mediate the relationship between the independent variable and the dependent variable has become increasingly popular. Unfortunately, there has been confusion regarding how best to test models of mediation (Gogineni et al., 1995). The most widely cited instructions for testing models of mediation come from Baron and Kenny’s (1986) and James and Brett (1984). However, there is still uncertainty regarding when to test for models of mediation and whether or not tests of mediation also address tests of indirect effects. In the present study, protective factors were investigated as mediators between Risk and Adaptive Outcome, and Coping factors were examined as mediators between other protective factors and Adaptive Outcome. Tests of mediation are reviewed below, and two statistical approaches are recommended.

Baron and Kenny (1986) propose that three criteria need to be met in order for a variable to be a mediator: 1) the independent variable accounts for variations in the presumed mediator, 2) the mediator accounts for changes in the dependent variables, and 3) when conditions 1 and 2 are met, the relationship between the independent variable and the dependent variable is not significant. These three steps can be translated into three regression equations: 1) \( t = b_i x + e \), 2) \( y = b_j x + e \), and 3) \( y = b_3 x + b_4 t + e \), where \( t \) is the potential mediator, \( x \) is the independent variable, \( y \) is the dependent variable, and \( e \) is error. According to Baron and Kenny, if \( t \) is a mediator then all three equations will be
significant and $b_3$ will be less than $b_2$. They recommend using multiple regression analyses (MRA) in three steps: 1) regress the mediator on the independent variable, 2) regress the dependent variable on the independent variable, and 3) regress the dependent variable on both the independent variable and the mediator. If the relationship between the mediator and the independent variable or the independent variable and the dependent variable are not significant, then the process should stop. If all conditions hold true, then the effect of the independent variable on the dependent variable must be less, and nonsignificant, in the third equation.

James and Brett (1984) advocate the use of Structural Equation Modeling (SEM) or path analysis (PA) to test for mediation. They recommend these methods because mediation exerts its effect in an additive, linear manner that implies causal order. They suggest that mediation follows Rozeboom’s (1956, as cited in James & Brett, 1984) definition of mediation resembling a simple path from $x$ (the independent variable) to $m$ (the mediator) to $y$ (the dependent variable). For mediation to have occurred, the influence of $x$ on $y$ is transmitted only through $m$. This is similar to Baron and Kenny’s conceptualization of mediation, although James and Brett recommend that mediator relationships be tested with SEM.

As indicated by Baron and Kenny and Brett and James, either MRA or SEM can be used to test for mediation. There are advantages to both methods. MRA more easily allows for the use of listwise deletions so that complete data sets are not needed. In contrast, many programs for SEM require complete data sets, which in the case of this study significantly reduced the useable sample size. Both methods test for mediator
effects, but MRA does so by comparing the $\beta$ weight of the independent variable, when just the independent variable is regressed on the dependent variable, to the $\beta$ weight when both the mediator and independent variables are regressed on the dependent variable. SEM compares the Chi-squared statistics of two models, one in which the independent variable causes the dependent variable, and a second in which the independent variable causes the mediator which causes the dependent variable.

The purpose of the present study was to test for the potential mediating role of a number of protective factors. It was not possible to obtain complete data sets without significantly reducing the usable sample size. Therefore, MRAs were conducted in this study to test for mediation.

**Indirect effects.**

In addition to tests of mediation, this study was interested in tests of indirect effects. Both of the above mentioned articles state that in order for mediation to have occurred, a previously significant relationship between the independent variable and the dependent variable is no longer significant with the addition of the mediator variable. This implies that there are only indirect effects with no direct effect between the independent variable and the dependent variable. When this is true, there is 'complete mediation.' However, as is often the case in social science research, it is likely that other variables affect the dependent variable as well as the independent variable under investigation. Thus, what is talked about in the literature as mediation is often 'partial mediation.' Partial mediation occurs when the relationship between the independent variable and the dependent variable is reduced with the addition of the mediator, but a
Predicting Adaptive Outcome
direct effect from the independent variable to the dependent variable still exists. Thus, it is possible that a variable may not be a mediator, but may still carry meaningful indirect effects from the independent variable to the outcome variable. This study conducted both tests for mediation and tests for indirect and direct effects.

Baron and Kenny recommend the use of Sobel’s test for indirect effects. Michael Sobel (1982) developed a test for indirect effects in structural equation models due to his belief that indirect effects were largely ignored in psychological research. This procedure involves determining the distribution of the indirect effects in one’s sample, and then estimating confidence intervals for this distribution. Preacher & Leonardelli (2001) recently provided an easy to use computer program of the Sobel Test. They claim that this program is a test of mediation, but when looking closely at the procedures, it is clearly a test of indirect effects.

In the current study, both Baron and Kenny’s method of testing three multiple regression equations, and the Sobel test of indirect effects are conducted to examine potential mediators.

Results

Results are presented according to the hypothesis that they test; the same numbers used in listing the hypotheses in Chapter 1 will be used to aid in interpretation.

1) Risk Factors:

a. It was expected that fewer risk factors would be associated with more Adaptive Outcomes, as measured by Time 2 teacher rating of social skills and behavioral problems (will be referred to as Behavioral Adjustment), Time 2 GPA, and Time
2 student-rated Anxiety. In particular, it was predicted that risk would be
negatively correlated with Time 2 teacher rating of Behavioral Adjustment and
Time 2 GPA, and positively correlated with Time 2 student-rated Anxiety.
Pearson product moment correlations were conducted and all relationships were
significant. Risk was negatively correlated with Time 2 teacher rating of
Behavioral Adjustment ($r = -0.462, p < .001; n = 131$) and Time 2 GPA ($r = -0.524,
p < .001; n = 149$), positively correlated with Time 2 student-rated Anxiety ($r = 0.181,
p < .05; n = 145$). Again, it is important to note that there is a restricted range of
risk factors, and the majority of students have fewer risk factors.

b. It was expected that boys would display more risk factors than girls. Independent
sample $t$-tests were conducted on the differences between boys' and girls' levels
of risk factors. Gender was removed from the risk variable for this analysis. This
hypothesis was not supported, as boys and girls had approximately the same
number of risk factors (see Table 3).
Table 3

Mean Number of Responses and Independent Sample t-test between Boys’ and Girls’ Levels of Risk Factors

<table>
<thead>
<tr>
<th>Risk Factor (continuous variable with 7 risk factors, gender was not included)</th>
<th>Boys</th>
<th>Girls</th>
<th>t</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.78</td>
<td>1.6</td>
<td>.565</td>
<td>.573</td>
</tr>
<tr>
<td></td>
<td>(95)</td>
<td>(95)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
df = 188
n is in parentheses.

2) Protective Factors:

a. It was predicted that Time 1 and Time 2 protective factors would be uncorrelated. If this were found to be true, then measures of protective factors at Time 2 were to be used as additional measures of Adaptive Outcome. Pearson product moment correlations were conducted and the majority of protective factors at Time 1 were significantly correlated with protective factors at Time 2 (see Table 4). Due to this finding, Time 2 protective factors were not used as outcome measures.
# Table 4

**Pearson Product Moment Correlations among Time 1 and Time 2 Protective Factors**

<table>
<thead>
<tr>
<th>Time 2 Protective Factors</th>
<th>Social Skills</th>
<th>Self-Esteem</th>
<th>FES Cohesion</th>
<th>FES Conflict</th>
<th>Social Support</th>
<th>Peer Relations</th>
<th>Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>.398**</td>
<td>.258**</td>
<td>.144</td>
<td>-.088</td>
<td>-.181*</td>
<td>-.135</td>
<td>-.128</td>
</tr>
<tr>
<td></td>
<td>(120)</td>
<td>(124)</td>
<td>(123)</td>
<td>(123)</td>
<td>(124)</td>
<td>(125)</td>
<td>(119)</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.493**</td>
<td>.669**</td>
<td>.507**</td>
<td>-.397**</td>
<td>-.505**</td>
<td>-.404**</td>
<td>-.454**</td>
</tr>
<tr>
<td></td>
<td>(126)</td>
<td>(129)</td>
<td>(128)</td>
<td>(128)</td>
<td>(129)</td>
<td>(130)</td>
<td>(124)</td>
</tr>
<tr>
<td>FES-Cohesion</td>
<td>.383**</td>
<td>.270**</td>
<td>.535**</td>
<td>-.374**</td>
<td>-.350**</td>
<td>-.163</td>
<td>-.283**</td>
</tr>
<tr>
<td></td>
<td>(130)</td>
<td>(134)</td>
<td>(133)</td>
<td>(133)</td>
<td>(132)</td>
<td>(135)</td>
<td>(129)</td>
</tr>
<tr>
<td>FES-Conflict</td>
<td>-.248**</td>
<td>-.260**</td>
<td>-.339**</td>
<td>.379**</td>
<td>.307**</td>
<td>.158</td>
<td>.199*</td>
</tr>
<tr>
<td></td>
<td>(130)</td>
<td>(134)</td>
<td>(133)</td>
<td>(133)</td>
<td>(132)</td>
<td>(135)</td>
<td>(129)</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.304**</td>
<td>-.270**</td>
<td>-.229**</td>
<td>.220*</td>
<td>.352**</td>
<td>.389**</td>
<td>.186</td>
</tr>
<tr>
<td></td>
<td>(130)</td>
<td>(135)</td>
<td>(133)</td>
<td>(133)</td>
<td>(134)</td>
<td>(135)</td>
<td>(129)</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.155</td>
<td>-.192*</td>
<td>-.021</td>
<td>-.023</td>
<td>.106</td>
<td>.398**</td>
<td>-.036</td>
</tr>
<tr>
<td></td>
<td>(128)</td>
<td>(132)</td>
<td>(131)</td>
<td>(131)</td>
<td>(130)</td>
<td>(133)</td>
<td>(126)</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>-.351**</td>
<td>-.423**</td>
<td>-.278**</td>
<td>.201*</td>
<td>.286**</td>
<td>.218*</td>
<td>.536**</td>
</tr>
<tr>
<td></td>
<td>(120)</td>
<td>(125)</td>
<td>(123)</td>
<td>(123)</td>
<td>(123)</td>
<td>(125)</td>
<td>(119)</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).
n is in parentheses.
b. It was predicted that subjects with a greater number of protective factors would demonstrate higher levels of Adaptive Outcome, as measured by the three outcome measures. Specifically, it was hypothesized that protective factors would correlate positively with Time 2 teacher rating of Behavioral Adjustment and Time 2 GPA, and correlate negatively with Time 2 student-rated Anxiety. The combined count of protective factors was correlated with Time 2 teacher rating of Behavioral Adjustment, Time 2 GPA, and Time 2 student-rated Anxiety using Pearson product moment correlations. As predicted, the count of protective factors correlated significantly with the three outcome measures (see Table 5).

Table 5
Pearson Product Moment Correlations among the Count of Protective Factors and the Three Measures of Adaptive Outcome

<table>
<thead>
<tr>
<th>PROCOUNT (continuous variable of protective factors)</th>
<th>Time 2 Outcome Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 2 Student Rated Anxiety</td>
</tr>
<tr>
<td></td>
<td>(154)</td>
</tr>
</tbody>
</table>

| PROCOUNT (continuous variable of protective factors) | .183* | -.168* | .243** |

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
\( n \) is in parentheses.
c. It was expected that protective factors would be correlated with one another, but that they would fall into one of two categories, either Environmental or Personal protective factors. Pearson product moment correlations were first conducted with all Time 1 protective factors, except the three Coping factors (the relationship between Coping and other protective factors was investigated in hypothesis #3a). The vast majority of protective factors were significantly correlated with one another (see Table 6).
## Table 6

**Pearson Product Moment Correlations among Time 1 Protective Factors (without the Three Coping Factors)**

<table>
<thead>
<tr>
<th>Time 1 Protective Factors</th>
<th>Social Skills</th>
<th>Self-Esteem</th>
<th>FES-Cohesion</th>
<th>FES-Conflict</th>
<th>Social Support</th>
<th>Peer Relations</th>
<th>Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>1.000</td>
<td>.485**</td>
<td>.205*</td>
<td>-.299**</td>
<td>-.297**</td>
<td>-.352**</td>
<td>-.193*</td>
</tr>
<tr>
<td></td>
<td>(162)</td>
<td>(144)</td>
<td>(147)</td>
<td>(147)</td>
<td>(146)</td>
<td>(155)</td>
<td>(133)</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.485**</td>
<td>1.000</td>
<td>.461**</td>
<td>-.377**</td>
<td>-.519**</td>
<td>-.328**</td>
<td>-.465**</td>
</tr>
<tr>
<td></td>
<td>(144)</td>
<td>(163)</td>
<td>(155)</td>
<td>(155)</td>
<td>(153)</td>
<td>(152)</td>
<td>(142)</td>
</tr>
<tr>
<td>FES-Cohesion</td>
<td>.205*</td>
<td>.461**</td>
<td>1.000</td>
<td>-.594**</td>
<td>-.416**</td>
<td>-.183*</td>
<td>-.283**</td>
</tr>
<tr>
<td></td>
<td>(147)</td>
<td>(155)</td>
<td>(170)</td>
<td>(170)</td>
<td>(160)</td>
<td>(161)</td>
<td>(151)</td>
</tr>
<tr>
<td>FES-Conflict</td>
<td>-.299**</td>
<td>-.377**</td>
<td>-.594**</td>
<td>1.000</td>
<td>.368**</td>
<td>.166*</td>
<td>.272**</td>
</tr>
<tr>
<td></td>
<td>(147)</td>
<td>(155)</td>
<td>(170)</td>
<td>(170)</td>
<td>(160)</td>
<td>(161)</td>
<td>(151)</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.297**</td>
<td>-.519**</td>
<td>-.416**</td>
<td>.368*</td>
<td>1.000</td>
<td>.424**</td>
<td>.449**</td>
</tr>
<tr>
<td></td>
<td>(146)</td>
<td>(153)</td>
<td>(160)</td>
<td>(160)</td>
<td>(170)</td>
<td>(156)</td>
<td>(152)</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.352**</td>
<td>-.328**</td>
<td>-.183*</td>
<td>.166*</td>
<td>.424**</td>
<td>1.000</td>
<td>.148</td>
</tr>
<tr>
<td></td>
<td>(155)</td>
<td>(152)</td>
<td>(161)</td>
<td>(161)</td>
<td>(156)</td>
<td>(172)</td>
<td>(144)</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>-.193*</td>
<td>-.465**</td>
<td>-.283**</td>
<td>.272**</td>
<td>.449**</td>
<td>.148</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>(133)</td>
<td>(142)</td>
<td>(151)</td>
<td>(151)</td>
<td>(152)</td>
<td>(144)</td>
<td>(157)</td>
</tr>
</tbody>
</table>

**Notes:**
- *Correlation is significant at the 0.05 level (2-tailed).
- **Correlation is significant at the 0.01 level (2-tailed).
- n is in parentheses.

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d. It was hypothesized that Environmental protective factors would include Social Skills, Family Cohesion, Family Conflict, Social Support, and Peer Relations. First, the correlations between these variables were investigated with Pearson product moment correlations, and they were found to significantly correlated with one another (see Table 7). Then these variables were combined to form one Environmental protective factor variable, and internal consistency was assessed. This new variable achieved an alpha of .72.
Table 7

Pearson Product Moment Correlations among Time 1 Environmental Protective Factors

<table>
<thead>
<tr>
<th>Time 2 Environmental Protective Factors</th>
<th>Social Skills</th>
<th>FES-Cohesion</th>
<th>FES-Conflict</th>
<th>Social Support</th>
<th>Peer Relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>1.000</td>
<td>.205*</td>
<td>-.299**</td>
<td>-.297**</td>
<td>-.352**</td>
</tr>
<tr>
<td></td>
<td>(162)</td>
<td>(147)</td>
<td>(147)</td>
<td>(146)</td>
<td>(155)</td>
</tr>
<tr>
<td>FES-Cohesion</td>
<td>.205*</td>
<td>1.000</td>
<td>-.594**</td>
<td>-.416**</td>
<td>-.183*</td>
</tr>
<tr>
<td></td>
<td>(147)</td>
<td>(170)</td>
<td>(170)</td>
<td>(160)</td>
<td>(161)</td>
</tr>
<tr>
<td>FES-Conflict</td>
<td>-.299**</td>
<td>-.594**</td>
<td>1.000</td>
<td>.368**</td>
<td>.166*</td>
</tr>
<tr>
<td></td>
<td>(147)</td>
<td>(170)</td>
<td>(170)</td>
<td>(160)</td>
<td>(161)</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.297**</td>
<td>-.416**</td>
<td>.368**</td>
<td>1.000</td>
<td>.424**</td>
</tr>
<tr>
<td></td>
<td>(146)</td>
<td>(160)</td>
<td>(160)</td>
<td>(170)</td>
<td>(156)</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.352**</td>
<td>-.183*</td>
<td>.166*</td>
<td>.424**</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>(155)</td>
<td>(161)</td>
<td>(161)</td>
<td>(156)</td>
<td>(172)</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Internal Consistency of this category was .7148.
n is in parentheses.
e. Coping (measured by the three new ACOPE factors). Self-Esteem and Internal Locus of Control were predicted to reflect Personal protective factors. Again, the first step was to investigate the correlations between these variables with Pearson product moment correlations (see Table 8). Self-Esteem and Internal Locus of Control were significantly correlated with one another, but inconsistently correlated with the three Coping factors (this is discussed in more detail under hypothesis #3). When these variables were combined to form one Personal protective factor variable, the reliability coefficient of this combination was .50. However, when the three Coping factors were removed from this combination, the reliability coefficient increased to .63. Therefore, the three Coping factors were not included in the Personal protective factors variable, but they used in separate analyses.
Table 8

Pearson Product Moment Correlations among Time 1 Personal Protective Factors

<table>
<thead>
<tr>
<th>Time 2 Personal Protective Factors</th>
<th>Self-Esteem</th>
<th>Locus of Control</th>
<th>Self/care Distraction Coping</th>
<th>Seeking Support from Family or Church Coping</th>
<th>Expressing Feelings/Avoiding Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Esteem</td>
<td>1.000</td>
<td>-.465**</td>
<td>.097</td>
<td>.199*</td>
<td>.448**</td>
</tr>
<tr>
<td></td>
<td>(163)</td>
<td>(142)</td>
<td>(113)</td>
<td>(113)</td>
<td>(113)</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>-.465**</td>
<td>1.000</td>
<td>.061</td>
<td>-.028</td>
<td>-.328**</td>
</tr>
<tr>
<td></td>
<td>(142)</td>
<td>(157)</td>
<td>(112)</td>
<td>(112)</td>
<td>(112)</td>
</tr>
<tr>
<td>Self/care Distraction Coping</td>
<td>.097</td>
<td>-.061</td>
<td>1.000</td>
<td>.013</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(125)</td>
<td>(125)</td>
<td>(125)</td>
</tr>
<tr>
<td>Seeking Support from Family or Church Coping</td>
<td>.199*</td>
<td>.028</td>
<td>.013</td>
<td>1.000</td>
<td>.104</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(125)</td>
<td>(125)</td>
<td>(125)</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
<td>.488**</td>
<td>-.328**</td>
<td>.012</td>
<td>.104</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(125)</td>
<td>(125)</td>
<td>(125)</td>
</tr>
</tbody>
</table>

Notes:
- * Correlation is significant at the 0.05 level (2-tailed).
- ** Correlation is significant at the 0.01 level (2-tailed).
- Internal Consistency of this category was .5006 with the three Coping strategies and .6341 with the three Coping strategies.
- n is in parentheses.
f. The previous two analyses support the prediction that protective factors can be conceptualized as either Environmental or Personal. Given this finding, the relationship between Environmental and Personal protective factors and outcome was investigated. Both Environmental and Personal protective factors demonstrated significant correlations with Time 2 teacher rated Behavioral Adjustment, Time 2 GPA, and Time 2 student-rated Anxiety (see Table 9). However, these results indicated that Personal protective factors were more strongly associated with Adaptive Outcome at Time 2, than were Environmental protective factors.

Table 9

Pearson Product Moment Correlations among the Composite Scores of Environmental and Personal Protective Factors and the Three Measures of Adaptive Outcome

<table>
<thead>
<tr>
<th>Time 2 Outcome Measures</th>
<th>Protective Factors</th>
<th>Time 2 Teacher Rated Behavioral Adjustment</th>
<th>Time 2 GPA</th>
<th>Time 2 Student Rated Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Environmental Protective Factors</td>
<td>.183* (124)</td>
<td>.248** (140)</td>
<td>-.280** (137)</td>
</tr>
<tr>
<td></td>
<td>Personal Protective Factors</td>
<td>.350** (101)</td>
<td>.478** (115)</td>
<td>-.447** (114)</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

n is in parentheses.
g. It was expected that girls would display higher levels of protective factors than boys. Independent sample t-tests were conducted on the differences between boys and girls on levels of protective factors. For this analysis, protective factors were examined individually rather than as a combination. There were significant gender differences for Family Conflict (males endorsed more family conflict), Peer Relations (males endorsed more peer distress), Social Support (females endorsed more social support), and Seeking Support from Family or Church coping (females endorsed greater use of this coping strategy; see Table 10)
Table 10

Mean Number of Responses and Independent Sample t-test between Boys' and Girls' Levels of Protective Factors

<table>
<thead>
<tr>
<th>Protective Factors</th>
<th>Boys</th>
<th>Girls</th>
<th>t</th>
<th>df</th>
<th>Significance 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean S.D.</td>
<td>Mean S.D.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>54.37 (82)</td>
<td>55.73 (81)</td>
<td>-0.847</td>
<td>161</td>
<td>0.398</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>44.18 (84)</td>
<td>45.33 (86)</td>
<td>-0.503</td>
<td>168</td>
<td>0.615</td>
</tr>
<tr>
<td>Family Conflict</td>
<td>57.56 (84)</td>
<td>52.95 (86)</td>
<td>2.38</td>
<td>168</td>
<td>0.018*</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>28.08 (85)</td>
<td>22.21 (87)</td>
<td>2.24</td>
<td>170</td>
<td>0.026*</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>9.89 (85)</td>
<td>9.22 (72)</td>
<td>1.04</td>
<td>155</td>
<td>0.299</td>
</tr>
<tr>
<td>Social Skills</td>
<td>92.59 (80)</td>
<td>94.78 (82)</td>
<td>-0.869</td>
<td>160</td>
<td>0.386</td>
</tr>
<tr>
<td>Social Support*</td>
<td>2.42 (86)</td>
<td>2.11 (84)</td>
<td>3.38</td>
<td>168</td>
<td>0.001**</td>
</tr>
<tr>
<td>Self-Care/Distraction Coping</td>
<td>-0.059 (69)</td>
<td>0.081 (56)</td>
<td>0.79</td>
<td>123</td>
<td>0.424</td>
</tr>
<tr>
<td>Seeking Support from Family or Church Coping</td>
<td>-0.28 (69)</td>
<td>0.26 (56)</td>
<td>3.16</td>
<td>123</td>
<td>0.002**</td>
</tr>
<tr>
<td>Expressing Feelings/ Avoiding Coping</td>
<td>-0.12 (69)</td>
<td>0.11 (56)</td>
<td>1.32</td>
<td>123</td>
<td>0.188</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
* The Social Support measure is reverse scored, so that lower scores indicate more Social Support.
* n is in parentheses.

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3) Coping

a. It was predicted that coping strategies would be correlated with all protective factors, but the relationships of interest were the associations between Coping (as measured by the Adolescent Coping Orientation for Problem Experiences), Self-Esteem (as measured by the Piers-Harris Children's Self-Concept Scale), and Internal Locus of Control (as measured by the Norwicki-Strickland Locus of Control Scale), as these three variables were hypothesized to all fall in the category of Personal protective factors (as previously mentioned this was not the case). Pearson product moment correlations were conducted between the three Coping factors and all other protective factors, and Coping significantly correlated with the majority of other protective factors (see Table 11). However, Expressing Feelings/Avoiding coping was the only coping strategy to correlate significantly with all other protective factors. Again, the relationships of interest were between the three Coping factors and Self-Esteem and Internal Locus of Control. Self-Esteem was positively correlated with Seeking Support from Family or Church ($r=.199, p<.05$) and Expressing Feelings/Avoiding ($r=.448, p<.01$), but not with Self-Care/Distraction ($r=.097, p>.10$). This is an interesting finding, as it indicates that subjects with higher self-esteem cope by communicating with their families and by avoiding problems or expressing their feelings. Internal Locus of Control was significantly negatively correlated with Expressing Feelings/Avoiding ($r=-.328, p<.01$), but not with Self-Care/Distraction ($r=-.061, p<.10$), or Seeking Support from Family or Church ($r=-.028, p>.10$).
Again, this is an interesting finding, as subjects who report an Internal Locus of Control, endorse the use of Expressing Feelings/Avoiding coping.

Table 11

**Pearson Product Moment Correlations among the Three Coping Factors and Protective Factors**

<table>
<thead>
<tr>
<th>Three Coping Factors</th>
<th>Self-Esteem</th>
<th>Locus of Control</th>
<th>Social Support</th>
<th>Social Skills</th>
<th>Peer Relations</th>
<th>Family Cohesion</th>
<th>Family Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Care Distraction Coping</td>
<td>.097</td>
<td>-.061</td>
<td>-.278**</td>
<td>.201*</td>
<td>-.201*</td>
<td>.226*</td>
<td>-.305**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(122)</td>
<td>(105)</td>
<td>(110)</td>
<td>(113)</td>
<td>(113)</td>
</tr>
<tr>
<td>Seeking Support from Family or Church Coping</td>
<td>.199*</td>
<td>.028</td>
<td>-.203*</td>
<td>.243*</td>
<td>-.008</td>
<td>.360**</td>
<td>-.277**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(122)</td>
<td>(105)</td>
<td>(110)</td>
<td>(113)</td>
<td>(113)</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
<td>.448**</td>
<td>-.328**</td>
<td>-.374**</td>
<td>.395**</td>
<td>-.236*</td>
<td>.370**</td>
<td>.277**</td>
</tr>
<tr>
<td></td>
<td>(113)</td>
<td>(112)</td>
<td>(122)</td>
<td>(105)</td>
<td>(110)</td>
<td>(113)</td>
<td>(113)</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
n is in parentheses.
b. It was also expected but that Coping would show a relationship to Adaptive Outcome over and above the effects of Self-Esteem and Internal Locus of Control. A hierarchical regression equation was constructed to investigate this relationship. This hypothesis was not supported, as the addition of the three Coping strategies did not significantly increase the variance already accounted for by Self-Esteem and Internal Locus of Control ($F_{(3, 76)} = .650, p > .10$). In fact, the adjusted $R^2$ decreased from .190 to .179 with the addition of the three coping strategies (Adjusted $R^2$ typically decreases with the addition of predictors, while $R^2$ increases. This occurs because adjusted $R^2$ is dependent on the number of predictors, and punishes for adding predictors.)

c. A structural equation model was initially proposed that suggested that coping may play a role between protective factors and outcome (see Appendix E). Similar to the Appendix A, this model was also changed to a path model with all manifest variables (see Appendix F) and tested with multiple regression analyses. Each relationship was tested individually. Expressing Feelings/Avoiding coping was the only Coping factor that was significantly predicted by other protective factors and was significantly predictive of less Time 2 student-rated Anxiety and greater Time 2 GPA (see Appendix G; see Table 12).
Table 12

Pearson Product Moment Correlations among the Three Measures of Adaptive Outcome.

Protective Factors and the Three Coping Factors

<table>
<thead>
<tr>
<th>Time 1 Coping Factors</th>
<th>Self-Care/ Distraction</th>
<th>Seeking Support from Family or Church</th>
<th>Expressing Feelings/Avoiding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>.201*</td>
<td>.243*</td>
<td>.395**</td>
</tr>
<tr>
<td>(105)</td>
<td>(105)</td>
<td>(105)</td>
<td></td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.097</td>
<td>.199*</td>
<td>.448**</td>
</tr>
<tr>
<td>(113)</td>
<td>(113)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>FES Cohesion</td>
<td>.225*</td>
<td>.360**</td>
<td>.370**</td>
</tr>
<tr>
<td>(113)</td>
<td>(113)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>FES Conflict</td>
<td>-.305**</td>
<td>-.265**</td>
<td>-.277**</td>
</tr>
<tr>
<td>(113)</td>
<td>(113)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>Social Support</td>
<td>-.278**</td>
<td>-.203*</td>
<td>-.374**</td>
</tr>
<tr>
<td>(113)</td>
<td>(113)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>Peer Relations</td>
<td>-.201*</td>
<td>-.008</td>
<td>-.236*</td>
</tr>
<tr>
<td>(110)</td>
<td>(100)</td>
<td>(100)</td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>-.061</td>
<td>-.028</td>
<td>-.328**</td>
</tr>
<tr>
<td>(112)</td>
<td>(112)</td>
<td>(112)</td>
<td></td>
</tr>
<tr>
<td>Time 2 Student-Rated</td>
<td>.121</td>
<td>-.052</td>
<td>-.208*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>(100)</td>
<td>(100)</td>
<td></td>
</tr>
<tr>
<td>Time 2 Teacher-rated</td>
<td>.021</td>
<td>-.016</td>
<td>.071</td>
</tr>
<tr>
<td>Behavioral Adjustment</td>
<td>(91)</td>
<td>(91)</td>
<td></td>
</tr>
<tr>
<td>Time 2 Student GPA</td>
<td>-.063</td>
<td>.120</td>
<td>.242*</td>
</tr>
<tr>
<td>(99)</td>
<td>(99)</td>
<td>(99)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: n is in parentheses.
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Coping was then investigated as a potential moderator and/or mediator between protective factors and Adaptive Outcome as discussed in the Analyses section.

1. Moderation: The three Coping factors were investigated as potential moderators of the relationship between selected protective factors and Adaptive outcome. As previously mentioned, protective factors were chosen due to their ability to be predicted by Risk and in return to be predictive of Adaptive Outcome. The three protective factors that met this criterion and were included in tests of moderation were Self-Esteem, Internal Locus of Control, and Social Support. There were many significant main effects, but no support was found for the hypothesis that any of the coping strategies moderated the relationship between Self-Esteem, Internal Locus of Control, or Social Support and Time 2 teacher rating of Behavioral Adjustment, Time 2 GPA, and Time 2 student-rated Anxiety (see Table 13).
Table 13

Multiple Regression Analyses for the Moderating Effects of Expressing Feelings/Avoiding Coping (EFA) on the Relationship between Protective Factors and the Three Measures of Adaptive Outcome

<table>
<thead>
<tr>
<th>Analyses</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1: DV=Time 2 GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support, EFA</td>
<td>.093</td>
<td>.093</td>
<td>4.816</td>
<td>2</td>
<td>.010**</td>
</tr>
<tr>
<td>Social Support X EFA</td>
<td>.093</td>
<td>.000</td>
<td>.018</td>
<td>1</td>
<td>.894</td>
</tr>
<tr>
<td>Self-Esteem, EFA</td>
<td>.212</td>
<td>.212</td>
<td>11.818</td>
<td>2</td>
<td>.000**</td>
</tr>
<tr>
<td>Self-Esteem X EFA</td>
<td>.212</td>
<td>.004</td>
<td>.004</td>
<td>1</td>
<td>.951</td>
</tr>
<tr>
<td>Locus of Control, EFA</td>
<td>.143</td>
<td>.143</td>
<td>7.064</td>
<td>2</td>
<td>.001**</td>
</tr>
<tr>
<td>Locus of Control X EFA</td>
<td>.143</td>
<td>.000</td>
<td>.029</td>
<td>1</td>
<td>.866</td>
</tr>
<tr>
<td>Analysis 2: DV= Time 2 Student Rated Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support, EFA</td>
<td>.083</td>
<td>.083</td>
<td>4.301</td>
<td>2</td>
<td>.016*</td>
</tr>
<tr>
<td>Social Support X EFA</td>
<td>.085</td>
<td>.002</td>
<td>.191</td>
<td>1</td>
<td>.663</td>
</tr>
<tr>
<td>Self-Esteem, EFA</td>
<td>.277</td>
<td>.277</td>
<td>17.029</td>
<td>2</td>
<td>.000**</td>
</tr>
<tr>
<td>Self-Esteem X EFA</td>
<td>.281</td>
<td>.004</td>
<td>.510</td>
<td>1</td>
<td>.477</td>
</tr>
<tr>
<td>Locus of Control, EFA</td>
<td>.122</td>
<td>.122</td>
<td>5.981</td>
<td>2</td>
<td>.004**</td>
</tr>
<tr>
<td>Locus of Control X EFA</td>
<td>.131</td>
<td>.009</td>
<td>.918</td>
<td>1</td>
<td>.341</td>
</tr>
<tr>
<td>Analysis 3: DV= Time 2 Teacher Rated Behavioral Adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support, EFA</td>
<td>.022</td>
<td>.022</td>
<td>.963</td>
<td>2</td>
<td>.386</td>
</tr>
<tr>
<td>Social Support X EFA</td>
<td>.022</td>
<td>.000</td>
<td>.033</td>
<td>1</td>
<td>.857</td>
</tr>
<tr>
<td>Self-Esteem, EFA</td>
<td>.145</td>
<td>.145</td>
<td>6.767</td>
<td>2</td>
<td>.002**</td>
</tr>
<tr>
<td>Self-Esteem X EFA</td>
<td>.146</td>
<td>.002</td>
<td>.149</td>
<td>1</td>
<td>.701</td>
</tr>
<tr>
<td>Locus of Control, EFA</td>
<td>.057</td>
<td>.057</td>
<td>2.312</td>
<td>2</td>
<td>.106</td>
</tr>
<tr>
<td>Locus of Control X EFA</td>
<td>.057</td>
<td>.000</td>
<td>.001</td>
<td>1</td>
<td>.974</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
2. Mediation: Based on the criteria for testing mediation effects outlined by Baron and Kenny (1986), a number of regression analyses were conducted to determine the appropriate Coping factors to test as mediators. First, the mediator and independent variable had to be significantly correlated (the Pearson product moment correlation is the same as the $R$ in a bivariate multiple regression equation). Second, the independent variable and the dependent variable had to be significantly correlated; and, finally, the mediator had to be significantly correlated with the dependent variable. Only the independent variable, Expressing Feelings/Avoiding coping, with the dependent variables of Time 2 student-rated Anxiety and Time 2 GPA met this criteria. Therefore, Expressing Feelings/Avoiding coping was investigated as a potential mediator between Self-Esteem, Internal Locus of Control, and Social Support, and Time 2 student-rated Anxiety and Time 2 GPA. Evidence was found that Expressing Feelings/Avoiding coping mediated the relationship between Social Support and Time 2 GPA, indicated by the lack of a significant relationship between Social Support and Time 2 GPA with the addition of the mediator (See Table 14).
Table 14

Multiple Regression Tests for the Mediation Effects of Expressing Feelings/Avoiding Coping (EFA) between Protective Factors and Time 2 GPA and Time 2 Student-Rated Anxiety

<table>
<thead>
<tr>
<th>Analyses</th>
<th>β</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis 1: DV= Time 2 GPA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem ➔ GPA</td>
<td>.498</td>
<td>6.55</td>
<td>129</td>
<td>.0005</td>
</tr>
<tr>
<td>EFA ➔ GPA</td>
<td>.242</td>
<td>2.45</td>
<td>96</td>
<td>.016</td>
</tr>
<tr>
<td>Self-Esteem, EFA ➔ GPA</td>
<td>.416</td>
<td>4.08</td>
<td>88</td>
<td>.0005</td>
</tr>
<tr>
<td>Self-Esteem ➔ EFA</td>
<td>.448</td>
<td>5.28</td>
<td>110</td>
<td>.0005</td>
</tr>
<tr>
<td>Locus of Control ➔ GPA</td>
<td>-.413</td>
<td>-5.04</td>
<td>123</td>
<td>.0005</td>
</tr>
<tr>
<td>EFA ➔ GPA</td>
<td>.242</td>
<td>2.45</td>
<td>96</td>
<td>.016</td>
</tr>
<tr>
<td>Locus of Control, EFA ➔ GPA</td>
<td>-.312</td>
<td>-2.97</td>
<td>85</td>
<td>.004</td>
</tr>
<tr>
<td>Locus of Control ➔ EFA</td>
<td>-.328</td>
<td>-3.64</td>
<td>109</td>
<td>.0005</td>
</tr>
<tr>
<td>Social Support ➔ GPA</td>
<td>-.186</td>
<td>-2.19</td>
<td>133</td>
<td>.030</td>
</tr>
<tr>
<td>EFA ➔ GPA</td>
<td>.242</td>
<td>2.45</td>
<td>96</td>
<td>.016</td>
</tr>
<tr>
<td>Social Support, EFA ➔ GPA</td>
<td>-.163</td>
<td>-1.57</td>
<td>94</td>
<td>.116</td>
</tr>
<tr>
<td>Social Support ➔ EFA</td>
<td>-.374</td>
<td>-4.42</td>
<td>119</td>
<td>.0005</td>
</tr>
<tr>
<td><strong>Analysis 2: DV= Time 2 Anxiety</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem ➔ Anxiety</td>
<td>-.470</td>
<td>-6.00</td>
<td>126</td>
<td>.0005</td>
</tr>
<tr>
<td>EFA ➔ Anxiety</td>
<td>-.208</td>
<td>-2.11</td>
<td>97</td>
<td>.038</td>
</tr>
<tr>
<td>Self-Esteem, EFA ➔ Anxiety</td>
<td>-.504</td>
<td>-5.16</td>
<td>89</td>
<td>.0005</td>
</tr>
<tr>
<td>Self-Esteem ➔ Anxiety</td>
<td>.448</td>
<td>5.28</td>
<td>110</td>
<td>.0005</td>
</tr>
<tr>
<td>Locus of Control ➔ Anxiety</td>
<td>.318</td>
<td>3.72</td>
<td>122</td>
<td>.0005</td>
</tr>
<tr>
<td>EFA ➔ Anxiety</td>
<td>-.208</td>
<td>-2.11</td>
<td>97</td>
<td>.038</td>
</tr>
<tr>
<td>Locus of Control, EFA ➔ Anxiety</td>
<td>.305</td>
<td>2.88</td>
<td>86</td>
<td>.005</td>
</tr>
<tr>
<td>Locus of Control ➔ EFA</td>
<td>-.328</td>
<td>-3.64</td>
<td>109</td>
<td>.0005</td>
</tr>
<tr>
<td>Social Support ➔ Anxiety</td>
<td>.214</td>
<td>2.53</td>
<td>132</td>
<td>.013</td>
</tr>
<tr>
<td>EFA ➔ Anxiety</td>
<td>-.208</td>
<td>-2.11</td>
<td>97</td>
<td>.038</td>
</tr>
<tr>
<td>Social Support, EFA ➔ Anxiety</td>
<td>.225</td>
<td>2.18</td>
<td>95</td>
<td>.032</td>
</tr>
<tr>
<td>Social Support ➔ EFA</td>
<td>-.374</td>
<td>-4.42</td>
<td>119</td>
<td>.0005</td>
</tr>
</tbody>
</table>

Notes:
- **Bold** = addition of mediator significantly reduced effects of IV on DV.
- b = df = n-2

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3. Sobel Test: This was a post-hoc analysis that was added to investigate the indirect effects of coping on outcome. Sobel Tests were conducted using Preacher & Leonardelli's (2001) interactive calculation tool. The same relationships tested in #3d2 were subjected to the Sobel Test of indirect effects. Results indicated that Self-Esteem, Internal Locus of Control, and Social Support did not have indirect effects, through Expressing Feelings/Avoiding coping, on Time 2 student-rated Anxiety or Time 2 GPA (see Table 15).

Table 15

Sobel's Test for the Indirect Effects of Expressing Feelings/Avoiding Coping on Time 2 GPA and Time 2 Student Rated Anxiety

<table>
<thead>
<tr>
<th>Analyses:</th>
<th>Sobel's Testa</th>
<th>dfb</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1: DV= Time 2 GPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem, EFA</td>
<td>.905</td>
<td>110</td>
<td>.366</td>
</tr>
<tr>
<td>Locus of Control, EFA</td>
<td>-1.259</td>
<td>109</td>
<td>.208</td>
</tr>
<tr>
<td>Social Support, EFA</td>
<td>-1.874</td>
<td>118</td>
<td>.061</td>
</tr>
<tr>
<td>Analysis 2: DV= Time 2 Student Rated Anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem, EFA</td>
<td>-.518</td>
<td>110</td>
<td>.605</td>
</tr>
<tr>
<td>Locus of Control, EFA</td>
<td>.942</td>
<td>109</td>
<td>.346</td>
</tr>
<tr>
<td>Social Support, EFA</td>
<td>1.203</td>
<td>118</td>
<td>.229</td>
</tr>
</tbody>
</table>

a = Sobel's test statistic is a t score.
b = df = n-4
4) Interactions between Risk and Protective Factors:

First the path model (see Appendix D) discussed in the Analyses section was investigated and then protective factors were examined as potential moderators and/or mediators between Risk and Adaptive Outcome. These relationships were tested with multiple regression analyses.

a. Path Model: The ability of Risk to predict protective factors and then the ability of protective factors to predict Risk was investigated. Risk significantly predicted all protective factors except Self-Care/Distraction coping, and Social Skills (see Table 16). Table 17 displays the relationships between protective factors and the three measures of Adaptive Outcome. Also, see Appendices D1, D2, and D3 for a graphical display of these relationships.
Table 16

Multiple Regression Analyses Investigating Risk Predicting Protective Factors

<table>
<thead>
<tr>
<th>Analyses</th>
<th>R</th>
<th>Adj. R^2</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk → Self-Care/Distraction Coping</td>
<td>.142</td>
<td>.012</td>
<td>2.487</td>
<td>120</td>
<td>.117</td>
</tr>
<tr>
<td>Risk → Seeking Social Support from Family or Church Coping</td>
<td>.219</td>
<td>.040</td>
<td>6.019</td>
<td>120</td>
<td>.016*</td>
</tr>
<tr>
<td>Risk → Expressing Feelings/Avoiding Coping</td>
<td>.223</td>
<td>.042</td>
<td>6.266</td>
<td>120</td>
<td>.014*</td>
</tr>
<tr>
<td>Risk → Self-Esteem</td>
<td>.388</td>
<td>.145</td>
<td>28.191</td>
<td>159</td>
<td>.000*</td>
</tr>
<tr>
<td>Risk → Locus of Control</td>
<td>.336</td>
<td>.107</td>
<td>19.231</td>
<td>151</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk → Peer Relations</td>
<td>.294</td>
<td>.081</td>
<td>15.750</td>
<td>167</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk → Social Support</td>
<td>.329</td>
<td>.102</td>
<td>19.843</td>
<td>164</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk → Social Skills</td>
<td>.143</td>
<td>.014</td>
<td>3.266</td>
<td>157</td>
<td>.073</td>
</tr>
<tr>
<td>Risk → FES Cohesion</td>
<td>.221</td>
<td>.043</td>
<td>8.458</td>
<td>165</td>
<td>.004**</td>
</tr>
<tr>
<td>Risk → FES Conflict</td>
<td>.210</td>
<td>.038</td>
<td>7.619</td>
<td>165</td>
<td>.006**</td>
</tr>
</tbody>
</table>

Notes:
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
## Table 17

### Multiple Regression Analyses Investigating Protective Factors Predicting Adaptive Outcome

<table>
<thead>
<tr>
<th>Analyses</th>
<th>R</th>
<th>Adj. R²</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1: DV=Time 2 GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Care/Distraction Coping</td>
<td>.063</td>
<td>-.006</td>
<td>.382</td>
<td>1, 97</td>
<td>.538</td>
</tr>
<tr>
<td>Seeking Social Support from Family or Church Coping</td>
<td>.120</td>
<td>.004</td>
<td>1.425</td>
<td>1, 97</td>
<td>.235</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
<td>.242</td>
<td>.049</td>
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<td>42.841</td>
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<tr>
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<td>.413</td>
<td>.163</td>
<td>25.429</td>
<td>1, 134</td>
<td>.006**</td>
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<td>.223</td>
<td>.042</td>
<td>6.945</td>
<td>1, 133</td>
<td>.009**</td>
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<tr>
<td>Social Support</td>
<td>.186</td>
<td>.027</td>
<td>4.810</td>
<td>1, 134</td>
<td>.036*</td>
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<td>Social Skills</td>
<td>.262</td>
<td>.061</td>
<td>9.224</td>
<td>1, 133</td>
<td>.003**</td>
</tr>
<tr>
<td>FES Cohesion</td>
<td>.171</td>
<td>.022</td>
<td>4.069</td>
<td>1, 135</td>
<td>.046*</td>
</tr>
<tr>
<td>FES Conflict</td>
<td>.026</td>
<td>-.007</td>
<td>.090</td>
<td>1, 135</td>
<td>.765</td>
</tr>
<tr>
<td>Analysis 2: DV= Time 2 Student Rated Anxiety</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Self-Care/Distraction Coping</td>
<td>.121</td>
<td>.005</td>
<td>1.454</td>
<td>1, 99</td>
<td>.231</td>
</tr>
<tr>
<td>Seeking Social Support from Family or Church Coping</td>
<td>.052</td>
<td>-.007</td>
<td>.263</td>
<td>1, 98</td>
<td>.609</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
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<td>.034</td>
<td>4.436</td>
<td>1, 98</td>
<td>.038*</td>
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<td>36.030</td>
<td>1, 127</td>
<td>.000**</td>
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<tr>
<td>Locus of Control</td>
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<td>.094</td>
<td>13.810</td>
<td>1, 133</td>
<td>.000**</td>
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<td>.018</td>
<td>3.351</td>
<td>1, 133</td>
<td>.069</td>
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<td>.039</td>
<td>6.377</td>
<td>1, 133</td>
<td>.013*</td>
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<td>Social Skills</td>
<td>.197</td>
<td>.031</td>
<td>4.943</td>
<td>1, 133</td>
<td>.028*</td>
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<tr>
<td>FES Cohesion</td>
<td>.212</td>
<td>.038</td>
<td>6.184</td>
<td>1, 132</td>
<td>.014*</td>
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<tr>
<td>FES Conflict</td>
<td>.246</td>
<td>.053</td>
<td>8.511</td>
<td>1, 132</td>
<td>.004**</td>
</tr>
<tr>
<td>Analysis 3: DV= Time 2 Teacher Rated Behavioral Adjustment</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Care/Distraction Coping</td>
<td>.021</td>
<td>-.011</td>
<td>.040</td>
<td>1, 89</td>
<td>.842</td>
</tr>
<tr>
<td>Seeking Social Support from Family or Church Coping</td>
<td>.016</td>
<td>-.011</td>
<td>.022</td>
<td>1, 89</td>
<td>.882</td>
</tr>
<tr>
<td>Expressing Feelings/Avoiding Coping</td>
<td>.071</td>
<td>-.006</td>
<td>.445</td>
<td>1, 89</td>
<td>.507</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>.415</td>
<td>.165</td>
<td>23.735</td>
<td>1, 114</td>
<td>.000**</td>
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<tr>
<td>Locus of Control</td>
<td>.297</td>
<td>.080</td>
<td>10.560</td>
<td>1, 109</td>
<td>.002**</td>
</tr>
<tr>
<td>Peer Relations</td>
<td>.217</td>
<td>.039</td>
<td>5.803</td>
<td>1, 118</td>
<td>.018*</td>
</tr>
<tr>
<td>Social Support</td>
<td>.116</td>
<td>.005</td>
<td>1.626</td>
<td>1, 119</td>
<td>.205</td>
</tr>
<tr>
<td>Social Skills</td>
<td>.136</td>
<td>.010</td>
<td>2.091</td>
<td>1, 111</td>
<td>.151</td>
</tr>
<tr>
<td>FES Cohesion</td>
<td>.164</td>
<td>.019</td>
<td>3.270</td>
<td>1, 119</td>
<td>.073</td>
</tr>
<tr>
<td>FES Conflict</td>
<td>.070</td>
<td>-.003</td>
<td>.583</td>
<td>1, 119</td>
<td>.447</td>
</tr>
</tbody>
</table>

Notes: * Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
b. Moderation: Again protective factors that were predicted by Risk and that were predictive of Adaptive Outcome (as determined by the analyses of the path model) were investigated as potential moderators of the relationship between Risk and Adaptive Outcome. The variables included Self-Esteem (as measured by the Piers-Harris Children’s Self-Concept Scale), Internal Locus of Control (as measured by the Nowicki-Strickland Locus of Control Scale), and Social Support (as measured by the Children’s Appraisal of Social Support). In addition, Expressing Feelings/Avoiding coping was investigated as a moderator of the relationship between Risk and Adaptive Outcome. This factor did not meet the above criterion, but was included due to this study’s interest in coping. Self-Care/Distraction and Seeking Support from Family and Church were not included because they did not demonstrate significant relationships with any of the outcome measures. Results did not provide support that any protective factor served as a moderating variable between Risk and Time 2 Adaptive Outcome (see Table 18). One interaction, Self-esteem X Risk, approached significance (p=.066) when regressed on the dependent variable of Time 2 GPA.
Table 18

Multiple Regression Analyses for the Moderating Effects of Protective Factors on the Relationship between Risk and Adaptive Outcome

<table>
<thead>
<tr>
<th>Analyses</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1: DV=Time 2 GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Social Support</td>
<td>.229</td>
<td>.229</td>
<td>19.761</td>
<td>2, 133</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X Social Support</td>
<td>.231</td>
<td>.002</td>
<td>.403</td>
<td>1, 132</td>
<td>.527</td>
</tr>
<tr>
<td>Risk. Self-Esteem</td>
<td>.357</td>
<td>.357</td>
<td>35.753</td>
<td>2, 129</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X Self-Esteem</td>
<td>.373</td>
<td>.017</td>
<td>3.426</td>
<td>1, 128</td>
<td>.066</td>
</tr>
<tr>
<td>Risk. Locus of Control</td>
<td>.229</td>
<td>.229</td>
<td>19.761</td>
<td>2, 133</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X Locus of Control</td>
<td>.231</td>
<td>.002</td>
<td>.403</td>
<td>1, 132</td>
<td>.527</td>
</tr>
<tr>
<td>Risk. EFA*</td>
<td>.247</td>
<td>.247</td>
<td>15.720</td>
<td>2, 96</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X EFA</td>
<td>.250</td>
<td>.004</td>
<td>.458</td>
<td>1, 95</td>
<td>.500</td>
</tr>
<tr>
<td>Analysis 2: DV= Time 2 Student Rated Anxiety</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Social Support</td>
<td>.051</td>
<td>.051</td>
<td>3.560</td>
<td>2, 132</td>
<td>.031*</td>
</tr>
<tr>
<td>Risk X Social Support</td>
<td>.051</td>
<td>.000</td>
<td>.013</td>
<td>1, 131</td>
<td>.910</td>
</tr>
<tr>
<td>Risk. Self-Esteem</td>
<td>.224</td>
<td>.224</td>
<td>18.161</td>
<td>2, 126</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X Self-Esteem</td>
<td>.230</td>
<td>.007</td>
<td>1.085</td>
<td>1, 125</td>
<td>.300</td>
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<tr>
<td>Risk. Locus of Control</td>
<td>.102</td>
<td>.102</td>
<td>6.921</td>
<td>2, 122</td>
<td>.001**</td>
</tr>
<tr>
<td>Risk X Locus of Control</td>
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<td>.002</td>
<td>.243</td>
<td>1, 121</td>
<td>.623</td>
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<td>Risk. EFA</td>
<td>.065</td>
<td>.065</td>
<td>3.377</td>
<td>2, 97</td>
<td>.038*</td>
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<td>Risk X EFA</td>
<td>.082</td>
<td>.017</td>
<td>1.771</td>
<td>1, 96</td>
<td>.186</td>
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<td>Analysis 3: DV= Time 2 Teacher Rated Behavioral Adjustment</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Social Support</td>
<td>.141</td>
<td>.141</td>
<td>9.703</td>
<td>2, 118</td>
<td>.000**</td>
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<tr>
<td>Risk X Social Support</td>
<td>.145</td>
<td>.004</td>
<td>.499</td>
<td>1, 117</td>
<td>.481</td>
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<tr>
<td>Risk. Self-Esteem</td>
<td>.252</td>
<td>.252</td>
<td>19.084</td>
<td>2, 113</td>
<td>.000**</td>
</tr>
<tr>
<td>Risk X Self-Esteem</td>
<td>.257</td>
<td>.004</td>
<td>.663</td>
<td>1, 112</td>
<td>.417</td>
</tr>
<tr>
<td>Risk. Locus of Control</td>
<td>.208</td>
<td>.208</td>
<td>14.145</td>
<td>2, 108</td>
<td>.000**</td>
</tr>
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<td>Risk X Locus of Control</td>
<td>.210</td>
<td>.002</td>
<td>.276</td>
<td>1, 107</td>
<td>.600</td>
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<td>Risk. EFA</td>
<td>.154</td>
<td>.154</td>
<td>8.018</td>
<td>2, 88</td>
<td>.001**</td>
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<td>Risk X EFA</td>
<td>.180</td>
<td>.026</td>
<td>2.798</td>
<td>1, 87</td>
<td>.098</td>
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</tbody>
</table>

Notes: * = Expressing Feelings/Avoiding coping
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
c. Mediation: The same criteria (Baron & Kenny, 1986) used to investigate the mediating effects of coping, were also applied to identify appropriate protective factors to examine as potential mediators between Risk and Adaptive Outcome. A number of protective factors met this criteria (in parentheses are the dependent variables for which they met the above criteria): Self-Esteem (Time 2 student-rated Anxiety, Time 2 GPA, and Time 2 teacher rated Behavioral Adjustment), Internal Locus of Control (Time 2 student-rated Anxiety, Time 2 GPA, and Time 2 teacher rating of Behavioral Adjustment), Social Support (Time 2 student-rated Anxiety and Time 2 GPA), Expressing Feelings/Avoiding coping (Time 2 student-rated Anxiety and Time 2 GPA), Family Cohesion (Time 2 student-rated Anxiety), and Family Conflict (Time 2 student-rated Anxiety). Evidence was found that Self-Esteem, Internal Locus of Control, Social Support, Expressing Feelings/Avoiding coping, Family Cohesion and Family Conflict do indeed mediate the relationship between Risk and Time 2 student-rated Anxiety. No mediating effects were found between Risk and T2 teacher rating of Behavioral Adjustment or Time 2 GPA. Table 19 reports significant findings.
Table 19

Multiple Regression Analyses for the Mediating Effects of Protective Factors between Risk and Time 2 Student-Rated Anxiety

<table>
<thead>
<tr>
<th>Analyses</th>
<th>$\beta$</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV= Time 2 Anxiety</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk $\Rightarrow$ Anxiety</td>
<td>.181</td>
<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>Self-Esteem $\Rightarrow$ Anxiety</td>
<td>-.470</td>
<td>-6.00</td>
<td>126</td>
<td>.0005</td>
</tr>
<tr>
<td>Risk, Self-Esteem $\Rightarrow$ Anxiety</td>
<td>-.059</td>
<td>-6.69</td>
<td>126</td>
<td>.004</td>
</tr>
<tr>
<td>Risk $\Rightarrow$ Self-Esteem</td>
<td>-.388</td>
<td>-5.31</td>
<td>158</td>
<td>.0005</td>
</tr>
<tr>
<td>Risk $\Rightarrow$ Anxiety</td>
<td>.181</td>
<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>Locus of Control $\Rightarrow$ Anxiety</td>
<td>.318</td>
<td>3.72</td>
<td>122</td>
<td>.0005</td>
</tr>
<tr>
<td>Risk, Locus of Control $\Rightarrow$ Anxiety</td>
<td>.033</td>
<td>.360</td>
<td>122</td>
<td>.720</td>
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<tr>
<td>Risk $\Rightarrow$ Locus of Control</td>
<td>.336</td>
<td>4.39</td>
<td>150</td>
<td>.0005</td>
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<tr>
<td>Risk $\Rightarrow$ Anxiety</td>
<td>.181</td>
<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>Social Support $\Rightarrow$ Anxiety</td>
<td>.214</td>
<td>2.53</td>
<td>132</td>
<td>.013</td>
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<tr>
<td>Risk, Social Support $\Rightarrow$ Anxiety</td>
<td>.079</td>
<td>.868</td>
<td>132</td>
<td>.387</td>
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<tr>
<td>Risk $\Rightarrow$ Social Support</td>
<td>.329</td>
<td>4.46</td>
<td>163</td>
<td>.0005</td>
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<tr>
<td>Risk $\Rightarrow$ Anxiety</td>
<td>.181</td>
<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>EFA$^b$ $\Rightarrow$ Anxiety</td>
<td>-.208</td>
<td>-2.11</td>
<td>97</td>
<td>.038</td>
</tr>
<tr>
<td>Risk, EFA $\Rightarrow$ Anxiety</td>
<td>.150</td>
<td>1.50</td>
<td>97</td>
<td>.136</td>
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<tr>
<td>Risk $\Rightarrow$ EFA</td>
<td>-.223</td>
<td>-2.50</td>
<td>119</td>
<td>.014</td>
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<tr>
<td>Risk $\Rightarrow$ Anxiety</td>
<td>.181</td>
<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>Family Cohesion $\Rightarrow$ Anxiety</td>
<td>-.212</td>
<td>-2.49</td>
<td>131</td>
<td>.014</td>
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<tr>
<td>Risk, Family Cohesion $\Rightarrow$ Anxiety</td>
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<td>1.39</td>
<td>131</td>
<td>.167</td>
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<tr>
<td>Risk $\Rightarrow$ Family Cohesion</td>
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<td>-2.91</td>
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<tr>
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<td>2.20</td>
<td>142</td>
<td>.030</td>
</tr>
<tr>
<td>Family Conflict $\Rightarrow$ Anxiety</td>
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<td>2.92</td>
<td>131</td>
<td>.004</td>
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<tr>
<td>Risk, Family Conflict $\Rightarrow$ Anxiety</td>
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<td>1.43</td>
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<td>.154</td>
</tr>
<tr>
<td>Risk $\Rightarrow$ Family Conflict</td>
<td>.210</td>
<td>2.76</td>
<td>164</td>
<td>.006</td>
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</tbody>
</table>

Notes:
* Addition of mediator variable significantly reduced the $\beta$ of the independent variable.
** Bold**= addition of mediator significantly reduced effects of IV on DV.
$^b$= df= N-2
$^b$= Expressing Feelings/Avoiding Coping
d. Sobel Test: This was a post-hoc analysis added after the prospectus meeting. Sobel Tests were conducted using Preacher & Leonardelli’s (2001) interactive calculation tool. The same relationships investigated above were subjected to the Sobel Test of indirect effects. Self-Esteem and Internal Locus of Control demonstrated indirect effects; Risk had indirect effects, through Self-Esteem, on the three measures of Adaptive Outcome. Risk also had indirect effects, through Internal Locus of Control, on two dependent variables, Time 2 student-rated Anxiety and on Time 2 GPA. None of the other protective factors demonstrated indirect effects between Risk and Adaptive Outcome (see Table 20).
### Table 20

**Sobel’s Test for the Indirect Effects of Protective Factors on the Three Measures of Adaptive Outcome**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Sobel’s Test (^a)</th>
<th>df (^b)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis 1: DV= Time 2 Student Rated Anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Self-Esteem</td>
<td>3.86</td>
<td>124</td>
<td>(.0005^{**})</td>
</tr>
<tr>
<td>Risk. Locus of Control</td>
<td>2.62</td>
<td>120</td>
<td>(.009^{**})</td>
</tr>
<tr>
<td>Risk. Social Support</td>
<td>1.85</td>
<td>130</td>
<td>(.064)</td>
</tr>
<tr>
<td>Risk. EFA</td>
<td>1.49</td>
<td>106</td>
<td>(.136)</td>
</tr>
<tr>
<td>Risk. Family Cohesion</td>
<td>1.67</td>
<td>130</td>
<td>(.096)</td>
</tr>
<tr>
<td>Risk. Family Conflict</td>
<td>1.88</td>
<td>130</td>
<td>(.060)</td>
</tr>
<tr>
<td>Analysis 2: DV= Time 2 GPA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Self-Esteem</td>
<td>3.28</td>
<td>128</td>
<td>(.001^{**})</td>
</tr>
<tr>
<td>Risk. Locus of Control</td>
<td>-2.59</td>
<td>121</td>
<td>(.009^{**})</td>
</tr>
<tr>
<td>Risk. Social Support</td>
<td>-.41</td>
<td>132</td>
<td>(.684)</td>
</tr>
<tr>
<td>Risk. EFA</td>
<td>-1.55</td>
<td>95</td>
<td>(.121)</td>
</tr>
<tr>
<td>Analysis 3: DV= Time 2 Teacher rated Behavioral Adjustment</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Risk. Self-Esteem</td>
<td>2.61</td>
<td>111</td>
<td>(.009^{**})</td>
</tr>
<tr>
<td>Risk. Locus of Control</td>
<td>-1.54</td>
<td>106</td>
<td>(.123)</td>
</tr>
</tbody>
</table>

\(^a\) Sobel’s test statistic is a \(t\) score.

\(^b\) df = N-4

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).
5) Specific Models: Two smaller models were investigated to examine the effects of protective factors on Adaptive Outcome. However, as previously mentioned, the two models were both tested in the same way, with multiple regression analyses for moderation effects, and are presented together.

a. Diathesis-Stress and Protective versus Vulnerability Models: It was expected that as subjects had more protective factors in the presence of increasing risk, they would have more Adaptive Outcome. The independent variables in these analyses are Risk and the count of Protective factors. The dependent variables are Adaptive Outcome, as measured by Time 2 teacher rating of Behavioral Adjustment, Time 2 GPA, and Time 2 student-rated Anxiety. There was a main effect ($F (2, 142) = 5.8, p<.01$), but no interaction effect between Risk and the level of protective factors present ($F (1, 141) = 1.00, p>.10$) for Time 2 student-rated Anxiety. There was also a main effect $F (2, 128) =17.7, p<.0005$), but no interaction between Risk and the level of protective factors present and Time 2 teacher rated Behavioral Adjustment ($F (1, 127) = .034, p>.10$). The same held true for Risk and level of protective factors present and Time 2 GPA (Main effect $F (2, 146) =27.9, p<.0005$); Interaction $F (1, 145)=.477, p>.10$). These results do not provide any evidence for the protective value of the hypothesized protective factors investigated; in the presence of higher levels of Risk, subjects who had more protective factors did not demonstrate better outcome than subjects who had fewer protective factors.
6) Additional analyses added after prospectus meeting:

a. Given questions about the validity of the Family Environment Scales (FES), it was recommended that FES normative raw scale scores be compared to FES raw scale scores obtained from students at CS Porter and Polson Middle Schools. One-sample t-tests were conducted for each of the FES Relationship Dimension scales: Cohesion, Expressiveness, and Conflict. Students from CS Porter and Polson Middle Schools scored significantly lower for levels of Family Cohesion ($t(169) = -4.6, p<.0005$) and Family Expressiveness ($t(169) = -11.86, p<.0005$), and higher for levels of Family Conflict ($t(169) = 5.34, p<.0005$). Although these findings are highly significant, it is important to note that CS Porter and Polson student's scores were within one standard deviation of the normative scores published in the FES manual. Thus, although subjects in this study scored lower on Cohesion and Expressiveness and higher on Conflict, these scores are still in the normal range.

Discussion

This study attempted to address methodological difficulties of past risk and resiliency research while investigating the effects of and interactions among risk and protective factors. There has been a call for risk and resiliency research that is prospective, involves a matched control group, contains multiple assessments at multiple times, is short-term, studies process and mechanism of change, and investigates maintenance and not merely etiology of adaptive outcomes (Garmezy, 1988). In order to conduct, and even conceive of such a study it was necessary to untangle the multitude of
terms that have been used in stress and coping, and risk and resiliency research to
describe stress, protection, risk, and so on.

Many areas of psychology have attempted to explain risk and resiliency, including
psychoanalytic theory, coping theories, developmental psychopathology, and personality
typeory (Masten, 1989). Although the goal is often the same, to identify how some
individuals are able to overcome great adversity and prosper while others succumb to
adversity and develop disorders, there is little consistency regarding how these terms are
used and their referents; the literatures often appear not to communicate with one another.
This has caused great confusion and has served to inhibit the transfer of information
about the factors that affect resiliency. Not only has the transfer of information been
hampered, but also, as a result, prevention activities have lacked direction and have often
been unsuccessful in targeting the factors that have been shown to counter risk.

The main purpose of this study was to attempt to identify a set of coherent
definitions for key terms (e.g., risk, protection, etc.) and then to investigate how the
constructs underlying the terms interact and combine to affect adaptive outcome.
Adaptive outcome was the focus of this paper. In addition, a goal of this study was to
identify the most important protective factors that might be the target of future prevention
efforts. A path model (see Appendix D) was proposed to explain the possible
interactions among risk factors, protective factors and outcome. Within this larger
model, Personal protective factors were the focus, with particular attention to the role that
coping played in facilitating adaptive outcome. In addition, since no one model has been
successful in describing the process of resilience, a series of models were investigated.
This study explored the ability of an alternative model (the diathesis-stress model), which has been widely used in stress and schizophrenia research, to explain how protective factors might interact with risk factors. The diathesis-stress model was then compared to Garmezy’s protective versus vulnerability model to determine if in fact they test for the same underlying constructs and relationships.

The data for this study were collected with a "real world" population of middle school students. Measures were obtained from teachers and students at two points, two years apart. Thus, this study is unique in that its participants represent a relatively normal population involved in a short-term, longitudinal study (with multiple measures from two sources), with a focus on adaptive outcomes.

**Definition of Key Terms**

There is confusion in the literature regarding the definitions of risk and protective factors and the categorization of high versus low-risk individuals. One purpose of the present study was to review definitions of risk and protective factors from a number of fields. This examination of the literature supported the claim that many different fields within psychology refer to variables in slightly different terms (i.e., risk factors, vulnerabilities, stressors, diathesis, etc.). In addition, the definitions of risk and protective factors have been clouded by a lack of distinction between the two. Rutter (1990) advocates that risk and protective factors are positioned on a continuum, where deficits reflect risk and surpluses reflect protection. The continuum concept appears to be well accepted (Masten, 2001), yet a number of variables are categorized as either risk or protective factors. This seems to be a consequence of many studies having a restricted
range or lack of variability in the variables tapping risk and protective factors. As a result, research has identified the most common risk and protective factors without taking into consideration that these variables may tap the same constructs, only at different levels.

The current study hoped to address this question but was limited by the lack of a large enough sample size and sufficient subject variability to adequately test variables at both ends of the continuum. As previously explained, this is similar to the problem of defining health as the absence of illness, and neither of these debates seems near conclusion. Although this presents challenges for future research, much has been gained over the past decade in terms of identification of key risk and protective factors. There is consistency across studies in terms of what factors are targeted as risk or protective variables, and preliminary evidence regarding the variables that are most identified with adaptive outcome. This has enhanced the generalizability of findings and created a solid foundation upon which to proceed.

Risk Factors

Overwhelmingly there has been a call to focus on the additive or other combinatory effects of risk factors instead of studying isolated risk factors (Rutter, 1990). However, the manner in which to accomplish this task has largely been determined by individual researchers; thus, there is little consistency across studies. The current study hoped to investigate a number of possible conceptualizations of risk categorizations and to determine the most meaningful method to be used in risk and resiliency research. As previously reviewed, risk was explored in three ways: 1) as a dichotomous variable (high
versus low risk). 2) as a polychotomous variable (high, middle, and low risk), and 3) as a nearly-continuous variable (nearly-continuous or dimensional) using all eight-risk indicators.

The first two methods were eliminated due to the tendency of studies using dichotomization or polychotomization to underestimate effect sizes and to reduce the power of statistical tests (Cohen, 1983). The third method provided the best conceptualization of risk. This risk variable was a nearly-continuous measure composed of eight different risk indicators: 1) low socioeconomic status as measured by qualification for free and reduced lunch, 2) homes with either one or no permanent parent, 3) three or more siblings in the home, 4) any suspensions in the last year, 5) five or more absences in the last year, 6) two or more disciplinary actions in the last year, 7) a grade point average of 2.0 or below, and 8) gender (male corresponding to greater risk).

Findings supported the prediction that individuals with more risk factors demonstrated poorer outcome at Time 2 as measured by increased Anxiety, lower GPA and decreased Behavioral Adjustment as reported by teachers. As previously mentioned, the majority of students had four or fewer risk factors, so this sample was not 'high-risk.' However, as the number of risk factors increased, so did students' difficulty, as rated by both teachers and the students themselves at Time 2. This result is important for prevention efforts. As interventions should target children who have been exposed to a wide range of risk factors rather than singling out specific risk factors. Of course, certain risk factors are more detrimental than others (i.e., fearing for one's safety, lack of shelter,
etc.), but interventions that target large populations, such as school-based interventions, should focus on recruiting children exposed to multiple risk factors.

Gender was included as a risk factor as there is strong support that being male increases the chances of negative outcome (Rutter & Garmezy, 1983; Williams et al., 1990). However, when boys and girls were compared in terms of presence of risk factors (of course, gender as a risk factor was not included in this analysis), they did not differ significantly. This indicates that although gender is an indicator of potential vulnerability to negative outcome, boys do not necessarily have more risk factors than girls. Thus, interventions need to target both sexes, as risk is not gender specific.

It is important to note that a number of the above mentioned risk factors were particular to school-aged subjects, and thus relevant for school-based interventions. As reviewed in Chapter 1, the most commonly studied risk factors are low socioeconomic status, maternal psychiatric disorder, overcrowding or large families, marital distress, paternal criminality, parental admission to care of local authority, gender, and reading difficulties (Rutter & Garmezy, 1983; Williams et al., 1990; Rutter 1979b). This study chose to focus less on the influence of parental difficulties and more on the students’ actual performance in school-related areas, such as attending class and classroom disrupted behaviors. This decision was based on the goals of the evaluation of the Flagship Project, particularly the goal to provide direction for school-based intervention programs. It was expected that certain risk factor would exert more of an influence on adaptive outcome in the school environment, and thus, be better targets for intervention projects.
Implications.

School-based intervention programs should target students with multiple risk factors, including risk factors that are specific to the school environment. Students should not be grouped into high versus low-risk distinctions, but rather a continuous variable of risk should be calculated. Both girls and boys should be targeted based on the presence of risk factors in both genders.

Limitations.

It was not possible to identify one unitary definition of risk factors, but rather the most common risk factors were highlighted in this study. Also, the sample of students in the present study had relatively few risk factors (147 of 188 students had three or fewer risk factors). Thus, it is possible that results would have been different if the sample had been more at-risk. Perhaps the nearly-continuous variable of risk factors would have displayed less of a relationship to outcome, but may have served to differentiate risk from protection to a greater degree were there greater range in functioning in the sample. However, it is equally plausible that it is not possible to differentiate risk from protection for definitional reasons (i.e., one is defined in terms of the other).

Protective factors

A nearly-continuous variable similar to the risk variable described above was created for protective factors. This variable represented a count of the level of protection that each subject demonstrated. Coping was originally proposed to be included as a protective factor, specifically a Personal protective factor (see next section for more...
information). However, it was not possible to categorize the three coping strategies as positive or negative, so coping was not included in this count.

This new protective factor measure was significantly related to Time 2 outcome. Subjects who had more protective factors also demonstrated less Anxiety, higher GPA's, and greater Behavioral Adjustment as rated by teachers. This provides support for intervention projects that attempt to foster protective factors through direct intervention. Children who displayed more Self-Esteem, Internal Locus of Control, Social Skills, Social Support, Family Cohesion and less Family Conflict tended to display more Adaptive Outcomes. Therefore, interventions should target these factors.

This is an important finding, but it does not illuminate what protective factors are most important to foster in order to facilitate adaptive outcome. One of the problems with prevention projects thus far has been the large number of protective factors targeted without direction, a sort of "fishnet" approach. This type of prevention effort can be beneficial, but only because at some level some key protective factors are being addressed. It was a goal of this study to examine what specific protective factors need to be targeted to facilitate adaptive outcome. It was proposed that protective factors could be divided into two types, Environmental and Personal. Environmental protective factors were hypothesized to include Social Skills, Family Environment, Social Support, and Peer Relations. Personal protective factors were expected to consist of Coping, Self-Esteem, and Internal Locus of Control. The distinctions between Personal and Environmental protective factors were supported, except that coping did not fit with the other Personal protective factors. This will be addressed in the next section.
Both Personal and Environmental protective factors were significantly associated with all three outcome measures. Subjects endorsing more of both types of protective factors demonstrated less Anxiety, higher GPA and higher Behavioral Adjustment rated by teachers at Time 2. However, it is important to note that Personal protective factors displayed stronger associations with Adaptive Outcome than did Environmental protective factors.

Implications.

A tentative conclusion can be drawn from the above results: a number of protective factors are associated with Adaptive Outcome, but the strongest effects in this study were between the independent variables of Self-Esteem and Internal Locus of Control, and all three outcome measures. Future intervention projects should direct their efforts to foster these two protective factors. The implications of fostering self-esteem and feelings of control over one’s life will be further examined after discussion of the path model.

Limitations.

The administration of measures assessing protective factors was potentially problematic. Time 1 measures were read out loud to approximately 20 to 30 students at one time. It was this investigator’s impression that few students felt comfortable asking questions, and the ones that did felt vulnerable as they were punished by other classmates who laughed. Time 2 administration was changed to address the potential problems with Time 1 administration, and also as a consequence of the increased comprehension level of 7th graders. Questionnaires were still administered in large groups, but students were
allowed to read to themselves silently. Research assistants were available to answer questions, but again, few students asked for clarification. All child measures were self-report and it is possible that students did not provide accurate responses to questions. It is also possible that students did not understand directions to all questionnaires, and inadvertently did not provide correct responses.

In addition, two measures had both validity and reliability problems. As previously mentioned, the factor structure of the Family Environment Scale (FES) has been called into question. Even though the Cohesion and Conflict subscales are two of the more empirically supported scales, there may be problems with the FES at the item level, which would affect the reliability of all scales. More research needs to be conducted on the FES scales, and caution should be used in its interpretation until there is more information on the validity and reliability of these scales.

Coping was originally considered to be a Personal protective factor, but the three Coping factors identified through RCA, did not demonstrate the expected pattern of relationships. Namely, the Coping factors did not join Self-Esteem and Internal Locus of Control as representing a category of protective factors distinct from Environmental protective factors. One potential reason for this is the measure of coping, The Adolescent Coping Orientation for Problem Experiences (ACOPE). Problems with this measure are discussed in the next section, which focuses on coping.

Coping

It was initially proposed that the Coping variables would join Self-Esteem and Internal Locus of Control as important protective factors that reduced the effects of Risk
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on Adaptive Outcomes. In fact, it was hypothesized that Coping would demonstrate a relationship over and above that of the combined effects of Self-Esteem and Internal Locus of Control on Adaptive Outcome. Coping was measured by the ACOPE, which is widely used as a measure of adolescent coping. However, there are a number of problems with this measure that were reviewed in the Methods section (most importantly the validity and the reliability of the measure's factor structure). Therefore, the first step in investigating coping was to address the methodological difficulties with the ACOPE.

The factor structure of the ACOPE was re-examined using Reliable Component Analysis (RCA: Cliff & Caruso, 1998). RCA was chosen over Principal Component Analysis due to the desire to have internally consistent and maximally reliable factors (scales needed to load at .80 or above to be included in the new factor). The 12 original ACOPE factors were subjected to RCA and three factors emerged: Self-Care/Distraction, Seeking Social Support from Church or Family, and Expressing Feelings/Avoiding. These three factors were used in all subsequent analyses investigating Coping in this study. However, the majority of significant results involved Expressing Feelings/Avoiding coping. This category is composed of the following individual items: get angry and yell at people; blame others for what’s going wrong; say mean things to people-be sarcastic; swear; let off steam by complaining to your friends; let off steam by complaining to family members; use drugs, drink beer, wine, liquor, smoke; try to stay away from home as much as possible; and tell yourself the problem is not important (Patterson & McCubbin, 1987).
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One goal of this study was to attempt to identify coping strategies that are predictive of Adaptive Outcomes for adolescents. Expressing Feelings/Avoiding coping was significantly correlated with higher student-rated Social Skills, higher Self-Esteem, higher Family Cohesion, higher Internal Locus of Control, higher Social Support, lower Peer Distress, and lower Family Conflict. This is an interesting finding as it indicates that students with more positive qualities handle distress by acting out their feelings or avoiding the cause of the distress. In addition, subjects who endorsed Expressing Feelings/Avoiding coping displayed less Time 2 Anxiety and had a greater GPA at Time 2. Therefore, not only are students who cope by Expressing Feelings/Avoiding higher in terms of other protective factors, they also demonstrate more Adaptive Outcome two years later. Self-Care/Distraction and Seeking Social Support from Family or Church, did not predict either adaptive or maladaptive outcome at Time 2.

Coping as a moderator and/or mediator.

In an attempt to further address the role of coping as an influential factor in the causal path between risk factors, protective factors, and outcome, coping was investigated as a potential moderator and/or a mediator. No evidence was found that any coping factor moderated the relationship between the selected protective factors (Self-Esteem, Internal Locus of Control, and Social Support) with any of the three outcome measures.

However, support was found that Expressing Feelings/Avoiding coping partially mediated (meaning the direct effects was not reduced to zero) the relationship between Social Support and student-rated Anxiety at Time 2. This indicates that Social support exerts its influence on Time 2 Anxiety through Expressing Feelings/Avoiding coping. It
is possible to identify the manner in which the mediator is influenced by the independent variable and influences the dependent variable by examining the regression coefficients of these variables. These findings indicate that regardless of the students' level of Social Support, students who endorsed Expressing Feelings/Avoiding coping display less Anxiety at Time 2. It is not the interaction between Social Support and Expressing Feelings/Avoiding coping that is important here, but rather the indirect effect of Social Support through Expressing Feelings/Avoiding coping on Anxiety levels at Time 2.

**Implications.**

The following results may appear surprising to the reader and will be elaborated upon further in this paper. This study found that subjects who endorsed Expressing Feelings/Avoiding coping displayed more Self-Esteem, Social Skills, Internal Locus of Control, Social Support, and reported more Family Cohesion and less Family Conflict. Clearly, subjects using Expressing Feelings/Avoiding coping demonstrate some classic characteristics of resilient individuals, in that they demonstrate a number of positive attributes often associated with healthy outcome. Further evidence for the potential value of this Coping factor comes from the statistically significant relationship between Expressing Feelings/Avoiding coping and less Anxiety and greater GPA at Time 2. In addition, Expressing Feelings/Avoiding coping was found to mediate the relationship between Social Support and Time 2 student-rated Anxiety. These results provide preliminary evidence that it may be important for interventions to foster Expressing Feelings/Avoiding coping in order to promote less Anxiety and higher GPA.
However, this finding may appear contradictory. How can a school-based intervention project encourage students to use drugs and alcohol as a way to cope? This seems counterproductive at the least, as great efforts are currently in place in schools to discourage adolescent drug and alcohol use. In order to address this perplexing question, the Expressing Feelings/Avoiding coping strategy was examined in more detail. The Expressing portion of the Expressing Feelings/Avoiding coping found in this study is similar to Folkman and Lazarus' Emotion-focused coping. Both refer to techniques that address emotions brought about by the stressor. However, there appears to more emphasis in the Expressing Feelings category of this study than in the Emotion-Focused category of Folkman and Lazarus on the actual expression of negative emotions through complaining and direct expression of emotions (e.g., swearing, being mean, yelling). It is possible that there is something cathartic about releasing negative emotions even in ways that have traditionally been viewed as negative.

The Avoiding part of the Expressing Feelings/Avoiding coping involves drug and alcohol use and denial that a problem exists. Frequencies of the individual items that make up the Expressing Feelings/Avoiding coping factor reveal that few students endorsed drug (8.1% of subjects who responded to this question reported that they used drugs sometimes, often or most of the time), alcohol (8.8% of subjects who responded to this question reported that they used alcohol sometimes, often or most of the time), or tobacco (11.2% of subjects who responded to this question reported that they used tobacco sometimes, often or most of the time) use as a coping strategy, with the majority reporting that they cope by expressing feelings or avoiding through cognitive strategies.
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(i.e., "tell yourself it is not important"). This provides a clue that the Expressing Feelings/Avoiding category is endorsed more by students expressing their feelings with words (complain, yell, scream) or by withdrawing, than by using drugs, alcohol or tobacco. Therefore, it is possible that the coping factor that is labeled Expressing Feelings/Avoiding is more a category of expression of negative emotions than use of drugs and alcohol.

It is possible that expressing feelings to cope with stressors is an adaptive way to regulate internal processes brought about by the stressor. This study found that students who share feelings with others tend to feel better about themselves and tend to have less anxiety and greater GPA’s. Thus, there is something empowering about expressing feelings that filters over into multiple areas of an individual’s life. There is some evidence to support this idea. Roecker, Dubow, & Donaldson. 1996 provide evidence that children and adolescents cope differently with conflict with peers than conflict with parents. In general, conflict involving parents is handled by use of distancing and denial coping, whereas conflict involving peers is more active and engaged. They found that children cope with conflict involving peers with more externalizing coping (i.e., yelling, screaming) and less by internalizing and worrying coping, which is used more often to cope with conflict involving parents. Given that this study was conducted in the school environment, it is possible that students interpreted the question of, “When you face difficulties or feel tense, how often do you:” (use each the 54 coping strategies listed below), as a question about coping with distress in the school environment, which is largely distress with peers.
Thus, children and adolescents tend to cope with distress involving peers by expressing their feelings. Perhaps children and adolescents feel that they are on more equal ground with their peers and can be more assertive in expressing their needs. In addition, as a side note, it is interesting that there is evidence that children who use denial to cope with parental conflict are reported to be better adjusted. Thus, it is possible that Expressing Feelings also falls into the category of a coping strategy that was originally thought to be maladaptive, but may in fact be adaptive in certain situations (in this case with peers).

However, it is also possible that the findings from this study regarding the positive value of expressing one's feeling may be unsupported. The positive value of expressing one's feelings goes against the literature regarding Emotion-Focused coping, which is typically associated with maladaptive outcome. In addition, confrontational coping has been shown to be used by people higher in depressive symptoms (Folkman & Lazarus, 1988). Although Expressing Feeling coping, as found in this study, may represent a healthy expression of negative emotions, more research is needed before this claim can be fully supported. However, the findings in this study highlight the need to explore the conceptualization of adaptive and maladaptive coping.

Clearly the literature has shown that it is impossible to label one coping strategy as always positive or always negative. Folkman and Lazarus (1980) introduced the idea that individual appraisal and context must be taken into consideration. In the present study it is impossible to determine what type of conflict the student was responding to when they endorsed the use of different coping strategies. In order to clarify this...
question, one would need more direct and specific questions that ultimately identify the source of the conflict.

This highlights a major problem with coping research, namely that the measurement of coping has been difficult and the meaning of different coping strategies ambiguous. This is a common problem in adult coping literature, which has been perpetuated in child and adolescent coping research. The adult coping literature has been lead by Folkman and Lazarus (1980) who developed the Ways of Coping Inventory. They suggest that there are two general types of coping, Problem (actively doing something about the problem) and Emotion-focused (reducing or managing emotions that result from the situation) coping. However, more recent evidence questions this distinction, highlighting the diversity of coping strategies that are summed to make up Problem and Emotion-focused coping (Carver et al., 1989). Folkman and Lazarus (1988) acknowledge that there are problems with research investigating coping as two overarching categories, rather than exploring the significance of individual coping strategies. They also stress that even though findings might support the claim that one coping strategies is more associated with adaptive outcome, it is essential to recognize the contextual nature of coping; certain coping strategies may be beneficial or maladaptive in different situations.

Understanding the role that various types of coping play in adaptive outcome is even less well understood with children and adolescents. Kestenbaum (1992) provides evidence that emotional expression may not fit a hierarchical (positive emotions separated from and, typically, “better than” negative emotions) model of categorization.
Different situations may elicit different emotional responses and lead to selection of different coping strategies. It may not be possible to identify coping strategies that are used across all emotional situations, because situations may warrant different emotional reactions in the individual and may be related to other factors such as who is the stimulus for the emotional reaction (e.g., peer or parent), or how much control the individual has in the situation (Roecker et al., 1996). In addition, there is evidence that the "fit" between stressors, appraisals, coping and support is important in determining the advantage or disadvantage of one coping strategy over another (Folkman & Lazarus, 1980; Forsythe & Compas, 1987). However, the majority of this work comes from adult literature and more direct research is needed with children and adolescents.

Initially, child and adolescent coping research followed adult coping literature and attempted to identify Problem and Emotion-focused coping, in addition to other types of coping (Compas et al., 1993). Distinctions between Inner and Outer directed coping (Rudolph, Dennig, & Weisz, 1995), and Avoidant and Approach coping (Roecker et al., 1996) have also been found. Yet, similar to adult coping research, these divisions have been questioned due to accumulating evidence that categorization of coping strategies into overarching groups may not be possible due to the contextual and individual nature of coping. In fact, the majority of studies which investigated the factor structure of the Adolescent Coping Orientation for Problem Experiences (ACOPE) did not find the Problem-focused versus Emotions-focused distinction. In addition, the Reliable Component Analysis conducted in this study also did not replicate these two factors.
The Problem-focused and Emotion-focused distinction needs to be re-evaluated, especially for children, and coping research needs to move away from the dichotomization of coping strategies to embrace a system of identifying the probable purpose of a given coping strategy and labeling it as such (i.e., approach coping). As evidence accumulates that coping is reliant on the individual and his/her experiences, measures of coping need to reflect these findings. More research needs to be conducted in this area, as it is not possible to make a blanket statement about the adaptive value of coping strategies like Problem-focused coping or Expressing Feelings/Avoiding coping, as these categories are composed of a number of individual items, some more positive than others. Future coping research with adolescents should focus on clarifying who is the source of conflict, what is the stressor the adolescent is coping with, and what specific action is the adolescent taking to cope; in general, research needs to better address the "fit" of the coping strategy employed to the stressor and resources present. Categories like Emotion-focused coping need to be broken down into their components to determine what aspects are adaptive and what are maladaptive and in what context. As more research accumulates, coping needs to be evaluated as a moderator and/or mediator of the relationship between risk and outcome. Only then can interventions be directed to foster one coping strategy over another. Until then, it does not appear that there is enough evidence to confidently recommend that interventions foster any one coping strategy.

Limitations.

It is also possible that Coping did not emerge as a more important part of the risk and resiliency process in this study due to the use of The Adolescent Coping Orientation
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for Problem Experiences (ACOPE). Test-retest reliability and the original factor structure of the ACOPE are questionable. The Reliable Component Analysis (RCA) conducted in this study attempted to address these methodological problems. Although the factors identified were more reliable (i.e., accounted for a substantial proportion of reliable variance), in general they failed to predict either positive or negative outcome. At this point it is difficult to determine if this is a problem with the conceptualization of coping as previous stated or rather a problem with reliable measurement of adolescent coping.

Given the difficulty that adult literature has with measurement of coping (and stress and stressors in general; Garmezy & Masten, 1994), it is highly likely that the both of the above mentioned problems are true: specifically, that coping is hard to measure due to its ambiguous and context dependent nature, and that this has resulted in the development of a number of coping measures that lack specificity and validity. Validity is particularly hard to achieve with adolescent coping measures because there is not an accepted, standard criterion against which one coping measure can be compared.

Another problem with the ACOPE is its reliance on recognition of coping strategies. It is possible that coping measures that assess recall versus recognition may tap into different coping strategies (Simon-Thomas, 1999). Thus, coping strategies elicited with the ACOPE may not represent how the subject would truly cope with distress. Again, more research needs to be conducted to better define coping before new measures of coping can be developed and applied.
Interactions between Risk and Protective Factors: Tests of Moderation, Mediation, and Indirect Effects

The main goal of the present study was to investigate the ways in which risk and protective factors combine and interact to effect adaptive outcomes. It was initially proposed that one large path model would be tested to explore these relationships and to attempt to provide the best fit for the data. However, this was not possible due to a variable sample size and the lack of complete data sets for Time 1 and Time 2 measures. Instead, the same variables that were initially proposed to measure underlying latent variables were separated out, and a path model of all manifest variables was created (see Appendix D). Much of this information has already been reviewed in terms of interactions between risk and protective factors. Given that the focus of this study was to provide direction for future intervention projects, the ability of protective factors to moderate or mediate the relationship between Risk and Adaptive Outcome will be emphasized in this discussion.

Path model

The path model proposed (Appendix D) revealed that Risk accounted for a significant amount of variance in Self-Esteem, Locus of Control and Social Support, and that in return, these three variables were predictive of Adaptive Outcome at varying levels. Measures of Self-Esteem and Internal Locus of Control, individually, predicted a substantial proportion of variance in all three of the outcome measures. As previously reviewed when these two variables were combined to make up the Personal protective factor composite variable, they were also highly predicted of Adaptive Outcome. The
finding that Self-Esteem and Internal Locus of control are highly correlated and emerge as important protective factors is not new (Seifer et al., 1992), or that Self-Esteem and Internal Locus of Control are associated with better outcomes (Gore, & Eckenrode, 1996). Thus, this study provides additional evidence that subjects with greater Self-Esteem and greater Internal Locus of Control tend to have adaptive outcomes. Given this information, the next logical step was to investigate the ways in which these variables exert their influences. This was conducted through tests of moderation (first, by examining the influence of higher levels of protective factors, and then by exploring individual protective factors) and through tests of mediation and indirect effects.

**Moderators.**

The term moderator refers to a statistical interactions between two variables, also referred to as a buffering effect. The hypothesis that subjects demonstrating more protective factors would display Adaptive Outcome despite exposure to higher levels of Risk was not supported. There was no interaction between levels of risk and levels of protective factors. In addition, individual protective factors were investigated as potential moderators of Risk on Adaptive Outcome. There were no statistically significant interaction effects, although the interaction between Risk and Self-Esteem approached significance and supports other findings from this study about the important role that Self-Esteem plays between Risk and Adaptive Outcome.

The lack of findings was unexpected, as protective factors have been discussed as moderators (Luthar & Zigler, 1991; Masten et al., 1988), and in this study, certain protective factors (Self-Esteem, Internal Locus of Control and Social Support) were
predicted to interact with increasing levels of Risk to lead to more Adaptive Outcome. One possible explanation for the absence of interaction effects is the lack of subjects with more than three risk factors (the majority of subjects displayed lower risk and possessed multiple protective factors). This restricted range may have made the possibility of discovering moderator effects statistically impossible.

Mediators and indirect effects.

A number of variables partially mediated (meaning the direct effect was not reduced to zero) the relationship between Risk and Time 2 student-rated Anxiety, including Self-Esteem, Internal Locus of Control, Social Support, Expressing Feelings/Avoiding coping, Family Cohesion and Family Conflict. This indicates that Risk exerts its influence on Anxiety levels at Time 2 through these variables. Again, the examination of the regression coefficients helps to define these relationships. Subjects with higher Self-Esteem, higher Internal Locus of Control, higher Social Support, higher levels of Family Cohesion, lower levels of Family Conflict, and who endorsed using Expressing Feeling/Avoiding coping displayed less Anxiety at Time 2. These results provide strong evidence that interventions should attempt to foster these protective factors in order to facilitate lower levels of Anxiety.

The relationship between Risk and Time 2 GPA or Time 2 Behavioral Adjustment as reported by teachers was not mediated by any of the protective factors. However, Self-Esteem and Internal Locus of Control did show indirect effects on Time 2 GPA, and Self-Esteem also demonstrated indirect effects on Time 2 Behavioral Adjustment as reported by teachers. Thus, Risk acts to exert its influence both directly and indirectly on
Time 2 GPA and Time 2 Behavioral Adjustment as reported by teachers, whereas the relationship between Risk and Time 2 student-rated Anxiety was mediated by a number of protective factors.

**Implications.**

A tentative conclusion regarding the interaction between risk and protective factors can be drawn from the above results. This conclusion is tentative because the analyses conducted were correlational not experimental, thus causal relationships cannot be inferred. Self-Esteem and Internal Locus of Control appear to be the most influential protective factors in the relationship between Risk and Adaptive Outcome. Both had strong direct, indirect, and mediating effects on Adaptive Outcome. Also, as demonstrated in the path model, Self-Esteem and Internal Locus of Control were most predicted by the continuous Risk variable and were most predictive of Time 2 Adaptive Outcome (i.e., lower Anxiety, higher GPA, and higher teacher rating of Behavioral Adjustment). In addition, Social Support, Expressing Feelings/Avoiding coping, Family Cohesion, and Family Conflict also play important roles between Risk and Adaptive Outcome.

It has been shown that interventions can directly target mediating variables to influence the relationship between the independent variable and the dependent variable (Masten, 2001). Results from this study indicate that interventions should focus their efforts on two areas: 1) increasing self-esteem and internal locus of control, and 2) increasing social support, expressing feelings, family cohesion, and decreasing family conflict. As previously mentioned, it is not possible to advocate for the fostering of
Expressing Feelings/Avoiding coping until more evidence is obtained that supports the findings from this study.

What precisely does this mean for interventions? Addressing family cohesion and family conflict could prove difficult in a school environment, but programs like the Family Resource Room and Family Fun Night could accomplish such a task. However, feeling good about oneself, feeling that you have control over decisions in your life, and feeling that you have social support could be readily addressed within the school environment. Ideas for interventions include: 1) offer empowering activities both within the school curriculum and as after school activities. 2) increase opportunities to work with peers in a non-competitive environment in which all participants win. 3) allow students to take leadership roles in nontraditional ways (such as through volunteering or school projects that encourage students to help people less fortunately than themselves), and 4) offer mediation of peer conflict through programs such as Restorative Justice. Programs like this offer students choices and options when they have harmed another. The goals of these programs are to provide students the skills and opportunities to learn healthy coping strategies to handle stress/conflict. In addition, this approach allows the "bad kid" or the "nerdy kid" to try on new roles and to interact in positive ways with peers with whom they were once in conflict.

It is important to note that there has been a backlash towards educational programs that attempt to foster self-esteem. This seems to be related to the fact that some programs focus on self-esteem to the exclusion of prosocial behaviors (such as empathy), academic success, ability to work with others, etc. In addition, programs like the DARE
project have attempted to increase self-esteem but have failed to produce substantial
effects. Some of these projects have received national attention and have left many
feeling disillusioned that intervention projects can foster abstract traits such as self-
esteeem.

The findings from this study are presented as an alternative to the above
mentioned failed attempts. Before reviewing these findings, it may be helpful to clarify
how interventions can target moderating and/or mediating variables. Masten (2001) does
a nice job of identifying specific ways interventions can influence a moderator or a
mediator. Interventions targeting a mediator variable should “focus on altering the level
of a particular asset or risk in a child’s life or in a population.” (p.230). Examples of this
would be to offer tutoring to enhance academic skills or to offer parenting classes to
increase effective parenting. Moderating variables are the result of the interaction
between the independent variable and the moderator. Thus, interventions should focus on
increasing risk-activated activities, such as school-based crisis services or services to aid
families in need. This study found only mediation effects and these will be discussed
below.

The present study found that students who feel they have choices and can effect
change in their lives, tend to have higher self-esteem and as a result have more social
skills, less anxiety, and higher GPA’s. Thus, the recommendations from this study to
target self-esteem with school-based interventions are not advocating for the targeting of
self-esteem to the exclusion of other protective factors, but rather in conjunction. Self-
esteeem and locus of control emerged as important areas to foster in order to assist a child
in displaying adaptive skills, yet self-esteem is difficult to target because it is multifaceted. An intervention directed at increasing athletic competence will not be meaningful to all children. Thus, in order to enhance self-esteem, one must address multiple areas of possible competences. One possible way to accomplish such a task is to query teachers to identify what students are interested in what activities and actively recruit specific students to participate in specific after-school activities.

In addition, although this study found Self-Esteem and Internal Locus of Control to be highly associated with Adaptive outcome, it is important to remember that students who had more protective factors in general were associated with better outcome. This is similar to findings in the medical field, the more protective factors present, the less chance for development of disease (Stamper, Hu, Manson, Rimm, & Willett, 2000)

Limitations.

First, the sample size for students with both Time 1 and Time 2 measures was small, particularly for testing models of this complexity. Not all moderation effects were tested due to the small sample size and the risk of increasing Type I error with the sheer number of regression analyses that would have needed to be conducted. Second, the restricted range of subjects with four or more risk factors may have hampered the ability to test for moderating effects. Finally, the lack of parent information as outcome measures was a significant limitation of this study. It would have been interesting to compare teacher and parent reports of adaptive outcomes to determine if child self-report was more or less predictive of either parent or teacher reports.
Summary

In reviewing the literature on risk and resiliency research, the overwhelming feeling is frustration and confusion. Much time and money has been spent trying to identify risk and protective factors in an attempt to devise intervention projects that address these factors. Although much has been learned from this research, the benefit of these intervention programs remains to be determined. Many programs make participants and developers "feel good" but have demonstrated no empirical evidence for their effectiveness (i.e., the DARE program). Yet, these programs remain in place and continue to receive substantial financial support. Further frustration comes when there are programs that have shown their benefit (Office of Behavioral and Social Sciences Research, 1998), and their practices are not adopted by others doing similar research. One area that is severely lacking is that of prevention.

It was the intention of this paper to demonstrate that it was possible to measure the interaction between risk and protective factors, and to identify protective factors that were essential to engaging risk and overcoming the challenges risk presents. In summary, these findings indicated that self-esteem and internal locus of control are the two most important factors for intervention programs to foster in order to facilitate lower anxiety, higher GPA, greater social skills, and fewer behavioral problems.

As youth violence is escalating and many youth feel disconnected from their peers, family, and community, it is critical that steps be taken to provide prevention activities that are salient and applicable to the youth, and that are based on empirically tested theories. It appears that many of the perpetrators of violence against their peers,
feel that they have no other course of action to feel heard: thus, they felt powerless and unimportant. This could be additional evidence that school-based interventions need to foster internal locus of control and self-esteem, as lack of choices and lack of validation seem to be key missing pieces for students who choose violence over peaceful dialogue.

Although these findings provide direction for future intervention programs, it is not possible to claim that the factors mentioned above are more protective for subjects exposed to greater risk, as an interaction effect was not found. It appears that self-esteem and internal locus of control are protective for all students, which makes them appropriate targets for school-based interventions, but fails to answer the question regarding the most beneficial factors to enhance to achieve adaptive outcome for students exposed to many risk factors.

More research is needed that specifically targets high-risk children and adolescents to determine what protective factors truly offer increased benefit for those exposed to considerable risk. In order to accomplish this, one would need a large sample with greater variability in the occurrence of both risk and protective factors. Only after such information is obtained can interventions be directed to focus on factors that ameliorate risk. Until then interventions should target factors that lead to adaptive outcomes for all students.
References


Jorgensen, R.S., & Dusek, J.B. (1990). Adolescent adjustment and coping


Predicting Adaptive Outcome


STRESSORS
- detentions
- socioeconomic status
- suspensions
- absences
- # of parents
- # and age of siblings

VULNERABILITIES
- low attachment (ASQ)
- low self-esteem (CSCS)
- few coping skills (ACOPE)
- being male
- low GPA

PERSONAL PROTECTIVE FACTORS
- high attachment (ASQ)
- high GPA
- low anxiety (RCMAS)
- high self-esteem (CSCS)

ENVIRONMENTAL PROTECTIVE FACTORS
- social skills (C-SSRS)
- peer relationships (IPR)
- family environment (FES)
- social support (CASS)
- sense of control (NSLCS)

ADAPTIVE ADJUSTMENT
- many coping skills (ACOPE)
- being female

Predicting Adaptive Outcome
Appendix B: Alternative path model for the prospectus meeting

Predicting Adaptive Outcome 187
ENVIRONMENTAL PROTECTIVE FACTORS (all Time 1 measures)

PERSONAL PROTECTIVE FACTORS (all Time 1 measures)

RISK FACTORS (all Time 1 measures)

ADAPTIVE ADJUSTMENT (all Time 2 measures)

social skills (C-SSRS)
peer relationships (IPR)
residual variance
social support (CASS)
socioeconomic status
attachment (ASQ)
# of parents
# and age of siblings
gender
self-esteem (CSCS)
residual variance
sense of control (NSLCS)
coping skills (ACOPE)
anxiety (RCMAS)
teacher rating of social skills (T-SSRS)
detentions
residual variance
suspensions
absences
GPA
teacher report form (TRF)
Appendix D:
Revised path model after data reduction
Appendix D1:
Path model investigating the relationship between risk, protective factors and time 2 GPA

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Appendix D2:
Path model investigating the relationship between risk, protective factors and time 2 anxiety
Appendix D3:
Path model investigating the relationship between risk, protective factors and time 2 behavioral adjustment
Appendix G:
Path model investigating the relationship between protective factors, expressing feelings/avoiding coping, and time 2 GPA and time 2 anxiety.