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RURAL ADOLESCENT RISK BEHAVIORS: TOWARDS AN UNDERSTANDING OF THEIR NATURE AND ASSOCIATED FAMILY FACTORS

A Thesis Presented

by

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DEDICATION

I dedicate this thesis to my mother, Carole Pollack, from whom I have learned the meaning of the words courage and determination. She has provided a loving and nurturing home for our family and always has encouraged me to believe in myself and to follow my dreams. I am eternally grateful to my mother for without her support and guidance I would not have achieved what I have today. Thank you mom.

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ABSTRACT

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The present study investigates the nature and associated family factors of rural adolescent risk behaviors. Three hundred and fifty-two rural adolescents (ages 14-18) completed questionnaires concerning their demographic information, their engagement in risk behaviors, and their family characteristics and environment. In general, it was determined that gender, grade, family structure, and familial problem behavior differences exist with respect to certain types of risk behavior. In addition, it was found that familial problem behavior, specifically familial alcohol abuse, is a significant predictor of the seriousness of all types of risk behavior for males and females. Family structure and family environment were occasional predictors of the seriousness of risk behavior depending on the behavior being examined. Gender differences in the family factors predictive of serious risk behavior are discussed. It is concluded that patterns of risk behavior in the population of rural adolescents are extremely

complex and examination of risk behavior patterns of these adolescents requires some awareness of and respect for this complexity. Implications of this study for intervention and future research are discussed.

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CHAPTER I

INTRODUCTION

As a society, we are becoming increasingly aware of the fact that we are not sufficiently responding to the needs of our youth. This awareness comes from statistics such as teen mortality, teen pregnancy, and crime. Research as well as life experience has shown us that adolescence can be a very difficult period in life. It is a time filled with new opportunities and complicated decisions for both adolescents and their families. Adolescents are faced with the challenges posed by their own growth and personal development and with the challenges created by society (Takanishi, 1993). In response to many of these challenges, some adolescents resort to risk behaviors such as delinquency, sexual promiscuity, and substance use/ abuse. Understanding these risk behaviors as well as their antecedents and potential outcomes is necessary if we are to create a more optimal environment for the healthy development of our youth.

Risk Behavior

Defining Risk Behavior

There currently is no clear understanding of what constitutes risk behavior, particularly with respect to adolescents. In the literature, the term problem behavior is frequently substituted for certain forms of risk behavior (Jessor & Jessor, 1977). According to Jessor and Jessor (1977), problem behavior is "behavior that is socially defined as a problem, source of concern, or as undesirable by the norms of conventional society and the institutions of adult

authority, and its occurrence usually elicits some kind of social control response." (p. 32). Although there is some disagreement, particularly between adolescents and adults, regarding what constitutes a risk behavior, it is generally accepted that moderate or high levels of delinquency, substance use, and precocious or unprotected sexual behavior can be classified as risk behaviors (Allen, Aber, & Leadbeater, 1990). What makes them risk behaviors is the fact that they place the adolescent at risk for negative developmental outcomes as well as for poor social adaptation.

In defining risk behavior, one needs to make two important distinctions. First of all, one must distinguish between risk behavior and risk-taking behavior. For the purpose of this study risk-taking behavior is defined as that which is done for the purpose of thrill seeking, whereas risk behavior is defined as that which is done for other reasons which may or may not be recognized by the adolescent (Jessor, 1991). The second distinction stems from the fact that risk behavior is at times "descriptive of mature, healthy adolescents" (Baumrind, 1987, p. 108). Thus, definitions of risk behavior must distinguish between behaviors which are developmentally functional for an adolescent and behaviors which put the adolescent at risk for negative outcomes. Such a distinction is often made based on factors such as age of onset, seriousness, frequency, and quantity of risk behavior (Dryfoos, 1991).

Using such factors as criterion for determining risk behavior has revealed that the population of adolescents who engage in risk behaviors is a heterogeneous one. A number of researchers have grouped adolescents

according to their risk behavior patterns (Crocket & Bingham, 1992; Dryfoos, 1991). For example, Dryfoos (1991) placed adolescents into groups along a continuum of risk behavior. "Very high-risk youth" are those who engage in multiple problem behaviors. This category accounts for approximately 10% of today's adolescent population. "High-risk youth" are those who engage in many of the same behaviors as the previous group, but who do so with a lower frequency and less deleterious consequences. About 15% of today's adolescents fall into this category. "Moderate-risk youth" are experimenters who use substances (not hard drugs) occasionally, have sexual intercourse with contraceptives, and are usually involved in only one of these behaviors. The "moderate-risk group" accounts for about 25% of today's youth. Finally, there are the "low-risk youth" who engage in no delinquent acts, no substance use/ abuse, and are not sexually active. This category includes approximately 50% of today's youth. Dryfoos determined these categories based on pulling together the results of several studies because no single study has considered all the behaviors and how they overlap within the adolescent population. Also, although these patterns and percentages may be descriptive of the general population of adolescents, it is not clear that they describe subpopulations such as rural adolescents.

Reasons for Risk Behavior

In order to understand adolescent risk behavior, it is important to consider the motivations or forces which lead to adolescents' involvement in such behavior. According to Jessor (1991) research has demonstrated that

adolescent risk behaviors are often "functional, purposive, instrumental, and goal directed" (p. 598). Several theorists have discussed the possible reasons why adolescents engage in risk behavior (Brooks-Gunn, 1989; Hamburg, 1987; Tonkin, 1987). Brooks-Gunn (1989) provides a useful summary of many of the proposed motivations for adolescent risk behavior. She includes in her summary the following reasons: (1) to achieve what seems to be unavailable goals, (2) to cope with personal frustrations and anticipated failure, (3) to express opposition to conventional society, and (4) to gain membership in peers' subcultures.

Allen, Aber, and Leadbeater (1990) note that "individual problem behaviors may result from general patterns of difficulties in social development, rather than serving simply as responses to the unique rewards of a given behavior" (p. 457). They argue that adolescents' developmental experiences, especially those related to attachment and autonomy, may be related to their involvement in problem behaviors. Thus, it is important to consider the many different influences and demands on adolescents, particularly those related to their families, in order to understand adolescent risk behaviors. It is also important to recognize that those influences may differ depending upon the population which is being studied.

Risk & Protective Factors

In an attempt to better understand the various influences and demands on adolescents, researchers have investigated the risk and protective factors related to risk behaviors. "Although we talk about 'high-risk behavior', most of

the factors that place children at risk are not of their doing" (Dryfoos, 1991, p. 128). Dryfoos stresses the importance of focusing on the antecedents or risk and protective factors of high-risk behavior rather than on the presenting behavior itself. When one investigates risk behaviors, it is important to keep in mind the fact that some teenagers who are exposed to risk factors do not engage in risk behaviors and/ or do not experience negative outcomes. Protective factors may account for this finding and should be included in research on the antecedents of risk behaviors (Newcomb & Felix-Ortiz, 1992; Rutter, 1990).

Jessor and Jessor (1977) were among the first researchers to approach risk behavior from the perspective of risk factors when they proposed their Problem Behavior Theory. They looked at problem behavior as part of a social-psychological relationship composed of a personality system, a perceived environment system, and a behavior system. Thus problem behavior, or risk behavior, is seen as part of an interaction between an individual's personality and the environment. From this perspective aspects of one's personality and environment are viewed as risk and protective factors.

Covariation of Risk Behaviors

Although adolescents may choose to engage in only one risk behavior, research has shown that many adolescents engage in several different behaviors. Such adolescents are said to engage in a "syndrome" or "lifestyle" of risk behavior (Donovan & Jessor, 1985; Jessor, 1991). This suggests that there may exist intraindividual covariation among different risk behaviors for

individuals. Jessor (1991) explains such covariation as the result of either (1) the social ecology of adolescent life or (2) the fact that different behaviors serve similar functions. A number of researchers have provided evidence supporting the existence of syndromes of risk behavior. For example, researchers have demonstrated that sexual activity and other risk behaviors tend to covary (Epstein & Tamir 1984; Metzler et al., 1992; Rogers & Ginzberg, 1991). Also, Jessor (1987) found a positive correlation between risky driving and other problem behaviors including delinquency and substance use. Donovan & Jessor (1985) provide support for the covariation hypothesis by demonstrating that the interrelations between different adolescent problem behaviors can be accounted for by a single common factor which they referred to as unconventionality. It is possible that the behaviors which comprise these syndromes as well as the factors which account for them are specific to the population being studied.

Outcomes of Risk Behavior

Whatever adolescents' reasons are for engaging in risk behaviors and regardless of the factors which may be related to these behaviors, by performing risk behaviors adolescents are placing themselves at risk for many negative developmental outcomes. The negative effects associated with the different risk behaviors range from immediate to long term effects and include involvement in more serious risk behaviors, dropping out of school, involvement in criminal activities, pregnancy, infection with STD's or HIV, and more. This is not to say that all risk behaviors necessarily have negative effects.

In fact, some positive outcomes can also come from risk behaviors. As Jessor (1991) states, this results in the need for adolescents to conduct a cost-benefit analysis. The accuracy of their analyses is crucial when one considers the possible negative consequences of an error: "Risk behaviors can jeopardize the accomplishment of normal developmental tasks, the fulfillment of expected social roles, the acquisition of essential skills, the achievement of a sense of competency, and the appropriate preparation for transition to the next stage in the life trajectory of young adulthood" (Jessor, 1991, p. 599).

Conceptual Framework for Adolescent Risk Behavior

Recently, Jessor (1991) combined many of these different issues regarding risk behavior into one conceptual framework. This framework is an ecological model composed of risk/ protective factors, risk behavior/ lifestyles, and risk outcomes. The risk and protective factors are divided into five general domains (although Jessor acknowledges that there may be others): biology/ genetics, social environment, perceived environment, personality, and behavior. The risk behaviors/ lifestyles are divided into problem behaviors, health-related behavior, and school behavior. Finally, the outcomes are broken down into health, social roles, personal development, and preparation for adulthood.

There are five major tenets of this conceptual framework which are important to discuss. First, the framework stresses that there exist multiple, interacting domains of factors all of which are involved in an intricate "web of causation". Secondly, Jessor proposes that each of the domains has direct

effects on adolescent risk behavior. Thirdly, each of the domains also has indirect effects on adolescent risk behavior. Fourthly, although the framework is arranged in a hierarchical fashion with risk and protective factors on the top, risk behaviors/ lifestyles in the middle, and risk outcomes on the bottom, Jessor recognizes that the relationships and causal effects are bidirectional. Finally, Jessor addresses the fact that the domains and behaviors change over time and throughout development. This suggests that accurate investigation of this framework requires longitudinal research (Epstein & Tamir, 1984).

A final component of Jessor's conceptual model is the importance of context. Specifically, Jessor calls for a "community-wide ecological perspective" (1993). Jessor and others believe that behavior, including risk behavior, cannot be understood without some appreciation for and understanding of the context in which a behavior is occurring (Jessor, 1993; Mechanic, 1991).

Present Study

Researchers have stressed the need for research focused on a diversity of populations (Powers, Hauser, & Kilner, 1989). Jessor (1993) suggests using his framework to look at the diversity within specific populations by considering context as a variable in the model. The study investigates risk behaviors in a specific population of adolescents- rural adolescents. Consistent with Jessor's model, it will explore the risk and protective factors associated with risk behaviors among rural adolescents. In general, there is a lack of research on developmental issues and behavioral processes in rural adolescents (Murray &

Keller, 1991; Urey & Henggeler, 1983). Although there exists some research on rural adolescents and rural adolescent risk behavior, it is minimal.

Family Factors

This study will investigate risk and protective factors specifically related to the family. Family factors form a subdomain of what Jessor refers to as the social environment domain. Although this subdomain comprises only a small segment of Jessor's many interacting domains, gaining some understanding for the extent to which this particular subdomain operates within Jessor's framework will provide a basic building block for future work. Researchers stress the importance of considering family factors in trying to understand adolescent development (Powers et al., 1989). During adolescence there are many changes which occur including changes in family relations and family roles (Grotevant & Cooper, 1985). Powers and her colleagues (Powers et al., 1989) state that "although legitimate differences among competing theoretical perspectives continue, there is growing agreement on the significance of family ties, parental models, and reciprocal influences between adolescents and their families. Not only do families affect adolescent development, but aspects of adolescent development affect the life of the family" (p. 203).

In addition, research suggests that family factors, such as family functioning, problem solving skills, and communication skills, are all closely related to the presence of psychiatric disorders in children (Rae-Grant, Thomas, Offord, & Boyle, 1988). Support for the integral role of the family in child behavior patterns is also demonstrated in the treatment literature. For example,

Henggeler, Rodick, Hanson, Watson, Berduin, & Urey (1986) revealed that a family ecological treatment was effective in reducing conduct problems in children.

The family factors which will be investigated in this study have been chosen because previous research has suggested that they may be related to adolescent risk behaviors. These factors include family structure, familial problem behaviors, and family environment. Family structure refers to the composition of the adolescent's family such as two parent, single parent, step parent , etc. Familial problem behaviors refers to family members' substance use and involvement with the law. Finally, family environment refers to aspects of the atmosphere and interaction patterns in the family. Within the area of family environment several specific areas including cohesion, expressiveness, conflict, independence, moral-religious emphasis, organization and control will be investigated.

Risk Behavior

In this study, three general areas of risk behavior will be investigated: delinquent behavior, sexual behavior, and substance use/ abuse. Considerable research has been done on each of these areas of risk behavior, however, rarely have they been considered simultaneously with the broad range of family factors which will be employed in this study and rarely have they been investigated specifically within a rural population (Dryfoos, 1991).

Delinquent behavior. Delinquent behavior "does not have a single meaning; it covers a wide range of behaviors from running away to murder"

(White, 1989, p. 296). Delinquency can be divided into categories- covert and overt delinquency. Covert delinquency includes all of the concealing behaviors including lying and theft, whereas overt delinquency includes the more aggressive and assaultive behaviors including arguing, fighting, swearing, and acting loud or rowdy. (Hinshaw, Heller, & McHale, 1992; Stouthammer-Loeber, 1986; Loeber, Weisman, & Reid, 1983).

In determining how risky one's delinquent behaviors are, the age of onset and seriousness of the acts are important to consider. Tolan and Thomas (1988) have found that an early onset of and an increased seriousness of delinquent acts, defined by a pattern of continual delinquent acts over time, place adolescents more at risk for negative developmental outcomes. Research has demonstrated that children and adolescents demonstrate different styles or patterns of delinquency including occasional delinquency, transitory delinquency, and persistent delinquency all of which require different explanations and interventions (Leblanc,1991).

Several researchers have illustrated the relationship between family environment variables and delinquency. For example, Patterson (1981) demonstrated that parents of delinquent children compared to parents of nondelinquent children tend to engage in more erratic supervision, inconsistent and inappropriate discipline, lack warmth, and demonstrate considerable marital discord, family disharmony, rejection and hostility. Tolan and Thomas (1988) showed that family emotional atmosphere, in particular family cohesion, was related to delinquent behavior in children with lower levels of cohesion

associated with involvement in more delinquent behaviors. In reviewing numerous studies of delinquency, Dryfoos identified several family environment factors including lack of bonding, abusiveness, and lack of communication as well as several familial risk behaviors such as parental mental illness, alcoholism, criminality and violence which are related to delinquency (Dryfoos, 1991).

The relationship between family factors to delinquent behavior has been demonstrated with both covert delinquency and overt delinquency (Stouthamer-Loeber & Loeber, 1986). Single parent family structure as well as family environment factors like rejection, discord, and supervision have been shown to relate to lying which is a type of covert delinquency (Stouthamer-Loeber, 1986 ; Stouthamer-Loeber & Loeber,1986). Loeber, Weisman, & Reid (1983) found that parental disciplining practices and parental behaviors are predictive of the development of covert delinquency, overt delinquency, or no delinquent behavior in children. More specifically, parents of overt delinquents, assaulters, tended to be more aggressive in their parenting style and their behavior whereas parents of covert delinquents, stealers, were often nonopposing and distancing in their parenting style and behavior.

Studies on delinquent girls have shown that family environment variables such as communication and conflictual interactions are related to the presence of delinquent behaviors (Stewart & Zaenglein-Senger, 1984). One study looking at gender differences in the families of male and female delinquents found that the family environments of female delinquents were

more conflictual than those of male delinquents (Henggelar, Edwards, & Borduin, 1987).

Sexual behavior. Adolescent sexual behavior has become a popular subject in research. Brooks-Gunn has done considerable research on sexual behavior and its place in development (Brooks-Gunn & Furstenberg, 1989). The recent increase in research on adolescent sexuality may reflect, in part, the large increase in numbers of sexually active adolescents. According to the 1988 National Survey of Family Growth (Rogers & Ginzberg, 1991) by the age of 19, 76% of white females, 85% of white males, 83% of black females, and 96% of black males have had at least one coital experience. These statistics become alarming when one considers the possible negative outcomes which can follow early and uneducated sexual activity, such as premature parenthood, STD's/ HIV, infertility, and genital cancer (Rogers & Ginzberg, 1991). Researchers have identified factors such as age of onset, condom use, birth control use, number of partners, and frequency of activity as descriptors of risky sexual behavior (Biglan et al., 1990).

The influence of one's social environment, including family, on sexual behavior has been stressed (Biglan et al.,1990). Empirical studies have found inconsistent results with respect to the relationship between family structure and adolescent sexual behavior (Dryfoos, 1991; Jemmot & Jemmott, 1992; Ohannessian & Crockett, 1993). Specifically, Jemmott and Jemmott (1992) found that family structure was unrelated to coital activity, but was related to condom use with single parent family structure related to a decrease in condom

use. Availability of parental figures, a factor frequently associated with family structure, has been shown to be a significant predictor of sexual behavior (Biglan et al. 1990; Philliber, Namerow, Kaye, & Kunkes, 1986).

Research has demonstrated the importance of certain family environment factors in predicting children's sexual behavior. Characteristics such as parental strictness, supervision, connectedness, coerciveness and supportiveness have all been shown to relate to onset and or frequency of adolescents' sexual behavior (Biglan et al., 1990; Brooks-Gunn & Furstenberg, 1989; Dryfoos, 1991; Jemmott & Jemmott, 1992; Rogers & Ginzberg, 1991) . Although it has been shown that a relationship between parent- child communication and adolescent sexual behavior exists, the nature of that relationship differs for fathers and mothers. Less risky sexual behavior appears to be related to more communication between the mother and the child about general issues and more communication between the father and the child about sexuality issues (Brooks-Gunn & Furstenberg, 1989). In addition, factors such as parental education, parent-child communication, and the quality of the parent-child relationship were shown to correlate with contraceptive use (Brooks-Gunn & Furstenberg, 1989; Dryfoos, 1991). Research on sexual behavior has demonstrated the importance of including different measures of sexual behavior such as onset, frequency, and number of partners in order to gain an accurate understanding of the relationship between family factors and sexual behavior (Metzler, Noell, & Biglan, 1992).

Some research has been done specifically on the sexual behavior of rural adolescents. In one study, perceptions of parental closeness were shown to relate to expectation of the onset of sexual behavior for rural girls in 7th -9th grade with decreased closeness being related to earlier onset (Crouter, Carson, Vicary, & Butler, 1988). Crouter and her colleagues demonstrated that the closer a girl feels to her parents, particularly her mother, the later she expects to engage in coitus. Whereas previous literature discussed a relationship between maternal employment and sexual permissiveness, Wright, Peterson, & Barnes (1990) demonstrated that maternal employment was not related to rural adolescents' sexual permissiveness. They also revealed a negative relationship between adolescents' sexual permissiveness and their communication about general issues with their mothers and their communication about human sexuality issues with their fathers . Additionally, it has been shown that in rural communities communication within the family was highly important and that efforts to improve this fostered sexual learning and responsibility (Shapiro, 1989). Finally, Crockett (1994) reports that single parent family structure is related to early sexual behavior in rural adolescents.

Substance use/ abuse. Substance use/ abuse is the final risk behavior which will be considered in this study. According to Dryfoos (1991), 15% of 12-14 year-olds and 25% of 15-17 year-olds smoke cigarettes, 25% of 12-14 year-olds and 55% of 15-17 year-olds use alcohol, and 7% of 12-14 year-olds and 20% of 15-17 year-olds use marijuana. Newcomb and Bentler (1989) stress the importance of understanding the distinction between the use and abuse of

drugs. Generally, substance abuse occurs when use is accompanied by "negative reactions and other adverse consequences to self, others, or property" (Newcomb & Bentler, 1989). They do recognize, however, that " ...regular use of drugs at developmentally critical life periods such as when an individual is very young or has not yet reached puberty can be considered abuse because of the potential for interfering with crucial growth and adjustment." (p. 243). In addition, researchers have shown that the use of the "softer" substances such as cigarettes, alcohol, and marijuana often is related to later use or abuse of hard drugs. Thus, many factors, including age of first use, frequency, and tendency toward later substance use/ abuse, should be taken into account when trying to determine the extent to which substance use can be considered a risk behavior.

Various family factors such as family environment, parental substance use, and family structure have been shown to be related to substance use/ abuse with more negative conflictual environments, increased parental substance use, and a non-intact family structure being related to increased use and abuse (Bloch, Crocket, & Vicary, 1991; Dryfoos, 1991; Newcomb & Bentler, 1989; White, 1989). One study focusing particularly on rural adolescents demonstrated that family relations and family structure are predictive of later alcohol use (Bloch et al., 1991). Research also has demonstrated that familial religiosity is inversely related to alcohol use (Bloch, Crocket, & Vicary, 1991; Newcomb & Bentler, 1989).

Previous research has revealed some covariation among delinquency, sexual behavior, and substance use/ abuse (Biglan et al., 1990; Burke,1987). Although there is no existing study that has looked at all three categories of risk behavior simultaneously, Dryfoos (1991) employed simulated estimation with a number of different studies in order to arrive at some understanding of the common antecedents of some of these risk behaviors. Through this procedure Dryfoos determined that, "Having insufficient bonding to parents, having parents who do not monitor/ supervise, offer guidance, or communicate with their children and having parents who are either too authoritarian or too permissive are all strongly associated with the behaviors." (p. 95). Although this information is helpful, research which actually empirically investigates the overlap between these behaviors is necessary if we are to draw any conclusions regarding the nature of these risk behaviors and their covariation within a rural population.

The present study investigates generalized risk behavior as well as the four categories of risk behavior discussed above. Three dimensions of risk behavior, namely frequency, age of onset, and seriousness, are assessed in this study. The frequency and onset variables are used in the more exploratory aspects of the study and the seriousness variable is used to test the specific hypotheses. Individual behaviors were combined into categories of risk behavior in order to give a more complete picture of the adolescent's risk behavior patterns. A variable indicating the seriousness of each risk behavior, which takes into account the frequency of the behaviors, was created for the

purpose of combining the individual behaviors. Assessment of the seriousness of each behavior is important for two reasons. First of all, the research discussed above suggests that the seriousness of risk behavior is predictive of developmental outcome. Secondly, seriousness was used in order to account for the fact that the risk implications of the frequency information might be dependent upon what behavior is being considered. For example, smoking once or twice may have very different implications for an adolescent's development than would using cocaine once or twice. Previous studies have either examined only individual behaviors or have simply added together the number of behaviors engaged in and their frequencies to arrive at an index (Tolan & Thomas, 1988). This investigator sought to capture some of the richness which might be lost in simply combining the frequency information in this way by weighting the behaviors according to their relative seriousness.

In addition, this present study investigates the associations between several family factors including familial problem behavior, family structure, and family environment. Finally, the present study investigates the existence of different patterns of risk behavior including what Jessor has referred to as "risk behavior syndromes" within this population of rural adolescents. Although this study may reveal patterns of risk behavior similar to those found in studies with more urban and suburban populations, it may also reveal unique patterns which had not previously been identified. Understanding the patterns of risk behavior exhibited by rural adolescents as well as the family factors which predict each pattern is necessary so that effective intervention and prevention

techniques can be developed for rural adolescents, their families, and their communities.

Exploratory Questions

The theoretical questions which will be explored in this study include:

1. What is the nature of risk behavior in a population of rural adolescents? More specifically, what types of behaviors do rural adolescents engage in and do subgroups within the general rural adolescent population exhibit differences in their risk behavior patterns?
2. Can adolescents be categorized into groups based on their patterns of risk behavior?
3. Do these groups differ with respect to gender, grade, and family factors such as family structure and familial problem behavior? The pre-existing literature does not provide a basis for hypotheses regarding specific associations between family factors and patterns of rural adolescent risk behavior.

Hypotheses

The present study investigates the following hypotheses regarding gender, grade, family structure, and family problem behavior differences in risk behavior:

1. Gender differences exist with respect to the nature of risk behavior and the patterns of risk behavior. Specifically, gender differences are predicted for the seriousness of overall risk behavior and delinquent behavior with males engaging in more serious behaviors than females. Previous literature

suggests that gender differences may not be found when only substance use is considered.

2. Grade differences exist with older adolescents and adolescents who have dropped out of high school engaging in more serious risk behavior than younger adolescents who are in school.
3. Family structure differences exist with adolescents who do not live with their parents or a parent and adolescents who live with a single parent engaging in more serious risk behavior than adolescents who live with two parents (biological, step, adoptive or foster).
4. Familial problem behavior differences exist with adolescents who have multiple family members who abuse alcohol engaging in more serious risk behavior than adolescents who have no or few family members who abuse alcohol.

   The present study investigates the following hypotheses regarding the family factors predictive of generalized risk behavior and the categories of risk behavior.

5. A history of familial problem behavior and no parent or single parent family structure as well as aspects of the family environment, namely conflict and control , will be positively related to increased seriousness of overt delinquent risk behavior. Additionally, other aspects of the family environment, particularly cohesion and expressiveness will be negatively related to increased seriousness of involvement in overt delinquent risk behavior, although to a lesser extent than conflict and control.

6. A history of familial problem behavior and no parent or single parent family structure will be positively related to increased seriousness of covert delinquent risk behavior. Aspects of the family environment, particularly cohesion and expressiveness will be negatively related to increased seriousness of covert delinquent behavior.
7. A history of familial problem behavior and no parent or single parent family structure as well as aspects of the family environment, namely conflict and control , will be positively related to increased seriousness of sexual risk behavior. Additionally, other aspects of the family environment, particularly cohesion, moral religious emphasis, and expressiveness will be negatively related to increased seriousness of involvement in sexual risk behavior
8. A history of familial problem behavior and no parent or single parent family structure as well as aspects of the family environment, namely conflict , will be positively related to increased seriousness of substance-related risk behavior. Additionally, other aspects of the family environment, particularly cohesion and moral religious emphasis will be negatively related to increased seriousness of involvement in substance-related risk behavior

CHAPTER II

METHOD

Sample

In the context of the Rural Adolescent and Family Study at the University of Massachusetts (1991-1994), data were collected from a sample of 382 rural adolescents (ages 14-18). The proposed project will study 352 of those adolescents (30 adolescents were eliminated from this study due to the fact that they were administered an abridged form of the questionnaires which did not contain all of the information needed for this study).

The adolescents come from a nine town region in Western Massachusetts. The nine towns were chosen because they fit our criteria of having a population of less than 2,500 persons (the definition of a rural community as defined by the United States Census Bureau, 1990) with predominately working-class families. The adolescents are attending or did attend a regional high school. Included in this sample are students who have dropped out of school, but who still fall into the desired age range and who are still located in the nine town region. Refer to Table 1 and 2 for demographic information on the adolescents and their families.

Procedure

Questionnaires assessing the risk behaviors and factors of interest were administered to the students during school hours. If students were absent on the day of the administration or if they had dropped out of school they were sent the questionnaires by mail. Absentees and dropouts received financial

reimbursement ($5 and $10, respectively) for completion of the questionnaires because they completed them on their own time.

Ninety-six percent of the students present on the day of the administration participated in the study. Fifty-six students were absent on the day that the questionnaires were administered. Of those 56, 17.9% (10) students returned the questionnaires which were mailed to them. Of the dropouts still living in the area, 71% (12) participated.

Measures

This study employs several measures for assessing both family factors and risk behavior.

Family

Demographic Form. Information was obtained about gender, grade, ethnicity, religion, family structure, parental marital status, parental education, and parental occupation status. The primary information used in this study was gender, grade, and family structure. The four possible family structures were 2-parent (biological, adoptive, or foster), step- parent (wherein one of the adolescents two parents was a step-parent), 1-parent, and no parent (wherein the adolescent did not live with any parents).

Family Environment Scale (MOOS). The Moos measures the social climate of families. It is composed of 90 true-false items scored on three dimensions: Relationship, Personal Growth, and System Maintenance. The Relationship dimension is comprised of three subscales: Cohesion (the degree of commitment, help, and support family members provide for one another),

Expressiveness (the extent to which family members are encouraged to act openly and to express their feelings directly), and Conflict (the amount of openly expressed anger, aggression and conflict among family members). The Personal Growth dimension is comprised of five subscales: Independence (the extent to which family members are assertive, are self-sufficient, and make their own decisions), Achievement Orientation (the extent to which activities are cast into an achievement-oriented or competitive framework), Intellectual-cultural Orientation (the degree of interest in political, social, intellectual, and cultural activities), Active-Recreational Orientation (the extent of participation in social and recreational activities), and Moral-Religious Emphasis (the degree of emphasis on ethical and religious issues and values). The System Maintenance dimension is comprised of two subscales: Organization (the degree of importance of clear organization and structure in planning family activities and responsibilities) and Control (the extent to which set rules and procedures are used to run family life). Although there are several forms of the FES only the "real form", which measures subjects' perceptions of their current family environments, was administered in this study.

Normative samples have been obtained on 1,125 normal and 500 distressed families (including 161 families where an adolescent or child was in a crisis situation, had run away from home, was identified as delinquent, or was being placed into a foster home). Internal consistency for the 10 subscales ranges from .61 to .78 and test-retest correlations for the individual subscales are reported to range rom .68 to .86 after 2 months, .54 to .91 at 4 months, and

.52 to .89 at 12 months. A number of studies support the construct validity of the FES by demonstrating its ability to discriminate among families and its associations with life transitions and crises in families (Moos & Moos, 1990).

Risk Behavior

Adolescent Information Survey (AIS). This survey contains self-report questions regarding adolescents' relationships with their families, their communication with their parents about issues such as dating and sexuality, their involvement in activities, their perceptions of their bodies, their family members' risk behaviors, their aspirations and expectations for their futures, and their feelings about their community .

The questions used in this study included those regarding the age at which adolescents first engaged in sexual intercourse, frequency of intercourse, number of partners with whom the adolescents have had intercourse, and the extent to which they use protection during intercourse. It also includes questions concerning family members' risk behaviors such as substance use/ abuse and court involvement, and family members' treatment for risk behaviors.

As with all other behavioral report questions that were answered by the adolescents, careful attention was paid to the consistency with which the adolescents answered questions and to any signs that the adolescent may not have completed the questionnaires honestly or seriously, eg. if the adolescent developed a pattern of responding throughout a number of the questionnaires or if the adolescent did not give his/ her correct name in the beginning of the administration. If there was any question that the adolescent was not

completing the questionnaires accurately, his/ her data was not used in the analyses. The data for four adolescents was excluded.

Risk Behavior Form (RBF). The Risk Behavior Form contains 45 items, each of which has been identified in the literature as a possible risk behavior (Brooks Gunn & Furstenberg, 1989; Donovan, Jessor, & Costa, 1988; Dryfoos, 1991; Elliot, Ageton, Huizinga, Knolwes, & Canter, 1983; Jessor & Jessor, 1977; Kandel & Logan, 1984; Kandel, Simcha-Fagan, & Davies, 1986; Turner, Irwin, & Millstein, 1991). The items are based on three categories of risk behaviors: Substance Use/Abuse, Delinquency, and Academic Failure. Items reflective of substance use/ abuse include: "drank alcohol" and "used cocaine". Items reflective of delinquency fall into the categories of overt and covert delinquency and include "hit or threatened to hit" and "lied to parents". Examples of items reflective of academic failure are "repeated a grade in school" and "failed a test".

The adolescent is asked to indicate how often they have engaged in a particular behavior using a scale which ranges from 1(never) to 5 (4 or more times a month). Then, the adolescent is asked to record when, if ever, they first engaged in each particular behavior.

This frequency information is then weighted according to its seriousness. The weights were determined by a team of eight experts on adolescents (3 faculty and 5 students) who rated each risk behavior at each frequency level according to its seriousness. For this task a reference value of 100 was assigned to "stolen or tried to steal something worth between $5 and $50" and

the raters were asked to assign seriousness values to the remainder of the behaviors. The protocol for this task was meant to reflect that used by Dohrenwend and Dohrenwend in creating the Stressful Life Events Scale (1981). A copy of the directions can be found in Appendix B. The raters assigned seriousness values to the 45 behaviors from the RBF as well as the sexual behavior questions from the AIS. The seriousness values are then used to create the risk behavior scales.

Child Behavior Checklist (CBCL). The Youth Self Report (YSR) is the form of the Child Behavior Checklist (CBCL) indicated for use with adolescents aged 11-18. It is a measure of children's behavior problems and social competencies (Achenbach & Edelbrock, 1983). The YSR consists of 118 behavior problem items; the adolescent rates the extent to which the particular behavior is characteristic of him or her on a scale of 0-2: 0 if not true; 1 if somewhat or sometimes true; and 2 if very true or often true. The list of items includes a broad range of problems relevant to adolescents' mental health referrals. Examples of behavior problem items are "I have trouble sitting still", "I feel worthless or inferior", and "I get in many fights". The CBCL also consists of 20 social competence items related to the amount and quality of the adolescent's participation in various activities, relationships, and school success.

The Child Behavior Profile, the companion to the CBCL, scores children on various behavior problem scales which were derived from factor analyses of the CBCL behavior problem items, using clinical samples. The behavior problem scales which were derived have been given descriptive labels to summarize the

items comprising them; some of the labels correspond to traditional diagnostic terms, but are not meant to be equivalent to them. The Child Behavior Profile for girls aged 12-16 years consists of 9 behavior problem scales: anxious-obsessive, somatic complaints, schizoid, depressed withdrawal, immature, hyperactive, cruel, aggressive, and delinquent. The Child Behavior Profile for boys aged 12-16 years consists of 10 behavior problem scales: somatic complaints, schizoid, uncommunicative, immature, obsessive-compulsive, hostile, withdrawal, hyperactive, aggressive, and delinquent.

The two behavior problem scales which will be used for this study are the Delinquent Behavior Scale and the Aggressive Behavior Scale. The Delinquent Behavior Scale has 11 items most of which are related to covert delinquency. Examples of items on this scale are "lie/cheat", "runaway", and "truant". The Aggressive Behavior Scale has 19 items most of which relate to overt delinquency. The items on this scale include: "fights", "argues", and "threatens".

Normative, non-clinical samples for each sex and age group provide standard scores for the factor-based behavior problem scales. Hence, raw scores on each scale can be converted into both percentiles and standard T scores. This allows children to be compared to typical agemates of the same sex on each scale and for profiles of the children to be created.

On the Child Behavior Profile the social competence scales were simply grouped into three scales designated as "activities", "social", and "school".

Unlike the behavior problem scales, low scores on the social competence scales are clinically significant.

Adolescents' self-ratings on CBCL behavior problem items show high enough stability, and high enough agreement with others ratings, to support their meaningfulness (Achenbach & Edelbrock, 1983). Adolescents aged 12 to 17 completed the CBCL at intake into a community mental health center and again at a 6-month follow-up; the Pearson-product moment correlation between the total behavior problem scores across the 6-month interval was .69., indicating considerable stability of the self-ratings of behavior problems. Additionally, the behavior problem scores obtained form the adolescents' self-ratings were significantly correlated (ranging from .37 to .70) with the CBCL ratings by the adolescents' mothers and a clinician, at both intake and a 6-month follow-up.

CHAPTER III

RESULTS

Investigation of Exploratory Questions

The Nature of Rural Adolescent Risk Behavior

In order to examine the nature of rural adolescent risk behaviors, the 48 specific behaviors were grouped conceptually into four categories: overt delinquency (27 behaviors), covert delinquency (7 behaviors), substance-related risk behavior (9 behaviors), and sexual risk behavior (3 behaviors). Two behaviors, failing tests and repeating a grade in school, which do not fit into any of these categories were also considered in some of the preliminary analyses as they seem to be closely associated with risk behavior and the possible negative developmental outcomes that adolescents may face.

Frequency of behaviors. The frequency with which adolescents engaged in the specific risk behaviors was first examined. The frequency distribution for each behavior was determined. Although due to the large number of behaviors these frequency distributions are not presented here, some summary information is provided. There were only two adolescents (one male and one female) who did not engage in any risk behavior at all. Additionally, there were eight adolescents who only engaged in lying, cursing, and/ or failing a test. The distributions for many of the risk behaviors were positively skewed with many of the adolescents engaging in the behaviors only once or twice if at all. For many of the risk behaviors the majority of the adolescents either never engaged in the behavior or only experimented with it once or twice. Many adolescents

engaged in some of the risk behaviors such as lying, cursing, and being loud/ rowdy with a higher frequency. There were nine of the 48 behaviors which less than 5% of the adolescents engaged in at all. Refer to Table 3 for these behaviors and the percent of adolescents who engaged in them.

Additionally, there were seven of the 48 risk behaviors which less than 10 % of the adolescents ever engaged in. Refer to Table 4 for these behaviors and the percent of adolescents who engaged in them. At the other extreme are those behaviors that 75 % or more of the adolescents engaged in at least once. Refer to Table 5 for a list of these behaviors and the percentage of adolescents who engaged in them.

The frequency of adolescents' sexual behaviors and sexual risk behaviors was also examined. The majority of adolescents (55.2%) have not had sexual intercourse. On the other hand, 85 (46.7%) of the female adolescents and 67 (42.7%) of the male adolescents have had intercourse. The majority of adolescents who were sexually active had intercourse for the first time at or after the age of 15. The frequency distribution for males and females' age of first intercourse is presented in Table 6.

The majority of adolescents who engage in sexual intercourse use some form of birth control to protect themselves against pregnancy. With respect to condom usage, the majority of males always use condoms and the majority of females at least sometimes use condoms to protect themselves from sexually transmitted diseases. The frequency distributions for males' and females' use of birth control and condoms are presented in Tables 7 and 8.

Next, Pearson chi square analyses were performed on individual risk behaviors from the four categories of risk behavior. Due to their extremely skewed distributions, the behaviors engaged in by less than 10% of the adolescents were excluded from the chi square analyses. Due to the relative ordinality of the frequency data, one way analyses of variance were performed in order to better understand the nature of the more complex significant chi squares. Admittedly, the frequency data is not continuous so the oneways were used solely to confirm and clarify the chi square results. Only the results of the chi square analyses are presented here.

For risk behaviors which can be categorized as overt delinquent behaviors, patterns of sex, grade, and family structure differences were revealed. More specifically, males engaged in many of the behaviors with a higher frequency than females, dropouts engaged in many of the behaviors with a higher frequency than the younger students, seniors engaged in some of the behaviors more often than the younger students, adolescents who do not live with their parents engaged in some of the behaviors more often than adolescents who live with two parents, one parent, or step-parents, and adolescents who live with only one parent engage in a few of the behaviors more often than adolescents who live with two parents. Table 9 displays the results of the chi square analyses for overt delinquent behaviors.

The chi square analyses on the individual covert delinquent behaviors revealed a pattern only for gender differences with males engaging in 4 out of 5 behaviors more often than females. Refer to Table 10 for these results.

The chi square analyses on the frequency of substance-related risk behavior revealed clear patterns for grade and family structure and a more tentative pattern for sex. With respect to adolescents' grade in school, a developmental pattern marked by increasing substance use and an increased in substance-related behaviors with increasing grade in school was found. Additionally, dropouts exhibited significantly more substance-related risk behavior than did the other students, especially the younger ones. The results for family structure revealed that adolescents living without their parents demonstrated a significantly higher frequency of substance-related risk behavior than did adolescents living with both their parents or a biological parent and step-parent. Adolescents living with only one parent also engaged in these behaviors more than did adolescents living with two parents. No difference between males and females' substance use behaviors was demonstrated, however, males were involved in other substance-related risk behaviors, such as getting drunk/ high or driving while drunk/ high, more often than females. Table 11 shows the results of the chi square analyses for substance-related risk behavior.

Finally, with respect to sexual behavior, chi square analyses revealed patterns for grade and family structure. With respect to grade, the same developmental trend exists as was identified for the other categories of risk behavior with older adolescents more likely to engage in sex and more likely to engage in sexual risk behaviors such as inconsistent use of birth control and

condoms than younger adolescents. Additionally, adolescents not living with their parents were more likely to have sex and more likely to be involved in sexual risk behaviors than adolescents who live with both of their parents or a biological and a step-parent. Refer to Table 12 for the results of these analyses.

Age of onset of risk behaviors. The age of onset of the various risk behaviors was investigated using multivariate analysis of variance (MANOVA) for each category of risk behaviors (overt delinquency, covert delinquency, and substance-related risk behaviors) with the age of onset of individual risk behaviors as the dependent variables. Thus, three MANOVA'S were performed with sex and family structure as the independent variables. Additionally, a 2 x 4 analysis of variance (ANOVA) was performed for the age of first sexual intercourse with sex and family structure as the dependent variables. Refer to Table 13 for the results of the MANOVAS and the ANOVA.

Only the MANOVA for substance-related risk behavior revealed significant results. The MANOVA revealed no significant interactions, but one significant main effect for family structure, $F(27, 920)=1.94$, $p < .001$. Specifically, results were found for "using LSD" and "hurting someone while drunk or high". Univariate analyses and post hoc comparisons using the Scheffe correction procedure revealed that dropouts engaged in both of these behaviors at a significantly earlier age than freshman, sophomores, and juniors.

Groupings of Adolescents Based on their Risk Behavior Patterns

Cluster analysis was employed in order to delineate groups of adolescents who differ according to their risk behavior patterns. Frequency information for

forty-five risk behaviors including overt delinquent behaviors, covert delinquent behaviors, substance-related risk behaviors and school problems as well as three sexual behaviors: engagement in sexual intercourse, use of birth control, and use of condoms were entered as discriminant variables. Four clusters were created. The first cluster, called the High Risk Group, is comprised of 6 members (all males), the second cluster, called the Moderate 1 Risk Group, is comprised of 6 members (5 males and 1 female), the third cluster, called the Moderate 2 Risk Group, is comprised of 58 members (26 males and 32 females), and the fourth cluster, called the Low Group, is comprised of 279 members (128 males and 151 females). Table 28 displays the frequency means for each of the four groups on 45 of the risk behaviors, not including those related to sexual behavior.

The groups can be examined in terms of their general characteristics although admittedly there will be members who do not fit the descriptions exactly. The High Risk Group contains adolescents who are, in general, having intercourse and usually using birth control and condoms, engaging in frequent verbal overt delinquent behaviors (e.g. cursing, being loud) and occasional to frequent aggressive overt delinquent behaviors (e.g. hitting), engaging in very frequent lying and occasionally other forms of covert behavior (e.g. stealing), engaging in occasional to frequent substance use (both mild and some hard substances), and frequent school related risk behaviors (e.g. failing tests).

The Moderate 1 and the Moderate 2 Risk Groups are fairly similar. Generally, they engage in most of the same behaviors as the High Risk Group,

however, with decreasing frequency. For both these groups the majority of adolescents are not engaging in intercourse, although those who are engaging in intercourse generally use birth control or condoms. The Moderate 1 Risk Group tends to engage in more frequent covert delinquent behaviors such as stealing whereas the Moderate 2 Risk Group tends to engage in more frequent aggressive overt behaviors such as hitting.

The Low Risk Group includes the majority of the adolescents. These adolescents may or may not engage in sexual intercourse, but if they do, they generally use protection. They either do not engage in overt, covert, or substance-related risk behavior or they only experiment with them (doing them only once or twice). Additionally, they do exhibit the highest rates of academic problems such as failing a test or repeating a grade. There clearly is some variation within this group with some adolescents engaging in an occasional behavior with an increased frequency.

The four groups were also assessed using Pearson chi square analyses to determine if there were any gender, grade, family structure, or familial alcohol abuse differences between the different clusters. These analyses must be viewed as preliminary due to the small N's for two of the groups. Table 15 displays the results for the chi square analyses.

The chi square analyses revealed significant results for gender, grade, family structure, and familial alcohol abuse. Generally, males, older students, and dropouts appear to comprise the more high risk groups. The findings for family structure and familial alcohol abuse are not as clear and are complicated

by the small N's in some of the cells. For family structure, the adolescents from each cluster seem to be dispersed with similar percentages across the different family structures with the exception of the Moderate 2 Risk Group which seems to have a higher percentage of adolescents from one parent families than do the other clusters. For familial alcohol abuse the majority of adolescents from both the Low Risk and the Moderate 2 Risk Group have no family members who abuse alcohol. On the other hand, 50% of the High Risk Group have two family members who abuse alcohol.

Investigation of Hypotheses

Creating Risk Behavior Scales

The risk behavior scales were created based on the seriousness ratings assigned by raters to each specific risk behavior at each possible frequency level.

Interrater Reliability of the Ratings. The interrater reliability of the ratings was originally assessed using an intraclass correlation. This, however, yielded reliability ratings between -.5 and .03. The poor reliability findings may be associated with the extreme differences in variance for the different raters' ratings (for example, in comparing two behaviors one rater assigned ratings of 400 and 1200 to the behaviors whereas another rater assigned ratings of 100 and 140). As the ordinality of the ratings for the different raters appeared to be relatively similar, the ratings were converted to ranks and then the reliability of the raters' ranks was assessed using a Spearman rho correlation. One rater was dropped from these analyses as she did not seem to understand the rating

directions. The correlations for the remaining 7 raters ranged from .58 to .81. Although some discrepancy clearly remained, the agreement was sufficient to use the rankings to create scales.

Formation of scales. The means of the seriousness rankings for each behavior at each frequency were determined and those means were then used as weights for the risk behaviors. The behaviors were conceptually grouped into their respective categories of risk behavior and the scales were formed by summing the adolescents' weighted scores on the risk behaviors which comprise each category. In the end five scales were created: the Overall Risk Behavior Scale (45 behaviors), the Overt Delinquency Scale (26 behaviors), the Covert Delinquency Scale (7 behaviors), the Substance-Related Risk Behavior Scale (9 behaviors), and the Sexual Risk Behavior Scale (3 behaviors). Refer to Table 16 for a list of the items contained in each of the scales.

Cronbach's alpha procedure was employed in order to assess the internal reliability of each of the scales. This procedure revealed reliability coefficients of .92 for the Overall Risk Behavior Scale, .87 for the Overt Delinquency Scale, .83 for the Covert Delinquency Scales, .85 for the Substance Risk Behavior Scale, and .50 for the Sexual Risk Behavior Scale . The frequency distribution of the original scales was extremely positively skewed. Due to the skewness of the scales, one scale, the Sexual Risk Behavior Scale, was dropped from all analyses, and the remaining four scales were transformed using a square root transformation. These transformations helped to normalize the distributions so

that the scales would be useful in subsequent analyses. Admittedly, after this transformation, the Covert Delinquency Scale remained slightly skewed and the Substance Risk Behavior Scale was even more skewed with 20.5% of the adolescents with a scale score of 0 due to the fact that they do not use any substances.

Although no means for assessing the validity of all the scales was included, the YSR Delinquency and Aggression Scales did function as a tentative test for investigating the validity of the Overt and the Covert Delinquency Scales. Although the match is not exact, the YSR Delinquency Scale is most similar, with respect to the items which comprise it, to this study's Covert Delinquency Scale whereas the YSR Aggression Scale is most similar to the present study's Overt Delinquency Scale. Additionally, because the Overall Risk Scale is comprised of both the Overt Delinquency Scale and the Covert Delinquency Scale it is expected that it too is related to the YSR scales. Table 17 presents the correlations between the risk behavior scales and the YSR scales. All of the risk scales are correlated with the YSR scales. The YSR Delinquency scale is most highly correlated with the Overall Risk Behavior Scale, the Substance Risk Behavior Scale, and the Covert Delinquency Scale. The YSR Aggression scale is most highly correlated with the Overt Delinquency Scale and the Overall Risk Behavior Scale.

Additionally, the resulting risk behavior scales were fairly highly intercorrelated. Refer to Table 18 for the correlations between the scales.

Analyses with Risk Behavior Scales

Table 19 displays the means and standard deviations for the four risk behavior scales according to sex, grade, and family structure. The dropout and no parent groups have particularly high standard deviations. This could be a problem, particularly with respect to homogeneity of variance, due to the particularly small N's for these groups (12 and 21 respectively). These groups are still included in the subsequent analyses, but any results should be considered both preliminary and tentative.

Overall risk behavior. Six planned comparisons were run to test the study's hypotheses regarding differences in the seriousness of overall risk behavior with respect to sex, grade, family structure, and family history of problem behavior (alcohol abuse). Refer to Table 20 for the results of these comparisons.

The Bonferonni correction procedure was employed to obtain the p-value necessary to control for the familywise error rate of these 6 planned comparisons. The P value obtained from this procedure was .008. Using this criteria all six comparisons were significant. According to these results, males engaged in more serious overall risk behavior ($M = 29.15$) than did females ($M = 24.04$), $t(1, 350) = 4.46$, $p < .001$. Twelfth graders engaged in more serious overall risk behavior ($M = 29.3$) than did 9th graders ($M = 22.2$), $t(4, 347) = 4.33$, $p < .001$, and dropouts engaged in more serious overall risk behavior ($M = 36.8$) than did 9th graders, $t(4, 347) = 4.48$, $p < .001$. Also, adolescents who live without their parents engage in more serious overall risk behavior ($M =$

35.8) than adolescents who live with two parents ($\underline{M}$ = 24.1), $\underline{t}$ (3,348) = 4.8, $\underline{p}$ < .001, and adolescents who live with a single parent engage in more serious overall risk behavior ($\underline{M}$ = 28.3) than adolescents who live with two parents, $\underline{t}$ (3,348) = 3.1, $\underline{p}$ < .002. Finally, adolescents who have three or more family members who abuse alcohol engage in more serious overall risk behavior ($\underline{M}$ = 36.6) than adolescents who do not have any family members who abuse alcohol, ($\underline{M}$ = 23.4), $\underline{t}$ (3,333) = 4.0, $\underline{p}$ < .001.

Several ANOVAS were performed with overall risk behavior as the dependent measure and sex, grade, family structure, and familial alcohol abuse as independent variables in order to investigate the possible interaction effects and post hoc comparisons for significance. The latter was important due to the partial exploratory nature to this study. Although these ANOVAS yielded no significant interactions, they did reveal four significant main effects. Table 21 shows the results of the ANOVAS.

Although much of the significance of the main effects can be accounted for by the previously discussed planned comparisons, post hoc comparisons were also used in order to determine if there were other significant pairwise contrasts. For these comparisons the Scheffe procedure, with a criterion p value = .05,was employed to account for the post hoc nature of the tests. These comparisons revealed additional grade effects with 11th graders engaging in significantly more serious overall risk behavior ($\underline{M}$ = 27.5) than 9th graders ($\underline{M}$ = 22.2) and dropouts engaging in significantly more serious overall risk behavior ($\underline{M}$ = 36,8) than 10th graders ($\underline{M}$ = 25.4). Additionally, adolescents with 1 or 2 family

members with a history of alcohol abuse engaged in more serious overall risk behavior ($\underline{M}$ = 28.8 and $\underline{M}$ = 36.6, respectively) than adolescents with no family members with a history of alcohol abuse ($\underline{M}$ = 23.4).

Risk behavior subscales. Next, the risk behavior subscales, Overt Delinquency, Covert Delinquency, and Substance Risk Behavior, were analyzed. First of all the same planned comparisons as were performed above for overall risk behavior, were carried out on each subscale. Once again, the Bonferonni correction procedure was employed to obtain the p-value necessary to control for the familywise error rate of these 6 planned comparisons. The P value obtained from this procedure was .008. The results were somewhat similar to those for overall risk behavior and are displayed in Table 22.

For overt delinquency there was a significant effect for sex with males engaging in more serious overt delinquent behavior than females ($\underline{M}$ = 21.1 and $\underline{M}$ = 16.0, respectively); a grade effect with dropouts engaging in more serious overt delinquent behavior than 9th graders ($\underline{M}$ = 25.6 and $\underline{M}$ = 16.7, respectively); an effect for family structure with adolescents who do not live with their parents engaging in more serious overt delinquent behavior than adolescents who live with both their parents ($\underline{M}$ = 25.4 and $\underline{M}$ = 17.1, respectively); and an effect for familial alcohol abuse with adolescents who have 3 or more relatives with a history of alcohol abuse engaging in more serious overt delinquent behavior than adolescents who do not have any relatives with a history of alcohol abuse ($\underline{M}$ = 22.3 and $\underline{M}$ = 16.6, respectively).

For covert delinquency there was a significant effect for sex with males

engaging in more serious covert delinquent behavior than females (M = 11.4 and M = 8.7, respectively); grade effects with dropouts and 12th graders engaging in more serious covert delinquent behavior than 9th graders (M =12.8, M = 11.0,and M = 7.9, respectively); an effect for familial history of alcohol abuse with adolescents who have 3 or more relatives with a history of alcohol abuse engaging in more serious covert delinquent behavior than adolescents who do not have any relatives with a history of alcohol abuse (M = 22.3 and M = 16.6, respectively).

For substance-related risk behavior there were significant grade effects with dropouts and 12th graders engaging in more serious substance-related behavior than 9th graders (M =14.8 , M = 10.5, and M = 4.3, respectively); effects for family structure with adolescents who do not live with their parents and adolescents who live with only one parent engaging in more serious substance behavior than adolescents who live with both their parents (M =12.6 , M = 9.7,and M = 6.7, respectively); and an effect for familial history of alcohol abuse with adolescents who have 3 or more relatives with a history of alcohol abuse engaging in more serious substance behavior than adolescents who do not have any relatives with a history of alcohol abuse (M = 12.6 and M = 6.0, respectively).

Next, due the high degree of intercorrelation among the three subscales a MANOVA was performed using the Overt Delinquency Scale, the Covert Delinquency Scale, and the Substance Risk Behavior Scale as the dependent measures. Refer to Table 23 for the results of this MANOVA.

The MANOVA revealed a number of significant two way interactions. Included in these was a sex by family structure interaction. For this interaction no significant univariates were found. The next significant interaction was for sex by familial alcohol abuse. For this interaction, significant univariates were found for overt delinquency, F (9, 713)= 6.15, $p < .001$, and for covert delinquency, F (9, 713)= 5.23, $p < .002$. Females showed a pattern of increasing seriousness of risk behavior, both overt and covert delinquency, with increases in the number of family members who abuse alcohol up to two members. If females had 3 or more family members who abuse alcohol, they demonstrated a decrease in the seriousness of risk behavior. Males did not exhibit this pattern, but rather demonstrated a continuous increase in the seriousness of risk behavior with increases in the number of family members who abuse alcohol.

There was also a significant interaction for familial alcohol abuse and family structure. Significant univariates were found for overt delinquency, F (27, 713)= 2.55, $p < .01$, covert delinquency, F (27, 713)= 2.16, $p < .03$, and substance-related risk behavior, F (27, 713)= 3.99, $p < .001$. The pattern was the same for all three types of risk behavior with adolescents who do not live with any parent demonstrating a continuous increase in the seriousness of risk behavior with increases in the number of family members who abuse alcohol. All other adolescents demonstrated this pattern of increasing up to having 2 members who have abused alcohol, but then demonstrated a remarkable decrease in the seriousness of their risk behavior, particularly for substance-

related risk behavior, if they have 3 or more relatives with a history of alcohol abuse.

A grade by familial alcohol abuse interaction was also identified. Significant univariates were found for overt delinquency, F (36, 713)= 4.78, p < .001, covert delinquency, F (36, 713)= 2.33, p < .01, and substance-related risk behavior, F (36, 713)= 6.81, p < .001. For overt delinquency and substance-related risk behavior a pattern of continuously increasing seriousness of risk behavior with an increasing number of family members who abuse alcohol was identified for seniors and dropouts whereas for 9th, 10th, and 11th grade that increasing pattern stopped with 3 or more family members with alcohol abuse histories at which point there was a decrease in risk behavior. For covert delinquency seniors who had 3 or more members with alcohol abuse histories exhibited less serious risk behavior than seniors who had less than three members.

Finally, a grade by family structure interaction was revealed. Significant univariates were found for overt delinquency, F (36, 713)= 1.85, p < .05, covert delinquency, F (36, 713)= 2.59, p < .01, and substance-related risk behavior, F (36, 713)= 2.84, p < .002. These interactions are extremely complicated and interpretation of them is hindered by the small N's for some of the cells for many of the interactions. In general , they demonstrate differential patterns of risk behavior depending upon a combination of one's grade and family structure. It appears that 9th graders engage in more serious overt delinquency and covert delinquency when they live with a step-parent whereas they engage in more

serious substance-related risk behavior if they come from a one parent home. 10th and 11th graders, on the other hand, engage in more serious risk behavior (all types of risk behavior) if they come from homes with no parents or only one parent. Seniors engage in more overt delinquency and substance-related risk behavior if they have a step-parent and engage in more serious covert delinquency if they do not live with any parents. The findings for dropouts are confounded due to the fact that half of them do not live with parents although it appears that those dropouts who do not live with their parents engage in more serious risk behavior than those who live with their parents (either 2 or 1 parent).

Associations with Family Factors

The associations between different family factors and risk behavior were assessed in two different ways. Firstly, the simple associations between the Moos Family Environment Scales and the Risk Behavior Scales were determined using Pearson product moment correlations. Tables 24, 25, and 26 show the Pearson correlations between the Risk Behavior Scales and the Moos Family Environment Scales for the overall population, the male adolescents, and the female adolescents, respectively.

The correlation results for the entire population revealed that conflict was positively correlated with all types of risk behavior and cohesion, intellectual-cultural orientation, and moral-religious emphasis were negatively correlated with all types of risk behavior. Additionally, control was negatively correlated with substance- related risk behavior.

For male adolescents cohesion was once again negatively correlated with all types of risk behavior. Conflict was positively correlated with overall risk behavior, overt delinquency and substance-related risk behavior; intellectual-cultural orientation was negatively correlated with overall risk behavior, overt delinquency, and covert delinquency; moral-religious emphasis was negatively correlated with overall risk behavior and substance-related risk behavior; and control was negatively correlated with substance-related risk behavior.

Finally, for female adolescents conflict was positively correlated with all types of risk behavior; cohesion was negatively correlated with overall risk behavior, overt delinquency, and covert delinquency; intellectual-cultural orientation was negatively correlated with overall risk behavior, overt delinquency, and substance related risk behavior; moral religious emphasis was negatively correlated with overall risk behavior, overt delinquency, and substance-related risk behavior; organization was negatively correlated with overall risk behavior; and active-recreational orientation was negatively correlated with overt delinquency.

Next, hierarchical regression was employed in order to determine the extent to which risk behavior can be predicted by aspects of the family, namely familial alcohol abuse, family structure, and family interaction patterns. In considering the results of the regression analyses, it is important to keep in mind that the Family Environment Scales are all somewhat intercorrelated with the correlations ranging from .01 to .46. The degree of their intercorrelation is similar to that which was found by Moos (1986) in his preliminary investigation

of the instrument. As the tolerance measures revealed, the scales were somewhat redundant each other with a typical tolerance level of .5. The scales were not however, redundant with the familial alcohol abuse variable or the family structure variable.

Hierarchical regressions, with overall risk behavior, overt delinquency, covert delinquency, and substance-related risk behavior as criterion variables, were performed in order to determine which family factors were predictive of the different types of risk behavior. For all regression analyses familial alcohol abuse was entered first, then family structure, then the first group of family environment variables, namely expression, conflict, cohesion, control, and moral/ religious emphasis, and finally the second group of family environment variables, namely independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and organization. The first group of family environment variables were those which the relevant literature has suggested might be predictive of risk behavior whereas the second group of family environment variables were those which were being considered in a more exploratory manner. Tables are provided which display the results for all steps up to the final significant step as well as the results for the individual independent variables at the final significant step. The first regression analyses were performed on each of the criterion variables using the entire population. Refer to Table 27-30 for the results of these regression analyses.

For the general population of adolescents familial alcohol abuse, particularly by two family members, was the best predictor of the seriousness of

overall risk behavior as well as the seriousness of each type of risk behavior. For covert delinquency and substance-related risk behavior, familial alcohol abuse was the only significant predictor. For overall risk behavior and overt delinquency the addition of the family structure variables in step 2 led to a significant change in R^2. Specifically, not living with one's parent (s) was significantly predictive of the seriousness of overall risk behavior and overt delinquency. Also for overall risk behavior, steps 3 and 4 resulted in a significant change in R^2. Specifically, conflict was a positive predictor and moral/ religious emphasis and intellectual-cultural orientation were positive predictors of the seriousness of overall risk behavior. For overt delinquency step 3 also resulted in a significant change R^2 with conflict positively predictive of the seriousness of overt delinquency.

Next, regression analyses were performed for only male adolescents. Refer to Tables 31-34 for the results of these analyses. The results for males were very similar to the results for the general population. For males, the best predictor for the seriousness of all types of risk behavior was familial alcohol abuse, although not necessarily by two members. Also similar to the general population, familial alcohol abuse was the only significant predictor of the seriousness of covert delinquency and substance-related risk behavior. For overall risk behavior steps 2 and 3 did not contribute a significant change in R^2, thus family structure and the first group of family environment variables are not significant predictors of the seriousness of males' overall risk behavior. Step 4, however, did lead to a significant change in R^2 with intellectual-cultural

orientation negatively predictive of the seriousness of males' overall risk behavior. Finally, the predictors for overt delinquency are similar to those for overall risk behavior, the only difference being that step 2 did lead to a significant change in R^2 with family structure, specifically living with a step-parent, marginally predictive of the seriousness of overt delinquency.

The last series of regression analyses were performed using only female adolescents. The results for these analyses are presented in Table 35-38. The results for females were somewhat similar to those for the general population and for males. Specifically, familial alcohol abuse was significantly predictive of the seriousness of all types of risk behavior. An important finding with respect to females is that familial alcohol abuse by 3 or more family members was not significantly related to overall risk behavior or overt delinquency and was only moderately predictive of covert delinquency and substance-related risk behavior. For overall risk behavior, overt delinquency, and substance related risk behavior, step 2 led to a significant change in R^2. Thus, family structure, particularly not living with one's parents, was predictive of the seriousness of these risk behaviors. For both overall risk behavior and overt delinquency, step 3 led to a significant change in R^2. Moral/ Religious emphasis was negatively predictive of the seriousness of both overall risk behavior and delinquency. In addition, conflict was positively predictive of overt delinquency.

CHAPTER IV

DISCUSSION

The general aim of this study was to gain a better understanding of risk behavior in a population of rural adolescents. In order to accomplish, this I have approached the adolescents' risk behaviors from a variety of directions. In this study I have examined several exploratory questions as well as a number of specific hypotheses which I will now discuss.

The Nature of Rural Adolescent Risk Behavior

The first exploratory question that I have attempted to answer, or at least begin to answer, concerns the nature of rural adolescent risk behavior. Although at some level this question will be answered throughout this discussion, I will begin answering it by considering the results found for individual risk behaviors.

Investigation of individual risk behaviors. Although this study did not employ a specific comparison group such as a group of urban adolescents, it may be helpful to compare these results to those of previous studies of general populations of adolescents. Dryfoos (1991) provided a review of much of the empirical work, including census material, on adolescent risk behaviors. Although she collected information from a variety of sources, she acknowledges the fact that rural adolescents were not well represented in her review. Throughout this discussion of the nature of rural adolescent risk behaviors, I will

periodically refer to Dryfoos' findings as a general means for assessing where rural adolescents stand in comparison to other populations.

As demonstrated by the somewhat skewed distributions of risk behaviors, it seems that, in general, the majority of rural adolescents are either not engaging in most behaviors or are only experimenting with most behaviors (e.g. trying them once or twice). This study examines a large variety of risk behaviors which range from behaviors that one might expect to be somewhat common or what Dryfoos (1991) refers to as minor behaviors, such as lying or cursing, to those that seem to be less common and more extreme or what Dryfoos refers to as major or serious behaviors, such as fighting and stealing. In this study very different frequency distributions were found for the behaviors at the two ends of the risk behavior continuum, with behaviors such as lying or drinking alcohol much more common than behaviors such as selling drugs.

This highlights the importance of investigating individual risk behaviors as well as combining risk behaviors into scales and indexes if one wants to get an accurate understanding of adolescents' risk behavior patterns. The most salient example of a behavior which should be considered independent of other risk behaviors, as well as in conjunction with them, is the use of alcohol. Alcohol use was fairly common in this sample, as demonstrated by the fact that about 77% of the rural adolescents had used alcohol at least once. This seems fairly consistent with reports on alcohol use in other populations. One survey (Rice, 1993) indicated that 50.2% of adolescents from the age of 12-17 have at least tried alcohol and Dryfoos reported that 92% of seniors in high school have tried

alcohol. The adolescents surveyed in this study were in grades 9th -12th (ages 14-18) and, thus, would be expected to fall somewhere between these two percentages with respect to their use of alcohol.

Sexual behavior was also assessed in this study. It was found that the majority of adolescents are not engaging in intercourse and that there is a developmental progression wherein the percentage of adolescents engaging in intercourse increases with age. This is consistent with the findings from other studies. Dryfoos (1991) reports that approximately 42% of high school adolescents are sexually active and that the number of sexually active adolescents increases with grade in school. There are a number of adolescents, both males and females, who could be at risk for a variety of outcomes as a result of their early sexual activity or their inconsistent use of both birth control and condoms. With the many possible difficulties associated with teenage pregnancy and the clear physical and psychological implications of sexually transmitted diseases, particularly HIV/ AIDS, these findings suggest the need for further intervention beyond what is currently occurring in schools, communities, or families in order to encourage the optimal development of these youth.

This study also examined gender, grade, and family structure differences in the specific risk behaviors. Although I will not discuss the results for each specific behavior, I will discuss several patterns which were revealed for types of risk behavior (e.g. over delinquent behaviors, covert delinquent behavior, and substance-related behaviors). In general, sex differences were found for

overt delinquent behaviors, covert delinquent behaviors, and substance-related behaviors (although not for actual substance use). Developmental differences characterized by increasing risk behavior with age were revealed for all categories of risk behavior except covert delinquent behaviors. Family structure differences with adolescents not living with any parents engaging in more risk behavior than adolescents who live with a parent or parents (biological or step) were revealed.

Other tentative patterns involving dropouts and adolescents from single parent homes were also revealed for overt delinquent behaviors and substance-related risk behavior. These patterns, however, were sporadic and seemed to be related more to specific behaviors. The analyses on specific individual risk behaviors reveal that although clear patterns do seem to exist, there are behaviors which do not seem to be consistent with these patterns. For example, for overt delinquency the pattern found for sex differences does not seem to hold for behaviors directed at one's parents. These differences between individual behaviors even when they are categorized according to the type of risk behavior further support the idea that individual behaviors should still be explored in detail if only to further delineate between subcategories of risk behavior for example types of overt delinquency or substance use vs. substance-related risk behavior other than use.

Also examined in this study was the age of onset of specific risk behaviors. The results from the present study indicate that, for the most part, there are no significant differences with respect to gender or family structure for the age of

onset of the various risk behaviors. This lack of significant findings suggests that adolescents' gender or family structure do not put them at risk for earlier onset of risk behavior. This is important because, as previously discussed, the age of onset of risk behaviors has been shown to predict adolescent developmental outcome (Dryfoos, 1991; Biglan, 1990). The findings of the present study differ from those of previous studies which have demonstrated that males tend to engage in risk behaviors at an earlier age than females and that aspects of family environment , such as monitoring, which are commonly associated with certain forms of family structure, are often associated with an earlier onset of risk behavior (Dryfoos, 1991). In considering the results for gender, there is a tendency for males to begin engaging in several of the more common risk behaviors, such as lying, at a younger age than females. These differences, however, were not significant. It seems that in general the entire population is engaging in risk behaviors for the first time at a slightly older age. This later onset may have something to do with the nature of rural adolescent life wherein there is limited accessibility to certain resources, including those related to risk behavior, and limited peer contact at a younger age. Another possible explanation for the lack of findings is the retrospective nature of the age of onset reporting, however, such retrospective reports have been employed in previous studies (Biglan, 1990; Tolan & Thomas, 1988). This is clearly an area which should be further investigated within the rural adolescent population.

Groups of adolescents based on risk behavior patterns. The final exploratory questions examined in this study asked whether adolescents can

be placed into groups based on their risk behavior patterns and whether those groups differ with respect to family factors, such as family structure and familial problem behavior. The groups of adolescents delineated based on their risk behavior patterns suggest that the majority of these adolescents are engaging in minimal if any risk behaviors. These groups seem to be reflective of Dryfoos' (1991) categories, with the percentages for the higher risk groups even lower than those determined by Dryfoos. Admittedly, however, the Low Risk Group seems fairly heterogeneous including adolescents who engage in no risk behaviors, adolescents who experiment with several risk behaviors, and adolescents who engage in a few risk behaviors with a higher frequency.

The groups delineated in the present study seem somewhat different from Dryfoos' groups in a couple of ways. First of all, there appears to be two different moderate risk groups which differ more in the type of risk behavior they engaged in than in the quantity of risk behavior. Dryfoos, on the other hand, seemed to emphasize more of a quantitative approach to grouping the adolescents than a qualitative one. Additionally, the groups in this study did not appear to differ in terms of their sexual behaviors. Rather there seemed to be some variation within each group in terms of being sexually active and in terms of taking precautions like birth control and condoms.

The groups were further examined by exploring gender, grade, and family factor differences between the groups. Gender and grade differences were revealed with the higher risk groups containing significantly more males, older adolescents, and dropouts. The findings related to family structure and familial

alcohol abuse were difficult to assess, however, tentatively it appears that the majority of the Low Risk adolescents and Moderate Risk adolescents do not have family members who have problems with alcohol. Research should further investigate these family differences possibly using a larger sample size so that the higher risk clusters can be more accurately examined. These results do suggest that there are specific subgroups within the larger population which may need to be targeted in their own unique manner.

Specific Hypotheses Concerning Rural Adolescent Risk Behaviors

In order to more clearly investigate the specific hypotheses of this study, risk behavior scales were formed by combining the individual behaviors into an Overall Risk Behavior Scale, an Overt Delinquency Scale, a Covert Delinquency Scale, and a Substance-Related Risk Behavior Scale.

Risk Behavior Scales. The task of creating the risk behavior scales proved to be both an arduous and an informative task. The difficulty that the raters had in assigning seriousness ratings may suggest a lack of decisiveness in the field around what constitutes a serious risk behavior in adolescents. In addition, it highlights the complexity of adolescent risk behaviors. There is a great deal of debate about what is part of normal developmental processes and what is detrimental to development (Dryfoos, 1991). Longitudinal research is needed to clarify this issue.

As previously explained, once the scales were formed they needed to be transformed so that their distribution more closely approximated normality. Only the sexuality scale had to be discarded due to the fact that it was too highly

skewed. The resulting scales were reasonably internally consistent and demonstrated some validity when compared to the corresponding YSR scales.

Intercorrelations among risk behaviors. The high degree of intercorrelations especially between the overall risk scale and the three subscales was expected. First of all, the overall risk scale is formed through a combination of the three subscales and the sexual behavior items. Secondly, as explained by Jessor (1991) in his discussion of the "risk behavior syndrome", one would expect a high degree of intercorrelations among risk behaviors for many of the adolescents.

Differences in risk behavior by sex, grade, family structure, and family problem behavior. Several hypotheses were made concerning sex, grade, family structure, and familial problem behavior differences in the seriousness of adolescents' risk behavior. Most of these hypotheses received at least partial support. As predicted, sex differences were found for overall risk behavior, overt delinquency, and covert delinquency. Consistent with the literature, no effects were found for substance-related risk behavior. Developmental differences were identified for all risk behaviors with seriousness of risk behavior increasing with grade in school. In addition, the population of dropouts engaged in significantly more serious overall risk behavior and overt and covert delinquency than did the younger adolescents. Adolescents who do not live with either of their parents engage in more serious overall risk behavior, overt delinquency, and substance-related risk behavior than adolescents who live with both of their biological parents. Additionally, adolescents who live with

only one parent engage in more serious overall risk behavior and substance-related risk behavior than adolescents who live with both parents. This may be explained in part by the differential availability or monitoring in these two situations. Finally, adolescents engage in more serious risk behavior for all categories of risk behavior if they have two or more family members with a history of alcohol abuse than if they do not have any family members who abuse alcohol.

There are two major differences between the results for the scales and the results for the individual behaviors, namely that sex differences were found when some of the individual substance-related risk behaviors were assessed, but not when the scale were employed and developmental differences were found for covert delinquency when the scales were examined and not when individual behaviors were considered. These differences may be due to the fact that the scales are considering the seriousness of the behaviors (with all of individual behaviors combined) as opposed to the frequency of the behaviors and/ or to the fact that the scales include some items not considered alone due to their skewed frequency distribution.

The results of the interactions further clarify the results discussed above. According to the interaction results involving familial alcohol abuse there are two patterns which emerge. One, which was the predicted pattern, involves increasing seriousness of risk behavior with the increase in the number of family members who abuse alcohol. The second pattern is characterized by an increase in the seriousness of risk behavior for adolescents with an increase in

the number of family members who abuse alcohol up to two family members, but then a decrease in the seriousness of risk behavior for adolescents who have three or more family members who abuse alcohol. The latter pattern was more common, however the former one was exhibited by males for overt and covert delinquency, for adolescents who do not live with their parents for all risk behaviors, for dropouts and seniors for overt delinquency and substance-related risk behavior, and for dropouts for covert delinquency.

There are a couple of possible explanations for these different patterns: one explanation is statistical and the other is theoretical. Statistically, fewer adolescents had three or more family members who abuse alcohol (N =20) than had two, one, or no family members who abuse alcohol (N =27, N =90, N =200, respectively) and, as a result, it might have been more difficult to get a significant result. Theoretically, it may be that when an adolescent has several family members with alcohol abuse histories they tend to respond by avoiding risk behaviors, especially substance-related risk behaviors.

The results concerning the interaction between grade and family structure highlight the importance of considering children at different grades as unique populations, as well as the importance of not making generalizing conclusions based on one's family structure. The variability within certain populations (e.g. the population of adolescents from single parent homes) is important to keep in mind both in research and clinical work.

Associations between risk behaviors and family factors. It was hypothesized that certain family factors, namely familial problem behavior (alcohol abuse)

and family structure, would be predictive of each category of risk behavior. In addition, it was hypothesized that certain family environment variables would be predictive of each type of risk behavior. Prior to examining the associations between the seriousness of risk behaviors and family factors, correlational analyses were employed to investigate the simple associations between family environment and the seriousness of risk behavior. Although correlational analyses revealed many of the hypothesized associations, it was important to consider these associations in conjunction with the other family variables which were believed to be important predictors of risk behavior. When the family environment factors were included in the hierarchical regression equations with familial alcohol abuse and family structure, only a few of them were significant predictors of the seriousness of risk behavior.

As was hypothesized, the regression analyses revealed that the best predictor for all forms of risk behaviors for the general population was having family members who abuse alcohol, particularly having two family members who abuse alcohol. Additionally, family structure, namely not living with one's parents, was a significant predictor of the seriousness of overall risk behavior and overt delinquency. The only family environment variable that was a significant predictor of overt delinquency was conflict, or the amount of openly expressed anger, aggression, and conflict among family members. For overall risk behavior, in addition to conflict, moral/ religious emphasis and intellectual-cultural orientation were predictive of the seriousness of risk behavior.

In the course of this study, it had became clear that sex differences exist

within this population with respect to the adolescents' involvement in risk behavior. As a result, this study assessed the specific predictiveness of the family factors for each gender as well as for the entire population. Considering males and females separately reveals certain interesting gender differences. Firstly, for males family structure seems to be a less significant and less consistent predictor of the seriousness of risk behavior than it was for the general population or for females, wherein not living with one's parent(s) was predictive of the seriousness of risk behavior (particularly overall risk behavior and overt delinquency). Secondly, for females the pattern discussed earlier with respect to having three or more family members who abuse alcohol again emerges wherein having three or more family members who abuse alcohol is not predictive of increased seriousness of covert delinquency or substance-related risk behavior. In contrast, having two family members who abuse alcohol was predictive of the seriousness of those behaviors. Finally, differences were found for which family environment variables were predictive of the seriousness of risk behavior for males and females. For males only intellectual-cultural orientation, or the degree of interest in political, social, intellectual, and cultural activities, was predictive of the seriousness of risk behavior (overall risk behavior and overt delinquency). For females, on the other hand , moral religious emphasis, or the degree of emphasis on ethical and religious issues and values, was predictive of the seriousness of overall risk behavior and overt delinquency and conflict was predictive of overt delinquency. Thus, although there are some general similarities between

males and females in terms of the family factors that are predictive of risk behavior, it does seem to be important also to investigate males and females as unique populations. These differential patterns of risk factors and protective factors for males and females have important implications for intervention efforts. More specifically, efforts to intervene with or prevent risk behavior in males might target more protective factors such as involvement in the community or in school whereas efforts to intervene with females might target involvement in religious or charitable organizations.

Thus, this study provided only partial support for my hypotheses. This was in part due to the predictive strength of familial alcohol abuse. The inconsistency of findings for family structure suggest that research should explore differences within family structures possibly with respect to familial problem behavior or family environment variables. The lack of findings for some of the predicted family environment variables may be in part accounted for by the very slight redundancy between family environment and familial alcohol abuse and the more substantial redundancy between family environment factors. Another possible explanation for the lack of findings with respect to the family interaction variables is that the questions which comprise the different scales refer to the family environment in general, a fact which our adolescents found particularly frustrating in completing the questionnaire. It may be that one needs to examine the specific relationships (dyadic, triadic, etc) within the family in order to better understand the actual dynamics of the family and to predict adolescent behavior (Pollack & Pierce, 1992). For example, many theorists

argue for the specific importance of a child's relationship with his/her mother and how interactions with one's mother are particularly related to children's psychological development (Mahler, Pine, & Bergmen, 1975, p. 3).

Limitations to the Present Study

There are a number of limitations to the present study. In general these limitations fall into two categories, namely the nature of the population and the difficulties with assessment and measurement.

Nature of the population. The nature of this population is such that the distribution of risk behaviors was positively skewed. Although attempts were made to correct for this difficulty, a slight skew did remain with many of the adolescents either not trying a behavior or only experimenting with it. Although undoubtedly other researchers have encountered this problem in investigating risk behaviors, it is not commonly discussed, and I wonder if the problem is more prominent for the rural adolescent population in that at least this particular population did seem to have a slightly higher percentage of adolescents in the low to moderate risk groups. This finding, although statistically problematic, is theoretically and practically informative. As a result, the findings of this study must be considered with caution and as preliminary. This is particularly true when considering the results for dropouts and adolescents who do not live with either of their parents. These groups were particularly small and contained considerable variability. Although one would expect this to be so, considering the variety of situations which might lead an adolescent to dropout of school or to live on their own, it is problematic from a statistical standpoint. The results for

these groups have still been included due to the fact that the results were so significant and these groups do seem to differ remarkably from the remainder of the adolescents. The results in the present study should not be taken as fact, but rather should encourage and guide future research with these subpopulations.

Limitations due to measurement and assessment. The present study has some limitations due to difficulties with measurement and assessment. First of all, the study employed strictly self-report information from the adolescents. This is problematic in two ways. First of all, the self-report information is vulnerable to a number of biases and distortions. A related problem is that I had no way of assessing the validity of the majority of the adolescents' reports concerning their behaviors. Despite these possible limitations, there is reason to believe that for the most part the information presented by the adolescents is accurate. Donovan and Jessor (1985) report that previous research comparing self-reports of adolescent problem behaviors with official records generally supports the validity of these reports. The other possible limitation to collecting all information via adolescent self-reports is the fact that we are not getting the impressions of other members of the family. Hence, when we discuss family environment, we are, in fact ,looking at the adolescent's perception of the family environment which, although important, does not give the entire picture.

Another possible limitation to this study has to do with the experimental nature of the risk behavior scales. It will be important to further explore the validity and usefulness of these scales as well as to attempt other ways to

collect the rating information such as by using a limited range rating scale and more raters. Despite the possible problems with these scales, the covert and overt delinquency scales were reasonably well correlated with the well validated YSR scales which suggests that although preliminary, these scales clearly have some utility.

Implications of the Present Study

This study has a number of important implications. First of all, it highlights the importance of considering the diversity within the rural adolescent population as these adolescents display a vast number of different risk behavior patterns depending on their sex, grade, family structure, and history of familial problem behavior. Additionally, it demonstrates the differences between and within types of risk behavior with respect to who is engaging in the behaviors and how serious their behaviors are.

In addition, this study suggests the importance of the family with respect to adolescent risk behaviors. More specifically, factors such as family history of problem behavior, family structure, and certain family environment variables have been demonstrated to function as risk and protective factors for risk behavior. This has important implications for the direction of prevention and intervention efforts with respect to rural adolescents. It seems important to intervene not only with the individual adolescents but also with the family, possibly even the more extended family depending upon the presence of familial problem behaviors.

Areas for Future Research

The present study points to a number of areas for future research. First of all, longitudinal research is needed to assess the actual seriousness of or negative developmental outcomes associated with various risk behaviors or risk behavior patterns. Due to the large number of adolescents who seem to fall into the "experimenters" category, longitudinal research should assess what the outcomes are for these individuals. Additionally, future research should address the need for different assessment techniques, such as multi-method approaches, in investigating risk behaviors and family environment. A third area for future study is a more extensive investigation of certain subgroups of the rural adolescent population, namely adolescents who have dropped out of school or who are no longer living with their parents. In our study these were extremely small groups with an incredible amount of diversity in part due to the variety of reasons for which they may have dropped out or moved away from home. Another task for future research is to expand on the findings of the present study by adding additional components of Jessor's conceptual model. Specifically, other categories of risk and protective factors such as peer influences should be investigated in conjunction with the family influences. Additionally, another important area for future research is comparative studies between rural, urban, and suburban adolescents. Particularly, research focusing on differential outcomes for high risk adolescents from different populations would be informative. Finally, future research should include a qualitative investigation of the experiences of rural adolescents, particularly with

respect to risk behavior. Gaining some understanding of the meaning rural adolescents assign to these behaviors and what they see as the implications for their behaviors undoubtedly would prove invaluable to researchers, clinicians, teachers, parents, and a vast array of other concerned members of the rural community and society as a whole.

APPENDIX A

SERIOUSNESS RATING DIRECTIONS

Directions

1. The **seriousness** of a risk behavior refers to the extent to which a behavior puts an individual at risk for a negative developmental outcome. As such judgements of seriousness may require consideration of both the type of behavior and the frequency of the behavior as well as any other factors.

2. You are asked to assign seriousness values to 50 behaviors at various frequencies. In scoring, use all of your experience in arriving at your answer. This means personal experience where it applies as well as what you have learned to be the case for others. Some behaviors may be more serious for certain individuals than for others.Therefore, strive to give your opinion of the average degree of seriousness for each behavior rather than an extreme.

3. The mechanics of rating are as follows: One behavior, "Stolen or tried to steal something worth between $5 and $50, once or twice", was assigned an arbitrary seriousness value of 100. As you complete each of the remaining behaviors think to yourself, 'Is this behavior more or less serious than stealing or trying to steal something worth between $5 and $50?' If you decide the behavior is more serious, then choose a proportionately larger number and place it in the blank corresponding to that behavior. If you decide the behavior is less serious, then choose a proportionately smaller number and place it in the blank corresponding to that behavior. If the behavior is of equal seriousness, then assign number 100 to it.

APPENDIX B

DATA TABLES

Table 1
Adolescent Demographic Information

		N*	% of Sample
Sex			
	Males	167	47.0%
	Females	185	52.6%
Grade			
	9th Graders	83	23.6%
	10th Graders	86	24.4%
	11th Graders	88	25.0%
	12th Graders	83	23.0%
	Dropouts	12	3.4%

* Total N = 352

Table 2
Characteristics of the Adolescents' Families

	N*	% of Sample
Family Structure		
2-Parent	196	55.7%
1-Parent	72	20.5%
Step-Parent	63	17.9%
No Parent in Home	21	5.9%
Parental Marital Status		
Married	199	60.5%
Unmarried	10	3.0%
Separated	13	4.0%
Divorced	94	28.6%
Mother Deceased	3	.9%
Father Deceased	10	3.0%

* Total N = 352.

Table 3
Risk Behaviors Engaged in by Five Percent or Less of the Population

Risk Behavior	Adolescents who Engaged in Behaviors: Number of Adolescents *	Adolescents who Engaged in Behaviors: Percentage of Adolescents
1. Sold Cocaine	3	.8%
2. Paid for Sex	6	1.7%
3. Sold Other Drugs	6	1.7%
4. Sex Against Other's Will	6	1.7%
5. Setting Fire	10	2.8%
6. Used Force with Adult	12	3.4%
7. Used Cocaine	13	3.7%
8. Stolen Vehicle	15	4.3%
9. Used force with Student	16	4.5%

Table 4
Risk Behaviors Engaged in by Between Five and Ten Percent of the Population

Risk Behavior	Adolescents who Engaged in Behaviors: Number of Adolescents *	Adolescents who Engaged in Behaviors: Percentage of Adolescents
1. Begged from Stranger	19	5.4%
2. Hurt Someone while Drunk/ High	22	6.3%
3. Been in Gang Fights	26	7.4%
4. Sold Marijuana	31	8.8%
5. Used Other Drugs	31	8.8%
6. Used LSD	34	9.7%
7. Stolen Something > $50	38	10.8%

* Total N = 352

Table 5
Risk Behaviors Engaged in by Seventy-Five Percent or More of the Population

Risk Behavior	Adolescents who Engaged in Behaviors: Number of Adolescents *	Adolescents who Engaged in Behaviors: Percentage of Adolescents
1. Drank Alcohol	265	75.3%
2. Lied to Other	275	78.1%
3. Cheated on a Test	287	81.5%
4. Lied to Parent	293	83.2%
5. Failed a Test	328	93.2%

* Total N = 352

Table 6
Adolescents' Age of First Sexual Intercourse

Age (In Years)	Males N *	Males % of Sample	Females N **	Females % of Sample
12	3	4.6%	5	6.1%
13	8	12.3%	4	5.0%
14	13	20.0%	15	18.8%
15	9	13.8%	29	36.3%
16	16	24.6%	15	18.8%
17	11	16.9%	10	12.5%
18+	5	7.8%	2	2.5%

* Total N = 67
** Total N = 85

Table 7
Sexually Active Adolescents' Use of Birth Control

Age (In Years)	Males N *	Males % of Sample	Females N * *	Females % of Sample
Always	37	56.9%	59	69.4%
Sometimes	26	40.0%	19	22.4%
Never	0	0.0%	5	5.9%
I Don't Know	2	3.0%	2	2.3%

Table 8
Sexually Active Adolescents' Use of Condoms

Age (In Years)	Males N *	Males % of Sample	Females N * *	Females % of Sample
Always	34	53.1%	40	47.1%
Sometimes	21	32.8%	25	29.4%
Never	9	14.1%	20	23.5%

* Total N = 67
** Total N = 85

Table 9
Results of Chi Square Analyses of Overt Delinquency by Sex, Grade, and Family Structure

Risk Behavior [a]	Sex (Df=4)	Grade (Df=16)	Family Structure (Df=12)
Cheated on a Test	11.4*	47.9**	11.9
Cursed at Parent	2.4	11.3	17.4
Cursed at Adult	48.8**	24.7	20.7
Skipped School	20.9**	73.5**	38.9**
Disruptive	37.1**	34.7**	18.6
Detention	18.3*	74.7**	35.1**
Received Verbal Reprimand	16.4**	23.7	15.5
Suspended from School	12.1*	63.4**	43.4**
Carried a Weapon	33.3**	23.7	12.8
Attacked Someone	8.8	29.4*	27.1
Hit/ Threatened (adult)	15.2**	66.1**	47.4**
Hit/ Threatened (student)	25.8**	18.5	16.3
Hit/ Threatened (parent)	8.3	46.6**	31.9**
Loud/ Rowdy	2.1	19.6	17.4
Broken into Vehicle	15.5**	35.7**	15.9

[a] Total N = 352 although the N for each individual analysis may be less than 352 due to missing data.

* Significant at $p < .05$
** Significant at $p < .01$

Table 10
Results of Chi Square Analyses of Covert Delinquency by Sex, Grade, and Family Structure

Risk Behavior [a]	Sex (Df=4)	Grade (Df=16)	Family Structure (Df=12)
Lied to Parent	15.7**	24.8	14.1
Lied to Other	28.4**	30.3*	10.7
Stolen less than $5	8.5	17.1	26.2*
Stolen between $5 & $50	17.6**	24.2	14.0
Bought or Sold Stolen Goods	22.4**	19.1	19.3

[a] Total N = 352 although the N for each individual analysis may be less than 352 due to missing data.

* Significant at $p < .05$
** Significant at $p < .01$

Table 11
Results of Chi Square Analyses of Substance-Related Risk Behavior by Sex, Grade, and Family Structure

Risk Behavior [a]	Sex (Df=4)	Grade (Df=16)	Family Structure (Df=12)
Smoked Cigarette	6.1	53.6**	39.1**
Drank Alcohol	7.2	40.7**	29.9**
Smoked Marijuana	5.2	48.5**	36.6**
Got Drunk/ High	15.5**	46.1**	27.8**
Drove Drunk/ High	12.6*	44.3**	18.3

[a] Total N = 352 although the N for each individual analysis may be less than 352 due to missing data

* Significant at $p < .05$
** Significant at $p < .01$

Table 12
Results of Chi Square Analyses of Sexual Behavior by Gender, Grade, and Family Structure

Risk Behavior[a]	Gender		Grade		Family Structure	
	Df	X^2	Df	X^2	Df	X^2
Sexual Intercourse	1	.5	4	47.5**	3	30.8**
Age of First Intercourse	6	12.5	24	69.4**	18	26.4
Use of Birth Control	4	9.3	16	68.0**	12	45.6**
Use of Condom	3	3.1	12	56.6**	9	50.8**

[a] Total N = 352 although the N for each individual analysis may be less than 352 due to missing data.

* Significant at $p < .05$
** Significant at $p < .01$

Table 13
Results of Multivariate Analyses of Variance for Age of Onset of Overt Delinquent, Covert Delinquent, and Substance-Related Behaviors by Sex and Family Structure

Category of Risk Behavior	Sex F (Df)	Family Structure F (Df)	Sex by Fam.Structure F (Df)
Overt Delinquency	1.2 (24,293)	1.3 (72,875)	1.1 (72, 875)
Covert Delinquency	.2 (7, 310)	.7 (21, 926)	.8 (21, 926)
Substance Behavior	1.5 (9, 308)	**1.9 (27,920)****	1.1 (27, 920)
Sexual Intercourse[a]	.8 (1, 316)	.9 (3, 316)	1.1 (3, 316)

[a] A univariate analysis was used for sexual intercourse as it involved only one dependent variable.

* Significant at $p < .05$
** Significant at $p < .01$

Table 14
Means for the Frequency of Risk Behaviors for the Four Cluster Groups[a]

Risk Behavior	High Risk (N = 6)	Moderate 1 Risk (N = 6)	Moderate2 Risk (N = 58)	Low Risk (N = 259)
Academic Difficulties				
Repeated Grade	1.3	1.0	1.3	1.2
Failed Test	3.5	2.8	3.5	3.0
Overt Delinquency				
Cheated on test	3.8	2.8	3.0	2.7
Cursed at Parent	2.8	2.3	3.4	2.3
Cursed at Adult	3.7	3.8	2.5	2.0
Ran Away	1.0	2.3	1.5	1.1
Set Fire to Building	1.3	1.2	1.0	1.0
Skipped School	3.5	3.0	3.0	2.0
Asked to Leave Class	3.7	2.8	2.1	1.7
Given Detention	4.0	2.5	2.8	1.9
Verbally Reprimanded	4.3	3.2	2.3	1.9
Suspended	2.5	1.2	1.5	1.1
Carried Weapon	4.2	1.8	1.3	1.3
Attacked Someone	2.7	1.2	1.3	1.1
Paid for Having Sex	1.0	1.0	1.0	1.0
Gang Fights	2.8	1.0	1.2	1.1
Sold Marijuana	3.3	1.2	1.3	1.1
Sold Cocaine/ Crack	1.8	1.0	1.0	1.0
Sold Other Drugs	2.2	1.0	1.0	1.0
Hit Adult	3.0	1.3	1.7	1.3
Hit Student	4.0	2.2	2.3	1.8
Hit Parent	1.5	1.0	1.9	1.2
Loud/ Rowdy in Public	3.5	2.8	2.7	2.2
Taken Vehicle	2.3	2.0	1.3	1.2
Sex Against Other's Will	1.0	1.0	1.0	1.0
Begged from Stranger	1.0	1.3	1.1	1.1
Used Force (Student)	1.2	1.0	1.1	1.1
Used Force (Adult)	2.0	1.0	1.0	1.1
Broken into Vehicle	2.5	1.8	1.4	1.2

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Table 14 (continued)

Risk Behavior	High Risk (N=6)	Moderate 1 Risk (N=6)	Moderate2 Risk (N=58)	Low Risk (N=259)
Covert Delinquency				
Lied to Parent	4.0	3.3	3.4	2.5
Lied to Other	3.8	2.2	2.9	2.3
Stolen Vehicle	2.2	1.3	1.1	1.0
Stolen between $5 and $50	3.2	2.5	2.1	1.4
Stolen < $5	3.2	3.0	2.6	1.7
Stolen > $50	2.7	2.0	1.3	1.1
Bought/ Sold Stolen Goods	2.7	2.0	1.7	1.2
Substance-Related Behavior				
Smoked Cigarettes	4.0	2.7	3.6	1.9
Drank Alcohol	4.2	3.5	3.7	2.4
Smoked Marijuana	4.0	1.7	3.1	1.5
Used Cocaine	1.8	1.0	1.1	1.0
Used LSD	2.3	1.2	1.4	1.1
Used Other Drugs	3.0	1.3	1.4	1.1
Got Drunk/ High	4.0	3.2	3.0	1.7
Driven Drunk/ High	2.7	1.3	1.5	1.1
Hurt Other Drunk/ High	1.3	1.2	1.3	1.1

[a] The frequency values range from 1 (never) to 5 (4+ times a month)

Table 15
Results of Chi Square Analyses of Cluster Membership by Sex, Grade, Family Structure, and Familial Alcohol Abuse

	N	Df	X^2 Value	P-Value
Sex	352	5	11.3*	.046
Grade	352	20	41.4**	.003
Family Structure	352	15	32.9**	.005
Familial Alcohol Abuse	337	15	33.3**	.004

* Significant at $p < .05$
** Significant at $p < .01$

Table 16
Items Comprising Each of the Risk Behavior Scales

Overt Delinquency Scale

1. Cheated on a test
2. Cursed at a parent
3. Cursed at an adult
4. Ran away from home
5. Set fire to a building
6. Skipped school
7. Asked to leave class because disruptive
8. Given detention
9. Verbally reprimanded
10. Suspended from school
11. Carried a hidden weapon
12. Attacked someone
13. Been paid for having sex
14. Been in gang fights
15. Hit or threatened an adult
16. Hit or threatened another student
17. Been loud, rowdy, or unruly in a public place
18. Taken a vehicle for a ride without owner's permission
19. Had sex with someone against their will
20. Begged for money or things from a stranger
21. Used force to get money or things from a student
22. Used force to get money or things from an adult
23. Broken into a building or vehicle
24. Sold marijuana or hashish
25. Sold cocaine or crack
26. Sold other hard drugs

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Table 16 (continued)

Covert Delinquency Scale

1. Lied to a parent
2. Lied to someone other than a parent
3. Stolen something worth less than $5
4. Stolen something worth between $5 and $50
5. Stolen something worth greater than $50
6. Knowingly bough, sold, or held stolen goods
7. Stolen a motor vehicle

Substance-Related Risk Scale

1. Smoked cigarettes
2. Drank alcohol
3. Smoked marijuana
4. Used cocaine
5. Used LSD
6. Used other recreational drugs
7. Gotten very drunk or high
8. Driven a motor vehicle while drunk or high
9. Accidentally hurt yourself or someone while high on drugs or alcohol

Sexual Risk Behavior Scale

1. Have had sexual intercourse
2. Use birth control to prevent pregnancy
3. Use condoms to prevent std's

Table 17
Correlations between the Risk Behavior Scales and the YSR Delinquency Scale and the YSR Aggression Scale

	Risk Behavior Scales[a]			
YSR Scales	Overall	Overt	Covert	Substance
Delinquency	.707**	.605**	.631**	.634**.
Aggression	.485**	.500**	.374**	.331**

Table 18
Intercorrelations Between Risk Behavior Scales

	Risk Behavior Scales[a]			
	Overall	Overt	Covert	Substance
Overall Risk	1.00	.92**	.77**	.79**
Overt Delinquency	X	1.00	.67**	.41**
Covert Delinquency	X	X	1.00	.37**
Substance-Related	X	X	X	1.00

** Significant at $p < .01$

[a] Overall refers to the Overall Risk Behavior Scale.
Overt refers to the Overt Delinquency Scale.
Covert refers to the Covert Delinquency Scale.
Substance refers to the Substance-Related Risk Behavior Scale.

Table 19
Means and Standard Deviations for Risk Behavior Scales

		Risk Behavior Scales[a]			
		Overall	Overt	Covert	Substance
Sex					
Male	M	29.2	21.1	11.4	8.8
	SD	(11.7)	(9.0)	(5.8)	(7.7)
Female	M	24.0	16.0	8.7	7.5
	SD	(9.8)	(7.30)	(4.7)	(6.6)
Grade					
9th	M	22.2	16.7	7.9	4.3
	SD	(10.1)	(8.6)	(5.4)	(5.5)
10th	M	25.4	17.48	10.08	7.49
	SD	(10.66)	(8.13)	(5.83)	(6.37)
11th	M	27.5	18.6	10.4	9.1
	SD	(10.1)	(8.2)	(5.7)	(6.9)
12th	M	29.3	19.9	11.0	10.5
	SD	(10.7)	(8.1)	(5.2)	(7.7)
Dropouts	M	36.8	25.6	12.8	14.8
	SD	(15.5)	(12.2)	(6.5)	(8.2)

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Table 19 (continued)

		Risk Behavior Scales			
		Overall	Overt	Covert	Substance
Family Structure					
2-Parent	M	24.1	17.1	9.3	6.8
	SD	(10.2)	(8.0)	(5.4)	(6.5)
1-Parent	M	28.6	19.1	10.7	9.7
	SD	(11.2)	(8.4)	(5.6)	(7.4)
Step-Parent	M	28.3	19.5	10.48	8.9
	SD	(10.1)	(8.2)	(4.72)	(7.4)
No Parent	M	35.8	25.4	12.3	12.5
	SD	(14.0)	(10.7)	(6.34)	(8.6)

a Overall refers to the Overall Risk Behavior Scale.
Overt refers to the Overt Delinquency Scale.
Covert refers to the Covert Delinquency Scale.
Substance refers to the Substance-Related Risk Behavior Scale.

Table 20
Results of Planned Comparisons for Overall Risk Behavior by Sex, Grade, Family Structure, and Familial Alcohol Abuse

Contrast*	T-Score	Df	P-Value
1. Sex	4.46	1, 350	.001
2. Grade 1	4.33	4, 347	.001
3. Grade 2	4.48	4, 347	.001
4. Family Structure 1	3.07	3, 348	.002
5. Family Structure 2	4.79	3, 348	.001
6. Familial Alcohol Abuse	4.01	3, 333	.001

* • Grade 1 refers to the contrast between 9th graders and 12th graders.
  • Grade 2 refers to the contrast between 9th graders and dropouts.
  • Family structure 1 refers to the contrast between adolescents from 2-parent homes and adolescents from 1-parent homes.
  • Family structure 2 refers to the contrast between adolescents from 2-parent homes and adolescents who do not live with their parents.
  • Familial alcohol abuse refers to the contrast between adolescents who do not have a family member with an alcohol problem and adolescents who have 3 or more family members with an alcohol problem.

Table 21
Results for Analyses of Variance of Overall Risk Behavior by Sex, Grade, Family Structure, and Familial Alcohol Abuse

	F	Df	P-Value
Main Effects			
Sex	20.46	1, 343	.001
Grade	5.21	4, 343	.001
Family Structure	6.54	3, 343	.001
Familial Alcohol Abuse	18.99	3, 333	.001
Interaction Effects			
Sex by Grade	.20	3, 342	NS
Sex by Family Structure	.67	3, 344	NS
Sex by Familial Alcohol Abuse	.30	3, 329	NS
Grade by Family Structure	1.14	11, 333	NS
Grade by Alcohol Abuse	1.74	11, 318	NS
Family Structure by Alcohol Abuse	1.52	9, 321	NS

Table 22
Planned Comparisons for Overt Delinquency, Covert Delinquency, and Substance-Related Risk Behavior by Sex, Grade, Family Structure, and Familial Alcohol Abuse

Contrast	T-Score	Df	P-Value
Overt			
1. Sex*	5.76	1, 350	.001
2. Grade 1*	2.50	4, 347	.013
3. Grade 2	3.44	4, 347	.001
4. Family Structure 1	1.81	3, 348	NS
5. Family Structure 2*	4.38	3, 348	.001
6. Familial Alcohol Abuse*	2.99	3, 333	.003
Covert			
1. Sex *	4.80	1, 350	.001
2. Grade 1*	3.74	4, 347	.001
3. Grade 2*	2.93	4, 347	.004
4. Family Structure 1	1.85	3, 348	NS
5. Family Structure 2	2.45	3, 348	.015
6. Familial Alcohol Abuse*	2.99	3, 333	.003
Substance			
1. Sex	1.76	1, 350	NS
2. Grade 1*	5.90	4, 347	.001
3. Grade 2*	5.08	4, 347	.001
4. Family Structure 1*	3.09	3, 348	.002
5. Family Structure 2*	3.61	3, 348	.002
6. Familial Alcohol Abuse*	4.28	3, 333	.001

* Indicates that the contrast was significant after using the Bonferonni correction.

Table 23
Results for Multivariate Analyses of Variance of Overt Delinquency, Covert Delinquency, and Substance-Related Behavior by Sex, Grade, Family Structure, and Familial Alcohol Abuse

	F	Df	P-Value
Main Effects			
Sex	9.25	3, 239	.001
Grade	3.84	12, 713	.001
Family Structure	1.65	9, 713	NS
Family Alcohol Abuse	6.46	9, 713	.001
Interaction Effects			
Sex by Grade	1.09	12, 713	NS
Sex by Family Structure	2.3	9, 723	.017
Sex by Familial Alcohol Abuse	3.4	9, 713	.001
Grade by Family Structure	2.5	36, 713	.001
Grade by Alcohol Abuse	3.18	36, 713	.001
Family Structure by Alcohol Abuse	2.03	27, 713	.002

Table 24
Correlations Between Risk Behavior Scales and Moos Family Environment Scales for Entire Adolescent Population

Moos Scales	Risk Behavior Scales[a]			
	Overall	Overt	Covert	Substance
Cohesion	-.25**	-.24**	-.22**	-.14**
Expression	.01	.01	-.10	.08
Conflict	.27**	.29**	.17**	.17**
Independence	.06	.05	.02	.10
Achievement	-.04	-.03	.00	-.02
Culture	-.24**	-.21**	-.16**	-.15**
Active	-.06	-.07	-.05	-.02
Moral/Religious	-.21**	-.18**	-.11	-.21**
Organization	-.09	-.09	-.04	-.05
Control	-.11	-.09	-.02	-.14*

* Significant at $p < .05$
** Significant at $p < .01$

[a] Overall refers to the Overall Risk Behavior Scale.
Overt refers to the Overt Delinquency Scale.
Covert refers to the Covert Delinquency Scale.
Substance refers to the Substance-Related Risk Behavior Scale.

Table 25
Correlations Between Risk Behavior Scales and Moos Family Environment Scales for Male Adolescents

Moos Scales	Risk Behavior Scales[a]			
	Overall	Overt	Covert	Substance
Cohesion	**-.22****	**-.17***	**-.19***	**-.17***
Expression	.09	.14	-.08	.14
Conflict	**.30****	**.28****	.12	**.17***
Independence	.07	.05	.01	.14
Achievement	.04	.03	.01	.05
Culture	**-.22****	**-.19***	**-.18***	-.12
Active	.04	.05	.05	.03
Moral/Religious	**-.19***	-.16	-.08	**-.24****
Organization	-.05	-.03	.02	-.04
Control	-.13	-.12	-.03	**-.19***

* Significant at $p < .05$
** Significant at $p < .01$

a Overall refers to the Overall Risk Behavior Scale.
Overt refers to the Overt Delinquency Scale.
Covert refers to the Covert Delinquency Scale.
Substance refers to the Substance-Related Risk Behavior Scale.

Table 26
Correlations Between Risk Behavior Scales and Moos Family Environment Scales for Female Adolescents

	Risk Behavior Scales[a]			
Moos Scales	Overall	Overt	Covert	Substance
Cohesion	**-.32****	**-.35****	**-.29****	-.13
Expression	-.03	-.07	-.08	-.05
Conflict	**.31****	**.38****	**.27****	**.18***
Independence	.07	.06	.04	.07
Achievement	-.13	-.11	-.05	-.09
Culture	**-.23****	**-.20****	-.12	**-.17***
Active	-.14	**-.17***	-.13	-.06
Moral/Religious	**-.23****	**-.19***	-.13	**-.18***
Organization	**-.16***	**-.18***	-.13	-.06
Control	-.08	-.05	.00	-.09

* Significant at $p < .05$
** Significant at $p < .01$

[a] Overall refers to the Overall Risk Behavior Scale.
Overt refers to the Overt Delinquency Scale.
Covert refers to the Covert Delinquency Scale.
Substance refers to the Substance-Related Risk Behavior Scale.

Table 27
Regression Findings for Overall Risk Behavior for the General Population

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f
1	.43	.18	NA	NA	NA	20.6	3, 272	.001
2	.48	.23	.05	5.6	.001	13.6	6, 269	.001
3	.54	.29	.05	4.2	.001	9.8	11, 264	.001
4	.57	.32	.03	2.65	.02	7.8	16, 259	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.21	3.9	.001
Familial Alcohol Abuse (2 Members)	.28	5.2	.001
Familial Alcohol Abuse (1 Member)	.16	2.8	.005
Family Structure (1-Parent)	.05	.9	NS
Family Structure (Step-Parent)	.07	1.3	NS
Family Structure (No-Parent)	.16	2.9	.004
Expression	.06	.9	NS
Conflict	.17	2.5	.01
Cohesion	-.08	-1.0	NS
Control	-.03	-.4	NS
Moral/ Religious Emphasis	-.14	-2.4	.02
Independence	.06	1.1	NS
Achievement Orientation	.07	1.3	NS
Intellectual-Cultural Orientation	-.16	-2.6	.01
Active-Recreational Orientation	.10	1.7	NS
Organization	.08	1.2	NS

Table 28
Regression Findings for Overt Delinquency for the General Population

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f
1	.35	.12	NA	NA	NA	12.9	3,272	.001
2	.41	.17	.04	4.6	.001	9.05	6,269	.001
3	.48	.23	.06	2.6	.001	7.1	11,264	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.15	2.6	.01
Familial Alcohol Abuse (2 Members)	.21	3.6	.001
Familial Alcohol Abuse (1 Member)	.11	1.9	NS
Family Structure (1-Parent)	.04	.7	NS
Family Structure (Step-Parent)	.05	.5	NS
Family Structure (No-Parent)	.17	2.9	.003
Expression	.05	.7	NS
Conflict	.21	3.0	.003
Cohesion	-.06	-.7	NS
Control	-.03	-.5	NS
Moral/ Religious Emphasis	-.09	-1.6	NS

Table 29
Regression Findings for Covert Delinquency for the General Population

Results for Each Step

Step Number	R	R^2	F	df	P_f
1	.29	.08	8.5	3, 272	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.18	3.1	.002
Familial Alcohol Abuse (2 Members)	.23	3.9	.001
Familial Alcohol Abuse (1 Member)	.16	2.6	.008

Table 30
Regression Findings for Substance-Related Risk Behavior for the General Population

Results for Each Step

Step Number	R	R^2	F	df	P_f
1	.44	.19	21.8	3, 272	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.27	4.8	.001
Familial Alcohol Abuse (2 Members)	.36	6.5	.001
Familial Alcohol Abuse (1 Member)	.22	3.9	.001

Table 31
Regression Findings for Overall Risk Behavior for Male Adolescents

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f
1	.50	.25	NA	NA	NA	13.8	3, 123	.001
2	.54	.29	.03	2.1	NS	8.1	6, 120	.001
3	.58	.34	.05	1.7	NS	5.4	11, 115	.001
4	.64	.41	.07	2.8	.02	4.8	16, 110	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.31	3.9	.001
Familial Alcohol Abuse (2 Members)	.32	4.1	.001
Familial Alcohol Abuse (1 Member)	.22	2.7	.008
Family Structure (1-Parent)	.03	.4	NS
Family Structure (Step-Parent)	.10	1.3	NS
Family Structure (No-Parent)	.08	.9	NS
Expression	.12	1.4	NS
Conflict	.24	2.5	.01
Cohesion	.03	.2	NS
Control	-.03	-.3	NS
Moral/ Religious Emphasis	-.09	-1.0	NS
Independence	.1	1.2	NS
Achievement Orientation	.13	1.5	NS
Intellectual-Cultural Orientation	-.23	-2.5	.01
Active-Recreational Orientation	.03	.4	NS
Organization	.15	1.5	NS

Table 32
Regression Findings for Overt Delinquency for Male Adolescents

	Results for Each Step							
Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f
1	.42	.17	NA	NA	NA	8.7	3, 123	.001
2	.47	.23	.05	2.6	NS	5.8	6, 120	.001
3	.52	.27	.05	1.5	NS	3.9	11, 115	.001
4	.59	.35	.08	2.6	.03	3.7	16, 110	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.22	2.8	.006
Familial Alcohol Abuse (2 Members)	.27	3.3	.001
Familial Alcohol Abuse (1 Member)	.22	2.5	.01
Family Structure (1-Parent)	.03	.4	NS
Family Structure (Step-Parent)	.16	1.9	.05
Family Structure (No-Parent)	.10	1.2	NS
Expression	.18	2.1	.04
Conflict	.23	2.2	.03
Cohesion	.05	.4	NS
Control	-.03	-.3	NS
Moral/ Religious Emphasis	-.06	-.6	NS
Independence	.09	1.0	NS
Achievement Orientation	.11	1.2	NS
Intellectual-Cultural Orientation	-.22	-2.4	.02
Active-Recreational Orientation	.05	.6	NS
Organization	.18	1.8	NS

Table 33
Regression Findings for Covert Delinquency for Male Adolescents

Results for Each Step

Step Number	R	R^2	F	df	P_f
1	.33	.11	4.9	3, 123	.003

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.24	2.8	.006
Familial Alcohol Abuse (2 Members)	.19	2.2	.03
Familial Alcohol Abuse (1 Member)	.20	2.3	.02

Table 34
Regression Findings for Substance-Related Risk Behavior for Male Adolescents

Results for Each Step

Step Number	R	R^2	F	df	P_f
1	.54	.29	16.7	3, 123	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.37	4.8	.001
Familial Alcohol Abuse (2 Members)	.39	5.1	.001
Familial Alcohol Abuse (1 Member)	.25	3.3	.002

Table 35
Regression Findings for Overall Risk Behavior for Female Adolescents

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f-
1	.45	.20	NA	NA	NA	12.4	3, 145	.001
2	.51	.27	.06	4.15	.007	8.7	6, 142	.001
3	.61	.37	.10	4.7	.001	7.5	11, 137	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.12	1.6	NS
Familial Alcohol Abuse (2 Members)	.30	4.1	.001
Familial Alcohol Abuse (1 Member)	.18	2.4	.018
Family Structure (1-Parent)	.11	1.6	NS
Family Structure (Step-Parent)	.06	.9	NS
Family Structure (No-Parent)	.20	2.8	.006
Expression	.09	1.1	NS
Conflict	.16	1.7	NS
Cohesion	-.18	-1.8	NS
Control	.01	.1	NS
Moral/ Religious Emphasis	-.18	-2.5	.01

Table 36
Regression Findings for Overt Delinquency for Female Adolescents

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f-
1	.41	.16	NA	NA	NA	9.5	3, 145	.001
2	.46	.21	.04	2.7	.047	6.3	6, 142	.001
3	.60	.37	.15	6.7	.001	7.2	11, 137	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.09	1.3	NS
Familial Alcohol Abuse (2 Members)	.25	3.3	.001
Familial Alcohol Abuse (1 Member)	.16	2.2	.03
Family Structure (1-Parent)	.04	.5	NS
Family Structure (Step-Parent)	-.02	-.2	NS
Family Structure (No-Parent)	.19	2.7	.008
Expression	.11	1.3	NS
Conflict	.26	2.8	.006
Cohesion	-.18	-1.7	NS
Control	-.00	.0	NS
Moral/ Religious Emphasis	-.15	-2.0	.046

Table 37
Regression Findings for Covert Delinquency for Female Adolescents

Results for Each Step

Step Number	R	R^2	F	df	P_f
1	.36	.13	7.4	3, 145	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.17	2.2	.029
Familial Alcohol Abuse (2 Members)	.32	4.1	.001
Familial Alcohol Abuse (1 Member)	.22	2.7	.007

Table 38
Regression Findings for Substance-Related Risk Behavior for Female Adolescents

Results for Each Step

Step Number	R	R^2	ΔR^2	$F_{\Delta R^2}$	$P_{\Delta R^2}$	F	df	P_f
1	.39	.15	NA	NA	NA	8.5	3, 145	.001
2	.44	.19	.04	2.8	.04	5.8	6, 142	.001

Results for Individual Independent Variables at the Final Significant Step

Variable Name	Beta	T_{Beta}	P_T
Familial Alcohol Abuse (3+ Members)	.15	1.9	.048
Familial Alcohol Abuse (2 Members)	.28	3.5	.001
Familial Alcohol Abuse (1 Member)	.17	2.1	.037
Family Structure (1-Parent)	.14	1.7	NS
Family Structure (Step-Parent)	.17	2.1	.035
Family Structure (No-Parent)	.16	2.1	.039

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