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University of Massachusetts Amherst

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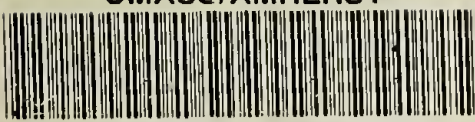
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AIDS AND PREGNANCY RISK-TAKING BEHAVIOR IN ADOLESCENCE:
AN EXPLORATORY STUDY

A Dissertation Presented

by

SCOTT A. RICE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 1995

Counseling Psychology

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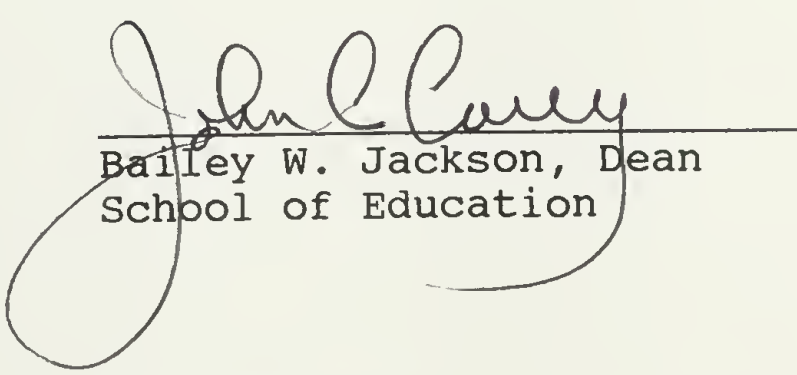
Approved as to style and content by:



Brunilda DeLeon, Co-chair


Seymour Epstein, Co-chair


Sally Powers, Member


Bailey W. Jackson, Dean
School of Education

This disseration is dedicated to my parents:

Allan F. Rice and Patricia A. Rice

Along with many other things, they taught me about work.

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ABSTRACT

AIDS AND PREGNANCY RISK-TAKING BEHAVIOR IN ADOLESCENCE:
AN EXPLORATORY STUDY

MAY 1995

SCOTT A. RICE, B.S., BOSTON COLLEGE

M.Ed, UNIVERSITY OF MASSACHUSETTS BOSTON

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by Professors Brunilda DeLeon and Seymour Epstein

Over 1,000,000 adolescent girls become pregnant each year, and nearly half of these girls give birth. Individuals between the ages of 20 and 29 account for nearly 20% of all documented AIDS cases. Given the long incubation period for the AIDS virus, many of these individuals were probably infected during sexual activity in adolescence. This exploratory research examined the predictive ability of demographic, developmental and personality variables on becoming sexually active, and on AIDS risk-taking and pregnancy risk-taking behavior in middle adolescence. A sample of 381 high school students (204 females, 177 males), age 14-18, from a town in Western Massachusetts completed a questionnaire. The majority of the sample (57%) reported having had sexual intercourse. Having a sexually active best friend, lower school achievement (GPA), lesser perceived parental support, and

high sensation seeking needs were all associated with experience with sexual intercourse. Participants who initiated intercourse at a younger age, had higher sensation seeking needs, a sexual abuse history, and who were older were those who exhibited the highest levels of AIDS risk-taking behavior. Participants who were younger, who initiated sex earlier, and had a sexual abuse history were those most likely to exhibit pregnancy risk-taking behavior. Some significant gender differences were noted for factors influencing sexual risk-taking. Results provide further support for the effects of sexual abuse on adolescent development and sexuality. The findings suggest a need for education in middle and elementary school, and the importance of using peer-led intervention efforts.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	v
ABSTRACT	vi
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xi
 Chapter	
I. DEFINING AND DESCRIBING THE PROBLEM	1
Overview	1
→Pregnancy and AIDS in Adolescence	3
→Biological Factors	6
Social Factors	7
Definition of Terms	9
II. RESEARCH ON SEXUAL RISK-TAKING IN ADOLESCENCE	12
Birth Control and Condom Use	12
Demographic Research	15
Developmental Influences on Sexual Risk	18
The Role of Personality Traits	30
Research Needs	40
III. EXPERIMENTAL METHOD	42
Purpose	42
Participants	44
Instruments	47
Procedures	60
Data Analysis and Statistics	67
IV. RESULTS	71
Descriptive Statistics	71
Instrument Reliability	78
Sexual Intercourse Experience	78
Sexual Risk-Taking	87
AIDS Risk-Taking	91
→Pregnancy Risk-Taking	95

V. DISCUSSION	101
Chapter Overview	101
Factors Predictive of Sexual Experience	101
Sexual Risk-Taking	<u>112</u>
Demographic Variables and Sexual Risk-Taking	115
Developmental Influences	120
Personality Traits	128
Limitations of the Research	140
Implications for Intervention and Practice	144
Directions for Future Research	147
APPENDICES	
A. PASSIVE CONSENT PARENT LETTER	151
B. INFORMED CONSENT LETTER	153
C. QUESTIONNAIRE USED IN THE STUDY	155
BIBLIOGRAPHY	172

LIST OF TABLES

Table	Page
1. Variable List by Research Clusters	43
2. Demographic Characteristics of the Study Sample	72
3. Sexual Characteristics of the Study Sample.....	74
4. Characteristics of the Sexually Experienced Group.....	75
5. Internal Consistency (Coefficients Alpha) for the Scales	79
6. Table of Means	80
7. Sexual Intercourse Experience Correlated with All Variables for Males, Females and Total Group.....	81
8. Discriminant Function Analysis of Variables Significantly Correlated with Sexual Intercourse Experience	85
9. Correlations of All Variables with AIDS Risk-Taking and Pregnancy Risk-Taking for the Sexually Experienced Group.....	88
10. Multiple Regression Analysis of AIDS Risk- Taking for the Sexually Experienced Group.....	92
11. Multiple Regression Analysis of Pregnancy Risk-Taking for the Sexually Experienced Group.....	96

LIST OF ABBREVIATIONS

AIDSRISK:	AIDS Risk-Taking
* PREGRISK:	Pregnancy Risk-Taking
* BIRTHORD:	Birth Order in the Family
LIVPARNT:	Parents Living in the Home
INCOME:	Family Income Level, as Measured by Free Lunch Receipt or Non-receipt
SXORIENT:	Sexual Orientation
SEXAGE:	Age at First Intercourse
FRNDSEX:	Sexually Active Best Friend
SEXABUSE:	History of Sexual Abuse
EGOAIDS:	Egocentrism Concerning AIDS
EGOPREG:	Egocentrism Concerning Pregnancy
GPA:	Grade Point Average
VOCAB:	Score on the Shipley Vocabulary Test
REASON:	Score on the Shipley Abstract Reasoning Test
INTELL:	Intellectual Ability--Combined VOCAB and REASON
SENSEEK:	Sensation Seeking Score
IMPULSE:	Impulsivity Scale Score
EGOSTREN:	Ego Strength Score
PARSUPP:	Perceived Parental Support Score
SELFEST:	Rosenberg Self-Esteem Scale Score
CTIGLOB:	Global Constructive Thinking Inventory Score
EMOTCOP:	CTI Emotional Coping Score

BEHCOP: CTI Behavioral Coping Score
CATTHNK: CTI Categorical Thinking Score
ESOTHNK: CTI Esoteric Thinking Score
NAIVOPT: CTI Naive Optimism Score

CHAPTER I

DEFINING AND DESCRIBING THE PROBLEM

Overview

This paper focuses on sexual risk-taking behavior in adolescence. Sexual risk-taking is defined as sexual behavior by unmarried teenagers which makes either of two detrimental outcomes possible: infection with the HIV virus, hereafter referred to as AIDS risk-taking, or becoming pregnant or helping to create a pregnancy, referred to as pregnancy risk-taking. The primary behaviors considered in AIDS risk-taking are promiscuity and failure to use condoms. The primary features of pregnancy risk-taking are a failure to use an effective method of birth control, or failure to use one on a consistent basis.

Sexual risk-taking by adolescents can result in other detrimental outcomes in addition to pregnancy or HIV infection. For example, the occurrence of rape or sexual assault after placing oneself in a risky situation is another hazard of adolescent sexual risk-taking. Jenny (1988) has outlined some compelling evidence of specific risk-taking behaviors common to the victims of sexual assault. Although important, this topic will be outside the realm of this paper. More detailed definitions of sexual risk-taking, as studied in this paper, are presented further on.

As this research was exploratory in nature, a wide range of variables were investigated both in the literature review and the designed experiment. Variables examined for their relationship to sexual risk-taking fell within three major clusters: demographic, developmental, and personality. The demographic variables were those which provided some reference to permanent or semi-permanent group membership. Developmental variables were defined as more transient, "life events". Personality variables included the operationalized measures of various traits regarded to be enduring and predictive of behavior over time. Considerable overlap between clusters existed for many of the variables studied, and they were placed in these categories solely to assist with organizing the discussion, rather than for any theoretical significance.

The paper begins with a brief statement of the individual and societal costs resulting from risky sexual behavior in adolescence. An overview of adolescent sexuality, including biological and social factors associated with risk-taking, is presented. This is followed by a broad review of existing research on causal factors implicated in risky sexual behavior in adolescence. The third chapter details the exploratory experimental design, and describes the subjects, instruments, and procedures which were employed to test the eleven hypotheses presented. Chapter four consists of tables and

narrative describing the results obtained in a survey of the sexual behavior of 381 high school students. The paper concludes with a discussion of these results, as they relate to past research. A presentation of the study's limitations; its implications for professional practice; and suggested directions for future research are included.

Pregnancy and AIDS in Adolescence

There are approximately one million adolescent girls who become pregnant each year, and of these, nearly half (480,000) will give birth (Hayes, 1987). Immediate and long-term costs for the individual and for society accompany this statistic. In financial terms, a fifteen billion dollar annual price is cited as the conservative estimate of the cost of adolescent pregnancy in the United States (Hofferth & Hayes, 1987).

On an individual level, pregnancy for the adolescent female involves an enormous decision. Termination of the pregnancy can have great emotional impact, while having the baby can involve interrupted education, changed plans, and an emotional and financial burden. The effect on adolescent males varies depending on knowledge of the pregnancy and sense of responsibility. A common scenario of teen parenting involves an absentee father, a mother who has poor parenting skills and a lack of supports, and a neglected child. The implications of this scenario for

society on the large scale cannot be measured in financial terms alone.

Adolescent sexual risk-taking can result in the acquisition of the HIV virus. Current (1993) epidemiological data indicates that almost 300,000 cases of AIDS have been diagnosed in the United States (Centers for Disease Control and Public Health Service, 1993). Adolescents presently account for 1% of all AIDS cases in the United States, the vast majority of these stemming from blood transfusions. Individuals between the ages of 20 and 29 account for 20% of all documented AIDS cases. When considering the long incubation period of the AIDS virus, it is likely that many of these cases can be linked to sexual behavior in adolescence (Curran, Jaffe, Hardy, Morgan, Selik, & Dondero, 1988). No hard data on the presence of the HIV virus in adolescents is available, but there is considerable indication that adolescents are a high risk group.

Adolescents place themselves at great risk of acquiring the HIV virus through practices such as promiscuity and non-use of condoms (Biglan, Metzler, Wirt, Ary, Noell, Ochs, French & Hood, 1990; Keller, Bartlett, Schleiffer, & Johnson, 1991). These studies indicated that condom use was rarer among those whose promiscuity was greater, thereby placing them at higher risk for infection. It is for this

reason that many consider teens to be the group at the greatest risk for the spread of HIV.

Given the rate of teenage pregnancy and the indications of extreme risk to the adolescent population for HIV infection, the need to develop a theoretical model which aptly explains the full range of contributory factors is a pressing one. In her thorough review of the literature on adolescent contraceptive behavior, Morrison (1985) illustrated the fragmented nature of the research in this area, "Scattered studies have investigated the relation of demographic, personality, environmental, and learning factors to adolescents use of birth control, leaving questions about the causal ordering of these factors and their interrelationships, unasked." p. 538. Identification of risk and protective factors is critical to any type of public health intervention efforts.

Despite evidence implicating adolescent sexual behavior in AIDS cases among individuals in their twenties (Curran, Jaffe, Hardy, Morgan, Selik & Dondero, 1988), and attesting to HIV risk-taking behaviors in adolescence (DiClemente, Durbin, Siegel, Krasnovsky, Lazarus & Comacho, 1992; Rotheram-Borus & Koopman, 1991; Melchert & Burnett, 1990) very little research has been conducted on factors influencing AIDS risk-taking behaviors in adolescence. In addition, a great shortage of research targeting gay and

bisexual youth exists, despite this group being at inherently high risk.

Biological Factors

Adolescence is the most common point in the lifespan for sexual activity to begin. Pubertal processes play a large role in this, as hormonal systems that have been dormant since fetal development are reactivated. The hypothalamus, a part of the brain involved with autonomic regulatory function, controls the pituitary gland by releasing hormones. The pituitary in turn controls the gonads (ovaries and testes) which produce androgens and estrogens, and also produce sperm or ova. The body sends messages back to the hypothalamus, in a feedback loop which allows a proper rate of development.

In the last century, the average age of puberty has declined in both males and females across cultures, however this trend has slowed in recent years (Tanner, 1981). Earlier onset of puberty is generally attributed to improved nutrition, with later onset still occurring in some impoverished nations. In the United States, first menstruation occurs at an average age of 12.5 years, and spermarche (beginning of sperm production) occurs in most boys before the age of fourteen.

The timing of the onset of puberty is critically important to sexual risk-taking. Irwin and Millstein

(1986) identified early maturing females as being at particular risk. Early maturing females have been found to be more popular with older males, and less popular with same age females. In addition, early maturing females may show more interest in sexual activity than their peers.

There is some evidence for a direct biological effect between testosterone levels and the onset of sexual activity in males (Udry, Billy, Morris, Groff & Raj, 1985). These researchers controlled for secondary sexual development, and found independent effects on sexual activity due to testosterone. The finding was not present in girls, for whom testosterone levels were linked to sexual interests, but not sexual behavior. Some research (Udry, Talbert, & Morris, 1986) has implicated social factors as being more important than direct biological effects for the initiation of sexual intercourse in females.

Social Factors

Social changes in the United States in the last century, combined with the early age of biologically possible parenthood and large scale acceptability of pre-marital sex, have made teenage pregnancy an enormous problem with large scale public health implications. The age of marriage is steadily rising, while the age of first intercourse has been declining (see Furstenberg, 1990 for a discussion of this phenomenon). When the United States was

an agrarian nation, a farmer could benefit from early marriage and the birth of many children to serve as field hands (Paige, 1983). With the industrial revolution, a great migration to the cities took place for the purpose of obtaining jobs in factories. Child labor and mandatory education laws followed, and it became desirous to postpone marriage and childbearing until the completion of an education. In addition, city life presented more disadvantages to early childbirth than agrarian life had. Despite the lessened need for reproduction during adolescence, a trend toward earlier onset of sexual activity has emerged.

In generations past, it was the norm for sexual intercourse to be delayed until marriage. More recent research documents the trend away from an intercourse-matrimony relationship. Zelnik and Kantner (1980) reported that 23% of females surveyed in a metropolitan area had had intercourse by age 15. Fifty-seven per cent had had intercourse by age 17 and 69% by age 19. Higher incidence of sexual intercourse was reported for black girls over white girls at all ages in this metropolitan sample. Flick (1986), in a middle adolescent sample, reported that 66% of males said they had had sexual intercourse by age 18. Hofferth and Hayes (1987), using a representative national sample of adolescents, reported that 77% of males and 62% of females have had sexual intercourse by age nineteen.

Koyle, Jensen, Olsen and Cundick (1989) reported on this trend of early initiation into intercourse, and found a positive relationship between early initiation into sex and later sexual promiscuity.

Definition of Terms

Before reviewing specific research on contributory factors in adolescent sexual risk-taking, it is important to clarify terms. Adolescence is defined by the World Health Organization as the period between age ten and age twenty. Other definitions are not chronologically based, but make reference to life events in which an adult role is taken on, i.e. marriage, full time employment, financial independence, etc... Many have argued that adolescence is being extended in our society, as the dawning of an adult role is being postponed by institutions such as college. Many studies of adolescents use college students as subjects. In this paper, the adolescent period will be seen as a length of time which varies between individuals. Its arrival is marked by the biological event of spermatarche or menarche and its conclusion characterized by a gradual process of maturation and increased responsibility brought on by one or more adult roles, i.e. employee, spouse.

Researchers have generally agreed on three chronological stages of adolescence, noted here despite the preference for non-chronological definition. Early

adolescence is the stage between age ten and fourteen, with its main characteristic being the extensive physical changes which predominate. Middle adolescence, or the high school years, extends from age fourteen to age seventeen. In this period the adolescent typically develops a greater sense of independence from family. Late adolescence is said to extend from age eighteen upward through the assumption of an adult role.

Sexual risk-taking is defined as either heterosexual or homosexual behavior by unmarried adolescents which can result in one of two usually unplanned and usually detrimental consequences: becoming pregnant or causing a pregnancy (referred to as pregnancy risk-taking) or becoming infected with the HIV virus as the result of unprotected sex (referred to as AIDS risk-taking). Although there are many different types of sexually transmitted diseases (STD's) which can result from unprotected sex, the concern of this paper will be AIDS. Unprotected sex is defined as heterosexual or homosexual intercourse without the use of a condom. It could be argued that any sexual intercourse between adolescents risks either AIDS or pregnancy. For this paper, risk will be conceptualized as a failure to take measures to protect the self and/or the partner from one of these two consequences.

More specifically, pregnancy risk-taking is defined by a failure to use an effective method of contraception, or to be unsure if a method of contraception has been used. Although there are varying degrees of effectiveness to different types of contraception, the following will be considered ineffective: douching, withdrawal, rhythm.

AIDS risk-taking will be defined as heterosexual or homosexual intercourse in which a condom is not used. If a heterosexual adolescent female reports being on the pill, but engages in sexual intercourse without the use of a condom, pregnancy risk-taking would be minimized. The young woman is, for the purposes of this paper, exhibiting AIDS risk.

There is intuitive knowledge of the risk factors involved in adolescent sexual risk-taking, but what are the factors which research shows to be the strongest predictors? Is sexual risk-taking in adolescence related to normal developmental rites of passage, or should it be viewed through a lense of psychopathology? How is adolescent sexual risk-taking best defined? Do adolescents perceive risk differently than adults? Is sexual risk-taking related to socio-economic status or independent of it? How significantly do family factors contribute or deter from adolescent sexual risk-taking? Some of these questions have been addressed in the literature on adolescent sexuality, while others remain to be asked.

CHAPTER II

RESEARCH ON SEXUAL RISK-TAKING IN ADOLESCENCE

Birth Control and Condom Use

It has been estimated that over 20% of sexually active nineteen year old women have become pregnant at least one time, as found in a metropolitan sample of adolescents (Zelnik, Kim, & Kantner, 1979). Teenagers often do not use effective contraception techniques. Zelnik and Kantner (1980) found that only 35% of the sexually active, unmarried females in their metropolitan adolescent sample used birth control regularly. Twenty-six per cent of the sample reported never using birth control. Geis and Gerrard (1984) surveyed 18 and 19 year old college students. Forty-two percent of the females and 45% of the males reported using no birth control in their initial sexual encounter. Along these lines, Zabin, Kantner, and Zelnick (1979) found that half of all pre-marital pregnancies occur within the first six months of sexual activity.

Alexander, Kim, Ensminger, Johnson, Smith and Dolan (1990) examined the relationship between risk-taking, as defined by the Adolescent Risk-taking Scale (ARTS- developed by the authors) measured in eighth graders, and self-reported sexual practices in ninth grade. The study included 758 adolescents from rural counties in Maryland.

The scale used was a six item measure derived from student reports of what they thought were risky behaviors (i.e. shoplifting, racing vehicles, sneaking out at night). Of the eighth graders who scored in the top 25% on this risk taking measure, 56% reported that they were sexually active in ninth grade. Only 26% of those in the lowest quartile of the risk-taking measure reported that they were sexually active in ninth grade.

Of the sexually active respondents, percentages of those who did not use contraception in ninth grade varied from 6.1% to 8.7%, which are very strong usage rates as compared with other research with this age group (Zabin, Kantner & Zelnick, 1979). Although the onset of sexual intercourse was found to be related to scores on the risk-taking measure, no significant differences in contraceptive use were found to be related to the risk-taking measure. This finding suggests that biologically based personality factors may account for a greater likelihood of intercourse, but that other factors are involved in mediating contraceptive use decisions.

Arnett (1990) surveyed 145 female high school juniors and seniors in Atlanta, and found that 36% of the girls reported having had sex without contraception. Most of these girls also reported having sex using contraception. Arnett cites this as support for previous research which has found that knowledge of contraception does not

guarantee use of contraception. Similarly, other research (Rotherham-Borus & Koopman, 1991; Keller, Bartlett, Schleifer & Johnson, 1991) has shown that a high level of AIDS knowledge does not equate to avoidance of AIDS risk-taking behaviors.

Keller, Bartlett, Schleifer, and Johnson (1991) studied a sample of adolescent clinic patients and high school students in the inner city. The researchers assessed sexually risky behavior (risk as defined by increased chances for HIV infection) in an area of the city with a high prevalence of HIV. Self reported high-risk behaviors were found to be prevalent despite a high level of knowledge about AIDS. In this study, alcohol and marijuana use were found to be predictive of high-risk sexual behavior.

Similarly, Biglan, Metzler, Wirt, Ary, Noell, Ochs, French and Hood (1990) found alcohol and drug use to be related to an index of high-risk sexual behavior in a sample of eighth to twelfth graders. Those who reported higher levels of alcohol and drug use; antisocial behavior; cigarette smoking; family structures with less parent availability; lesser amounts of parental monitoring and support of the adolescent; and friends' involvement with alcohol use and other problem behaviors were the most likely to engage in high-risk sexual behaviors such as promiscuity or nonuse of condoms.

Kelly, Murphy, Sikkema, and Kalichman (1993) expressed the view that adolescent AIDS risk-taking be considered in light of the wider context of an adolescent's experience, i.e. alcohol/drug, family, peer, academics, and social-cognitive functioning.

The correlations among various types of risk-taking behaviors in adolescence have been well documented. Many studies have focused on the correlations between the different types of risk-taking and have suggested commonalities in adolescents who take risks. Involvement in one type of risk-taking behavior significantly increases the probability of being involved in another, or several other, types of risk (Jessor & Jessor, 1977; Jessor, 1987; Clark, Sommerfeldt, Schwartz, Hedeker & Watel, 1990; Irwin & Millstein, 1986; Osgood, Johnston, O'Malley & Bachman 1988; Newcomb & McGee 1991; Galavotti & Lovick, 1989). This type of research has advanced the idea that a single causal factor underlies a variety of risk-taking behaviors.

Demographic Research

Age has been found to be related to pregnancy risk-taking in adolescence. Most of this research has targeted females, and younger females have been found to use birth control less frequently, and to use less effective birth control methods than older females (McCullough & Scherman, 1991; Melchert & Burnett, 1990; Zelnik & Shah, 1983;

Cvetkovich & Grote, 1983; Philliber & Tatum, 1982; see Morrison, 1985 for a review). The relationship between age and pregnancy risk-taking for male's or between age and AIDS risk-taking has received less attention.

Based on the research concerning female pregnancy risk-taking, a relationship between age and both male and female sexual risk-taking was hypothesized:

Hypothesis #1: Older adolescents will receive higher scores on the measures of sexual risk-taking than younger adolescents.

Zelnik and Shah (1983) found gender differences related to pregnancy risk-taking. Males may tend to rely on females to care for birth control needs. Morrison (1985) in a review of the literature on adolescent contraceptive use, stated that adolescent males report less frequent use of birth control than adolescent females. Adolescent females know more about birth control on average than males (DeLameter & MacCorquodale, 1979; Lieberman, 1981, Freeman, Rickels, Huggins, Mudd, Garcia & Dickens, 1980). For the present research, gender was explored as an isolated predictor variable, but was not hypothesized to have a relationship to sexual risk-taking independent of subgroup context.

Because higher pregnancy rates have been found among adolescent females from lower income families (Hofferth &

Hayes, 1987), and AIDS is more prevalent among lower socioeconomic groups (Athey, 1991), a relationship between family income and sexual risk-taking was hypothesized:

Hypothesis #2: Adolescents from lower income households will have higher scores on the sexual risk-taking measures than adolescents from higher income households.

The finding of a relationship between family structure (i.e. parents in the home, foster placement) and high risk sexual behavior in adolescence (Biglan, Metzler, Wirt, Ary, Noell, Ochs, French, & Hood, 1990) suggests that the physical presence and availability of parents may be a protective factor against sexual risk-taking. In the present research, family structure, referred to as parents living in the home, is treated as a demographic variable, as it classifies the type of household. Parental support, however, was categorized as a developmental variable (see Table 1 in Chapter 3). Parents residing in the home was predicted to have a relationship to sexual risk-taking:

Hypothesis #3: Those adolescents from single parent homes, from foster homes, and those who live independently from parents will report more sexual risk-taking behavior than those from two parent households.

Even when an adolescent lives in a two parent household, the amount of supervision received can be a critical factor. There has been an increase in the number of households where both parents work, or that contain a

single parent only who must work. Parents of adolescent children often do not see a need for childcare while they are at work. Unsupervised adolescents may be more likely to become involved with drugs, alcohol, and sex (Padilla & Landreth, 1989). In a study of adolescent sexuality and pregnancy, Franklin (1988) found that the most likely setting for teenage sexual intercourse was during the daytime hours in the homes of working parents.

Developmental Influences on Sexual Risk

Social relationships change dramatically during adolescence. Parent-child relationships change, and the importance of peer influence increases. There is a widely held belief that adolescence is a time of open rebellion and rejection of parental modeling and teaching on the part of the adolescent. This belief is characterized by the "storm and stress" model of adolescence proposed by G. Stanley Hall (1904). More recent research (Offer, 1969; Offer, Ostrov, & Howard, 1981) suggests that nearly 75% of adolescents report supportive, congenial relationships with parents throughout the adolescent years. According to this research, most adolescents describe their parent to be a significant source of support. In addition, most parents report amiable relations with their teens.

In a review of the literature on parent-adolescent relationships, Grotevant and Cooper (1986) divided existing

research into the two contrasting positions of "storm and stress" and the "continuous supportive relationship". In addition, Grotevant and Cooper proposed a third conceptualization involving a dynamic relationship which is continually renegotiated throughout the adolescent years. They emphasized the interplay between connectedness and individuality in the adolescent's role-taking skill and identity formation. Regarding adolescent sexuality, is the support an adolescent receives from parents of significant influence on becoming sexually active or on sexual risk-taking behavior? Not much is known about the relationship between parental support and sexual risk-taking in adolescence. Some research shows connectedness to and supportiveness from parents to be related to a later age of sexual onset (Inazu & Fox, 1980; Jessor & Jessor, 1977).

The age of sexual onset has biological (Irwin & Millstein, 1986; Udry, Billy, Morris, Groff, & Raj, 1985), psychological (White & Johnson, 1988; Geis & Gerrard, 1984) and social (Billy & Udry, 1985) determinants. The age of sexual onset has been implicated in sexual promiscuity later in adolescence (Koyle, Jensen, Olsen, & Cundick, 1989). Those adolescents who are sexually active earlier have been found to be the least sexually cautious. In the present study, it was hypothesized that early age of first intercourse would be predictive of sexual risk-taking behavior:

Hypothesis #4: Those with an early onset of sexual intercourse will report higher levels of sexual risk-taking than those who were older at sexual onset.

Billy and Udry (1985) documented the importance of peers in becoming sexually active. Their study was longitudinal, and showed that if a white adolescent virgin female reported having a sexually active best friend, she was six times more likely to initiate intercourse in the year to come than a virgin female whose best friend was also a virgin.

One of the greatest shifts in adolescence involves the emerging importance of the peer group over family influences. The need to become independent from parents and exercise greater autonomy in decision making becomes critically important. Generally, peers are a more important source of sexual information than parents, whose contribution to the adolescent's sexual knowledge is often negligible (DeLamater & MacCorquodale, 1979). The peer group provides a testing ground for interpersonal decision making skills.

The age of sexual onset has also been shown to be influenced by sexual abuse (Kolko, Moser & Weldy, 1990; Lindberg & Distad, 1985; McCullough & Scherman, 1991). Sexual abuse has been linked to problems with development and sexual risk-taking behavior in females. Kolko, Moser & Weldy (1990) found that adolescents who had been sexually

abused as children were more likely to be sexually active than adolescents who had been physically abused as children. Sexual abuse has been implicated in teen pregnancy (Donaldson, Whalen & Anastas, 1989; Lindberg & Distad, 1985; McCullough & Scherman, 1991). In the McCullough and Scherman research, 43% of their sample of 37 pregnant teens and teen parents reported having been sexually abused in childhood and adolescence.

Donaldson, Whalen and Anastas (1989) suggested that emotional reactions and behavioral patterns stemming from unresolved feelings concerning earlier incidence of sexual abuse are implicated in teen pregnancy. As described by McCullough and Scherman (1991), "The sexually abused female may have difficulty in accomplishing the developmental tasks of adolescence. Feelings of powerlessness, disgust and shame may lead her to seek closeness through repeated sexual encounters which, of course, increases the risk of pregnancy." p. 814.

Because of the documented relationship between having a sexual abuse history and promiscuity and pregnancy in adolescence, a relationship was predicted between sexual abuse and sexual risk-taking in this research:

Hypothesis #5: Those participants reporting a history of sexual abuse will receive higher scores on the measures of sexual risk-taking than those without such a history.

Recent research has focused on sexual abuse as trauma (Herman, 1992; van der Kolk, 1994), with lasting physiological, psychological, and interpersonal consequences. Similar to combat veterans, victims of sexual abuse experience flashbacks of the abuse; dissociative symptoms and "numbing"; states of hyperarousal in response to environmental triggers of traumatic memories; and interpersonal problems often related to problems with the regulation of affect. Females are the most common victims of sexual abuse, with implications for later sexual risk-taking. Less is known about the effects of sexual abuse on male sexual behavior in adolescence, however the effects on sexual risk-taking for males are expected to be similar.

Judith Herman (1981) documented the effects of father-daughter incest on the cognitive and emotional development of an adolescent female. Quite often, the emotional and interpersonal effects of sexual abuse are not evidenced until adolescence, when issues of identity, and particularly sexual identity, become prominent. The traumatic experience has devastating effects on the ability to trust, to develop adequate interpersonal boundaries, and on judgment and decision-making skills. Decision-making ability develops considerably, and is tested repeatedly in adolescence, with implications for sexual risk-taking.

In a review of the literature on adolescent thinking, Keating (1990) writes, "...we should be careful not to assume that teenagers' decisions that are objectionable to parents or to society at large are the result of incompetent decision-making skills. It may be that the decision-making is quite effective; it is the purpose and intentions that differ." (p. 88). Keating indicates that the decision-making skills needed by adolescents are generally in place by middle adolescence. Quadrel, Fischhoff, and Davis (1993) argue strongly that, "unsubstantiated claims about the incompetence of adolescents... threaten to disenfranchise and stigmatize (them)... they interfere with the experimentation that is part of the business of adolescence." p.114. Despite these views, there tends to be a wide discrepancy between the ability to make appropriate decisions, and the actual application of this skill.

Adolescence is associated with greater content knowledge, increases in reasoning ability, emergence of abstract thinking and the ability to think in relative terms, the ability to take the perspective of another or of the self at a future point in time, development of metacognition and self examination, and greater ability to access knowledge. The Piagetian developmental model characterizes adolescence as the time in which a person moves from a concrete operational stage to a formal

operational stage. A larger number of mental processes become routinized. Gordon (1990) and Cobliner (1974) have identified adolescent reasoning ability as being critical to decision making about contraceptives. Gordon has indicated that despite this being a very promising area for research, very little has been done to examine the role that developmental changes in thinking play in sexual risk-taking.

Flavell (1992) described the construct of perspective taking and its two important subtypes. The first refers to the developmental movement from the egocentric perspective, to an awareness that the views of others are different from one's own. The second type of perspective taking described by Flavell refers to the ability to take the perspective of the self in the future. Perspective taking is related to complex forms of decision making and problem solving (Inhelder and Piaget, 1969). As described, both types of perspective taking have important implications for sexual risk-taking, i.e to see the perspective of a partner's need to avoid pregnancy/HIV; to see the perspective of the self in the future when providing for a dependent infant or having contracted the HIV virus.

Irwin and Millstein (1986) proposed a causal model of adolescent risk-taking which included four psycho-social factors: cognitive scope, self-perceptions, perceptions of the social environment, and personal values. Cognitive

scope reflects the transition from "concrete egocentric thinking" to "more abstract sociocentric perspectives" (p.87). The interaction between risk perception, characteristics of the peer group, and personal values were proposed as the determinants of risk-taking behavior. This model was proposed based on a review of the adolescent risk-taking literature, but as yet has not been tested.

Similar to Keating (1990) who stressed the complex interaction between cognitive development and other developmental factors, Irwin and Millstein discussed the interplay between the four factors as they pertain to adolescent risk-taking. They proposed that the adolescent's emerging ability for abstract reasoning but limited experience with the environment cause a discrepancy between actual cause and effect relationships and perceived cause and effect relationships.

Cvetkovich and Grote (1981) found that adolescents appear to have difficulty with probability estimates in regard to pregnancy. These difficulties may be related to incomplete development of formal operational reasoning abilities, with implications for the ability to make accurate probability estimates, especially concerning misfortune to the self (Oskamp & Mindick, 1983). An example of this phenomenon would be the "it can't happen to me" belief associated with pregnancy or with contracting

HIV. These types of beliefs have been associated with adolescent egocentrism.

Adolescent egocentrism, as defined by Elkind (1967), refers to a tendency by adolescents to personalize events which occur in their environment. The adolescent often can feel a uniqueness to his or her life and may also feel invincible-- not subject to the harm which can befall others. Elkind described two types of cognition associated with adolescent egocentrism: the "imaginary audience" and the "personal fable". The "imaginary audience" refers to a tendency to overemphasize the attention paid to the adolescent by others. The adolescent may feel self-conscious, and feel that his or her actions are under close scrutiny for much of the time. Because of all the perceived attention from others, a "personal fable" can develop. The personal fable refers to an adolescent's belief that his or her life is totally unique and apart from the experience of others. The sense of importance can become exaggerated, and the adolescent may at times feel invincible, making risk-taking more likely.

Two major instruments designed to measure the construct of adolescent egocentrism have been created: the Adolescent Egocentrism Scale (AES; Enright, Shulka & Lapsley, 1980, and the Imaginary Audience Scale (IAS; Elkind & Bowen, 1979). Buis and Thompson (1989) reviewed the literature on this construct, and reported conflicting

results. The instruments in question were found to be quite limited. The tests were said to suffer from both "psychometric faults", as well as the difficulties inherent in assessing subjects who may wish to hide their real thoughts or feelings. The authors called for additional work in the measurement and interpretation of this construct.

Very little research has been done linking the adolescent egocentrism construct with sexual risk-taking. Green, Johnson, and Kaplan (1992) examined the influence that egocentrism, as measured by the Imaginary Audience Scale (IAS) and Personal Fable Questionnaire (PF), had on contraceptive decision-making ability. They found that the egocentrism variables predicted from 6% to 14% of the variance in contraceptive decision making. Overall cognitive capacity (measured by the ability to understand puns and a displaced volume of liquid question) also had a significant association with contraceptive decision making. Experience with contraceptives was not significantly related to contraceptive decision-making.

In a study of 145 girls in grades 11 and 12, Arnett (1990) found a significant relationship between adolescent egocentrism (measured as the perceived probability of pregnancy among girls who used contraception compared to those who did not use it) and sex without contraception. The girls who had sex without contraception were

significantly more likely than those who used it to estimate the likelihood of pregnancy as lower, suggesting that egocentrism was operating. The Arnett study did not control for other variables which might cause girls to estimate the likelihood of pregnancy as lower. Arnett compared perceived risk of becoming pregnant (cognition) with contraceptive use or nonuse (behavior).

Due to the research suggesting a relationship between adolescent egocentrism and sexual risk-taking, the following prediction was made:

Hypothesis #6: Those participants with higher levels of egocentrism (those estimating the likelihood of consequences from sexual risk-taking as greater for others than for themselves) will receive higher scores on the measures of sexual risk-taking than those with lower measured egocentrism.

In addition to egocentrism, other aspects of cognitive development have been examined for their relationship to adolescent sexual risk-taking. There is a relationship between school motivation and achievement and the propensity for sexual risk-taking. Jones and Philliber (1983) found that those adolescents who reported never using contraception had lower educational aspirations than those who had used contraception at least occasionally. Oskamp and Mindick (1983) found lower educational aspirations in teenagers who were pregnant over those who

were not pregnant. Jessor and Jessor (1977) found that those adolescents with poorer school achievement (measured by grades in school) were more likely to be sexually active than those with higher grades. Other research (Sandler, Watson & Levine, 1992; Philliber, 1982) linking low academic achievement and pregnancy risk-taking suggested this prediction:

Hypothesis #7: Those participants with higher grade point averages (GPA's) will report less sexual risk-taking than those who have lower GPA's.

Jessor and Jessor (1977) examined the relationship between personality and various types of risk-taking, which they termed "problem behavior" in their study. They outlined the characteristics of an adolescent personality inclined toward risk: "The adolescent who is more likely to engage in problem behavior shows an opposite personality pattern-- a concern with personal autonomy, a relative lack of interest in the goals of conventional institutions (such as school and church), a jaundiced view of the larger society, and a more tolerant attitude about transgression." p. 237. Jessor and Jessor's data must be viewed in light of the cultural revolution and changing view of authority occurring during its collection. Notwithstanding, the relationship between various types of deviant activity in adolescence remains. Donovan and Jessor (1985) were able

to support the hypothesis of a single factor underlying different types of risk-taking behavior in adolescence.

The Role of Personality Traits

Given the weight of evidence showing that different types of problem behaviors in adolescence tend to cluster together, efforts to explain this tendency in light of individual differences in personality have been proposed. The socio-cultural context for deviance cannot be ignored, but the question remains: Do individuals who take sexual risks do so because of a need for greater excitement and stimulation than those who are not so inclined? Is sexual risk-taking at least partially explained by a personality trait, and if so, what are the implications for adolescents?

Marvin Zuckerman of the University of Delaware developed a construct called Sensation Seeking. Zuckerman proposed that individuals have an "optimal level of stimulation", and behave in ways which maintain this optimal level. Zuckerman defines sensation seeking as, "...a trait defined by the need for novel, varied and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience". (Zuckerman, 1979) p.10.

Approach and withdrawal behavior are common to all animal species, but the manifestation is thought to involve

more cognition in humans, while it is purely instinctual in animals (Zuckerman, 1984). Sensation seeking is thought to be related to an interplay between exploration and fear in animals, though Zuckerman cautions that in humans the trait of sensation seeking is not correlated with measures of anxiety in social situations (Zuckerman, 1984).

Zuckerman developed a scale to measure the human trait of sensation seeking. The Sensation Seeking Scale (SSS-Zuckerman, Kolin, Price and Zoob, 1964) is a bipolar forced choice questionnaire which is discussed in further detail in Chapter III. Research using the SSS to study sexual risk-taking has supported the notion of a link between sexual risk-taking and sensation seeking. However, much of this research has been with college students, as younger adolescents have largely been excluded. Homosexual risk-taking has not been examined, or HIV risk-taking in general.

High sensation seekers are generally more permissive in their attitudes toward sex. They report a greater variety of sexual activities with many different sexual partners (Zuckerman, 1979). White and Johnson (1988) examined two subscales of the SSS in a longitudinal study of adolescent sexual behavior over a three year period. They found that those adolescents who lost their virginity between the initial sampling and the second sampling scored higher on the Disinhibition (DIS) subscale of the SSS than

did other adolescents. No relationship was found between sensation seeking measures and birth control reliability or consistency.

In contrast, Arnett (1990) in a sample of 145 female high school juniors and seniors, found a significant relationship between scores on the SSS and sex without contraception. Virgins scored significantly lower on the total SSS score, Boredom Susceptibility (BS), and Disinhibition (DIS) subscales than girls who had had sex without using contraception. Newcomb and McGee (1991) found sensation seeking to be associated with "sexual events", defined as becoming pregnant or getting someone pregnant, losing virginity, getting or giving a venereal disease, and four others. The longitudinal study of 595 late adolescent males and females found specific, rather than general, effects of sensation seeking across time.

Because of the research implicating sensation seeking in adolescent sexuality, the following prediction was made:

Hypothesis #8: Those participants with higher sensation seeking needs (higher scores on a measure of sensation seeking) will report a greater degree of sexual risk-taking than those with lower sensation seeking needs.

Somewhat related to the construct of sensation seeking, is the construct of impulsiveness. Sensation seeking involves cognition, as it is a cognitive preference for novel stimulation. Impulsiveness is a behaviorally

oriented construct, and represents a lack of cognitive mediation in decision-making. Adolescents who have greater needs for immediate gratification, and who act without full consideration of consequences, would be expected to exhibit a greater degree of sexual risk-taking. Impulsivity has implications for the planning required for the utilization of birth control, or for taking precautions against AIDS. For younger adolescents, planning birth control use may mean accepting the self as sexually active, which may be harder to accept than occasional sexual activity which is unplanned (Geis & Gerrard, 1984).

Relatedly, Oskamp and Mindick (1983) found that those who did not use birth control had a need to see sex as spontaneous and unplanned. These authors studied "planfullness" as measured by a "future events test". In an earlier study with the same instrument, Mindick, Oskamp, and Berger (1977) sampled 50 17-35 year olds in a planned parenthood agency. They hypothesized that those who used birth control consistently and effectively would have a longer future-time perspective than those who did not use birth control effectively. The hypothesis was supported.

White and Johnson (1988) operationalized impulsivity by creating second order factor scales from a personality inventory, and found nonvirgins to be significantly higher on the impulsivity measure than virgins, but found no

relationship to consistency or reliability of birth control use.

In the present study, a relationship was predicted between self-reported impulsiveness and sexual risk-taking: **Hypothesis #9: Those participants with higher scores on an impulsiveness questionnaire will report a greater degree of sexual risk-taking than those with lower impulsiveness scores.**

Related to impulsiveness, the construct of ego strength addresses the ability to plan ahead and delay gratification, sense of responsibility, presence of inner controls, and developmental maturity. Some research has implicated this construct in adolescent sexual risk-taking. Hernandez & DiClemente (1992) assessed AIDS risk-taking behavior in a sample of 176 male college students. Those who score lower in self control and goal-directedness measures (ego development) were more likely to engage in sex without condoms.

Resnick and Blum (1985) studied sexual decision-making in a sample of 206 14-19 year old adolescent females. They divided the adolescents into four groups: successful contraceptive users; teens who had had abortions; pregnant teens; and teen mothers. Ego development, as measured by the Loevinger Sentence Completion Form, along with other intrapersonal variables, effectively discriminated between the four groups. Similarly, Romig and Bakken (1990) found

ego development, as measured by a sentence completion test, to be related to pregnancy status in a sample of 99 adolescents (46 past or present pregnancies, 53 never pregnant). In light of this research, a relationship between ego strength and sexual risk-taking was proposed in the present study:

Hypothesis #10: Those scoring higher on a measure of ego strength will report a lesser degree of sexual risk-taking behavior than those with lower measured ego strength.

Intuitively, there is a relationship between the development of ego strength and the development of self-esteem within an adolescent. Adolescents who feel better about themselves may feel less pressure to engage in early sexual activity. In addition, those who are sexually active might be more confident in their ability to express contraceptive or HIV protective needs to a partner. Despite this intuitive appeal, there have been conflicting results on the role that self-esteem plays in sexual risk-taking, with some indication that it is negligible, and limited to specific situations (Morrison, 1985). Hayes (1987) in examining data from a national representative sample of adolescents, reported that there is no clear relationship between low self-esteem and either use of contraceptives or early initiation of sexual activity. Because of these findings, no hypothesis regarding a relationship between self-esteem and sexual risk-taking was put forth.

Some situation-specific effects of self-esteem (measured in varying ways) on sexual risk-taking have been seen. In a sample of 1008 Australian adolescents, Rosenthal, Moore and Flynn (1991) found that males had higher levels of sexual self-esteem than females and were more able to express their sexual needs. They were less confident than the females in their ability to resist sexual demands placed on them. Fisher, Schneider, Pegler and Napolitano (1991) found that adolescent females who were unhappy with their weight had lower self esteem and were more likely to engage in sexual activity with multiple partners.

Self-esteem has been associated with pre-marital pregnancy in studies of several different populations: Jamaican teenage girls (Keddie, 1992); non-Hispanic U.S. whites (Plotnick, 1992; Plotnick & Butler, 1991); and alternative high school students (Drummond & Hansford, 1991). Plotnick and Butler (1991) used information from the National Longitudinal Survey of Youth. At age 14 and 15 the subjects had been surveyed, and again at age 19. By age 19, 16.9% of the survey had a non-marital child. Higher self-esteem was said to be related to lower probability of non-marital childbearing.

Geis and Gerrard (1984) found in a study of 645 never married college students (336 of these were non-virgins) that the sexually active respondents using "moderate

effectiveness" birth control methods had higher self-esteem, as measured by the Rosenberg Self-Esteem Inventory. Herold, Goodwin and Lero (1979) studied 486 adolescent female family planning clinic users in Ontario, Canada. They used a Likert type self-esteem inventory, and found that adolescent users of birth control pills had higher scores on the self-esteem scale than others in the sample.

As with the research on a self-esteem/sexual risk-taking link, research on an association between intelligence and sexual risk-taking in adolescence has been inconclusive. In the present study, no relationship was hypothesized between intelligence and sexual risk-taking, due to a lack of research support. Intelligence has intuitive appeal in the study of adolescent sexual risk-taking. Some degree of cognitive capacity is necessary for the understanding of reproductive physiology, as well as for the understanding of how the HIV virus is spread. Adolescents with greater cognitive capacity could be expected to take fewer sexual risks because of their understanding of the implications. Research in this area has a developmental emphasis, and overlaps some of the findings presented in the discussion of developmental influences on sexual risk-taking.

Johnson and Green (1993) hypothesized that cognitive capacity, as measured by two formal operations abstract reasoning tasks (explaining the two meanings in each of

three puns; mental manipulation of a displaced volume of water in a picture) would have a relationship to sensible contraceptive use (using contraceptives at least 75% of the time when engaging in sexual activity) in 60 unmarried female adolescents, age 14-18. The ability to understand the puns was found to account for more of the variance (30 per cent) than any other variable studied except for age and grade. The pun measure of cognitive capacity added significantly to the predictive power of age and grade, suggesting that increased age is not synonymous with increased cognitive capacity. These results were similar Green, Johnson, and Kaplan's (1992) results reflecting the contribution of cognitive capacity to contraceptive risk-taking.

Sandler, Watson, and Levine (1992) studied 37 female adolescent clients at a health care clinic. Sexually active adolescents who were using contraception reliably were found to have higher scores on the Vocabulary subtest of the Wechsler Intelligence Scale for Children-Revised (WISC-R) than those who were not using contraception reliably (controlling for socio-economic status).

In addition to intelligence and abstract reasoning ability in the study of adolescent sexual risk-taking, there is a need to consider the role that emotions play in the decision making process. Any objective, paper and pencil assessment of these constructs alone will not assess

the degree to which sexual risk-taking is influenced by emotions. Epstein (1990) presented a theory of personality called Cognitive-Experiential Self Theory. Within the framework of the theory, he outlines two cognitive systems operating within the human mind: the experiential, characterized by holistic, rapid, and emotionally influenced decisions, and the rational, characterized by analytic, slower, and logically derived decisions. In evolutionary terms, the experiential system corresponds to older, instinctual, physiologically based survival mechanisms within the organism. The rational system is newer, more abstract, with more highly differentiated and integrated information, corresponding to the development of the neo-cortex.

Within this framework, intelligence tests provide information about an individual's rational abilities. Epstein has shown in several studies that decision-making in life is often more strongly related to the influence of the experiential system than the rational (see Epstein, 1993 for a review). He developed the Constructive Thinking Inventory (Epstein, 1993) in an attempt to measure the relative influence of these two systems on an individual's thinking. The structure and content of the CTI are discussed in the next chapter.

No research on adolescent sexual behavior has been conducted utilizing the Constructive Thinking Inventory

(CTI). Based on other decision-making experiments using the CTI (Epstein, 1993), a relationship was predicted between constructive thinking and the decision-making involved with sexual risk-taking:

Hypothesis #11: Those who are better constructive thinkers (those with higher scores on the CTI) will report a lesser degree of sexual risk-taking than those who are poor constructive thinkers.

Research Needs

There is a great need to conduct research with younger adolescents regarding contraceptive risk-taking. Research identifies the time of the initiation of sexual intercourse as being the most critical for pregnancy risk-taking (Koyle, Jensen, Olsen & Cundick, 1989; McCullough & Scherman, 1991; Melchert & Burnett, 1990; Zelnik & Shah, 1983; Zabin, Kantner & Zelnik, 1979). In addition, a significant age relationship has been found for use of contraception at first intercourse (Zelnik & Shah, 1983; Cvetkovich and Grote (1983), with older subjects more likely to use contraception. Despite the fact that early and middle adolescence are characterized by the greatest levels of pregnancy risk-taking, much of the research conducted in this area is done with non-representative samples of individuals in late adolescence (college students). In her review, Morrison (1985) commented on

this dearth of representative samples in studies of adolescent contraceptive use, and on the overuse of college students. In addition, research on pregnancy risk-taking is greatly weighted toward the study of adolescent females. We know very little about the attitudes and behaviors of adolescent males toward contraception and contraceptive decision-making.

Kelly, Murphy, Sikkema, and Kalichman (1993) emphasized the importance of research on developmental factors influencing AIDS risk-taking in adolescence, spelling out that social-cognitive and affective factors particular to adolescents will be important considerations for any interventions targeting this population. Brooks-Gunn and Furstenburg (1989) also expressed the need for research on the context in which adolescent sexuality occurs. Objective studies of intelligence or the exhibition of formal operational reasoning need to be enhanced by measures which are able to assess the role that emotions play in the arrival at spontaneous decisions, as these factors are probably more relevant to sexual decision-making. The need for research on the contribution of personality types, family support, and peer influences is also clear.

CHAPTER III
EXPERIMENTAL METHOD

Purpose

The purpose of the research was to gain information on contributory factors to sexual risk-taking in middle adolescence. The study was conducted with a representative community sample of 14 to 18 year old high school students. The research was exploratory in design, and employed many different questions and brief scales to assess a wide array of constructs and contributory factors. The overall goal was to determine those independent variables from the three variable clusters (demographic, developmental, and personality) which were the best predictors of the two dependent sexual risk-taking variables, AIDS risk-taking and pregnancy risk-taking.

The research was conducted using a questionnaire comprised of several previously developed scales as well as a demographics questionnaire, a sexual risk-taking questionnaire, and an egocentrism measure unique to this study. All of these instruments are included in the appendix. Table 1 provides a listing of the variables in each cluster. The administration technique is presented in the Procedures section.

Table 1

Variable List by Research Clusters

Dependent Variables

Sexual Intercourse Experience (Virgin or Non-Virgin)
AIDS Risk-Taking
Pregnancy Risk-Taking

Demographic Variables

Age
Gender
Sexual Orientation
Race
Birth Order in Family
Parents Living in the Home
Family Income

Developmental Variables

Perceived Parental Support
Age of First Intercourse
Sexually Active Best Friend
Sexual Abuse History
Egocentrism Concerning AIDS
Egocentrism Concerning Pregnancy
Grade Point Average

Personality Variables

Intellectual Ability
 Vocabulary
 Abstract Reasoning
Sensation Seeking
Impulsivity
Ego Strength
Self Esteem
Constructive Thinking
 Emotional Coping
 Behavioral Coping
 Categorical Thinking
 Esoteric Thinking
 Naive Optimism

Participants

The participants in the study were Greenfield High School students enrolled during the 1993-94 school year (Total school population= 573 during the dates of testing). Only students in attendance on the day of administration for their Physical Education class were included in the sample. A total of 102 students did not attend P.E. class on the date their various classes were being tested. The sample was drawn from grades nine through twelve, and consisted of students age fourteen to eighteen. The median age was sixteen.

Greenfield is a town with a population of 18,666 (1990 census). It is the largest town in Franklin County, a section of northwestern Massachusetts covering approximately 725 square miles. The county is large and rural in character, with a total population of 70,092 (1990 census). Franklin County is 67.8% rural and 32.2% urban, with Greenfield characterized as primarily urban. Racial breakdown in the county for children (birth to 17) is 94.7% Caucasian, 2.2% Hispanic, 2.2% Other, and .9% Black/African- American (Brewer, 1994). The racial breakdown in the research sample resembled the statistics for the county as a whole. As reported on the 381 questionnaires, the following racial breakdown was seen: 93% White (n=351); 1% African- American (n=3); 1% American

Indian (n=4); 3% Asian-American (n=10); and 2% Hispanic (n=8).

The socioeconomic make-up of Franklin County is principally working and middle class. The mean income for a married couple with children was \$45,212 in 1989 (Brewer, 1994). A large disparity in income between types of households was seen, as single parent fathers earned a mean income of \$25,713, while single parent mothers earned only \$15,141 in 1989 (Brewer, 1994). In the Greenfield High sample, 59% of students reported living with both parents; 21% with only one parent; 14% with a biological parent and a step-parent; 4% with foster parent or with relatives; 2% on their own or with friends.

Fourteen percent of children in Franklin County younger than eighteen years of age live in families with incomes below the 1993 federal poverty level. Forty-seven per cent of households headed by a female were below the poverty level, as compared to 6.6% of households headed by males, and 5.6% of two parent households (Brewer, 1994). The racial breakdown of the poverty analysis showed a disproportionate number of racial minorities living in poverty in the county.

Socioeconomic information for the Greenfield High School sample was sought by asking students if they received free or reduced price lunch at school, eligibility for which is based on federal income guidelines. Fifteen

percent of the sample reported receiving free or reduced price lunch. This information serves as a conservative estimate for low income students, as Greenfield School Department data show that a substantial number of high school students do not receive free or reduced price lunch despite being eligible for it.

The sample adequately represents the students in the 14 to 18 year old age group in the town, with some skewing. Students who seek a vocational high school education can opt to attend the Franklin County Technical School, which admits students who apply in Middle School or early in their high school years. Greenfield School Department data (October 1, 1993) indicate that 16.6% of the high school age population attend technical high school. No testing occurred with technical school students.

In addition, some students residing in Greenfield choose to attend one of the private high schools in the area. Seven per cent (52 students) of the high school aged population attended private high school. These students were not asked to participate. In addition, those students in the 14-18 year old age group who had dropped out of high school were not asked to participate. The high school has a drop out prevention program called the Futures Program. A facilitator works under a federal grant with students who meet nationally established criteria for drop out risk (low school attendance, failing grades, disciplinary problems,

etc...). Students enrolled in this program who were in attendance on the day of the questionnaire administration were part of the sample as well.

Twelve percent of the high school population are special education students. The high school has two resource rooms to assist learning disabled students. There are two self-contained classrooms; one for students whose primary presenting problem is emotional disturbance; and one classroom for developmentally delayed students. All students in the high school were asked to participate, with the exception of the developmentally delayed students. The reading level required by the questionnaire made it inappropriate, and five of these students were excluded. Because the fourteen students in the alternative program (emotionally disturbed) did not have regular P.E. class, they were provided with a separate testing session in their room. Six students were in attendance for this session, and four completed the survey.

Instruments

The dependent variables in the study were AIDS Risk-Taking and Pregnancy Risk-Taking. The AIDS Risk-Taking Scale was made up of three items, and the Pregnancy Risk-Taking Scale of two items, both taken from the section of the questionnaire that asked the adolescents about their sexual behavior.

Similar to the Geis and Gerrard (1984) study, the pregnancy risk-taking scale included a contraceptive use question with discrete categories based on increased risk of pregnancy. This question was made up of five categories of risk, with pill and IUD at the low risk end; and withdrawal, rhythm, or nothing at the high risk end. The pregnancy risk-taking scale was different from the Geis and Gerrard (1984) scale as it provided a score derived from two questions. It was hoped that the addition of a question regarding the frequency of birth control use would contribute significantly to information concerning the type of birth control used. The frequency of use question also used a five-point scale, with five representing the highest risk.

The first question in the pregnancy risk-taking scale was #94: "How often do you use some form of birth control (condoms, pill, diaphragms, creams, IUD, etc...) when you have sex? Response options included: Every time; Most times, not every time; Half the time; Sometimes, not often; and Never. The second question in the scale was #95: "Which one of the following is your usual method of birth control?". Response options included: Pill or IUD; Condoms or diaphragm with foam or cream; Condoms alone or diaphragm alone; Sponge alone or foam alone; Withdrawal (pulling out), rhythm method, douching, or nothing.

Each student received a raw score based on the sum total from the pregnancy risk-taking questions. Scores could range from a low of zero (virgin) to a high of ten. Scores from the sexually experienced group could range from a low of two to a high of ten. An estimate of internal reliability (coefficient alpha) was calculated and found to be .85 (n=365) for the entire sample. When sexually active students alone were examined, coefficient alpha fell to .64 (n = 215).

A similar technique assessed AIDS risk-taking using three questions. Two questions were on five-point scales, and one was on a three-point scale. The AIDS risk-taking raw score was derived from these questions, which addressed the frequency of sexual intercourse without using a condom, and the number of different sexual partners an individual had. The first question comprising the AIDS risk-taking scale was #90: "How many people have you had sex with?" Response options included: 10 or more; 5-9; 3-5; 2; or 1. The second question was #91: "Have you ever had sexual intercourse with someone who you think has had sex with other people before you?" The three response options were: "No"; "Yes, and I always use condoms when this happens."; and "Yes, and sometimes I don't use condoms when this happens." The third question in the scale was #93: "How often do you use condoms or make sure that your partner does, when you have sex?". Response options included:

Every time; Most times, not every time; Half the time; Sometimes, not often; Never.

All of the participants received an AIDS risk-taking score, based on the combined sum of the three questions. The lowest score possible was 0, for those students who were virgins, with the highest possible score being 13. In the sexually experienced group, the lowest possible score was 3, with a possible high of 13. The alpha coefficient for the AIDS risk-taking scale was .88 (n=365). When the sexually experienced students alone were examined, coefficient alpha dropped to .53 (n = 213).

Each independent variable in the study has either been found to have some significance to sexual risk-taking, or is hypothesized to have a relationship. The items from the demographics page, as well as some of the items from the sexual risk-taking section were evaluated as single items for their predictive ability, and were not part of any scale. The demographics variables included age, sex, grade, parents in the home, race, birth order, socio-economic status (as assessed by receipt of free or reduced price lunch), having a sexually active best friend, sexual orientation, sexual abuse, and sexual intercourse experience.

Several scales were employed to measure salient factors which might predict sexual risk. Variables assessed by a scale included: intellectual ability

(vocabulary and abstract reasoning--timed), sensation seeking, impulsivity, perceived parental support, ego strength, and self-esteem. In addition, an egocentrism variable was constructed. Due to the problems highlighted in Chapter II with existing measures of adolescent egocentrism, a technique was designed by the author to measure this construct for the study.

The approach used to assess adolescent egocentrism was similar to one used by Arnett (1990), who found a significant relationship between egocentrism and pregnancy risk-taking. Arnett compared subjects based on their probability ratings of "a girl becoming pregnant" and then compared these responses to reports of contraceptive risk-taking behavior. Arnett was comparing the cognitive probability information to the actual behavior of the individual. The approach used in this study was different, in that the egocentrism measure was derived from two cognitive ratings: probability of a detrimental outcome of sexual risk-taking for another, and the probability of a detrimental outcome for the self.

On the demographics page two questions were asked concerning the probability of undesirable outcomes of sexual risk-taking on a five-point scale. One concerned the probability of AIDS infection: "How possible do you think it would be for a person to get AIDS if that person often has sex with different partners and doesn't use

condoms or make sure that their partner is using them?"

The second question concerned pregnancy: "What are the chances that a pregnancy would result if a man and a woman had sex once a week for a year and never used birth control?"

Later in the testing, two nearly identical, five-point scale questions were asked. As the demographic page had been collected, there was no possibility of referring back to previous answers. The difference in the latter two questions was the substitution of the word "you" for the more general wording. Egocentrism was said to be operating if the individual attributed greater likelihood of a negative outcome happening on the general questions than on the personalized questions. An "egocentrism differential" was calculated for the AIDS and the pregnancy question by subtracting the raw score of the personalized questions from the raw score of the general questions. Egocentrism Concerning AIDS (EGO AIDS) and Egocentrism Concerning Pregnancy (EGOPREG) were then entered as predictor variables for sexual risk-taking.

The Shipley Institute of Living Scale (Zachary, 1986), formerly known as the Shipley-Hartford Retreat Scale for Measuring Intellectual Impairment, is an instrument designed to provide an estimate of general intellectual functioning in adolescents and adults. It is appropriate for group test administration, and is for use with

individuals age fourteen and older. The test includes forty vocabulary and twenty abstract reasoning items, in a timed, multiple choice, paper and pencil format. The items are arranged in order of increasing difficulty on both the vocabulary and the abstract reasoning scales. Three scores are yielded, Vocabulary, Abstract Reasoning and a Total Score, derived from the sum of the two sections. Scores from the Shipley have been used as estimates of WAIS-R IQ scores. The vocabulary items have a four choice answer format and the abstract reasoning requires choice among five responses.

The Shipley norms were created using a twenty minute time limit, ten minutes per section. In the present study, a total of ten minutes was allotted for the entire test. Four minutes were allotted for the vocabulary section and six for the abstract reasoning. This was done in the interests of the time constraints involved. The Shipley norms were not used for this reason and because of the numerous standardization problems with the Shipley (see Kramer & Conoley, 1992). The students in the sample received three raw scores based on the number of correct responses plus a correction for guessing/ not guessing. Students were given both verbal and written directions before the administration of each section to inform them that guessing was permitted. Not responding to a vocabulary test item added .25 points to the raw score,

while a missing response on an abstract reasoning item added .20 points to the raw score. The total Intellectual Ability score was calculated by adding the Vocabulary and Abstract Reasoning raw scores together.

Reliability data are published in the Shipley manual, but are inappropriate given the non-standardized use of the Shipley in this study. Internal consistency (coefficient alpha) for the Shipley administration in the present study was .86 for the Vocabulary scale, .77 for the abstract reasoning scale, and .88 for the Total Score. Construct validity is attested to by correlations ranging from the .70's to the middle .80's with WAIS-R Full Scale I.Q. scores (Deaton, in Kramer & Conoley, 1992).

The Sensation Seeking Scale (SSS, Zuckerman, Kolin, Price and Zoob, 1964) is a bipolar forced choice questionnaire measuring the "...need for novel, varied and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience". (Zuckerman, 1979) p.10. The most recent version of the SSS is Form V (five) (Zuckerman, 1979). It is a forty item questionnaire that yields four subscales developed through factor analysis, in addition to a total sensation seeking score. The SSS has been translated into several different languages, and it has been used throughout the world. It has been found to be a reliable

instrument with considerable construct validity (see Zuckerman, 1979 for validity and reliability studies).

The present study employed an alternative version of the Sensation Seeking Scale. Dr. Zuckerman was contacted by mail regarding the use of a shortened sensation seeking scale, needed because of the time constraints with the administration procedure. He proposed using a subscale of his newly developed Zuckerman-Kuhlman Personality Questionnaire, Form III (ZKPQ-III). The relevant subscale is called Impulsive Sensation Seeking (ImpSS). This subscale has been found to correlate significantly with the Sensation Seeking Scale, Form V, $r=.66$ (Zuckerman, Kuhlman, Joireman, Teta & Kraft, 1993) and has the advantage of some updated language changes.

The ImpSS subscale is made up of nineteen items in a true-false bipolar format. Eight of the items are impulsiveness items, and eleven are sensation seeking items. Test materials sent to the author permitted breaking the scales down for exploration of the differential validity of the two types of content. The impulsiveness items were discarded, to isolate sensation seeking as a distinct construct. The remaining eleven items were used in a five point response scale, ranging from completely true to completely false to permit greater variability in responses. In the present study, the alpha coefficient for this scale was $.79$ ($n=326$).

An ego strength measurement was regarded to be important to the study because of the need to assess the presence of inner controls, planfullness, and sense of responsibility in th adolescent. All of these factors were hypothesized to be relevant to sexual risk-taking. The assessment used in the study was a shortened, 14 item version of the Ego Strength Scale (Epstein, 1981). Seven of the items were impulsiveness items which were reverse scored in the calculation of the ego strength score. These impulsiveness items were also grouped together to form an independent scale to represent this construct as a separate predictor variable. The alpha coefficient for the fourteen item Ego Strength scale was .75 (n=326). For the seven item impulsiveness scale it was .74 (n=326).

Evidence of the construct validity of the Ego Strength Scale is found in its negative and significant correlation with Neuroticism on Eysenck's Neuroticism-Extraversion scale, and with the Neurotic Scale of the Primary Emotions and Traits Scale (Epstein, 1983). The total score has been found to correlate positively and significantly with the Global Self-Esteem, Competence, Will Power, Moral Self Approval, Organization, and Identity Integration scales of the Multidimensional Self-Esteem Inventory, formerly the Self-Report Inventory (O'Brien, 1980). Construct validity is also supported by its significant and positive correlation with the Ego Strength Scale of the Primary

Emotions and Traits Scale. Although this correlational data was gained using the original 42 item version of the Ego Strength Scale, the 14 items selected for use in the present research were global and had high face validity.

The Constructive Thinking Inventory (CTI, Epstein, 1993) is a 108 item scale which yields six scales and a total CTI score. The present research used a 52 item version of the CTI which yields five scales and a total CTI score. The five scales are: Naive Optimism, Categorical Thinking, Esoteric Thinking, Emotional Coping, and Behavioral Coping. Each question presented was answered on a five-point scale.

The CTI has considerable appeal over and above measures of intelligence and abstract thinking. Because decision making on questionnaires may represent a person's objective knowledge, rather than an indication of their true behavior, it is important to gain insight as to how much an individual is influenced by his or her emotions. The CTI was constructed to examine primarily experiential intelligence: the ability to learn from experience and the automatic thinking that goes into solving problems in daily living. For this reason, the CTI had great appeal for studying adolescent decision-making regarding contraceptive use and protection from AIDS.

A nine-item Perceived Parental Support scale was used in the study. Research conducted by Ellis, Thomas, and

Rollins (1976) examined three scales which were designed to measure the parental support construct. Parental support was said to refer to, "...that interaction characterized by nurturance, warmth, approval, and other positive sentiments from the parent to the child." p. 713.

After a factor analysis of the three scales which were in wide use at the time, the authors determined that a nine-item scale derived from two of the three scales had the highest correlation with overall parental support. The individual item-whole test correlations ranged from .60 to .76, with an alpha coefficient of .895. Construct validity was not extensively tested in this study. There were reported correlations in the expected direction with self-esteem and communication from parents, though it was not clear how these factors were measured. The nine-item scale was determined to be a "good tool to employ" if a researcher were interested in general support from parents.

In the present study, the nine-item scale was found to have an alpha coefficient of .93 (n=356). Individual item-whole test correlations ranged from .60 to .81. Because of the ambiguity associated with the term "parents", students were provided with the following instruction: "For questions 148-156, please answer by thinking about the parent(s) you live with and/or spend the most time with..."

The Rosenberg Self-Esteem Inventory (RSE, Rosenberg, 1979), also known as the New York State Self-Esteem Scale,

is an instrument widely used in research for the assessment of self-esteem. It is a ten-item multiple choice test based on a four-point Guttman scale. The RSE has a coefficient of reproducibility of .92 and a coefficient of scalability of .72. Two week test-retest reliability coefficients range from .85 to .88 using college students (Rosenberg, 1979). Rosenberg also reports good convergent and discriminant validity. The RSE was found to correlate .60 with the Coopersmith Self-Esteem Inventory (Coopersmith, 1967, as reported in Rosenberg, 1979).

In past studies of high school students, Rosenberg provided evidence of construct validity. In a sample of 272 high school seniors in Maryland, those with high self-esteem as measured by the RSE received high ratings from peers, being perceived more often as leaders by their classmates. An examination of the ten items reveals good face validity. The items use understandable vocabulary, are global in nature and avoid specific situations beyond the normal range of experience for high school students.

In the present study, a five-point scale was used in place of the four-point Guttman scale, for the purpose of creating consistency with the other scales in the questionnaire, thereby reducing response errors. Although research data reported by Rosenberg are from the Guttman, four-point format, he indicated that a Likert five-point

scaling method is often used, and seems to produce similar results to the four-point Guttman scale.

Characteristics of the scale in the present research showed an alpha reliability coefficient of .89, suggesting adequate internal consistency. Each individual question contained a low score of one and a high of five, five representing the highest self-esteem. Item-whole test correlations ranged from .53 to .72 for the ten items.

Procedures

The author was employed by the school system as a school psychologist at Greenfield High School during the 1993-94 academic year. A proposal was presented to the high school principal and to the Research Review Committee of the Greenfield School Department. The proposal was sent to the Superintendent of Schools with a favorable recommendation, and she reviewed and approved it. Parent permission consent slips were then sent home to a small number of parents whose children agreed to participate in a pilot study.

The readability of the questionnaire was assessed by a reading specialist to insure that it could be understood by most of the respondents. Each of the questions was examined in this analysis. Three separate readability assessments were employed. The reading specialist was employed by the high school and was familiar

with the student participants who were to take the questionnaire. Based on the readability analysis, she estimated that the questionnaire could be read and understood by 80-90% of the high school students without difficulty. Those who the author knew would have great difficulty with the reading were excluded ahead of time.

After receiving the parental consent forms, arrangements were made for a pilot study. Fourteen students arranged to stay after school for an hour to take the questionnaire. The students were known to the researcher to have varying levels of academic capability and reading skill. The students were informed that they would be required to stay for a full hour, so as to avoid the possibility of rushing their responses. With the exception of the use of an incentive for participation (pizza), and the after school testing time, all other testing conditions resembled the administration procedure which was used for the school as a whole.

The major purpose of the pilot study was to gain a reliable estimate of the time requirement, given the length of the questionnaire. Results from the pilot study showed completion times ranging from 27 minutes to 42 minutes. Since students known to have a slow reading rate were included, one school class period (45 minutes) was determined to be suitable for administration.

Feedback from the students and observations of the examiner were recorded during the pilot study. Students were observed to lose their place at two critical points when marking the optical scanning sheets. One optical scanning sheet had to be excluded for this reason. Special directions in large letters were added to correct this problem.

Student comments from the pilot study were generally positive. Some negative comments were made concerning validity scale items from the CTI, i.e. "Water is usually wet.", despite the presence of a written explanation for these questions. In instructions given during administration for the rest of the school, students were given a verbal explanation for these questions. They were told that the purpose of the questions was to make sure that they were paying attention, and not answering randomly.

Parent notification letters were sent out to every parent shortly after the pilot study was concluded (see Appendix A). The format and content of the letter had been approved by the Human Subjects Review Committee at the University of Massachusetts. A passive consent procedure was employed, whereby parents had to send an exclusion form back to the school to keep their child from participating. The letter was mailed two weeks prior to the testing week,

via bulk mail. Two parents sent this form back. A total of three students were excluded in this fashion.

Agreement was reached with school administration to use physical education class periods for the testing. There were twelve sections of physical education classes in the school, which required four days of administration to reach the entire sample. Five classes were tested on the first day, five on the second, and one each on the third and fourth. The author made announcements on the school intercom during homeroom periods on the first two days of the administration week. Students were told briefly why the survey was being conducted, and why it was important. They were asked to report to the school cafeteria during their assigned P.E. classes.

Classes varied in size from 34 to 65 students as indicated by class lists. The author was present for the entire time for each of the twelve administrations, as were the two physical education instructors. They assisted with questionnaire administration, and helped to insure that procedures were standardized and consistent. For the largest classes, two additional high school staff members were asked in advance for their assistance. Test materials had to be rapidly distributed due to the time constraints, and the extra staffing made this possible for the larger classes.

Students entered the cafeteria during their regularly scheduled P.E. time. They were asked to sit only where a paper had been placed, two to a table. This paper was printed on two sides. Side one contained a brief explanation of the research, and an informed consent signature form (see Appendix B). This consent form had been approved by the Human Subjects Review Committee at the University of Massachusetts as meeting ethical criteria for informed consent of human subjects in research. Side two contained the first nine questions of the questionnaire, which were primarily demographic questions.

While the students were reading and signing the consent form, the staff members distributed the computer optical scanning answer sheets. Each student received one of these sheets which had been pre-coded with their grade level, grade point average, and weighted grade point average. Each of the answer sheets had been coded with this information, with the exception of the ninth grade answer sheets, as G.P.A. information was unavailable for this group. Students' names were written in pencil in the upper margin of the answer sheet to make sure that the correct student (student with the designated GPA) received the sheet. Students were asked both in the written and verbal instructions to erase their name completely to render the response sheet anonymous. Students were instructed to make all responses to the questionnaire on

the answer sheet only (see Appendix C for the entire questionnaire).

After they had received their optical scanning sheets and had signed the informed consent, students were instructed to turn the consent form over and begin answering the first nine (demographic) questions. When students finished items 1-9, they were asked to put their pencil down and raise their hands. The examiners then brought the vocabulary test, and placed it face down in front of each student, while collecting the signed consent forms. When all vocabulary tests had been distributed and consent forms collected, students were instructed to flip over the vocabulary test and begin working. They were told that they had four minutes to work on it. The author recorded the time with a stopwatch. At the end of four minutes, students were instructed to stop working and put their pencils down. The examiners simultaneously collected the vocabulary sheets and distributed the abstract reasoning sheets (face down). When all abstract reasoning tests had been distributed, students were instructed to flip them over and begin working. They were told that they had six minutes to complete the section.

At the end of six minutes, the abstract reasoning test sheets were collected. Students were given the final 110 questions of the questionnaire in an untimed format. Students were asked to work quickly, however. Time

available for completion of these final questions ranged from 24 to 28 minutes. Students were informed of the time remaining at designated intervals, and urged to keep pace. i.e. "There are twenty minutes left. If you're not on #100 please try to work faster." Students raised their hand when they had finished the questionnaire. Optical scanning sheets were sealed in manilla envelopes following each class, to further insure anonymity. The school bell marked the end of each testing session.

The potential full school sample size (n=573) was reduced as some students were not in attendance in their P.E. classes on the day of administration, and no retesting occurred. Attendance was taken during each administration by one of the physical education instructors. A total of 102 students were not present in class on the day the questionnaire was being administered to their class. Three students missed the testing during their P.E. classes, but came for testing during one of their study halls when it was being administered to another class. Students who were late to class were excluded if they entered after the timed administration of the vocabulary and abstract reasoning had begun.

Three students were excluded based on written parental exclusion after the parent information letter had been mailed out. Twenty-three students did not sign the informed consent letter and declined to participate. A

small number of students appeared to be responding randomly. These students were questioned about their sincerity in participating, and in most cases their answer sheets were excluded. The author was the only examiner permitted to exclude an answer sheet. Twenty-eight answer sheets were excluded in this fashion.

Data Analysis and Statistics

Response sheets were "cleaned" after they had all been collected. The author and two volunteers checked each sheet for stray or incomplete marks which would have interfered with optical scanning. Visual inspection resulted in the exclusion of more response sheets found to have a consistent response pattern, i.e. all C responses. Twelve response sheets were excluded in this fashion during the data preparation phase.

Further preparation was done with the computer to separate out those response sheets which showed questionable validity. An objective validity measure was constructed based on two separate scales. The first was an inappropriate response scale. Inappropriate responses were defined as responses which were not possible given the question, i.e. a response of E on a yes-no question. The computer was programmed to assign an inappropriate response score each time that this type of error occurred in a data set.

The second type of validity check was an inconsistency scale. This scale consisted of ten checks of impossible response combinations, i.e. indicating oneself as a virgin and then answering sexual activity questions. The sum total of these types of errors were then collected and referred to as inconsistency errors.

A third validity check was planned, based on the validity scale included in the Constructive Thinking Inventory. These questions are designed to insure that the subject is reading the questions and not responding randomly. They have obvious answers, i.e. "Two plus two equals four". A scale ranging from 11 to 25 was created based on the number of validity questions answered correctly (higher scores represent more valid answers). Many students were found to have poor scores on the CTI validity scale, but showed no inconsistencies or inappropriate responses. Because the incorrect responses on the CTI validity scale were not predictive of other response inconsistencies, a decision was made not to exclude anyone due to a poor CTI validity scale score.

Twenty-six students were excluded based on poor scores on the two validity checks. To be excluded, students had to have three or more inconsistencies; three or more inappropriate responses; or a combined score of 4. The total school population was reduced to the final sample size in the following summary:

- 573 Total school population
- 102 Absent, Late, Dismissed or Skipping
 - 3 Excluded by parent request
 - 23 Declined participation
 - 28 Responding carelessly/ Excluded during administration
 - 12 Excluded during data cleaning for non-random response patterns
 - 24 Failed the three validity checks

n = 381

Correlation tables were obtained from the computer analysis to determine the items which were significantly correlated with the dependent variable. Two multiple regression analyses were then conducted to determine which variables were the most useful in predicting AIDS risk-taking and pregnancy risk-taking. The research hypotheses were investigated by determining the relative contribution of each variable in the total sample. After this was completed, regressions were run to determine age and sex differences in the ordinal importance of the independent variables.

The equation for the multiple regression was as follows:

$Y = B_n + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 \dots$ where Y = the score on the sexual risk-taking scales (one Y for AIDS risk, one for pregnancy risk, in separate regressions), and where:

- X1= gender
- X2= age
- X3= grade
- X5= grade point average
- X6= Parental Support Score
- X7= parents in the home
- X8= race
- X9= birth order
- X10= free lunch/ socio-economic status
- X11= Sexual Abuse History
- X12= Age at first intercourse
- X13= sexually active best friend
- X14= egocentrism differential--AIDS
- X15= egocentrism differential--pregnancy
- X16= Shipley Total Score (Intelligence)
- X17= Shipley Vocabulary Score
- X18= Shipley Reasoning Score
- X19= Sensation Seeking Score
- X20= Ego Strength Score
- X21= Impulsiveness Score
- X22= Total Constructive Thinking Inventory Score
- X23= CTI Emotional Coping Score
- X24= CTI Behavioral Coping Score
- X25= CTI Categorical Thinking Score
- X26= CTI Esoteric Thinking Score
- X27= CTI Naive Optimism Score
- X28= Rosenberg Self-Esteem Scale Score

CHAPTER IV

RESULTS

Descriptive Statistics

The sample of high school students was balanced with regard to age and gender. The modal age was 16, accounting for twenty-nine percent of the sample. Twenty-eight percent were younger than 16, and 43% were older. The racial breakdown was similar to that of the town and the county, as the vast majority was white.

An attempt was made to introduce an economic variable based on household income. To receive free or reduced price lunch, a student's family needs to have an income below the federal poverty level. For a family of four, the maximum income allowed in receiving reduced price lunch is \$25,808. The allowed income increases by approximately \$5,000 for each additional member of the household.

The figure reported on Table 2 is probably an underestimation of the number of students in the sample living below the poverty level. School department data show a dramatic decline in the number of students receiving reduced price lunch across the school years. Forty-five percent of Greenfield elementary students receive reduced price lunch, 32% in middle school, and 15% in high school. This decline may be due in part to concern over the perceptions of peers. The 15% figure matched exactly the

Table 2

Demographic Characteristics of the Study Sample (n=381)

<u>Age</u>	<u>Frequency</u>	<u>Grade</u>	<u>Frequency</u>
14 or below	23 (6%)	Nine	64 (17%)
15	85 (22%)	Ten	106 (28%)
16	112 (29%)	Eleven	99 (27%)
17	90 (24%)	Twelve	104 (28%)
18 or above	71 (19%)		
<u>Gender</u>		<u>Free/Reduced Price Lunch</u>	
Males	175 (46%)	No	320 (85%)
Females	204 (54%)	Yes	56 (15%)
<u>Race</u>		<u>Birth Order</u>	
White	351 (93%)	Oldest	147 (38%)
African-American	3 (1%)	Only child	29 (8%)
Asian-American	10 (3%)	In middle	83 (22%)
Hispanic	8 (2%)	Youngest	121 (32%)
Native-American	4 (1%)		
<u>Parents in Home</u>		<u>Frequency</u>	
Mother and father		226 (59%)	
Mother alone or father alone		79 (21%)	
Mother and stepfather or father and stepmother		53 (14%)	
Foster parents or with relatives		15 (4%)	
None-live independently or with friends		7 (2%)	

Note. Frequency totals below 381 represent missing data.

number of students in the present sample who reported that they receive free or reduced price lunch, suggesting some validity to the student's reporting. Approximately three fourths of the sample reported living in two parent households, though some of these were remarriages after divorce or death of a spouse. The great majority of the students were from homes with other children in them. The question did not discriminate between step-siblings and biological siblings, and this may have impacted on the birth-order question.

The majority of the students in the sample reported that they had had sexual intercourse (Table 3). Most of the sample reported a heterosexual identity, with a small number reporting gay/lesbian and bisexual orientation. The number of those reporting either gay/lesbian or bisexual identification represented eight percent of the nonvirgin group (Table 4).

Sixteen percent of the sample reported having been sexually abused. Although the term was not defined, it is believed that high school students possess knowledge of what behaviors constitute sexual abuse. In the sexually active group, (Table 4), this figure increased to 20%. The number of students reporting that they have a best friend who is sexually active closely resembles the number who reported that they had had intercourse. Nearly 80% of the nonvirgin group reported having a sexually active best friend.

Table 3

Sexual Characteristics of the Study Sample (n=381)

<u>Sexual Orientation</u>	<u>Frequency</u>
Heterosexual	348 (94%)
Gay/Lesbian	13 (3%)
Bisexual	12 (3%)
<u>Sexual Abuse Victim</u>	<u>Frequency</u>
No	319 (84%)
Yes	59 (16%)
<u>Sexual Experience</u>	<u>Frequency</u>
Virgin	164 (43%)
Nonvirgin	215 (57%)
<u>Sexually Active Best Friend</u>	<u>Frequency</u>
No	168 (44%)
Yes	211 (56%)

Note. Frequency totals less than 381 represent missing data.

Table 4

Characteristics of the Sexually Experienced Group (n=215)

Sexual orientation		Sexually active best friend	
Heterosexual	195 (92%)	No	47 (22%)
Gay/Lesbian	8 (4%)	Yes	167 (78%)
Bisexual	9 (4%)		
Sexual abuse victim		Intercourse in past year	
No	172 (80%)	No	29 (14%)
Yes	42 (20%)	Yes	184 (86%)
Age at first intercourse		Number of sex partners in life	
13 or below	33 (15%)	1	90 (42%)
14	52 (25%)	2	45 (22%)
15	62 (29%)	3-5	46 (22%)
16	48 (22%)	5-9	18 (8%)
17 or older	19 (9%)	10 +	13 (6%)
Frequency of intercourse/month		Frequency of condom use	
4 or less times	100 (48%)	Every time	97 (46%)
5-9	38 (18%)	Most times	49 (23%)
10-14	8 (13%)	Half the time	15 (7%)
15-19	19 (9%)	Sometimes	16 (8%)
20 or more	23 (12%)	Never	34 (16%)

Table Continues

Table 4 Continued

Frequency of birth control use	
Every time	137 (65%)
Most times	36 (17%)
Half the time	8 (3%)
Sometimes	12 (6%)
Never	19 (9%)
Usual type of birth control	
Pill or IUD	55 (26%)
Condoms or diaphragm with foam/cream	33 (16%)
Condoms alone or diaphragm alone	104 (50%)
Withdrawal, rhythm, douching or nothing	17 (8%)

Note. Frequency totals less than 215 represent missing data.

The modal age for the onset of sexual intercourse among the nonvirgin subgroup was fifteen. The mean age of sexual onset for the entire group would be higher, as virgins were excluded from this calculation. In the nonvirgin group, approximately three-fourths reported an onset of sexual intercourse between the ages of 14 and 16, with significant numbers reporting earlier or later onset.

The great majority of the nonvirgin group had had sex within the previous year. Nearly half of this group reported having sex four or less times per month. Four out of five of the members of the nonvirgin group reported having sex fourteen or fewer times in a month, as shown in Table 4.

The nonvirgin group was characterized by a lack of promiscuity, as approximately two-thirds reported having had either one or two sexual partners in their lifetime. Nearly half of the sexually active sample reported using a condom every time that they have sex. Over two-thirds of the sample reported using condoms either "most times" or "every time". A small, but significant minority reported never using condoms.

In regard to birth control usage, nearly two-thirds of the nonvirgin group reported use of birth control every time that they have sex. Over four-fifths reported birth control usage either most times or every time. Condoms and diaphragms without any supplementary birth control emerged

as the most popular form, accounting for half of the nonvirgin subgroup. When those who supplemented condom use with contraceptive foams or creams were included, condom use accounted for two-thirds of the nonvirgin group. One fourth of the sample reported using either the pill or an IUD. These data suggest that the majority of the sample was using birth control when they engaged in sex, and were using moderate to extremely effective methods.

Instrument Reliability

As seen in Table 5, the internal consistency reliability coefficients of the scales ranged from a low of .53 (nonvirgin AIDSRISK) to a high of .93 (Parental Support Scale). Because of the time constraints involved with administration, and the variable workspeed of the students, the number of subjects who completed scales varied.

Sexual Intercourse Experience

The first analysis of sexual risk involved an examination of the sexual experience of the students. Data were analyzed to determine which variables were most likely to differentiate between the virgin (sexually inexperienced) and nonvirgin (sexually experienced) groups. The criterion for dividing the two groups was the examinee's response to question number 86, "Have you ever

Table 5

Internal Consistency (Coefficients Alpha) for the Scales
(n=381)

Scale	n	Total Items	Alpha
AIDSRISK Scale ^a	365	3	.88
PREGRISK Scale ^a	365	2	.85
Shipley Vocabulary Test	381	40	.86
Shipley Reasoning Test	381	20	.77
Shipley Intelligence Test	381	60	.88
Parental Support Scale	356	9	.93
Sensation Seeking Scale	326	11	.79
Impulsivity Scale	326	7	.74
Ego Strength Scale	326	14	.75
Rosenberg Self-Esteem Scale	321	10	.89
Constructive Thinking-Global	347	18	.79
C.T.I. Emotional Coping	347	10	.75
C.T.I. Behavioral Coping	347	9	.62
C.T.I. Categorical Thinking	347	10	.71
C.T.I. Esoteric Thinking	347	10	.80
C.T.I. Naive Optimism	347	9	.65

^aIncludes virgins, who were assigned a risk score of 0. For the sexually active subgroup alone, coefficients alpha for the AIDSRISK and PREGRISK variables were .53 and .64, respectively.

Table 6

Table of Means (n=381)

Variable	n	Mean	SD
AIDSRISK ^a	374	3.64	3.73
PREGRISK ^a	359	2.36	2.60
EGO AIDS	381	-0.13	.75
EGOPREG	381	.03	.59
GRADE POINT AVERAGE (GPA) ^b	305	2.57	.62
VOCABULARY	378	23.32	4.03
REASONING	376	14.31	3.05
INTELLIGENCE	373	37.74	6.00
SENSATION SEEKING	333	35.72	7.50
IMPULSIVITY	337	22.39	4.74
EGO STRENGTH	331	46.40	4.86
PARENTAL SUPPORT	356	36.57	7.89
SELF ESTEEM	321	35.71	7.60
CTI GLOBAL SCORE	347	54.87	9.95
CTI EMOTIONAL COPING	347	30.37	6.72
CTI BEHAVIORAL COPING	347	29.18	4.88
CTI CATEGORICAL THINKING	347	20.04	6.35
CTI ESOTERIC THINKING	347	29.05	8.07
CTI NAIVE OPTIMISM	347	28.93	5.12

^aIncludes virgins, who were assigned a risk score of 0.

^bG.P.A. information available for grades 10-12 only.

Table 7

Sexual Intercourse Experience Correlated With All Variables
for Males, Females and Total Group

	SEXUAL INTERCOURSE EXPERIENCE (VIRGIN VS. NONVIRGIN)		
	Total	Males	Females
	n=381	n=175	n=204
AGE	.34***	.39***	.31***
GENDER	.00	---	---
RACE	-.02	-.12	.07
BIRTHORD	-.07	-.05	-.08
LIVPARNT	-.12	-.09	-.16*
INCOME	-.02	-.06	.00
SXORIENT	-.07	-.07	-.09
FRNDSEX	.46***	.55***	.39*** ^b
SEXABUSE	.13*	.00	.19** ^a
EGOIDS	.01	-.01	.01
EGOPREG	-.08	.01	-.16*
G.P.A.	-.32***	-.31***	-.34***
VOCAB	-.09	-.10	-.08
REASON	-.07	-.01	-.12
INTELL	-.10	-.07	-.13
SENSEEK	.27***	.37***	.17* ^b
IMPULSE	.10	.10	.09

Table Continues

Table 7 Continued

	Total	Males	Females
EGOSTREN	-.09	-.07	-.10
PARSUPP	-.15**	-.07	-.20**
SELFEST	.06	.13	.00
CTIGLOB	-.06	-.06	-.08
EMOTCOP	-.02	-.01	-.04
BEHCOP	-.04	.01	-.09
CATTHNK	.15**	.22**	.09
ESOTHNK	.07	-.02	.16*
NAIVOPT	-.05	-.05	-.04

Note. The data presented are partial correlation coefficients. Age and gender were controlled for in the Total data, and age was controlled for in the Male and Female data. Gender differences were calculated by converting the male and female correlations to z scores and calculating the significance of the difference. All gender differences were insignificant unless followed by a superscript.

^aGender difference significant at .10 level. ^bGender difference significant at .05 level.

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

had sexual intercourse?". A Pearson Product-Moment Correlation was conducted to examine the relationship between each of the independent variables and a two-point Sexual Experience variable (1 = virgin, 2 = nonvirgin). The results are presented in Table 7.

Table 7 contains partial correlation coefficients for the total group, males and females. For variables such as race, parents in the home, and sexual orientation, the frequency data were examined, and a two-point scale was constructed.

The less frequent occurrence was assigned a value of one and the more frequent was assigned a value of two. For other variables, the scales were arranged in increasing order, that is a higher value representing a greater amount of the variable. Age and gender were controlled for in the whole-group correlations, and age was controlled for in the male and female correlations. When male and female correlations differed, the correlations were converted to Z scores and the difference examined for statistical significance. Only three variables, Sexually Active Best Friend, Sexual Abuse History, and Sensation Seeking, had a statistically significant gender difference.

The most significant predictor of sexual experience was having a sexually active best friend. This finding was true for both sexes, but was significantly more important for males ($r = .55, p < .001$) than for females ($r = .39, p$

< .001), with a gender difference significant at the .05 level. As would be expected, age was correlated with sexual experience. Older students were significantly more likely to have had sexual intercourse than younger students. Grade point average was also significantly related to sexual experience. Virgins tended to have higher GPA's than nonvirgins.

Sensation seeking was a stronger predictor of sexual experience for males ($r = .37, p < .001$), than for females ($r = .17, p < .05$; gender difference $p < .05$). Sexual abuse was significantly predictive of being sexually experienced for females ($r = .19, p < .01$), but not for males ($r = .00$) gender difference $p < .10$). Those females who reported higher levels of parental support were less likely to have had sex ($r = -.20, p < .01$). Parental support was not significantly related to sexual experience for males ($r = -.07$).

The Global Constructive Thinking score was not related to sexual experience for either males or females. Two scales of the CTI were significantly associated with sexual experience. Categorical Thinking was significant for males ($r = .22, p < .01$), and Esoteric Thinking was significant for females ($r = .16, p < .05$).

A discriminant function analysis was conducted to determine the relative significance of each of the variables in explaining sexual experience, and to determine

Table 8

Discriminant Function Analysis of Variables Significantly
Correlated with Sexual Intercourse Experience

Whole Group (n=278)				
	Wilk's lambda	F	sig. p	Correlation within function
FRNDSEX	.73346	100.30	.0000	.82
G.P.A.	.88961	34.25	.0000	-.48
AGE	.89579	32.11	.0000	.46
SENSEEK	.93763	18.36	.0000	.35
CATTHNK	.97555	6.92	.0090	.21
PARSUPP	.98340	4.66	.0318	-.18
SXABUSE	.99127	2.43	.1201	.13
Wilks' lambda= .6470181		Eigenvalue= .54555		

Males (n = 141)				
	Wilk's lambda	F	sig. p	Correlation within function
FRNDSEX	.61165	88.26	.0000	.69
SENSEEK	.85919	22.78	.0000	.42
AGE	.86909	20.94	.0000	.41
G.P.A.	.89508	16.29	.0001	-.36
CATTHNK	.90874	13.96	.0003	.33
Wilks' lambda= .5219983		Eigenvalue= .91572		

Table Continues

Table 8 Continued

	Females (n=140)			Correlation within function
	Wilk's Lambda	F	sig. p	
FRNDSEX	.81423	31.49	.0000	.69
G.P.A.	.87442	19.82	.0000	-.54
AGE	.90867	13.87	.0003	.46
EGOPREG	.97603	3.39	.0678	-.23
PARSUPP	.97712	3.23	.0744	-.22
SXABUSE	.97792	3.12	.0797	.22
SENSEEK	.98335	2.34	.1287	.19
LIVPARNT	.98826	1.64	.2025	-.16
ESOTHNK	.99496	.70	.4047	.10

Wilks' lambda= .675503 Eigenvalue= .48038

Note. Variables are listed in order of significance. Data are derived for grades 10-12 only, as no G.P.A. information was available for ninth graders.

how effective the combined variables are in discriminating between the virgin and nonvirgin groups. As seen in Table 8, approximately 92% of the variance in the Sexual Experience variable is explained in the discriminant analysis of the male subjects (Eigenvalue = .915). Only 48% is explained for the female subjects. Sexually Active Best Friend, GPA and Age were highly significant variables for both males and females. Sensation Seeking and Categorical Thinking were highly significant for males.

Sexual Risk-Taking

The AIDS Risk-Taking Scale was made up of the combined scores to four questions concerning sexual promiscuity and nonuse of condoms. The Pregnancy Risk-Taking scale was derived from two questions, one about the type of birth control usually used, and the other about frequency of birth control use. Table 8 contains Pearson Product Moment Correlations of each variable with the two sexual risk-taking variables for the sexually experienced subgroup only (n = 213). AIDS risk-taking and pregnancy risk-taking were significantly correlated with each other ($r = .35$, $p < .001$).

The AIDS Risk-Taking and Pregnancy Risk-Taking variables were analyzed by a repeated forced entry multiple regression procedure. In the initial regression for each

Table 9

Correlations of All Variables with AIDS Risk-Taking and
Pregnancy Risk-Taking for the Sexually Experienced Group
(n=213)

	AIDSRISK			PREGRISK		
	Males n=99	Females n=114	Total n=213	Males n=99	Females n=114	Total n=213
AIDSRISK	1.00	1.00	1.00	.42***	.30***	.35***
PREGRISK	.42***	.30***	.35***	1.00	1.00	1.00
GENDER	---	---	.12	---	---	-.10
AGE	.12	-.05	.00	-.12	-.29**	-.21**
RACE	-.04	.05	.02	.02	-.09	-.03
BIRTHORD	.16	.02	.08	.14	-.04	.03
LIVPARNT	-.05	-.05	-.05	-.03	.06	.03
INCOME	-.09	-.18	-.06	-.03	.00	.00
SXORIENT	-.17	-.12	-.13	-.15	.02	-.03
SEXAGE	-.46***	-.45***	-.46***	-.28**	-.04	-.15*
FRNDSEX	-.04	.00	.00	-.22*	-.06	-.11
SEXABUSE	.16	.22*	.19**	.19	.22*	.20**
EGOIDS	.00	-.10	-.04	.20	-.19*	.01 ^c
EGOPREG	-.11	.10	-.01	-.15	.05	-.06
G.P.A.	-.05	-.11	-.10	.10	.13	.11
VOCAB	.07	.08	.06	.08	-.01	.03
	(.10)	(.12)	(.09)	(.11)	(-.01)	(.04)

Table Continues

Table 9 Continued

	AIDSRISK			PREGRISK		
	Males n=99	Females n=114	Total n=213	Males n=99	Females n=114	Total n=21
REASON	.03 (.04)	.03 (.04)	.00 (.00)	.09 (.13)	-.03 (-.04)	.01 (.01)
INTELL	.07 (.10)	.06 (.09)	.05 (.07)	.09 (.12)	-.01 (-.01)	.02 (.03)
SENSEEK	.20 (.31)	.32** (.49)	.27*** (.42)	.09 (.13)	.09 (.13)	.10 (.14)
IMPULSE	.10 (.16)	.28** (.45)	.20** (.44)	-.04 (-.06)	.18 (.26)	.11 (.16)
EGOSTREN	.09 (.14)	-.24* (-.38)	-.10 ^b (-.16)	.23* (.33)	-.21* (.30)	-.06 ^c (-.09)
PARSUPP	-.20 (-.28)	-.06 (-.09)	-.11 (-.16)	-.01 (-.01)	-.09 (-.12)	-.06 (-.08)
SELFEST	.17 (.25)	-.07 (-.10)	.03 (.04)	.19 (.25)	.04 (.05)	.10 (.13)
CTIGLOB	.12 (.19)	-.16 (-.25)	-.06 (-.09)	.04 (.06)	-.04 (-.06)	-.01 (-.01)
EMOTCOP	.24* (.38)	-.04 (-.06)	.06 ^b .10	.20 (.29)	.01 (.01)	.09 (.13)
BEHCOP	.03 (.05)	-.18 (-.31)	-.10 (-.17)	-.04 (-.06)	-.16 (-.25)	-.11 (-.17)

Table Continues

Table 9 Continued

	AIDSRISK			PREGRISK		
	Males n=99	Females n=114	Total n=213	Males n=99	Females n=114	Total n=213
CATTHNK	.16 (.26)	.10 (.16)	.14 (.23)	.19 (.28)	.04 (.06)	.11 (.16)
ESOTHNK	.02 (.03)	.14 (.22)	.10 (.15)	-.12 (-.17)	-.12 (-.17)	-.10 (-.14)
NAIVOPT	-.05 (-.09)	-.13 (-.22)	-.09 (-.26)	-.20 (-.32)	-.05 (-.08)	-.13 (-.21)

Note. Data shown are partial correlation coefficients.

Age is controlled for in the male and female data. Gender and age are controlled for in the Total data. Values in parentheses are correlations corrected for unreliability. Gender differences were calculated by converting the male and female correlations to z scores and calculating the significance of the difference. All gender differences were insignificant unless followed by a superscript.

^aGender difference significant at .10 level. ^bGender difference significant at .05 level. ^cGender difference significant at .01 level.

* $p < .05$

** $p < .01$

*** $p < .001$

variable, all of the independent variables were entered into the equation. Subsequent regressions were run with all of the variables that were found to be significant in the previous trial. The results presented in Table 10 and Table 11 represent the final regression with the most significant variables for the whole group, males and females. More variance was explained in the AIDS Risk-Taking regression model (Total Group $R^2 = .271$) Table 8 than was in the Pregnancy Risk-Taking regression model (Total Group $R^2 = .172$).

AIDS Risk-Taking

As in the analysis of sexual intercourse experience, gender on the whole was found to be unrelated to AIDS risk-taking. Age by itself was not significantly correlated with the AIDS Risk-Taking variable, but when the regressions were run, age emerged as significant, both for the whole group (R^2 Change = .035; $p = .0051$), and for males (R^2 Change = .069, $p = .0137$). The older students in the sample, particularly males, tended to engage in more AIDS risk-taking behaviors than the younger students. The relationship between the age of first intercourse and AIDS risk-taking was of notable significance. Those who started having sex at a younger age tended to have more sexual partners and use condoms less often than those with a later onset of sexual intercourse. This held true for the whole group ($r = -.46$, $p < .001$), males ($r = -.46$, $p < .001$), and

Table 10

Multiple Regression Analysis of AIDS Risk-Taking for the Sexually Experienced Group (n=213)

Total Group (n = 180)			
Variable	Beta	R ² Change	Sig. t
1. SEXAGE	-.46	.179	.0000
2. SENSEEK	.17	.021	.0145
3. GENDER	.12	.011	.2841
4. AGE	.21	.035	.0051
5. BEHCOP	-.09	.007	.2146
6. ESOTHNK	-.05	.018	.3847
R ² = .271		Adjusted R ² = .241	

Males (n = 88)			
Variable	Beta	R ² Change	Sig. t
1. SEXAGE	-.45	.150	.0002
2. AGE	.25	.069	.0137
3. EMOTCOP	.17	.030	.0677
4. PARSUPP	-.18	.033	.0521
R ² = .282		Adjusted R ² = .248	

Table Continues

Table 10 Continued

Females (n = 97)			
Variable	Beta	R ² Change	Sig. t
1. SEXAGE	-.33	.179	.0008
2. SEXABUSE	.13	.021	.1578
3. SENSEEK	.24	.052	.0155
4. BEHCOP	-.13	.018	.1428
5. INCOME	-.18	.029	.0522
	R ² = .30	Adjusted R ² = .26	

Note. Regressions were calculated using a forced entry multiple regression procedure. A pairwise deletion of missing data was used. Thirty-three subjects were lost from the sexually experienced subgroup (n = 213) due to missing data.

females ($r = -.45, p < .001$). In Table 10, the Age of First Intercourse variable explained more of the variance in AIDS risk-taking than any other variable for the total group, males, and females.

Sensation seeking needs were predictive of sexual experience for males, but were not predictive of AIDS risk-taking behavior. For females, however, sensation seeking had only a modest relationship to sexual experience ($r = .17, p < .05$), but was more predictive of AIDS risk-taking ($r^2 = .052, p = .0155$). It appears that sensation seeking needs have more of an impact on the decision to have intercourse for males, but are more related to AIDS risk-taking behavior for females.

Some other gender differences were also noted in the AIDS risk-taking correlations on Table 9. Ego strength, a construct related to planning ability, self control, and the ability to inhibit impulses, was correlated significantly with AIDS risk-taking for females ($r = -.24, p < .05$), in the expected direction. Males with higher ego strength tended to report more AIDS risk-taking behavior, and females with lower ego strength had higher AIDS risk-taking scores (gender difference, $p < .05$). The Emotional Coping scale of the CTI was predictive of AIDS risk-taking for males ($r = .24, p < .05$), but not for females ($r = -.04, NS$; gender difference, $p < .05$). Emotional coping explained three percent of the variance in AIDS risk-taking for males. Better emotional

coping ability was associated with higher levels of AIDS risk-taking in males. Males who reported higher levels of parental support tended to engage in less AIDS risk-taking behavior (R^2 Change = .033, $p = .0521$).

Having been sexually abused was predictive of AIDS risk-taking behavior for females ($r = .22$, $p < .05$), and accounted for 2% of the variance in this variable. A small but significant relationship between family income and AIDS risk-taking behavior was found for females (R^2 Change = .029, $p = .0522$), suggesting that females from lower income families engaged in more AIDS risk-taking behavior than females from higher income families.

Pregnancy Risk-Taking

Age was a significant predictor of pregnancy risk-taking for the sexually experienced group (R^2 Change = .05, $p = .0198$). Younger students engaged in more pregnancy risk-taking than older students. Age was a more important predictor for females ($r = -.29$, $p < .01$), than for males ($r = -.12$). Young females represented the riskiest subgroup in the pregnancy risk-taking analysis, as age accounted for over 8% of the variance in pregnancy risk-taking for females.

Gender was a significant predictor of pregnancy risk-taking for the whole group (R^2 Change = .05, $p = .0216$). Males engaged in more pregnancy risk-taking behavior than females. The data presented in Table 9 suggested that

Table 11

Multiple Regression Analysis of Pregnancy Risk-Taking for
the Sexually Experienced Group (n = 213)

Total Group (n = 177)

Variable	Beta	R ² Change	Sig. t
1. ESOTHNK	-.18	.009	.0106
2. SEXABUSE	.21	.028	.0041
3. GENDER	-.17	.050	.0216
4. AGE	-.17	.050	.0198
5. SEXAGE	-.16	.019	.0307
6. EMOTCOP	.18	.004	.0241
7. BEHCOP	-.21	.034	.0055

R² = .172Adjusted R² = .142

Males (n = 88)

Variable	Beta	R ² Change	Sig. t
1. SEXAGE	-.25	.093	.0177
2. FRNDSEX	-.12	.061	.2491
3. EGOSTREN	.26	.016	.0218
4. SEXABUSE	.25	.036	.0205
5. NAIVOPT	-.26	.063	.0121
6. CATTHNK	.19	.033	.0737

R² = .302Adjusted R² = .242

Table Continues

Table 11 Continued

		Females (n = 97)		
	Variable	Beta	R ² Change	Sig.t
1.	SEXABUSE	.24	.044	.0138
2.	AGE	-.33	.083	.0009
3.	ESOTHNK	-.21	.030	.0320
4.	EGOSTREN	-.24	.055	.0128
5.	EGOIDS	-.16	.026	.0829
		R ² = .237	Adjusted R ² = .195	

Note. Regressions were calculated using a forced entry multiple regression procedure. A pairwise deletion of missing data was used. Thirty-six subjects were lost from the sexually experienced subgroup (n = 213) due to missing data.

females tended to have higher AIDS risk-taking scores than males, and males tended to have higher pregnancy risk-taking scores.

The age of first intercourse had an association with pregnancy risk-taking for males ($r = -.28, p < .01$), accounting for over 9% of the total variance in this variable. Males who had experienced an earlier onset of intercourse had higher pregnancy risk-taking scores than those with later onset. Age at first intercourse was not related to pregnancy risk-taking for females. Having a sexually active best friend was not associated with pregnancy risk-taking for females ($r = -.06$), but was for males ($r = -.22, p < .05$). Having a sexually active best friend accounted for over 6% of the variance in pregnancy risk-taking for males when it was entered into the equation, but became less significant after accounting for the interaction of the variables ($p = .2491$). Given the direction of the correlation, it appears that, for males, having a sexually active best friend was associated with lower levels of pregnancy risk-taking.

Having been sexually abused was associated with greater amounts of pregnancy risk-taking behavior for the total group (R^2 Change = .028, $p = .0041$); males (R^2 Change = .036, $p = .0205$); and females (R^2 Change = .044, $p = .0138$). Sexual abuse was slightly more correlated with pregnancy risk-taking

for females than it was for males, but the gender difference was not significant.

Different subscales of the CTI were implicated in pregnancy risk-taking for different groups. For the sexually experienced total group, Behavioral Coping accounted for over 3% of the total variance in pregnancy risk-taking. Students with lower behavioral coping ability were more prone to taking risks associated with pregnancy. Emotional coping was also found to be significant for the total group ($p = .0241$), but had a minimal effect on the total variance in pregnancy risk-taking (R^2 Change = .004). The positive correlation suggests that those who are better emotional copers are more likely to take pregnancy risks than those who are poor emotional copers. For males, Naive Optimism and Categorical Thinking together accounted for one third of the total explained variance (Naive Optimism, R^2 Change = .063, $p = .0121$; Categorical Thinking, R^2 Change = .033, $p = .0737$). Lower scores on Naive Optimism were associated with higher pregnancy risk-taking for males, and higher scores on Categorical Thinking were associated with higher pregnancy risk-taking behavior. For females, 3% of the pregnancy risk-taking variance was accounted for by Esoteric Thinking. Those females with lower scores on Esoteric Thinking had higher pregnancy risk-taking scores.

Ego strength was significantly related to pregnancy risk-taking for both males and females. Ego strength

accounted for one quarter of the total explained variance in the pregnancy risk-taking variable for females (R^2 Change = .055, $p = .0128$), but only 5.5% of the overall variance. A significant gender difference was found in the correlations ($p < .01$) presented in Table 9. For females, the correlation was in the expected direction ($r = -.21$, $p < .05$). Females with high ego strength scores were less likely than those with low ego strength scores to take risks associated with pregnancy. As it was with the AIDS risk-taking variable, greater reported ego strength in males was correlated with greater pregnancy risk behaviors ($r = .23$, $p < .05$). Ego Strength accounted for only a small percentage of the variance in pregnancy risk-taking for males (R^2 Change = .016, $p = .0218$).

CHAPTER V

DISCUSSION

Chapter Overview

This chapter includes a discussion of the demographic, developmental, and personality variables which were found to be related to the onset of sexual intercourse, the risk of pregnancy, and the risk of acquiring the HIV virus. The pre-existing research from each area (where applicable) is integrated with the present results and the implications are discussed. Beginning with the section on sexual risk-taking, the eleven hypotheses presented in the literature review chapter are evaluated for support or rejection based on the results. The chapter proceeds to a discussion of the research limitations, followed by some implications for practical intervention with adolescents, and concludes with directions for further research.

Factors Predictive of Sexual Experience

Sexual experience, as it is referred to in this paper, is a dichotomous variable representing experience with sexual intercourse. The statistical techniques used to examine the relationship between demographic variables and this type of sexual experience included a Pearson Product-Moment Correlation, and a discriminant function analysis. Unlike the sexual risk-taking analysis presented in the next section, which included only students who had had sexual

intercourse, the sexual experience variable included data from each student who participated in the study.

As was expected, age was significantly and positively correlated with sexual experience, for males, females and the total group. Physical and emotional maturation increase the likelihood of sexual involvement. Sex drive was not controlled for in this research, and could confound further interpretation of the results. No relationship between gender and sexual experience was found. In the discriminant analysis of sexual experience, significantly more variance was explained for males (Eigenvalue = .92, 5 variables) than for females (Eigenvalue = .48, 9 variables). Interpretively, it may be that more factors are involved in an adolescent female's decision to have sex than in an adolescent male's.

The complexity of variables such as race and socio-economic status, put them beyond the possibility of thorough study in this research. They were included in the analysis of demographic variables solely to establish the presence or absence of group differences in both sexual experience and sexual risk-taking.

Research in the area of sexual experience has shown some differences based on racial group membership and socio-economic status. African-American adolescents, for example, have been shown to be sexually active at earlier ages than Whites (Newcomer & Udry, 1983; Zelnick & Kantner, 1980).

These researchers studied urban populations, with substantial minority representation.

In the present study, racial groups were collapsed into one minority category, given the small number of minority students. The minority category included African-American, Asian-American, Hispanic, and American-Indian students, and contained a total of 25 students, or 7 percent of the total sample. No statistically significant differences in Sexual Experience were found based on racial group membership. The small number of minority group individuals, both in the sample and in the community, meant that group differences based on race could not be adequately studied. It is likely that there are differences within racial groups based on rural/urban status and SES that would need to be controlled for to adequately assess group differences based on race.

No significant differences in Sexual Experience were found between students from higher income families and students from lower income families, as determined by receipt or non-receipt of free or reduced price lunch. In the present sample, having had sexual intercourse did not appear to be related to economic factors. The data trend in the present study supports a greater likelihood of sexual experience among adolescents coming from homes with a single parent or no parent. The "parents in the home" variable was negatively correlated with sexual experience for each group, but was only significant for females ($r = -.16, p < .05$).

This finding is consistent with the Newcomer and Udry (1983) results showing earlier sexual activity in adolescent girls from single parent homes than those from two parent homes.

The importance of parents in sexual decisions by adolescents has been debated. DaLameter and MacCorquodale (1979), in a study of 1376 male and female college students, age 18-23, found the parents' role in providing sexual knowledge to the adolescent to be almost negligible. Treboux and Busch-Rossnagel (1990) found important gender differences in a sample of 161 male and 200 female high school students, in that friends had greater influence on contraceptive knowledge and sexual attitudes of females, but parents were more influential for males.

Of the two parental variables in the present study, parental support, as perceived by the adolescent and measured on a nine item scale, had the greatest relationship to sexual experience (Total group, $r = -.15$; males, $r = -.07$; females, $r = -.20$). Lesser parental support perceived by the adolescent is associated with a greater likelihood of being sexually experienced. This is consistent with earlier work (Jessor & Jessor, 1977; Inazu & Fox, 1980) showing a relationship between communication and support felt from parents and later age of sexual onset in adolescents. Parental support was found to be the sixth most important variable in explaining sexual experience in a discriminant

analysis of the total sample. It ranked fifth in importance for females, and was found to be insignificant for males.

The present results indicate that the parental role in the decision to have sex is significant for females, both in terms of presence (parents in the home) and perceived support. There was no demonstrable relationship between either of the parental variables and sexual experience for males. Birth order was another family variable studied, and it was not found to have an effect on sexual experience for either gender.

The developmental variables in this study were viewed as being part of an adolescent's experience as transitory life events, rather than the more permanent group membership of the demographic variables. These were: having a sexually active best friend; age at first intercourse (if a nonvirgin); sexual abuse history; two cognitive egocentrism variables; and the student's grade point average (GPA).

The results from the present study are consistent with Billy and Udry's (1985) results showing the importance of a white adolescent female's best friend on becoming sexually experienced. Billy and Udry longitudinally studied over 1100 Florida 7th, 8th and 9th graders. They found racial and gender differences, with significant effects in sexual experience related to friendships for white females, but not for black males, black females, and white males. A virgin white female whose best friend was a nonvirgin at T1 was six

times more likely to have had sex at T2 than her counterpart who had had a virgin same sex best friend at T1.

The findings of the present study show that having a sexually active best friend is more strongly related to sexual intercourse experience than any other variable, for the total group, males, and females. The statistically significant gender difference between males and females suggested the opposite of the Billy and Udry (1985) study; that is, the role of the best friend was more important for becoming sexually experienced for males than it was for females. Two possible explanations are offered. The longitudinal nature of the Billy and Udry study focused on the influence of best friends at T1 on virginity status at T2, while the present study focused on best friend's sexual experience compared to one's own sexual experience, concurrently. The second important difference is the younger sample employed by Billy and Udry, which was also more racially diverse. It is also possible that a cohort difference exists, due to the nine year time lapse.

Another developmental variable which was important in discriminating between sexually experienced and sexually inexperienced adolescents in the present study was sexual abuse. It ranked sixth in importance for females in the Sexual Experience discriminant analysis, but was nonsignificant for males and for the total group. The contributory role of sexual abuse to early sexual onset,

sexual risk-taking, and teen pregnancy has been well established (Kolko, Moser & Weldy, 1990; Donaldson, Whalen, & Anastas, 1989; Lindberg & Distad, 1985; McCullough & Scherman, 1991). Massachusetts Department of Social Services 1992 data showed the Greenfield area to have the highest percentage of child sexual abuse cases (22% of total substantiated cases of child abuse) in the state (Brewer, 1994), and this is consistent with 1990 and 1991 data as well. Nonetheless, the present data are of great concern, with 16% of the sample reporting a sexual abuse history. This refutes the popular notion that sexual abuse is a rare phenomenon. The data lend additional support to the role of child sexual abuse in influencing an adolescent's experience with sexual intercourse, and predisposing an adolescent to risky sexual behavior.

It is believed that these data should be regarded as conservative estimates of the incidence rates, for two reasons. First, there is the possibility that subjects who had been sexually abused in childhood may deny the experience and wish to avoid reporting it, even on an anonymous survey. Second, it is important to consider the differential way that sensory memories are encoded during a traumatic experience, such as sexual abuse (Herman, 1992; van der Kolk, 1994). It is quite possible that some of those students taking the survey were sexually abused, but were unable to recall the experience. Egocentrism was introduced as a variable in the

study, as it was felt that those adolescents less able to envision negative consequences of sexual activity for themselves would be more likely to have experience with sexual intercourse and with sexual risk-taking. Overall, there was no substantial effect found on the sexual experience variable which could be attributed to egocentrism, as measured. Interpretation of the findings on the relationship between egocentrism and adolescent sexual behavior is more fully addressed in the sexual risk-taking discussion section.

The results of this study support earlier findings linking poor school achievement with early sexual experience (Hofferth & Hayes, 1987; Jessor & Jessor, 1977; Devaney & Hubley, 1981; Donovan & Jessor, 1985; Jessor, Donovan & Costa, 1992; Billy, Landale, Grady & Zimmerle, 1988). In a longitudinal self-report questionnaire given to a racially balanced sample of 1120 male and female 7th, 8th and 9th graders, Billy, Landale, Grady and Zimmerle (1988) found a strong negative effect of sexual intercourse experience on the school grades of white males.

In the present study, grade point average was found to have a moderately strong relationship to sexual intercourse experience for males, females and the total group. Those who had lower GPA's were significantly more likely to have had sexual intercourse than those with higher GPA's, controlling for age and gender. In the discriminant analysis of the

Sexual Experience variable, GPA was second in importance only to having a sexually active best friend for females. It ranked fourth in importance for males.

These data, together with existing research, point to a relationship between experience with sexual intercourse and academic achievement, but the reasons for this relationship are uncertain. One possibility is that adolescents involved in sexual activity have less time for academics than their virgin peers. An alternate position is that adolescents who are less invested in school achievement seek other areas over which to exert mastery and control. These adolescents may be less able to delay need gratification, which is critical to academic achievement. Still another interpretation is that of "problem behavior" theory (Jessor & Jessor, 1977), which holds that early sexual activity and poor school achievement are part of a cluster of deviant behaviors which are interconnected.

Unlike GPA, there was no relationship demonstrated in this study between sexual intercourse experience and any of the other measures of intellectual ability (Abstract Reasoning, Vocabulary, or the combined "Intelligence" score). Research assessing the possible link between adolescent sexual behavior and intellectual ability has most frequently targeted birth control use (Johnson & Green, 1993; Sandler, Watson & Levine, 1992; Green, Johnson & Kaplan, 1992). Less is known about cognitive factors influencing the onset of

sexual activity. The results of this study suggest that becoming sexually involved is a phenomenon independent of intellectual ability, or that the construct was not adequately measured in this study.

In addition to traditional notions of intelligence, this study attempted to assess the relative contribution of the construct of constructive thinking, as measured by the Constructive Thinking Inventory (Epstein, 1993), to adolescent sexual behavior. Constructive thinking refers to the automatic, emotionally influenced thinking which may be more relevant to decision-making in daily life. This type of thinking is not assessed by measures of intellectual ability. Although the global CTI score was not found to be related to sexual intercourse experience, there were some relationships found with other scales of the CTI.

A modest, but significant correlation was found between categorical thinking and experience with sexual intercourse for males ($r = .22, p < .01$), and also for the total group ($r = .15, p < .01$). According to the Manual for the Constructive Thinking Inventory (Epstein, 1993), Categorical Thinking involves a rigid type of thinking, characterized by a difficulty in discriminating more subtle distinctions. People high in Categorical Thinking tend to perceive the world in "black and white" terms. Interpretively, it may mean that for middle adolescent high school students, particularly males, being less able to envision the many

personal and social implications of intercourse make its occurrence more likely. A modest, but significant, ($r = .16$, $p < .05$) correlation was found between Esoteric Thinking and sexual intercourse experience for females. Esoteric thinking "...reveals the degree to which people believe in scientifically questionable phenomena, such as ghosts, astrology..." (Epstein, 1993, p.5). High scores on this scale are associated with "excessive reliance on feelings and unsubstantiated impressions which can lead people to behave unrealistically" p.5 (Epstein, 1993). Despite the intuitive appeal of the relationship between this type of thinking and adolescent involvement in sexual intercourse, interpretation must be tempered by the marginally significant findings.

Sensation seeking was found to be the most significant personality variable with regard to sexual intercourse experience. Sensation seeking is "...a trait defined by the need for novel, varied, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience." (Zuckerman, 1979) p.10. Sensation seeking was far more influential for male sexual intercourse experience ($r = .37$, $p < .001$) than it was for female sexual intercourse experience ($r = .17$, $p < .05$), with a statistically significant gender difference ($p < .05$) between the correlations. Sensation seeking is known to increase with age in adolescence (Zuckerman, 1979), however age was controlled for in the analysis to avoid possible

confounding. Interpretively, it appears that for adolescent males, strong needs for novelty and excitement in personality composition are associated with a greater likelihood of action in the behavioral realm to fulfill those needs, i.e. sexual intercourse.

Some limitations of this finding are noteworthy. Testosterone levels have been linked directly to sexual activity in male adolescents (Udry, Billy, Morris, Groff, & Raj, 1985). Sex drive was not controlled for in the data analysis, and could have confounded the results. Psycho-social factors related to the onset of puberty were not examined in depth, and there was no way to control for the variability in the timing of puberty onset. These factors make it difficult to determine if the intercourse-sensation seeking link is best explained as a personality or developmental difference, or more probably, some interaction between of the two.

Sexual Risk-Taking

The discussion of factors influencing adolescent sexual risk-taking is formatted like the sexual intercourse experience section. The major difference is that only those students who indicated nonvirgin status (n = 215) were included in the examination of risk-taking. Results from the present study pertaining to AIDS risk-taking behavior and pregnancy risk-taking behavior are evaluated and interwoven with the results of previous research, when applicable. The

hypotheses presented earlier in the paper are evaluated for support from the data. This section, like the previous one, progresses through three clusters of variables evaluated in this exploratory paper: demographic, developmental, and personality.

The three question scale used in this study to measure AIDS risk-taking had relatively high internal consistency reliability for so few items in the scale. For the sexually experienced group, the coefficient alpha was .53. The two-item scale to measure pregnancy risk-taking also had relatively high reliability for a short scale (coefficient alpha = .64). The intuitive appeal of the scales was their simplicity, as they assessed both the frequency and the effectiveness of risk-prevention efforts. An emphasis was placed on behavior, rather than on knowledge or attitudes, as previous research has established that sexual risk-behavior is independent of factual knowledge of the risks (Melchert & Burnett, 1990; Arnett, 1990). It may be, however, that more specific behavioral items are needed to adequately measure risk.

In examining the regression analyses of AIDS risk-taking and pregnancy risk-taking, only a modest amount of variance was explained (AIDSRISK: $r^2 = .27$; PREGRISK: $r^2 = .24$). To attempt to eliminate the increased, but erroneous, explained variance which occurs from adding a large number of variables to the regression equation, the regressions reported reflect

the largest explained variance with the fewest possible variables. For females, slightly more variance was explained for AIDS risk-taking than was for males, while the opposite was true for pregnancy risk-taking.

As the research was exploratory in nature, the total explanatory power is of less significance than it would be in research which seeks to test predictive models of sexual risk-taking (Cvetkovich and Grote, 1983; Geis and Gerrard, 1984). The purpose of the present study was to assess the relative importance of individual variables in sexual risk-taking, and to target those which are most promising for further research. AIDS risk-taking was significantly correlated with pregnancy risk-taking. The correlations were significant for the total group ($r = .35, p < .001$), males ($r = .42, p < .001$), and females ($r = .30, p < .001$). This finding suggests that those adolescents who exhibit one type of sexual riskiness are somewhat likely to be involved in the other. There appears to be no previous research examining both AIDS risk-taking behavior and pregnancy risk-taking behavior measured this way in the same sample, and it is difficult to project whether or not this is a generalizable finding. There is some overlap between the two categories, in that condom use affected both raw scores. The contribution of condom use may be significant in explaining the correlation between the two risk-taking variables, as

condoms or diaphragm were listed as the usual type of birth control for two-thirds of the sample.

The frequency of birth control use among the sexually experienced in this sample compared favorably to past reports of adolescent birth control usage rates (Zelnik and Kantner, 1980; Geis and Gerrard, 1984). Approximately one quarter of the sexually active group was using highly effective methods, and over 90% of them were using methods of at least moderate effectiveness. In the present study, sexually experienced adolescents reported a 2 : 1 ratio of condom use to birth control pill use. Morrison (1985) reported on the increased popularity in birth control pills over condoms among adolescents. It is quite possible that this trend is being reversed in response to adolescent concerns about the AIDS epidemic. It may also be that condoms are generally more available to adolescents than are those requiring medical involvement.

Demographic Variables and Sexual Risk-Taking

There is a well established relationship between age and pregnancy risk-taking in females (McCullough and Scherman, 1991; Melchert and Burnett, 1990; Zelnik and Shah, 1983; Cvetkovich and Grote, 1983; Philliber, 1982; Morrison, 1985). Simply stated, older adolescent females are more likely to use effective methods of birth control, and more frequently than their younger female peers. Based on this research, the

first hypothesis that was tested, for both sexes, examined the relationship of age to sexual risk-taking:

Hypothesis #1: Older students will have lower scores on the sexual risk-taking measures.

This hypothesis was accepted for the pregnancy risk-taking variable but rejected for the AIDS risk-taking variable. Despite the expected finding of a positive and significant relationship between age and sexual intercourse experience, older students were more likely to use birth control on a more frequent basis than younger students, and were therefore less "risky" as a group. The relationship between age and pregnancy risk-taking existed for the whole group ($r = -.21, p < .01$), and for males ($r = -.12$), but was especially important for females ($r = -.29, p < .01$). Age explained 5% of the variance in pregnancy risk-taking for the whole group, and explained more variance in this variable for females than any other variable (R^2 Change = .083).

Zelnik and Shah (1983) reported that approximately one half of teenagers do not use contraceptives the first time that they have intercourse. Zabin, Kantner, and Zelnik (1979) found that half of all premarital pregnancies occurred within the first six months of sexual activity. In addition to a lack of reproductive and sexual knowledge in a causal role, it is possible that young female adolescents do not wish to think of themselves as being sexually active due to negative self-perceptions or the perceptions of peers.

The planning associated with birth control use may mean accepting this identity, and use is therefore delayed.

For AIDS risk-taking, the hypothesized relationship between being older and being sexually "safer" was rejected. Although age had no statistically significant correlation with AIDS risk-taking (see Table 8), it became modestly significant when interacting with other variables, and accounted for 3.5% of the variance in the regression analysis of the AIDS risk-taking variable for the total group. Age was significantly more important for males than for females in AIDS risk-taking, accounting for nearly 7.0% of the variance in male AIDS risk-taking. This suggests that promiscuity and nonuse of condoms is more prevalent as adolescent males get older. It may be that for older adolescent males, there is an increased reliance on birth control methods controlled by the female, i.e. birth control pills, that were not used at sexual onset. The risk of pregnancy may be viewed seriously by these males, but AIDS may be seen as less of a threat.

An alternate interpretation of this finding is that younger males in the study were exposed to AIDS education at the critical time when they began sexual activity. The older males in the study may not have been exposed to AIDS education until after their sexual habits had already been established. The only finding suggesting an effect due solely to gender was that for the total group pregnancy risk-

taking regression analysis. Despite this finding, being male or female alone had less relationship to sexual risk-taking than did being male or female in the context of subgroup membership, i.e. age, age of sexual onset, ego strength. In a review of the literature on adolescent contraceptive behavior, Morrison (1985) indicated that adolescent males generally report less frequent use of birth control than females do. The present results are consistent with this finding, as being male was predictive of lesser frequency and effectiveness of contraceptive use. The tendency for greater birth control use among adolescent females is due to their direct experience of the detrimental outcome from nonuse, i.e. pregnancy. Related to this, research shows that female adolescents know more about reproduction and birth control than males, both in college age (DeLameter & MacCorquodale, 1979; Lieberman, 1981) and high school age populations (Freeman, Rickels, Huggins, Mudd, Garcia, & Dickens, 1980).

Poverty has been implicated as a major risk factor in HIV infection (Athey, 1991), as incidence rates are significantly higher in lower socio-economic groups. Comparative studies, examining how membership in different socio-economic groups impacts on adolescent sexual risk-taking, are lacking. However, given incidence rates of pregnancy among lower income adolescents (Hofferth and Hayes, 1987), and the high incidence of AIDS cases in low income

urban areas, there was a hypothesized relationship between adolescent sexual risk-taking and family income:

Hypothesis #2: Students from lower income households will have higher scores on the sexual risk-taking measures.

This hypothesis was rejected for pregnancy risk-taking, but partially supported for female AIDS risk-taking. Receiving free or reduced price lunch, presumptively meaning lower family income, was associated with greater promiscuity and less condom use among females (R^2 Change = .029, $p = .05$). No relationship was found between family income and either of the sexual risk-taking variables for males.

Previous research has implicated a lack of parental supervision in adolescent sexuality and pregnancy (Franklin, 1988). In addition, parents can provide an educational role in teaching their children about AIDS, pregnancy, and contraception. For this reason, it was proposed that those adolescents with lesser amounts of parental influence may be more susceptible to taking sexual risks:

Hypothesis #3: Those adolescents from single parent homes, foster homes, and those who live independently from parents will score higher on the sexual risk-taking measures.

This hypothesis was rejected. There was no relationship between parents in the home and either of the sexual risk-taking measures, for either males or females. Perceived parental support, as measured by the parental support questionnaire, did have a modest relationship to AIDS risk-

taking behavior for males. Males who reported less parental support engaged in higher amounts of AIDS risk-taking behavior (R^2 Change = .033, $p = .0521$) than those reporting greater parental support. As with sexual intercourse experience, the support an adolescent receives from his or her parent(s) appears to be more important than the physical presence of two parents. For females, but not males, parental support was particularly important in the decision to have sex. For males, but not females, lesser parental support was related to promiscuity and nonuse of condoms.

Developmental Influences

The age of sexual onset has been identified as a major risk factor for teenage pregnancy (Melchert & Burnett, 1990; Koyle, Jensen, Olsen, & Cundick, 1989; McCullough & Scherman, 1991; Zabin, Kantner, & Zelnick, 1979). Most of these studies involved interviews with pregnant adolescents, asking them at what age they first had intercourse. In the present study, the adolescent's report of sexual behavior was compared against the age that he or she first reported having had intercourse. Because of the research linking early sexual onset with later pregnancy risk-taking, a relationship was hypothesized between early sexual onset and AIDS risk-taking as well:

Hypothesis #4: Those who began having intercourse at a younger age will report higher levels of sexual risk-taking than those who were older.

This hypothesis was supported for male and female AIDS risk-taking, and male pregnancy risk-taking behavior. The age of sexual onset variable accounted for over half of the variance in the AIDS risk-taking dependent variable (R^2 Change = .179, $p=.0000$), and was by far the most important predictor of AIDS risk-taking for males and females. Those adolescents, both male and female, who had sexual intercourse at a younger age than their sexually active peers were significantly more likely to report more sexual partners and less condom usage.

Both internal and external factors may be implicated in the sexual promiscuity component of this finding. Internal factors, i.e. sex drive, sensation seeking needs, may contribute to the adolescent's early initiation into intercourse, and seeking of multiple partners. External factors, i.e. peer group norms, parental modeling, may reinforce the continuation of promiscuous behavior. The risk-taking part is harder to explain. Why do these adolescents avoid using protection? Unfortunately, the age of sexual onset variable is more descriptive than explanatory, and other variables in the study must be examined for their explanatory power.

The relationship which is most clearly established by prior research, that between early sexual onset and pregnancy risk-taking in females, was absent in the present study. One explanation may be that sex education efforts have been successful with young females in this sample. Another possibility is that this study differed in its measurement from previous research which examined the sexual history of pregnant female adolescents. There were several pregnant teens and teen mothers who were not part of the sample due to factors related to these conditions which kept them from attending school. This may have created a sampling bias. Age of sexual onset was the most significant predictor of pregnancy risk-taking behavior for males (R^2 Change = .093, $p = .0177$). As with AIDS risk-taking, the factors which explain the tendency of males with earlier sexual onset to be more sexually careless (not using birth control), is hard to interpret. It may be, that with males who have become comfortable with their identity as sexually active, there is a feeling of immunity from consequences if they have not happened in past sexual encounters. Those males who began sex at an earlier age may not have developed the ability to consider all of the implications of sex. They may regard birth control as the woman's responsibility, or may fail to consider it at all.

Another significant developmental variable affecting sexual risk-taking was sexual abuse. Due to past research

implicating a sexual abuse history in teenage pregnancy and sexually risky behavior (Kolko, Moser, & Weldy, 1990; Donaldson, Whalen, & Anastas, 1989; Lindberg & Distad, 1985; McCullough & Scherman, 1991), a link between sexual abuse and sexual risk-taking in this sample was proposed.:

Hypothesis #5: Having been the victim of sexual abuse will be predictive of greater levels of sexual risk-taking.

This hypothesis was supported. Sexual abuse history was a significant predictor of pregnancy risk-taking for both males and females. Having a sexual abuse history was significantly correlated with AIDS risk-taking ($r = .19$, $p < .01$) and pregnancy risk-taking ($r = .20$, $p < .01$) for the total group. The data indicate that the strongest influence of sexual abuse was on male and female pregnancy risk-taking, as this variable explained approximately 3.5% and 4.5% of the variance, respectively. A slight relationship was found between having a sexual abuse history and AIDS risk-taking in females ($r = .22$, $p < .05$), however the relationship was not found to be significant in the regression analysis of AIDS risk-taking.

As noted in the discussion on sexual intercourse experience, trauma plays a significant role in influencing the behavior of an individual for years after its occurrence. Trauma survivors experience "numbing", dissociative symptoms, intrusive memories, and a tendency to re-enact the unresolved traumatic experience: "...traumatized people find themselves

reenacting some aspect of the trauma scene in disguised form, without realizing what they are doing...Even when they are consciously chosen, they have a feeling of involuntariness. Even when they (reenactments) are not dangerous, they have a driven, tenacious quality. Freud named this recurrent intrusion of traumatic experience the "repetition compulsion". (Herman, 1992) p. 40-41.

This interpretation may be useful in explaining promiscuity or repeated sexual victimization in adolescence, but how are the findings on pregnancy risk-taking to be interpreted? It is probable that the internalized feelings of worthlessness in victims of sexual trauma lead to a lack of concern over physical health and well being. These individuals may be more impulsive, less oriented to future goals, and less likely to take precautions against pregnancy.

Unlike the findings on sexual intercourse experience, there was almost no influence found on AIDS and pregnancy risk-taking attributable to having a sexually active best friend. One interesting exception was found for male pregnancy risk-taking, which was correlated negatively and significantly ($r = -.22, p < .05$) with having a sexually active best friend. This may mean that for an adolescent male, associating with other males who are having sex is a protective factor. It can be speculated that those males who have friends who are sexually active may talk with them more

about sex, and may have learned more about birth control and pregnancy than their peers without this social connection.

Cognitive-developmental factors have strong conceptual appeal in adolescent sexual risk-taking. In an article which links these two areas, Gordon (1990) implicated envisioning and evaluating alternatives, perspective taking, and knowledge of chance and probability as critical to contraceptive decision-making. Perspective taking, as described by Flavell (1992) involves two types of conceptualization which have implications for sexual risk-taking as well. The ability to take perspectives, both of the needs of a sexual partner in the present and of the self or partner in the future, are also critical. Elkind's (1967) constructs of "the imaginary audience" and "the personal fable", to describe types of adolescent thinking, have received scant empirical analysis, and these analyses have been conducted in conflicting ways with conflicting results (see Buis and Thompson (1989) for a review of these studies).

In the present study, a technique resembling a repeated measures design was used to assess the presence or absence of cognitive egocentrism. A relationship was proposed between thoughts of personal invulnerability to the consequences of sexual risk-taking and risky sexual behavior, leading to this hypothesis:

Hypothesis #6: Those with greater egocentrism differentials (those estimating the likelihood of unfavorable consequences

from sexual risk-taking as greater for others than for themselves) will report higher levels of sexual risk-taking than those with lower egocentrism differentials.

This hypothesis was rejected. There appeared to be no substantive relationship between any of the egocentrism variables and sexual risk-taking. Rather than conclude that no relationship exists between adolescent egocentrism and sexual risk-taking, it is probably more accurate to infer a problem with construct validity in this study. The attempt to detect the difference between egocentric and sociocentric thinking via a pre-test and post-test word substitution was novel, but perhaps overly ambitious. The role of cognitive development in adolescent sexual risk-taking warrants more specialized study, with more sophisticated operational definitions and valid measures of both constructs.

The relationship between cognitive abilities related to school motivation and achievement and the propensity for sexual risk-taking is better established. Jones and Philliber (1983) found that never-users of contraception had lower educational expectations than those who had used contraception at least occasionally. Oskamp and Mindick (1983), found lower educational aspirations in teenagers who were pregnant over those who were not pregnant. Due to these and other findings (Robbins, Kaplan & Martin, 1985; Jessor & Jessor, 1977; Philliber, 1982) regarding the relationship

between low academic achievement and pregnancy risk-taking, the following hypothesis had been put forth:

Hypothesis #7: Those with higher grade-point averages will report lower levels of sexual risk-taking than those with lower GPA's.

This hypothesis was rejected. There was no relationship between GPA and pregnancy risk-taking or AIDS risk-taking for males, females or the total group. The findings linking GPA with sexual intercourse experience expand upon those of researchers documenting the greater likelihood of sexual activity among those who do poorly in school (Jessor & Jessor, 1977; Hofferth & Hayes, 1987). Jessor and Jessor (1977) found that those adolescents engaging in early sexual intercourse were also likely to do poorly in school and be involved with delinquent "problem" behaviors of other types. The results of the present study suggest that although there is a relationship between sexual intercourse experience and poor school achievement among adolescents, this relationship does not extend to sexual risk-taking. Those sexually active adolescents who do poorly in school are not necessarily more prone to risky sexual behavior, as other variables seem to be more predictive of sexual risk-taking.

This finding contrasts with the research showing a relationship between poor school achievement and pregnancy risk-taking. An examination of the different populations and methodologies used appears to be explanatory. Oskamp and

Mindick (1983) studied adolescent females who were pregnant, in a post-facto design. Jones and Philliber (1983) studied frequency of contraceptive use, but did not examine contraceptive effectiveness, as was done in the present study. In addition, their academic variable involved "educational aspirations" rather than a continuous scale GPA variable. It appears that there is a difference in pregnancy risk-taking findings based on a priori vs. post facto designs, the specific populations studied (pregnant adolescents vs. a general adolescent sample), and the criteria used (educational aspirations, GPA, attitude toward school).

Personality Traits

Related to school achievement are individual differences in cognitive capacity or intelligence. There have been a limited number of studies which have examined the relationship between intellectual ability and sexual risk-taking. This variable has been operationalized in several ways in studies of adolescent sexuality: ability to solve displaced volume questions (Johnson, Green & Kaplan, 1992; Johnson & Green, 1993); the Vocabulary subtest of the WISC-R (Sandler, Watson & Levine, 1992); cognitive development specific to reasoning about sexuality (Gfellner, 1986). When a developmental lens is used, there is considerable overlap

between the construct of intelligence, and that of cognitive-developmental level.

In the present study, the construct of intelligence was measured with the Shipley Institute of Living Scale, a timed, twenty item abstract reasoning test and a timed, forty item vocabulary test. No significant correlations were found between any of the measures of intellectual ability and either sexual risk-taking variable. In the Johnson and Green (1993) research, abstract thinking ability, as measured by the ability to interpret the double meanings of three puns, accounted for 30% of the variance in the dependent variable, sensible use of contraceptives (defined as contraceptives used at least 75% of the time). These researchers studied 60 female adolescents age 14-18. Similarly, Sandler, Watson, and Levine found that higher WISC-R Vocabulary scores helped discriminate between adolescents with greater amounts of knowledge and use of contraceptives over their counterparts with lower reported knowledge and use of contraception, controlling for socio-economic status. These researchers studied 37 females, age 13-17 who visited a general purpose health clinic.

If a relationship between intelligence and sexual "safeness" does exist, the failure to replicate past findings with the vocabulary and abstract reasoning variables may be due to the measures employed. In the present study, a timed, group administered, multiple choice, paper-and-pencil

instrument was used. The Vocabulary subtest of the WISC-R is untimed, individually administered, verbally presented and responded to, with open ended responses. Factors possibly confounding the measurement of intellectual ability in the present study include attention span and distractibility, test anxiety in a timed situation, and level of involvement or commitment to the study. In addition, the population studied was different from past research. The present study used high school students, both male and female, as opposed to exclusively female users of a health clinic.

In addition to cognitive factors, sensory and emotional factors were examined for a relationship to sexual risk-taking in adolescents. Past research implicates the construct of Sensation Seeking in adolescent sexual activity and risk-taking (White and Johnson, 1988; Newcomb and McGee, 1991; Arnett, 1990; Zuckerman, 1979). Zuckerman (1979) indicated that high sensation seekers are more permissive in their attitudes toward sex, and report a greater variety of sexual activities with more partners than do low sensation seekers. For these reasons, a relationship between sensation seeking and sexual risk-taking was hypothesized:

Hypothesis #8: Sensation seeking scores will be significantly positively related to reported sexual risk-taking scores.

This hypothesis was partially supported. Sensation seeking was significantly correlated with AIDS risk-taking ($r = .27, p < .001$) for the total group, but not with pregnancy

risk-taking. The sensation seeking variable accounted for over 5% of the variance in female AIDS risk-taking, and over 2% for the total group. It was not significant in the regression of male AIDS risk-taking. The findings with regard to gender run counter to those found for sexual intercourse experience. It appears that for males, sensation seeking is a more important predictor of sexual intercourse experience than it is for females. For females, sensation seeking is more important with regard to AIDS risk-taking behavior than it is for males. The need for complex, novel stimuli seems to be important in initiating sexual activity for males, and seems to drive a female tendency to be promiscuous and unsafe with regard to condom use. Since no relationship between pregnancy risk-taking and sensation seeking was found for females, it can be inferred that the sexually active females with high sensation seeking needs were using effective methods of birth control frequently, but were not assuring that their partners used condoms. It may be that the threat of pregnancy is more real to female sensation seekers, but AIDS may be perceived as more distant and remote. It may also be that condom use interferes with the bodily "sensation seeking" desired by these adolescents.

Similar results were found with the impulsivity variable. Impulsivity is somewhat different from sensation seeking, in that it is more behaviorally, rather than cognitively oriented. A person with strong sensation seeking

needs has a cognitive preference for novel stimuli, but may be able to delay action in searching them out. An impulsive person often acts before cognitively integrating all of the information which could influence a course of action. The two variables were moderately significantly correlated ($r = .46$, $P < .001$) in this study.

There is both intuitive appeal and empirical support for a relationship between impulsivity and sexual risk-taking (White & Johnson, 1988; Oskamp & Mindick, 1983). Those adolescents more prone to acting before evaluating the implications of their behavior would seem to be those at greatest risk for unplanned pregnancy and AIDS. In this study, a significant and positive relationship between impulsivity, as measured by a seven item, forced choice scale, and sexual risk-taking was predicted:

Hypothesis #9: Those adolescents who report greater impulsiveness will report a greater degree of sexual risk-taking than their less impulsive peers.

Although impulsiveness had no demonstrated relationship to sexual intercourse experience, it did have a relationship to sexual risk-taking behavior. The hypothesis was supported for the total group ($r = .20$, $p < .01$) and for females ($r = .28$, $P < .01$). For females, being impulsive was related to promiscuity and nonuse of condoms. Also, a trend in the data which was not statistically significant suggested a relationship between impulsivity and less frequent and

effective birth control use by females ($r = .18, p = NS$). The data relating impulsiveness to sexual risk-taking were less than robust, as impulsiveness did not emerge as significantly predictive in any of the regression analyses.

Ego strength was used as a predictor variable due to its appeal as an index of goal directedness and self control. The scale used to operationalize this construct, a shortened, 14 item version of the Ego Strength Scale (Epstein, 1981), contained seven items which were impulsiveness items, reverse scored. A limited amount of previous research was found linking ego strength and ego development to sexual risk-taking. Based on the negative relationship found between ego development and pregnancy risk-taking (Resnick and Blum, 1985), along with the negative relationship found between ego development and AIDS risk-taking (Hernandez and DiClemente, 1992), the following hypothesis had been put forth:

Hypothesis #10: Ego strength will have a significant and negative relationship to sexual risk-taking behavior.

This hypothesis was supported for both AIDS risk-taking and pregnancy risk-taking behavior in females, but was rejected for both types of sexual risk-taking in males. For females, there was a significant negative correlation between ego strength and AIDS risk-taking ($r = -.24, p < .05$) and pregnancy risk-taking ($r = -.21, p < .05$). For females, ego strength accounted for 5.5% of the variance in the pregnancy risk-taking regression, emerging as the second strongest

predictor variable. There was much overlap between the ego strength and impulsiveness constructs due to the 7 items common to both scales. Those females who were less impulsive, more goal directed, and with better self control by their own report, were less likely to be promiscuous and fail to use condoms than their peers with lower self reported ego strength. Similarly, those females with higher ego strength were more likely to use effective methods of birth control, frequently.

Perhaps the most interesting finding with the ego strength construct was the gender difference seen. There was a positive and significant correlation between ego strength and pregnancy risk-taking for males ($r = .23, p < .05$), as contrasted to the negative and significant correlation for females. The statistically significant gender difference ($p < .01$) suggests that for females, having self control and planning ability is a protective factor against unintended pregnancy, but for males, having such self-control equates with lesser frequency and effectiveness of birth control use. Similarly, the same data trend exists for AIDS risk-taking. For females, promiscuity and nonuse of condoms is associated with poor planning and a lack of goal directed behavior. For males, this AIDS risk-taking behavior may be of a more intentional nature, as it was more likely to be reported by those males with greater ego strength. Male sexual risk-taking behavior is found in those males who possess adequate

planning ability and self control. If this finding does not represent an aspect of deliberate, intentional action, at the least, it suggests that male sexual risk-taking is not related to impulsiveness and poor planning ability. The statistically significant gender difference ($p < .05$) suggests that for females, having good self control and planning ability are far more important to sexual risk-taking than it is for males.

A similar finding was found in the data on self-esteem. For males, there was a positive correlation between self reported self-esteem and AIDS risk-taking ($r = .17$, NS), and pregnancy risk-taking ($r = .19$, NS). These findings provide some limited support for the contention that sexual risk-taking is associated with greater self-esteem in males. The combined findings on ego strength and self-esteem suggest that sexual risk-taking may be more ego-syntonic for males, but ego-dystonic for females. This is perhaps due to a societal "double standard" regarding the sexual norms for both genders. A promiscuous male adolescent may regard himself, or be regarded by peers, as a "stud", while a female adolescent with multiple partners is regarded as a "slut".

The research on self-esteem and adolescent sexual risk-taking reviewed found inconsistent findings specific to populations studied and measurements used (Geis & Gerrard, 1984; Herold, Goodwin & Lero, 1979; Hayes, 1987; Plotnick & Butler, 1991; Drummond & Hansford, 1991; McCullough &

Scherman, 1991; Fisher, Schneider, Pegler, & Napolitano, 1991; see Morrison, 1985 for a review). For this reason, no hypothesis regarding self-esteem had been put forth. The results of the present study suggest that further research on self-esteem should be separated by gender when examining possible effects. No prior research linking adolescent sexual behavior with the construct of Constructive Thinking (Epstein, 1990), was in existence at the time of the data collection. There was reason to believe, based on laboratory decision making experiments examining constructive thinking (Epstein, 1993), that a relationship would exist between this construct and adolescent sexual decision-making.

For these reasons, the following hypothesis was proposed: **Hypothesis #11: Better constructive thinkers, those with higher scores on the CTI, will report lower levels of sexual risk-taking than those with low CTI scores.**

This hypothesis was not supported for the global CTI score. Although there was a negative correlation between AIDS risk-taking and the global CTI score for females ($r = -.16$), it was not significant. This trend suggests a tendency for better constructive thinking females to be less promiscuous and more likely to use a condom during intercourse.

With the individual scales of the CTI, there were some significant findings. Better emotional coping ability was associated with higher AIDS risk-taking behavior in males (r

= .24, $p < .05$). There was also a non-significant trend relating higher emotional coping and pregnancy risk-taking in males. High scores on the Emotional Coping scale are associated with the ability "...to cope with distressing situations in a manner that does not produce undue stress." (Epstein, 1993) p.4. Good emotional coping ability in adolescent males may be related to less cognitive concern given to the possible negative outcomes of sexual risk-taking. Epstein (1993) cites a strong relationship between poor emotional coping and neuroticism, and hypothesized that poor emotional coping involves the automatic thinking, cognitive component of neuroticism. If this is true, those adolescent males less prone to thinking in ways which generate anxiety are more likely to be promiscuous without using condoms. In addition, though not a statistically significant finding, this type of thinking may have a relationship to sex without birth control for this group.

For adolescent females in this study, a negative trend in the data suggested some relationship between behavioral coping and the two sexual risk-taking variables. Behavioral coping refers to "...the tendency to think in ways that promote effective action." (Epstein, 1993), p.4. Although the data were not significant (AIDSRISK: $r = -.18$; PREGRISK $r = -.16$) it seems that those females with better behavioral coping scores had a tendency to protect themselves from the risk of AIDS or unplanned pregnancy more than those women who

were poor behavioral copers. In the total group regression analysis of pregnancy risk-taking, behavioral coping explained 3.4% of the variance-- evidence of a small but significant effect on behavioral action with birth control for both genders.

Another data trend was found for the Categorical Thinking scale for males. There was a non-significant trend toward a positive relationship between categorical thinking and both AIDS risk-taking and pregnancy risk-taking for males. This is similar to the findings with the sexual intercourse experience variable, for which the Categorical Thinking scale was found to effectively discriminate between virgin and nonvirgin males. Within the subgroup of sexually active males, those who tended to think in categorical terms were more likely to take sexual risks than their peers who did not think as much in this manner.

To summarize the findings on AIDS risk-taking, a profile of a "high risk" adolescent is presented. Those adolescents who are most promiscuous and least likely to use condoms consistently are: likely to be older; have an early age of sexual onset; have a history of having been sexually abused; have a strong need for novel stimulation (high sensation seeking needs); have a tendency to be impulsive. By far, the most important variable in AIDS risk-taking for both genders was the age of sexual onset. In addition to this variable, the most important factors in male AIDS risk-taking were:

being older, perceiving little support from parents; and having good emotional coping ability; respectively. After the age of sexual onset factor, the adolescent female profile for promiscuity and nonuse of condoms includes: high sensation seeking needs; low family income; high tendency toward impulsive action; low ego strength; and a sexual abuse history, in order of statistical importance.

The results of the study suggest that age and gender were the most important factors in pregnancy risk-taking. Males as a group were less likely to use effective birth control consistently than were females. In addition, younger adolescents were more likely to risk pregnancy than older adolescents. These two variables accounted for ten percent of the variance in pregnancy risk-taking. After age and gender, the following profile describes those adolescents least likely to use effective birth control methods on a consistent basis (in order of importance): poor behavioral coping ability; a history of sexual abuse; an early onset of sexual activity.

The profile of an adolescent male most likely to engage in pregnancy risk-taking includes: early age of sexual onset, low level of naive optimism; no sexually active best friend; a sexual abuse history; a tendency to think in categorical terms; high ego strength (in order of importance). The adolescent female profile of sexual risk-taking suggests that age was the most important factor, as

younger girls were by far the riskiest. After this variable, the profile of a female at risk for pregnancy includes: low ego strength, a sexual abuse history, and low esoteric thinking.

Limitations of the Research

The major limitation to the study was the lack of total explanatory power of the combined independent variables for the two dependent sexual risk-taking variables. Although there was success in discriminating the virgin from the nonvirgin students (Male Eigenvalue = .92; Female Eigenvalue = .48), no more than 30% of the variance was explained in any of the sexual risk-taking regression analyses. Part of this problem may be due to the low internal consistency (alpha coefficient) of the two scales for the sexually active group, AIDS RISK = .53, PREG RISK = .64. This suggests that each scale was measuring two somewhat discrepant factors within it. AIDS RISK measured promiscuity and nonuse of condoms, which are somewhat separate and distinct. PREG RISK measured consistency of birth control use, along with the effectiveness of the birth control method usually employed. These may also be separate and distinct.

When considering the issue of statistical power, some limitations must be placed on the conclusions derived. Correlations reported in this study (see Table 8) which were of statistical significance ranged from .21 to .46, from

slight to moderate significance. For interpretations which were based on correlations in the low .20's, it is important to consider that these data are explaining only between 4% and 6% of the variance in the dependent variable (see Cohen, 1994 for a discussion of the misuse of correlation coefficients). For this reason, the interpretations based on low correlations should be considered for further study, rather than regarded as conclusive, explanatory results.

There were several potential independent variables neglected in this research which may have accounted for more variance. Among these were the following: alcohol and drug use, both in general and in direct relation to sexual activity; future-time perspective and future aspirations; the context of the sexual activity and decision-making within relationships; sex drive; body image; sexual stereotypes and perceived expectations of partners, and potentially many others. Alcohol and drug use significantly contributes to sexual risk-taking behavior by adolescents (Flanigan, McLean, Hall & Propp, 1990).

Despite these absences, an attempt was made to ensure a wide array of independent variables, both novel ones and those seen in existing studies. As the research was exploratory in nature, the overall goal was to identify those variables which should be given more careful study. The limitation is one of depth, as the findings are indications

of possible relationships, rather than conclusions in themselves.

Both the AIDS RISK variable and the PREG RISK variable were scales based on self-reported behavior. In focusing on behavior, other important aspects of adolescent sexuality were omitted, i.e. reproductive and contraceptive knowledge, the availability of birth control, sexual attitudes, the interpersonal context in which sexual decisions are made. A major limitation of the research is that it did not target specific reasons for nonuse, nor did it assess protective factors, those factors which make pregnancy and AIDS prevention more likely. Comparison of the reported findings should be limited to other studies which measure self-reported sexual behaviors of suburban high school students.

The missing data due to the time constraints involved may have impacted on the results. The procedures employed to administer the questionnaire were designed for the most efficient distribution and collection to allow the greatest amount of testing time for each student. Nonetheless, some students did not finish. For the scales later in the questionnaire, i.e. Self-esteem, Impulsivity, Ego Strength, Sensation Seeking, data analyses were conducted with missing data for these students. Although the number of students not completing was very small during each administration, the results may have been affected.

The attrition rate of subjects due to other factors was also a concern. During the six days in late February and early March 1994 when the questionnaire was administered, the total school enrollment was 573 students. The final number in the study was 381 students. The 33% attrition rate suggests some skewing. In addition to higher than average absentee rates during these months, behavioral factors i.e. random response patterns, questionnaire refusal, resulted in the exclusion of some students (see Methodology section for details). It is possible that for some of the students who were excluded from the study, the behaviors which resulted in their exclusion, such as absenteeism, or impulsive action, were influencing their use or nonuse of condoms and contraception during sex, given that problem behaviors in adolescence tend to cluster together (Jessor & Jessor, 1977).

A possible confounding variable involved the biological differences between the students. The timing of the onset of puberty has been found to be important in adolescent sexuality (Irwin & Millstein, 1986). Relatedly, no attempt was made to control for the effects of sex drive. There has been some evidence suggesting a direct link between testosterone levels and sexual activity in boys (Udry, Billy, Morris, Groff & Raj, 1985).

Another limitation of the research results from the homogeneity of the adolescent sample. In the literature, the term "adolescent" is used to describe individuals from middle

school to college, studied in a variety of contexts. The results presented in this paper were obtained from a predominantly white, working-middle class suburban sample of primarily heterosexual high school students. The sample adequately represents the community from which it was taken, but the findings are probably not generalizable to adolescent populations which do not resemble the make up of the sample. Furthering this point, although an attempt was made to include sexual and racial minorities, the small number of each meant that valid interpretations for either group were not possible.

Implications for Intervention and Practice

The findings regarding age in the study present some pressing needs for intervention with adolescents. The students most likely to take risks which could result in pregnancy were the youngest (particularly females), and those most likely to take risks resulting in HIV infection were the oldest (particularly males). The focus of sex education in the schools has been at the high school level, and often over the objection of parents who believe that this type of learning should take place in the home. To make an attempt at being preventive, sex education-- including AIDS and pregnancy education, should be taking place in middle school and elementary school, as suggested by the results found in this study.

As society has changed, schools have been asked to provide an increasing number of services once arranged for or provided by the family. Psychological services and health services are now routinely provided, and school-based health clinics are growing in number. A controversial issue being faced by school districts in the 1990's is whether or not to become involved in the active distribution of condoms and other methods of birth control.

Along with increased health-related services provided by schools has come increased pressure over what to include in the educational curriculum. Traditionally, the health curriculum has been that which has addressed sexuality. The results of this research suggest a need for approaches which emphasize the importance of the adolescent peer group in sexual decision-making. The findings regarding the influence of peers on sexual activity and possibly sexual risk-taking, suggest that a peer education approach might be beneficial.

It is clear that adolescents often minimize or fail to consider the risks for a given activity. To have a significant impact, an effective approach might expose adolescents to those who had suffered the consequences of sexual risk-taking. Guest speaking appearances by young people who have contracted AIDS; teen mothers; and fathers discussing child support responsibilities could enhance awareness of vulnerability, particularly if the speakers

are close to the students in age. In planning this type of intervention, it is important to consider that one approach may not be effective for both males and females. The results of this study suggest that males and females get very different messages from their peers about sex. Speakers who can describe sexual stereotypes, and who are able to elicit an open discussion about the students' views, will be the most effective.

Encounter groups and open discussion of sexuality facilitated by trained peer educators, knowledgeable about the subject matter, yet able to relate to other students in a non-authoritarian manner, hold promise. Activities generated from these groups such as writing and poster contests; poems, interviews, and stories can help to keep sexual safety in student consciousness. To have this occur, schools need to establish a climate of openness.

Consistent with this openness, is the need for schools to address the needs of gay/lesbian youth. Although the number of these students was small ($n = 25$) in the present sample, they are a minority with needs for early education about AIDS and safe sexual practice. Working in the direction of protecting gay and lesbian students from harassment, in Massachusetts the "Safe Schools" legislation has mandated public schools to provide resources for these students.

Schools can also help with the problem of AIDS and teen pregnancy on an individual basis by providing help to students identified as being at risk. School psychologists, guidance counselors, and school adjustment counselors, as participants on a Student Intervention Team, can help identify those students at risk for problems other than academic failure. Students who have been sexually abused, those who are known to have been sexually active at a young age, and those involved in delinquent behavior are often referred to school counselors. Assessment of sexual risk-taking can occur routinely when incorporated into a counseling relationship.

Directions for Future Research

As the present study was exploratory, there were several variables which emerged as deserving of further attention. Often these variables held significance for one demographic subgroup, but not others, supporting the need for adolescent risk-taking research targeting specific populations, as called for by previous researchers (Jessor, 1993; Robinson, Ruch-Ross, Watkins-Ferrell, & Lightfoot, 1993). Family income emerged as a predictor of AIDS risk-taking in females, suggesting the need for assessment of risk factors in different socio-economic groups. Cross-cultural and comparative research is needed, along with those which sample specific populations. The utility of

the "representative", white middle class sample of adolescents is now in doubt and is being replaced by a paradigm emphasizing, "...increased complexity of research objectives; greater reliance on time-extended research designs; expanded attention to the social context;...a readiness to study populations of adolescents hitherto largely ignored." (Jessor, 1993) p. 117.

Some of the gender differences which were present suggested the importance of research on adolescent sexuality to examine gender differences, or employ single gender research designs. Of particular interest were the sexual risk-taking gender differences seen for the self-esteem, ego strength, and constructive thinking variables. These findings open questions about sexual roles, stereotypes and gender-specific social influences on sexual decision-making in adolescence. There is a need for more research into the social and communicative factors involved in adolescent sexuality. The finding of lower pregnancy risk-taking among those adolescent males with a sexually active best friend suggests that communication may be a protective factor.

Communication and support from parents, as related to adolescent sexuality, is an area in need of investigation. The results of this study suggest that support perceived by the adolescent from parents does have some relationship to

both sexual onset and sexual risk-taking. The nature and extent of this relationship is unknown.

The results of the study added to the research which has established a link between child sexual abuse and sexual risk-taking in adolescence (Donaldson, Whalen, & Anastas, 1989; Lindberg & Distad, 1985; McCullough & Scherman, 1991). Longitudinal research is needed into the efficacy of different types of therapy received near to the time of abuse, as measured by sexual risk-taking in adolescence. In addition, research studying sexually abused children who do not exhibit sexual risk-taking in adolescence should be conducted to determine protective factors.

Although egocentrism, as operationalized in this research, showed no relationship to sexual behavior, the need to study the impact of social-cognitive and abstract reasoning variables remains. In addition, the relative impact of emotional factors, particularly within the context of relationships, on adolescent sexual behavior is deserving of attention. The findings with the Constructive Thinking Inventory, particularly with regard to categorical thinking, and emotional and behavioral coping ability in adolescents, support its future use in adolescent sexual research.

The difficulty in comparing outcome results from various research on adolescent sexual risk-taking speaks to

the need for a standardized scale of adolescent sexual behavior. This has been attempted for adolescent risk-taking in general (Alexander, Kim, Johnson, Smith & Dolan, 1990), as well as for combined sexual attitudes and behaviors (Johnson & Green, 1993), but scales specifically measuring only contraceptive behavior or AIDS risk-taking behavior are lacking. A scale tailored to each gender, for both types of sexual risk-taking, would allow results to be more readily compared.

APPENDIX A
PASSIVE CONSENT PARENT LETTER

February 8, 1994

Dear GHS Parent:

During the week of February 28- March 4, a research project will be conducted by me at the high school, in association with the Counseling Psychology Department at the University of Massachusetts at Amherst. The proposed research has been approved by the Human Subjects Review Committee at UMASS, as well as the Research Review Committee of the Greenfield School Department.

Each year, over one million teen pregnancies occur. In addition, some AIDS cases can be traced to HIV infection in adolescence. For these reasons, I believe research assessing adolescent sexual behavior is very important.

The students at the high school will be given a questionnaire. This questionnaire includes questions about several factors associated with risky sexual behavior in adolescence. Because some of the questions ask about sexual knowledge, attitudes and behaviors, all questionnaires will be kept totally anonymous and confidential. Response sheets will be sealed and kept separate from the questionnaires, and there will be no identifying information found on them. The information gained will be shared with the high school to help better understand the health-related educational needs of students.

Participation in this project is totally voluntary. Each student will be asked for their written consent before taking the questionnaire. If the student does not want to participate, he or she will be provided with an alternative activity during the testing time.

If you have any questions about the research, please call me at 772-1350. If you have strong objections to your son or daughter taking the questionnaire, please sign below, detach the form and return it to the high school on or before February 25th. If this form is not received, your son or daughter will be asked to voluntarily participate.

Thank you for your attention to this notice.

Sincerely,

Scott A. Rice, NCSP
GHS School Psychologist

I request that _____ be excluded from taking the questionnaire described above.

parent signature

date

APPENDIX B
INFORMED CONSENT LETTER

Dear GHS Student:

The questions being asked in this survey are part of a research project on the factors contributing to risky sexual behavior of high school students. Recent research has shown that some AIDS cases can be traced to HIV infection in the teen years. In addition, teenage pregnancy is a great problem, with over one million teen pregnancies occurring each year. These reasons make this type of research with high school students very important.

The questionnaire you will receive is part of a study being conducted by Scott Rice in the Counseling Psychology Department at the University of Massachusetts at Amherst. The information gained from your questionnaire will be an extremely important part of this research. Many of the questions will seem unrelated to the topic, however they do provide important information about you. Sometimes when students take these types of questionnaires, they are reminded of unpleasant experiences and get upset. If you experience any emotional stress related to the questions being asked, please see Mr. Rice or Ms. Brimmer for an appointment to talk about it. Because some of the questions are about sexual attitudes and behavior, your identity will be kept totally confidential using the following procedure:

Your responses to all questions should be made only on the computer answer sheet. No one will ever be able to identify the responses as yours. The blackened circles at the bottom left represent your grade point average, as this is part of the research. Your name is on the answer sheet to make sure that the right person gets it. After you get your answer sheet, erase the name. Once you erase your name, YOUR ANSWERS WILL BE TOTALLY ANONYMOUS. Information about the group as a whole will be shared with the school, for the purpose of better understanding the health related educational needs of students.

Your participation in this research is totally voluntary. You do not have to take the questionnaire. If you begin to work on the questionnaire, and decide not to finish, you may stop at any time. By signing below, you agree that you are voluntarily participating in this research. If you decide not to, you will be given other instructions, without penalty. If you don't understand what has been said, please ask the teacher for help.

I acknowledge that I have been informed about this research and agree to participate willingly.

student signature

date

If you are going to participate, please sign above. Turn this page over and answer the questions asked. If you do not want to participate, please hand it back without signing it.

APPENDIX C
QUESTIONNAIRE USED IN THE STUDY

Please answer the questions below by darkening the correct letter on the answer sheet. Darken the circle completely. If you make a mistake, erase it thoroughly.
(Demographics Questionnaire/Egocentrism Items)

- 1) Sex: a. male b. female
- 2) Age: a. 14 b. 15 c. 16 d. 17 e. 18 or older
- 3) Which parent(s) do you live with....?
 - a. both mother and father
 - b. mother alone or father alone
 - c. mother and stepfather or father and stepmother
 - d. foster parents or with relatives
 - e. on own or with friends
- 4) Race: a. White b. African-American
 - c. American Indian
 - d. Asian-American
 - e. Hispanic
- 5) What is your birth order?
 - a. only child
 - b. oldest child
 - c. somewhere in middle
 - d. youngest child
- 6) Do you receive free or reduced price lunch at school?
 - a. yes
 - b. no
- 7) Is your best friend sexually active (sex within the last two months)?
 - a. yes
 - b. no
- 8) How possible do you think it would be for a person to get AIDS if that person often has sex with different partners and doesn't use condoms or make sure that their partner is using them?

a.	b.	c.	d.	e.
will	probably	possible	not	won't
happen	happen		likely	happen
- 9) What are the chances that a pregnancy would result if a man and a woman had sex once a week for a year and never used birth control?

a.	b.	c.	d.	e.
will	probably	possible	not	won't
happen	happen		likely	happen

Questions 10-69 will be timed. It is the only part of the questionnaire which is like a "test". Please hand this sheet in now and wait for the next section.

(Shipley-Vocabulary Test)

The next section is a vocabulary test. You will have four minutes to work on it. Don't worry about finishing, just do as many as you can.

PLEASE DO NOT PICK UP YOUR PENCIL OR TURN THIS PAGE OVER UNTIL YOU ARE TOLD TO DO SO. BE SURE TO START WITH #10 ON YOUR ANSWER SHEET. (printed on back of vocabulary test)

Vocabulary Test

On the test below, the first word in each line is printed in capital letters. Opposit it are four other words. Of these four words, choose the one word which means most nearly the same thing as the first word. Darkent he circle on the separate answer sheet. If you don't know, guess. You will have four minutes total, so don't spend much time on any one item.

SAMPLE

LARGE	red	<u>big</u>	silent	wet
	A	B	C	D
	_____	_____	_____	_____
10) TALK	draw	eat	speak	sleep
11) PERMIT	allow	sew	cut	drive
12) PARDON	forgive	pound	divide	tell
13) COUCH	pin	eraser	sofa	glass
14) REMEMBER	swim	recall	number	defy
15) TUMBLE	drink	dress	fall	think
16) HIDEOUS	silvery	tilted	young	dreadful
17) CORDIAL	swift	muddy	leafy	hearty
18) EVIDENT	green	obvious	skeptical	afraid
19) IMPOSTOR	conductor	officer	book	pretender
20) MERIT	deserve	distrust	fight	separate
21) FASCINATE	welcome	fix	stir	enchant
22) INDICATE	defy	excite	signify	bicker
23) IGNORANT	red	sharp	uninformed	precise
24) FORTIFY	submerge	strengthen	vent	dreaden
25) RENOWN	length	head	fame	loyalty
26) NARRATE	yield	buy	associate	tell
27) MASSIVE	bright	large	speedy	low
28) HILARITY	laughter	speed	grace	malice
29) SMIRCHED	stolen	pointed	remade	soiled
30) SQUANDER	tease	belittle	cut	waste
31) CAPTION	drum	ballast	heading	ape
32) FACILITATE	help	turn	strip	bewilder
33) JOCOSE	humorous	paltry	fervid	plain
34) APPRISE	reduce	strew	inform	delight
35) RUE	eat	lament	dominate	cure
36) DENIZEN	senator	inhabitant	fish	atom

37) DIVEST	dispossess	intrude	rally	pledge
38) AMULET	charm	orphan	dingo	pond
39) INEXORABLE	untidy	involatile	rigid	sparse
40) SERRATED	dried	notched	armed	blunt
41) LISSOM	moldy	loose	supple	convex
42) MOLLIFY	mitigate	direct	pertain	abuse
43) PLAGIARIZE	appropriate	intend	revoke	maintain
44) ORIFICE	brush	hole	building	lute
45) QUERULOUS	maniacal	curious	devout	complaining
46) PARIAH	outcast	priest	lentil	locker
47) ABET	waken	ensue	insight	placate
48) TEMERITY	rashness	timidity	desire	kindness
49) PRISTINE	vain	sound	first	level

(Shipley--Abstract Reasoning Test)

The next section is a reasoning test. You will have six minutes to work on it. Don't worry about finishing, just do as many as you can.

PLEASE DO NOT PICK UP YOUR PENCIL OR TURN THIS PAGE OVER UNTIL YOU ARE TOLD TO DO SO. BE SURE TO START WITH #50 ON YOUR ANSWER SHEET. (printed on back of the Reasoning test)

Reasoning Test

Complete the following. Each dash (---) calls for either a number, a letter, or a word to be selected from the five choices in the right-hand column. Darken your choice on the separate computer answer sheet. You will have six minutes total, so don't spend too much time on any one question. Each numbered line is a separate item. Answer the items in order. It is all right to guess.

<u>Problem</u>	<u>Select One of These Answers</u>				
	A	B	C	D	E
50) 1 2 3 4 5 ---	2	6	9	8	5
51) white black short long down ---	in	right	up	out	left
52) AB BC CD D---	F	E	C	A	H
53) Z Y X W V U ---	W	A	F	T	P
54) 12321 23432 34543 456---	45	12	78	54	32
55) NE/SW SE/NW E/W N/---	S	E	W	N	NW

- 56) escape cape cape --- nape cat dress coat ape
- 57) oh ho rat tar mood --- mouse sad doom joy ah ha
- 58) A Z B Y C X D --- W E V F U
- 59) tot tot bard drab 537 --- 357 753 573 375 735
- 60) mist is wasp as pint in
 tone --- toe on to no ton
- 61) 57326 73265 32657
 26573 --- 32657 65732 65723 57362 75623
- 62) knit in spud up both to
 stay --- on set up tap at
- 63) Scotland landscape
 scapegoat --- land ho/victim/shepherd/escape/goatee
- 64) surgeon 1234567
 snore 17635 rogue --- 17632 34625 34567 36425 17236
- 65) tam tan rib rid rat raw
 hip --- hot hit top tip pit
- 66) tar pitch throw serve steak board plink lunch
 saloon bar rod
 fee tip end
 plank --- meals
- 67) 3124 82 73 154 46 13--- 9 6 5 10 8
- 68) lag leg pen pin big bog
 rob --- rub rib rid rap rat
- 69) two w four r one o
 three --- t h r e u

Read each of the following statements and decide whether it is true or false for you. Please use the following scale, and blacken the letter on your answer sheet which best represents the way you feel.

A	B	C	D	E
completely true	mainly true	partly true partly false	mainly false	completely false

Important: Make sure to start with #70 on your answer sheet.

(Sensation Seeking/Ego Strength/Impulsiveness Scales)

- 70) I like to have new and exciting experience and sensations even if they are a little frightening.
A B C D E
- 71) Most people who know me consider me to be a dependable person.
A B C D E
- 72) I like doing things just for the thrill of it.
A B C D E
- 73) When confronted with a difficult situation, I give up more easily than most people.
A B C D E
- 74) I tend to do things on the spur of the moment.
A B C D E
- 75) I have frequent ups and downs in mood.
A B C D E
- 76) I find it hard to wait for something I want.
A B C D E
- 77) I would like the kind of life where one is on the move and travelling a lot, with lots of change and excitement.
A B C D E
- 78) Most people who know me consider me to be a dependable person.
A B C D E
- 79) I like "wild" uninhibited parties.
A B C D E
- 80) I like to explore a strange city or section of town by myself, even if it means getting lost.
A B C D E
- 81) I prefer friends who are excitingly unpredictable.
A B C D E

(Egocentrism Questions/Demographics/Sexual Risk-Taking)

Please answer the following questions honestly and carefully.

- 82) How possible do you think it would be for you to get AIDS if you often have sex with different partners without using condoms?
- A. definitely happen B. probable C. possible D. not likely E. impossible
- 83) What are the chances that a pregnancy would result if you and your partner had sex once a week for a year and never used birth control?
- A. definitely happen B. probable C. possible D. not likely E. impossible
- 84) Which of the following best describes your sexual orientation?
- A. homosexual B. heterosexual C. bisexual
- 85) Have you ever been the victim of sexual abuse?
- A. yes B. no
- 86) Have you ever had sexual intercourse?
- A. yes B. no
- If you have not had sexual intercourse, skip #87 to #95
Go right to the directions on the next page.
- 87) How old were you when you first had sexual intercourse?
- A. 13 or below B. 14 C. 15 D. 16 E. 17 or older
- 88) Have you had sexual intercourse within the last year?
- A. yes B. no
- 89) How many times per month do you have sex, on average?
- A. 20 or more B. 15-19 C. 10-14 D. 5-9 E. 4 or less
- 90) How many people have you had sex with?
- A. 10 or more B. 5-9 C. 3-5 D. 2 E. 1

- 91) Have you ever had sexual intercourse with someone who has had sex with other people before you?
- A. No B. Yes, and I always use condoms when this happens C. Yes, and sometimes I don't use condoms when this happens
- 92) How many people have you had sex with, without using condoms?
- A. 10 or more B. 5-9 C. 3-5 D. 2 E. 1
- 93) How often do you use condoms when you have sex?
- A. Every Time B. Most times, Not every time C. Half the time D. Sometimes, Not Often E. Never
- 94) How often do you use some form of birth control (condoms, pill, diaphragms, creams, IUD, etc...) when you have sex?
- A. Every Time B. Most times, Not every time C. Half the time D. Sometimes, Not Often E. Never
- 95) Which one of the following is your usual method of birth control?
- A. pill or IUD B. condoms or diaphragm with foam or cream C. condoms alone or diaphragm alone
- D. sponge alone or foam alone E. withdrawal (pulling out), rhythm method, douching or nothing

(Constructive Thinking Inventory--CTI)

Starting with question #96, please follow these directions:

First of all, this next section is not a test, but a questionnaire. A typical question is, "When bad things happen to me, I worry about them for a long time." If you are a real worrier, and this is "all true" for you, darken the A circle on your answer sheet. If you almost never worry and when you do it doesn't last very long, darken the D circle, as it goes with "pretty much false". Use the "not sure" answer only if you can't decide on the other choices.

There is no right or wrong answer to any of the questions, so don't worry if one question confuses you. Just answer it as honestly as you can.

This next section contains some silly questions such as "Birds can run faster than they can fly." These questions make sure that you are paying attention. Please answer them correctly.

- 96) When I have a difficult task to do, I try to think about things that will help me do my best.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 97) I feel that people are either my friends or my enemies.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 98) I don't get upset about little things.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 99) I believe there are people who can project their thoughts into other people's minds.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 100) If I do well on an important test, I feel like a total success and that I'll go far in life.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 101) When I'm not sure how things will turn out, I usually expect the worst.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 102) If people treat you badly, you should treat them the same way.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 103) If I don't do well, I take it very hard.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

- 104) Most birds can run faster than they can fly.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 105) Some people can read other people's thoughts.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 106) I think everyone should love their parents.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 107) When I have a lot of work to do I feel like giving up.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 108) There are only two answers to any question, a right one and a wrong one.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 109) When anyone disapproves of me, I get very upset.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 110) If I wish hard enough for something, that can make it happen.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 111) If I do something good, good things will happen to me.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 112) I get so upset if I try hard and don't do well that I usually don't try to do my best.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 113) Two plus two equals four.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

- 114) I worry a lot about what other people think of me.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 115) I believe the moon or the stars can affect people's thinking.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 116) When something good happens to me, I feel that more good things are likely to follow.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 117) There are basically two kinds of people in this world, good and bad.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 118) I don't worry about things I can't do anything about.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 119) I have washed my hands at least one time this year.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 120) I don't believe in ghosts.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 121) I always look at the good side of things.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 122) I've learned not to hope too hard, because what I hope for usually doesn't happen.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

- 123) I trust most people.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 124) I like to succeed, but I don't get too upset if I fail.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 125) I believe in flying saucers.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 126) When I discover that someone I like a lot likes me, it makes me feel like a wonderful person and that I can accomplish whatever I want to.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 127) When bad things happen to me, I don't worry about them for very long.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 128) I believe there are people who can see into the future.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 129) I think anyone who really wants a good job can find one.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 130) I have never seen anyone with blue eyes.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 131) I think there are many wrong ways but only one right way to do almost anything.
- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

- 132) I try to do my best in almost everything I do.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 133) I believe most people are only interested in themselves.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 134) I don't have any good luck charms.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 135) When I have a lot of work to do by a deadline, I waste a lot of time worrying about it.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 136) I think more about happy things from my past than about unhappy things.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 137) I believe in good and bad magic.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 138) The only person I completely trust is myself.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 139) If I did not make a team, I would feel terrible and think that I would never be on any team.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False
- 140) I try to accept people as they are.
A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

141) Water is usually wet.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

142) It is foolish to trust anyone completely because if you do you will get hurt.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

143) I do not believe in any superstitions.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

144) People should try to look happy no matter how they feel.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

145) I spend a lot of time thinking about my mistakes even if there's nothing I can do about them.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

146) Almost all people are good at heart.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

147) If I have something unpleasant to do, I try to think about it in a way that makes me feel better.

- A) All True B) Pretty Much True C) Not sure
D) Pretty Much False E) All False

Questions 148-156 ask about your overall relationship with both of your parents. If you are from a single parent household or live on your own, please answer the questions thinking about the parent you live with and/or spend the most time with. Please use the following scale to answer: (Parent Support Questionnaire)

A	B	C	D	E
-----	-----	-----	-----	-----
Never	Once in a while	Sometimes	Usually	Almost Always

- 148) I feel safe and secure when I'm with my parent(s)....
 A B C D E
- 149) My parent(s) trust me....
 A B C D E
- 150) My parent(s) feel affection for me...
 A B C D E
- 151) My parent(s) approve of me and the things I do....
 A B C D E
- 152) My parent(s) show interest in me and give me support...
 A B C D E
- 153) I can count on my parent(s)....
 A B C D E
- 154) My parent(s) are there when I need them....
 A B C D E
- 155) My parent(s) teach me helpful things....
 A B C D E
- 156) My parent(s) say nice things about me....
 A B C D E

Read each statement and decide whether it is true or false for you. Please use the following scale, and blacken in the letter on your answer sheet that best represents the way you feel. Begin with number 157.

(Impulsiveness/Sensation Seeking/Ego Strength Scales)

A	B	C	D	E
completely true	mainly true	partly true partly false	mainly false	completely false

- 157) I enjoy difficult and challenging situations.
 A B C D E
- 158) I tend to make quick judgements of people.
 A B C D E

- 159) I would like to take off on a trip without planning the details ahead of time.
 A B C D E
- 160) My emotions rarely get out of hand.
 A B C D E
- 161) I tend to change interests frequently.
 A B C D E
- 162) I prefer to buy something right away rather than save money for later on.
 A B C D E
- 163) I sometimes like to do things that are a little frightening.
 A B C D E
- 164) I often say and do things without stopping to think.
 A B C D E
- 165) Self control is no problem for me.
 A B C D E
- 166) I'll try anything once.
 A B C D E
- 167) I tend to jump to a second task before I have completed the first one.
 A B C D E
- 168) I sometimes do "crazy" things just for fun.
 A B C D E
- 169) When I have a job to do, I am not easily distracted.
 A B C D E

Please answer questions 171 to 180 by indicating how much you agree with the following statements. (Rosenberg Self-Esteem)

- 171) On the whole, I am satisfied with myself.
 A B C D E
 Strongly Agree Agree Not Sure Disagree Strongly Disagree
- 172) At times, I think I am no good at all.
 A B C D E
 Strongly Agree Agree Not Sure Disagree Strongly Disagree

173) I feel I have a number of good qualities.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

174) I am able to do things as well as most other people.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

175) I feel I do not have much to be proud of.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

176) I certainly feel useless at times.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

177) I feel that I'm a person of worth, at least equal to other people.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

178) I wish I could have more respect for myself.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

179) All in all, I'm inclined to feel that I am a failure.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

180) I take a positive attitude toward myself.

A	B	C	D	E
Strongly	Agree	Not Sure	Disagree	Strongly
Agree				Disagree

THE END. THANKS A LOT FOR YOUR COOPERATION AND EFFORT.

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