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THE UNIVERSITY OF CALGARY

Adolescent Substance-Abuse:

Vulnerability and Protective Factors From a Developmental Perspective

by

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ABSTRACT

Substance-abuse can profoundly impact cognitive and emotional development and interpersonal functioning in adolescents. There are multiple pathways from substance use to abuse that can be attributed to differences in the vulnerability or protective factors experienced by the adolescent. This study focussed on vulnerability and protective factors in adolescent substance-abuse.

A total of 134 participants, aged 12 to 21 years, were recruited from a number of community venues within a large urban centre in Western Canada. For purposes of the study, the participants were divided into two groups – non-substance-abusing and substance-abusing adolescents. The two groups were then compared and examined from the perspective of vulnerability and protective factors that would mediate the risk condition of substance-abuse. Adolescents from backgrounds of alcohol abuse were expected to be more vulnerable to the risk condition of substance-abuse. A strong attachment to parents was expected to act as a protective factor in non-substance-abusing adolescents, particularly those from substance-abusing environments. A subgroup of adolescents from within the non-substance-abusing group was further identified as being Resilient on the basis of having one or both parents who were considered to be alcohol abusers. Differences in internalizing disorders (anxiety and depression) were investigated between the Resilient Subgroup and the main group of non-substance-abusing adolescents to determine if competence was stable across domains.

Results of the investigation indicated that there were significant differences in maternal attachment, self-concept, and parental substance-abuse between the two groups

classified as non-substance-abusing and substance-abusing adolescents. Attachment was not found to be a protective factor against substance-abuse. The "number of people in the household with a drinking problem" was found to be the strongest predictor of adolescent substance-abuse. The Resilient Subgroup did not differ significantly in any measure from the main group of non-substance-abusing adolescents indicating competence across domains. These findings were discussed in terms of theoretical and practical implications for prevention and intervention efforts for adolescent substance-abuse.

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CHAPTER ONE: INTRODUCTION

The prevalence of adolescent substance use has endured to such an extent that in many cultures it is now considered a normal part of the adolescent experience. National statistics in Canada and the United States report high percentages of adolescents using alcohol. In Canada 64% of adolescents aged 15-16 and 80% of adolescents aged 17-19 have been reported as current drinkers (Hewitt, Vinje & MacNeil, 1995). In the United States, 90% of high school students reported that they had used alcohol (Johnston, O'Malley & Bachman, 1995). Alcohol use has been documented as a gateway to alcohol and other substance-abuse (Kandel, Yamaguchi & Chien, 1992). These statistics have encouraged ample research on the initiation of adolescent substance-use. Currently there is a need to focus on delineating normal adolescent substance use from substance-abuse and to determine levels of adolescent problem usage. In an effort to add to the literature in this area, this study compared a group of non-substance-abusing adolescents with a second group of substance-abusing adolescents to document patterns of use. Additionally, variables that may lead to adaptive or maladaptive adolescent development were also investigated.

A variety of personality, family, and peer factors have been implicated as contributing to adolescent substance-abuse. However, the literature has yet to resolve many questions regarding the antecedents, correlates, and consequences of increased substance-abuse by adolescents. Issues that arise repeatedly in the literature involve what increases vulnerability to substance-abuse and what protects adolescents from developing substance-abuse problems (Dryfoos, 1998; Jessor, 1993). This study focused on variables

from vulnerability and protective perspectives that have been associated with the initiation of substance use and with the progression to abuse. The protective factor chosen was attachment. Attachment patterns are thought to have a major impact on substance-abuse for several reasons. The attachment relationship which develops in infancy has been documented to continue throughout development, impacts successive developmental tasks across domains, and is a major influence on relationships subsequent to the caregiver/child relationship. A secure attachment relationship possibly subsumes other variables and in this study it is hypothesized to act as a protective factor against substance-abuse in adolescents. A major goal of this study was to explore the influence of the attachment relationship on adolescent substance use and abuse.

The second issue discussed in the literature is the intergenerational transmission of alcohol. The specific vulnerability factor under investigation in this study was parental alcohol abuse. An increasing amount of research suggests that children of alcoholics (COAs) are at greater risk for becoming adult substance-abusers. Little is known about the risk for alcohol and drug use among adolescent COAs. This study investigates whether COAs are at greater risk for becoming substance-abusers compared to the general adolescent population (Molina, Chassin & Curran, 1994).

Many COAs are reported to live in chaotic environments where secure attachment relationships are compromised. This study investigates whether secure attachment relationships serve a protective function in adolescents, thus preventing them from becoming substance-abusers, even when they are exposed to parental alcohol-abuse. Because COAs face increased vulnerability for becoming substance-abusers the study has

identified a subgroup of COAs who are non-substance-abusing in order to determine whether there are differences in the presence of protective factors.

Considering many COAs have experienced a disruptive environment, yet do not become substance-abusers, it is reasonable to ask the question "Have non-substance-abusing COAs overcome these difficulties, or are they manifested in some other way?" The non-substance-abusing COAs may have avoided developing an externalizing disorder, in the form of substance-abuse, by developing appropriate coping strategies. An alternative hypothesis is that they may have developed internalizing disorders, in the form of anxiety or depression, as a means of coping with their stressful environment. This study investigates whether there are differences in the presence of internalizing disorders (i.e., anxiety or depression) between the identified subgroup of non-substance-abusing COAs and the main group of non-substance-abusing adolescents.

Developmental Psychology

In the field of developmental psychology there is a dearth of research available on the effects of adolescent substance use and subsequent abuse. Developmental psychology can contribute to the delineation of the multiple pathways involved, their outcomes, and the differences in psychosocial correlates between normal and abnormal use of psychoactive substances. The concepts of vulnerability and protective factors have been used to explain the initiation, maintenance, and termination of substance-abuse in adolescents. Using models developed in the field of childhood resilience, the discipline of developmental psychology adds valuable information to our understanding of the differences between well-adjusted youth and those who surrender to the vulnerability

factors that contribute to substance-abuse and consequent social problems (Glantz, 1992; Luthar, Cushing & McMahon, 1997). Research is needed to examine pathways that have received less attention (e.g., children of substance-abusers who do not abuse substances) and which could provide further insight into the various pathways to substance-abuse. Determining the differences in the etiologies of those who abuse substances is necessary when formulating effective prevention and intervention programs.

Adolescents and youth who do not abuse substances have different characteristics than those in whom substance involvement escalates to abuse (Logue & Rivinus, 1991). There are also multiple pathways that predispose an individual to become a substance-abuser. It is important to clearly delineate the multiple pathways that lead to substance-abuse so that individuals can receive intervention suited to their particular vulnerability or etiology. Factors related to specific vulnerabilities must be identified in order to increase the efficacy of prevention and intervention programs for high-risk adolescents.

Not all adolescent substance use is considered to be unhealthy. In fact, in many cultures some experimentation is expected. However, substance-abuse has been well documented as placing adolescents at high-risk for maladaptive and unhealthy development (Bukstein, 1995; Chatlos, 1996). Current literature contends that substance-abusing adolescents may have been exposed to a variety of circumstances (i.e., vulnerability factors) that contributed to their abuse problems (Patton, 1995). Conversely, the presence of other factors (i.e., protective factors) has been associated with healthy development and many of these have been identified as serving a protective function for children who may otherwise develop maladaptive behaviors (Newcomb, 1992). The

attachment relationship was chosen as a variable in this study because of its early emergence, continuity, and impact on adolescent behavior. Parental substance use or abuse was chosen as a variable because of its potential influence on substance-abuse during adolescence. When the two variables are considered together, it is reasonable to suspect that there is potential for disruption in the attachment relationships in children of alcoholics (COA) due to disturbances in caregiving patterns and a chaotic environment. Morrison, Rogers and Thomas (1995) reported that "one third of COA's become chemically dependent, one third marry chemically dependent people, and one quarter do both" (p. 384). This suggests that not only are COAs at risk for chemical dependency problems, but that they may have impaired decision-making structures for developing intimate relationships. Moreover, children of alcoholics face a double jeopardy – the risk of becoming a substance-abuser or perpetuating the lifestyle through partner choice. How attachment is linked to later strengths and vulnerabilities of children and adolescents remains unclear (Cicchetti, Cummings, Greenberg, & Marvin, 1990). Therefore, further research is needed that contributes to the understanding of the role of attachment and related processes in substance-abusing and non-substance-abusing adolescent populations.

Attachment

The phenomenon of attachment is included in this study as a potential moderator of risk. Early problems in the emotional attachment between infant and caregiver create increased vulnerability for certain mental disorders and for impaired peer relations (Vulnerability and Resilience, 1996). Attachment processes are also thought to affect the

development of self-esteem. As low self-esteem has been associated with self-destructive actions and antisocial behaviors, it is important to study the developmental impact of the parent-child attachment relationship.

Attachment to parents has been associated with psychological well-being (Bowlby, 1988) and, as such, may be considered as a protective mechanism against high-risk behavior. Attachment theory provides a framework for investigating the relational aspects of child development that impact on the formation of self-knowledge. Attachment styles between the infant and caregiver provide the internal working model that acts as an interpretive filter through which the child constructs and maintains a belief system concerning self and others (Collins & Read, 1994). All aspects of the child's emotional, cognitive, and social development that contribute to the structure of self-knowledge can be conceptualized under the theory of attachment. Moreover, social learning theory and attachment theory are similar in linking the interdependence of social relationships and personal belief and behavior. Mahoney and Lyddon (1988) stated that personal meaning systems are generated, maintained, and transformed in the context of emotional attachment.

The early development of insecure attachments has been found to have long-term negative implications and is a predictor of maladaptive behaviors in adolescence and adulthood (Ainsworth, 1991; Bowlby, 1982; Cicchetti & Howes, 1991). During adolescence, the view of self as being unworthy of secure and trusting relationships can contribute to a negative bias that can impede the development of relationships and contribute to negative expectations about one's own and others' behavior. This negative

bias influences behavior in troublesome social situations and has been related to drug use and delinquent behavior (Allen, Aber, & Leadbeater, 1990).

In summary, substance-abusing adolescents are at risk for experiencing short and long-term negative consequences to their development. A familial pattern that may potentiate adolescent substance-abuse is growing up in a family environment of substance-abuse. Secure attachment patterns may serve a protective function in the problem behaviors of some adolescents and attachment quality is thought to influence psychological well-being. There is a need to determine whether there are factors that will increase the risk for adolescents becoming substance-abusers (i.e., vulnerability factors), or factors that may allow them to overcome persistent environmental risks or specific high-risk environments (i.e., protective factors). If such protective factors exist, they could permit adolescents to choose an alternative developmental trajectory that would favor a more resilient outcome.

Resilience and Adolescent Substance-Abuse

Resilience refers to the ability of individuals to successfully negotiate risks to their developmental process. Resilience is a multifaceted phenomenon that integrates biological and environmental components of an individual's existence and can be influenced by many factors and the interaction of these factors. For example, elements within the child, between the child and his or her family, or between the child in the family and the broader environment can have an impact on child development.

As significant numbers of adolescents use substances that may have deleterious effects on their development, it is important to determine the factors that promote

resilience in substance-abusing adolescents. The possibility of damaging effects from substance-abuse presents short and long-term consequences for the adolescent and for society. Substance-abuse is often associated with delinquency, teen pregnancy, and a number of other problematic adolescent behaviors. The study of adolescent substance-abuse and its correlates may lead to the discovery of possible underlying mechanisms associated with problem behaviors in many adolescents. If specific underlying mechanisms can be uncovered in non-substance-abusing adolescents, these mechanisms may be important in prevention and intervention efforts.

At the individual level, substance-abuse places adolescents in jeopardy for immediate risk and leaves them vulnerable to future problems with long-term consequences. Immediate risks include the interruption of stage-salient developmental tasks that serve as precursors to the attainment of subsequent developmental levels. Other immediate risks may include interruption or termination of academic endeavors, teen pregnancy, and engagement in high-risk behaviors that pose threats to the individual's health, or to the health of others (e.g., unprotected sexual encounters or driving under the influence). Long-term risks may include ongoing poverty resulting from low education, disruption of identity development, and familial and parental stress.

Familial patterns can serve as influences on patterns of substance use. The familial context provides the earliest and most pervasive influence on child development. Parents, directly and indirectly, influence a child's development in a number of ways, commencing with the establishment of trust, the provision of support and discipline, and as behavior models for their children. Many studies have demonstrated that maladaptive

parental behaviors are predictive of maladaptive child or adolescent behaviors (Allen, Aber & Leadbeater, 1990). The family provides a complex set of relationships that affect development, however, specific pathways have yet to be determined.

One familial pattern that has been identified as placing children at high-risk for becoming substance-abusers is having one or both parents who abuse substances (El-Guebaly, West, Maticka-Tyndale, & Pool, 1993; Sher, 1991). A substance-abusing environment can be the foundation for disrupted caregiving patterns and, as a result, children of substance-abusing parents are at risk for insecure attachments and the developmental sequelae that follow, such as, low self-esteem and poor peer relations (Brown, 1991). These findings have generated interest in uncovering the underlying mechanisms that contribute to the substance-abuse of adolescents. Current statistics on substance-abuse problems in adolescents, generally, and in adolescents of alcohol abusing parents, specifically, underscore the need for research in the area of resilience.

This research study explored vulnerability and protective factors that increase risk or resilience to substance-abuse. In the field of developmental psychology various conditions – environmental or biological – can be identified as placing an individual "at risk" for unhealthy development. The concepts of risk and resilience emerge from this field of psychology. These concepts incorporate the study of typical and atypical development in order to promote normal development in "at risk" populations through prevention and intervention efforts. Recent research has emphasized the role of protective factors that moderate the effects of exposure to risk and that increase the potential of a resilient outcome for high-risk populations.

Study Parameters and Research Questions

In many studies that seek to determine contributors to resilience, risk or resilience is measured in terms of overt behavioral adaptations (Luthar, 1991). This research study used a single life stressor approach – substance-abuse – and defined the high-risk group as those adolescents who abuse alcohol. A group of substance-abusing adolescents was compared with a second group of non-substance-abusing adolescents. In addition, a subgroup of non-substance-abusing adolescents was identified as being resilient. The resilient subgroup of adolescents was defined as non-substance-abusing individuals who perceived that one or both parents had a substance-abuse problem.

The research questions for this study were established prior to a broad investigation of adolescents who were grouped according to substance-abuse patterns. One hundred and thirty-four adolescents between the ages of 12 and 21, residing within a large urban center in Southern Alberta, participated in the study. The participants were recruited from a number of community groups and participation was strictly voluntary. After collecting and scoring the data, the participants were then placed into two groups of approximately the same size – non-substance-abusing adolescents (NSAAD, N=61) and substance-abusing adolescents (SAAD, N=73). The Resilient Subgroup (RSg, N=15) was chosen from within the group of non-substance-abusers.

Group Definition

The first stage of inquiry was to determine substance use patterns between the group of non-substance-abusing adolescents (NSAAD) and the substance-abusing adolescent group (SAAD). Specifically, the research question for this section was:

1. What are the differences in the substance use patterns between the two groups?

Vulnerability Factors (Social Context)

Once the two groups (NSAAD and SAAD) were established, vulnerability factors (social context) were investigated to determine:

2. Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?

Parental substance use and socioeconomic demographics associated with vulnerability factors were the specific topics under investigation.

Protective Factors

The protective factors category was to investigate whether there were differences between the two adolescent groups (NSAAD and SAAD) in attachment and attachment-related patterns which may serve as protective factors in abuse of substances by adolescents. The specific research questions were:

3. Are there differences in attachment patterns between the NSAAD and the SAAD groups?

4. Are there differences in self-concept between the NSAADs and the SAADs?

Predictors of Problem Severity

The significant findings emerging out of the vulnerability and protective factors categories were analyzed to establish variables for the investigation of predictors of

problem severity within the population of substance-abusing adolescents. The research question was:

5. Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?

Resilience

The final stage of this study was to focus on the Resilient Subgroup (RSg). Differences in internalizing disorders, in the form of anxiety or depression, within the group of NSAAD and the Resilient Subgroup (RSg) were investigated.

Many children develop under conditions that place them "at-risk" for maladaptive outcomes. These outcomes are usually measured on the basis of behavioral criteria, such as adolescent substance-abuse. The absence of overt behavior maladaptation often assumes strong underlying coping skills. However, it was expected that the Resilient Subgroup (RSg) of non-substance-abusing adolescents (those with substance-abusing parents) would present with greater levels of depression and anxiety when compared to the lower risk group of non-substance-abusing adolescents (NSAAD), despite their resilience to the behavioral measure of substance-abuse. If so, the label "resilient" may be erroneous when based solely on behavioral measures. As a result, the misnomer may be a disservice to this group (RSg) if they are excluded from receiving intervention.

To clearly establish differences within the Resilient Subgroup (RSg) and the main group of non-substance-abusing adolescents (NSAAD), the following research question was structured:

6. Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents (NSAAD) of non-substance-abusing parents?

The purpose of the research study questions was to determine patterns of substance use in adolescents and to identify and compare the presence of elements associated with adaptive or maladaptive adolescent development. The objective was to delineate the different pathways to substance-abuse, to establish protective factors in overcoming adverse environments, and to gather data that will contribute to the efficacy of prevention and intervention programs for adolescent substance-abuse.

Table one outlines the identified categories of inquiry in this study and the related research questions pertaining to each individual category.

Table 1.

Categories of Inquiry

Research Questions Pertaining to Each Category
Group Definition:
1. What are the differences in substance use patterns between the two groups?
Vulnerability Factors (Social Context)
2. Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?
Protective Factors
3. Are there differences in attachment patterns between the NSAAD and the SAAD groups?
4. Are there differences in self-concept between the NSAADs and the SAADs?
Predictors of Problem Severity
5. Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?
Resilience
6. Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?

Summary

The specific area under investigation in this research is the use and abuse of substances by adolescents and determining the multiple pathways leading to each outcome. Factors that increase the vulnerability, or would serve as protection to promote a resilient outcome, are included in the study. One element thought to contribute to adolescent substance-abuse is the presence of a caregiver who abuses alcohol. In some cases, a secure attachment relationship may serve as a protective function. As well, from a theoretical and social policy standpoint, a revision in the definition of "resilience" may be necessary if it is determined that the term has come to mean a lack of externalizing disorders. The exploration of vulnerability and protective processes will be guided by developmental research on resilience.

Chapter Outlines

Following this introduction, chapter two presents a summary of the implications of substance-abuse on adolescent development, a profile of attachment theory and its contribution to the socioemotional development of the child and adolescent, and a review of the risk and resilience literature. A section on how the resilience perspective merges with the knowledge of attachment is offered, followed by an exploration of how the resulting knowledge can be used to inform the study of intervention and prevention of adolescent substance-abuse.

Chapter three describes research methods utilized including participant selection, data collection procedures, and a description of the research instruments used to gather the data. Chapter four presents the results of the data analyses, and chapter five discusses

the results as they pertain to the research questions, the research literature, and to practical implications. Chapter five also presents a discussion of the limitations of the current research and directions for future research in the area of prevention of substance-abuse in high-risk adolescents.

CHAPTER TWO: LITERATURE REVIEW

An overview of the area under investigation in this research, adolescent substance use and abuse, is presented as an introduction to this chapter. This is followed by a summary of attachment theory and how it might serve as a vulnerability and protective factor in adolescent substance-abuse. Finally, the concepts fundamental to risk and resilience and that have directed this research are presented.

Adolescent Alcohol and Substance-Abuse

Adolescent substance use behavior can be viewed in two ways: as normal experimentation of adult roles or as a sign of maladjustment. Although there has been an increasing interest in the study of adolescent substance use and subsequent abuse, overall the field is still in its early stages. Much of the information on adolescent substance-abuse has been generalized from the more studied field of adult alcoholism (Kaminer, 1994). There remains a need to add to the scientific literature regarding normal adolescent use of substances and abuse of those substances. A greater understanding of the problem will be facilitated through determining the factors that contribute to the vulnerability or protective processes of developing problem behaviors.

Adolescence is the developmental stage that marks the transition from childhood to adulthood. Cognitive, biological, and psychological maturation are accelerated and adult social roles are experimented with during this period (Erikson, 1968). The adolescent begins to relinquish childhood behaviors and shifts to engaging in appropriate adult behaviors. This stage is characterized by increasing autonomy from parents and an increased reliance on peers. The process is influenced by social pressure, personal needs,

and the changing expectations of the individual and his or her environment. Adolescents may experience considerable difficulty with this process due to a number of factors. Professional, academic, and government studies present alarming statistics on the prevalence of adolescent problems.

Many of these adolescent problems are associated with risk taking behavior. Irwin and Millstein (1986) suggested that risk-taking behavior is an aspect of the developmental stage of adolescence and that such behaviors actualize many developmental needs such as autonomy, mastery, and intimacy. Developmental needs emerge as the result of the biological, psychological, and environmental changes of adolescence. However, not all risk taking behaviors culminate safely while meeting the developmental needs of the adolescent. Some risk behaviors have the potential to jeopardize development more than others do. One of these risk-taking behaviors involves use of psychoactive substances and later abuse. Substance-abuse can delay or prevent the successful negotiation of necessary developmental stages during adolescence. Research in this area seeks to discover protective mechanisms that will minimize this disruption by preventing the escalation of risk-taking behaviors. Substance use and abuse are topics of ongoing interest in adolescent development, however, most studies have focused primarily on alcohol. There is a need to investigate the use of alcohol by the adolescent as well as their use of other intoxicating substances.

Substance-Abuse Definition

The *Diagnostic and Statistical Manual of Mental Disorders*, (4th edition; DSM-IV; American Psychiatric Association, 1994) criterion for abuse includes a

substance use pattern that results in impaired functioning at work, school, home, or in relationships. Individuals categorized as such continue to use psychoactive substances despite encountering these impairments and continue use recurrently in dangerous situations despite negative consequences. The criterion also includes: (a) tolerance (the need for increased amounts of the substance to achieve the desire effect, or diminished effect, with continued use of the same amount of the substance), and (b) withdrawal (a characteristic syndrome of withdrawal for the substance is taking the substance to avoid withdrawal, and craving it when it is not available).

There are two problems associated with using the DSM-IV criteria for adolescents. First, due to the rapid developmental changes that adolescents are undergoing, they are at greater risk than adults for developing a substance-abuse problem quickly (Dusenbury & Botvin, 1990). Second, using the DSM-IV criteria, some research results have confirmed the usefulness of dependence as a construct, but that when applied to adolescents, tolerance, withdrawal, and medical problems present differently than they do in adults (Martin, Kaczynski, Bukstein & Moss, 1995).

Hawkins, Catalano and Miller (1992) have defined adolescent substance-abuse as the frequent use of alcohol or drugs during the teenage years or the use of alcohol or other drugs in a manner that is associated with problems and dysfunctions. Many researchers agree that an adolescent may present with a substance-abuse problem when he or she incurs adverse or negative consequences of use on self, others, or property. When the consequences have deleterious health implications, impair relationships, involve accidents, blacking out, fights, or become the cause for arrest these occurrences

indicate that the substance use has progressed to abuse, whether or not physical dependence is involved. The current study employed this method of defining adolescent substance-abuse and used a measure that considered frequency of use as well as negative consequences appropriate to the developmental stage of adolescence.

A problem behavior may be any behavior that interferes with competence. Competence can be defined as behavioral manifestations of success at meeting social expectations that are associated with a particular developmental stage (Luthar, 1997).

Regardless of the controversy regarding specific criteria in the definition, there is agreement that substance use and abuse are intolerably high in North American adolescents and that efforts must be meaningfully directed towards prevention and intervention to reduce use and abuse of psychoactive substances.

Adolescent Substance Use and Abuse

Without exception, adolescent substance use has permeated every social class and region of our country. It is widely accepted that substance use is common among young people. In North America, the experience occurs early, and often progresses steeply during adolescence (McClanahan, McLaughlin, Loos, Holcomb, Gibbins & Smith, 1998). The prevalence of alcohol and drug use by young people is escalating. Experimentation and use of alcohol and drugs from all social backgrounds has an earlier onset (often before adolescence) and extends well past young adulthood, often heightening into abuse problems. Some research suggests that experimentation with a number of activities during adolescence is normal and the rate of experimental behaviors subsides to socially acceptable levels by adulthood. However, Newcomb and Richardson (1995) report that

6% to 10% of adolescents will develop alcohol or drug use problems. This represents a significant percentage of adolescents entering adulthood with a social problem.

It is not necessary to obtain scientific research journals to document that adolescent substance-abuse is a well recognized social problem. Daily reports in city newspapers and popular magazines regularly cite incidents involving substance-abusing adolescents, the consequences of their behavior, and the initiation of programs that attempt to circumvent the problems and to provide solutions.

Although adolescent substance abuse is a serious problem to the adolescent, his or her family, and society, it is important to note that most adolescents who experiment with substances do not become abusers. It is, therefore, necessary to distinguish between normal adolescent substance use behaviors and adolescent substance-abuse. Experimentation with many behaviors and roles is expected during the period of adolescence and helps the adolescent to establish an independent and autonomous identity. Culturally accepted induction with some substances may be expected, such as alcohol use on the weekends and cigarette smoking with friends (Kaminer, 1994). These behaviors are prevalent among adolescents and, from a developmental perspective, are considered normal (Newcomb & Bentler, 1988). Shedler and Block (1990) stated that adolescents who experimented with some substances were psychologically more healthy than abstainers or substance-abusers. Research is needed that investigates patterns of use of psychoactive substances and subsequent abuse among adolescents. The results of such research will contribute to the literature on normal consumption of psychoactive substances during the period of adolescence.

Consequences of Substance-Abuse

Adolescence is often viewed as a period of experimentation and transition and as an unstable developmental stage. As a result, this group is considered difficult to research and is studied less than children or adults. However, the tremendous number of developmental changes occurring during this period together with their long-term outcomes highlight the importance of ensuring that changes occur smoothly.

Use and abuse of psychoactive substances impairs the ability to think logically, lowers resistance to peer pressures and temptations, and increases the likelihood of careless behavior. Many careless behaviors are high-risk and begin in early adolescence. As a result, the negative impact can be severe and have long-term consequences. Newcomb and Bentler (1987) documented the impact of adolescent drug use on seven areas of life that include family formation and stability, criminality and deviance, sexual involvement, educational pursuits, livelihood pursuits, mental health, and social integration.

The short-term costs of high-risk behavior, such as alcohol abuse, can include car accidents, fatalities, injury to self or others, missing school, unprotected sex, exposure to sexually transmitted diseases, and unwanted pregnancies. The long-term costs of substance-abuse are associated with a tendency toward a premature entry into some adult roles characterized by early involvement in marriage, family, the work force, and forsaking educational pursuits. The short- and long-term costs can include negative physical and mental health outcomes and can contribute to adolescent morbidity and mortality. The general negative social outcomes include the loss of education and

impairment of later productivity and job stability, as well as the emotional and financial impact of such events on relatives and families (Irwin & Millstein, 1986; Muuss, 1996).

Researchers have recognized that many adolescent problem behaviors co-occur and that there is an interrelationship of substance-abuse with other high-risk behaviors that serves to magnify the hazards. Motor vehicle accidents and reckless driving are associated with substance use and abuse. As well, early sexual activity and sexually transmitted diseases have been related to these behaviors (Hawkins et al., 1992). Dryfoos (1990, 1998) has documented a significant overlap among the multiple problem behaviors of substance-abuse, delinquency, teenage pregnancy, and school failure.

Donovan and Jessor (1985) reported a syndrome of problem behaviors including delinquent activities, drug use, and precocious sexual experiences among junior and senior high school students. Others have reported that participation in one problem behavior increases the likelihood of participation in another within one year (Mott & Haurin, 1988). The research does not suggest that the problem behaviors are the same, nor do they necessarily serve the same function, but individual problem behaviors may result from patterns of difficulties in social development rather than being "responses to the unique rewards of a given behavior" (Allen, Aber, & Leadbeater, 1990, p. 457). The failure to achieve developmental milestones such as secure attachment will provide a consistent underlying basis for risk behaviors, although the behavioral maladaptations may change over time. These findings emphasize the need for researchers to focus on unmet developmental tasks that persistently contribute to problem behaviors rather than on the behaviors themselves.

Prevalence of Adolescent Alcohol Abuse

Substance-abuse has historically been, and continues to be, a serious social problem. It carries with it tremendous social and financial costs to the abusers, their families, and the population at large. In the United States, alcohol has been associated with over half of the deaths and major injuries suffered in automobile accidents each year. In addition it has been implicated in about 50% of all murders, 40% of all assaults, 35% or more of all rapes, and about 30% of all suicides. About one in every three arrests in the United States results from the abuse of alcohol.

In the General Social Survey from Statistics Canada (Single, Brewster, MacNeil, & Hatchet, 1994) it was reported that about three-quarters of the Canadian population age 15 and older are alcohol consumers. Of these individuals, 46.2% had participated in an average of 15.7 heavy drinking occasions within the last year (males, average heavy drinking occasions = 19.4, females average heavy drinking occasions = 8.4). Approximately 9.2% of the population are reported to have experienced alcohol-related problems. In the 15-17 year old age group, this percentage is higher (15.3%) and it is higher yet for the 18-19 year old age group (21.5%). Unfortunately no data are available for adolescents under the age of 15 years. Adolescent alcohol use has continued to endure as the primary drug problem (Morrison, Rogers, & Thomas, 1995).

Progression

The developmental progression of substance-abuse is fairly predictable, however causal relationships cannot be inferred (Hamburg, Braemer, & Jahnke, 1975; Kandel, 1978; Yamaguchi, & Kandel, 1984). The general sequence is cigarette use, alcohol,

marijuana, and then other drugs. Many studies refer to cigarettes, alcohol, and marijuana as "gateway" drugs and suggest that progression to the use of other drugs is unlikely without a prior initiation with the gateway substances (Hird, Khuri, Dusenbury, & Millman, 1997; Yamaguchi, & Kandel, 1984). Intensification of use is thought to occur between the seventh and ninth grade with some factors being associated with potentiating this increase. Some of these factors include greater life stress, lower parental support, more parental substance-abuse, maladaptive coping skills, low self-control, and a greater affiliation with substance-abusing peers (Wills, McNamara, Vaccaro, & Hirky, 1996). The potential detrimental effects of substance-abuse must be considered with regard to the prevalence, progression, and interrelationship of negative behaviors among substance using and abusing adolescents.

Vulnerability to Substance Use in Adolescence

Vulnerability factors are defined as any element that would predispose an adolescent to substance use and later abuse. Although not all youths suffer negative consequences as a result of high-risk behavior, many engage in risk behaviors during their developmental passage and many suffer the consequences of compromised development (Allen, Moore & Kuperminc, 1997; Dryfoos, 1990). Because of the disruption to the developmental process, there has been a growing interest in identifying the precursors to the high-risk behavior of adolescent substance-abuse. The co-existence of substance-abuse with other antisocial behaviors places the adolescent at risk for long-term problems.

The discussion of the precursors to adolescent substance-abuse will be approached in a manner consistent with approaches to research in risk and resiliency. Garmezy (1990) argues for the inclusion of variables at different levels of the individual, family or environmental organization as potential contributors to psychosocial outcome. Individual factors considered to be residing within the child would include autonomy and self-esteem. Family factors incorporate cohesion, warmth and availability, and environmental factors include the availability of external support systems that might encourage and reinforce a child's coping efforts. Hawkins et al. (1992) concur with Garmezy that predisposing factors to adolescent substance-abuse fall broadly across three domains – the individual, the family, and the broader environment that can include peer groups, the school and classroom, and the broader community. Hawkins and colleagues catalogued 17 risk factors across the three areas that have been demonstrated to be stable over time regardless of changing societal norms.

Identifying vulnerability factors to adolescent problem behaviors in general, and for substance-abuse problems specifically, presents a challenging opportunity for researchers. First, there are numerous factors that may be combined in a multitude of ways to increase the risk for substance-abuse and these factors may not be consistent or have the same impact across developmental levels. Again, the concern with regular use of substances at an early age, before puberty, or during adolescence is due to the potential of the substances and their accompanying behaviors for interfering with essential growth and adjustment tasks (Newcomb & Bentler 1988). Developmentally, it is important to remember that the consequences of vulnerability factors differ across time. Kellam and

Brown (1982) provided an example of poor academic achievement being a predictor of drug-abuse in grades 5-7, particularly if it continues into the higher grades. However, poor academic achievement in grades 1-2 is not considered a predictor.

As discussed previously, vulnerability is influenced by combinations of predisposing factors producing various divergent pathways that eventually converge to a similar outcome, that being substance-abuse. The predisposing factors are conceived as being in dynamic transaction with one another, with the individual, and with the environment, each reciprocally influencing the others (Cicchetti & Schneider-Rosen, 1986). Moreover, there is general consensus that the risk of substance use and abuse increases with the number of vulnerability factors present (Bry, McKeon, & Pandian, 1982; Newcomb, Maddahian & Bentler, 1986; Newcomb, Maddahian, Skager & Bentler, 1987; Rutter, 1980).

Irwin and Millstein (1986) presented a causal model of adolescent risk-taking behavior that depicts how biological maturation may influence psychosocial changes; specifically, cognitive scope, self-perception, perceptions of the social environment and personal values, and subsequently risk-taking behavior. They hypothesize that the four psychosocial factors predict adolescent risk-taking behavior through the mediating effects of risk perception and peer group characteristics. They extrapolate components of their risk- taking model onto three specific high-risk behaviors: (a) principal factors in vehicular accidents, (b) premature sexual activity, and (c) substance use. Their model provides a way to integrate the many variables that can combine to produce a negative outcome.

Chatlos (1996) presented a model that focused on three factors at separate points in time: predisposition, drug use, and an enabling system. This model is derived from research on the antecedent, concomitant, and maintenance factors of addiction and mental disorders. Both models stress the importance of predisposing factors to substance-abuse. Several other researchers have discussed the importance of predisposing factors (Dryfoos, 1990, 1998; Hawkins et al., 1992) and how the likelihood of risk behaviors increase cumulatively with the number of these factors present.

Kaminer (1994) provided an alternative approach to predisposing factors. He presented a summation of 42 authors who had studied the progression of substance use from initiation to eventual abuse. These studies were grouped into four classes of theories

"1. theories on one's relationship to self

2. theories on one's relationship to others

3. theories on one's relationship to society

4. theories on one's relationship to nature" (p. 68).

The emphasis on relationships between self, others and society is considered consistent with developmental theory and in conjunction with attachment theory can act as a framework for the study of substance-abuse. The attachment relationship is one of the earliest developing and occurs and can be affected by the context of the family. The relative success of this relationship has long-term implications and will be elaborated on in the following section. The areas of attachment and family context (children of alcoholics) are areas that merit further investigation.

From a developmental viewpoint, it is important to remember that each stage of the child's development consists of a series of qualitative reorganizations among and within behavioral systems that become differentiated and hierarchically integrated. Success at later developmental tasks will depend upon success at the earlier stages, most of which is beyond the control of the child. The child endures the consequences of internal personality characteristics, family characteristics, and wider environmental influences during those developmental times. Although predisposing factors are usually presented singly, it is significant to recall their transactional nature and that no simple cause-effect model can account for their complexity.

Hawkins et al. (1992) emphasized the importance of development when considering vulnerability factors and subsequent prevention programs. Historically, prevention programs have achieved the greatest success with children at lower levels of vulnerability. Although success has been demonstrated with high-risk groups, it has been found to be short-term. Hawkins et al. suggested that the low success rate may be attributable to a failure to take into account the "basic developmental conditions" (p. 97) that the child has experienced. Many of the highest risk children have grown up in familial frameworks that have been instrumental in contributing to the subsequent risk patterns. This highlights the need for research that takes into account the contributing role of familial variables in substance-abuse.

A summary of the predisposing factors cited in the literature is provided in the following section. One specific predisposing factor, that is being the child of an alcoholic, has received considerable attention and will be elaborated on in this summary.

Children of alcoholics are of particular interest because of the potential impairments to development resulting from disrupted family patterns.

Predisposing Factors to Substance-Abuse

Cognitive and personality correlates.

Several researchers (Irwin & Millstein, 1986; Chassin, Presson, Sherman, Corty, & Olshavsky, 1984) have discussed cognitive and attitudinal characteristics within the adolescent that increase vulnerability towards substance use. These include a lack of awareness of the negative consequences of use, the adolescent's beliefs about the risks involved, less negative attitudes about psychoactive substances, an increased tolerance for deviance, and the belief that substance use is normal and generally based on nontraditional role models.

Personality characteristics that increase vulnerability include low assertiveness, low self-efficacy or self-esteem with psychoactive substances used to increase self-esteem (Irwin & Millstein, 1986; Jessor, 1982), low social confidence, and an external locus of control. Other personality characteristics often discussed include aggressiveness, unconventionality, problems with interpersonal relatedness, and precocious sexuality (Dryfoos, 1990; Patton, 1995). Some researchers have pointed to an association between depression, anxiety, and substance use, indicating that the likelihood of abusing substances increases for young people in stressful situations (Hawkins et al., 1992). Rohde, Lewinsohn, and Seeley (1996) presented findings, which indicated that psychiatric disorders preceded alcohol abuse, and that 80% of adolescents with alcohol disorders had some form of psychopathology. Other researchers have suggested that the

early onset of substance use may encourage the development of psychopathology (Clark & Neighbors, 1996; Robins & Przybec, 1985).

Behavioral correlates.

The behavioral correlates of substance-abuse include poor academic performance, the expectation that school will not be a successful experience, and low grades. In addition, anti-social or deviant behaviors and not abiding by the law have been associated with greater use of substances (Dryfoos, 1990; Hawkins et al., 1992; Hird et al., 1997).

Social and environmental correlates.

The power of social influence is often indicated as increasing vulnerability to substance-abuse. For the purposes of this discussion social influences will be broken into two groups, peer and family.

Newcomb and Bentler (1989) suggested that the strongest and most consistent factors of peer influences include the modeling of use, the provision of substances, and the encouragement of use. Peer influences also contribute to positive attitudes toward substance use. Positive attitude combined with the above mentioned personality characteristics weaken resistance to the influence of substance-abusing peers (Chatlos, 1996; Dryfoos, 1990; Hird et al.,1997)

The role of the family has been documented to influence adolescent substance use in a number of ways. Attributes associated with parenting such as the lack of parental support and guidance and permissive or tolerant attitudes toward substance use has been linked with adolescent substance use. Two other familial influences will be briefly discussed and elaborated upon in the following sections. The quality of attachment

relationships between parents and adolescents and parental substance-abuse have been associated with increased vulnerability to adolescent substance use (Kwakman, Zuiker, Schippers & de Wuffel, 1988; Loeber, 1991).

The attachment relationship between parents and adolescents has increasingly been implicated as contributing to vulnerability or serving as a protective factor in high-risk adolescents. The attachment relationship is heavily dependent upon factors that occur during infancy and the preschool years. An insecure attachment relationship has been hypothesized to set in motion a developmental trajectory that leads transactionally to a number of child and adolescent disorders of which adolescent substance-abuse is one (Kwakman et al., 1988; Loeber, 1991). Attachment is of interest because it is an early developmental process that is thought to influence many aspects of the child's development, specifically relational patterns. A variety of relational patterns have been indicated as predisposing factors to substance-abuse.

Substance-abuse by one or both parents has been implicated as having great impact on the adolescent becoming a substance-abuser when compared to adolescents of non-substance-abusers. Cloninger, Bohman, and Sigvardsson (1981) suggested that susceptibility to substance-abuse is neither genetic or environmental nor a sum of their separate contributions. Rather, a unique mix of both predisposing stressors interact in the adolescent children who do become substance-abusers. Whatever the understanding of the contribution or interaction of genetic or environmental contributors to substance use, children of substance-abusing parents are considered to have increased vulnerability to becoming substance-abusers (Brown, 1991).

Children of substance-abusing parents.

Children of substance-abusers are considered "at risk" for the transmission of substance-abuse problems (Rivinus, 1991). They are frequently exposed to significant levels of environmental stress that can include emotional, physical or sexual abuse, and neglect.

These children are at risk at each level of development for a host of problems. Prenatally, the child exposed to alcohol is at risk for developing fetal alcohol syndrome. During the preschool years the child may be exposed to marital discord and desertion, physical violence, and feelings of shame or terror resulting in abandonment anxieties, dependency or clinging behavior, or a defensive false maturity. These circumstances can interfere with the separation-individuation processes and the formation of a cohesive self (Berlin & Davis, 1989). In middle childhood the child is at risk for poor school performance, impaired peer relations, and poor regulation of mood and self-esteem (Barnes, 1977). Adolescents are considered to be at risk for: "1) impulse control problems, acting out, delinquency, promiscuity and running away; 2) depression and suicidal behavior; and 3) drug and alcohol abuse" (Berlin & Davis, 1989, p. 86).

Many aspects of the substance abusing family undermine successful syntonic development of the adolescent. Family functioning, as described by Lewis, Beavers, Gossett & Phillips (1976) is based on five categories: a) power structure, b) degree of individuation, c) acceptance of separation and loss, d) perception of reality, and e) affect. The family members are affected to the degree that each of these categories are or are not successfully managed. When these categories are weighted to the negative end of the

continuum, the impact on development follows a theme of shame, powerlessness, lack of autonomy and individuation, inacceptance of changes related to growth and development, and a lack of validation of one's perceptions. In essence, the presence of substance-abuse in the family becomes the central focus and its effects undermine the successful development of those prerequisites necessary for the development of a mature ego-identity during adolescence. The child can be expected to present with shame, self-doubt, dependency, self-consciousness, and lack of autonomy. These characteristics seriously thwart successful development of a positive sense of identity.

Many of the social and behavioral problems documented in children of substance-abusers parallel the social and behavioral problems associated with disruption in the developmental processes necessary for identity development in adolescence. Earlier difficulties with mistrust, shame, doubt, guilt, and feelings of inferiority can later manifest themselves in outcomes that include acting out, substance-abuse, suicidal tendencies, and teenage pregnancy (Erikson, 1968). To attain maturity youths must separate their own identity from that of their parents and develop autonomy (Muuss, 1996). This process can be impeded by maladaptive family functioning.

Genetic influences have been indicated in the transmission of intergenerational patterns of substance-abuse (Newcomb & Bentler, 1989). It is also possible that the behaviors are transmitted through family processes. When substance-abusing parents demonstrate to their children that substance use is an appropriate method of dealing with stress, the odds weigh heavily in favor of the child developing the same coping strategies in an intrapersonal environment of shame, self-doubt, and a low sense of personal

self-worth. This process disrupts the completion of necessary developmental tasks for the adolescent in two ways. First, the unavailability of the family system, and second, the overlay of substances in the abusing adolescent lead to impairments in the successful negotiation of the developmental tasks.

The greater total number of risk factors present for and within the individual has become the most reliable correlate of drug use and has become a predictor for increased drug use over time (Newcomb, Maddahian &, Bentler 1986). Adolescence is a time of experimentation and as such it may be expected that many, if not most, adolescents will try cigarettes, alcohol, or marijuana before the completion of high school. However, it is important to delay regular use of psychoactive substances as they may interfere with the development of adaptive and effective personal and interpersonal skills. Earlier use of psychoactive substances is related to problem use of the substances that, in turn, place enormous burdens on the individual and society.

Family factors that prevent adolescent substance-abuse.

Correlates of adolescent problem behaviors consistently implicate characteristics of the family of the adolescent. The family relationship provides a set of complex interactions that may affect development of the adolescent. "Attachment theory offers a model that potentially accounts for much of this relationship and suggests how family characteristics influence the problem behaviors of adolescents" (Allen et al., 1990, p. 457). Specific to this discussion, attachment theory can be used to frame the disruption in child development as a result of the parent-child bond. Since the maladaptive adolescent

outcomes develop against a relational backdrop, attachment theory provides an appropriate frame to study the developmental impact of adolescent substance-abuse.

Summary: Adolescent Alcohol and Substance-Abuse

Childhood and adolescence are critical periods for the development of personal and interpersonal competence, coping skills, and responsible decision making. Psychoactive substance use is a manner of coping that can interfere with or preclude the necessary development of these other critical skills if it is engaged in regularly at a young age. When an adolescent uses alcohol as a way to reduce distress, he or she may never acquire other coping skills to ameliorate distress. Adolescent substance-abuse establishes a developmental trajectory that may truncate, interfere with, or circumvent essential maturational processes that typically occur during adolescence. As a result the adolescent substance-abuser may enter adult roles of marriage and work prematurely and without adequate socioemotional growth and often experiences failure in these adult roles. Continued research is required to finely discriminate the differences between normal substance use and abuse patterns among adolescents. This information will guide appropriate prevention and intervention efforts to areas where they are most needed.

The successful accomplishment of developmental milestones has been stressed as a necessary component for subsequent developmental stages. Characteristics of the family have repeatedly been implicated in child and adolescent problem behaviors and require further investigation. As well, attachment theory provides a model to account for much of this relationship and provides a framework to study the underlying developmental bases of problem behaviors specifically, substance abuse. The following

section will elaborate on the fundamentals of attachment theory and how the continuity of the attachment relationship can have life-long consequences.

Attachment

The child's understanding of, and participation in, relationships throughout life are thought to be influenced by the earliest attachment relationships (Bowlby, 1969). The influence emerges from the earliest internal working models that provide a complementary representation of the attachment figure and the self and have a diffuse effect on everyday thinking and behavior (Bowlby, 1980; Bretherton, 1992).

Sroufe and Waters (1977) formulated an "organizational perspective" of human development whereby they suggested that many developmental tasks find their resolution within the context of the family. More specifically, they suggested that individual differences in attachment quality will have an effect on patterns of behavioral organization. The organizational perspective supports the nature of attachment influencing current and future developmental tasks and adaptations. A continuity of adaptation emerges between the organization of attachment behavior and other patterns of adaptive behavioral organization (Waters & Sroufe, 1983).

The purpose of this overview of attachment is to demonstrate that the internal working models of the attachment relationship influence behavior, either positively or negatively, throughout the life span. Secure attachment relationships have been associated with positive effects and less secure attachment relationships have been associated with negative effects. Families where substance abuse occurs are particularly

vulnerable to disrupted attachment patterns because of the parents primary needs being secondary to their children.

First, an overview of the central tenets in attachment theory, including the attachment behavioral control system and attachment behaviors, is provided. This overview is followed by a brief discussion of attachment theory using an organizational framework. Next, the theory of working models pertinent to the study of continuity is explicated. This discussion is followed by a demonstration of the continuity of attachment from infancy to adulthood. Current research is presented that suggests an internal working model that mediates the connection between previous attachment experiences and subsequent personality and associated behaviors. Finally research that demonstrates the discontinuity of attachment behaviors and the resulting adaptive styles is outlined.

Attachment Theory

The attachment behavioral system and attachment behaviors.

John Bowlby's attachment theory (1969, 1973, 1980, 1982) is based in theories of ethology and evolution. A central thesis in attachment theory is that attachment is a behavioral control system that strives to organize and direct behaviors or activities to achieve specific, set goals. As in any control system, it includes a mechanism for feedback, and in attachment theory, this system is referred to as goal-corrected, synonymous with the term goal-directed.

The primary function of the behavioral control system in infancy is to ensure safety and security, thereby increasing the chances of survival for the infant (Ainsworth,

1989). Bowlby (1969) discussed this process as the intermeshing of two different control systems; the attachment control system of the infant and the care-giving control system of the parent.

The function and goal of the behavioral control system require some elucidation. West and Sheldon-Keller (1994) suggested distinguishing function from goal by considering the difference between *why* and *how*, respectively. The function, or *why*, of the behavioral system is the contribution the system makes to survival. More specifically, the function of attachment is protection from danger, which ultimately means increasing the chances of survival. In contrast, the goal, or the *how*, of the system is the means the organism can use to accomplish the function. The set goal of the attachment behavioral system is proximity to a caregiver with the result being felt security. This process develops within the first six months of life (Sroufe & Waters, 1977). Environmental features will activate the system, and once the system is activated, specific actions will be engaged in for the purpose of achieving the set goal. In attachment theory, this process proceeds as follows. The child encounters an environmental stressor, such as separation from the caregiver, that will activate the system, resulting in the child engaging in behaviors that will help him or her to achieve the set goal. The attachment behaviors refer to any of the various forms of behavior that an individual engages in from time to time to obtain and/or maintain a desired proximity (Ainsworth, 1969; Ainsworth & Marvin, 1995). These include approach or signaling behaviors, such as, reaching and following, or crying and calling. When the caregiver responds by increasing proximity through verbal means or physical distance, the goal is achieved and the behavior can be

terminated. This process is referred to as a goal-corrected partnership. As the child's ability to delay gratification increases, and the internal representation of the caregiver continues to develop, the goal of proximity maintenance is adjusted (Bowlby, 1979; Hazan & Shaver, 1994).

Fundamental to Bowlby's theory of development is that the attachment behavioral control system is the predominant control system of infancy and early childhood. When the caregiver responds in such a way that the child develops a secure attachment relationship, further development is maximized through the activation of other behavioral systems, such as the exploratory and affiliative systems. The child then begins to learn how to use these other behavioral systems in order to influence his or her environment (Berman & Sperling, 1994). Moreover, West and Sheldon-Keller (1994) suggested that the full expression of other behavioral systems is compromised by insecure attachment relationships.

Bowlby's attachment theory does not offer discrete stages of development, but rather, provides a theory of developmental continuity based on the expression of behavioral manifestations of the internal working model of attachment. The development of attachment progresses through four phases beginning with undiscriminating social responsiveness and developing into focused responsiveness to one or a few figures. This is followed by emerging secure base behavior and culminates in the transformation of the secure base behavior into a goal-corrected partnership with the primary caregiver (Bowlby, 1969; Waters, Posada, Crowell, & Lay, 1994). Waters et al. (1994) maintained that attachment development does not stop at the end of infancy, but that the secure base

behavior continues throughout early childhood. Further, they hold that secure base behavior continues but the expression changes, through infancy, childhood, adolescence, and adulthood. Waters and colleagues have extended the four-stage model to better reflect the life-span nature of attachment relationships. Pertinent to this discussion is the addition of two phases that follow the consolidation of the secure base behavior in early childhood. The first extension includes a lengthened period in which a partnership develops around the task of maintaining communication and supervision once the child begins to be independent. The second extension provides an opportunity for the transfer of secure base behavior from parents to a special partner or peer, in which the partners have a reciprocal secure base relationship (Waters et al., 1994).

A set of discrete attachment patterns emerge from the attachment relationship that are not determined by age (West & Sheldon-Keller, 1994). The child's first affectional bond is created through the complementary process of the child being driven by basic instincts and the caregiver responding (Bowlby, 1980; West & Sheldon-Keller, 1994). Attachment to primary caregivers is the intense affectional bond that is established between infancy and the age of six years (Ainsworth & Bowlby, 1991; Bowlby, 1969).

The attachment behavioral control system is activated upon separation. The inclination to behave in consistent ways becomes intrinsic to the individual and is reflected in the attachment style. Changes in attachment style occur only slowly over time and are unlikely to be affected by a single situation. Rather, repeated exposure is necessary to elicit changes.

To date four specific attachment styles have been identified. The most widely used system to identify and classify attachment behaviors has been developed by Ainsworth, Blehar, Waters, and Wall (1978) and Main and Solomon (1986, 1990). The coding of the attachment style is derived from the results of a laboratory procedure known as the Strange Situation Protocol developed by Ainsworth and Wittig (1969). The Strange Situation consists of a series of mildly stressful separations and reunions between the child, the caregiver, and a stranger. The child's behavior is observed and the child is then classified into one of four general patterns of attachment relationships based on two broad categories, secure and insecure.

The secure pattern is also referred to as Type "B." The three insecure patterns are labeled (a) anxious-avoidant, Type "A;" (b) anxious-ambivalent, also known as resistant, Type "C;" and (c) the most recent category developed by Main and Solomon (1990), disorganized/disoriented, Type "D" or "A/C." As these patterns are prominent in the attachment literature they will be briefly described. Because maternal sensitivity and responsivity are factors that influence whether the relationship is one of security or insecurity, the mother's style of interaction is also presented (Ainsworth et al., 1978).

Securely attached infants have mothers who are described as dependable, responsive, sensitive, and caring (Ainsworth, 1969; Ainsworth et al., 1978; Genuis, 1995). The children are described as having confidence in the availability of the caregiver in times of need and comfortable with closeness, interdependence, and trust.

In contrast, the mothers of children classified as avoidant have demonstrated suppressed anger, lack of tenderness in touching and holding, insensitive intrusiveness,

and rejection of attachment behavior. The mothers are cold and rejecting and consistently rebuff or reject the infant's attempts to establish physical contact or proximity, especially close bodily contact. The infant learns to avoid the caregiver (Ainsworth, 1969; Ainsworth et al., 1978; Genuis, 1995). The children demonstrate a lack of confidence that they will receive care when it is sought. They exhibit little overt distress upon separation and do not seek contact on reunion. Their distress is hidden by excessive interest in toys and other objects in the environment, rather than in the caregiver.

The mothers of children demonstrating an ambivalent attachment style provide the child with a mixture of positive and negative experiences. They are slow, or inconsistent, in responding to their infants' cries or regularly intrude or interfere with their infants' desired activities, sometimes forcing attention on them at a particular moment. The ambivalent infants oscillate between behaviors seeking proximity and contact with their primary caregiver and behaviors resisting such contact and interaction. They appear unable to be reassured or comforted and are so preoccupied with their caregiver's availability that exploration of their environment is reduced or precluded. Emotional conflict arises from a strong desire for intimacy, together with insecurity about others' responses to this desire, and a high fear of rejection (Ainsworth, 1969; Ainsworth et al., 1978; Genuis, 1995).

The mother, or primary caregiver, of children classified with disorganized/ disoriented attachment styles are often abused themselves, as well as being abusive, depressed, disturbed, or neglectful. Parental behavior is hypothesized as characterized by unresolved fear, which is then transmitted through parental actions that are either

frightened or frightening (Main & Solomon, 1990). The children classified with disorganized/disoriented attachment styles act as though the environment and the attachment figure are sources of threat to them. A dilemma then results from a conflict between the two incompatible behaviors: seeking proximity to the attachment figure and avoiding proximity with that figure because she or he poses a threat. The behaviors elicited by these infants appear as a contradiction or disorganization of action as they fail to exhibit a consistent strategy upon activation of the attachment system (Genuis, 1995; West & Sheldon-Keller, 1994).

In a summary of American studies by Campos, Barrett, Lamb, Goldsmith and Sternberg (1983), the authors found that the placings of children across the first three identified styles were 62% for secure, 23% for avoidant, and 15% for anxious/ambivalent. Hazan and Shaver (1987) obtained adult equivalencies for the three groups as being 56% for secure, 25% for avoidant, and 19% for anxious/ambivalent. Main and Solomon (1990) recently described the disorganized/disoriented or "D" type, and consequently, this type is not included in any earlier studies and is slowly being included in current research.

Attachment: The Organizational Perspective

The original writings of John Bowlby (Bowlby, 1969, 1973, 1980) stressed the importance of early attachment relationships between mother and infant. He posited that the relationship would mature into a "goal-corrected partnership" establishing a model for child and adult formation of subsequent intimate relationships. From the original relationship, the child developed a working model, or schema, regarding the quality of

the relationship. This was based on whether it provided a feeling of security, and this became the prototype from which other intimate relationships developed (Fox, 1995). The goal of attachment behavior is proximity, or contact, and the function is survival.

Sroufe and Waters (1977) considered Bowlby's view as constricting, with its focus on the first primary relationship as the model for all others and on the function as protection from predation. They believed that it did not necessarily follow that a myriad of developmental achievements would be dependent upon the attachment relationship with its sole function being security (Fox, 1995; Rice, 1990; Sroufe & Waters, 1977).

Sroufe and Waters (1977) expanded Bowlby's (1982) original view and defined the goal of attachment behavior as being "felt security" and extended the function to include providing support and a secure base from which to safely explore the environment. Sroufe and Waters presented attachment from an organizational perspective emphasizing the context of the attachment behaviors. The emphasis was placed on the *meaning* and not the *frequency* of attachment behaviors. Moreover, they concluded that the same behaviors can have different meanings depending on the context. A more accurate inference of the security or insecurity of attachment can then be made when context is taken into consideration.

The more expansive view of attachment allows for attachment relations becoming the basis for subsequent adaptive functioning. The functions of attachment become elaborated, and discrete behaviors may or may not change, but an adaptive, secure attachment relationship early on will be the basis for similar adaptive relationships later in life. Fox (1995) likened this to an Eriksonian view of attachment. The initial

attachment relationship between mother and infant establishes a feeling of security or insecurity that pervades the psychological being of the individual providing a sense of basic trust or mistrust about the way in which those in the environment will react. Secure children will be at an advantage to undertake subsequent developmental tasks, believing in their own effectiveness and self worth, while insecure children will not be as successful.

These two premises (Bowlby 1969, 1973, 1980; Sroufe & Waters, 1977) have launched numerous studies documenting the correlations between attachment styles and success at later developmental tasks, as well as demonstrating the continuity of adaptation (Matas, Arend, & Sroufe, 1978; Sroufe, Egeland, & Kreutzer, 1990; Suess, Grossman, & Sroufe, 1992). With the acceptance of the life-span approach to attachment, revisions in methodology have been necessary, for behavioral markers of attachment are not identical across development (Lerner & Ryff, 1978).

Working Models

The child is instinctively driven to form an affectionate bond with a caregiver. During the course of development, security may be threatened causing the child to seek proximity to the caregiver. When the child receives appropriate degrees of responsiveness and closer proximity is attained the threat abates and security is restored. Over time, consecutive experiences of this nature help the child to establish internalized attitudes and beliefs about the self and others, notably their primary caregivers. The child's internal representations or beliefs about his or her primary caregiver as being

available, and about themselves as being worthy of care and as effective in eliciting this care, are termed working models (Main, 1991).

The sensitive availability and responsiveness of the caregiver results in a secure attachment relationship. There are, however, instances where the child seeks proximity and the caregiver does not respond appropriately to the child's bid for security. Parental substance abuse is one example. In such cases both parents are considered unavailable. The substance-abusing parent is unavailable since their needs center on the substance and the non-substance-abusing parent's needs center on controlling the substance-abuser (Brown, 1988). This results in a decreased response to the needs of the children. The result of this pattern of reciprocal behaviors is insecure attachment. Inappropriate responses include ignoring, punishing, or rejecting, and as a result, the child feels threatened by the loss of the necessary relationship. This places the child in an awkward predicament. In a fearful situation, felt security is established through proximity seeking. If the response from the caregiver is unsatisfactory, however, it further threatens security that, in turn, increases the need for proximity-seeking. Simultaneously then, the child must seek proximity to the caregiver for felt security and must suspend proximity-seeking as the feedback information verifies that such actions do not result in achievement of the goal (West & Sheldon-Keller, 1994). Just as repetition of actual experiences that achieve felt security result in secure attachment, repetition of experiences that fail in the child's attempts for increased security lead to insecure attachments. Both types of experience establish an internal representation of attachment.

The concept of the working model is not restricted to the beliefs about self and others. As stated previously, working models develop within the context of the attachment behavioral system, which is a goal-corrected system. Strategies are developed in order to achieve the goal of felt security. At times it will be necessary to deal with situations that arise when the goal is blocked. The central features of the working model become examples of both goals as well as the strategies necessary to achieve these goals. Bowlby (1973) proposed that working models are used to simulate and predict the behavior of others and to plan one's own behavior in social interactions.

Collins and Read (1994) proposed that working models include four inter-related components. The first component is comprised of historical memories of attachment-related experiences. Many of the memories will have strong affective components and may not be accurate representations of the actual experiences. However, to the degree that any experience is filtered through existing cognitive structures, the memories will provide information about an individual's current organization and representation of attachment-related experience. They hold validity in spite of the accuracy.

Second, the beliefs, attitudes, and expectations about self and others in relation to attachment will have been formed throughout childhood, adolescence, and adulthood. Those beliefs, attitudes, and expectations will vary situationally and in degrees of generality and specificity. One may have a specific working model regarding a relationship with one's mother. For example, a person may always behave in a certain way [X] when with one's mother because the mother always behaves in a certain manner

[Y]. Another general working model regarding relationships with friends may be present. For example, individuals may believe that friends are trustworthy and supportive, and that their friends can also count on them for support. Alternatively children raised in a chaotic environment, as would be expected in some patterns of parental substance abuse, may hold the view of others as being unreliable and unresponsive to their needs. In this way, knowledge about self and others is organized into schemas.

Third, the attachment-related goals and needs will differ according to the individual's history of achieving or failing to achieve the goal of felt-security. As the working model has developed as a complementary system defining the self in relationship to others, the working model will contain information about one's own goals and the goals and needs of others. Researchers have demonstrated that goal structures of secure and insecure individuals are different (Bartholomew, 1990; Hazan & Shaver, 1990). For example, secure and anxious-ambivalent adults would be expected to seek close relationships, however, anxious-ambivalent adults have an additional need for approval and a fear of rejection that may lead to altered levels of intimacy and autonomy. Avoidant adults may have a need to maintain distance (Bartholomew, 1990; Hazan & Shaver, 1990). As well, individual needs may vary with respect to the conditions necessary to satisfy the goal of felt security. Moreover, secure and avoidant individuals may both desire autonomy, but may differ in their desired levels of autonomy (Collins & Read 1994).

The fourth component being the plans and strategies of attaining or maintaining felt-security will be contingent upon the history of experiences with the key attachment

figures. Attachment-style differences are expected in one's plans and strategies for dealing with socioemotional needs and goals. As Kobak and Sceery (1988) demonstrated, secure adults are more likely to acknowledge distress, and seek support from others, avoidant adults manage distress by repressing anger and minimizing emotional displays, and anxious adults exhibit heightened expressions of anger and distress in an effort to maximize the possibility of response from an attachment figure.

Working models or social representations are used to understand, predict, and guide social interactions. To successfully achieve this, the working models should include the goals of the social interactors, the plans and strategies for achieving the goals, the resources needed to enact the strategies, and their beliefs about themselves and the world (Miller & Read, 1991; Collins & Read, 1994).

Continuity

From a developmental perspective, attachment theory posits four processes that require further explanation. They are:

1. the development of attachment patterns between infants and caretakers, based on infants' need expressions, that eventually lead to individual differences in attachment quality by the end of the first year;
2. the process that transforms these relational differences into individual differences, i.e. the transition from dyadic attachment interactions to individual (inner) representations thereof;
3. the transition of specific behavior strategies from early childhood, through adolescence, into adulthood, and into old age;

4. the transmission of caregiving qualities across generations, i.e. the way in which attachment behavior strategies are passed on from parent to children. (Grossman & Grossman, 1991, p. 94)

This section on continuity summarizes the relevant research that has been instrumental in establishing the continuity of attachment styles and the correlates of these styles that have significant impact on other aspects of the child's development. As well, these studies demonstrate how the working models of the varied attachment styles differ in regard to the inter-related components of the working models previously presented.

Children.

Matas, Arend, and Sroufe (1978) examined the association between attachment classifications and later quality of play and problem solving in children at 18 months and at 24 months. They predicted that the secure group would exhibit greater autonomy and self-confidence on problem-solving tasks and more affective sharing with their mothers. When compared to the other groups, the secure toddlers engaged in more symbolic imaginative play than the insecure group. They demonstrated more enthusiasm in learning tasks, more persistence and compliance, and cooperated with maternal suggestions, when necessary, instead of showing frustration.

Arend, Grove, and Sroufe (1979) chose to study the predictive validity of attachment styles over a longer period of time. They linked quality of attachment at 18 months and effective independent functioning at two years with dimensions of ego resiliency, ego control, and an independent measure of curiosity, between 4 and 5 years of age. They found that the securely attached infants demonstrated more curiosity and

were more ego resilient (responding to problems with flexibility, persistence, and resourcefulness) than the other two groups. Moderate levels of ego control (extent of control over feelings, impulses, and gratification) were considered to be the most adaptive.

Waters, Wippman, and Sroufe (1979) studied the correlates between infant-mother attachment at 15 months and measures of sociability, social competence, and ego strength at age 3 years. The results indicated that secure preschoolers were more competent in peer interactions and demonstrated greater ego strength than the insecurely attached group. Specific indicators included acting as leaders among their peers, initiating activities, being sought out as an interaction partner, and being sympathetic to their peers' distress. With regard to ego strength, the secure children were more self-directed, welcomed learning new cognitive skills, and pursued what they wanted. Children in the insecure group were more socially withdrawn, were spectators and listeners, rather than participants and engagers, were not as curious about new challenges, and were less aware of surroundings.

Sociability differences between the three attachment groups were also found by Pastor (1981). He classified 62 infants into attachment groups at 18 months of age and at approximately 2 years of age. Members of each attachment group (designated "focal" children) were paired with a securely attached playmate. The dyads were observed in free-play and rated on a variety of dimensions. The secure focal children were found to be more sociable to their mothers and their playmates. Similar results were found by Jacobson and Willie (1986). Based on these results, Jacobson and Willie suggested that

early attachment relationships can affect amenability of interaction partners. This is consistent with attachment theory in that the different responses according to attachment style will confirm the individual's expectations about themselves, important others, and the social world. This, in turn, strengthens the constitution of the internal working model and increases the stability of the early attachment styles.

Erickson, Sroufe, and Egeland (1985) investigated early attachment classifications and later social behavior in preschool. To determine if anxious attachment related to specific behavior problems in preschool they observed 96 children, 4 1/2 to 5 years old that had been classified into attachment groups at 12 and 18 months of age. Erickson et al. observed the children for three different types of behavior problems: acting out, being withdrawn, and exhibiting attentional problems. As predicted, insecurely attached children were more likely to belong to one of these groups, with the most striking difference evident between anxious-avoidant and secure groups. The insecurely attached children were described by their teachers as hostile, impulsive, lacking in persistence, and withdrawn. The anxious-ambivalent children also functioned poorly and lacked the agency, confidence, and assertiveness necessary to successfully engage peers in the preschool environment.

Main and Cassidy (1988) investigated cross-age stability in the organization of attachment. They developed an attachment classification system for 6-year old children based on the Strange Situation. The children were observed in an unstructured reunion with their parents following an hour of mildly stressful testing. The attachment classifications of 33 children at age 6 were found to be highly predictable from infancy

attachment classifications. Grossman and Grossman (1991) replicated the study of Main and Cassidy (1988) with a sample of 40 children, six-years-old, in Regensburg, Germany whose attachment classifications had been established at the age of 11 months. Eighty-seven percent of the cases could be predicted based on the infant attachment classifications.

Elicker, Englund, and Sroufe (1992) have been involved with a high-risk sample in a longitudinal study in Minnesota. The children had previously been classified into attachment groups at 12 and 18 months of age and also had participated in a preschool study at age four. For the current study, Elicker et al. recruited 47 of the children to participate in a four-week summer camp program. Approximately equal numbers from each attachment group were selected and extensive observations were made from several levels: broad (counselor ratings of social competence, emotional health, and self-confidence), specific (observations of child-child and child-adult interactions), and personal interview of the children during the last week of camp.

The results demonstrated that the inter- and intrapersonal correlates of the attachment bond were stable ten years after the initial assessment, in the absence of direct maternal influence, and away from familiar surroundings. These were found to be predictive of competence and interpersonal relations. In summary, children previously rated as securely attached were found to be more emotionally healthy, self-assured, and competent. They also spent more time with peers, and in groups of three or more, and spent less time alone or with adults. In addition, they were rated as more popular, sociable, and as demonstrating greater prosocial interaction skills than their insecure

peers. In contrast, the historically insecurely attached children were rated as more dependent on adults, displayed negative biases in peer evaluations, and were less likely to have developed peer-aged friendships.

Similarly, Grossman and Grossman (1991) in their longitudinal study of the Regensburg, Germany infants, followed their sample to age 10. They assessed the children on peer relations and their strategies for coping with stressful situations. They found that early attachment quality was most highly related to children's reports of relations with peers. Secure children reported having at least one or a few good friends whom they considered reliable and trustworthy. Insecure children reported having either no good friends, or many friends, whose names they could not remember and described themselves as exploited or ridiculed by peers and as being excluded from group activities. In addition, differences in attachment styles were noted when coping with stress but only in situations causing the children to feel afraid, angry, or sad. Secure children coped with negative feelings by turning to others for help or comfort, whereas insecure children most often attempted to work out problems for themselves.

These studies demonstrate Bowlby's original premise that an infant's relationship with the primary caregiver lays the foundation for later social-emotional development. These studies represent the individual differences in the organization of attachment seen in the infant, child, and preadolescent in reunion behavior, and also differences in mental representations of the self and others. The internal working model developed through the first few years of life provides ongoing observable behaviors throughout development

and plays a mediating role between environmental events and subsequent behavior.

Adolescents and adults.

Across the life-span, the function of the attachment relationship remains constant, being that of safety, security, and exploration (Sroufe & Waters, 1977). Consistent with Bowlby's (1969, 1972, 1980) original formulation, the revisions to the behaviors necessary for achieving the function change and develop with maturation. Therefore, we would expect to see in studies of adolescent attachment, some age-appropriate changes in attachment behaviors when security is threatened. If the attachment relationship provides enduring bonds and internal working models of the self and others, changes may be expected in attachment behaviors while similar meanings and goals are maintained. Research in the study of adolescent attachment has been minimal although attachment has been linked with some aspects of adolescent development such as ego identity development (Hauser, Borman, Powers, Jacobson, & Noam, 1990; Hauser et al., 1991), and social and emotional adjustment in a variety of situations (Allen, Aber & Leadbeater, 1990; Kwakman et al., 1988; Paterson, Pryor, & Field, 1995). Adult attachment investigators have been exploring the presence of attachment styles in adults similar to those identified by Ainsworth et al. (1978) for children. A review of some of the adolescent and adult studies will be presented that demonstrate the continuity of attachment across the life-span.

Greenberg, Siegel, and Leitch (1983) and Armsden and Greenberg (1987) developed the Inventory of Parent and Peer Attachment (IPPA) in their research on adolescent attachment and psychological well-being which measures behavioral and

affective/cognitive aspects of attachment relations. Three subscales have been derived from the IPPA: Trust, Communication, and Alienation (Armsden & Greenberg, 1987). Armsden and Greenberg found overall that attachment to parents contributes to adolescent adjustment. Their results demonstrated positive correlations between measures of self-concept, self-esteem, life satisfaction, healthy family environment, and the quality of attachment to parents. Greater parental attachment was also associated with adaptive emotional functioning. These findings suggest the quality of parent-adolescent attachment is important well into late adolescence.

There is a shift in emphasis in the attachment studies between children and late adolescents and adults. The studies on children have been conducted in order to establish attachment patterns and then to determine various correlates between the attachment patterns and other indices of personality, such as coping, friendships, and interactional style, problem solving, and the working models of self and others. The studies on adolescents and adults were initially investigated to determine if there were attachment styles in adulthood that paralleled those in childhood.

Main, Kaplan, and Cassidy (1985) sought to derive empirical support for the Adult Attachment Interview (AAI) by correlating adult parent's attachment styles with those of their infant child's attachment classifications in the Strange Situation. The Adult Attachment Interview was found to predict with approximately 80% accuracy how a parent's infant child will be classified in the Strange Situation (Fonagy, Steele, & Steele, 1991; Grossman & Grossman, 1991; Main et al., 1985). Grossman and Grossman (1991) point out that there are similarities between statements, from adults and children, in

general statements about their parents. This reflects a similarity in state of mind with regard to attachment and a representation of their internal working models. The similarities held across Main et al.'s (1985) four attachment styles for children and adults are shown as: secure and secure, insecure (A) with "dismissing of attachment," insecure (C) with "preoccupied with attachment," and insecure (D) with "evidencing unresolved attachment-related trauma."

Hamilton (1994) studied 30 adolescents who had been observed in the Strange Situation as 1-year olds. Seventy-seven percent of the participants maintained stability of the attachment category of either secure or insecure when measured 17 years later using the AAI (Main & Goldwyn, 1993). Continuity of attachment was attributed to stability of family circumstances, whether positive or negative. They concluded that there are similar attachment styles across the life-span and that parental attachment styles are predictive of infant attachment styles. In alcoholic families, the child becomes parent-centered as a result of the parents' inability to recognize others feelings, needs or ways of experiencing. The child must accommodate his or her needs to those of the parent. The childs cognitive, affective, and social development are determined by the parents feelings and needs. The resulting attachment patterns have been hypothesized to span generations (Brown, 1988).

Using the three category typology established by Main et al. (1985), Kobak and Sceery (1988) studied the succession of attachment styles in college students and found similar dynamics between the adult and child attachment patterns. The secure group was found to be more ego-resilient, less anxious, less hostile, less distressed, and felt more

supported. The avoidant, or dismissing of attachment, group was rated low on ego-resilience, higher on hostility by peers, and reported more distance in relationships. The ambivalent, or preoccupied with attachment group, was viewed as less ego-resilient, was perceived as more anxious by peers, and reported higher levels of distress and higher levels of support from families.

Hazan and Shaver (1987) sought to determine whether the relative prevalence of attachment styles was similar for adults and children, whether the three patterns of attachment identified by Ainsworth et al. (1978) could predict romantic attachment style, and if the romantic attachment style was related to concepts of self, social relationships, and to relational experiences with parents. They devised a single-item self report measure based on Ainsworth et al.'s infant patterns but redesigned it to reflect adult manifestation of the patterns and also used a 37-item attachment history checklist. Hazan and Shaver found attachment style distributions similar for adults as those established for children by Ainsworth et al.

Bartholomew (1990) and Bartholomew and Horowitz (1991) have provided a four-category conceptualization suggesting that Hazan and Shaver's (1987) avoidant category is too narrow and may obscure separable patterns of avoidance in adulthood. Bartholomew, based on Bowlby's (1973) suggestion that working models differ in terms of images of self and others, provided a matrix view of self and others. Her model included two levels of self-image (positive vs. negative) and two levels of image of others (positive vs. negative), which provide four differing configurations of attachment classification: secure, preoccupied (equivalent to Hazan & Shaver's anxious-ambivalent

category), fearful (similar to Hazan & Shaver's avoidant category), and dismissing (similar to Main et al.'s 1985 dismissing category). Bartholomew's results compare to those of Hazan and Shaver's with the exception of the delineation of the avoidant category. The secure adults reported parents as generally supportive, warm, and accepting. Preoccupied adults (Hazan and Shaver's anxious-ambivalent) provided descriptions of their parents as overprotective but inconsistently responsive and accessible. Bartholomew's fearful adults were similar to Hazan and Shaver's (1987, 1990) avoidant and reported high levels of parental rejection and separation, and low levels of parental involvement. The dismissing adults were found to discuss their parent in idealized way, while subtly indicating that the parents were actually rejecting or emotionally distant. This behavior might be expected from children of alcoholics who are raised in an environment where their attachment needs are not met. Further the children are included in the family denial of a problem as well as being expected to contribute to the outward appearance of family normalcy.

Overall these studies demonstrate that attachment styles determined in infancy maintain measurable cross-situational continuity and cross-age continuity and are consistent with attachment theory and interpersonal correlates in later childhood. The attachment styles and relationships endure over time having become internalized in the individual's working models.

Discontinuity

Working models function to a large extent outside of awareness, and provide individuals with a heuristic for anticipating and interpreting the behavior and intentions

of others, especially attachment figures. Working models provide the mechanism for continuity. The greater the number of interactions encountered, the more entrenched the working model becomes, and therefore, it becomes more resistant to change.

Rothbard and Shaver (1994) provided a Piagetian analogy between the process of a working model and the notions of assimilation and accommodation. As the child is developing, the working models are adjusting themselves, or accommodating the incoming information regarding the attachment figures, the environment, and the self. Researchers have found that attachment styles are established between 12 and 18 months of age (Ainsworth et al., 1978) and incoming attachment-relevant information is processed by assimilating it into the existing structure, sometimes creating significant distortions. While the term internal working model infers the changing nature of the mechanism, it has been found to be more flexible during childhood, responding to a changing environment. Later, the working models are considered to be the mechanisms through which continuity in the organization of attachment is achieved (Rothbard & Shaver, 1994). Only when the difference between the working model and reality is blatant is the individual inclined to accommodate the new reality (Bretherton, Ridgeway, & Cassidy, 1990).

Not all findings demonstrate stability in attachment with equal strength. Vaughn, Egeland, Sroufe, and Waters (1979) and Thompson, Lamb, and Estes (1983) found attachment stability at 6 months, but only 62% and 58% stability, respectively, at 12.5 and 19.5 months. In these cases, the occurrence of stressful life events, or changes in family circumstances seemed to have influenced stability in the caregiving environment.

That is, the factors influencing the environment changed the stability, thereby changing the child's attachment behavior. These changes are attributed to the continued exposure to events that are repetitive enough to allow the working model to change.

Other studies (Egeland & Farber,1984; Erickson et al., 1985) have also explored discontinuity in attachment styles. They investigated factors that led securely attached infants to later display behavior problems and insecurely attached infants to display competent behavior. They found that the secure children with behavior problems had mothers whose behavior changed over time. The insecure children who later exhibited competence also had mother's whose behavior changed over time and was characterized by a greater respect of autonomy, warm, supporting environments with little unwarranted intrusion, and also reports of better emotional and social support networks. This again demonstrates that repeated changes in the environment contribute to the changes in the working model which, in turn, affect behavior. However, it does not necessarily imply permanent change. It is possible for the child's behavior to revert to previous behavioral styles with continued alterations in the environment (Erikson et al., 1985).

Although early attachment patterns manifest themselves in behaviorally predictable ways over the life-span, Schneider (1991) and Belsky and Nezworski (1988) also suggested that developmental difficulties are not inevitable. The risks to the child can be reduced by changing the nature and quality of the care provided to the child and the internal working models of mother and child could be changed. In short, continuity encourages continuity and discontinuity encourages discontinuity.

The dynamics and determinants of attachment styles for children and adults are similar. The dynamics are analogous but more complex in adults, and the styles are determined originally in parental relationships, but become more elaborated through interactions in subsequent important close relationships (Rothbard & Shaver, 1994). One mechanism for maintaining the attachment style is through the processing of social information. People produce behaviors that elicit particular reactions from others, which confirms the person's internal working model of the self and others (Bartholomew & Horowitz, 1991). Another process central in maintaining adult patterns of attachment is called selective affiliation, which is the seeking or avoidance of social contacts, and the selection of social partners who will confirm the individual's internal model (West & Sheldon-Keller, 1994).

The concept of continuity may be unwelcome for some if the attachment styles have negatively impacted the individual's sense of self and response to others in their environment. It is important to remember that these behaviors have developed over time and that the behavioral strategies are optimal or adaptive in the short run, but may cause difficulties later. The average person participates in several important friendships and love relationships, each of which provides an opportunity to revise mental models of the self and others. Main, Kaplan, and Cassidy (1985) suggested that continuity has been disrupted in adults who have mentally worked through unpleasant experiences with previous caregivers, and that they now have mental models of relationships more typical of secure subjects. Epstein (1980) argued that repeated compelling emotional experiences that are inconsistent with the current working model must be experienced in order to

produce change. These experiences would likely occur with a spouse or a therapist and, quite possibly, at a time of a major life transition such as marriage or leaving home. The repeated interactions with model-disconfirming relationship partners force the individual to restructure the working model by accommodating the old model to the new experiences, instead of assimilating the new experiences into the old model. Therapy seeks to alter attributional styles and to change behaviors that result in self-fulfilling prophecies. Either way a secure base is provided in a consistent manner over a period of time that will disallow continued assimilation into the established working model.

Summary: Attachment Theory

Attachment theory was originally proposed to have broad implications as suggested by Bowlby's (1979, p. 129) often quoted "cradle-to-the-grave" characterization of human attachment behavior. Bowlby himself did not attempt to research the life-span developmental status of attachment. The bulk of research inspired by Bowlby has focused on the period of infancy, however, there has been increasing interest in applying his theory across the life-span. Barnas, Pollina, and Cummings (1992) provided numerous references to researchers who have taken a life-span developmental approach in their studies on attachment. Sroufe and Waters (1977) expanded on Bowlby's work and defined the goal of attachment as felt security, rather than proximity or contact, with the caregiver. They expanded the function of attachment to include the safe exploration of the environment from a secure base, as well as Bowlby's protection from predation. The expansion of the original attachment theory

more adequately explains the motivational components of attachment and provides a framework for attachment behaviors across the life-span (Sroufe & Waters, 1977).

As has been demonstrated, some aspects of attachment remain stable from childhood, through adolescence, and into adulthood. Appropriate responses from parents to the attachment needs of adolescent's can support healthy development and act as a deterrent to substance-abuse and other problem behaviors. Parent availability is as important in adolescence as it is in infancy. The enduring attachment bond is mutual and characterized by "nurturance, little conflict, and the child's identification with the parent" (Brook, Brook, Gordon, Whiteman & Cohen, 1990, p. 130). The strength of the attachment relationship has significant psychological and behavioral consequences for the adolescent. As such, it deserves ongoing attention from a developmental perspective and further, what this perspective can contribute to the prevention of problem behaviors such as substance-abuse.

Research is needed on processes of continuity and change, especially pathways of adaptation. The study of risk and resilience has provided considerable methodological considerations to guide this research and they will be explored in the following section.

Risk, Resilience, Vulnerability, and Protective Factors

Resilience, protective factors, risk, and vulnerability are terms that have become essential in understanding normal and atypical development. These concepts encompass many of the core constituents in the field of developmental research. Attention has focused on the precursors of adaptive and maladaptive outcomes and the accompanying topic of continuity and discontinuity in behavior across the life-span. Within the

discipline of developmental psychology, researchers have expanded on issues related to the interactions among attributes of vulnerable individuals, their families, and the greater environment, to facilitate the prediction of successful or unsuccessful outcomes (Masten & Garmezy, 1985). Ultimately, because the interest lies in disorder, competence, and recovery, the development of prevention strategies is expected to emerge (Cicchetti & Richters, 1997; Masten & Garmezy, 1985).

This section of the literature review will discuss risk, resilience, and related concepts. To best understand the phenomenon of resilience, it is essential to discuss the basic tenets of the discipline from which it emerged, that is developmental psychopathology. A brief overview of this theoretical perspective is presented. Following this, the majority of the discussion is devoted to fundamental issues concerning the validity of the phenomenon of resilience. For the phenomenon of resilience to be credible within the scientific community, ongoing attention must be devoted to empirically advancing the construct. Necessary goals include the operationalization of the definition of resilience, and recognition that it is a dynamic concept. Stress and coping emerge throughout the life span, and susceptibilities and strengths can change during developmental transitions. Moreover, it is also necessary to investigate functioning in several developmental domains (Cicchetti & Garmezy, 1993). Finally, the definition of risk also carries some cautionary notes, the most relevant of which are explored in this discussion.

Developmental Psychopathology

Developmental psychopathology involves three elements or perspectives: (a) the developmental perspective, (b) the psychopathologic perspective, and (c) the focus on mechanisms, processes, and causal chains, rather than sheer statistical associations and syndromes (Rutter, 1988; Wakefield, 1997). Developmental psychologists assume an essential continuity in functioning placing severe symptoms (e.g., depression) on the same dimension as normal emotions (e.g., sadness or unhappiness). Conversely, clinical psychiatrists rely on an assumption of discontinuity, such that disordered behavior is interpreted as different, in kind, from normal behavior. Lastly, developmental psychopathologists are equally concerned with the similarities and differences between normal development and the development of disorder. Antecedent assumptions about either continuity or discontinuity are not made (Rutter & Garmezy, 1983). There has also been recognition of the transactional nature of development emerging from the reciprocal influence of the individual and the environment. This more encompassing, transactional view has replaced the simple linear model (Luthar & Zigler, 1991).

Fundamental to the field of developmental psychopathology is the study of atypical and normal development in tandem, with reciprocal goals of the study of one informing the other. Further to this tenet, it was determined that studying children who overcame risk and adversity would enhance knowledge of atypical and normal development (Cicchetti, 1984; Masten, Best, & Garmezy, 1990; Sroufe, 1990, 1997; Sroufe & Rutter, 1984). In addition, interest is as strongly focused in well-functioning individuals, high-risk individuals who do not display psychopathology, and in individuals

who do develop a disorder (Cicchetti & Garmezy, 1993; Garmezy, 1990). Emphasis is on uncovering the mechanisms and processes that lead to effective adaptation, despite the presence of adversity, and in the process of refining our understanding of normal development and psychopathology. Cicchetti and Garmezy (1993) stressed that neither adaptive, maladaptive, nor resilient functioning should be viewed as a static condition, but rather, they should be viewed as being in dynamic transaction with forces internal and external to the individual.

Variables of Resilience and Risk

It is necessary, at the outset, to delineate some of the terminology instrumental to understanding studies in resilience. The term, resilient, is used to describe children in high-risk environments who have overcome adversity and have achieved successful outcomes. Resilience, in its most simple definition, is normal development under difficult conditions. Garmezy (1985) presented three broad categories of variables offering protection to the individual in adverse environments: (a) personality features such autonomy or self-esteem; (b) family cohesion, warmth, and an absence of discord; and (c) the availability of external support systems that encourage and reinforce a child's coping efforts.

Risk factors constitute those conditions that are statistically correlated with the likelihood that a child will develop health and/or behavioral problems in childhood, in adolescence, and in later years. For example, poverty or low socioeconomic status, low maternal education, low birth weight, and family instability have been associated with lower academic and work achievement and increased emotional or behavioral problems

of which substance-abuse can reasonably be considered one (Masten & Garmezy, 1985; Masten, Best, & Garmezy, 1990). Reflecting upon Garmezy's (1985) three categories of protective variables, it might appear that risk would simply be the absence of protection. That is, low self-esteem, discordant family life, an absent support system would generally be considered as variables in a high-risk situation. Broadly based categories of resilience or risk are of limited value in finding new approaches to prevention. If the study of resilience is to have any practical value it must go beyond the broad categorization of risk and protective factors. More specifically, it must help to explain why some people manage to have high self-esteem and support systems while others do not. Focus must be directed on the underlying protective mechanisms and processes that allow for individual variation in response to the risk factor. Resilience does not infer that an individual has been exposed to fewer or lower risk variables therefore achieving a more desirable outcome. Rather, it suggests that under circumstances of acknowledged adversity, certain individuals are able to successfully negotiate risk, while others, under the same circumstances, fail to do so.

The current emphasis on resilience has necessitated a move in emphasis from risk factors to the process of negotiating risk situations (Rutter, 1990). Resilience research has concentrated on the identification of protective mechanisms that facilitate adaptive outcomes and decrease risk, rather than the establishment of factors that increase risk. This positive emphasis on protective mechanisms may increase the effectiveness of prevention and intervention efforts to reduce the susceptibility of high-risk children to

maladaptive outcomes. The focus has narrowed to identifying those developmental and situational mechanisms involved in protective processes (Rutter, 1987, 1990).

Vulnerability and Protective Processes

Positive outcomes to risk situations provide the context under which one can study the interaction of vulnerability and protective factors with high-risk variables. Vulnerability and protective factors are more specific and narrowly defined than the concept of resilience (Rutter, 1990). They either intensify or ameliorate risk conditions that would be expected to lead to a maladaptive outcome. In this way, vulnerability and/or protective mechanisms interact with risk variables by instigating change that results, negatively or positively, in the expected course of development. This process is referred to as the concept of discontinuity in the developmental trajectory.

Vulnerability and protective factors do not have direct effects on outcome. More specifically, in the absence of risk factors, they do not have an effect by themselves on the suggested maladaptive outcome. For example, secure or insecure attachment of an individual does not by itself increase or decrease the risk of an adolescent becoming a substance-abuser. In a risk situation, such as being a child of a substance-abuser, a secure or insecure attachment may provide added protection or vulnerability to becoming an adolescent substance-abuser. The risk factor acts as a catalyst to engage the protective or vulnerability mechanism.

Protective processes are not to be considered the absence of risk. Protective processes interact with risk variables by mediating the effects to produce a positive outcome. The protection versus vulnerability model demonstrates the interactive effects

of protective and vulnerability mechanisms. Protective or vulnerability effects are evident only in combination with the risk variable. When the protective attribute is present, it serves a protective function in the presence of risk. Conversely, if the attribute creates vulnerability, stress or susceptibility to risk will increase when the vulnerability attribute is present.

The protective versus vulnerability model of resilience (Garmezy, Masten, & Tellegen, 1984) implies an interactive relationship between stress and personal attributes in predicting competence. At low levels of risk, or in its absence, there may be little difference in functioning between an individual with a protective trait and one without. As the risk increases, individuals with higher levels of the protective trait are relatively unaffected. Therefore, greater differences in outcome associated with this trait will be seen at high, rather than low, stress levels (Fonagy, Steele, Steele, Higgitt, & Target, 1994). That is, the presence or absence of the attribute at low levels of risk will make little difference in the level of competence (Luthar, 1993).

The essence of the interaction effect is that there is no discrimination at low levels of risk, but as risk (stress) increases, the attribute serves either to protect or to increase susceptibility. Protection is not in the avoidance or absence of risk, but in the successful encounter with it. This implies an interactive relationship between risk and the measured personal attribute. For example, a secure attachment relationship is thought to serve a protective function, but this would not be evident unless the child was exposed to some risk. A secure attachment relationship has been hypothesized to serve a protective

function during the adolescent's developmental quest for autonomy and limits the possibility of deviant outcomes (Allen, Moore, & Kuperminc, 1997).

The protective versus vulnerability model suggests that personality traits, familial, and environmental contexts may interact in an number of ways that impact on the development of an individual. The anticipated developmental trajectory may be impacted positively or negatively depending on the interplay of child, familial, and environmental factors encountered by the child. This further suggests that turning points are possible (Rutter, 1987, 1990, 1996). Although other models have been distinguished (Garmezy et al., 1984; Luthar, 1990, 1991, 1993; Luthar & Ziglar, 1991) the protective versus vulnerability model clearly identifies processes that may serve a protective function against risk mechanisms.

Developmental Pathways

The study of resilience has adopted a developmental approach, instead of a medical approach. The developmental approach allows us to consider the child in the environment in a transactional way. Rather than seeking single, endogenous causes to discrete problems, this approach acknowledges that the individual interacts with the environment in such a way that behaviors and the environment are rendered inseparable. Behavioral and emotional problems develop through a succession of interactions and accompanying adaptations to the environment, and are governed by the same principles as normal development (Sroufe, 1997). Maladaptation occurs as a result of the individual's unique response and adaptation to a combination of risk and protective factors. Behavior is the result of the interaction of the individual, the environment, and as

Sroufe (1997) points out, an often neglected third factor, the history of prior adaptation up to the present time.

The continuities and discontinuities of behavior are an essential premise of resilience research. Continuity of behavior suggests that there is stability in the organizational pattern of behavior from childhood to adulthood. The behavioral manifestations may change over time, as a result of development and cognitive maturity, but the pattern remains stable. The question becomes, under adverse conditions, what underlying processes would allow normal development to continue, and what are the protective or vulnerability mechanisms that initiate a change in the developmental trajectory? In such a case, protective mechanisms interact with the individual and the risk factor, and divert the trajectory to a more adaptive outcome. Conversely, a vulnerability process would combine with the risk variables to intensify a maladaptive outcome (Sroufe & Rutter, 1984).

Interaction with the environment can result in a number of developmental pathways that have been represented metaphorically by Bowlby (1973) as branching tracks in a railway yard, and by Sroufe (1997) as continuous branches of a tree. Either representation demonstrates that there are a number of developmental pathways conceivable for any individual. One pathway, notable to risk researchers, is taken by those individuals who are at risk developmentally, and through repeated adaptational failures, their course culminates in some type of maladaptation, or disorder. A second route is taken by the individual on a maladaptive course that continues over time, but which at some point on the maladaptive course, changes, leading the individual to a more

competent pathway. A third course suggests a pathway where change is restricted by prior adaptational patterns. That is, the longer an individual engages in a maladaptive pathway, the more ingrained the negative behavior becomes, and the less likely it is that adaptive alternatives will be possible. This phenomenon has been represented in a social information-processing model presented by Crick and Dodge (1994). Negative experiences are created in an ongoing way such that individuals attribute hostile bias to most encounters whether neutral, positive, or negative. In this way the negative patterns are perpetuated and the cycle is resistant to change (Loeber et al., 1993; Moffit, 1993). The developmental pathway approach provides a framework for investigating development from a number of perspectives that may have been overlooked in a medical approach. This framework allows for investigation of the processes of initiation, continuity, and change in both adaptation and maladaptation (Sroufe, 1997).

Equifinality and multifinality.

As research in risk and resilience has emerged from the field of developmental psychopathology, the objectives of researchers have been to gain a process-level knowledge of "how, why, and in what ways individual differences in normal and abnormal social, emotional, cognitive, and behavioral development emerge, interact, and develop across the life span" (Richters, 1997, p. 198). This developmental approach necessitates acknowledgment and use of the concepts of the malleability, growth, and development of the individual, through interaction with the environment. The transactional nature of these interactions suggests that there are numerous origins and

termination points in development that are discussed as the equifinality or multifinality of the developmental pathways.

Equifinality refers to the notion that diverse initial developmental pathways can, through a variety of different processes, culminate in similar outcomes. The implications are that some disorders or maladaptations may have many symptoms in common, but may have resulted from different developmental pathways. For instance, many but not all substance-abusing adolescents come from families in which one or both parents were substance-abusers. Richters (1997) pointed to a number of personality structures, including impulsivity, deviant values, substance dependency, revenge, low intelligence, and sensation-seeking all converging equifinally to antisocial behavior. Blatt (1995) presented a fairly common cluster of features; lack of social engagement, depressed mood, and low self-esteem, that can arise from the divergent pathways of alienation, anxiety, or helplessness. Regardless of the terminal similarity in the behaviors, the interventions may be remarkably different and research must be enlisted to determine these differences (Moffit, 1993). The lack of success in the prevention and intervention programs for adolescent substance-abuse would suggest multiple pathways to this behavior that do not all respond to a single treatment. Consideration of developmental pathways will affect the description and conceptualization of disorders, what research questions will be asked, and how the findings are interpreted.

Multifinality refers to the phenomenon where in the developmental pathway that individuals encounter have the same or similar starting points or experiences but result in diverse outcomes. The initial condition does not necessarily reflect the end state and can

manifest a variety of overt behaviors for similar reasons. Richters (1997) presented an example using the characteristic, extroversion, as interacting with many internal and external factors related to the individual, and resulting in any one of a number of career choices, such as, athlete, performer, professor, salesperson, politician, clergy, or detective.

Attention-deficit hyperactivity disorder (ADHD) has recently been used as an example by both Richters (1997) and Sroufe (1997) to demonstrate the implications of equifinality and multifinality in conceptualizing mental disorders of childhood. Richters pointed out that while ADHD diagnosis is based on reports of the child's patterns of inattention, hyperactivity, and distractibility, there has been little reason to believe that the final configuration of behavior stems from a common etiology. Sroufe presented results from the Minnesota Longitudinal Study that gathered prospective data investigating children's attention and activity problems, using criteria of ADHD in DSM III-R (American Psychiatric Association, 1987). The data set included child variables (i.e., variables thought of as residing within the child), the developmental context (e.g., parenting behaviors and the context in which the parenting prevailed), and a set of distal contextual factors (e.g., marital status at birth). The initial results indicated that the influence on activity and attention level originated outside of the child. Of the more than 40 early child variables, only one (motor immaturity) shed modest prediction of ADHD criteria in kindergarten, and this was not predictive of such behaviors beyond that time. The child's observed or reported activity level was not significantly related to later attention or activity levels. Parental intrusiveness and overstimulation were more

predictive, with some consistency across ages, and the single best predictor of attention and activity problems found was the mother's relationship status being single at the time of the child's birth. Further almost no overlap was found between the cases using the predictor variables motor immaturity, parenting, and other contextual variables. These results emphasize the existence of multiple origins and endpoints. Moreover, regardless of the origin or endpoint, outcomes can be influenced by the way that they are measured.

Assessment of Resilience

Resilience generally refers to a positive outcome and can be defined in a number of ways. Not only are there multiple pathways to the endpoint *resilient*, but the term resilient is at the discretion of the researcher. The multiple definitions of the term resilience, the criteria used to determine resilience, and the resultant difficulty there is to compare studies are areas of concern within resilience research.

How these differences can manifest themselves in terms of results was demonstrated by Kaufman, Cook, Arny, Jones, & Pittinsky (1994). In a study of 56 maltreated elementary school-aged children they found that resilience rates varied dramatically by the source of data, whether teacher, parent, or self-reports, ranging from 21% to 64%. Variations by assessment type were also found. Resilience ratings varied when measured by individual domain – for example, social skills alone – versus across domains – that is, social skills plus cognition. Resilience ratings on academic achievement were much higher than ratings on either social competence or clinical symptomatology. Consequently, when evidence of adaptive functioning was required on two measures per domain, there were dramatic decreases in the number of children

classed as resilient, when compared to using a single measure (Kaufman et al., 1994). In addition, when they changed the resilience criterion from a single domain to multiple domains the number of resilient children dropped to three (5%). This study demonstrated how changes in data collection and reduction methods can alter findings and would falsely indicate multifinality. Further, the results highlight the importance of detailing methodology and reporting results with caution (Kaufman et al., 1994). The results, however, also emphasize the difficulties in devising operational criteria in defining resilience.

The aim of resilience research is generally twofold, although the target populations may vary widely. The goals are to investigate the development of individuals who are at risk for social, emotional, cognitive, and behavioral problems, and an effort is made to identify factors associated with the emergence of positive outcomes (Kaufman et al., 1994).

There are three general types of assessments represented in the literature and each has a characteristic set of outcome criteria associated with it: (a) stage-salient developmental tasks, (b) clinical symptoms, and (c) multidimensional assessments. With the exception of secure infant attachment as an indicator of positive socioemotional adjustment in infancy (Ainsworth et al., 1978; Main & Solomon, 1986), there is little consensus as to classification procedures that define satisfactory social, emotional, and cognitive development, school adaptation, or adult competence. Different techniques are used across studies to measure positive outcome. To emphasize this diversity, in the stage-salient research literature, consider the outcome measures in the following three

studies. Farber and Egeland (1987) used a secure attachment rating for infants as the outcome measure of resilience. Luthar (1991) required the adolescents in her study to obtain a score of at least one standard deviation above the mean of the sample on one of three outcome measures in order to be classified as resilient (e.g., teacher ratings, peer ratings, and school grades). Vaillant (1993) and Felsman & Vaillant (1987) classed men as resilient based on competence ratings derived from Eriksonian stages of development. Those classified as resilient in one study, therefore, may not be classified as such in a different study, depending upon the criterion used.

The second type of resilience outcome measurement investigates clinical symptoms. There is great divergence in this literature that covers many types of psychopathologies and mental illness such as depression, schizophrenia, maltreatment, and substance-abuse. Inclusion in a high-risk category varies correspondingly. Two examples of organizational criteria are: being the offspring of one or two mentally ill parents (Graham, Rutter, & George, 1973), or scoring above a predetermined cut-off on one of many stressful life events checklists such as parental alcohol abuse (Cowan, Wyman, Work, & Parker, 1990). Accordingly, the resilient outcome measure will also vary and may be measured by clinical thresholds on rating scales with predetermined cut-off points that establish resilience (Cowan et al., 1990) or simply by the presence or absence of the clinical disorder (Kaufman, 1991). A less flexible approach would be to establish positive outcome as the lifetime absence of mental illness or psychopathology (Pellegrini et al., 1986).

The third broad category, multidimensional assessments, combines measurements of stage-salient measures of adaptation and clinical symptom ratings to determine the outcome of resilience. In different studies the results have been used separately or in combination. Werner and Smith (1979, 1992) did not attempt to combine information across the areas and reported positive outcome as indicated in each domain assessed. That is, although the participants were measured using a variety of measures, a positive outcome in any single domain allowed them to be classified as resilient according to the definition set by the authors. Kaufman, Grunebaum, Cohler, and Kramer (1979) devised a composite scale and predetermined the definition of resilient to be those individuals scoring in the top 20%. Rutter and Quinton (1984), after receiving scores on measures of adaptation and clinical symptoms, defined resilience as those individuals without problems on either type of assessment.

However, researchers have come to some general agreement regarding which domains to measure in order to establish adaptive functioning such as appropriate social, cognitive, and behavioral functioning. There remain many differences in the source, type, and number of assessments deemed necessary to obtain the classification criteria of resilient (Kaufman et al., 1994). Data integration methods also vary with respect to the use of single versus multiple assessments per domain. Competence can be established on the basis of one or any number of measures, and cut off scores have been the arbitrary right of the researcher (Kaufman et. al. 1994).

In summary, while there is no single preferred method, the aim of the research under study will guide the most reflective definition of resilience. The type of assessment

will depend upon the comprehensiveness or limits of the definition. If overall functioning is the objective, a multidimensional approach would be more useful. However, when resilience to specific types of high-risk situations is being investigated, such as substance-abuse, narrow assessments remain appropriate.

Defining Risk

Resilience is the phenomena of individual differences in people's responses to adversity. It represents one end of a continuum of response patterns, and theoretically, has meaning only when the risk criteria are uniformly defined. The individual differences in responses are measured against the same level of the risk variable in each individual. Risk, then, can also can be operationalized in a number of ways.

Proximal and distal risk factors.

Salient to discussing the concept of risk, are two related concepts, proximal and distal risk factors. Several researchers (Baldwin, Baldwin, & Cole, 1990; Luthar, 1993; Masten, Best, & Garmezy, 1990; Richters & Weintraub, 1990) have stressed the importance of distinguishing between these two types of risk factors. Proximal risk factors directly impact on a child and would include inadequate nutrition, conflict between parents, or antisocial behaviors. Distal risk factors are those not immediately experienced by the child, such as parental mental illness or social class (SES), but are mediated by proximal factors. For example, a child may live in poverty (distal factor) and this experience could be mediated by ineffective parenting (proximal factor), thereby generating vulnerability to the distal factor. That is, the direct influence of the parenting behavior on the child mediates the influence of the socioeconomic status.

Richters and Weintraub (1990) elaborated that the popular variable of social class is limited in its ability to provide information about environmental influence. On its own, social class does not convey information regarding specific proximal experiences of children associated with a given level of social class. They further suggested that proximal environmental variables, such as measures of mother-child interaction, marital discord, or parental disciplinary practices are better predictors of child functioning than general environmental measures. It is not social class itself, but rather, the proximal environmental effects that are found within and across levels of social class, that exert the influence on children's adjustment (Richters & Weintraub, 1990). Consequently, it may not be adequate to label an individual as high-risk based solely on a general measure, such as social class. The quest becomes determining the underlying mechanisms of vulnerability and protective processes that would be better predictors of variability in child functioning.

Brook, Cohen, Whiteman and Gordon (1992) discussed four sets of contributors to adolescent substance-abuse from the perspective of being distal or proximal. The first set includes personality variables such as childhood aggression (distal) and adolescent tolerance of deviance or acting out behavior (proximal). Second are attachment to parents (distal) and attachment to peers (proximal). A third set that is relatively proximal is association with a peer group who use legal and illegal substances. The last, and most proximal set of contributors is the individual's personal use of substances together with having friends who also use substances. Figure one below illustrates a conceptualization of these distal and proximal contributors of adolescent substance-abuse.

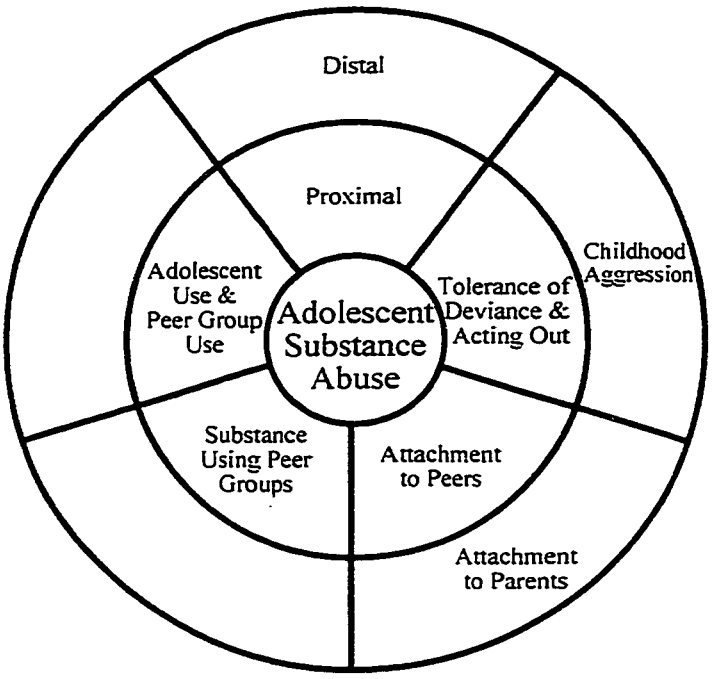

Figure 1. Distal and proximal contributors to adolescent substance-abuse.

Baldwin et al. (1990) suggested that the terms distal and proximal be thought of as ends of a continuum, suggesting that differences in degrees of distal and proximal are possible. The process affecting the child may be a causal chain. Poverty is a distal variable, and maternal anxiety a proximal variable, yet the effects on the child are mediated through maternal behaviors such as irritability and restriction of a child's freedom (Baldwin et al., 1990). Proximal risk factors must be considered to avoid the possibility of ignoring relevant risk. When proximal risk factors are not identified, an individual can erroneously be classified as resilient, when he or she may have faced

fewer negative circumstances despite their original risk classification – that is, parental psychopathology or being the child of an alcoholic (Luthar, 1993).

Baldwin et al. (1990) provided two related issues that emerged from their study. First they found that the impact of proximal variables may differ across environments. Prior to a study, therefore, it would be erroneous to assume that the same degree of risk is associated with each proximal risk variable for each group. These authors found that children from high-risk families, who experienced more authoritarian and restrictive parental styles, had more favorable outcomes, when compared to more advantaged children with similar parenting styles.

The second issue is the practicality of identifying all proximal variables that could affect outcome. Again, the distal risk factor, low socioeconomic status, has many proximal factors associated with it. Within a research project, it may be possible to include some of these factors such as maternal warmth or parenting practices. It is unlikely, however, that all proximal factors could reasonably be accounted for – that is, items such as the availability of books, the time spent by the mother on her job rather than on child-rearing, or the financial ability of the parent(s) to satisfy the child's needs or wishes. Related to the issue of practicality is determining conclusively that specific proximal variables constitute a risk factor. To demonstrate the difficulty in conclusively determining that specific proximal variables constitute a risk factor, one need only to look at the differential treatment of children in the same family, and the differences in how children may be influenced or respond to their parent's behavior (Luthar, 1993).

It is of use to consider how the effects of distal risk factors are mediated through proximal risk factors however, conclusions about the level of risk should be the intent of thoughtful investigation. Moreover, it would be inaccurate to assume that each child will be equally affected by exposure to the risk, regardless of where the risk factor falls on the distal/proximal continuum.

Operationalizing risk.

In addition to proximal or distal measurements, there remains the problem of operationalizing risk. There are three strategies generally used in operationalizing risk. These are the life events approach (Luthar & Zigler, 1991), the multiple measures approach (Luthar, 1993; Seifer & Sameroff, 1987), and the specific life event approach (Luthar & Zigler, 1991; Werner & Smith, 1982, 1992).

In the life events research approach (Luthar & Zigler, 1991), risk is operationalized using a self-report measure that yields a count of stressful life events encountered by the participant. Many of the life events checklists have acceptable psychometric properties in terms of reliability and validity. The advantages to this approach are the ease of data collection and the built-in provision of control group data. As the stress scores are on a continuous scale, comparisons between high and low stress groups are possible without the need to locate specific high-risk and control samples (Luthar & Zigler, 1991). One disadvantage to the multiple stressful life events approach is that it does not always delineate the impact that the negative events may have had on an individual's life. That is, an individual may not consider seemingly negative events to have a major impact on his or her life; conversely, a minor event may have had a major

impact. Another disadvantage to this approach lies in the difficulty of making inferences regarding causality. Some negative life events may be the result of maladaptive behavior being exhibited by the participant, a case that would confound the measurement. For example failing a grade at school would be considered a negative life event but it may have been a manifestation of school truancy that in turn was a manifestation of substance-abuse.

The second and less used approach involves multiple measures of risk. This approach, pioneered by Seifer and Sameroff (1987), includes variables from different organizational levels including the individual, the family, and societal organizations as potential risk factors. Consistent with a transactional approach, the different systems that affect developmental processes are merged. This method incorporates measures of life events with specific stress. The approach merits investigation, given that risk factors seldom operate in isolation. Concurrent consideration in understanding multiple indices of risk is worthwhile in furthering the definition of risk, which, in turn, would further the understanding of the phenomenon of resilience (Luthar, 1993; Luthar & Zigler; 1991).

The third approach to operationalizing risk examines the effects of specific life stresses that are considered to have potential negative impact on positive outcomes. Individuals in high-risk circumstances are studied in terms of positive and negative outcomes. Studies using this approach include those that focus on the effects of parental death, family breakup, substance-abuse or single disasters, such as floods or fires. A benefit to this approach is that it does not overtly include a heterogeneous mix of stressors, that is, the intent is to measure a single indicator of risk. However, caution

should always be taken to carefully elaborate on all conditions thought to be related to the risk factor being measured. In reality, there are likely no events that operate in isolation, but rather each circumstance brings with it a complex series of events and stressors. One disadvantage to this approach is that many specific life event studies have not included a control group, and this limits comparison of children termed resilient to the specific life event with successful children from the population at large. These drawbacks can be avoided by adding a control group or using standardized instruments. Again, the issue of causality is in question, as there is not often data on these children prior to exposure to the major risk. As a result, it is difficult to determine if the two groups differ only in terms of exposure to the risk or if there were also differences in psychological functioning prior to the exposure.

Protective Factors

Many studies have attempted to document the characteristics of resilient people. Which personality characteristics contribute to psychological resilience? The importance of determining or exploring this line of research is that it allows the focus to be on ways to foster and strengthen those attributes that will help children grow to be psychologically well adjusted. The most salient of these will be discussed according to the three categories previously provided by Garmezy (1985) – that is, the child, the family, and the larger social environment.

Attributes of the child.

Many researchers have determined that temperament as an infant serves as a protective factor in a number of ways. Infants with easy temperaments elicit greater

numbers of positive responses from their caregivers. Researchers have suggested that children with easy temperaments appear to have higher intelligence and more advanced problem-solving skills, social skills, and coping strategies (Mantzicopoulos & Morrison, 1994; Masten et al., 1988; Werner, 1993; Werner & Smith, 1992). It is likely that this positive cycle continues and manifests itself in high self-esteem, another attribute of resilient individuals. In spite of adversity, resilient individuals appear to maintain a high level of self-esteem, a practical sense of personal control, and a feeling of hope (Higgins, 1994; Rutter, 1985; Werner, 1993).

Gender differences have also been reported. When compared to girls, boys are more vulnerable to out-of-home day care (Gamble & Zigler, 1986) and they react to stressful family circumstance with greater emotional and behavioral disturbances (Rutter, 1990). Rutter provided a cautionary note that other mechanisms may also be at play. He suggested that parents may be more likely to quarrel in front of boys, and in the case of a marital break-up, boys would be more likely than girls to be placed in institutional care (Rutter, 1990). In addition, there tends to be a different meaning placed on aggression in boys compared to girls. Aggression is considered to be acceptable at certain levels in boys (Condry & Ross, 1985). Together, these reports suggest that the protection of gender provides a lower exposure to the risk factor.

Humour has also been correlated with resilience and exploratory analyses show that highly stressed competent individuals demonstrated greater scores on humor generation than highly stressed less competent individuals (Higgins, 1994; Luthar & Zigler, 1991; Masten, 1982; Wolin & Wolin, 1993; Vaillant, 1993). Additionally,

believing that one has control over one's environment, or an internal locus of control, has been found to serve a protective function in children, adolescents, and young adults (Luthar, 1991; Werner, 1989). Rutter and Quinton (1984) found that actively participating in environmental change served as a protective for women who were raised in institutions. The women who demonstrated planning for marriage, and therefore exerted control over the event, were less likely to marry deviant men.

Familial factors.

Children from homes characterized by conflict were less ego-resilient than children from homes with competent, loving parents with shared values (Block, 1971). Rutter (1979) found that the risk of family discord can be ameliorated by a good relationship with at least one parental figure. Masten et al. (1988) found that maternal competence in parenting served protective functions for girls in middle childhood. Parental values and beliefs have been demonstrated among underprivileged families whose parents believe that success can be achieved through education. Education has helped many children attain success and competence in their adult lives (Comer, 1988). Werner and Smith (1982, 1992) indicated several protective aspects of family functioning and found that protective factors can vary during different points in development. Their studies demonstrated that males are more vulnerable than females in the first decade of life, less vulnerable in the second, with a shift again occurring in the third decade. During childhood, the father's presence was significant for boys and the mother's presence significant for girls. In adolescence, across gender, the individual's perception of the

relationship, especially with the father, and the absence of mental health problems in the mother also were predictors of resilience.

The protective function of the family follows into adulthood. In their study of institutionalized women Rutter and Quinton (1984) found that, when these women married, a supportive spouse served as a protective function in respect to the quality of parenting provided by the women.

Social Environment

A frequently asked question regarding resilience is what is the role of supportive relationships in the lives of successful survivors? High-risk children and their families who have demonstrated positive outcomes often have a network of varied informal relationships that can include same age peers, older friends, clergy, or teachers who can provide the support that is absent in the home (Werner & Smith, 1982, 1992; Herrenkohl, Herrenkohl, & Egolf, 1994). The inference is not that this is a random occurrence where the child or family meets someone who acts as a catalyst in their successful survival. Such a perspective would overlook that the resilient child or family is an active agent in the success. The resilient individuals are active agents who appropriately recognize potentially interested adults and overtly or covertly pursue them. The supportive others become a model and a source of encouragement for the resilient individual at crucial times (Wolin & Wolin, 1993).

Summary: Risk, Resilience, and Vulnerability Factors

The primary interest in risk and resilience research is to determine how children develop normally, despite environmental risks. Ultimately the goal of this research will

be the development of empirically derived prevention and intervention programs for children at-risk for maladaptive development.

Research in resilience subscribes to a transactional view that is valuable conceptually but not without methodological difficulties. There are many complexities in researching continuously interacting interrelated components, least of which is clearly articulating the components under investigation. Precise definitions of the groups under study, and of their environments, are essential to the validity of the results. Findings can be obscured by a lack of precision in defining resilience and risk.

This field does not prescribe to one single best paradigm or approach to research, but rather, remains flexible as to how to investigate the links between normal and abnormal development. In the study of many high-risk conditions, such as substance-abuse, it would be an advantage to draw from many of the concepts contained within the framework of risk and resilience research.

Although much is known about substance use in adolescents, a great deal remains to be learned. A number of risk and protective factors have been identified, yet they have provided little help in curtailing the problem. The incidence of adolescent substance use and the transition to abuse continues to escalate.

A developmental approach that seeks to establish the continuity of consequences of the unmet developmental tasks may lend a new perspective to the study of adolescent substance-abuse. One of the earliest developmental tasks is forming an attachment relationship. This relationship occurs in a familial context and can have profound effects on all further aspects of development as well future relationships.

CHAPTER THREE: METHOD

Two groups of adolescents were studied – substance-abusing (SAAD) and non-substance-abusing (NSAAD). Substance use patterns and the incidence of parental substance abuse between the two groups were compared. The two groups of adolescents were also examined from the perspective of protective and vulnerability factors that would mediate the risk condition of substance-abuse. A strong attachment to the parents was expected to act as a protective factor in non-substance-abusing adolescents, particularly those from substance-abusing environments. Adolescents from backgrounds of substance-abuse were expected to be more vulnerable to the risk condition of substance-abuse. A Subgroup of adolescents from within the non-substance-abusing group was identified as being Resilient. This Subgroup was further identified as having a parent or parents who were alcohol abusers. Differences in internalizing disorders were investigated between the Resilient Subgroup and the main group of non-substance-abusing adolescents (NSAAD).

Research Participants

One hundred and thirty four participants were recruited from a number of community venues that included friend and peer referral, community sports leagues, and social service agencies. Prior to contacting participants, ethics approval was obtained from the University of Calgary (Appendix A). All of the participants lived within a large urban center in Western Canada. For participants under the age of 18 years, information letters were provided to all parents and written, informed consent was obtained from at least one parent (see Appendices B and C). In addition, written informed consent for the

data to be collected and used in the study was obtained from each participant (Appendix D). Participation in the study was strictly voluntary.

The participants ranged in age from 12 to 21 years with a mean age of 15.8 years and a standard deviation of 1.9 years. Fifty five females (41%) and 79 males (59%) participated in the study. Almost half the adolescents reported that they lived with both of their parents (N=60; 45%), one-fifth lived solely with their mother (N=28; 21%), and 6% (N=8) lived solely with their father. Approximately one-third of the adolescents (N=37, 28%) identified their current living conditions as living on their own. One participant did not respond to this item. Education of the participants ranged from Grade six to first year university with a mean of grade 10 and standard deviation of 1.8. One hundred and twenty-three of the participants were currently registered in city schools or in their first year of university. The participants in the study were primarily from nonprofessional families. Nineteen percent of the mothers had professional designations (N= 24) and 18% of the fathers had professional designations (N=23). The remainder of the participants reported that their parents were employed in nonprofessional occupations, did not work, or they did not know the occupations of their parents. All but seven participants had Caucasian backgrounds.

Research Instruments and Plan of Analysis

Research Instruments

The following instruments were used to gather data for the study:

1. Demographic Questionnaire (DQ);
2. Personal Experience Screening Questionnaire – PESQ (Winters, 1991);

3. Children of Alcoholics Screening Test, shortened version – CAST-6 (Hodgins & Shimp, 1995);
4. Inventory of Parent and Peer Attachment – IPPA (Armsden & Greenberg, 1987);
5. Tennessee Self Concept Scales – TSCS (Fitts 1964);
6. Child Depression Inventory – CDI (Kovacs, 1992);
7. Revised Children's Manifest Anxiety Scale – RCMAS (Reynolds & Richmond, 1985).

The Personal Experience Screening Questionnaire (PESQ) was used to determine patterns of substance use and to categorize the adolescents into the two groups – substance-abusing (SAAD) and non-substance-abusing (NSAAD). The Demographic Questionnaire (DQ) and Children of Alcoholics Screening Test–6 (CAST-6) were used to determine if the substance-abusing adolescents had a higher incidence of parents who were substance-abusers and the information obtained was also used in a later analysis regarding predictors of substance-abuse. The Inventory of Parent and Peer Attachment (IPPA) and the Tennessee Self-Concept Scales (TSCS) were used to measure protective processes in the two groups of adolescents. All of the above measures were used in the analysis for predictors of substance-abuse. The final focus of the study was resilience and internalizing disorders. The Child Depression Inventory (CDI) and Revised Children's Manifest Anxiety Scale (RCMAS) were used to determine if there were internalizing disorder differences between non-substance-abusing adolescents from both substance-abusing and non-substance abusing families.

Table two outlines the particular research questions, the independent variables identified, and the research instruments utilized to investigate each question.

Table 2.

Research Questions, Variables, and Instruments

Research Questions	Independent Variables	Research Instruments
Group Definition	*Substance Use Patterns*	
1) What are the differences in substance use patterns between the two groups?	• Problem severity • Substance use	• PESQ
Vulnerability Factors (Social Context)	*Demographics*	
2) Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?	• Usage patterns • Family structure • Parental education • No. of people in household with a drinking problem • Parental drinking	• DQ • CAST-6
Protective Factors	*Attachment*	
3) Are there differences in attachment patterns between the NSAAD and the SAAD groups?	• Maternal attachment • Paternal attachment • Peer attachment	• IPPA
4) Are there differences in self-concept between the NSAADs and the SAADs?	*Self-Concept* • Total self-concept subscales	• TSCS
Predictors -Problem Severity	*Possible Predictors*	
5) Do social context, attachment and self-concept predict problem severity of substance-abuse in the adolescent population?	• Parental drinking • No. of people in household with a drinking problem • Self-concept • Maternal attachment • Paternal attachment • Peer attachment	• PESQ • DQ • CAST-6 • TSCS • IPPA
Resilience	*Internalizing Problems*	
6) Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?	• Depression • Anxiety	• CDI • RCMAS

Group Definition

Personal Experience Screening Questionnaire (PESQ).

The initial research question was stated as:

1) What are the differences in substance use patterns between the two groups (NSAAD and SAAD)?

To address the initial research question the Personal Experience Screening Questionnaire (PESQ) developed by Winters (1992) was utilized. The PESQ is an instrument designed to assist in identifying substance-abuse in adolescents. This questionnaire consists of 40 items addressing problem severity, frequency and onset of use, defensiveness (faking good responses or responding to items on the basis of social desirability), and psychosocial functioning that can be answered "never," "once or twice," "sometimes," or "often." It takes approximately 15 minutes to complete. A nondefinitive cut-off score is provided as indicative of problematic use.

Winters (1992) reported that the problem severity portion of the PESQ has a high internal reliability estimate (0.92), that the PESQ as a whole demonstrated satisfactory discriminant validity, and that overall scores were related to assessment-referral recommendations. Also, PESQ scores were found to be highly predictive of scores on a more comprehensive assessment instrument, the Personal Experience Inventory (PEI; Winters & Henley, 1989).

Vulnerability Factors (Social Context)

Demographic Questionnaire (DQ).

Two research instruments were used to address the second research question established for this study, stated as:

2) Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?

To establish demographic variables and sociodemographic characteristics, a self-report questionnaire (DQ) was used to obtain information on family size, household composition, and education and occupation of parents. The information was used to determine the child's perception of who looked after them the most while they were growing up and also, whether they perceived that someone in the household had a drinking problem. All data were obtained directly from the adolescents. The demographic questionnaire was developed for the purpose of this research study and is presented in Appendix E.

Children of Alcoholics Screening Test-6 (CAST-6).

To determine if the adolescents could be classified as children of alcoholics and for the analysis of predictors of substance-abuse in adolescents, the Children of Alcoholics Screening Test – 6 (CAST-6; Hodgins & Shimp, 1995) was used. The CAST-6 is a shortened version of the Children of Alcoholic Screening Test – CAST (Jones, 1983). The CAST is a widely used instrument for identifying adults and adolescents who have at least one alcoholic parent and to assess the severity and areas of impact of parental alcoholism on the individual. Hodgins and Shimp (1995) compared the

CAST-6 with the CAST and a variety of other measures used for identifying children of alcoholics. They determined that the CAST-6 was internally reliable (Cronbach's alpha coefficient = .87), had good retest reliability over a one-week interval (Pearson correlation and Kappa coefficient $r(53) = 0.94$, $p < .0001$), and corresponded well with other measures of parental status.

The CAST-6 is comprised of six items to which the respondent answers "yes" or "no." Hodgins and Shimp (1995) suggested that a conservative criterion of three or a liberal criterion of two be used as cut-off scores for identifying familial alcoholism. Since past research (Tweed & Ryff, 1991) has indicated that single item diagnostic criteria produce similar results to more comprehensive diagnostic criteria, the liberal criterion of two was used in this study.

Protective Factors

Attachment: Inventory of Parent and Peer Attachment (IPPA).

The third research question addressed protective factors relating to attachment and was stated as:

3) Are there differences in attachment patterns between the NSAAD and the SAAD groups?

To assess the adolescent's attachment relationship patterns the adapted version of the Inventory of Parent and Peer Attachment (IPPA) developed by Armsden and Greenberg (1997) was used. This instrument separately assesses perceived quality of attachment to mothers, fathers, and peers.

Secure or insecure attachment relationships between the child and caregivers are based on the child's expectations of the availability of the parents or guardians during times of need. The quality of this relationship is the core of the child's internal working model of environment, self, and attachment figures. Attachment theory accounts for much of the complex relationship in the family and suggests how this relationship might influence the problem behavior of adolescents.

The IPPA consists of three separate 25-item scales that assess adolescents' perceptions of the positive and negative affective and cognitive dimensions of relationships with their mother, father, and close friends. The three separate scales measure attachment to significant figures that may serve as sources of psychological security. Four scores are available for each person; a total score and three subscale scores being trust (T), communication (C), and alienation (A). All of the items for the alienation subscale are reverse-scored, so that the subscale is actually the absence of alienation in one's attachment to parents and peers. The IPPA was originally developed for use in late adolescence but has been recommended for ages 12 to 20.

The instrument is a self-report questionnaire with a five point likert-scale response format. The revised version (Mother, Father, Peer Version) comprises 25 items in each of the mother, father, and peer sections yielding three attachment scores (see Appendix G). Three week test-retest reliability coefficients were Mother attachment – .87, Father attachment – .89, and Peer attachment – .92. Internal consistency for the subscales of Trust, Communication, and Alienation (Cronbach's alpha coefficients) were .91, .87, and .72 respectively (Armsden & Greenberg, 1997).

Self-concept and esteem: Tennessee Self-Concept Scale (TSCS).

The fourth research question addressed self-concept and is stated as:

4) Are there differences in self-concept between the NSAADs and the SAADs?

The Tennessee Self-Concept Scale (TSCS; Fitts, 1964) was utilized for this question. This scale provides a single score that reflects overall self-esteem, but perhaps more informative are the many composite scores this scale provides. The questions cover three areas of analysis: identity (what I am), self-satisfaction (how satisfied I am with myself), and behavior (how I act). Further, five areas of self are evaluated: physical, moral-ethical, personal, family, and social. These scales may best be conceived of using a three by five matrix. Adolescents with less secure attachment styles may present with overall positive self-esteem but investigation of composite scores may show otherwise. For example, an individual with an avoidant attachment pattern may present his or her self as very "confident" with an "I can get along quite well by myself" attitude (Hazan & Shaver, 1987, 1990, 1994). A composite analysis may reveal differences between identity, behavior, and self-satisfaction.

The TSCS is multidimensional in its description of self-concept. The instrument consists of 100 self-descriptive statements that the subject uses to portray his or her own self-picture. These items separate and can provide information according to 29 scales. Information from 10 scales most relevant to this research was gathered and hand-scored. Cronbach's alpha coefficients, a measure of consistency among the items in a measurement scale, were provided for both adolescents and adults and are as follows: for

total self-esteem, adolescent – .91, adult – .94, and total (combined adolescent and adult) – .94. The Cronbach's alpha coefficients for the self-concept subscales ranged from .81 to .94 in a population of adolescents and adults. Within the same population the test-retest values ranged from .80 to .92. The alpha coefficient for the self-criticism scale was .71 (Fitts & Warren, 1996).

Predictors of Problem Severity

The fifth research question which follows addressed predictors of problem severity:

5) Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?

Results obtained using the measures outlined above were utilized in subsequent analyses to address this question.

Resilience – Measures of Internalizing Symptoms

Depression: Children's Depression Inventory (CDI).

The final research question addressed the Resilient Subgroup (RSg) of adolescents identified from the non-substance-abusing adolescent main group (NSAAD) and is stated as:

6) Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?

Assessments of depression were obtained using the Children's Depression Inventory (CDI) taken from Kovacs (1992). This instrument is a 27-item self-report scale that was

designed for school-age children and adolescents. Each item consists of three choices, with scores ranging from 0 to 2 in the direction of higher levels of depression. As measured by Cronbach's alpha coefficient, this measure has an internal consistency in the range of .71 to .89 (Kovacs, 1992) and has been found to have adequate criterion and concurrent validity (Kovacs, 1992; Saylor, Finch, Spirito, & Bennett, 1984).

Anxiety: The Revised Children's Manifest Anxiety Scale (RCMAS).

The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985) was used to assess levels of anxiety. A 37-item self-report measure, this scale yields a total anxiety score based on 28 items. These items may be further subdivided into three subscales: physiological anxiety, worry/oversensitivity, and social concerns/concentration. The remaining nine items constitute a subscale labeled lie. Within this study, the total anxiety score and subscale scores were used in the statistical analyses.

Items on the Revised Children's Manifest Anxiety Scale are scored 0 or 1, with high scores being indicative of higher levels of anxiety. Cronbach's alpha estimates have been found to range from .78 to .85 for the total anxiety score, and test-retest reliability over 9 months was .68. Construct validity of this measure was adequately established by convergent and divergent analyses (Reynolds & Richmond, 1985). Alpha reliability ranges for the subscales are reported as follows: physiologically anxiety ranges from .60 to .70, worry/oversensitivity ranges from .70 - .82 and social concerns/concentration demonstrates reliability generally in the .60-.69 range. Coefficient alpha reliability for the lie scale are consistently in the .70s and .80s.

Data Collection Procedure

Data for each student were collected after school hours in the homes of the adolescents, community centers, or community agencies. Testing of the participants was done in a single session of approximately 90 minutes, individually or in small groups when possible. Questionnaires were administered in the same order to all individuals or groups. To determine the order of administration it was the intention of the researcher to minimize the possibility of discomfort to the participants. Each session began and ended with structured measures and any instruments that were considered to be potentially upsetting to the participants (i.e., those dealing with anxiety or depression) were interspersed in the middle of the testing session.

Order of test administration was:

1. Participant Consent;
2. Demographic Questionnaire (DQ);
3. Children of Alcoholics Screening Test, shortened version – CAST-6;
4. Personal Experience Screening Questionnaire – PESQ;
5. Child Depression Inventory – CDI;
6. Inventory of Parent and Peer Attachment – IPPA;
7. Revised Children's Manifest Anxiety Scale – RCMAS;
8. Tennessee Self-Concept Scale – TSCS.

The tasks were explained to each participant at the beginning of each 90 minute session. The participants were encouraged to provide truthful and straightforward answers with the assurance that confidentiality would be strictly protected.

Confidentiality of the participants responses was strongly emphasized, especially since information was obtained on the illegal use of substances by minors. As well, the participants were asked to put their names on the demographic questionnaires only, with the assurance that it would be removed before the data was scored. To further ensure confidentiality and to minimize recognition by identification number, data was scored in group sets of 10 to 30.

The researcher stayed with each participant, or groups of participants, during completion of the questionnaires to observe reactions and answer any questions. To maximize the quality of participation from the adolescents in the study, each was instructed to consider filling out the questionnaires as a job that would take approximately one hour. Talking between the participants was discouraged to minimize the influence from others' responses and to maintain attention through to completion of the tasks. At the completion of the questionnaires an honorarium of $10.00 was paid to each participant. As well, upon completion each participant was asked how they felt about the questions and was provided with individual debriefing, if warranted.

CHAPTER FOUR: RESULTS

This chapter is divided into five sections. The first section, Group Definition, addresses the initial research question and provides a description of substance use patterns between the non-substance-abusing adolescents (NSAAD) and the substance-abusing (SAAD) group. This is followed by a descriptive discussion in the Vulnerability Factors (Social Context) section addressing the second research question and comparing the two groups of adolescents. Research questions number three and four are then addressed in a section entitled Protective Factors, that investigated differences in attachment and self-concept between the NSAAD and SAAD groups. The fourth section entitled Predictors of Problem Severity will analyze social context, attachment, and self-concept as predictors of problem severity. Finally, the section entitled Resilience will determine whether the identified Resilient Subgroup is also found to be resilient to internalizing disorders.

Research Questions

Based upon the data obtained from the Personal Experience Screening Questionnaire (PESQ), the participants were divided into two groups – non-substance-abusing adolescents (NSAAD) and substance-abusing adolescents (SAAD). The data obtained from the two groups was analyzed to answer the following research questions:

Group Definition

1. What are the differences in the substance use patterns between the two groups?

Vulnerability Factors (Social Context)

2. Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?

Protective Factors

3. Are there differences in attachment patterns between the NSAAD and the SAAD groups?

4. Are there differences in self-concept between the NSAADs and SAADs?

Predictors of Problem Severity

5. Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?

Resilience

6. Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?

Table three outlines the research questions, variables, and their associated methods of analysis.

Table 3.

Research Questions, Variables, and Methods of Analysis

Research Questions	Independent Variables	Analysis Used
Group Definition 1) What are the differences in substance use patterns between the two groups?	*Substance Use Patterns* • Problem severity • Substance use	A MANOVA was used to confirm that problem severity, substance use, and parental drinking were significantly different.
Vulnerability Factors (Social Context) 2) Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?	*Demographics* • Usage patterns • Family structure • Parental education • No. of people in household with a drinking problem • Parental drinking	Descriptive Percentages. An ANOVA was used to explore whether differences in parental drinking across the groups was statistically significant.
Protective Factors 3) Are there differences in attachment patterns between the NSAAD and the SAAD groups? 4) Are there differences in self-concept between the NSAADs and the SAADs?	*Attachment* • Maternal attachment • Paternal attachment • Peer attachment *Self-Concept* • Total self-concept and self-concept subscales	An ANOVA was used to explore whether the differences in attachment across groups was statistically significant. A MANOVA was used to confirm significant differences in total self-concept and self-concept subscores.
Predictors -Problem Severity 5) Do social context, attachment and self-concept predict problem severity of substance-abuse in the adolescent population?	*Possible Predictors* • Parental drinking • No. of people in household with a drinking problem • Self-concept • Maternal attachment • Paternal attachment • Peer attachment	Multiple regression analyses were conducted to identify which variables were the best predictors of problem severity.
Resilience 6) Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?	*Internalizing Problems* • Depression • Anxiety	A MANOVA was used to confirm significant differences in depression and anxiety between the two groups.

Group Definition

To address the initial research question "What are the differences in substance use patterns between the two groups?" substance use patterns among the adolescent group as a whole were established using a predetermined cut-off score on the Personal Experience Screening Questionnaire (PESQ). The data obtained were then used to group the adolescents according to non-substance-abusing (NSAAD) or substance-abusing (SAAD). Further, a Multivariate Analysis of Variance (MANOVA), the most appropriate technique for this type of analysis (Tabachnik & Fidell, 1996; Andrews, Klein, Davidson, O'Malloy & Rodgers, 1981), was then undertaken using the individual score differences. The results of that analysis revealed significant differences in patterns of substance use between the two groups ($F=67.0$; $p<.001$).

In investigating substance use patterns across the two groups (NSAAD and SAAD), significant statistical differences were found in problem severity, with the SAAD group demonstrating much higher problem severity scores when compared to the NSAAD group. Problem severity, measured on the Personal Experience Screening Questionnaire (PESQ), provides a score that measures the individual's psychological and behavioral involvement with alcohol and drugs. High scores are associated with alcohol and drug dependence and abuse. The total score cut-off for problem severity ranged from 29-34 depending upon the age and the sex of the participant. These scores subsequently determined groupings of the adolescents into either the substance-abusing adolescent (SAAD) or the non-substance-abusing adolescent (NSAAD) category.

There were three substance categories where significant statistical differences

were found – alcohol, marijuana, and other drugs. Although both groups indicated that they may use any one of the substances, the SAAD group used significantly more, particularly of alcohol and marijuana. Table four below provides the univariate F results for each variable.

Table 4.

Differences in Substance-Abuse Patterns Between Substance-Abusing and Non-Substance-Abusing Adolescents

	Non-Substance-Abusing N=61		Substance-Abusing N=73		
	Mean	Standard Deviation	Mean	Standard Deviation	Univariate F
Problem Severity	23.3	5.2	46.3	9.0	312.1***
Substance Use of:					
-Alcohol	3.1	1.8	5.5	1.7	63.8***
-Marijuana	1.8	1.5	5.2	2.2	106.5***
-Other Drugs	1.3	0.9	3.3	2.2	43.1***

Note: * =p <.05, **=p <.01, ***=p <.001

Table five illustrates in figures the data obtained for the two study groups showing instances when the adolescents first experienced a "high" sensation as well as their reported first regular use of alcohol and drugs. The same data is also depicted in the two bar graphs in Figures two and three. The results illustrated in Table five below indicate that 65% of the NSAAD have never experienced a "high" sensation. Of the 35% who have experimented with alcohol or drugs, 30% began experimenting at grade ten or earlier. In contrast, 77% of the SAAD first experienced a "high" at grade eight or before.

It is noteworthy that in the SAAD category 17% consider that they are not regular

substance users. In addition 59 % of the SAAD began substance use regularly at or before grade eight.

Table 5.

Instances of Reported First "High" Experiences and Regular Alcohol and Drug Use by the Two Groups – Non-Substance-Abusing Adolescents and Substance-Abusing Adolescents

	Non-Substance-Abusing Adolescents N=61	Substance-Abusing Adolescents N=73
First "High" Experience		
- Never	65%	5%
- Grade 6 or earlier	5%	34%
- Grade 7-8	13%	43%
- Grade 9-10	12%	15%
- Grade 11 +	5%	3%
First Regular Use		
- Never	85%	17%
- Grade 6 or earlier	2%	15%
- Grade 7-8	3%	44%
- Grade 9-10	7%	18%
- Grade 11 +	3%	6%

NOTE: *=p<.05, **=p<.01, ***=p<.001

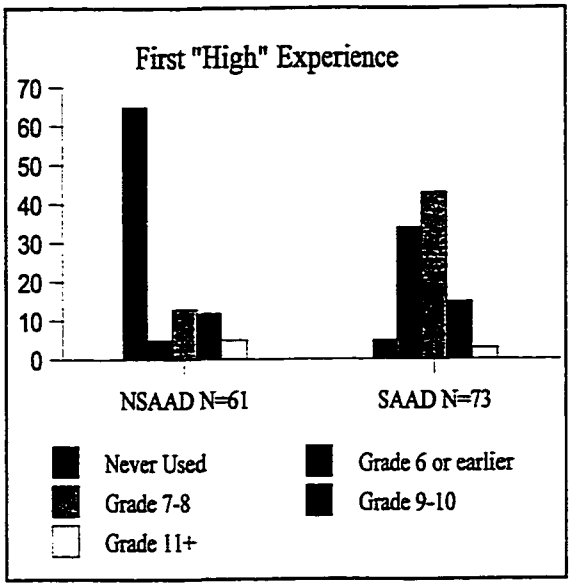

Figure 2. First "High" Experience with Psychoactive Substances Reported by Adolescents.

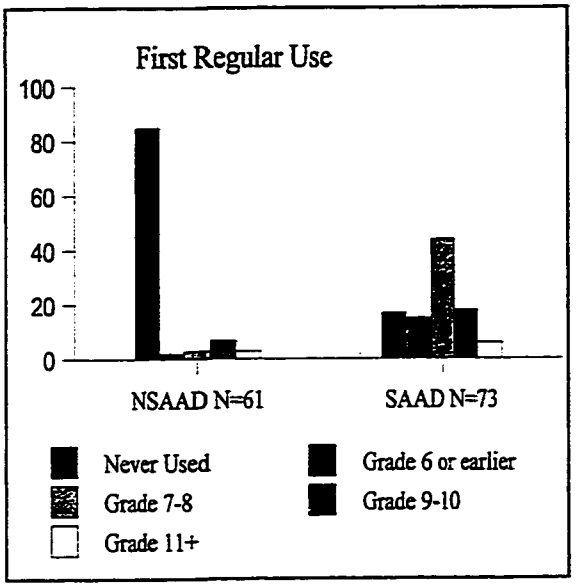

Figure 3. First Regular Use of Psychoactive Substances Reported by Adolescents.

Differences in Use of Drugs Other Than Alcohol or Marijuana

Drugs, other than alcohol or marijuana, were used by 58% of the sample group. Of these other drugs there was minimal experimentation by the NSAAD (N=61) group with ranges from 2% to 8% across types of drugs other than alcohol or marijuana.

In the SAAD (N=73) group there was considerably greater experimentation. The greatest experimentation occurred with psychedelic drugs (56%), amphetamines (32%), cocaine (29%), and other drug categories (26%). Lesser use was demonstrated with tranquilizers (15%), inhalants (10%), heroin (11%), barbiturates (8%), or Quaaludes (6%).

Vulnerability Factors (Social Context)

Demographic Differences

Tables six and seven demonstrate individual group differences in the following demographic variables: where the adolescent lives, who the adolescent was raised by, parental occupation, parental education, perceptions of drinking problems in the home environment, who drinks, and the number of people in the home that have a drinking problem.

The information tabulated in tables six and seven suggests that there were no relative differences between NSAAD and SAAD groups regarding who raised them. The percentages between the two groups are very close, with similar distributions between the categories "having been raised by both parents" or "raised by mother alone." The data showed higher percentages of substance-abuse among those adolescents who perceived that they were raised by their father or "other." In response to the question "Who raised you?" 15 respondents stated other. The other category included: myself (5), sister or brother (4), nanny (2), foster parents (2), grandmother (1), aunt (1). Approximately equal percentages of females and males presented as substance-abusing and non-substance-abusing.

Table six below compares the various demographic differences which are then graphically illustrated in figures four, five, and six.

Table 6.

Demographic Differences between Non-Substance-Abusing Adolescents and Substance-Abusing Adolescents

	Non-Substance-Abusing Adolescents N=61	Substance-Abusing Adolescents N=73
Adolescent Presently Living With:		
- both parents	52%	40%
- mother	18%	23%
- father	8%	4%
- other (generally on their own)	22%	33%
Adolescent View of Who They Were Raised by:		
- both parents	25%	20%
- mother	63%	56%
- father	5%	9%
- other	7%	16%
Education of Mother:		
- High School or less	27%	58%
- Post-Secondary Education	73%	42%
Education of Father:		
- High School or Less	19%	35%
- Post-Secondary Education	81%	65%

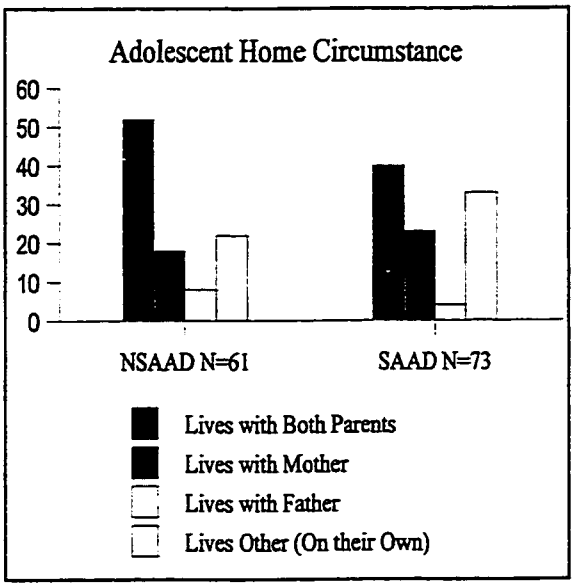

Figure 4. Comparison of where adolescents from the two groups are presently living.

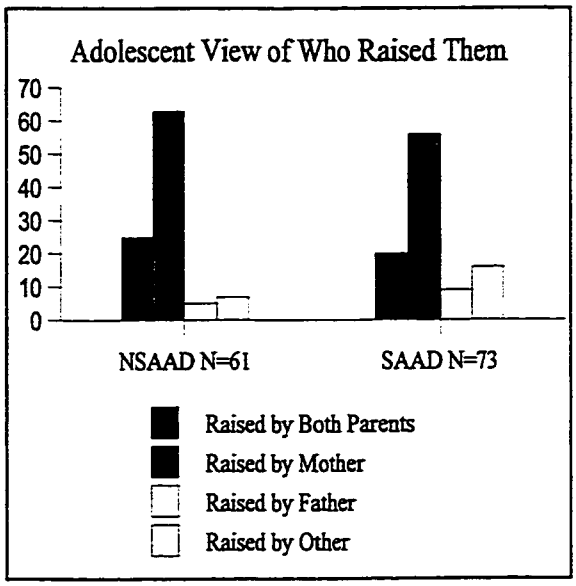

Figure 5. Comparison of adolescents views of who raised them.

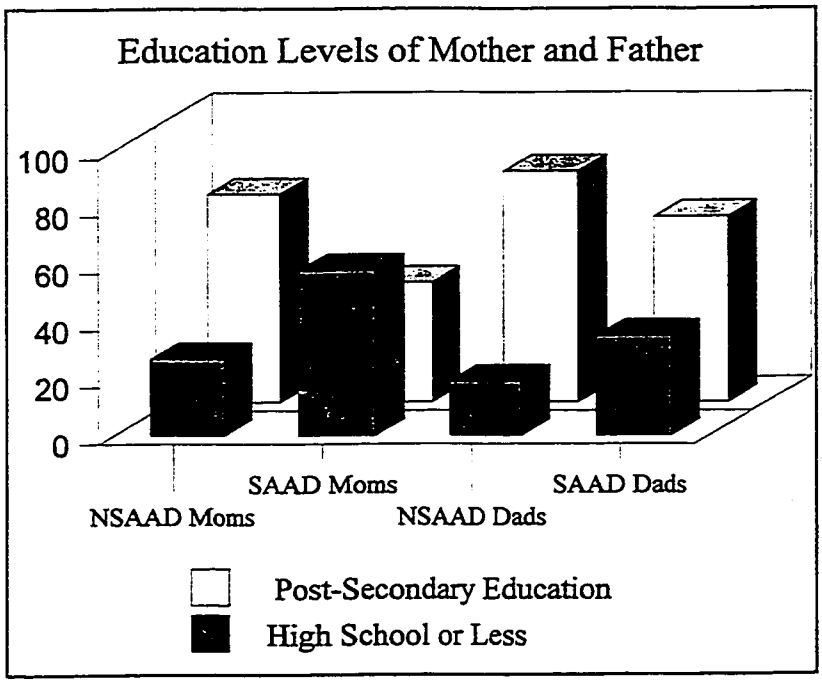

Figure 6. Comparison of levels of parental education between NSAAD and SAAD groups.

Table 7.

Differences in Environmental Exposure to Alcohol in Non-Substance-Abusing Adolescents Compared to Substance Abusing Adolescents

	Non-Substance-Abusing Adolescents N=61	Substance-Abusing Adolescents N=73
Adolescent View of Parental Drinking:		
-considered a problem	22%	51%
- father drinks	12%	38%
CAST-6 Determinants of Parental Problem Drinking:	N=61	N=73
- mother	8%	7%
- father	16%	34%
- both parents	2%	10%
- unknown	–	1%
Problem Drinkers in Household:	N=60	N=71
- 0	77%	49%
- 1	18%	25%
- 2+	5%	25%

In a comparison of demographic information with the results of the Children of Alcoholics Screening Test - 6 (CAST-6) shown in Table eight, some adolescents did not perceive either or both parents to have a drinking problem in response to the demographic question, yet their responses on the CAST-6 indicated that they could be identified as children of alcoholics. For example, on the demographics questionnaire, none of the respondents, that is adolescents from either the NSAAD or the SAAD groups,

responded that they perceived their mother to have a drinking problem; and yet, on the Cast-6 responses for the NSAAD group, 8% (N=5) reported that their mothers did have a drinking problem and in the SAAD group, 7% (N=5) indicated that their mothers had a drinking problem.

The responses reported here refer to the question on the CAST-6 that asks a) "Have you ever thought that one of your parents had a drinking problem? and b) If yes, who: Mother, Father, or Both." The totals include only those NSAAD and SAAD who perceived either or both of their parents to be problem drinkers. This total does not include adolescents who perceived that their parents did not have a substance-abuse problem.

Of the total number of NSAAD (15) who perceived that one or both of their parents had a drinking problem ten respondents indicated that the father had a problem, four respondents indicated that the mother had a drinking problem, and only one claimed that both parents had a drinking problem.

Of the 37 SAAD (51%) with substance-abusing parents, in 13% of the cases the mother was the substance-abuser, in 66% of the cases the father was the substance-abuser, and in 18% of the cases both parents were substance-abusers. In three percent of the cases there was substance-abuse reported among the parents but it was not specified whether one or both of the parents had the problem.

The number of people in the household with a drinking problem also made a significant difference. However it is interesting that 49% (N=36) of the substance-abusing adolescents came from a household without the perception of a

problem drinker present. These findings indicated that the substance abusing adolescents were approximately evenly distributed across families with alcohol problems and without. In this sample, 37 (51%) substance abusing adolescents came from alcoholic environments and 36 (49%) substance abusing adolescents came from non-alcoholic environments. Although non-substance abusing adolescents almost always come from homes where no one is perceived to have a drinking problem (77%) this in itself does not serve as a protective factor for children becoming substance-abusers.

The Children of Alcoholics Screening Test - Shortened (CAST-6) test was used to determine if the participants came from a high-risk (vulnerable) environment – defined as a "child of an alcoholic." These children are deemed to be at higher risk for becoming alcohol or other substance-abusers (Brown, 1991; Sher, 1991). The results shown in Table eight reveal significantly more SAAD come from homes where the adolescents perceive alcohol to be a problem by one or both parents and may have scores that would place them in the child of an alcoholic category (Mean = 2.3, s.d. = 1.3). However these results also indicate that not all substance-abusing adolescents come from substance-abusing families. Figures seven, eight, and nine graphically demonstrate the differences in environmental exposures to alcohol.

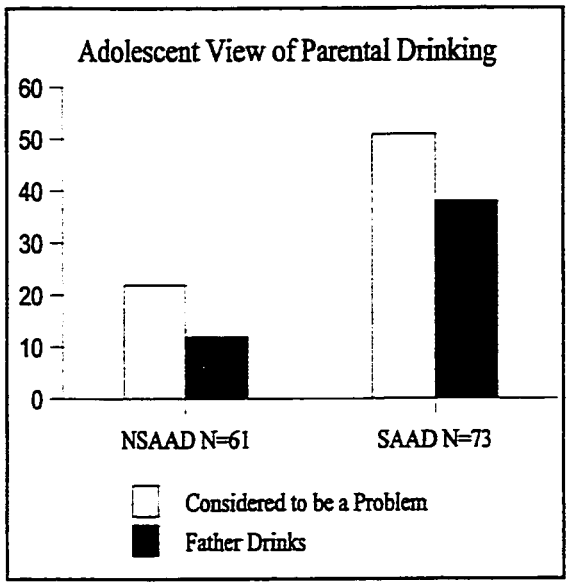

Figure 7. Adolescents view of parental drinking.

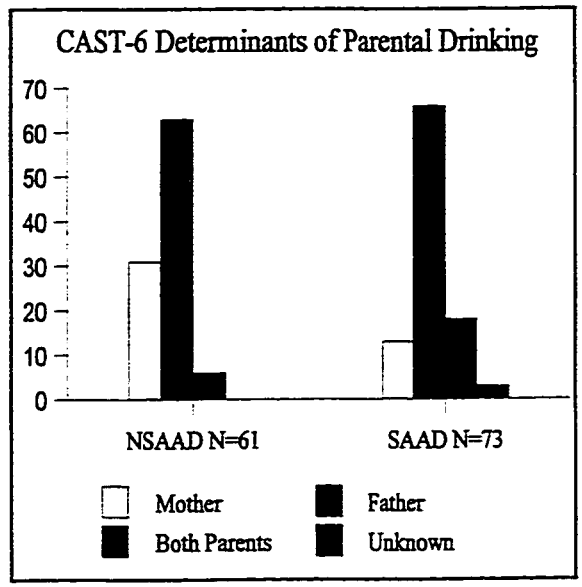

Figure 8. CAST-6 Determinants of Parental Drinking.

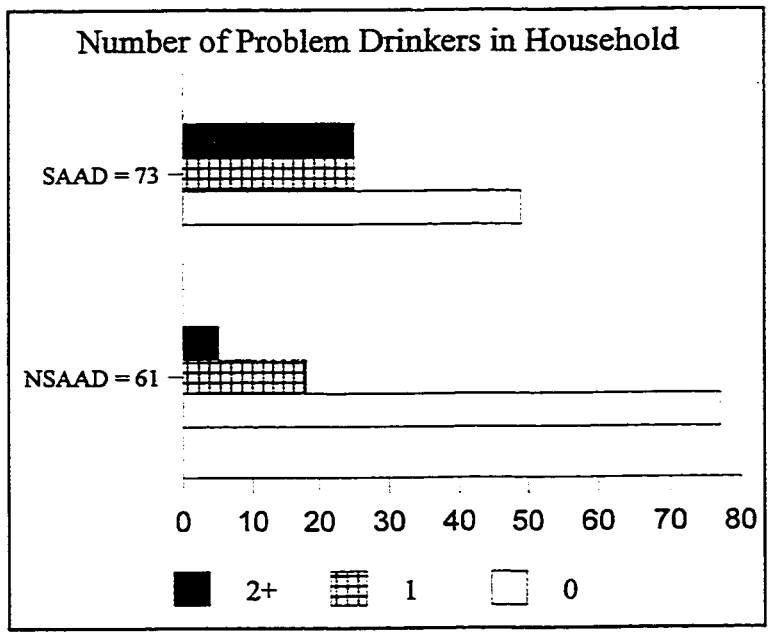

Figure 9. Comparison between the NSAAD and SAAD groups of the number of perceived problem drinkers in the household.

Table 8.

Children of Alcoholics Screening Test - Shortened (CAST-6) Results for Non-Substance Abusing Adolescents and Substance-Abusing Adolescents

	Non-Substance-Abusing Adolescents N=61		Substance-Abusing Adolescents N=73		
	Mean	Standard Deviation	Mean	Standard Deviation	Univariate F
CAST-6	1.3	1.9	2.3	2.3	7.1**

Note: * =p <.05, **=p <.01, ***=p <.001

Protective Factors

Attachment

The attachment relationship patterns section was to investigate the question: "Are there differences in attachment patterns between the NSAAD and SAAD Groups?" The question was structured to determine whether more secure attachments patterns had been formed with parents or with peers who may have provided the secure base for the development of adaptive coping skills.

An Analysis of Variance (ANOVA) of total attachment scale scores showed significant differences for the category "attachment to mother" (F= 7.4, p<.01) between the NSAAD and the SAAD groups. There were no statistically significant results found in the categories of "attachment to father" or in "peer attachment" between the two groups. The ANOVA was considered the most appropriate analysis (Tabachnik & Fidell, 1996) since the respondent totals varied across the groups of mother, father, and peer as a

result of some participants claiming not to know one of their parents. Table nine presents the one-way ANOVA results for the three subscales that comprise the total attachment score.

Armsden and Greenberg (1997) hypothesized that the "internal working model" of attachment figures may be tapped by assessing a) the positive affective/cognitive experience of trust in the accessibility and responsiveness of attachment figures (communication and trust), and b) the negative affective/cognitive experiences of anger and/or hopelessness resulting from unresponsive or inconsistently responsive attachment figures (alienation). As illustrated in Table nine significant statistical differences within the "attachment to mother" category were found between the NSAAD and the SAAD groups in the trust and communication subscales, but not in the alienation subscale.

Table 9.

Attachment Differences Between the NSAAD and SAAD Groups in Trust, Communication, and Alienation Regarding Parents and Peers

	Non-Substance-Abusing		Substance-Abusing		
Attachment Subscales	Mean	Standard Deviation	Mean	Standard Deviation	Univariate F
	N=60		N=70		
Mother					
-Trust	35.3	10.9	31.0	10.3	5.3*
-Commun.	28.5	7.9	24.9	7.9	6.8**
-Alienation	19.8	5.2	18.5	8.0	n.s.
	N=55		N=56		
Father					
-Trust	33.9	10.4	31.2	11.6	n.s.
-Commun.	25.9	8.4	23.2	9.3	n.s.
-Alienation	19.1	5.1	17.3	6.3	n.s.
	N=54		N=55		
Peer					
-Trust	40.7	7.7	40.2	8.1	n.s
-Commun.	31.5	6.8	31.1	6.9	n.s.
-Alienation	25.4	5.6	25.4	12.6	n.s.

Note: * =$p < .05$, **=$p < .01$, ***=$p < .001$

Self-Concept

The research question pertaining to self-concept was "Are there differences in self-concept between the NSAAD and SAAD groups?" If so, it was also necessary to determine if there were differences between the NSAAD and SAAD groups in subscale scores.

An ANOVA of total self-concept scale scores showed significantly higher NSAAD mean self-concept score differences ($F=10.3$, $p<.002$) between the NSAAD

(mean = 41.4) and the SAAD (mean = 35.4) groups. Table ten presents the one-way ANOVA results for all of the subtests that comprise the total self-concept scale.

The data in Table ten indicate that there are differences between the two groups in a measure of total self-concept. This suggests that the SAAD group does have lower overall levels of self-concept.

As well some interesting differences emerged in the subscales that refer to an internal frame of reference. There were significant statistical differences between the NSAAD and SAAD groups in the subscale identity or the "What I am" subscale, where the NSAAD individuals responded with more positive self-perceptions of their own basic identity. The NSAAD also demonstrated positive significant differences in the self-satisfaction subscale, but they were not as great. This scale measures the level of self-acceptance the individual has with their perceived self-image. The behavior scale that measures the individual's perception of how they act, presented statistically significant differences between the two groups.

Five subscales referred to an external frame of reference and significant differences were demonstrated in four of these. There was no significant difference found in the subscale Physical Self, that emphasizes an individual's perceptions of body, health, physical appearance, and sexuality.

The most notable significant difference was found in the Moral Self subscale. This subscales emphasizes an individual's self from the standpoint of moral worth, relationship to God, and feelings of being a "good" or "bad" person. Significant differences were also found in the subscales Personal self (which emphasizes worth apart

from the body or relationships to others), Family self (which reflects an individuals worth as a family member), and Social Self (which reflects the individual's sense of "adequacy and worth in social interaction with other people").

There was a significant difference ($F=6.1, p<.05$) between the two groups on the self-criticism subscale. This scale measures common frailties that most people would admit to when responding candidly, such as "I get angry sometimes." These results indicate that the NSAAD are trying (making a deliberate effort) to present a more favorable picture of themselves. However the mean for both groups were within normal, healthy ranges, indicating that both groups were neither overly defensive, nor unusually undefended. This score is used as a guide for interpretation of the other TSCS subscales to determine the possibility of the scores being artificially inflated.

Table 10.

Differences in Overall Self-Concept and Subscale Scores Between the NSAAD and SAAD Groups

	NSAAD N=59		SAAD N=73		
Self-Concept Subscales	Mean	Standard Deviation	Mean	Standard Deviation	Univariate F
-Identity	37.4	14.6	31.1	10.5	8.3**
-Self-Satisfaction	47.5	11.0	43.7	9.9	4.3**
-Behavior	38.5	11.1	31.4	7.7	18.9***
-Physical Self	37.8	12.9	39.1	13.5	n.s
-Moral Self	42.3	12.0	31.8	9.1	32.8***
-Personal Self	47.9	13.4	42.9	12.5	4.8*
-Family Self	37.5	12.9	31.0	10.3	10.1**
-Social Self	45.3	13.0	41.2	11.2	3.9*

Note: * =p <.05, **=p <.01, ***=p <.001

Predictors of Substance-Abuse

The research question relative to predictors of substance-abuse was structured to establish "Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?"

As reported in Table 11, a multiple regression analysis was conducted to explore what combination of variables, specifically parental drinking, parental and peer attachment, and self-concept best predicted the severity of problem drinking in adolescents. The combination of these variables predicted a 23% variance (R=.23, R^2 =

.20). Parental problem drinking emerged as a predictor of adolescent substance abuse (t= 3.52, p, <.001). Adolescent self-concept emerged as a significant protective factor (t= -2.28, p=.025). Attachment was not statistically significant in the multiple regression. However, it is likely that attachment contributes to the values of self-concept. This is supported by the fact that all correlations between self-concept and attachment were significant at p<.001.

A Pearson correlation analysis was performed between total self-concept and total attachment for mother, father, and peers. Total self-concept scores were significantly and positively correlated to maternal attachment (R=.38, p<.001), paternal attachment (R=.43; p<.001), and peer attachment (R=.35; p<.001).

Table 11.

Predictors of Problem Severity

	N=109		
Variables	r	Beta	t
Family Exposure			
-Cast-6 Total Score	.37	.32	3.5**
-Total Self-Concept	-.36	-.24	-2.3*
-Mother IPPA	-.21	-.01	-0.1
-Father IPPA	-.24	-.10	-1.0
-Peer IPPA	-.14	-.05	-0.5

Note: * =p <.05, **=p <.01, ***=p <.001

It is likely that in our present society adolescents are exposed to a wider influence of family members with a drinking problem, as documented by the increase in differences of living styles and family patterns (Johnston, O'Malley, & Bachman, 1989). For this reason the *number of people in the household with a drinking problem* was added to the previous group of independent variables as a possible predictor and a second multiple

regression analysis was undertaken.

As reported in Table 12, a multiple regression was conducted to explore what combination of variables such as family, parental drinking, parental and peer attachment, and self-concept best predicted the severity of problem drinking in adolescents. The combination of these variables predicted a 31% variance (R=.55, R^2 = .31). The strongest predictor of problem severity was the number of people in the family who are perceived as having alcohol problems (t= 3.1, p, <.01). Adolescent self-concept approached statistical significance (t= -2.0, p=.053).

The multiple regression analysis that included the variable, "number of people in the household with a drinking problem" explained 31% of the variance. The multiple regression analysis that used only the CAST-6 variable without the variable "number of people in the household with a drinking problem" explained 23% of the variance. Therefore there is an additional 8% of variance in problem severity that can be explained by using the variable "number of people in the household with a drinking problem" versus just the variable "CAST-6, score."

Table 12.

Predictors of Problem Severity

	N=109	
Variables	Beta	t
Family Exposure		
-Cast-6 Total Score	.12	1.2
-Number of People in Household with a Drinking Problem	.33	3.1**
-Total Self-Concept	-.20	-2.0
-Mother IPPA	-.02	-0.3
-Father IPPA	-.15	-1.5
-Peer IPPA	-.05	-0.5

Note: * =p <.05, **=p <.01, ***=p <.001

Focus on Resilience

The final research question was developed to determine the continuity of "Resilience" across domains. It states: "Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?"

An Analysis of Variance (ANOVA) was completed to determine if there were differences in internalizing disorders between the Resilient Subgroup (N=15) and the main group of non-substance-abusing adolescents (N=46). There were no significant differences found in internalizing disorders. The Resilient Subgroup did not have higher rates of depression and anxiety than the main group of non-substance-abusing adolescents.

For practical purposes there were no differences between the Resilient Subgroup and the control group. Further, there were no externalizing differences as defined by this

study, because by definition neither group had substance-abuse problems. It was determined that anything said about the NSAAD group in this sample held for the Resilient Subgroup as well and further investigation of that Subgroup was not considered warranted.

The differences in internalizing disorders between the two groups (NSAAD and SAAD) were not part of the main investigation in this study. However, this data is available and is presented in Appendix F.

CHAPTER FIVE: DISCUSSION

The purpose of this study was to determine patterns of adolescent substance use and to identify and compare the presence of elements associated with substance use and abuse. The study was designed to investigate five major areas. First, it addressed the differences in patterns of use between normal substance use and substance-abuse in a group of adolescents. Then a comparison was made of substance-abusing and non-substance-abusing adolescents in terms of vulnerability factors (social context) that included familial demographics and family patterns of alcohol use. A third aim of the study was to target the family relations in an attempt to clarify whether there were differences in attachment or attachment related patterns between the non-substance-abusing adolescents and the substance-abusing adolescents. The next step was to examine correlates of attachment, specifically parental alcohol use, parental and peer attachment, and self-concept to determine if they were predictors of substance-abuse in the adolescent population. Finally, the research focused on a Resilient Subgroup of non-substance-abusing adolescents to determine if they presented with fewer overt problems, such as internalizing disorders. The investigation yielded several insights. The findings pertaining to each aspect of the study are summarized in Table 13 and are discussed respectively.

Table 13.

Research Questions and Summary of Pertinent Findings

Research Question	Summarized Findings
Group Definition	
1. What are the differences in substance use patterns between the two groups?	Significant differences were found between substance-abusing and non-substance-abusing adolescents. These differences established the rationale for placement of the adolescents into the two groups.
Vulnerability Factors (Social Context)	
2. Are there differences in the vulnerability factors (social context) between the groups of NSAAD and SAAD?	Significant differences were found between the groups in parental drinking and in the "number of people in the household with a drinking problem" in the adolescents' environment.
Protective Factors	
3. Are there differences in attachment patterns between the NSAAD and the SAAD groups?	There were significant differences between the groups in overall attachment to mothers but not to fathers or peers.
4. Are there differences in self-concept between the NSAADs and the SAADs?	Statistically significant differences in total self-concept were found between the two groups of SAAD and NSAAD.
Predictors of Problem Severity	
5. Do social context, attachment, and self-concept predict problem severity of substance-abuse in the adolescent population?	The first multiple regression analysis indicated that CAST-6 was a predictor of substance-abuse in adolescents. Total self-concept was a protective factor against substance-abuse in adolescence. When "number of people in the household with a drinking problem" was added as a variable in a second multiple regression, it emerged as a stronger predictor than the CAST-6 score, and total self-concept approached significance as a protective factor.
Resilience	
6. Does the Resilient Subgroup of adolescents demonstrate differences in internalizing disorders when compared with the non-substance-abusing adolescents of non-substance-abusing parents?	There were no differences between the Resilient Subgroup and the main group of non-substance-abusing adolescents in internalizing disorders indicating "resilience" across domains.

Group Definition

It was hypothesized that differences would exist in substance use between the groups of non-substance-abusing adolescents (NSAAD) and substance-abusing adolescents (SAAD). An ANOVA determined that there were significant differences between the two groups which warranted classification of the adolescents into substance-abusing and non-substance-abusing categories. The most notable demographic features distinguishing the two groups were age of onset of substance use and patterns of subsequent use and abuse.

Age of Onset

The age of onset of substance use was found to be earlier for the SAAD group than for the NSAAD group. Those adolescents in the SAAD group tended to experience a "high" sensation at an earlier age than did adolescents in the NSAAD group. This finding is consistent with past research that suggests that the earlier an adolescent begins to use substances, the greater his or her chances are of becoming a substance-abuser and the greater the risk for developing long-lasting patterns of abuse and dependency (Will, McNamara, Vaccaro, & Hirky, 1996). Findings of this study indicated that 77% of the SAAD group first experienced a "high" at grade eight or before, as compared to 18% of the NSAAD experiencing a "high" at grade eight or before. Only three percent of the SAAD adolescents first experienced a "high" during high school. It appears that delaying the initiation of substance use decreases the likelihood of becoming a substance-abuser. There are several factors which are likely to contribute to increased risk for substance-abuse with the earlier onset age of experimentation. First, in these circumstances it is

possible that individual and familial vulnerability factors were present that potentiated experimentation with, and subsequent abuse of, psychoactive substances. The actual use or abuse of substances at early ages compounds negative outcomes. For instance, when initiation into substance use occurs early, the cognitive developmental level of the child or adolescent may prevent him or her from making an informed decision regarding the use of substances. The possibility of negative outcomes increases with the progression to substance-abuse that potentially prevents further psychosocial development and the completion of stage salient developmental tasks that are prerequisites for successive tasks. In such cases, the adolescent's development will continue to fall further behind age-appropriate developing peers.

Those adolescents who wait until grade 11 or 12 before first experimenting with substances are likely in a well-defined peer-group (i.e., one that does not experiment with substances) that has managed to withstand peer and media pressures that promote the association of alcohol with fun and being "cool." Glantz (1992) and Kandel, Yamaguchi, and Chien (1992) have noted that there is a strong relationship between an adolescents' substance use and their friends' use and in this case the adolescent benefits from the positive effect of peer pressure. As well, an increase in reasoning capacity and moving beyond the feeling of invulnerability, allows adolescents to make more informed decisions regarding use of substances.

Callen (1985) suggested that the normal developmental timings for substance use and most experimentation occurs at about grade 10 to 12 and that the adolescents are finished with experimentation by about age 20. Beman (1995) presented the adolescent as

being more susceptible to substance-abuse during this period but concurred that initiation of substances, particularly cigarettes, alcohol, and marijuana, is greatest between the ages of 16 and 18 with completion of by about age 20. Patton (1995) noted several studies that documented alcohol use in youth as early as the fifth grade. This last finding indicates that the normative age of alcohol initiation may be lower than previously reported, however many studies, particularly national surveys, begin sampling the population at age 15 (Hewitt, Vinje, & MacNeil, 1995).

Several aspects of adolescent development make substance-abuse appealing. Adolescence has been recognized as a time of individuation and separation from parents, suggesting that experimentation occurs, in part, as an aid to the formation of a separate identity. During this period the adolescent is expected to experiment with alternative attitudes, lifestyles, and behavior. An increase in the influence of peer-oriented attitudes and behaviors is expected together with the desire for adult status and the mimicking of perceived adult behaviors (Bukstein, 1995). Experimentation is expected to decline as the adolescent moves into adult roles of career, marriage, and family (Hird et al., 1997).

The findings of this study highlight the importance of the timing of prevention and intervention programs. Whereas prevention and intervention programs are typically targeted at the high school student population (McClanahan et al., 1998), these findings indicate that the timing may be inappropriate. By the time adolescents are exposed to educational-preventative efforts, it may be too late to have the proposed impact because they have already experimented with substances, and have possibly progressed to substance-abuse or dependency.

Since more than three quarters (77%) of the substance-abusing adolescents in this study's sample used substances at, or before, grade eight, there are implications for the direction that prevention programs should take. The data clearly demonstrate that high school is too late for prevention programs – rather prevention programs should start in middle to late elementary school or at the start of junior high school to be the most effective and to maximize the degree of awareness among youth. Moreover, not only are greater prevention efforts needed at earlier ages but early intervention is also necessary. Prevention and intervention could also be directed at informing parents and families about patterns of normal use, and how to recognize higher risk patterns.

It is possible that past prevention efforts targeted at high school students have been geared to individuals at a specific level of cognitive development and may therefore be inappropriate for many individuals at a lower cognitive level. Prevention efforts are required that are developmentally appropriate and meaningful for the target audience. There is a need for prevention messages that are directed toward younger individuals with messages geared to their level of cognitive development and that appeal to the needs of the particular developmental stage.

Patterns of Substance Use and Abuse

According to the criteria outlined in this study, the non-substance-abusing adolescents who considered themselves to be regular substance users (15%) were not considered substance-abusers at the time of assessment (i.e., according to the results of the PESQ). Regular use at earlier ages places the adolescents at higher risk for abuse problems later. According to Callen (1985) experimentation should end around age 20.

However, the risk for becoming a substance- abuser peaks between the ages of 18 and 22 (Hird et al., 1997). The combination of personal and environmental factors will contribute to, or prevent, the progression of regular use to problematic use of substances.

It is interesting to note that 17% of the adolescent substance-abusers did not consider themselves to be regular users. This could be a function of the adolescent's definition of the term "regular" or of peer group or familial background where higher levels of consumption are considered normative. Alternatively, the adolescents may have been comparing themselves to other members of their peer group when answering this question, or perhaps may view others in their peer group as being more serious or frequent users of substances than the adolescents who were involved in the study.

Although this study did not expressly target the regularity of use of specific substances other than alcohol and marijuana, results from the PESQ showed that in the SAAD groups, many youth are polydrug users. For example, in addition to alcohol or marijuana, 55% of the SAAD group have used psychedelics in the past year. This suggests that SAAD are at high risk, not only for using alcohol and marijuana, but also for other illicit drugs. Regardless of the legality, it appears that the adolescents have easy access to a variety of substances.

Approximately equal percentages of females and males presented as being substance-abusing or non-substance-abusing in this study. Previous studies (Johnson et al., 1990) have reported a greater percentage of males as compared to females experimenting with and abusing alcohol and/or illicit drugs, however, the findings of this research does not support gender differences. Thorne and DeBlassie (1985) pointed out

that although many researchers have demonstrated gender differences in substance use, the origins of these differences have not been investigated. Resilience research reported in chapter two pointed out that boys are more susceptible to emotional and behavioral problems as a result of a number of circumstances. Rutter (1990) noted that this may be due in part to differences in parental behavior towards boys compared to girls. A related finding by Needle, Su, and Doherty (1990) supported this supposition. They reported that parental divorce during adolescence, but not in early childhood, had a greater effect on drug involvement for boys than it did for girls. As it relates to substance-abuse, it may be hypothesized that substance-abusing parents demonstrate more negative behaviors in front of boys. A substance-abusing parent or parents may shelter girls from the negative behaviors that occur as a result of the substance-abuse, such as fighting in front of the child, involving the child in fights, or being abusive toward the child. The underlying similarities may be that parents perceive a difference in emotional needs between the genders, and consequently exhibit different behaviors toward boys compared to girls.

Vulnerability Factors (Social Context)

Parental Substance Use

Several interesting findings emerged regarding the question investigating differences in the vulnerability factors between the NSAAD and SAAD groups. These included "number of people in the household with a drinking problem" and the adolescents perceptions of parental drinking problems. One of the most striking differences was related to the "number of people in the household with a drinking problem." The findings in this study indicate that the substance-abusing adolescents were

approximately evenly distributed across families with alcohol problems and those without. Although 50% of the SAAD adolescents came from homes where they perceived one or more people to have a drinking problem, 49% of the SAAD came from homes where they did not perceive anyone in the household to be a problem drinker. These data suggest that many substance-abusing adolescents were raised in homes without problem drinkers present. In this sample, 38 substance-abusing adolescents came from alcoholic environments and 35 came from a non-alcoholic environments. A substantial amount of literature on substance-abuse supports the idea that children of substance-abusers are at greater risk for becoming substance-abusers (Brown, 1991; Cotton, 1979; Dryfoos, 1997; Sher, 1991). Although the results of the current investigation support this viewpoint, they also suggest that familial patterns of alcohol use are not the sole contributors to the development of substance-abuse in adolescents. Conversely, although non-substance-abusing adolescents almost always come from homes where there was no problem drinking reported (77%) this in itself does not serve as a protective factor against children becoming substance-abusers. It is interesting to note that about half of the SAAD in this study did not report problem drinking in their homes. These results emphasize the concept of equifinality, where multiple pathways lead to a similar outcome. The effectiveness of prevention and intervention programs may be compromised when the various routes to an outcome are not considered. These alternatives must be carefully examined and further research in this area is necessary.

Further difficulty in clearly describing familial factors related to substance-abuse arises from the adolescents' descriptions of drinking patterns in their homes. Seeming

contradictions in adolescent responses were revealed when comparisons were made between information resulting from the demographic question and the results of the CAST-6. It is noteworthy to compare the item from the demographic questionnaire which states "When you were growing up did someone in your household have a drinking problem?" to the results of the Children of Alcoholics Screening Test-6 (CAST-6). Some adolescents answered negatively on the demographic questionnaire, yet their responses on the CAST-6 indicated that they could be identified as children of alcoholics. There may be several reasons for this discrepancy. Within the family setting excessive parental drinking is not discussed in terms of being a problem behavior. This explanation is consistent with children of alcoholics (COA) literature that supports denial of the problem as the primary means for continuation of the problem drinking (Brown, 1991). The adolescent dichotomizes the labeling of drinking as problematic and the presence of feelings regarding the drinking patterns of parents. Additionally these differences are supported by literature (McDermott, 1984) which stated that the adolescent's perception of parental substance use had a greater impact on his or her behavior than the actual amount of substance use. Future research should explore adolescents' perceptions of what may constitute a drinking problem. Ideally such insight would assist the adolescent in breaking the cycle of denial by acknowledging the problem drinking patterns of their parents. Minimally, such insight would facilitate acknowledgment of the adolescents' own behaviors.

Protective Factors

Attachment

Following the comparison of demographic differences and parental alcohol use between the two groups, protective factors were studied. The first set of protective factors investigated was maternal, paternal, and peer attachment. A Multivariate Analysis of Variance (MANOVA) revealed positive significant differences in attachment between the two groups for attachment to mother, but not in attachment to father or peers. These results indicate that the non-substance-abusing adolescents have more secure attachment to their mothers than the substance-abusing adolescents but the groups are similar in attachment to their fathers and peers. Historically studies of attachment relationships have been limited to the attachment between mother and child. This study attempted to extend the investigation of patterns of attachment to mothers, fathers, and peers as a protective factor. It is interesting that there were differences between the two groups in attachment to mothers but not to fathers. These findings concur with the popular belief that the mother is generally the primary caregiver and, therefore maternal attachment has the strongest influence. Lamb (1997) concluded that although there is evidence that infants form attachments to mothers and fathers in infancy, the preference towards mothers exists because they continue to be responsible for most of the child care. It is, however, premature to draw conclusions regarding paternal attachment on the basis of the limited work that specifically targets paternal attachment. Fathers may contribute to child development in different ways than mothers do. Future research should include

analyses of mother and father attachment patterns to determine the long-term effects of any differences.

Further, differences were found in the attachment to mother subscale scores of trust and communication between the two groups, but not in the subscale of alienation. Differences among the subscales were not predicted. From a developmental perspective, however, they are reasonable. As previously discussed, an important developmental task of adolescence is separation and individuation from the parents. An explanation for the findings may be that a certain degree of perceived alienation from parents is acceptable, and perhaps even necessary, during this stage of development. However, for the NSAAD alienation can occur in an atmosphere of trust and communication.

The differences in attachment to mothers between the two groups on the communication subscales may also contribute to the explanation of adolescent substance-abuse in a number of ways. A recent study by Reifman, Barnes, Dintcheff, Farrell and Uhteg (1998) found one of the predictors of progression to heavier drinking by adolescents was low paternal monitoring. Parental monitoring is an important element in the parent-adolescent relationship and has the potential to act as a deterrent against progression to heavier substance use. A low communication subscale score would corroborate these results. Enhanced communication between parents and adolescents would likely increase the probability that the parents have an increased awareness of their children's whereabouts and how they typically spend their time.

Another effect of the communication component of the attachment relationship may be through the transmission of parental attitudes. Ary et al. (1993) found that

parental attitudes, as well as parental drinking, affected basic drinking patterns of adolescents. Communication is one aspect of attachment that potentially serves a protective or vulnerability function. Communication may be protective particularly when it occurs in combination with trust and the parent is allowed to impart alcohol-related attitudes as well as maintain a degree of monitoring. Adolescents lacking trust and communication with their parents may have an increased vulnerability to substance-abuse through the absence of parental monitoring and the undermining of positive parental messages attributed to the lack of trust.

It was hypothesized that if substance-abusing adolescents were found to be less strongly attached to their parents than the non-substance-abusing group, they may be more strongly attached to their peer group. This was not found to be the case. There were no significant differences in attachment to peers between the NSAAD and the SAAD groups. This suggests that the NSAAD have a secure attachment to their mother, have developed strong social skills, and feel attached to and supported by, their peer group in the process of individuation and separation from their parents. The peer group are likely prosocial and comprised mainly of adolescents with like backgrounds and interests. The SAAD group may also use their peer group for support and trust although it may not be for prosocial behaviors. Rather, the SAAD may be finding support for their anti-social or substance-abusing behaviors. Past studies have produced mixed results on the influence of friends' drinking on adolescent drinking. The correlations between the variables of a friends drinking and adolescent drinking could be attributed to many factors including friends influence on the drinking behavior of the adolescent, the adolescent drinking and

seeking out similar friends, or the adolescent attributing his or her level of use onto friends (Bauman & Ennett, 1994). From a developmental perspective the adolescent age and level of maturity will also affect their susceptibility to peer influences (Ary et al., 1993; Ellickson & Hays, 1991). Increasingly, research is supporting the concept that associations with the peer group are the single biggest contributor to substance-abuse (Beman, 1995; Reifman, Barnes, Dintcheff, Farrell & Uhteg, 1998).

Self-Concept

The second protective factor of interest in this study was self-concept. The research question investigated differences in self-concept between the NSAAD and the SAAD groups according to overall self-concept. A Multivariate Analysis of Variance (MANOVA) revealed differences between the two groups across several subscales. These subscales, as described in Chapter three, included five areas of self: physical, moral-ethical, personal, family, and social across three areas of analysis: identity, self-satisfaction, and behavior.

Significant differences in total self-concept were found between the NSAAD and SAAD groups. Higher total self-concept scores found in the NSAAD group represent individuals who generally view themselves in a positive way and possess competence across a number of areas. The overall self-concept allows them to view areas in which they are lacking competence as less valuable to them than those areas in which they demonstrate competence. They are able to contend with information about themselves and to act upon it to initiate and carry through realistic change.

Adolescents' lower total self-concept scores are associated with doubt about personal self-worth and more difficulty differentiating between abilities and goals. Such youngsters often perceive competence where there are weaknesses and weakness in areas of competence. Because their self-view can be inaccurate, environmental exploration is reduced and may be accompanied by avoidance of responsibilities, goals, or activities where failure is possible. As a result these youngsters often set unchallenging goals and may compare themselves to people performing at lower levels to maintain some form of a positive self-view (Fitts and Warren, 1997).

It was interesting that there were no significant differences found in the physical self-concept scale. This scale is associated with how an individual views his or her sexuality, body, physical health, and appearance and according to Fitts and Warren (1997) is "highly associated with global self-esteem across the life span" (p. 23).

The most significant differences between the two groups were reflected in the moral self-concept scale. The substance-abusing adolescents had a significantly lower moral self-concept than the non-substance-abusing adolescents. This reflected the self from a moral-ethical perspective and represented adolescents' feelings of being a "good" or a "bad" person rather than presenting a religious perspective – for example, "I am a decent sort of person" or "I am an honest person" (Fitts, 1964). The differences in this case likely reflect the fact that there was a level of self-awareness within the adolescents that their conduct was discrepant with their perception of acceptable levels.

This study and other research done on substance-abuse in adolescents supports the concept that adolescents follow the moral-ethical examples they have been exposed

to, such as those described in social learning theory. However, this finding indicates that the adolescents are exhibiting moral and ethical behaviors that they acknowledge are discordant with what they perceive to be appropriate, ostensibly because they have been exposed to alternate and more socially acceptable behaviors. In this study, one possible explanation for the discrepancy between the substance-abusing adolescents' moral-ethical conduct and their perceptions of acceptable levels of moral-ethical behavior may be accounted for by the number of SAAD who perceived no parental alcohol abuse in their homes.

As expected there were significant differences between the two groups in the subscale of "family self," indicating that the SAAD do not value themselves as family members to the same degree as the NSAAD. This finding is consistent with the overall "attachment to mother" results between the two groups and also the differences in their perception of *who raised them* as reported on the demographic questionnaire. The adolescents may perceive that their mothers *raised them* and that this occurred according to a set of moral values and beliefs that currently does not represent the adolescents' sense of self. It would follow that the adolescents may not feel that they are adequate or worthy members of their families.

The differences between the two groups on the personal-self subscale are considered to be separate from the physical or the social subscales. However, when these subscales are interpreted in combination with total low self-concept scores, they are reflective of individuals who are more easily influenced by the opinion of others, react to temporary circumstances, and who avoid challenge or risk. The differences found

between the two groups on the social self subscale may indicate that the SAAD group are less socially adept or have unrealistic expectations about how social interactions should develop. Substance-abusing adolescents may use substance-abuse to avoid practice in social situations that would eventually provide more realistic social expectations and decrease their social awkwardness. It is ironic that many adolescent substance-abusers use substances to gain access to a social group – that is, to increase their social desirability in the absence of other strategies for obtaining friendship. It is probable, however, that substance-abuse interferes with social development. Continued substance use will also further impede development of social competence, especially intimate relationships that are expected to occur as the adolescent transits into adulthood. In essence, substance-abuse denies the adolescent access to that which he or she most needs and desires. Although substance use may be viewed by some adolescents as a means to a social group, psychodynamic theory suggests that it is a means of avoiding relationships, which in turn, impedes the adolescent's development of interpersonal skills and "further reinforces the avoidance of relationships" (Bukstein, 1995, p. 12). Future research must consider delineating the various reasons why adolescents use substances so that prevention and intervention programs can be designed to meet their specific needs.

There were also positive significant differences between the two groups, favoring the non-substance-abusing adolescents, in the three related subscales of identity (who I am), self-satisfaction (how satisfied am I with my self-image), and behavior (how do I perceive my behavior). These results are not surprising, particularly when considered in light of attachment theory. When an individual does not feel worthy of trust and love, he

or she cannot develop a positive self-concept. When the perception of attachment to the mother is not secure, or the feeling of belonging within a family is weak the development of a positive sense of self-worth is difficult. These experiences negatively bias one's self-perception undermining confidence in self and trust in others.

Predictors of Problem Severity

The results from the preceding ANOVAs and MANOVAs of group differences, vulnerability factors, and protective factors between the NSAAD and SAAD were required to move to the next area of investigation being predictors of problem severity. One of the purposes of this study, for theoretical and practical reasons, was to explore the predictors of substance-abuse among adolescents. Two multiple regression analyses were conducted. The results of the first analysis revealed that parental problem drinking was a predictor of substance-abuse and that overall self-concept was a protective factor against substance-abuse in adolescents. These results will be discussed in turn.

These results are consistent with other research that stated that children of alcoholics are at a three-to fourfold risk of becoming problem drinkers (Monteiro & Schuckit, 1988). The earlier in the child's development that parental drinking is apparent, the greater the risk factor as the child will have had less of a chance to achieve developmental milestones. Moreover, this risk is compounded if the child begins to use or abuse substances at an early age as use of substances will interfere with learning and with the completion of other developmental tasks. Because this study investigated adolescents as young as twelve, the results emphasize that the impact of parental drinking

can be measured in young adolescents. These results again stress the importance of early prevention and intervention efforts.

Overall self-concept was found to be a protective factor, and contrary to expectations, attachment was not a significant protective factor. It is expected that during adolescence the measurement of the attachment relationship may be subsumed under the measurement of self-concept. Self-concept may be reflective of the level of security of the earlier attachment relationship and may be a later manifestation of attachment during adolescence. A secure attachment has been associated with the development of inner security and a feeling of mastery of the environment which is equitable to satisfaction with one's personal identity and a sense of control over issues of personal development (Brook, Cohen, Whiteman, & Gordon. 1992).

A second multiple regression analysis was conducted that added the variable of "number of people in the household with a drinking problem." Surprisingly, when the "number of people in the household with a drinking problem" variable was added, parental alcohol use and self-concept lost their predictive value for later substance-abuse. Instead, the "number of people in the household with a drinking problem" was found to be the single greatest predictor. A possible explanation is that although parental alcohol use, as measured by the CAST-6, may not have been a specific predictor in this second analysis, it may be included under the "number of people in the household with a drinking problem." That is, if the adolescent answered positively to the "number of people in the household with a drinking problem," it is likely that there were positive responses regarding the perception of parental drinking patterns on the CAST-6.

Moreover, as the number of people in the household with a drinking problem increases, so too will the likelihood of youngsters answering positively to two or more questions on the CAST-6. Kaminer (1994) reported that the number of people within a household who are substance users, and the degree to which the children are involved in the substance use are good predictors of the expectation of use by the child and actual abuse of alcohol, cigarettes, and marijuana.

The effects on child development of substance use in the home has been explained by social learning theory (Bandura, 1977; Petraitis, Flay, & Miller, 1995). Social reinforcement of the values and behaviors of the parents and other adults in the family occurs and influences the subsequent behaviors of the child. The earlier the child is exposed to the behaviors, the greater the risk of the child developing similar behaviors.

The regression results did not provide theoretical support for the CAST-6 or for attachment as being predictors of adolescent substance-abuse. It did, however suggest that the "number of people in the family with a drinking problem" was a predictor of adolescent substance-abuse. The definition of family has changed dramatically over the last few decades and there are a variety of family forms that should be investigated in addition to the nuclear family. The question "Which of the following people live with you?" posed on the *Monitoring the Future Survey* documented 64 different family structures (Johnston, O'Malley & Bachman, 1995; University of Michigan Institute for Social Research, 1994). It is possible that family remains important, but not in ways previously thought of. Future research efforts should consider the varied family structures (in an ever widening support system) that might influence a child. Family structure alone

could be considered as a variable in future research. Because the CAST-6 did come out as a predictor variable when the "number of people in the household with a drinking problem" was not in the multiple regression, future research should consider both the presence and number of substance-abusers within the child's environment as well as their relationship to the child.

Resilience

The final focus of this study was to compare a Resilient Subgroup of adolescents (non-substance-abusing adolescents from substance-abusing families) with the main group of non-substance-abusing adolescents (from non-substance-abusing families) on levels of internalizing disorders to determine if their competence extended across different domains of adjustment. It was anticipated that the Resilient Subgroup may have higher levels of internalizing disorders, such as anxiety and depression, that would be associated with higher levels of stress associated with living in an environment of parental alcohol abuse. A MANOVA revealed no differences between the Resilient Subgroup of non-substance-abusing adolescents and the main group of non-substance-abusing adolescents in internalizing disorders, or in any other areas.

This outcome might have resulted from narrowly defining the term resilience. Other studies have more broadly defined the terms risk and resilience. For example, risk may be defined as growing up in poverty, and resilience would be the absence of any overt behavioral maladaptations such as substance-abuse, conduct disorders, or anti-social personality. Depending on the definition, risk and resilience may lack basis in reality because there are so many environmental elements not considered. For example, if

risk was defined as growing up in poverty, specific influences to the child, such as parental characteristics, availability of support systems, or any number of factors that vary from household to household, are not considered. Further, when the broader definitions of resilience are used it becomes difficult to extrapolate the findings to be generally protective. This study attempted to contribute to the information about resilient non-substance-abusers by narrowly defining risk and resilience. Because there is a large amount of literature that places children of alcoholics at risk for substance-abuse, it was noteworthy to investigate how some children come to function appropriately and also to determine whether or not their adaptive functioning exists across domains.

Resilience was defined in this study as being the non-substance abusing child of alcohol-abusing parents. According to the definition of competence outlined in this study, substance use may be associated with the developmental stage of adolescence, but substance-abuse was not. Moreover, substance-abuse is contraindicated in the successful negotiation of current and subsequent developmental tasks. Future research could involve the investigation of resilient adolescents for a comparison of similarities to healthy adolescents rather than to differences in pathological adolescents.

Limitations

Many limitations are encountered when doing research, either with the research design or the type of data collection. The limitations included in this study are no exception and include cross-sectional research design, self-report methods, generalizability of results, definition of terms, and comparison of items across instruments. Each of these limitations will be discussed respectively.

One limitation of the study is that this was a cross-sectional, rather than a longitudinal study. Longitudinal studies would demonstrate the long-term effects of adolescent risk-taking and are needed for future research studies. From the point of view of this study, it may be projected that many of the substance-abusing adolescents are at high-risk, however they may seek or choose alternative trajectories and recede to normal use or abstinence of substances. In such cases, their final pathways would be considered successful (resilient). One influence on developmental trajectories may be the type of substance that a parent uses or abuses. A limitation of this study was that only alcohol was included in the parental substance use measure whereas multiple substances were included in the adolescent substance use measure.

Self-report is often discussed in terms of a limitation. Self-report depends on honesty, which is affected by social-desirability, and can always be considered a limitation in the absence of corroborating reports. However, the results obtained in community venues are considered to be as truthful, if not more truthful, than similar information gathered within city schools. In this case there was no motivation to lie because the adolescents were not in school and the results could not affect grades or reputation within the school, or otherwise influence reputation with authority figures.

Self-report data would be less reliable in some contexts given what the adolescent has to lose by telling the truth and to gain by lying. Confidentiality may be questionable in a school setting considering that counselors or administrators may feel obligated or compelled to provide intervention for a "self-confessed" adolescent substance-abuser. This is complicated by the fact that adolescent substance use is illegal, or in the case of

alcohol, not generally condoned. In spite of the limitations of the reliability and validity of adolescent self-report there is data available to support the reliability and validity of adolescent self-reporting (Oetting & Beauvais, 1990). A related limitation involves the fact that the data regarding parents were obtained second hand. Instead, adolescents' perceptions of parental behaviors were studied.

The participants in this study were recruited through community agencies and organizations instead of other venues, such as school systems. This may be considered a limitation in generalizability. However, when dealing with high-risk adolescents, school systems may not be the most appropriate choice. It may be noteworthy to acknowledge that much of the information available, regarding trends of adolescent substance use is from an annual survey in the United States that began in 1975, called *Monitoring the Future* (University of Michigan, Institute for Social Research, 1994). Since 1975 this survey was limited to grade 12 students. In 1991, eighth and tenth graders were added. The data from this survey may lead to some erroneous conclusions for a few reasons. First, the researchers have not taken into consideration absenteeism on the given day of the survey. High absenteeism is associated with problem behaviors (McClanahan et al., 1998) therefore some adolescent substance-abusers may not have been included. Also because the survey is done in a school, dropouts are not included. This also can alter the interpretation of total adolescent substance use. For example the 1991 *Monitoring the Future Survey* indicated that heroin use was more prevalent in lower grades than higher grades. This may be a fact for adolescent's in school, but it may also be likely that if an

adolescent was using heavy drugs at an early age, he or she may have dropped out of school by Grade 12.

Another issue related to generalizability is that the data for this study was collected in one urban center in Western Canada. The participants shared fairly homogeneous socioeconomic and ethnic backgrounds. Consequently, the results must be interpreted with caution and may not apply to other groups.

One limitation of narrowly defining the term resilience was the increased difficulty in finding adolescents that fit the criteria. Parents and school boards are particularly reluctant to allow children to answer questions about their perceptions of parental behaviors. Encouraging volunteers from the community can be laborious and likely has influenced the decision in other studies to include multiple indices of resilience as opposed to a single stressor. However the single stressor approach has validity, because the more that is known about resilience to specific stressors, the greater the contribution to the literature on resilience in general. As well some segments of the population are deemed to be at greater risk for certain outcomes and it is of value theoretically and practically to understand the many pathways that influence risk and resilient outcomes.

Another limitation centers around the potential for inconsistency in reporting when comparing one tool to the next. An interesting observation emerged from two questions in the demographic questionnaire that were originally thought to be equivalent and confirmatory for the analysis. In the demographic questionnaire two questions were posed at separate times: "*Who are you currently living with?*" and "*Who raised you?*"

Many adolescents responded that they lived with both parents, yet stated that they were raised by a single parent who, in most cases, was the mother. For example 52% of the NSAAD group reported *living with* both parents, yet only 25% reported being *raised by* both parents. Eighteen percent of the NSAAD reported *living with* their mother only, yet 63% responded that they were *raised by* their mother. In retrospect, the wording of the questions was not clear. The intention was to determine, for attachment purposes, with whom the child lived while growing up – this was expected to be the same as who *raised you*. However the question was worded "*Who are you currently living with?*" Inadvertently, two quite different pieces of information were obtained. Adolescents may live with both parents, but many did not perceive that they are being raised by both parents. It is not known if the parent excluded in the "*raised by*" item was physically or emotionally absent, or if the answers were reflective of a traditional perception of the mother as the primary caregiver. This information may have implications regarding the impact of the perceived emotional availability the parents have on the child's behavior and the degree of attachment felt by the child towards the parent. Future research may want to consider this information when determining the importance or influence of paternal attachment. Additionally without a comparison of the two questions, this information could have been interpreted to mean that most of the participants in the study were raised in single-parent family homes. This would lead to the erroneous conclusion that children from single-parent families are at greater risk of becoming substance-abusers. The differences in these questions did not affect the present study but they are a potential source of investigation for future research.

Additionally because only self-report measures were used, no confirming information is available from the parents. In future, to evaluate the risk potential of being raised in a single-parent family, or to evaluate attachment relationships based on mother and father separately, it would be useful to delineate if the child is responding to the perception of "who raised him or her" versus who was physically present in the home while the child was growing up. As can be seen in this data, these two points are separate.

In summary, several limitations have been noted in this study. However, the aim of the study was to investigate patterns of substance-abuse and the association with vulnerability and protective factors within a community sample of adolescents. Within this context, the goal was met and information not often captured in general population, clinic, or school surveys was collected.

Directions for Future Research

After considering the results of this study and the limitations cited, some directions for future research are suggested. Peer attachment, the value of longitudinal studies, and the inclusion of the family will be considered.

The similarity in peer attachment across both groups indicated that adolescents identify with their peer groups, an expectation from the developmental perspective. From a prevention and intervention standpoint it may be important to target programs within the context of peer relations, particularly in those groups that have been identified as substance-abusers.

Future research should more specifically include questions about the peer group. Given the great percentage of adolescents in this study that had substance-abuse

problems, but who did not come from substance-abusing backgrounds, it would have been interesting to know more about their peer group (emphasizing the multiple pathways to the outcome of substance-abuse). Further studies might consider asking questions such as:

- "How much of a problem is there at your school with drugs and alcohol?"
- "Is there a lot of drinking at parties your friends go to?"
- "Do your parents let you drink at home?"
- "Do you think one or both of your parents have a drinking problem or drinks frequently?" or,
- "Do any other family members drink a lot?"

It might be possible to design an instrument similar to the CAST-6 in length, but which would have questions regarding the peer group embedded in it and where two scores could be obtained – a) the probability of child of an alcoholic status, and b) the probability of peer group association that supports the use of alcohol and other substances.

Longitudinal studies are required that collect information from a number of areas to include the individual, the family, and peers that would be initiated prior to, during, and after the adolescent transition. These are required to identify the consequences of various risk raking behaviors thought to endanger health and to differentiate these from stage-appropriate behaviors (Baumrind, 1985). For prevention to be effective it must address the etiological risk factors for the behavior. Ongoing research is needed that addresses the differences between the behavior of drug initiation, occasional use of drugs,

regular or frequent use of drugs, and drug abuse as the possible focus of prevention efforts. Each of these different behaviors may be predicted by somewhat different etiological pathways.

Due to the significant influence of the family, the development of family oriented interventions would also seem worthwhile. An increased focus on family issues that includes parent management training would be worthy of further investigation.

Although there are risk factors that predict adolescent substance-abuse, there are protective factors that will help adolescents to overcome the tendency or to avoid substance-abuse. Effective prevention and intervention is necessary and must be started earlier and targeted to specific groups to be most efficacious. Further research is needed in determining the multiple pathways of children and adolescents that lead them to become substance-abusers in order create profiles that would aid in the early identification of high risk children.

In summary, the attachment perspective may continue to serve as a heuristic for exploring alternatives to parental attachment during the adolescent years. As well, there is an ongoing need for longitudinal studies to document the multiple pathways to substance use and abuse by adolescents. The need for research that includes different aspects of the family is ongoing. In as much as families have been implicated either as vulnerability or protective factors they cannot be overlooked as an influential source for prevention and intervention efforts in adolescent substance-abuse.

Conclusion

Research can only provide us with a picture of *what is* and often leaves the researcher speculating as to *what should be.* From the perspective of *what is* the results of this study demonstrated that there are multiple pathways to adolescent substance-abuse, that substance use is occurring at early ages, and that the number of persons in the environment with a drinking problem has a great influence on the substance use patterns of adolescents. From a perspective of *what should be,* and considering the multiple pathways to substance-abuse, no adolescent should be precluded from participating in substance-abuse prevention programs. Finally, in an ideal culture, there would be enthusiastic familial involvement in understanding the course of normal adolescent substance use, knowledge of the risks of substance-abuse, and preventive efforts that would minimize or eliminate the need for adolescent substance-abuse intervention.

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APPENDIX A

University of Calgary Ethics Approval.

THE UNIVERSITY OF CALGARY
Faculty of Education

1997-04-17

Alice Mohr
132 Pumphill Green S. W.
Calgary, Ab. T2V 4L4

Dear Ms. Mohr

Subject: **Ethics Approval of Your Proposal**

Please be advised that your proposal **"Determinants of Resilience in High Risk Adolescence"** has been given the Ethics approval by the Faculty of Education Joint Research Ethics Committee. Your approval is enclosed. However, please note that your proposal has now been sent to the Calgary Board of Education and the Calgary Separate School Board for their approval. **You must now wait to do research in their schools until you receive their approval. Please note that you are responsible for obtaining approval from all participants as well as from any other institutions or agencies from which you are drawing participants (e.g. Mount Royal College, VRRI, nursing homes etc.).** If your proposal is under review by another research ethics committee (e.g., Joint Research Ethics Committee or the Conjoint Medical Ethics Committee), you cannot proceed with your research until this committee has also granted its approvals.

Good luck with your research.

Sincerely,

Michael Pyryt, Ph.D.
Chair, Faculty of Education Joint Research Ethics Committee

C:\DOCS\ETHICS\MOHR.APR

2500 University Drive N.W., Calgary, Alberta T2N 1N4
Telephone: 220-5625 Fax:

APPENDIX B

Letter of Information to Parent(s)

Date

Dear Parent (or Guardian):

My name is Alice Mohr. I am a graduate student in the Department of Educational Psychology at the University of Calgary, conducting a research project under the supervision of Dr. Jean Pettifor as part of the requirements for a Ph.D. degree. I am writing to provide information regarding my research project, Determinants of Resiliency in High-risk Adolescents, so that you can make an informed decision regarding your child's participation.

I am interested in learning about how adolescents develop the skills they need to succeed in today's world. The main focus of the research will be to study the ways that adolescents have developed to cope with stressful events in their past and present environments. I am writing to many parents of adolescents aged 13 to 20 attending junior and senior high schools in southern Alberta requesting that their children take part in this project.

Once consent is obtained, the participants will be asked to complete questionnaires about their relationships with parents and peers, their attitudes towards alcohol and drugs, their attitudes about themselves, and about events that in the past which may have caused them sadness or anxiety. These procedures will take approximately two hours. A small sample of the participants will be chosen for an audio-taped interviewed regarding their coping skills. Your adolescent does not have to participate if (s)he does not wish to, or if you do not wish him/her to. Also, if the participant wishes to withdraw from the project, or the researcher feels that involvement should be terminated, this may be done at any time without penalty. Each adolescent will be offered ten dollars upon completion of participation in this study. If involvement in this project causes your child emotional upset or discomfort, counselling services will be available if you or your child deem it necessary.

All the information obtained during the research will be strictly confidential, and no child will be identified by name. To ensure anonymity, each participant will be assigned a personal identification number. All of the data collected will be labeled according to this number. Once collected, responses will be kept in strictest confidence, only group results will be reported in any published studies. The raw data will be kept in a locked filing cabinet at the University of Calgary only accessible to the researcher. All files will be destroyed two years after completion of the analyses.

If you have any questions, please feel free to contact me at 403-252-8878, my supervisor, Dr. Jean Pettifor at 403-289-5161, the Office of the Chair, Faculty of Education Joint Ethics Review Committee at 220-5626, or the Office of the Vice-President (Research) at 220-3381.

Please sign your name in the space below if you would like your child to be included in the project. Two copies of the consent form are provided. Please return one signed copy and retain the other copy for your records. Also, if you would be interested in a summary of my findings when the study is completed, I would be happy to send them to you at no charge.

Thank you very much for allowing your child to participate.

Sincerely,

Alice Mohr, M.C.D.

APPENDIX C

Consent for Research Participation: Parent/Guardian Form

I/We, the undersigned, hereby give my/our consent for _____ to participate in a research project entitled Determinants of Resiliency in High-risk Adolescents.

I/We, understand that such consent means that _____ will participate in completing questionnaires that will ask about his/her relationships with parents and peers, attitudes towards alcohol and drugs, attitudes about him/herself, and about events that in the past may have caused sadness or anxiousness. These procedures will take approximately two hours. I/we understand that a small sample of the participants will be chosen for an audio-taped interview regarding their coping skills.

I/We understand that my child will be offered a ten dollar honorarium upon completion of participation in this project.

I/We understand that participation in this study may be terminated at any time by my/our request, or of the investigators. Participation in this project and/or withdrawal from this project will not affect my/our request or receipt of other services from the school board or the university.

I/We understand that if participation in this study causes my child emotional upset or discomfort, school counseling services will be available.

I/We understand that the responses will be obtained anonymously and kept in strictest confidence and that data collected will be labeled according the personal identification number assigned to my child.

I/We understand that only group data will be reported in any published reports.

I/We understand that all raw data will be kept in a locked file cabinet and destroyed two years after the completion of the analyses.

I/We have been given a copy of this consent form for my (our) records. I/We understand that if at any time I have questions, I can contact the researcher, Alice Mohr at (403) 252-8878, her supervisor Dr. Jean Pettifor at (403) 289-5161, or the Office of the Chair, Faculty of Education Joint Ethics Review Committee, at (403) 220-5626, or the Office of the Vice-President at (403) 220-3381.

_____ _____

Name of child participating Parent's/guardian's signature

_____

Date

If you would like a summary of the findings, please check here: _____

APPENDIX D

Consent For Research Participation: Adolescent Form

This is a study of people's feelings towards themselves, their family and their friends. When you give consent you will be given seven questionnaires that will ask about your relationship with your parents and your friends, what you think about drinking and drugs, what you think about yourself and about events that in the past may have made you sad or uneasy. Some of you will be asked questions about how you deal with everyday problems. Your answers will be audio-taped. The questionnaires will take about two hours. If you become upset while giving your responses to the questionnaires, counseling will be made available.

You will be offered ten dollars for participating in this project at the end of the questionnaires. All the information given will be strictly confidential and will be kept in a locked cabinet at the University of Calgary. No one other than the person doing this study will be allowed to see your answers. All of the forms used in this study will be destroyed two years after they are analyzed.

You do not have to be in this study if you do not want to. If at any time you are asked to stop participating in this study or if you want to leave the study, you may do so without penalty. Also, if you would like a summary of my findings when the study is finished, I would be happy to give them to you. If you have any questions about the study, please feel free to ask me.

If you have questions later you can call me at (403) 252-8878. You may also call my supervisor, Dr. Jean Pettifor at (403)-289-5161, or the Office of the Chair, Faculty of Education Joint Ethics Review Committee at 220-5626, or the Office of the Vice-President (Research) at 220-3381. You will receive a copy of this form to keep.

I have read and understood the above explanations and agree to participate.

Name: _____ Signature: _____

Grade: _____ Date: _____

APPENDIX E

Demographic Questionnaire

ID #

Individual Information

All information is strictly confidential.

1. Name _____

2. Age _____ Date of Birth _____

3. Gender: Male _____ Female _____

4. School: Grade _____

5. How many brothers and sisters do you have? _____

6. Are you currently living with:

- mother and father _____
- mother _____
- father _____
- on your own _____
- other _____
- if other, who? _____

7. How many people live in the household? _____

8. Education of parents:

- Mother:

  - elementary/junior high school _____ high school _____

- trade school _____ college or university _____

- Father:

- elementary/junior high school _____ high school _____

- trade school _____ college or university _____

9. Occupation of Mother:

_____

10. Occupation of father:

_____

11. Who looked after you most when you were growing up?

_____

12. When you were growing up did someone in your household have a drinking problem?

Yes _____ No _____

13. If yes to #12, what was their relationship to you?

Mother _____ Aunt _____

Father _____ Uncle _____

Brother _____ Grandmother _____

Sister _____ Grandfather _____

Other, if other, who? _____

APPENDIX F

Internalizing Disorders

The additional research question pertaining to internalizing disorders, not considered part of the main study, is stated as:

> "Are there differences in the presence of internalizing disorders such as anxiety and depression between substance-abusing adolescents and non-substance-abusing adolescents?"

In the measures of depression overall significant differences were found between the two groups (NSAAD and SAAD). An Analysis of Variance (ANOVA) of total depression scores showed significant statistical differences ($F = 8.2$, $p < .005$) between the NSAAD and the SAAD groups. The NSAAD group (mean = 49.7) demonstrated significantly lower mean scores on the depression inventory than the SAAD group (mean = 55.9). Table F-one below presents the one-way ANOVA results for all of the subtests that comprise the total depression inventory.

As Table F-one illustrates, in the depression subscales the greatest significant differences were found to be in the subscales of interpersonal problems and ineffectiveness. Ineffectiveness measures may be related to locus of control. Some research has suggested that an internal locus of control is associated with resilient people. A feeling of ineffectiveness may imply that an individual perceives that he or she has no control over their environment. Other significant findings in the subscales include negative moods and anhedonia. These last two findings are not surprising. Several authors report the fluctuating mood swings of adolescents (Offer, Ostrov, Howard

Atkinson, 1990). The expectation was that there would be no significant differences in these areas.

Table F-one illustrates that there were fewer significant differences between the two groups on a measure of anxiety. The difference between the two groups approached statistical significance in total anxiety ($F = 3.8$; $p = .054$, NSAAD, mean = 9.7, SAAD mean = 12.0). The greatest significant difference was in the area of physiological anxiety, which measures physical manifestations of anxiety such as sweaty palms. Significant differences were found in the social concerns and concentration scale, suggesting that the SAAD group may sense that they have difficulty living up to the expectations of others and may not perceive themselves as good or capable as others, compared to the NSAAD group. No significant differences were found in the subscale of worry and oversensitivity. The lie scale indicates a significant difference, indicating that the SAAD group may be trying to present themselves in a more positive light, in terms of anxiety, indicating a high need for social desirability.

A relationship between internalizing disorders and substance-abuse may be expected in the SAAD group for a few reasons: first there is a belief that alcohol and other drugs reduce anxiety and depression and therefore acts as a motivator toward consumption. As well adolescents, especially from substance-abusing backgrounds, may use alcohol to decrease anxiety and depression in the absence of other coping strategies. Cooper (1994) recently presented results that heavier drinking in adolescents can be motivated by the desire to avoid internally created aversive experience (e.g., negative emotion). The adolescents have not learned, in their families or in other environments,

appropriate ways of dealing with difficulty. However, this does not explain the increase in anxiety and depression in the SAAD group, other than the mistaken idea that alcohol reduces anxiety and depression. Alcohol has been found to reduce anxiety and depression prior to anxiety provoking stimulus, but not post-stimulus.

Clark and Neighbors (1996) reported many studies indicating that internalizing disorders are often present in adolescents who abuse substances, however the research results continue to present contradictory evidence in the comorbidity of substance-abuse and the presence of anxiety or depression in regard to cause and effect relationships. Some studies support the fact that substance use was initiated to alleviate anxiety or depressive symptoms and others support the idea that substance use and progression to substance-abuse caused the anxiety or depressive symptoms. Regardless of the cause, a viscous cycle begins and is perpetuated when alcohol or drugs are ingested with the intention of decreasing anxiety or depression, with substance-abuse usually worsening either condition. Likewise low doses of alcohol have been found to enhance mood but high doses lead to a dysphoric mood (Clark & Neighbors, 1996).

Although significant differences were found across many totals in the areas of depression and anxiety, this does not necessarily reflect the fact that SAAD scores were within a clinical range. The results indicate only that there were statistically significant differences between the two groups.

Table F-1.

Internalizing Disorders (Anxiety and Depression)

		NSAAD N=61		SAAD N=73	
	Mean	Std. Dev.	Mean	Std. Dev.	Univariate F
CDI Subscales (t scores)					
negative mood	49.0	11.6	54.1	13.1	5.7*
interpersonal problems	50.0	9.2	57.4	12.2	15.2***
ineffective-ness	49.7	10.0	55.3	12.4	8.2**
anhedonia	48.8	10.1	53.5	10.1	7.2**
negative self-esteem	50.1	11.2	52.4	14.1	n.s.
RCMAS Subscale (t scores)					
physiolog-ical anxiety	9.7	3.4	11.5	3.0	10.6***
worry/over sensitivity	9.3	3.3	10.2	3.5	n.s.
social concerns/ concentration	9.7	3.0	11.1	3.2	6.3*
lie	10.4	2.7	9.5	2.3	4.1*

Note: * =$p < .05$, **=$p < .01$, ***=$p < .001$