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## School-based prevention of adolescent substance abuse

Kristina Lorenzen

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## School-based prevention of adolescent substance abuse

### Abstract

Because of the prevalence and serious consequences of adolescent substance abuse, it is necessary to review programming for prevention. Progress has been made in identifying effective prevention methods. However, there is a gap between what research has shown to be effective and the methods commonly used in most schools.

The purpose of this paper is to review existing literature and research on substance abuse prevention for adolescents. The following research questions were addressed: How prevalent is adolescent substance abuse? What specific factors put an adolescent at risk for substance abuse? Why are some programs considered ineffective? What components make an effective substance abuse prevention program? What are the limitations and strengths of previous adolescent substance abuse prevention studies? Examining these questions will lead to implications for future research and school psychology.

SCHOOL-BASED PREVENTION  
OF ADOLESCENT SUBSTANCE ABUSE

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Kristina Lorenzen  
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Dr. Donald Schmits, Director of Research Paper

---

Dr. Dennis Cryer, Co-Reader of Research Paper

---

Dr. Barry Wilson, Faculty Advisor

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Dr. Barry Wilson, Head, Department of Educational  
Psychology & Foundations

4-29-02

Date Approved

## Abstract

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## Chapter 1

### INTRODUCTION

#### Statement of the Problem

By the time children reach eighth grade, nearly one in four has tried marijuana, a quarter have been drunk, and one in five has sniffed inhalants. More than half have tried beer or wine. The number of adolescents receiving substance abuse treatment on any given day between 1991 and 1996 (when illicit drug use soared among teens in this country) almost doubled from 44,000 to 77,000 (Mayer, 2001).

Rates of drinking and smoking increase among high school students as they age, and this remains a serious public health problem (Botvin, 2000). The consequences of drug abuse are severe on a personal and societal level. For an adolescent, alcohol and drug abuse weakens motivation, hinders cognitive processes, contributes to debilitating mood disorders, and increases risk of accidental injury or death (Hawkins, Catalano, & Miller, 1992). Hawkins et al. (1992) further asserts that for the whole society, adolescent substance abuse causes a high cost in health care, educational failure, mental health services, drug and alcohol treatment, and juvenile crime.

Added to the immediate personal and societal costs of adolescent drug abuse are the long-term implications for teens that maintain alcohol and drug abuse into adult life. Alcohol and other drugs are major factors in lung cancer, coronary heart disease, acquired immunodeficiency syndrome (AIDS), violent crimes, child abuse and neglect, and unemployment (Hawkins et al., 1992). These can all cause loss in productivity, loss of life, destruction of families, and a weakening of bonds that hold the society together.

Because the prevalence of alcohol and drug use increases with age, prevention programs should target youth before or during junior high school (Botvin, 2000).

Significant effort has been directed toward identifying effective prevention programs. The United States General Accounting Office estimates that the federal government is spending about \$2.4 billion annually on youth drug prevention programs (U.S. General Accounting Office, 1997). Regardless of this tremendous amount of spending, usage increases occur among those youth who have received more drug education than any group since school-based drug education began (Brown, D'Emidio-Caston, & Pollard, 1997).

#### Importance of the Review

The purpose of this paper is to review existing literature and research on school-based substance abuse prevention for adolescents. Because of the seriousness of substance abuse consequences and the money spent on prevention, the federal government has become very interested in determining which prevention strategies and programs are the most effective (Fisher & Harrison, 2000). Although substantial progress has been made in recognizing effective prevention methods, there is a discrepancy between what research has shown to be effective and the methods commonly used in most schools.

A critical review is needed because of conflicting results and inconsistent research designs in the field of adolescent substance abuse prevention programming. Investigating the strengths and weaknesses of previous research is a critical factor in establishing program effectiveness

The current review investigates the following research questions: How prevalent is adolescent substance abuse? What specific factors put an adolescent at risk for substance abuse? Why are some programs considered ineffective? What components make an effective substance abuse prevention program? What are the limitations and strengths of previous adolescent substance abuse prevention studies?

#### Methodology for Finding Sources

The researcher began the search for sources in the University of Northern Iowa's Rod Library and Curriculum Laboratory. General sources were located, which included United States Documents and textbooks. These documents and textbooks' bibliographies were examined for relevant sources. After these sources were found, the researcher conducted an electronic search on the ERIC and PsychInfo databases which led to a review of these sources and their bibliographies. Sources not found at the University of Northern Iowa were obtained through Inter Library Loan. A web search was also conducted to locate on-line professional journals. Search terms included: substance abuse prevention, adolescent substance abuse prevention, school-based substance abuse prevention, substance abuse prevention and intervention, substance abuse prevention and intervention and school, drug education, drug prevention, treatment for adolescent substance abusers, youth drug use, and youth drug use and prevention.

Once these sources were located, the researcher read journal articles, book chapters, and books. Notes were taken on notecards, and an outline was formed around the topics read. This led to a comprehensive review of the research.

## Overview

After the introduction, the review is presented in Chapter 2. A brief history of adolescent substance abuse and prevention is provided, followed by statistics on prevalence of adolescent substance use. Adolescent developmental considerations and the developmental stages of adolescent substance use are then discussed. A summary of risk and protective factors for adolescent substance abuse is given and divided into three sections: biological factors, psychological factors, and sociocultural factors. Characteristics of ineffective and effective programming are explained in order to introduce a summary of methods of prevention. Specific programs targeted towards prevention of adolescent substance abuse are described. This then leads to a critique of the research.

The author's summary and conclusion is offered in Chapter 3. Implications for research are described in order to guide future study of adolescent substance abuse prevention. Implications for school psychology are then explained in order to define the school psychologist's role in assisting schools with adolescent substance abuse prevention.

## Definition of Terms

### Addiction/Dependence

"Compulsion to use alcohol or other drugs regardless of negative or adverse consequences" (Fisher & Harrison, 2000, p. 15).

### Adolescence

Youth ages 12-18.

### Illicit drugs

Marijuana, LSD, other hallucinogens, crack, other cocaine, heroin, other narcotics, amphetamines, barbiturates, tranquilizers not under a doctor's orders.

### Intoxication

"State of being under the influence of alcohol or other drugs so that thinking, feeling, and/or behavior are affected" (Fisher & Harrison, 2000, p. 16).

### Substance abuse

"The continued use of alcohol and/or other drugs in spite of adverse consequences in one or more areas of an individual's life" (Fisher & Harrison, 2000, p. 16).

### Substance misuse

"When a person experiences negative consequences from the use of alcohol and other drugs" (Fisher & Harrison, 2000, p. 85).

### Substance use

"The ingestion of alcohol or other drugs without the experience of any negative consequences" (Fisher & Harrison, 2000, p. 85).

### Tolerance

"Requirement for increasing doses or quantities of alcohol or other drugs in order to create the same effect as was obtained from the original dose. Tolerance results from the physical or psychological adaptations of the individual" (Fisher & Harrison, 2000, p. 16).

### Withdrawal

"Physical and psychological effects that occur when a drug-dependent individual discontinues alcohol or other drug use" (Fisher & Harrison, 2000, p. 16).

## Chapter 2

### REVIEW OF LITERATURE

This review of the literature provides information on adolescent substance abuse school-based prevention. The review is organized in the following sections: a) history, b) prevalence, c) adolescent developmental considerations, d) developmental stages of adolescent substance use, e) risk and protective factors, f) prevention, g) audiences for prevention, and i) review of research.

#### History

Substance use trends and patterns are not stable. The changing trends in substance abuse throughout history have been parallel to societal and governmental reactions (Strader, Collins, & Noe, 2000). It is necessary to continually monitor how these trends and patterns change in order to reassess the needs of young people. As illustrated in the following description of historical trends, previous prevention approaches have centered around largely ineffective techniques, such as: information-only, replacement of addiction with other addictions, law enforcement, and fear/punitive approaches.

In the last half of the nineteenth century, The Society for the Protection of Cruelty to Children was created to address the needs of neglected urban children, especially those with alcoholic parents (Bukstein, 1995). Because of the problems caused by alcohol, the temperance movement gained considerable support. The Women's Christian Temperance Union designed a curriculum of temperance in 1874 which frequently

became mandatory teaching in the schools. This predecessor of modern prevention efforts described medical and social consequences of alcohol consumption.

The rise of Victorian values, as well as the increasing pressure of prohibitionists, caused a steady fall in overall alcohol use in both adolescents and adults from the turn of the century until the 1940s and 1950s (Bukstein, 1995). However, before the turn of the century, medical products containing opiates were accepted and commonly used by the whole population, including infants. Eventually, the hazards and addictive nature of opiates became known, and the Pure Food and Drug Act of 1906 forced manufacturers to state which products contained opiates. Once the dangers of a substance became known, large segments of society censured its use and distribution. The use and distribution of cocaine, marijuana, and opiates (morphine and heroin) became deviant behaviors associated with lower socio-economic populations. Dealing with the drug problem began with the passage of the Harrison Act of 1914, which made a number of drugs illegal under federal law (Gonet, 1994). It defined addicts as criminals and assumed prevention would occur simply through legislation (Strader et al., 2000).

During the 1920s, several narcotic maintenance clinics started (Bukstein, 1995). The maintenance clinic in New York City was run by the Department of Health that enrolled about 7,500 people; 10 percent were under 19 years of age. Also during the 1920s, Richmond Pearson Hobson, a leading prohibitionist, began focusing on teenage heroin addiction. Hobson founded many national organizations that provided the early drug education programs in which scare tactics and misinformation were often employed (Gonet, 1994).

Following the First World War, there was an outbreak of drug addiction among adolescents (Bukstein, 1995). A significant number of teens were among the estimated one million addicts in the United States. Harry Anslinger, Commissioner of Narcotics in the 1930s, addressed growing fears about teenage marijuana use through the use of sensationalistic writings with little or no documentation (Bukstein, 1994; Gonet, 1995). These claims by Anslinger were directly related to state legislatures adopting the Uniform Narcotic Drug Act and Congress passing the Marijuana Tax Act in 1937 (Bukstein, 1995).

In response to an increased level of drug use among teens following the Second World War, many schools began instruction on narcotics. Prevention programs trained teachers and other school staff in identifying drugs and addiction and in routines of reporting these findings to authorities. Educational, community, and public responses to the problem had the best of intentions but did not do much to address underlying problems of socioeconomic factors (Bukstein, 1995).

In the 1960s and 1970s, drug use was no longer just an urban problem and became a substantial concern for middle class and suburban youth (Bukstein, 1995). In the United States, the number of adolescents who had tried marijuana increased from almost zero in 1960 to 3 out of every 10 students in 1979. In 1962, President Kennedy convened the White House Conference on Drug Abuse (Gonet, 1994). The conference introduced the concept of drug abuse, acknowledged the lack of accurate information about drug abuse, and focused on medical treatment for addicts. The Comprehensive Drug Abuse Prevention and Control Act of 1970 in which President Nixon announced the

first “war on drugs” came next. This law established categories of illicit drugs and expanded federal support for education and treatment programs. However, Gonet (1994) also explains that the percentage of high school students using and abusing substances continued to grow through the early 1970s.

An increase in cocaine and crack cocaine use in the 1980s prompted The National Drug Control Strategy of 1989 to pay even more attention to enforcement and punishment rather than treatment (Bukstein, 1995). Unfortunately, the threat of punishment simply assumes that addicts can quit on demand, and that making a popular drug illegal will cause an immediate end to its use. This confuses treatment and prevention motives (Strader et al., 2000).

Nevertheless, from the late 1970s to the early 1990s the use of illicit drugs among 12<sup>th</sup> grade students declined (Johnston, O’Malley, & Bachman, 1999). This improvement had important policy implications. It showed that substance using behaviors among adolescents are malleable and can be changed. However, this decrease in substance use did not continue for long as prevalence in the 1990s increased.

#### Prevalence

A considerable decline in attention to the substance abuse issue in the early 1990s helps to explain why perceived risk and disapproval among adolescents began to backslide (Johnston et al., 1999). Media coverage of the drug issue fell drastically between 1989 and 1993, and the ads from the Partnership for a Drug Free America also plummeted. The use of illicit drugs increased sharply in 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grades after 1992, as negative attitudes and beliefs about drug use continued to erode. In 1992, 8<sup>th</sup>

graders displayed a large increase in annual use of marijuana, cocaine, LSD, and hallucinogens other than LSD, as well as an increase in inhalant use. The proportion of students reporting the use of any illicit drug other than marijuana rose steadily after 1991 among 8<sup>th</sup> and 10<sup>th</sup> graders and after 1992 for 12<sup>th</sup> graders. The softening attitudes about crack and other forms of cocaine also provided a basis for concern; the use of both increased steadily through 1998.

In 1997, for the first time in six years, illicit drug use began to decline among 8<sup>th</sup> graders, and in 1998 the illicit drug use started to decline among 10<sup>th</sup> and 12<sup>th</sup> graders also (Johnston et al., 1999). News coverage of the drug issue made a comeback in response to the early and mid-1990s drug use increases. Even though there has been a decline in substance use in the late 1990s, the prevalence of adolescent drug use remains a concern.

In the most recent Monitoring the Future Study by the U.S. Department of Health and Human Services in 1999, 24 percent of 8<sup>th</sup> graders, 40 percent of 10<sup>th</sup> graders, and 51 percent of 12<sup>th</sup> graders reported drinking alcohol within the past month (Johnston et al., 1999). Fifteen percent of 8<sup>th</sup> graders, 26 percent of 10<sup>th</sup> graders, and 31 percent of 12<sup>th</sup> graders reported engaging in binge drinking (i.e., having five or more drinks in a row) at least once during the 2 weeks before the survey was conducted. Twenty-two percent of 8<sup>th</sup> graders said they had tried marijuana, and 49 percent of 12<sup>th</sup> graders said they had done so. Seventeen percent, one in every six, 8<sup>th</sup> graders has tried some illicit drug other than marijuana (excluding inhalants). By 12<sup>th</sup> grade, 29 percent have tried some illicit drug other than marijuana. Information from three tables of survey results from the

Table 1

*Trends in Substance Use Among 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> Graders in 1998*

Substance	Ever used	Used past year	Used past month
Any illicit drug			
8 <sup>th</sup> grade	29.0	21.0	12.1
10 <sup>th</sup> grade	44.9	35.0	21.5
12 <sup>th</sup> grade	54.1	41.4	25.6
Any illicit drug other than marijuana			
8 <sup>th</sup> grade	16.9	11.0	5.5
10 <sup>th</sup> grade	23.6	16.6	8.6
12 <sup>th</sup> grade	29.4	20.2	10.7
Marijuana			
8 <sup>th</sup> grade	22.2	16.9	9.7
10 <sup>th</sup> grade	39.6	31.1	18.7
12 <sup>th</sup> grade	49.1	37.5	22.8
Inhalants			
8 <sup>th</sup> grade	20.5	11.1	4.8
10 <sup>th</sup> grade	18.3	8.0	2.9
12 <sup>th</sup> grade	15.2	6.2	2.3
Hallucinogens			
8 <sup>th</sup> grade	4.9	3.4	1.4
10 <sup>th</sup> grade	9.8	6.9	3.2
12 <sup>th</sup> grade	14.1	9.0	3.8
MDMA (Ecstasy)			
8 <sup>th</sup> grade	2.7	1.8	0.9
10 <sup>th</sup> grade	5.1	3.3	1.3
12 <sup>th</sup> grade	5.8	3.6	1.5
Cocaine			
8 <sup>th</sup> grade	4.6	3.1	1.4
10 <sup>th</sup> grade	7.2	4.7	2.1
12 <sup>th</sup> grade	9.3	5.7	2.4
Crack			
8 <sup>th</sup> grade	3.2	2.1	0.9
10 <sup>th</sup> grade	3.9	2.5	1.1
12 <sup>th</sup> grade	4.4	2.5	1.0
Heroin			
8 <sup>th</sup> grade	2.3	1.3	0.6
10 <sup>th</sup> grade	2.3	1.4	0.7
12 <sup>th</sup> grade	2.0	1.0	0.5

Substance	Ever used	Used past year	Used past month
Amphetamines			
8 <sup>th</sup> grade	11.3	7.2	3.3
10 <sup>th</sup> grade	16.0	10.7	5.1
12 <sup>th</sup> grade	16.4	10.1	4.6
Been drunk			
8 <sup>th</sup> grade	24.8	17.9	8.4
10 <sup>th</sup> grade	46.7	38.3	21.1
12 <sup>th</sup> grade	62.4	52.0	32.9
Cigarettes			
8 <sup>th</sup> grade	45.7	not reported	19.1
10 <sup>th</sup> grade	57.7	not reported	27.6
12 <sup>th</sup> grade	65.3	not reported	35.1
Smokeless tobacco			
8 <sup>th</sup> grade	15.0	not reported	4.8
10 <sup>th</sup> grade	22.7	not reported	7.5
12 <sup>th</sup> grade	26.2	not reported	8.8
Steroids			
8 <sup>th</sup> grade	2.3	1.2	0.5
10 <sup>th</sup> grade	2.0	1.2	0.6
12 <sup>th</sup> grade	2.7	1.7	1.1

*Note.* Entries are percentages. From *National Survey Results on Drug Use From the Monitoring the Future Study, 1975-1998*, by L.D. Johnston, P.M. O'Malley, & J.G. Bachman, 1999, Bethesda, MD: National Institute on Drug Abuse.

Monitoring the Future Study was combined to create Table 1. See Table 1 for an organized summary of trends in substance use among 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders in 1998.

#### Adolescent Developmental Considerations

Adolescence is a unique time of life characterized by growth and rites of passage into adulthood. This period indicates a physiological, psychological, and sociocultural phenomena. Many distinctive characteristics must be considered when choosing appropriate interventions and treatment. Adolescents require treatment approaches that

attend to their responsibility and roles in family and society, their cognitive and social development, the environmental influences on their behavior, and their educational requirements (Thomas & Schandler, 1996).

When compared to adults, adolescents are more likely to use and abuse alcohol and other drugs, which can potentially complicate treatment. Many times, adolescence marks the onset of both substance use and psychiatric disorders, for example: conduct disorder, major depression or bipolar disorder, and anxiety disorders. This can increase adolescents' vulnerability to substance abuse or may be the consequence of substance abuse (Bukstein, 1994).

In adolescence, significant changes occur in physical maturity, social viewpoints affected by friendships, sexual interests, relationships and intimacy, cognitive abilities, identity formation, peer pressure, and struggles for independence (Bukstein, 1995; Gonet, 1994; Tobler, 1992). According to Bukstein (1994), the following are specific developmental characteristics of adolescents relevant to treatment of alcohol abuse and dependence: dependent position in family and society; limits imposed by physical, social, and cognitive development; greater influence by peers and popular culture; need for educational or vocational training; frequent coexisting psychiatric disorders; and frequent multiple drug use. Because they comprehend and respond to their environment much differently than mature adults, adolescents are more vulnerable to poor decision-making and influence from peers. Junior high and high school experiences are a critical time for exposure to career and future choices. Families also play a crucial role in the development of an adolescent, to which he/she is a dependent member.

Although the differences between adolescents and adults are apparent, adolescents still experiment with a variety of opinions and behaviors as part of their search for independence. Adolescents want identities separate from their parents in order to be considered autonomous individuals. Adolescents often imitate adult behavior, and adult behaviors that adolescents may experiment with could include substance use. Whether this is experimental only or becomes consistent use is influenced by a variety of other developmental factors, among which are peer pressure and family structure (Bukstein, 1995).

It must be kept in mind that substance use does not equal substance abuse. This distinction reflects an understanding of the realities facing adolescents in regards to alcohol and other drug (AOD) use. Adolescent AOD use, excluding prescribed substances, is not condoned or legal; however, there are a large number of teens that try AOD without becoming regular users or developing drug-related problems (Bukstein, 1995; Hawkins et al., 1992). Temple and Fillmore (1986) found that only one-half of heavier drinkers at 18 years of age continued the same drinking pattern 12 years later. AOD use may simply reflect a developmental phase in many adolescents that stops or reduces over time without intervention.

#### Developmental Stages of Adolescent Substance Use

There exists a continuum that can help to explain adolescent substance abuse in a developmental context (Bukstein, 1995). There has been a confirmation among studies of a sequential pattern of AOD use (Donovan & Jessor, 1983; Yamaguchi & Kandel, 1984). First, adolescents sample legal substances for adults (beer, wine, and cigarettes).

Beer and wine are usually first tried before hard liquor. Next, the use of alcoholic drinks precedes marijuana use. This is followed by illicit or “hard” drugs (opiates and stimulants). Adolescents are not likely to use marijuana and other illicit drugs without the prior use of alcohol and/or cigarettes. The use of an earlier drug, like marijuana, does not always result in the progression of use to other illicit drugs. After using either alcohol, marijuana, or other illicit drugs, some may turn to the use of prescription drugs (with or without a medical approval). Drugs that are legal for adults, alcohol and cigarettes, are termed “gateway” drugs because they may initiate the use of other illicit drug use. Most teens begin at the earliest stage of this sequence with progressively fewer teens advancing to later stages. Furthermore, according to Chen and Kandel (1995), the greater part of adolescents ultimately stop using most drugs in adulthood, an occurrence known as “maturing out.”

Addiction develops over time and can also be conceptualized on a continuum between use and dependency (Gonet, 1994). Substance use means having tried a drug at some time in life. This does not necessarily mean that substance use is synonymous with one-time use. There is also a distinction between experimental and social use.

The term, experimental use, can be ambiguous and overstated; however, for the purposes of this paper, it “recognizes that many young people will try a drug once or twice, decide they do not like the effects, and discontinue use. Many young people experiment with a variety of drugs and never get beyond this phase. They drift in and out of experimentation but never settle into a specific drug-using pattern” (Gonet, 1994, p. 16).

Social use, in many cases, for teenagers indicates going to a party and drinking or using substances in order to “get high” (Gonet, 1994). Because there is no absolute definition of the term, social use, it must be used carefully. Social use may not mean the same for adolescents as it does for adults. Alcohol is a drug illegal to adolescents, so the term, social use, may not be appropriately applied to what is illicit behavior. However, thinking of adolescent social use in terms of a continuum of drinking behavior can help to assess the behavior risks of students.

At some point along the continuum, an adolescent’s behavior may cross the line into abuse. Abuse means that an adolescent’s use patterns put him/her at risk for life dysfunctions, and sometimes it indicates drug use problems that have developed into the disease of chemical dependency (Gonet, 1994). The American Medical Association stated in June of 1987 that all drug dependencies are diseases (as cited in Gonet, 1994). Dependency includes three behaviors: compulsion to use the drug, loss of control over the drug, and continued use of the drug despite adverse consequences. Adolescents with the disease of addiction have a defined illness and are entitled to treatment.

Adolescents are much less likely to experience withdrawal than adults with dependence diagnoses, due to the limited time period during which teenagers have been using AOD heavily (Sanjuan & Langenbucher, 1999). In addition, tolerance to alcohol is less specific to a dependence diagnosis in adolescents, suggesting that an increase in AOD use may be a common developmental occurrence for teens.

Prevention and intervention programs should address these adolescent developmental themes and guide professionals in choosing appropriate treatment

methods. Within a developmental context, many risk and protective factors play an important role in adolescent substance abuse (Bukstein, 1995). Because there is disparity between groups of adolescents in regards to age of entry into stages of the developmental sequence of substance use, speed of progression, and extent of progression into many stages of the sequence, the identification of risk factors may provide a better understanding of the role of substance use in adolescent development.

### Risk and Protective Factors

Adolescent substance abuse risk factors are defined in the literature as, "Any individual attribute or characteristic, situational condition or environmental context that increases the probability of substance use or abuse or a transition in the level of use or involvement with substances" (Clayton, Leukefeld, Donohew, Bardo, & Harrington, 1995, p. 7). So, risk factors can be conceived of as antecedents to drug and alcohol use/abuse. Conversely, Clayton et al. (1995) describes protective factors as individual attributes, characteristics, situational conditions, or environmental contexts that inhibit, reduce or buffer the probability of drug abuse.

The more risk factors evident in an adolescent's life, the higher the chances that he/she will use substances (Bukstein, 1995; Hawkins et al., 1992; Pandina, 1996; Thomas & Schandler, 1996). This is known as the multiple-risk-factor model; the ratio of the number of risk factors to the number of protective factors can provide a good indication of whether an adolescent is at risk for future substance abuse problems (Pandina, 1996). Risk-focused approaches look for ways to prevent drug abuse by eliminating or reducing its antecedents and increasing protective factors. Present knowledge about risk factors

for drug abuse does not provide a prescription for prevention, but it does point to possible targets for preventive intervention (Hawkins et al., 1992).

Risk factors for adolescent substance abuse can be classified into one of three categories: biological, psychological, and sociocultural. Hawkins et al. (1992) and Pandina (1996) used such a scheme, and their findings are summarized in Table 2.

### *Biological Factors*

Biological factors include developmental and genetic factors that may increase or decrease an adolescent's susceptibility to substance abuse (Hawkins et al., 1992). Considerable research has displayed a relationship between family history of substance use (especially alcohol) and substance use in following generations. Besides the genetic transmission of a propensity to alcoholism in males, family drug using behavior and parental attitudes toward children's drug use are directly related to the risk of alcohol and other drug abuse (Hawkins et al., 1992).

Parental and sibling alcoholism and illegal drug use increase the risk of alcoholism and drug abuse in children (Hawkins et al., 1992). Parental drug use is linked to initiation of use by adolescents (Kandel, Kessler, & Margulies, 1978) and with frequency of marijuana use (Brook, J.S., Brook, D.W., Gordon, Whiteman, & Cohen, 1990). Comparable findings have been reported for adolescent drinking habits. Parental use of marijuana was associated with adolescents' use of other illicit drugs, such as cocaine and barbiturates (Hawkins et al., 1992).

Table 2

Organization of Risk/Protective Factors

<u>Classes of factors</u>	<u>Factors</u>
Biological	Genetic profile Sensory processing disturbances Neurocognitive alterations Personal history of affective disorders Family history of alcoholism, drug abuse Family history of impulse disorders Family history of affective disorders and emotional disturbance
Psychological	Personality styles (e.g., sensation seeking, novelty seeking, harm avoidance, reinforcement sensitivity) Emotional profile Self-regulation style (e.g., coping repertoire) Behavioral competence Self-efficacy/self-esteem Positive and negative life events/experiences Attitudes, values, beliefs regarding drug use Age of onset of drug use Commitment to school Academic failure/success School failure/success
Sociocultural	Structure/function of family supports Parenting styles Opportunities for development of basic competencies Peer affiliations Economic, social, and educational opportunities General social support structure Availability of prosocial activities in relevant social-environmental structures Strength and influence of the faith community Social norms, attitudes, and beliefs related to drugs Availability and projected attractiveness of drugs and drug use Economic and social incentives of drug trafficking Laws Neighborhood disorganization

*Note.* From "Risk and Protective Factors for Alcohol and Other Drug Problems in Adolescence and Early Adulthood: Implications for Substance Abuse Prevention," by J.D. Hawkins, R.F. Catalano, & J.Y. Miller, 1992, *Psychological Bulletin*, 112, pp. 66-81.

And “Risk and Protective Factor Models in Adolescent Drug Use: Putting Them to Work for Prevention,” by R.J. Pandina, 1996, Paper presented at the National Conference on Drug Abuse Prevention Research, Washington, DC.

Longitudinal and cross-sectional studies conducted by Brook et al. (1990) revealed nondrug use and emotional stability in fathers enhanced the effect of other protective factors, for instance, peer nonuse of drugs. In addition, psychological stability in mothers offset the effects of risk factors, such as peer drug use.

### *Psychological Factors*

Psychological risk factors include the cognitive, emotional, and moral development of the adolescent (Hawkins et al., 1992). Particular characteristics of individuals are associated with a greater risk of adolescent drug abuse. Sensation seeking and low harm avoidance predict early-onset alcoholism. Poor impulse control in childhood predicts frequent marijuana use at age 18 (Shedler & Block, 1990). Alienation from the dominant values of society, low religiosity, and rebelliousness have also been shown to be positively related to drug use (Hawkins et al., 1992).

A longitudinal study of 5-year-olds followed into adulthood (Lerner & Vicary, 1984) found that children portrayed by withdrawal responses to new stimuli, biological irregularity, slow adaptability to change, frequent negative mood expressions, and high intensity of positive and negative expressions of affect more often became regular users of alcohol, tobacco, and marijuana in adulthood than “easy” children, who were characterized by greater adaptability and positive affect early in life. Likewise, Shedler and Block (1990) reported frequent marijuana users at age 18 were described in childhood as “emotionally distressed” (as cited in Hawkins et al., 1992, p. 83). Children

who were irritable, easily distractible, experienced temper tantrums, fought often with siblings, and engaged in predelinquent behavior were at a greater risk to use drugs in their teen years (Brook et al., 1990).

When considering academic failure as a psychological risk/protective factor, discrepancies in results were evident. In a national probability sample, high intelligence, as assessed by the Armed Forces Qualifying Test, was associated with higher lifetime levels of cocaine use among young adults age 19-26 (Kandel & Davies, 1991). Similarly, in an African-American inner-city sample, higher scores on reading readiness and IQ tests in first grade predicted earlier and more frequent use of alcohol in adolescence (Fleming, Kellam, & Brown, 1982). In contrast, other studies have identified school failure as a predictor of adolescent drug abuse (Clayton et al., 1995). Poor school performance has been found to predict frequency and levels of illegal drug use (Hawkins et al., 1992). Holmberg (1985), in a longitudinal study of 15-year-olds, stated that truancy, placement in a special class, and early drop out from school were predictive factors for drug abuse. Furthermore, exceptional performance in school reduced the possibility of frequent drug use among a ninth-grade sample studied by Hundleby and Mercer (1987).

### *Sociocultural Factors*

Sociocultural risk factors for adolescent substance abuse include family, peer, and community influence. The prevalence of drug abuse can be connected with changes in cultural norms, in the legal definitions of particular behaviors, and in economic factors. Studies observing the relationship of minimum drinking age and adolescent drinking and

driving have commonly shown that lowering the drinking age increases teen drinking and driving and teen traffic fatalities; raising it decreases teens driving while intoxicated (DWIs) and deaths. Neighborhoods with high population density, lack of natural surveillance of public places, high residential mobility, physical deterioration, low levels of attachment to neighborhood, and high rates of adult crime also have high rates of juvenile crime and illegal drug trafficking (Hawkins et al., 1992).

Poor and inconsistent family management practices are also cited as a sociocultural risk/protective factor (Hawkins et al., 1992). A lack of maternal involvement in activities with children, lack of (or inconsistent) parental discipline, and low parental educational aspirations for their children predict initiation of drug use.

Even though children of divorced parents are sometimes considered to be at a higher risk for delinquency and drug use, there is not an actual direct, independent contribution of "broken homes" to delinquent behavior (Hawkins et al., 1992). More important is conflict among family members in predicting delinquency, rather than family structure.

One of the strongest predictors of substance abuse among adolescents has consistently been association with drug-using peers (Brook et al., 1990; Kandel, 1978). Besides actual peer use, an adolescent's perception of peer use and support for use are also strong predictors of use, especially for marijuana use and also for alcohol use (Kandel et al., 1978). Adolescents with greater peer attachment, rather than parent attachment, are at a greater susceptibility to peer influences (Brook, Linkoff, & Whiteman, 1980; Kandel et al., 1978). Strong bonds to parents and family decrease the

likelihood of association with substance using peers (Sanders, 2000). Research from Kandel's (1982) work also suggests that peer influences may be fairly short-term in comparison to parent and other factors.

Risk and protective factors fluctuate in importance across individuals or groups. For instance, high IQ may act as protective in some groups and as risk in others. The impact of certain factors may also differ at various times of drug use stages. Additionally, research has suggested that factors function differentially by age group (Sanjuan & Langenbucher, 1999).

More research is needed in order to understand whether risk factors function in the same way for all substances or if they operate differently for different drugs, for example, marijuana use as opposed to cigarette smoking. However, risk and protective factors are subject to change and can be reduced or produced. This is a further implication of the role risk and protective factors can play as targets for prevention and intervention (Sanjuan & Langenbucher, 1999).

### Prevention

Despite current knowledge about effective curricula for the prevention of adolescent substance abuse, programs that reflect promising practices are not being widely utilized (Dusenbury & Falco, 1995). Only recently has a research-literature base for substance abuse prevention as a resource for program design been developed. The 1980s and the passage of the Drug Free Schools and Communities Act of 1986 caused schools to be overwhelmed with promotional literature for substance abuse prevention curricula and training programs (McNamara, 1995). At this time, schools began to adopt

programs despite a lack of validation of their effectiveness in reducing and/or eliminating substance use. McNamara (1995) states that these programs usually lacked a sufficient evaluation element or failed to evaluate substance use as a specific outcome measure.

Most of the money spent annually on drug education is actually spent on aggressively marketed programs that have not been evaluated or have not been shown to work (Hansen, Rose, & Dryfoos, 1993). The three largest marketed programs are: DARE, QUEST, and Here's Looking at You, 2000. Of these programs, only DARE has been sufficiently evaluated (Dusenbury & Falco, 1995). DARE has been successful in information dissemination, but it is not any more effective at reducing substance use behavior than standard curricular approaches (Ennett, Tobler, Ringwalt, & Flewelling, 1994).

Ennett et al. (1994) conducted a meta-analysis to review eight methodologically rigorous DARE evaluations. They concluded that DARE's short-term effectiveness for reducing or preventing drug use behavior is small and is less than for more interactive programs. Some possible explanations of DARE's ineffectiveness could be related to who teaches it and how it is taught. It is, in fact, teaching style and not curriculum content that sets DARE apart from other programs. The program depends on the officer as expert and makes repeated use of lectures and question-and-answer sessions between the officer and students. Although officers receive extensive training to conduct the program, they may not be as well equipped to lead the curriculum as classroom teachers. Further studies are needed to substantiate this point.

## Ineffective Versus Effective Programming

### *Ineffective Programming*

There is evidence from existing research that some prevention strategies are ineffective (Bosworth, 1997). Scare tactics, providing only information on drugs and their effects, self-esteem building, values clarification, large assemblies, and didactic presentation of material have not been shown to be particularly effective in the prevention of AOD use.

Knowledge-only programs, or information-dissemination, imitate the unsuccessful scare tactics of the early 1970s and continue to be ineffective in reducing adolescent drug use (Tobler, 1992). Information-dissemination communicates information about alcohol and other drugs, including their harmful effects. Fear-arousal messages, moralizing, and objective information-giving are included under this strategy. Anderson (1988) stated that information-dissemination reduces many students' anxiety about using by providing accurate information about alcohol and other drugs, thereby increasing use levels; further, it was based on a faulty assumption that cognitive knowledge alone is preventive.

Affective-only programs stresses intrapersonal change through examination of personal beliefs, values, and decision making patterns with no specific reference to drugs; these programs have also been shown to be ineffective (Tobler, 1992). The failure of affective education as an AOD prevention strategy may be in the absence of a clear focus,

inadequacy in the number and frequency of interventions, and application of inappropriate methods for fostering skill acquisition among students (McNamara, 1995). Furthermore, Tobler (1992) reports that the combined knowledge-plus-affective strategy, although more effective than the two strategies alone, also has minimal effects on drug use.

### *Effective Programming*

Dusenbury and Falco (1995) conducted a review of school-based drug abuse prevention programs and interviewed a panel of 15 leading experts in prevention research. The purpose of the research was to identify key elements of promising prevention curricula. They reported 11 components of effective drug abuse prevention curricula:

1. *Research-based/theory-driven.* If a curriculum is to be effective, it should be based on current theory and research in drug abuse prevention. In the past research has been inclined towards a focus on only two risk factors: attitudes favorable to drug use (norms) and peer use. Recently, Botvin (2000) and Hawkins et al. (1992) have broadened this research to investigate a multitude of risk and protective factors and their impact on prevention. As risk and protective factors are further explored in research, prevention programs are likely to become increasingly effective.
2. *Developmentally appropriate information about drugs.* Information about drugs and consequences should focus on the short-term and negative social consequences of use. Adolescents are more interested in concrete information

and present experiences, rather than possibilities in the distant future.

Lengthy information about the types and effects of drugs is not needed and can also be counterproductive (Botvin, 2000).

3. *Social resistance skills training.* Programs that help prepare students to identify pressures to use drugs and provide instruction on skills needed to resist these pressures while maintaining friendships are most successful.
4. *Normative education.* Most people do not use drugs. Normative education teaches adolescents that they are in the majority if they are not using drugs.
5. *Broader-based skills training and comprehensive health education.* Decision-making skills, goal-setting, stress management, communication skills, general social skills, and assertive skills are the types of skills taught in broader based skills training programs. Comprehensive health education would give students training in general personal and social skills.
6. *Interactive teaching techniques.* Role-playing, discussions, and small group activities are much more effective than didactic techniques and lecture.
7. *Teacher training and support.* When teachers receive training and support from program developers or prevention experts, programs are most effective. Teacher training should also include a focus on interactive teaching techniques, give enough opportunity to practice new skills, and provide feedback and reinforcement during practice sessions.
8. *Adequate coverage and sufficient follow-up.* Unfortunately, many drug abuse prevention programs are brief. Most commonly, programs are 10 sessions the

first year, and fewer than five in the second year (Flay, 2000). This can help to explain research findings that prevention efforts lose effectiveness over time. Sufficient and continued follow-up is needed.

9. *Cultural sensitivity.* Teachers should adapt the curriculum activities to the cultural experience of their students and be respectful of cultural diversity in their classroom. The curricula should be specifically appropriate and relevant to the cultural experience of the school and community.
10. *Additional components.* Consideration to family, community, media, and special population components would be of value to prevention programs.
11. *Evaluation.* Evaluation designs should include pretest and post-test measures, a control group, and outcome measures of substance use behavior. Ideally, researchers should be independent investigators and also disclose royalties and consulting fees associated with a curriculum. (pp. 421-422)

### Methods of Prevention

McNamara (1995) suggests that prevention programming can be delegated to four different methods and three audiences. The four methods of prevention include: school policy initiatives; education; alternatives; and intervention, treatment, and support. The three audiences for prevention are: primary, secondary, and tertiary.

#### *School Policy Initiatives*

Not only should school policies reflect a broad emphasis on AOD use prevention, but they should also describe explicit rules and procedures that clearly indicate AOD use or sales will not be tolerated (McNamara, 1995). A statement of philosophy should also

be included, which clearly conveys the school system's beliefs and values concerning the nature of AOD problems; the emphasis on prevention, risk management, early intervention, and protection in the school's comprehensive AOD program; and the role of the school in helping students to resolve problems associated with AOD use.

In order to be most effective, school policy should be developed, promoted, publicized, and enforced in community-based efforts that include students, parents, law enforcement officials, and school and community representatives (McNamara, 1995). Policies should address the following issues: specification of AOD offenses by defining illegal substances or paraphernalia, the area of the school's jurisdiction, and types of offenses; procedures to be followed for first-time offenders and repeat offenders and consequences for policy violation; and circumstances which require incidents to be reported, a specification of responsibilities and procedures for investigating and reporting incidents, and procedures for notifying parents and law enforcement officials.

### *Education*

The role of education in a comprehensive AOD prevention program includes an emphasis on reducing risk factors and enhancing protective factors (Hawkins et al., 1992; McNamara, 1995; Thomas & Schandler, 1996). The United States Department of Education (1988) suggests that the following should be addressed in AOD prevention curricula at all grade levels:

- A clear and concise message that the use of alcohol, tobacco, and other illicit drugs is unhealthy and harmful.

- Knowledge of all types of drugs, including what medicines are, why they are used, and who should (or should not) administer them.
- The social consequences of substance abuse.
- Respect for the laws and values of society.
- Promotion of healthy, safe, and responsible attitudes and behavior by correcting mistaken beliefs and assumptions, disarming the sense of personal invulnerability, and building resistance to influences which encourage substance abuse.
- Strategies to involve parents, family members, and the community in the effort to prevent use of illicit substances.
- Appropriate information on intervention and referral services, plus similar information on contacting responsible adults when help is needed in emergencies.
- Sensitivity to the specific needs of the local school and community in terms of cultural appropriateness and local substance abuse problems. (p. 10)

Current research findings on the effectiveness of education programs and curricula support schools in developing or adopting programs that stress training in skills to resist negative peer, adult, media, and community influence, while promoting the development of adaptive coping skills and social competence (McNamara, 1995).

### *Alternatives*

The alternatives method provides students with multiple opportunities for meaningful and responsible participation in school (McNamara, 1995; Tobler, 1992). Protective factors are enhanced through prosocial bonding with peers and the school, student involvement in activities, and formation of caring relationships with school staff

and students. Other activities may include: peer mediation programs, peer tutoring, peer counseling, mentoring programs, buddy systems, and peer-led workshops.

An important consideration in implementing an alternatives program is the involvement of students from all three audiences: primary, secondary, and tertiary. Unfortunately, many schools only involve students who have demonstrated responsible behavior in their alternatives program as a reward (McNamara, 1995). This neglects the needs of at-risk and troubled students who could greatly benefit from these programs.

#### *Intervention, Treatment, and Support*

The intervention, treatment, and support method generally receives the most attention for secondary and tertiary audiences. However, the primary prevention audience may exhibit risk factors that require the attention of the intervention, treatment, and support strategies (McNamara, 1995). This method involves identification, assessment, and referral of students whose behavior places them at-risk for involvement with AOD. The strategies can include: creating networks of informed parents, community members, and school personnel that discourage use through monitoring of youth activities; to support abstinence among students; and to create a school climate in which behavior and achievement problems are identified for early intervention purposes (McNamara, 1995). Student Assistance Programs and programs that foster parent involvement signify a promising tool for prevention.

## Audiences for Prevention

### *Primary Prevention*

The primary prevention audience includes those who have not yet participated in AOD use. The focus of primary prevention includes reducing risk factors for substance use and increasing protective factors against substance use (McNamara, 1995). Activities that are addressed in primary prevention are: promoting accurate perceptions of short-term consequences of substance use, establishing coping skills and techniques to resist negative influence, enhancing student performance and bonding to school, forming positive peer associations, establishing policy support and sanctions, working with parents to assist development of effective family management skills, and working with community members to reduce student access to harmful substances (University of California Los Angeles [UCLA], 1997).

This section will review substance abuse programs aimed at primary prevention currently prominent in the research literature. Programs were chosen that have been described consistently in the literature as promising approaches and can serve as examples that reflect effective programming and best practices.

*Life Skills Training (LST)*. The LST program is comprised of three components: to influence alcohol, tobacco, and other drug (ATOD) related knowledge, attitudes, and norms; to teach skills for resisting social influences to use ATODs; and to promote the development of personal self-management and social skills (Botvin & Kantor, 2000; Flay, 2000).

In order to influence knowledge, attitudes, and norms the LST program examines the following: short- and long-term consequences of ATOD use, the actual levels of ATOD use (to correct normative expectations), the declining social acceptability of smoking and other ATOD use, media pressures to use ATODs, and skills for resisting alcohol and tobacco advertising and peer pressure to use ATODs (Botvin & Kantor, 2000).

In order to promote the maturity of personal self-management skills, the LST program is designed to: improve decision making and problem solving abilities; teach skills for identifying, analyzing and resisting media influences; teach skills for coping with anxiety, anger, and frustration; and provide students with principles of personal behavior change and self-improvement (e.g., goal setting, self-monitoring, and self-reinforcement) (Botvin & Kantor, 2000).

In order to support the development of social skills, the LST program is designed to: influence social skills (e.g., communication, initiating social interactions, conversation, complimenting, skills related to male/female relationships, and verbal/nonverbal assertive skills) and to improve students' general social competence (Botvin & Kantor, 2000).

The Life Skills Training program is conducted in 15 class sessions (about 45 minutes each) and is oriented toward middle or junior high school students (Dusenbury & Falco, 1995). After the first year of 15 sessions (usually in seventh grade), the LST program continues for two more years. These are booster sessions that are designed to

reinforce the initial material covered. Booster sessions increase the salience of prevention efforts.

The way content is presented is as important as the actual content, and interactive techniques are considered to be more effective (Dusenbury & Falco, 1995; Ennett et al., 1994). A variety of instructional methods have been used in the LST program, including traditional didactic teaching, facilitation and group discussion, classroom demonstrations, and cognitive-behavioral skills training with more of an emphasis on group discussion and skill training (Botvin & Kantor, 2000). The cognitive-behavioral skills include not only instruction and demonstration, but also behavioral rehearsal through role-playing, frequent teacher and peer feedback, social reinforcement, and extended practice through behavioral homework assignments. Health professionals from outside the school, older peer leaders, and regular classroom teachers can teach the LST program.

The LST program has been deemed effective by the Centers for Disease Control and Prevention, the American Medical Association, and the American Psychological Association (Mayer, 2000). The U.S. Office of Juvenile Justice and Delinquency Prevention gives funding to middle schools and junior high schools that wish to use the LST program in their school.

Prevention effects have been consistently demonstrated in studies testing the LST approach (Botvin, 2000). The extent of the reported effects typically has been large with most studies demonstrating initial reductions of 50 percent or more relative to control groups (Botvin & Kantor, 2000). The studies have generally reported decreased use for both experimental and more serious levels of substance use. Prevention effects have also

lasted into the 12<sup>th</sup> grade (Botvin, 2000). Botvin further explains that follow-up studies performed at the end of the 12<sup>th</sup> grade report a prevalence of ATOD use 44 percent lower than control groups. Research also indicates that the LST program is effective with inner-city minority populations.

Studies have tested the LST's short- and long-term effectiveness, the use of different instructional methods and booster sessions, its effectiveness when conducted by different program providers, and its effectiveness with different populations. The studies have ranged from smaller studies involving two schools and a few hundred adolescents to large-scale, randomized field trials involving more than 50 schools and several thousand adolescents (Botvin & Kantor, 2000).

*Project Northland.* Project Northland is the largest ongoing community trial in the United States focusing on the primary prevention of alcohol-related problems using multilevel, multicomponent interventions for sixth through twelfth grades (Williams, Perry, Farbaksh, & Veblen-Mortenson, 1999). The project utilizes two phases. Phase 1 targets interventions for early adolescence, and Phase 2 focuses on interventions for high school students. Currently, results from the Phase 2 interventions are not available; however, studies have been conducted for the Phase 1 interventions.

Project Northland is based on the belief that underage drinking is influenced by multiple factors of the social environment, which includes: individual, family, peer group, school, and community (Williams et al., 1999). The interventions make use of multiyear social behavior curricula, intensive parental involvement components, multiple

peer leadership opportunities, and community-level changes through the formations of task forces (Durlak, 1997; Flay, 2000; Williams et al., 1999).

In sixth grade, prevention efforts started by involving parents in activities (Williams et al., 1999). Home programs encouraged families to develop guidelines in the home against underage drinking, become facilitators for school activities, become resources for the community task forces, become involved with goals and activities in newsletters, and participate in homework projects with their children. In seventh grade, parents still remained involved, but increasing emphasis was placed on school-based interventions to develop skills for dealing with peers and building positive peer group influences. Activities involved group discussions and problem solving through role-playing, many led by peer leaders. In eighth grade, activities reinforced skills to resist pressures to drink and empowered students to make healthy changes in their communities. Durlak (1997) reports that throughout each year, community task forces were successful in their efforts to pass local ordinances regarding sales of alcohol to minors, meet with local merchants about sale practices, and encourage local businesses to offer discounts to students who pledged to be alcohol-free.

The effectiveness of Project Northland was tested with a research design using school districts randomized to intervention or reference conditions (Williams et al., 1999). Participating students in Project Northland reported less onset and prevalence of alcohol use compared with students in the reference condition. Effects were stronger with students who had not yet tried alcohol before the study. Intervention students who

were nonusers at baseline also reported significantly less cigarette and marijuana use, and significantly greater self-efficacy (Flay, 2000).

The study conducted by Williams et al. (1999) made use of MMPI-A scales in order to assess clinical problems related to adolescents' alcohol and other drug use, school functioning, and family functioning. Results showed significant reductions on the MMPI-A Proneness scale for those participating in the project.

In addition to reduced alcohol-related problems, Project Northland appeared to create an impact in other areas (Williams et al., 1999). For example, studies indicate that the project was successful in increasing family communication about consequences of drinking, increasing students' reasons to remain a nonuser, reducing peer norms and influences for use, and introducing skills to resist peer influences. Program students were significantly more likely than students in the reference condition to believe that many of their peers drank at the beginning of the intervention, and they were significantly less likely to hold the same belief at the end of the intervention (Durlak, 1997).

### *Secondary Prevention*

Students in the secondary prevention audience are at high risk for AOD use. Activities are intended to interrupt, minimize, or protect against the influence of these risk factors (McNamara, 1995). An emphasis is placed on: providing a more intensive focus on developing coping and resistance skills, coupled with efforts to prevent school failure; encouraging caring relationships between students and adults; increasing strategies to place school success and positive peer affiliation within reach of troubled and at-risk youth, including creation of opportunities for responsible and rewarding

behavior; and extending interventions with families to focus on problem-solving and communication skills (UCLA, 1997).

Compared to primary and tertiary prevention, secondary prevention practices receive the least amount of attention in the research literature. This may be a result of the difficulty of identifying, defining, and intervening with “at-risk” students. The following section will review two secondary prevention programs targeted to intervene with high-risk students.

*Preparing for the Drug-Free Years (PDFY).* The PDFY program operates from a public health approach, which includes preventive interventions with goals to delay early initiation of substance use or to prevent progression to more dependent and problematic use once initiation has occurred (Spoth, Reyes, Redmond, & Shin, 1999). It is a theory-based program, intended to address risk and protective factors predicting adolescent AOD use. Specifically, the PDFY program aims to enhance the protective factor of parent-child affective qualities. Participants are trained in skills (e.g., peer refusal training) that positively affect risk and protective factors, using research-based interactive skills techniques, such as modeling, rehearsal, feedback, and home practice.

The PDFY program is intended for the beginning of sixth grade (Spoth et al., 1999). Five sessions are conducted once per week for five weeks, and each session lasts about two hours. A unique characteristic of this program is that adolescents only attend one session – parents are participants for all sessions. The program can be offered during weekday evenings at school buildings.

Instruction for parents includes: risk factors for substance abuse, developing clear guidelines on substance-related behaviors, enhancing parent-child bonding, monitoring compliance with guidelines and providing appropriate consequences, managing anger and family conflict, and enhancing positive child involvement in family tasks (Spoth et al., 1999). Instruction for adolescents focuses on peer resistance skills.

The longitudinal study conducted by Spoth et al. (1999), collected data on the PDFY outcomes for a 2.5-year period from 329 rural adolescents. The PDFY program demonstrated both primary and secondary prevention effects at the 2-year follow-up. Substance use rates did increase in the experimental and control groups; however, the likelihood of substance use initiation after two years was significantly lower among intervention-group students. Students in the intervention-group who had already initiated use also showed delayed progression at the 1-year follow-up. These students were more likely to have the same substance use status at the 2-year follow-up than were corresponding control-group adolescents who had already initiated use.

*Interpersonal Relations (IPR)*. The IPR program is a school-based program that operates from a network social support model in order to counteract the negative effects of prior poor school performance and drug involvement (Eggert, Seyl, & Nicholas, 1990). Eggert et al. (1990) explains that the intervention approaches incorporate teacher modeling and structured peer group support to “increase at-risk students’ bonding to a prosocial peer group, strengthen bonding to the conventional norms of school achievement and attendance, and decrease social disorganization and role strain by reinforcing non-drug use and enhancing academic and social skills” (p. 777).

The IPR program recognizes that early signs of drug use/abuse and dropout usually emerge at school, and teachers may be the first to notice and recommend early interventions (Eggert et al., 1990). Goals, including improved school achievement and attendance and decreased drug involvement, were consistently communicated throughout the program. As part of the IPR program, some activities are: group discussion and skills training in interpersonal communication, problem solving, decision-making, and self-management; supervised study and peer tutoring; goal setting and journal writing; planning for alternative drug-free weekend activities; visiting community agencies (e.g., vocational and GED programs, community colleges) and recreational activities of student choice (e.g., bowling, walks, breakfast together).

The IPR program takes place as part of a small-group psychoeducational counseling class (i.e., Interpersonal Relations) that met daily for one school semester (Eggert et al., 1990). Students considered “high-risk youth” are eligible for the class and invited to participate – participation is not mandatory. Those who complete the class receive course credit. Participants included students returning from drug treatment, high-risk dropouts, and known drug users. Students returning from drug treatment were placed in a separate section of the IPR class from the drug users. Teachers of the IPR program receive training and constant support from the school counselor and school nurse.

IPR program students’ outcome measures were compared with a control group that included students who were considered high-risk but chose not to enroll in the IPR class. Following implementation of the IPR class, a large majority of potential dropouts

remained in school, increased their school achievement and attendance, and decreased their drug involvement. The program factors that were considered to contribute most to decreased drug involvement were: teacher and program-peer pressure reinforcement of non-drug use, quality teacher-student and program-peer relationships, and problem solving and social skills training (Eggert et al., 1990).

The study did have some limitations. For instance, randomization procedures were not utilized, and the sample was taken from a homogeneous population of middle-class Caucasians (Eggert et al., 1990). The program also did not use longitudinal procedures in order to assess long-term program effects. Yet, despite these limitations, the prevention produced substantial short-term results which have implications for cost-effective treatment.

### *Tertiary Prevention*

The tertiary prevention audience consists of those who have already used substances. The purpose of prevention for this audience is to interrupt and eliminate patterns of substance abuse (McNamara, 1995). There are a variety of needs in this audience. Some students have used substances in an experimental nature, others have regular patterns of use, and still others are dependent or addicted to certain substances.

As well as the interventions recommended for the secondary prevention audience, efforts for the tertiary prevention audience focus on: offering opportunities for students to learn and practice particular skills for achieving and maintaining abstinence and for coping with personal distress; drawing students into the mainstream by providing opportunities to establish or restore positive peer and adult relationships and commitment

to normative standards of behavior; connecting families with community-based resources and support networks of concerned parents; cooperating with law enforcement agencies to reduce availability and access to substances; and offering substance free activities (UCLA, 1997).

Traditionally, tertiary prevention has not been school-based. In the past and still today in 2002, the role of the school in tertiary prevention has sometimes involved identifying students in need of tertiary prevention and making connections with outside community resources for treatment. The research literature says almost nothing about school-based treatment; however, there is limited information about certain attempts at school-based tertiary prevention.

The new attention to school-based approaches reflects an interest in alternative methods to treatment (Bukstein, 1994). Many existing programs have started to include an assortment of family or behavioral treatments, health services, vocational and educational services, and recreational activities in addition to 12-step principles. Other programs incorporate case managers and multidisciplinary teams from different social service agencies and treatment programs to coordinate services and care. Furthermore, growing importance is being considered to providing help in the adolescent's own community and in as "normal" a setting as possible.

Some common recommendations can be made for adolescent treatment modalities. The fundamental goal should be to achieve and maintain abstinence from AOD use (Bukstein, 1994). Treatment should also strengthen the general psychosocial functioning (e.g., educational, vocational, family, and interpersonal functioning) of the

adolescent in addition to the particular areas (e.g., problem-solving or anger management) that helps the adolescent to avoid relapse.

Fleisch (1991) and Friedman and Beschner (1985) have identified treatment characteristics that have been associated with improved abstinence and lower relapse rates and can be used as guidelines for treatment. Treatment should: be intensive and of adequate duration to accomplish changes in attitude and behavior (what is determined sufficient varies among individuals and treatment modalities); be comprehensive and target several fields of the adolescents' lives (e.g., coexisting psychiatric disorders, vocational or educational needs, recreational activities, and information about relevant medical issues); be sensitive to the cultural and economic realities of the adolescents, their families, and environments; encourage family involvement and improvement of family communication; include a variety of social services; and provide aftercare to support the changes that have been achieved during primary treatment.

The following sections will review two approaches to tertiary prevention among adolescent substance abusers. The first program is an inpatient approach, and the second reflects a school-based method. These programs were selected because of their prominence in the literature, depending on their status as a school-based or non-school-based program.

*The Minnesota Model.* The Minnesota model is widely recognized as the most commonly practiced form of adolescent substance abuse treatment in the United States (Bukstein, 1994). Previously, it had been considered a long-term residential model, but it

has currently taken on many forms of intensity and is no longer exclusively practiced in only residential settings (Winters, Latimer, & Stinchfield, 1999).

The Minnesota model unites the practices of Alcoholics Anonymous (AA), Narcotics Anonymous (NA), and the principles of psychotherapy and is a 12-step program dedicated to meet adolescents' developmental needs (Winters et al., 1999). It is characterized by four components (Fisher & Harrison, 2000). First, the model promotes the belief that participants can change attitudes, beliefs, and behaviors. Second, it adheres to the disease concept of addiction. In this program, the term "chemical dependency" is seen as a physical, psychological, social, and spiritual illness that is chronic, progressive, and possibly fatal. The focus of treatment is the disease and not secondary characteristics. Third, the model encourages an ongoing, lifelong commitment to change. The long-term treatment goals of the model are abstinence from all mood-altering substances and improvement of lifestyle. The disease is considered incurable, and the client participates in a constant process of recovery. Finally, the Minnesota model incorporates the principles of Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) through a 12-step program.

Counselors of intensive group processes and self-help group participation are often recovering alcoholics and drug users (Winters et al., 1999). Unique to the Minnesota model is that participants help others through mutual sharing in the peer and self-help group settings. Groups are organized around the steps of AA; specifically, the Minnesota model focuses on the first five steps of AA, and the remaining seven steps are addressed during aftercare and continued involvement in AA groups.

Families of the adolescent also engage in adult group therapy in order to gain an understanding of the nature of adolescent substance abuse, of their own relationship with substance abuse, and how they can be of help during their adolescent's recovery (Winters et al., 1999). In-treatment schooling is also offered in addition to recreation and leisure counseling, self-help group orientations, and special topics groups (e.g., sexuality, victimization of abuse).

Evaluations of the Minnesota model report that one year follow-up data of program completers produced abstinence rates typically in the range of about 50% to 70% (Alford, Koehler, & Leonard, 1991; Winters et al., 1999). However, after two years, abstinence rates of program completers ranged from about 40% to 60% (Alford et al., 1991). Regular, continued attendance at AA/NA meetings was not a predictor but an indicator of abstinence during the collection of two-year follow-up data (1991). These data indicate a need for more attention to relapse prevention.

*Washington's Prevention and Intervention Services Program.* The treatment method responds to the need for the development of school programs that offer more comprehensive services for youth and their families (Bukstein, 1994; Carlson, 2001). As stated earlier, school-based treatment methods are scarce in the literature and are emerging as a possible treatment option. Advocates of school-based treatment methods argue that schools give the most efficient access to the adolescent population and are in a unique position to change children's interactions and behaviors and to model community standards (Carlson, 2001). Furthermore, research indicates that successful treatment is associated with involvement in school; educational involvement has been identified as a

factor that correlates with reduced difficulties before treatment, lower rates of in-treatment relapses, and more likely post-treatment success (Catalano, Hawkins, Wells, Miller, & Brewer, 1991).

School-based treatment methods have many advantages. Access and availability to services increases; Carlson (2001) states that many sites for these programs in Washington were in communities that previously had no adolescent treatment services. Conducting the program within the school relieves not only transportation issues, but also helps to encourage the participation of high-risk parents in an already familiar school setting. Also, Catalano et al. (1991) suggest the participation of other responsible adults, besides parents, in adolescents' lives as an additional support role. Teachers and/or staff can fill this role as prevention and intervention specialists.

Adolescents who have been expelled or have dropped out of school are not necessarily denied access to school-based treatment programs. Possibilities for addressing this issue are to have students who have been expelled or have dropped out attend after-school programs located at alternative schools or attend treatment services at a community school at another site (Carlson, 2001). For these adolescents, participation in school-based treatment can help encourage students to re-enroll in school or become involved in a GED program.

Follow-through of after-care treatment is improved when utilizing a school-based treatment program (Carlson, 2001). With school administrators, counselors, teachers, and other school staff on-site, they are more likely to be available to offer assistance and support, encouragement, or consequences for noncompliance.

There are three models in place in Washington for school-based treatment (Carlson, 2001). Model 1 utilizes a school district to deliver both prevention and intervention services and treatment services. Model 2 utilizes private treatment agencies to provide services within the school. Model 3 utilizes school district staff to provide prevention and intervention services and utilizes a private, certified substance abuse treatment agency to provide school-based treatment services. These programs involve the following components: linking attendance to course credit opportunities, family activities, class activities utilizing group structures, and aftercare through support groups and follow-up meetings with counselors.

A study of adolescents who had completed the treatment in Washington state revealed that more than two-thirds of participants had at least one six-month post-treatment period of abstinence (Carlson, 2001). The study also reported significant evidence of improved school performance and reduced school disciplinary problems.

### Critique of Research

The evaluation of drug prevention programs is often conducted by program creators or directors and is seldom exposed to scientific rigor (Brown & Kreft, 1998; Gorman, 1998; Sanjuan & Langenbucher, 1999). In regards to many of the skill-based programs, like Life Skills Training, research has been limited to white, middle-class participants and has been the subject of only limited longitudinal studies of program impact (Goldstein, Reagles, & Amann, 1990; McNamara, 1995; Winters et al., 1999). A large percentage of the country's substance abusers, however, are lower socioeconomic status and minority students (Goldstein et al., 1990).

Some authors argue that there exists a pattern of biased reporting in the research literature (Brown & Kreft, 1998; Gorman, 1998). For example, Brown and Kreft (1998) examined results for the Life Skills Training program and found that negative program effects were not mentioned in the results section of Botvin, Baker, Dusenbury, Botvin, & Diaz's (1995) evaluation, only positive effects of other conditions were noted. Even Botvin, the creator of the Life Skills Training program, has noted that additional research is necessary in order to identify program variables (e.g., age of students, number of training sessions, use of booster sessions, and instructional materials) that correlate with prevention success (as cited in Fisher & Harrison, 2000).

Specifically, treatment issues also lack a body of quality research (Sanjuan & Langenbucher, 1999; Winters et al., 1999). Sanjuan and Langenbucher (1999) report that existing adolescent substance abuse treatment studies are characterized by incomplete and unclear reporting, missing control groups, poor assessment measures, and inconsistent definitions of diagnoses and relapse. Furthermore, many authors have concluded that positive outcomes for adolescents are observable yet no approach has been shown to be more effective than another (Catalano et al., 1991; Sanjuan & Langenbucher, 1999; Winters et al., 1999). Therefore, very little is known about matching adolescents to optimal treatment approaches.

In response to methodological criticisms of evaluation studies conducted during the 1980s and early 1990s, Dusenbury and Falco (1995) assert that substance abuse prevention research has adopted progressively more demanding methodology. Larger samples, more sophisticated research designs, more thorough data analyses, greater

concern for implementation commitment and accuracy of assessment measures, and longer follow-ups have begun to characterize prevention research designs. Studies are further improving the replicability and consistency of findings across studies and research groups.

Although there has been some improvement in research design, other issues remain in the evaluation of prevention program effectiveness. Definitions of program failure or success need to be clarified and consistent among studies. Currently, researchers differ in what constitutes program success (i.e., abstinence vs. decreased use). Relapse prevention also requires rigorous evaluation since a consistent finding from studies is that many people who receive treatment for substance problems use again after leaving treatment (Fisher & Harrison, 2000). Finally, it should become more common practice for data to be made available for secondary analyses by researchers not affiliated with any of the programs (Brown & Kreft, 1998).

## Chapter 3

### SUMMARY

#### Summary of Research

Substance abuse prevention programs can work (Bosworth, 1997; Bukstein, 1995; Dusenbury & Falco, 1995; Tobler, 1992). A significant amount of public and private resources have been distributed to prevent youth from using substances (Bosworth, 1997). This has resulted in research that has identified effective prevention strategies (Bosworth, 1997; Dusenbury & Falco, 1995; Hawkins et al., 1992). Yet, despite this knowledge of successful programming, most schools are not currently using effective substance abuse prevention curricula (Bukstein, 1995; Dusenbury & Falco, 1995).

Efforts to reduce the onset, use, and abuse of substances are most effective when prevention programs involve multiple levels of influence, including peers, school personnel, and community resources (e.g., parents, community leaders, media) (Dusenbury & Falco, 1995; Durlak, 1997; McNamara, 1995). Also, prevention is most likely to succeed when programs address multiple risk factors at both individual and environmental levels (Botvin, 2000; Clayton et al., 1995; Hawkins et al., 1992; Pandina, 1996; Thomas & Schandler, 1996). Past research reveals that effective programs go beyond information giving and skill training to incorporate strategies for promoting protective school environments and enhancing prosocial motivation (McNamara, 1995).

Essential to effective programming is an understanding of the relationship between program methods and prevention audiences in order to provide a framework for planning and evaluation (McNamara, 1995). The purposes and content of policy,

education, alternatives, and intervention/treatment/support activities should be adapted to the needs of students in the primary, secondary, and tertiary prevention audiences.

Schools must carefully examine current theory and research in drug abuse prevention. Because of the serious consequences and costs (Hawkins et al., 1992) involved in adolescent substance abuse, schools must critically analyze their current prevention program, other possible prevention programs, and evaluation research in order to meet their students' needs. Likewise, in order to truly make these newer prevention efforts more effective, programs must have comprehensive evaluations of outcomes and use outside evaluators.

#### Implications for Future Research

Researchers must continue to increase their efforts to examine the effectiveness of adolescent substance abuse prevention programming. Studies need more rigorous experimental design and methodology (Bukstein, 1994, 1995), and this could include comprehensive, standardized assessments before, during, and after programming with assessment tools developed for adolescents, the use of control groups, longitudinal outcome studies, replicability, and evaluation of efficacy with adolescents of varying demographics.

Researchers also need to study the identification of more specific risk factors which are responsive to specific, targeted interventions (Bukstein, 1995; Hawkins et al., 1992). Currently, it is challenging to determine which risk factors or combination of risk factors are most potent, which are changeable, and which are specific to drug abuse rather than generic contributors to adolescent problem behaviors (Hawkins et al., 1992).

More research is also needed related to developmental patterns of substance abuse among adolescents. Many adolescents experiment with one or more substances, yet most move into adulthood without persistent substance abuse problems and without treatment (Bukstein, 1995). Clarified definitions of substance abuse and methods of diagnosis for adolescents are needed to understand these patterns (Bukstein, 1995; Winters et al., 1999). Research should also focus on relevant differences between particular substances of abuse and whether a broad definition of abuse fits for all substances in adolescents.

The role of other coexisting problems (e.g., emotional or psychiatric disorders) in the development and persistence of substance abuse in youth is also important to future research (Bukstein, 1995; Jorgensen & Salwen, 2000). Substance abuse may only be a part of a larger behavioral and/or emotional problem. Both the substance abuse and coexisting psychiatric problem become potential targets for intervention.

There is also a need to study the schools' specific role in intervening with chronic users. There is little research in the area of school-based treatment of adolescent substance abuse (Carlson, 2001). These nontraditional treatments should be evaluated further, especially with students in which more traditional approaches are not effective. Issues that must be addressed in these studies are: funding and cost-effectiveness, training and support for teachers and staff, commitment and involvement of host schools, and certification of treatment staff. Also specific to treatment issues is the need for studies to evaluate the efficacy of various approaches to determine which methods work best for specific populations. Additionally, because relapse rates are generally high among treatment completers (Alford et al., 1991; Fisher & Harrison, 2000), research is also

needed in this area. It is clear that there are limitations to the current information available on school-based treatment; however, these types of programs are worthy of attention for possible future use in more schools.

### Implications for School Psychology

School psychologists have many of the skills required for adolescent substance abuse prevention program design and implementation. According to McNamara (1995), school psychologists are familiar with the ongoing structures, organizations, and routines of school functioning and “play a dual role of ‘inside expert’ and ‘outside consultant,’ bringing knowledge of research on the role of AOD risk and protective factors and components of effective programs” (p. 380).

McNamara (1995) identifies key areas in which school psychologists can offer expertise, including needs assessment, comprehensive program planning, curriculum design, collaboration, training, early identification, intervention, and evaluation. School psychologists can be of significant help in assessing the needs of a school in substance abuse prevention. Surveys, interviews, and data from school records can be used to understand the extent of the substance abuse problem and to develop target areas for prevention activities. A needs assessment can be used to develop baseline data for comparison following implementation of a program, develop problem statements, establish prevalence data, assess student attitudes, and identify risk factors.

To aid in comprehensive program planning and curriculum design, the school psychologist assists staff in developing long- and short-term goals, objectives, and resources (McNamara, 1995). Curriculum selection, implementation, and evaluation are

also areas in which staff can find assistance in the school psychologist. A team approach utilizing collaboration that includes a school psychologist is the most effective method for program design and implementation. School psychologists can also serve as trainers, facilitators of support groups, and links to training resources in the community (McNamara, 1995).

School psychologists can assist schools in evaluation of the scope and effectiveness of substance abuse prevention programs (McNamara, 1995). This would include gathering information about the number of student participants, background characteristics of participants, activities included in the program, number of school staff and community members involved in programs, and resources allocated to programs; and reflecting on data about student knowledge and attitudes, prevalence, feedback on program effects, student achievement, school climate, attendance, and disciplinary referrals related to substance use. These data can be gathered through questionnaires, interviews, observations, and reviews of documents.

Finally, the population served by school psychologists may exhibit patterns of early school failure, rebelliousness, lack of commitment to school, deficits in interpersonal skills, behavior problems, and association with deviant peer groups. Each of these are potential risk factors for substance abuse (Hawkins et al., 1992; Pandina, 1996; Thomas & Schandler, 1996). The school psychologist can serve as an early identifier of students-at-risk for substance abuse before the impact of risk factors becomes devastating.

The prevalence of adolescent substance abuse warrants attention from all school staff. Specifically, the impact the school psychologist can have assisting in substance abuse prevention is tremendous. This involvement promotes effective programming, prevention, and intervention of adolescent substance abuse.

## References

- Alford, G. S., Koehler, R. A., & Leonard, J. (1991). Alcoholics Anonymous-Narcotics Anonymous model inpatient treatment of chemically dependent adolescents: A 2-year outcome study. *Journal of Studies on Alcohol*, 52(2), 118-126.
- Anderson, G. (1988). *When chemicals come to school: The student assistance program model*. Greenfield, WI: Community Recovery Press.
- Bosworth, K. (1997). Drug abuse prevention: School-based strategies that work. Retrieved November 18, 2001, from <http://ericcass.uncg.edu/virtuallib/subabuse/1055.html>
- Botvin, G. J. (2000). Preventing drug abuse in schools: Social and competence enhancement approaches targeting individual-level etiologic factors. *Addictive Behaviors*, 25(6), 887-897.
- Botvin, G. J., & Kantor, L. W. (2000). Preventing alcohol and tobacco use through life skills training. *Alcohol Research and Health*, 24(4), 250.
- Botvin, G. J., Baker, E., Dusenberry, L., Botvin, E. M., & Diaz, T. (1995). Long-term follow-up results of a randomized drug abuse prevention trial in a White middle class population. *Journal of the American Medical Association*, 273(11), 1106-1112.
- Brook, J. S., Linkoff, I. F., & Whiteman, M. (1980). Initiation into adolescent marijuana use. *Journal of General Psychology*, 137, 133-142.
- Brook, J. S., Brook, D. W., Gordon, A. S., Whiteman, M., & Cohen, P. (1990). The psychosocial etiology of adolescent drug use: A family interactional approach. *Genetic, Social, and General Psychology Monographs*, 116 (Whole No. 2).
- Brown, J. H., & Kreft, I. G. G. (1998). Zero effects of drug prevention programs: Issues and solutions. *Evaluation Review*, 22(1), 3-14.
- Brown, J. H., D'Emidio-Caston, M., & Pollard, J. (1997). Students and substances: Social power in drug education. *Educational Evaluation and Policy Analysis*, 19(1), 65-82.
- Bukstein, O. G. (1994). Treatment of adolescent alcohol abuse and dependence. *Alcohol, Health & Research World*, 18(4), 296-301.
- Bukstein, O. G. (1995). *Adolescent substance abuse: Assessment, prevention, and treatment*. New York: John Wiley & Sons, Inc.

- Carlson, K. (2001). School-based outpatient treatment for adolescent substance abuse: A review of program models in Washington state. Retrieved November 18, 2001, from Research Corporation Web site: <http://www.rmccorp.com/Project/Pleval.html>
- Catalano, R. F., Hawkins, J. D., Wells, E. A., Miller, J., & Brewer, D. (1991). Evaluation of the effectiveness of adolescent drug abuse treatment, assessment of risks for relapse, and promising approaches for relapse prevention. *The International Journal of the Addictions*, 25(9A & 10A), 1085-1140.
- Chen, K., & Kandel, D. B. (1995). The natural history of drug use from adolescence to the mid-thirties in a general population sample. *American Journal of Public Health*, 85, 41-47.
- Clayton, R. R., Leukefeld, C. G., Donohew, L., Bardo, M., & Harrington, N. G. (1995). Risk and protective factors: A brief review. In C. G. Leukefeld & R. R. Clayton (Eds.), *Prevention Practice in Substance Abuse* (pp. 7-14). New York: The Haworth Press, Inc.
- Donovan, J. E., & Jessor, R. (1983). Problem drinking and the dimension of involvement with drugs: A Guttman scalogram analysis of adolescent drug use. *American Journal of Public Health*, 73, 543-552.
- Durlak, J. A. (1997). *Successful prevention programs for children and adolescents*. New York: Plenum Press.
- Dusenbury, L., & Falco, M. (1995). Eleven components of effective drug abuse prevention curricula. *Journal of School Health*, 65(10), 420-425.
- Eggert, L. L., Seyl, C. D., & Nicholas, L. J. (1990). Effects of a school-based prevention program for potential high school dropouts and drug abusers. *The International Journal of the Addictions*, 25(7), 773-801.
- Ennett, S. T., Tobler, N. S., Ringwalt, C. L., & Flewelling, R. L. (1994). How effective is drug abuse resistance education? A meta-analysis of Project DARE outcome evaluations. *American Journal of Public Health*, 84(9), 1394-1401.
- Fisher, G. L., & Harrison, T. C. (2000). *Substance abuse: Information for school counselors, social workers, therapists, and counselors* (2<sup>nd</sup> ed.). Boston: Allyn and Bacon.
- Flay, B. R. (2000). Approaches to substance use prevention utilizing school curriculum plus social environmental change. *Addictive Behaviors*, 25(6), 861-885.

- Fleisch, B. (1991). *Approaches in the treatment of adolescents with emotional and substance abuse problems* (DHHS Publication No. ADM 91-1744). Washington, DC: U.S. Government Printing Office.
- Fleming, J. P., Kellam, S. G., & Brown, C. H. (1982). Early predictors of age at first use of alcohol, marijuana and cigarettes. *Drug and Alcohol Dependence*, 9, 285-303.
- Friedman, A. S., & Beschner, G. M. (Eds.). (1985). *Treatment services for adolescent substance abusers* (DHHS Publication No. ADM 85-1342). Washington, DC: U.S. Government Printing Office.
- Goldstein, A. P., Reagles, K. W., & Amann, L. L. (1990). *Refusal skills: Preventing drug use in adolescents*. Champaign, IL: Research Press.
- Gonet, M. M. (1994). *Counseling the adolescent substance abuser: School-based intervention and prevention*. London: Sage Publications.
- Gorman, D. M. (1998). The irrelevance of evidence in the development of school-based drug prevention policy, 1986-1996. *Evaluation Review*, 22(1), 118-146.
- Hansen, W. B. (1993). School-based alcohol prevention programs. *Alcohol, Health & Research World*, 17, 54-60.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112(19), 64-105.
- Holmberg, M. B. (1985). Longitudinal studies of drug abuse in a fifteen-year-old population. *Acta Psychiatrica Scandinavica*, 71, 67-79.
- Hundleby, J. D., & Mercer, G. W. (1987). Family and friends as social environments and their relationship to young adolescents' use of alcohol, tobacco, and marijuana. *Journal of Clinical Psychology*, 44, 125-134.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1999). *National survey results on drug use from the monitoring the future study, 1975-1998: Volume II college students and young adults*. Bethesda, MD: National Institute on Drug Abuse.
- Jorgensen, E. D., & Salwen, R. (2000). Treatment of dually diagnosed adolescents: The individual therapeutic alliance within a day treatment model. In J. J. Boren & L. S. Onken (Eds.), *Approaches to drug abuse counseling* (NIH Publication No. 00-4151, pp. 55-72). Bethesda, MD: U.S. Department of Health and Human Services.

- Kandel, D. B. (1982). Epidemiological and psychosocial perspectives on adolescent drug use. *Journal of American Academic Clinical Psychiatry, 21*, 328-347.
- Kandel, D. B., & Davies, M. (1991). Cocaine use in a national sample of U.S. youth (NLSY): Epidemiology, predictors, and ethnic patterns. In *The epidemiology of cocaine use and abuse* (NIDA research monograph, DHHS Publication No. ADM 91-1787, pp. 151-188). Washington, DC: U.S. Government Printing Office.
- Kandel, D. B., Kessler, R. C., & Margulies, R. Z. (1978). Antecedents of adolescent initiation into stages of drug use: A developmental analysis. In D. B. Kandel (Ed.), *Longitudinal research on drug use: Empirical findings and methodological issues* (pp. 73-99). Washington, DC: Hemisphere.
- Lerner, J. V., & Vicary, J. R. (1984). Difficult temperament and drug use: Analyses from the New York longitudinal study. *Journal of Drug Education, 14*, 1-8.
- Mayer, O. (2000). Substance abuse prevention takes to the classroom. Retrieved November 18, 2001, available from <http://www.stateserv.hpts.org/public/pubhome.nsf>
- McNamara, K. M. (1995). Best practices in substance abuse prevention programs. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology III*. Washington, DC: The National Association of School Psychologists.
- Pandina, R. J. (1996, September). *Risk and protective factor models in adolescent drug use: Putting them to work for prevention*. Paper presented at the National Conference on Drug Abuse Prevention Research, Washington, DC.
- Sanders, M. R. (2000). Community-based parenting and family support interventions and the prevention of drug abuse. *Addictive Behaviors, 25*(6), 929-942.
- Sanjuan, P. M., & Langenbucher, J. W. (1999). Age-limited populations: Youth, adolescents, and older adults. In B. S. McCrady & E. E. Epstein (Eds.), *Addictions: A comprehensive guidebook* (pp. 477-498). New York: Oxford University Press.
- Shedler, J. & Block, J. (1990). Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist, 45*, 612-630.
- Spoth, R., Reyes, M. L., Redmond, C., & Shin, C. (1999). Assessing a public health approach to delay onset and progression of adolescent substance use: Latent transition and log-linear analyses of longitudinal family preventive intervention outcomes. *Journal of Consulting and Clinical Psychology, 67*(5), 619-630.

- Strader, T. N., Collins, D. A., & Noe, T. D. (2000). The need for prevention. In T. P. Gullotta (Ed.), *Building healthy individuals, families, and communities: Creating lasting connections* (pp. 1-10). New York: Plenum Publishers.
- Temple, M. T., & Fillmore, K. M. (1986). The variability of drinking patterns and problems among young men, age 16-31: A longitudinal study. *International Journal of the Addictions, 20*(11/12), 1595-1620.
- Thomas, C. S., & Schandler, S. L. (1996). Risk factors in adolescent substance abuse: Treatment and management implications. *Journal of Child & Adolescent Substance Abuse, 5*(2), 1-16.
- Tobler, N. S. (1992). Drug prevention programs can work: Research findings. *Journal of Addictive Diseases, 11*(3), 1-28.
- University of California Los Angeles, Department of Psychology. (1997). *Resource aid packet: Substance abuse*. Retrieved October 25, 2001, from the School Mental Health Project Web site: <http://smhp.psych.ucla.edu>
- U.S. Department of Education. (1988). *Drug prevention curricula: A guide to selection and implementation*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
- U.S. General Accounting Office. (1997). *Substance abuse and violence prevention: Multiple programs raise questions of efficiency and effectiveness*. (GAO/T Publication No. HEHS-97-166). Washington, DC: Author.
- Williams, C. L., Perry, C. L., Farbaksh, K., & Veblen-Mortenson, S. (1999). Project Northland: Comprehensive alcohol use prevention for young adolescents, their parents, schools, peers and communities. *Journal of Studies on Alcohol* (Suppl. 13), 112-124.
- Winters, K. C., Latimer, W. L., & Stinchfield, R. D. (1999). Adolescent treatment. In P. J. Ott, R. E. Tarter, & R. T. Ammerman (Eds.), *Sourcebook on substance abuse: Etiology, epidemiology, assessment, & treatment* (pp. 350-361). Boston: Allyn and Bacon.
- Yamaguchi, K., & Kandel, D. B. (1984). Patterns of drug use from adolescence to young adulthood. *American Journal of Public Health, 74*, 668-672.