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Facts and Reflections on Girls and Substance Use



GIRLS CLUBS OF AMERICA, INC.

**Facts
and
Reflections
on
Girls and
Substance
Use**

112707

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Acknowledgments

Girls Clubs of America presents *Facts and Reflections on Girls and Substance Use* as the third work in the "Facts and Reflections" series of publications. The organization's current attention to girls and harmful substances also includes the implementation and evaluation of FRIENDLY PEERSUASION, a substance abuse education and prevention program for girls. Both the program and this publication are supported by a grant (1-H84-AD00876-01) from the Office for Substance Abuse Prevention of the Alcohol, Drug Abuse and Mental Health Administration in the United States Department of Health and Human Services. The content of this publication does not necessarily reflect the opinions or positions of the funding source.

The "Facts and Reflections" series offers cogent reviews of research findings in program-related areas, and an interpretation of the meaning of these findings for today's girls and young women. Sifting through the burgeoning literature on adolescent substance use and producing a thoughtful summary was a challenge. The support of the Girls Clubs of America National Board, National Executive Director Margaret Gates, and the entire national staff has been essential. Special mention is due to Heather Johnston Nicholson, Jane Quinn and Dolores Wisdom for their comments, Mary Jo Gallo for coordinating design and production, Mary F. Maschino for locating and securing literature and resources, and Barbara A. Nickels for typing many drafts.

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Reflections from Research Staff

It is tempting for parents and community leaders to think that other people's kids are the ones who use harmful substances. When a third of high school seniors say they have at least experimented with tobacco or alcohol by the eighth grade, the average parent has cause for concern. Substance use among young people mirrors the complex patterns and mixed messages of our larger society. This review of the research literature is an attempt to make sense out of the complicated issue of substance use in the lives of today's girls.

Some findings from research are relatively straightforward and interpretable. For example, television and magazines insist that beautiful women are thin women; and one-fourth of high school girls report that they have used stimulants, such as diet pills, at some time in their lives. Similarly, a party is not a party without alcohol says the larger society; and 63 percent of senior girls say they have used alcohol in the past month. The significance of other research findings is less clear. For example, except for cigarettes and cocaine, rates of substance use decline among young women following adolescence. Yet the young women who are most likely to use substances as adults are those who start at young ages. And it is not yet clear from research what factors distinguish normal experimentation from early stages of drug abuse and dependency. Still, prevention and intervention programs must be designed in spite of these unresolved issues.

On the issue of substance use, in contrast to other social problems involving youth, research on the patterns of use is consistently and regularly gathered, national in scope, and promptly and professionally reported by scholars. Studies are conducted annually with a random sample of high school seniors in the United States, a survey of American households, and other national samples. These studies include detailed questions about past and current substance use. Much of the reporting of the behavior of adolescents in this guide is based on reports by senior girls of their behavior, which is dependent on accurate remembering and truthful reporting, and can be colored by values and subsequent experiences. The information from seniors about their own early adolescence is also several years out of date and might not reflect the behavior of today's 12- and 13-year-olds. Finally, the reports of students who remain in school until their senior year might be significantly different from the experience of those who left school earlier. All of these limitations must be kept in mind when considering the statistics presented in this guide.

Without these studies there would be little information on which to base our understanding of girls' involvement with substances; but any form of data collection has limitations and it is well to keep them in mind. The studies that attempt to identify causes for substance use and abuse, and those that evaluate strategies for intervention also have inherent

limitations, including the fact that many are confined to special populations over one or a few years.

Girls and young women in all their diversity comprise half the youth of today, and that seems to us good enough reason to focus on them in this guide. Yet we are accustomed to hearing about girls only when there are dramatic differences from boys. While differences between girls and boys in patterns and rates of substance use are evident, these differences are smaller during the teenage years than at any time later in life. So in this volume when we say what girls are doing we are not always implying that boys are doing something quite different. Generally, both similarities and differences by gender are reported here when they are available. For some of the most interesting questions, including factors influencing substance use, there is too little research on girls and young women to be able to interpret with authority where girls might be headed or what the unique risk factors are.

As a society we are ambivalent about the use of chemical substances. This ambivalence is reflected in our seemingly insatiable demand for over-the-counter remedies, our policy struggle over public cigarette smoking, our divided decision about advertising alcohol on television (beer and wine yes, hard liquor no) and our classification of some harmful substances as legal and others as illegal. It is a challenge in this context to develop programs and materials for girls and young women that go beyond "Do as I say, not as I do." We trust this synthesis of research will be helpful to the parents and teachers, youth workers and policy makers, journalists and analysts who care about young people and want to prepare them better to find a safe path through the trap doors and distorted mirrors of the amusement-park fun house of harmful substances.

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Reflections from Program Staff

One of the strengths of Girls Clubs of America is its willingness to both ask and answer the question, "What do we know about girls?" A 1982 publication by that title summarized the proceedings of a national conference at which researchers and practitioners entered into a dialogue about how to enhance program services for girls by applying current research findings. Building and maintaining a solid bridge between theory and practice continues to be a major organizational commitment.

We recognize that practitioners who work with girls in any setting — in Girls Clubs or other youth agencies, in schools, in juvenile courts, in church-based youth ministry groups — know that good programs are based on sound theory. Yet many practitioners are too busy DOING to keep up with the latest research on the many subjects that constitute the complex lives of today's youth. It is precisely this gap that Girls Clubs of America's research guides are designed to fill, and we hope that this new guide on girls and substance use will serve the worthwhile purpose for which it is intended.

While concerns about substance use and abuse have only recently risen to the top of the American public's collective consciousness, these issues have been a priority at Girls Clubs of America for many years. Our Clubs have a solid record of programming in this area; fully 88 percent currently include drug education in their programming. In 1981, member Clubs named health, including substance abuse prevention, as one of the three national program priorities, thus directing Girls Clubs of America to take a leadership role in developing materials, programs and policies that would address this important public health and social problem.

We approached this research task with several sets of questions in mind: What is the extent of substance use among girls and young women in America today? What are the causes of this use? What are the most promising approaches to substance abuse prevention? Do girls and boys differ in their patterns of substance use? Do girls and boys use substances for different reasons? Do girls respond differently than boys to substance abuse prevention efforts?

We found that existing research provides rich, yet not always conclusive, answers to all of these questions. A summary might read something like this:

— Although rates of substance use among American adolescents have generally shown a downward trend in recent years, the United States continues to have one of the highest rates of substance use by youth of any industrialized nation.

— Youthful substance use is determined by multiple causes, and these causal variables interact with one another.

— Generic prevention approaches have evolved through several stages (from moral suasion to scare tactics to information-based approaches to values clarification and self-esteem enhancement). The limitations of these approaches have led contemporary practitioners to utilize a social influence model, aimed at improving interpersonal skills and at addressing the social pressures that influence young people to use substances. There are many variations of this model, and some have yielded promising evaluation results.

— Girls' patterns of substance use differ from boys' patterns in several important respects. While girls report lower usage rates overall, they have higher usage rates for specific types of substances — stimulants, over-the-counter diet pills and cigarettes.

— Of the many factors that influence substance use, girls seem to be more responsive than boys to family conflict and to peer influence. Substance use for girls occurs most often in a social context, and the likelihood of substance use by girls increases if peers, siblings, boyfriends and male friends are substance users.

— Some studies suggest that girls and boys may respond differently to various types of prevention efforts. Girls appear to respond more positively to peer-led approaches than to authority-led approaches.

Taken together, this summary leads to several useful conclusions: that our country faces a major challenge in developing and providing programs designed to prevent and curtail drug use among young people; that successful interventions need to be multi-faceted in their approach; that at least one sound basic prevention model currently exists (and can be adapted to specific age, gender and cultural groups); that gender-sensitive prevention programming is needed to address the differences in girls' and boys' patterns of substance use, the underlying causes of this use, and their responses to specific interventions.

And, so, the answer to the question, "What do we know about girls and substance use?" is both "a lot" and "not enough." In the short run, we can apply what we know in the design of effective interventions. Over the longer term, we need to evaluate and continually strengthen these interventions, and to deepen our understanding of the causes of and deterrents to the use of harmful substances by girls and young women.

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Introduction

Use of alcohol, tobacco and illegal substances is a widespread phenomenon in the United States. Over half of high school seniors report use of substances. During the past few decades, the number of girls who used substances rose dramatically. Involvement with substances constitutes a serious problem for these girls and young women.

Substance use among children raises special concerns because of health issues involved. All substances can have physically damaging effects if taken in large doses. These toxic effects may be more extreme for children due to physical immaturity. The physical effects of chronic use over long periods of time are unknown for most illicit drugs. Most adverse effects of substances are worse for individuals who begin use at an early age, and risks of physical and psychological dependence are increased by early onset of use. Finally, all psychoactive drugs affect mood and thought processes, including memory and recall. For children and adolescents, use of substances is very likely to interfere with learning and school performance.

Many effects of substance use on children's physical, psychological, and social development are not known. Most of what is known suggests adverse effects of substance use by the young. To the extent that today's girls and young women are the hope of the future, adolescent substance use is a problem deserving of attention by advocates for girls.

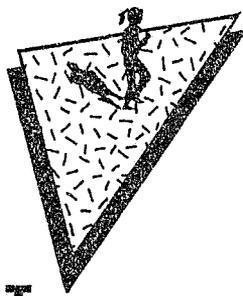
Prevalence of Substance Use Among Girls

More than half of all American high school seniors reported experimenting with an illegal drug.

Marijuana is the most popular illicit drug among adolescent girls, followed by stimulants and cocaine.

Experimentation with alcohol and tobacco occurs at much higher rates than illicit drug use among both girls and boys.

One-fifth of high school senior girls are daily smokers, while less than five percent use alcohol or marijuana on a daily basis.



The United States has one of the highest prevalence rates of substance use by youth of any industrialized nation. This problem includes both licit (legal) drugs, such as tobacco and alcohol, and illicit drugs, which are illegally made or sold. Statistics on the prevalence of substance use among American youth come from a number of surveys of young people.^{72,92} An annual national survey of high school seniors in 1987 found that fifty-seven percent of all students reported use of some illicit drug at some time in their lives. However, one third of these students reporting illicit drug use had used only marijuana. Marijuana is by far the most widely used illicit drug, followed by stimulants, inhalants and cocaine. Based on these statistics, it is estimated that 80 percent of young adults will have tried some illicit drug before age 30, and more than half will have tried some drug other than marijuana.⁷²

Rates of substance use among senior girls reflect a similar pattern as those for all youth. Among high school senior girls surveyed, nearly half reported some use of marijuana, 34 percent reported using it in the past year, and about one fifth of senior girls reported marijuana use in the past month. While marijuana is clearly the most commonly used illicit substance, one fourth of senior girls reported use of some illicit drug other than marijuana in the past year. Nearly one quarter of senior girls had used stimulants some time in their lives; fourteen percent had used inhalants or cocaine. About one in ten had used tranquilizers, sedatives, and hallucinogens. Of these illicit drugs, the rates of use for girls are lower than those for boys, except for stimulants. Girls reported a greater use of stimulants and over-the-counter weight reduction pills than did boys.⁷²

Use of licit substances, such as alcohol and tobacco, is more widespread than the use of illicit drugs for both girls and boys. Nine out of ten female high school seniors reported that they had tried alcohol, while 63 percent reported drinking in the past month. Seven out of ten senior girls had tried smoking cigarettes while about one third reported smoking in the past month. Adolescent senior girls are reporting slightly higher rates of cigarette smoking than are boys; three percent more girls than boys reported ever using cigarettes.⁷²

Daily use of substances is reported by a smaller percentage of female high school seniors. One fifth reported smoking cigarettes on a daily basis and about one tenth reported smoking a half-pack or more of cigarettes per day. Two percent of high school senior girls reported daily use of marijuana, and nearly three percent reported daily use of alcohol. The rates for occasional heavy drinking, defined as having five or more drinks in a row in the past two weeks, were much higher; nearly one third of high school senior girls reported such recent heavy drinking episodes.

Girls use most substances at slightly lower rates than boys, except for cigarettes and stimulants.

Rates of substance use among American adolescents are continuing a downward trend.

Experimentation with alcohol and cigarettes begins in preadolescence, with over one third of students trying one of these substances by the eighth grade.

In comparing self-reported rates of substance use by girls and boys, some consistent gender differences are noted. A higher proportion of senior boys than girls reported use of illicit drugs, especially frequent use. A slightly higher proportion of boys than girls reported having tried marijuana, but boys are twice as likely to be daily users of marijuana. Differences are also found in use of illicit drugs other than marijuana. Rates for adolescent boys are higher than they are for girls, except in the use of stimulants. Girls are more likely to use stimulants and over-the-counter weight reduction pills than are boys. While boys are much more likely to use alcohol heavily and on a daily basis, girls are somewhat more likely to smoke cigarettes than are boys.^{25,72,86} In spite of these differences, girls are more like boys in use of substances during adolescence than at any time later in life. Thus, use of both licit and illicit drugs is a fact of life for a sizable percentage of American teens, including girls and young women.

Surveys conducted with high school seniors since 1975 allow a comparison of yearly data, providing information on trends in substance use by youth. These trends reflect changes in rates of use for both girls and boys, with some changes in gender differences noted. Currently there is a downward trend in the rates of use of illicit drugs, following a leveling off of use in 1985. Marijuana is now at the lowest rate of use since 1975, with peak use for the past month having occurred in 1978. Cocaine use showed no signs of decline until 1986. However, rates of cocaine use continue to increase with age until later in adulthood. The prevalence of alcohol use for the past month has been gradually declining since 1980. Rates of smoking declined from 1977 to 1981, but have remained unchanged in the last six years. Girls' rates of smoking have been higher than those for boys since 1986, and more girls than boys report smoking a pack or more of cigarettes per day. Differences in rates of use reported by male and female high school seniors for both alcohol and cocaine are narrowing. Girls' use of alcohol has declined at a slower rate than boys' use. Rates for cocaine use have been affected by the rising prevalence of crack (a smokable form of cocaine) use among adolescents, with increased rates occurring for both girls and boys.

Information on onset of substance use was obtained from high school seniors' retrospective self-reports, which indicate that experimentation with licit substances begins at young ages.⁷¹ Gender differences in use of substances by preadolescent girls and boys are less clear, as rates of use are lower for this age group.^{13,71} Nearly one fourth of respondents reported experimental use of cigarettes by the sixth grade, while two percent were already regular smokers. About one third reported experimental use of alcohol by the eighth grade. Those who reported use of cigarettes were more likely to report use of alcohol as well. Thus, over one third of students reported experimentation with licit substances in preadolescence, though few were regular users. Clearly, use of substances among girls and young women begins to develop before high school.

Teen substance use is prevalent in all geographic areas.

White and American Indian girls report higher rates of substance use than do black, Hispanic or Asian girls.

Gender differences may vary across racial and ethnic groups.

The majority of adolescent girls believe that regular use of substances is dangerous.

Illicit drugs are also considered harmful by senior girls, though many see experimentation as a low risk.

In recent years, concern among high school seniors over regular use of marijuana and cocaine has increased.

Adolescent substance use is not limited to any particular geographic location. Minor differences do exist based on geographic regions. Rates of substance use among teens are slightly higher in urban areas than in rural areas, and in states in the Northeast and on the West Coast.

Differences in rates of substance use are also found based on racial and ethnic backgrounds.¹³² Blacks consistently report less use of alcohol and illicit drugs than do whites, this being especially true for black young women.^{2,61,112,137} In a sample of seventh to twelfth grade girls in New York public schools, white girls were more likely to drink and reported higher levels of abusive drinking than did black or Hispanic girls. Hispanic girls were less likely to drink and drink excessively compared to white and black girls. Asian girls had the lowest rates of use of illicit drugs and alcohol.¹³⁷ Most studies also report lower rates of smoking among black youth, although it is less clear if this holds true for girls.¹⁰⁹ High rates of drinking and illicit drug use are found among American Indian youth.^{9,137} While rates are declining, nearly half of all American Indian youth are considered at risk for serious substance involvement.

A recent survey of cigarette and smokeless tobacco use among fifth grade students in the Southwest suggests that gender differences may vary across racial and ethnic lines. This study found that Hispanic, Navajo Indian and other American Indian girls were less likely to smoke cigarettes or chew tobacco than were boys of the same backgrounds.⁵⁷ This study suggests that racial and ethnic group differences may interact with gender differences, such that gender differences may be exaggerated or minimized by cultural influences.

Attitudes expressed by high school seniors are roughly compatible with the prevalence of drug-using behavior. Most senior girls believed that regular use of cigarettes involves a great risk. Nearly one third of this group thought having one or two drinks each day involves great risk, while 45 percent thought having five or more drinks once or twice each weekend involves great risk. Three quarters of senior girls believed that four or five drinks each day involves a great risk. Only four percent of these students thought that trying one or two drinks of alcohol involves a great risk.³

More than three quarters of high school senior girls judged regular use of marijuana to involve a great risk of harm. Fourteen percent thought experimental use was as dangerous, and one quarter thought occasional use was dangerous. Almost one fourth thought experimenting with amphetamines and barbiturates involves a great risk. Four in ten senior girls thought experimenting with heroin involves a great risk of harm, and one third thought experimenting with cocaine was as dangerous.³

By comparing the expressed attitudes of high school seniors from national annual surveys over several years, some trends are evident.⁷¹ Between 1975 and 1979 there was a decline in the perceived harmfulness of use of most illicit drugs. Since 1979, there has been a large increase in expressed concern over regular marijuana use, and a two-fold increase in expressed concerns over occasional use of marijuana. High school seniors

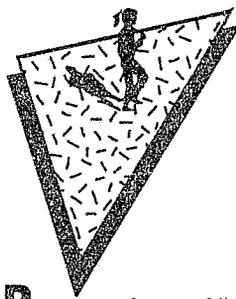
Most seniors reported disapproval of regular use of all substances by others.

also indicated concern over both experimental and regular use of cocaine, with attitudes toward perceived harmfulness of other illicit drugs remaining relatively stable.

The majority of high school seniors surveyed disapproved of regular use of all drugs by anyone over 18. Almost nine out of ten disapproved of regular marijuana use, while more than half disapproved of trying marijuana. Almost all seniors disapproved of regular use of other illicit drugs. The majority of these students also disapproved of regular use of licit substances. Three quarters disapproved of smoking a pack of cigarettes or more each day and of having one or two drinks of alcohol each day. Only 62 percent disapproved of occasional heavy drinking, consistent with the greater prevalence of occasional heavy drinking over daily drinking among high school seniors.

In summary, prevalence of substance use among girls is widespread, with heavier use noted for licit than illicit substances. Senior girls report higher rates of cigarette and stimulant use than do boys, though generally boys are more likely to use substances and to be frequent users. Girls and boys begin experimentation with licit substances at very young ages, with around one third of students experimenting with alcohol or cigarettes by the eighth grade. White and American Indian girls may be at greater risk for involvement with substances while Hispanic and Asian girls appear to have lower rates of substance use. Most high school seniors believe that use of illicit substances is more dangerous than use of licit substances, but occasional use of most substances is considered to involve great risk by only a minority of students.

Patterns of Substance Use Among Girls



Onset of most substance use for girls and boys occurs before high school, and peaks during adolescence.

Early onset of substance use increases the likelihood of further involvement with substances.

Early use of cigarettes and marijuana greatly increases the likelihood of using other illicit drugs.

Substance use by girls and teen women typically progresses through a series of stages.

Patterns of use of licit and illicit substances among girls are established at an early age.⁷⁰ Most experimentation with cigarettes, alcohol and marijuana occurs before students reach the tenth grade. Cocaine is unique in that onset of use often does not occur until later in high school. The highest rates of initiation of substance use occur during the adolescent years, with patterns of use stabilizing by the late teens.^{78,142} Use of most substances declines sharply after the age of 22. Thus, the use of licit and illicit drugs appears to be related to the transitional period of adolescence.

The age of onset of use of substances is a strong predictor of the degree of involvement with substances for girls throughout adolescence.¹⁴² Use of alcohol before the age of 18 increases the likelihood of using marijuana, while marijuana use is less likely for girls who have not experimented with alcohol and cigarettes. About one third more young women who start and continue using alcohol at age 15 will also use marijuana, compared to women who do not use alcohol before age 21. A girl who uses cigarettes and alcohol at age 15 is almost 50 percent more likely to also use marijuana than if she did not drink and smoke.

Girls are about 50 percent more likely to use other illicit drugs if they use marijuana by age 14 than if they never use marijuana in adolescence. However, girls who begin smoking cigarettes at age 15 but do not use marijuana face only a five percent greater likelihood of using other illicit drugs compared to nonsmokers.

These statistics clearly show that use of certain substances at an early age greatly increases the likelihood of using other substances throughout adolescence. Observation of this fact led to the development of the "stepping stone hypothesis." This hypothesis identified marijuana as a stepping stone, or gateway drug, to future use of heroin and other illicit drugs. Recently, however, researchers have realized that the influence of early substance use upon later illicit drug use is not so clear and direct as the stepping stone hypothesis would suggest. For example, most users of marijuana do not become heroin addicts, even though most heroin addicts first tried marijuana. Nonetheless, use of marijuana does increase the likelihood of using other illicit drugs. Factors such as attitudes toward substance use and influence of peers may play mediating roles in the likelihood to progress from marijuana use to use of more serious and dangerous substances.

Current theories typically do acknowledge a relationship between early substance-using behavior and future illicit drug use. A prominent model⁷⁸ describes the steps or stages through which substance use is likely to proceed, noting that many

Substance use among girls often proceeds from cigarettes or alcohol, to marijuana to other illicit drugs, with cigarettes playing a critical role.

Early onset and frequent use of substances increases the chances of progression to use of other illicit substances.

Experimentation with substances need not lead to regular use, and girls may stop using substances at any stage.

issues are important in determining whether or not a girl will progress to the next stage of use.

An identifiable pattern of stages of substance use for girls and young women^{78,133,142} indicates that use of alcohol or cigarettes precedes the use of marijuana. Use of alcohol, cigarettes and marijuana precedes the use of other illicit drugs. Use of alcohol and cigarettes or marijuana precedes the use of psychoactive prescription drugs. Patterns of use of illicit drugs after marijuana may vary between ethnic groups and across time periods. There is some evidence that cocaine use is becoming similar to marijuana, occurring earlier in the model of progression.⁹¹ It is evident that cigarette smoking plays an important role in the stages of substance involvement for girls.

Within this model of stages of substance use, frequent use of a substance early in the sequence increases the likelihood of further use of other substances and of multiple drug use. Early onset of substance use also increases the likelihood of progression to use of other substances. Different factors influence progression at the various stages of substance use. Generally, these patterns of progression are considered to hold for girls despite racial and ethnic differences.⁹¹

The influence of use of one substance upon likelihood of using another can be explained in three ways. First, early use of alcohol or cigarettes may facilitate subsequent substance use through the development of positive attitudes toward the use of illicit substances.⁷⁷ Second, experience with licit substances may introduce the use of mood-altering chemicals as an option for recreation or coping behavior. Third, the use of cigarettes introduces the method of ingesting chemicals through smoking, which may facilitate initiation into smoking marijuana.

While this model of stages of substance use is helpful in describing the patterns of use among girls, it is equally important to remember that progression is not inevitable. Much adolescent experimentation with substances does not escalate to drug abuse.⁸ One long-term study found that nearly one fourth of girls under age 15 who tried alcohol used it only once or twice; 15 percent of girls under age 15 did not continue use of marijuana after experimentation.⁴⁷

In summary, it is evident that patterns of experimentation with and use of substances among girls begin early, often before entering high school. The age of onset of substance use significantly predicts the degree of involvement with substances. Models of stages of substance use by girls have been developed, indicating that progression occurs from use of cigarettes or alcohol to use of marijuana to non-medical use of prescription drugs and to use of other illicit drugs. Cigarette smoking plays a critical role in the progression to illicit drug use by girls, and earlier and frequent use of substances increases the likelihood of progression. These models are applicable to girls from different racial and ethnic backgrounds. It is important to remember that discontinuance of substances tried, and not trying more serious substances, can occur at any stage in the model.

Factors Influencing Substance Use Among Girls

Research on correlates of substance use among girls is limited by several factors.

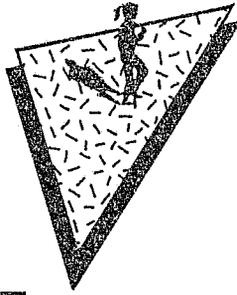
Changes in the design of studies make some results hard to duplicate.

Researchers have not always studied the same types of substance users.

The causes of substance use among girls are complex and have their impact as a group of interacting variables.

Genetic Influences

Genetics may play a role in the development of alcoholism in men, but may not be significant in determining substance use problems among girls and young women.



The research on correlates of substance use among girls is limited by several factors. One obvious limitation is that there is less research, and less clear research results, that specifically address girls. Many studies combine girls and boys, neglecting to address issues of gender differences and generalizability. Nonetheless, much of the literature on youth and adolescents is at least partially applicable to girls, as the general correlates of substance use are usually quite similar for girls and boys.

A second limitation involves the changes in research strategies used in this field. Initially, single variable studies were common, exploring the way in which one factor, such as school performance or family structure, related to current substance use. These studies were often correlational, meaning that they described relationships that existed in the present between substance use and other variables, but could not truly address the direction of cause and effect. Similarly, correlational studies exploring differences between substance users and abstainers could not ascertain whether differences preceded or were the effects of substance use.

A third limitation of this research involves the definitions of substance abuse, and the types of substances under study. Studies varied widely in whether they addressed experimentation, substance use, abuse or addiction. Some of the earliest studies focused heavily on heroin addiction, while more recent studies have looked at problem drinking and use of marijuana among adolescents. This lack of continuity in definition and focus limited the extent to which results could be replicated and generalized.

It is best to state at the outset that no single variable or factor can explain why girls use or abuse substances. The issue is a complex one and is multiply determined, meaning that variables interact with each other to form a constellation of influences upon girls. Although each factor is discussed separately, no clear cause can be identified. The relative importance of these different variables is discussed at the end of this section, with a description of several theories proposed to explain substance use.



Some researchers have explored the possibility of a genetic factor in determining substance abuse. Studies have found that sons of alcoholics are four times more likely to become alcoholics than sons of non-alcoholics.⁵⁵ A number of physiological differences between alcoholics and non-alcoholics also have been identified, including differences in rates of metabolizing alcohol, blood proteins, color blindness, relaxation

Family Influences

Girls' patterns of substance use often reflect those of their parents.

Parental drinking has a strong influence on girls' use of alcohol and marijuana.

Use of coffee and cigarettes by parents also influences their daughters' use of drugs.

Substance use by siblings is also a good predictor of substance use by girls.

Parents may influence a girl's use of substances through modeling, by establishing norms and attitudes, and through the quality of their relationship.

level following drinking, EEG patterns and sleep patterns, and enzyme levels in the blood. The evidence appears to support the hypothesis of a genetic predisposition or vulnerability to alcoholism for boys and men, but studies with women have not found a significantly higher rate of alcoholism in daughters of alcoholics compared to controls.⁵⁵ However, these results are complicated due to small groups of subjects in the studies, and inconsistencies in diagnosing alcoholism in women. Much more research must be conducted to clearly determine what role, if any, genetics may play in the development of substance abuse among girls and young women.



A strong and consistent association between parents' use of substances and female adolescent substance use has been found in numerous studies.^{7,11,17,19,38,41,58,75,106,113,118,132} Findings include parents' use of alcohol, cigarettes and prescription drugs as well as illicit drugs. Parents who are frequent substance users tend to have children who are frequent users of substances.¹¹⁸ The association appears to be stronger for adolescents' perception of substance use by the mother than by the father,^{118,124} especially for daughters.⁷⁵ The relationship is always stronger when based on an adolescent's report of parent substance use than when based on parents' self-report. Thus, a daughter's perception of substance use by parents seems to play a role in adolescent girls' substance-using behavior. This role can be positive as well as negative, as parents who do not use substances are more likely to have children who resist the invitation to try substances.⁷⁵

A strong relationship between parent and adolescent substance use is found for parents' use of alcohol and adolescent use of alcohol and marijuana.^{75,106} Parental drinking has been found to have a greater impact on drinking among girls than among boys. Parental use of substances also appears to have a stronger impact on black youth than on white youth.¹³²

Use of other licit substances, such as coffee and cigarettes, is also related to adolescent substance abuse. One study found that eight out of ten parents who drank more than ten cups of coffee per day, and 85 percent of parents who smoked more than a pack of cigarettes per day, had children who drank or used illicit substances.³⁸

Siblings are also influential family members in their impact on younger sisters' substance use. Adolescents are much more likely to use marijuana if they have an older brother or sister who uses it^{56,75} and patterns of substance use often parallel that of older siblings.¹⁰⁶

Several explanations have been proposed for the relationship between parent and child substance-using behavior, focusing on the role of parents as models and influential authority figures. Parents may serve as models for their daughters, demonstrating behaviors of substance use or abstinence that girls may imitate. Substance-using parents might also introduce their daughters to drugs. Alternatively, parents might influence girls' perceptions of normal adult behavior, establishing positive values and norms toward substance use that children adopt.¹⁰⁰

Parents' attitudes toward substance use influence onset of adolescent substance use, especially for girls.

Moderate parental attitudes toward alcohol are least likely to contribute to adolescent drinking.

Many girls who use substances come from families with poor relationships and high levels of stress.

Some girls may turn to substance use as a means of separating from their families.

Girls seem especially vulnerable to the negative effects of family conflict.

Girls from drug-using homes may turn to substance use themselves as a means of coping with the negative environment. Also, parents who use substances may be less available and supportive to their daughters, leaving them more vulnerable to the influence of peers. Finally, acceptance of substance use by parents may lead girls to anticipate acceptance, or at least little disapproval, of their own substance use. It is likely that parents influence their daughters in several of these ways, depending on the quality of their relationships and other family factors.

Parents' attitudes toward substance use play a significant role, especially in determining the initiation of substance use. Consistent with this, parental norms have been found to have a greater impact on adolescent drinking,⁵ an early substance in the stages of substance use. As with parental drug-using behavior, parental attitudes toward substance use are more influential for girls than for boys and more influential for blacks than for whites.¹³²

Drug-using adolescents have described their parents as controlling and restrictive.¹⁰² One study found that mothers who were abstinent, extremely rigid and forbade drinking by their children had higher rates of abstinent children *and* higher rates of children with problem drinking.⁷ Similarly, parental approval of drinking is associated with higher rates of drinking by girls. Thus, there appears to be a two-way relationship between parental control and girls' drinking, with both highly favorable and highly proscriptive parental attitudes associated with higher rates of drinking alcohol.¹³²

A third avenue through which families affect girls' use of substances is the quality of family relationships. Positive family relationships and interaction discourage youthful substance use,^{6,58} whereas drug-using teens usually perceive their parents as disapproving, unaffectionate, and critical.¹⁰² Girls who use substances often come from families exhibiting a lack of closeness, noninvolvement of parents, inconsistent discipline, and low educational aspirations for the children. The parents of these girls have higher rates of antisocial and sexually deviant behavior, jail and prison terms, and mental health problems.^{7,11, 19,58,60,102, 106,111,132} Use of substances by girls from these families may serve the function of coping with stress or displaying anger toward parents.

Sometimes family dynamics can contribute to girls' use of substances.⁶⁰ Distressed families may have difficulties dealing with the natural separation process that occurs during adolescence. Girls from such families find it difficult to establish an independent identity, and may turn to substances as a statement of rebellion or defiance. While the daughter's substance use creates conflict, it also results in increased family interaction around the conflict. Thus, for some families, the daughter's involvement with substances may serve as a way for the entire family to work through the difficulties of separating and allowing the daughter to mature.

Family conflict and dynamics appear to have a greater impact on girls than on boys.^{11,41} One national study found that conflict occurring in preadolescence predicted likelihood and degree of drinking behavior in later adolescence. Some evidence

The feelings and expectations of both parents are important factors in girls' decisions to use substances.

Family structure and size are not distinctly related to substance use among girls.

Peer Influences

Use of substances by friends is one of the strongest predictors of substance use among girls.

Girls most often experiment and use substances with their friends.

suggests that parent-child conflict has a greater influence on Hispanics, though this is not a consistent finding.¹³²

Nonuse of marijuana in girls is positively correlated with a close and affectionate relationship with the father.¹⁸ Mothers' expectations for daughters are also related to adolescent girls' substance use. Mothers with low expectations of how far their daughters would go in school had daughters with higher rates of smoking.⁸⁰ Thus, the separate relationships that girls have with each parent appear to be significant factors related to girls' use of substances.

Other researchers have explored the relationship between family structure and substance use among teens. No predictable relationship has been found between birth order or family size and substance use.⁵³ The influence of divorce has also been studied. Generally, no differences in substance abuse are found between adolescent girls from mother-headed households compared to dual-parent households.⁸⁰ However, parental separation occurring during adolescence has been associated with increased likelihood of adolescent substance use for girls.^{53,83} Actual family structure appears to be less important than the quality of family relationships and attachment.

In summary, parents appear to contribute to substance use among girls in three different ways. Parents' substance use, negative parent-child relationships and family environment, and very strict or lenient attitudes toward substance use are positively associated with adolescent substance use. Girls appear to be influenced more than boys by these family variables, with both parents playing a significant role.



The influence of peers on adolescent substance use is the best replicated finding in the substance abuse literature. Involvement with other teens who use substances is the best predictor of use of marijuana,^{58,63,67,75,77,106} and also predicts use of cigarettes,^{45,85} and use of other illicit drugs.^{20,48,58,63,75,79, 102} The importance of peer influences has also been established as an international finding.⁷⁷ The behavior of peers may be a stronger influence for girls than for boys,⁶⁶ as the relationship of substance use among friendship pairs is higher for girls than for boys.⁷⁵ The influence of other girls seems to be especially important for smoking.⁴⁵ Attention to peer behavior appears to be critical to understanding girls' use of substances.

Adolescent use of substances often occurs in a social context. It is less likely for adolescent girls and boys to use substances alone. Introduction to substance use also occurs more often through peers. Most teens who use substances report that they were first introduced to substances by a friend.^{45,75} More than half of adolescents report smoking their first cigarette with a friend. Girls are very unlikely to use substances if their friends do not. Among seventh and eighth grade girls, those who have tried smoking cigarettes report having friends and a best friend who smoke.⁵⁶ Adolescents who do use substances usually report that their friends support their use.^{58,63,106}

Girls are more likely to use substances if they have friends who do.

Boyfriends are important intermediaries between girls and substances.

The influence of peers on decisions to use substances appears to be stronger than family or parental influence for adolescents.^{52,75,106} This is due, in part, to the greater orientation of adolescents toward peers than toward parents.^{67,77} Adolescents who use substances report a greater reliance on peers for information, more contact with peers, and a dislike of their peers by their parents.

The influence of peers on girls' decisions to use substances can be explained in several ways. Availability of substances increases when peers use them. Also, adolescents imitate peers, and so modeling plays a role. Some research suggests that adolescents may be motivated to drink as an attempt to project an image that is socially desirable to peers.²⁴ Similarly, smoking may play a role in differentiating social groups of adolescents.³⁵ Concern over social image may play a role in the onset of illicit substance use as well.

One especially important peer influence on girls' use of substances is boys. Boyfriends often initiate or maintain substance-using behavior in girls.^{49,126} Girls often begin and continue to use substances in dating relationships with boys or men.³⁹ Girls are also more likely to smoke marijuana with boys than with other girls, and are more likely to obtain marijuana from someone than to buy it directly for themselves. Girls and young women may obtain illicit substances from males as a gift or through an exchange of sex for illicit drugs. Thus, males seem to play a critical intermediary role between girls and illicit substances. Sometimes referred to as "agents of contagion," males introduce, supply and participate in the use of illicit drugs with adolescent girls. Indeed, one predictor of likelihood of using marijuana is the number of boys in a girl's circle of friends; the more male members in a friendship group, the more likely it is that members of that group will use marijuana.¹⁴⁰

In summary, peer influence is a significant and powerful factor in determining whether girls become involved in substance use. The likelihood of substance use by girls increases if peers, boyfriends, and male friends use substances. Substance use for girls occurs almost entirely in a social context, often in dating relationships. The impact of peer influence is well established, nationally and internationally, and appears to be more powerful than parents' influence on adolescent girls' use of substances.



Poor school performance is associated with increased likelihood of adolescent substance use. School difficulties usually occur prior to involvement with substances, and are predictive of likelihood and degree of involvement.^{2,11,20,58,64,85,119} Truancy and absenteeism are higher among students who use substances. Low academic goals and weak commitment to school are associated with higher rates of illicit drug use^{58,67,70} and smoking^{45,71,85} for both girls and boys. Students not intending to go to college are twice as likely to use marijuana daily, and to be daily smokers of a pack of cigarettes or more.⁷¹ Likelihood of using marijuana is correlated with a greater value on independence than on academics.⁶⁷

School Performance

School problems often precede substance use among teens.

A strong commitment to school is associated with lower rates of use of most substances.

Intelligence alone is not a good predictor of likelihood to use substances.

Personality Characteristics

Girls who use substances score high on measures of sensation seeking.

and low levels of substance use are associated with liking school, more time spent on homework, and positive perceptions of the relevance of school courses.

High-achieving students' rates of substance use are below the average for same age peers. In a national survey of high school seniors, college-bound seniors reported lower rates of illicit drug use than did non-college bound students.⁷¹ Commitment to education has the strongest negative effect on smoking,⁸⁵ with high-achieving students being particularly less likely to be heavy smokers. However, high achieving students are more likely to use a few particular substances. A slightly higher tendency has been reported for high achievers' use of nonprescription pain relievers such as aspirin.⁶⁴ Over the counter stimulants, or "stay-awake pills" are also used at higher rates among college-bound than non-college bound seniors.⁷¹

Studies exploring intelligence separately from school performance have found mixed results. While substance use is correlated with poor school performance, substance users are usually found to be of average or above-average intelligence.¹¹ One longitudinal study found a positive relationship between intelligence and alcohol use. Medium and high IQ girls, and girls who were considered more academically ready in the first grade, were found to use more alcohol at a ten year follow-up.⁸⁰ Thus, negative school adjustment may not be a strong predictor of substance use until later elementary grades.

In summary, poor school performance predates and correlates with female adolescent substance use. A stronger commitment to school, plans to attend college, and high academic achievement reduce the likelihood of substance use. It is actual school performance, rather than intelligence, that seems to be a significant factor.



Substance use has been found to correlate with a characteristic termed "sensation seeking." This is defined as a need for varied, novel and complex stimuli and experiences.¹⁴⁵ A proposed explanation is that substance experimentation is motivated by a need for stimulation, possibly due to the effects of substances on certain neurotransmitters in the brain. Both delinquent behavior and the number of substances used correlate with scores on a sensation-seeking scale.¹²³ This correlation holds for girls as well as boys,¹³⁸ although much of the research on sensation seeking and substance use has been conducted with adult males. While sensation seeking may motivate initial experimentation with substances, it does not appear to be applicable to chronic illicit drug users. In the case of a substance abuser, the individual seeks a predictable experience from substances rather than a new and exciting one.¹²¹ Thus, the sensation seeking theory may explain some portion of initial experimentation with substances, but is not widely applicable to the girls and young women who regularly use specific substances.

Commitment to religious activities and conservative religious beliefs reduce the risk of substance use for girls.

No clear relationship between substance use and psychological problems has been identified. However, serious abuse of or addiction to illicit drugs often indicates psychological disturbance.

Moderate experimentation with substances can be considered normative behavior for adolescent girls.

Submissiveness or depression in girls may predispose them to use of alcohol as a means of coping.

Further studies are needed to distinguish between normal adolescent girls who may experiment and girls who are likely to abuse substances to deal with negative feelings.

A consistent negative relationship has been found between religiosity and alcohol and illicit drug use.^{17,58,68,106,116} Girls who are more involved with religious and church activities are less likely to use substances. Drinking is less likely among very conservative protestants, than among liberal protestants, Roman Catholics or non-attenders.

No studies have found a distinct psychological disturbance that discriminates girls who use substances from those who do not, or a specific personality type that underlies adolescent substance use.⁵⁸ However, serious abusers of substances have been diagnosed with more psychological problems, and some psychological disorders predispose individuals to become involved in substance use as a form of antisocial behavior or coping with stress.¹¹ Additionally, serious addiction to substances in adulthood is often considered indicative of underlying personality defects.^{81,122} A recent study found that normal weight tenth grade girls who reported bingeing and purging behavior also reported a higher incidence of drunkenness and daytime drinking. These girls reported drinking to help cope with daily stress; no differences were found for these girls' use of tobacco, marijuana or cocaine.⁸²

A positive relationship was found in one study between psychological health in the first grade and subsequent substance use ten years later, with moderately or severely shy and aggressive females being less likely to use substances.⁸⁰ For adolescent girls, experimentation with marijuana is associated with assertiveness and initiative. Thus, psychological health may increase the likelihood of experimentation with substances. That is, some experimentation with substances is considered a normative aspect of adolescent risk taking. Also, girls who are socially outgoing or more mature are more likely to be exposed to older peers and to more opportunities to experiment with substances. This is consistent with the concept of adolescent substance use as a social phenomenon.⁸

Childhood temperament has also been found to be significantly related to adult use of tobacco, alcohol and marijuana.⁸⁹ The two characteristics that appear to be significant for girls are submissiveness and depression. Submissiveness in childhood was related to adult problem-drinking in women,⁷³ which likely began in adolescence.

Depressive symptoms have been found to be predictive of drinking and illicit substance use in girls,^{73,105} and are a more significant predictor for girls than for boys. The link between depression and substance use holds for various racial and ethnic groups, with one study finding that Puerto Rican girls were especially more likely to use multiple substances if they were depressed. This finding suggests that depressed girls may use substances as a form of self-medication to help them compensate for inadequate coping skills.^{73,117,120}

Studies on personality characteristics seem to suggest two types of girls who are at risk for involvement with substances. Girls who are assertive and independent may become involved in substance experimentation as one aspect of normal and healthy adolescent risk taking behavior. These girls may be sensation seekers, and may be socially mature and of above-

Delinquent Behavior

Girls who use substances are more likely to engage in delinquent behavior.

Girls who use substances are likely to have nonconformist attitudes.

Use of illicit drugs greatly increases the risk of early sexual activity, premarital pregnancy and abortion.

average intelligence. They may begin experimentation with substances through contact with older peers. As they mature to adulthood where substance use is less compatible with adult roles and does not elicit peer approval, they are likely to discontinue or greatly reduce their use. A second at-risk group of girls may be characterized by submissiveness, depression and poor coping skills. They may become involved with substances as a means of dealing with negative feelings. For these girls, substance use becomes a way of coping, and may progress to problem drinking or substance abuse, and continue into young adulthood. Further research is needed to test these hypotheses. They represent different perspectives on adolescent substance use from data that cannot presently be reconciled.

In summary girls are more likely to become involved in substance use if they seek excitement, do not attend church, engage in bingeing and purging behavior, or are characteristically submissive or depressed. The role of personality factors in adolescent substance use is not straightforward, and may be mediated by other factors such as race and ethnic backgrounds. As a group, personality variables are less significant predictors of substance involvement than are behavioral variables, such as school performance, age at onset of substance use, and peer substance use.



Much research had been conducted on the relationship between delinquent or deviant behavior and substance use. The majority of these studies have been conducted with boys, although the findings appear to generalize to girls. Generally, substance use has been found to be positively related to delinquency and crime. Girls who use multiple drugs are more likely to be involved in crimes of petty theft and shoplifting. Both girls and boys who use substances are more likely to sell them.²² Contrary to popular belief, delinquency usually precedes substance use in most cases.^{76,114,136} However, use of substances does increase the likelihood of future crimes for teens already engaged in this type of delinquent behavior. The extent of crime that results from substance use appears to be dependent on the degree of substance involvement.

Substance use is also related to negative attitudes toward cooperation, competition,¹⁰² resistance to authority, nonconformity, impulsivity, and a higher tolerance for deviance.^{68,85} A positive relationship has been found between measures of antisocial attitudes and substance use for girls.^{105,144} Thus, the relationship between delinquency and substance use may be based, in part, on underlying antisocial or nonconformist attitudes.

Research on delinquent behavior in girls often defines delinquency to include early sexual activity. Drinking, substance use and sexual activity have been found to be related, along with delinquent activity, suggesting that these behaviors may occur as a constellation of behaviors.^{32-34,36,37,59} The order of occurrence of these behaviors appears to be delinquency, followed by substance use, followed by initiation of sexual activity. Nearly five times as many young women report

Self-Reported Reasons

Most adolescents report using substances for social reasons.

Girls are somewhat more likely than boys to report using substances for functional reasons.

Media Influences

Cigarette ads appear to influence girls' decisions about smoking.

substance use occurring before than after the onset of sexual activity.³⁶ Use of illicit drugs substantially increases the risk of initiating sexual activity at all ages, and use of only alcohol increases the risk at most ages. About half of adolescent girls ages 11 to 17 who use multiple drugs are sexually active compared to only three percent of nonusers. The relationship between substance use and early sexual activity is less clear for minority girls, however.^{36,94}

Adolescent girls' degree of substance use is related to the risk of premarital pregnancy and abortion. Use of illicit drugs other than marijuana doubles the risk of premarital pregnancy for older adolescents,¹⁴³ and the risk is even greater for girls under age 16.³⁶ Young women who use illicit drugs are more likely to experience a premarital birth than are nonusers, and are six times more likely to have abortions.¹⁴³

To summarize, girls are at greater risk for involvement with substances if they are engaged in deviant activities and have antisocial or nonconformist attitudes. Involvement with substances often precedes and increases the likelihood of early sexual activity and subsequent premarital pregnancy.



In an annual survey of high school seniors, students who used substances were asked to report their reasons for use.⁷⁰ Few differences were found between the reasons given by girls and boys. The most frequently reported reason for substance use was, "to have a good time with my friends." Approximately 65 percent of students gave this response. Different substances tended to result in different motivations for use, based somewhat on the effects of the substance. That is, substances such as alcohol and tranquilizers were reportedly taken "to get to sleep," while amphetamines were taken "to get energy." This suggests that treating substance use as a unidimensional behavior with a singular motivation may be too simplistic.

Some gender differences emerge in self-reported reasons for using substances. Girls who engaged in daily use of alcohol were more likely to report drinking for the purpose of coping with negative feelings. Girls were somewhat less likely than boys to report using illicit drugs "to get high" or "to have a good time with my friends," but were more likely to report functional reasons for substance use, especially for use of stimulants. Girls appear to use substances more than boys do for a self-medicative purpose, such as losing weight or lessening physical pain. Still, the major reasons reported by girls for use of substances are similar to those of boys, and involve social contact.



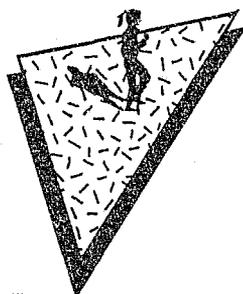
Little research has been conducted to assess the impact of media on girls' decision to use substances. Advocates of some prevention approaches suggest that the media are a contributing factor, and should be utilized in prevention programming.^{46,134} One study found that junior high school girls, more than boys, reported that cigarette advertisements made them want to smoke. Thus, higher reported rates of

Girls are exposed to a great number of alcohol commercials through television, but the impact is not clear.

smoking among girls may be due, in part, to a greater influence of cigarette advertising on girls. Other research⁹⁰ has shown that choice of brand of cigarette used by youth is clearly different for early starters. This suggests motivation may change for onset of smoking at different ages. However, both studies suggest an impact of media advertisements on girls' decisions about smoking.

Television's presentation of substance use is rather inconsistent. Smoking is rarely portrayed in programs, and cigarette advertisements are not allowed. On the other hand, drinking is often portrayed in programs, but few episodes of heavy or irresponsible drinking are shown. In the latter cases, characters frequently experience negative consequences as a result of their drinking. Perhaps the most salient target for negative influences through the television medium is the frequency and intensity of alcohol advertisements. It is estimated that the average teenager is exposed to 1000 alcohol advertisements per year. These ads typically emphasize the social context of drinking, and glamorize the use of alcohol. More studies are needed to determine the extent to which cigarette and alcohol ads actually influence girls' decisions to engage in substance use.

Theoretical Perspectives on Causes of Substance Use



Several different theories have been developed to explain why girls use substances.

Adolescence is a period of intense change that presents girls with specific issues and problems.

One view of adolescent substance use has focused on the generation gap.

Another view of substance use emphasizes the frustrations and stresses of children from deprived environments.

Social Learning Theory regards substance use as a behavior that is learned by observing and imitating others.

A number of theories have been proposed to explain how family, peers, social, personality and behavioral factors interact to produce use or abuse of substances. Most of these theories recognize contributions from the different influencing factors just reviewed, with some variables providing stronger influence than others. Several of these basic theories will be briefly summarized as a means of integrating the information presented on factors influencing substance use among girls.

A review of the developmental issues characteristic of adolescence can set the stage for the theoretical perspectives. Adolescence is a period of tremendous physical and psychological change, and a time when girls typically experiment with new behaviors. Adolescence is also a period when girls begin to separate from their families, often resulting in conflict and tension between parent and daughter as each learns to adapt to the changes in their relationship. Adolescents increasingly rely on peers for support and counsel. Self-consciousness is heightened over appearance, abilities, and personality. Intellectually, adolescents are able to view the world from a more relativistic perspective, sometimes resulting in confusion over the lack of a definitive right and wrong. These developmental changes add to the difficulty of making choices about appropriate involvement with licit and illicit drugs.

One interpretation of adolescent substance use focuses on the discontinuity between parents and children, the so-called "generation gap." This theory emphasizes that substance use by youth is in direct violation of parental norms and standards, and that young people use substances as a means of rebelling against their parents. Substance use signifies independence and separateness from family and identification with peers.

A second theoretical perspective borrows from theories of delinquency, such as Social Control Theory,⁶² which views substance use as a form of delinquency. Delinquent behavior is thought to result from poor socialization and weak attachments, combined with frustrated needs and aspirations. Youth are pulled to behave in a deviant manner when needs and aspirations are frustrated, as in economically deprived areas. Attachments to parents, peers, church and school, in addition to external social controls, inhibit deviant behavior. Frustrated youth who are lacking in attachments are most at risk for becoming delinquent.

A Social Learning Theory⁴ interpretation of adolescent substance use suggests that a major portion of social behavior is learned by imitation of a model. Parents' and peers' use of substances is imitated by youth, and also affects the concepts girls form about appropriate adult behavior. When girls see others using substances, they are more likely to imitate this

The modeling concept has been expanded to include the role of substances in our society.

Another view distinguishes experimentation with substances as healthy risk-taking behavior, and regular use as maladaptive.

Problem behavior theory proposes that many "problem" behaviors, including substance use, occur together and form a syndrome.

Another view regards substance use as a sign of multiple stressors occurring in several areas of a girl's life.

behavior and use substances themselves. They are also more likely to accept substance use as normal and appropriate behavior for themselves and others.

A social interaction model^{75,76} integrates modeling theory with the stages of substance use. This model assumes that both parents and peers influence adolescent substance use, as does the social context. At a societal level, use of pills and medications is commonly accepted as a means of dealing with physical and emotional problems. At a personal level, alcohol serves a critical role in social interaction. For adolescents, marijuana may fulfill the same function as alcohol does for adults: social facilitation and recreation. Different social variables are considered important to substance use at different stages.

A developmental perspective of substance use⁸ focuses on the developmental tasks adolescents face. This theory draws a distinction between experimentation and regular substance use. According to this view, experimentation with substances is considered to be normative for most adolescents, and may be regarded as an adolescent "rite of passage."¹² Use of alcohol and tobacco are seen as behaviors that confer adult status, and adolescents are inclined to experiment and "try on" these behaviors. Typically they provide increased esteem within peer groups, and involve the simultaneous emulation and rejection of adult norms. Youth emulate adults by engaging in adult-like substance using behaviors, but also violate adult norms by using substances of which adults disapprove. This theory suggests that, except for delinquent subcultures, experimentation or occasional use of substances is not a sign of deviance or delinquency, and most often does not escalate to regular or increased use.

In sharp contrast, Problem Behavior Theory^{32,33} emphasizes that certain "problem" behaviors occur together in adolescents. These include illicit drug use, early sexual activity, and delinquency. This theory suggests that these behaviors constitute a syndrome and represent the adoption of a deviant lifestyle. An unconventional personality is hypothesized to explain the occurrence of this syndrome in certain adolescents. Environmental and behavioral variables are also considered significant. The risk, or "proneness," of problem behavior is greater for adolescents with difficulties in all three areas: personality, behavior and environment.

The Stress Model²⁰ suggests that the combination of influencing factors is different for each individual. No single variable, parents, peers or personality, can be said to cause substance use. Rather, these factors combine in unique ways for each person. Substance use is seen as a coping mechanism. It can be predicted by the number of stress factors present in a girl's life. Thus, the more stress conditions present, the more likely the adolescent is to become involved with substance use.

These different theories offer a number of perspectives on substance use, and have different applications for intervention programs. Further research is needed to clarify and validate an integrated, grounded theory of substance use for girls. All of the theories recognize the importance of peer and adult influences on girls' decisions to use substances. This influence is considered of key importance, and suggests that programs must address environmental and social factors.

Health Risks of Substance Use Among Girls

Health risks of substance use include impaired functioning, toxicity and addiction.

Tobacco

Smoking decreases life expectancy.

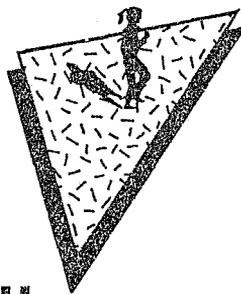
Smoking increases the likelihood of many types of cancer.

Addiction to nicotine is a likely result of cigarette smoking.

Smoking has a negative impact on nonsmokers in the same household.

Alcohol

Alcohol use puts youth at serious risk for impaired behavior, poor school performance, automobile accidents, and deteriorating health.



Health risks posed by substance use among girls can be categorized into three principal risks: impaired functioning, toxic effects, and physical and psychological dependence. While adolescent girls who smoke cigarettes can develop both a physical and psychological dependence, most adolescents are at less risk for addiction as the rates of use for highly addictive substances are low. However, early onset of substance use increases the likelihood of addiction in later life. Both immediate and long-term health risks are presented for each substance category.



The Surgeon General of the United States has declared that smoking is a serious health risk.¹²⁷⁻¹²⁹ The long-term consequences are clear. The mortality rates for women who smoke are 30 percent higher than for nonsmokers, and are directly related to the amount of smoking. The risk is greater for smokers who began at a young age.

Cigarette smoking is a major cause of cancer in the United States. It is considered the major cause of lung cancer, oral cancer and esophageal cancer, and contributes to cancer of the bladder, kidney, pancreas and liver. Cigarette smoking is also significantly associated with cerebrovascular disease (stroke) and arteriosclerosis (clogged arteries). Women smokers have a 70 percent greater chance of heart disease compared to nonsmokers. Women smokers who also use birth control pills have a tenfold greater risk of heart disease, and an increased risk of brain hemorrhage. Smoking is also associated with an increased risk of chronic bronchitis, peptic ulcer and respiratory disease.^{27,45}

Strong physical and psychological dependence on nicotine develops easily. Withdrawal symptoms include nervousness, anxiety, irritability, difficulties concentrating, and cravings. Smoking is one of the most difficult addictions to overcome.

Smokers also present a health risk to nonsmoking family members. Involuntary smoking can cause illness and lung disease in nonsmokers. Children of smokers have increased frequency of respiratory infections, bronchitis, pneumonia and ear infections.



Alcohol represents a substantial health risk for adolescents. Alcohol-related automobile accidents are a leading cause of death among 15-to 24-year olds.^{65,69} The short-term negative effects of alcohol include impaired control of behavior, confusion, impaired thinking and judgment, and accident proneness.²⁷ Long-term negative effects include hypertension,

Marijuana

There is disagreement over the extent of the dangers associated with marijuana use.

Use of marijuana can affect learning, judgment and motivation.

Long-term use of marijuana may affect the immune system.

Health risks due to smoking may be greater for marijuana than for comparable amounts of tobacco.

Narcotics

Users of narcotics are at multiple risk for problems due to injections.

cirrhosis, gastritis, bleeding ulcer, and damage to the pancreas, liver, nerves, muscles, endocrine glands, heart and brain. Among young women alcoholics, mortality rates and rates of physical illness are higher than for men.⁷⁴ Physical and psychological dependence develops with prolonged use. Attempts to abstain from alcohol following sustained heavy use may be accompanied by withdrawal symptoms of tremors, hallucinations and cravings.



A controversy exists regarding the extent of the negative effects of marijuana use. As with most substances, frequency and duration of use and age of onset all play a role in determining the extent of negative consequences. Short-term negative effects of marijuana use can include anxiety, confusion, panic and paranoia, impaired recall, impaired motor coordination and perceptual accuracy, and changes in heart rate and blood pressure. Like alcohol, heavy intoxication can impair driving ability. Psychotic episodes are rarely precipitated by marijuana except for individuals already emotionally unstable and predisposed to such breakdowns.²⁷

An Amotivational Syndrome is often found among adolescent heavy marijuana users, characterized by passivity, inactivity and sedation. While marijuana does function as a sedative to depress physiological activity, symptoms may result from an interaction between drug effects and personality factors. That is, apathetic girls with low achievement motivation may be more likely to become involved in marijuana use.²⁷ Also, these symptoms may be indicative of depression.

Toxic effects and death from marijuana use are extremely rare. Few users report experiencing withdrawal symptoms upon cessation. Physical and psychological dependence are debatable. Regular use may lead to an accumulation of chemical compounds in the fat tissue of the body. The long-term consequences of this are unknown. Animal studies have consistently demonstrated evidence of impairment in the immune system due to regular use. This effect is less well-documented in humans. Also, no clear increase in rates of illness among marijuana users has been demonstrated.¹¹⁰

Long-term risks of marijuana use also result from complications due to the process of smoking marijuana. Smoking marijuana results in increased carbon monoxide intake, and two and one half to four times as much tar intake as a comparable amount of tobacco.¹⁴¹ Prolonged use can result in smoker's cough, bronchitis, obstructive lung disease, pulmonary cancer, and possible brain atrophy in certain areas. Thus, health risks are increased for smokers of marijuana and tobacco.²⁷



Narcotics include opium, heroin and morphine, as well as some prescription drugs. Short-term negative effects of opiate or heroin use may include constipation, loss of appetite, and loss of normal menstruation.¹⁰⁸ Many risks of use are associated with intravenous (IV) injections. These include hepatitis, heart and lung infections, and increased risk of

Narcotics are highly addictive and withdrawal can be difficult and dangerous.

Sedatives and Tranquilizers

Addiction to sedatives and tranquilizers develops easily, and risk of toxicity or overdose is high.

Inhalants

Use of inhalants can cause damage to various systems in the body.

Hallucinogens

Use of hallucinogens results in serious impairment in judgment and perception.

Stimulants

Use of stimulants can lead to irregularities in sleep, thinking and cardiovascular activity.

contracting AIDS. Other risks secondary to use include accidents occurring while sedated, death from overdose, malnutrition, and hygienic complications.

Strong addiction and physical dependence develop with opiate use, and withdrawal can require medical attention. Withdrawal symptoms can include loss of appetite, tremors, panic, chills, muscle cramps, and insomnia. Withdrawal is best achieved when carried out gradually under medical supervision.



Sedatives and tranquilizers include both illicit substances and medically prescribed psychoactive drugs, such as phenobarbital and diazepam (Valium). Negative consequences of use include poor judgment, impaired motor skills and irritability. Long-term use can result in convulsions and toxicity.¹⁰⁸ The risk of toxicity and overdose is high with this class of substances as physical tolerance develops at levels very near the lethal dosage. These substances are especially dangerous when used in combination with alcohol. Physical dependence develops very easily and withdrawal can be severe and life endangering.



Short-term negative effects of inhalant use can include impaired perception and coordination and impaired judgment.¹⁰⁸ Depending on the substance used, one or more of the following long-term negative effects can result: peripheral nerve cell damage, and damage to liver, kidney, bone marrow, heart, and blood vessels.



Hallucinogens include LSD (lysergic acid diethylamide), PCP (phencyclidine), and psychedelic mushrooms. Side effects of LSD and PCP use include inability to judge time or distance and perceptual distortion. LSD toxicity may result in anxiety and panic and increased heart rate and body temperature. Flashbacks can occur after multiple use, but they are uncommon for most users. There is no evidence of physical withdrawal from LSD.

PCP toxicity can result in hypertension, ataxia, analgesia, amnesia, confusion, agitation, and depersonalization. Extensive use of PCP can precipitate psychosis, violent behavior, and mood and thought disturbances. Overdose of PCP leads to convulsions, coma and death. Withdrawal from this substance usually precipitates a severe depression.



The category of stimulants includes amphetamines and prescriptive stimulants, nicotine, caffeine and over-the-counter weight reduction pills, which often contain phenylpropanolamine (PPA). Short-term negative effects of amphetamine use can include hypertension, stroke, heart problems, and convulsions. Extensive use can result in paranoia, hallucinations and bizarre behavior. Toxic effects include cardiovascular collapse and death. Withdrawal from

Cocaine

Psychological and physical side effects can result from cocaine use.

Use of IV injections with heroin, cocaine and amphetamines increases the risk of contracting AIDS.

amphetamines is usually followed by a severe depression. Other withdrawal symptoms, such as impaired sleep and fatigue, may be due to drug effects or to sleep deprivation during use.^{27,98,108}

Use of nonprescription stimulants can result in increased heart rate and blood pressure, suppressed appetite, irritability and impaired sleep. However, the risks of toxic effects are minimal, and the occurrence of addiction has not been substantiated. Similarly, the health risks and addiction potential of new "designer drugs" (designed specifically for recreational use), such as MDMA (methylenedioxy methamphetamine), which are often amphetamine analogues, have not been determined.⁹⁸

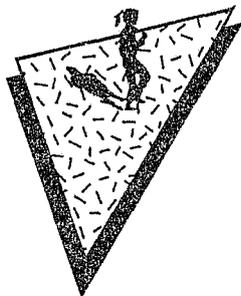


Occasional use of cocaine can lead to nasal congestion and ulceration. Short-term negative effects include restlessness, irritability and anxiety. Toxic effects can include delusions, paranoia and short-term psychosis. Long-term negative effects of use include loss of appetite, weight loss, depression, hypertension, heart attack, paranoia, seizures or stroke. Physical dependence is debatable, although psychological dependence develops rapidly, especially with crack (a smokable form of cocaine), making withdrawal emotionally difficult.²⁷

Intravenous (IV) drug users are the second largest group at risk for contracting AIDS. IV injections can be involved in the use of heroin, cocaine and amphetamines. AIDS is a virus that breaks down the human immune system, making the patient susceptible to a wide range of illnesses and complications. It is currently incurable. Sharing needles between drug users is one way in which this virus can be transmitted between drug-using peers.⁹⁷

Clearly, use of all harmful substances, licit and illicit, presents a great number of threats to health. Girls and adolescents are most at risk for toxic effects and impaired functioning. However, childhood users are at greater risk for physical dependence in adulthood, and the negative effects of prolonged use of most substances are substantial.

Health Risks of Substance Use Among Pregnant Young Women



Use of most substances during pregnancy will negatively affect the fetus, delivery and postnatal development.

Knowledge of health risks may not be sufficient to alter the substance-using behavior of pregnant adolescents.

Fetal Alcohol Syndrome is a well-documented effect of heavy drinking during pregnancy.

Smoking can have negative effects on fetal development.

Use of marijuana during pregnancy inhibits fetal development.

Substance use by pregnant young women presents a substantial health risk to the fetus. Nearly all substances taken by the pregnant mother readily cross the placenta to the fetus. The fetus may be affected through the direct action of a substance as well as indirectly through the effects on the mother. The direct effects of substances on the fetus may be significantly longer-lasting, as the underdeveloped liver of the fetus cannot metabolize chemicals as quickly as a normal adult.²³ For example, while cocaine can be metabolized out of the adult system in about 24 hours, it may last as long as six to nine days in the blood system of the fetus. Additionally, many substances can be passed from mother to infant through breast milk.

Substance use during pregnancy can interfere with normal fetal development and cause complications. Knowledge of this danger is apparently widespread, but dealt with poorly. A recent survey of teenage girls in predominantly black high schools reports that both pregnant and nonpregnant young women thought that substance use during pregnancy put the fetus at great risk of harm. However, no differences were found between pregnant and nonpregnant adolescents in their use of alcohol and marijuana, and pregnant teens were more likely to be smokers.¹⁰⁹ Thus, knowledge of the dangers of substance use during pregnancy may not have much impact on adolescent girls' substance-using behavior.

Fetal Alcohol Syndrome (FAS) has been well documented in infants of alcoholic women,¹²⁵ and is characterized by symptoms of central nervous system (CNS) dysfunction. These include poor attention span, tremulousness, irritability, poor sucking reflex and poor responsiveness to the environment. Other symptoms of FAS are mental retardation, facial deformity, malfunction of the heart or other organ systems, and growth deficiency.

Smoking during pregnancy can compound the effects of alcohol. Smoking alone can result in lower birth weight, and poor attention and orientation in children.

Use of marijuana by pregnant young women has also been found to have a negative impact on the fetus. A generalized developmental delay occurs prenatally, with low birth weight and inhibited postnatal growth, which lessens by the end of the first year. Heavy use of marijuana by the mother has been found to be associated with an increase in male over female newborns,¹³¹ delayed maturation in the visual system,⁵⁰ and sleep disturbances.¹¹⁵ There are no reports of deformity resulting from maternal use of marijuana during pregnancy.¹

Cocaine use by pregnant women impairs fetal development and increases the incidence of labor and delivery complications.

Cocaine use during pregnancy can induce contractions in the uterus and can cause accelerated labor and delivery complications. Infants of cocaine-using mothers may have low birth weights and small size, poor adaptation, and are at increased risk for Sudden Infant Death Syndrome. Currently, there is no evidence that links cocaine use to birth defects.²³

Clearly, use of any substance during pregnancy is ill-advised. All appear to have some negative effects on the fetus, and can also complicate labor, delivery and early development. Even moderate use poses health risks, and frequent use can result in serious and lasting damage.

Treatment and Prevention of Substance Use Among Girls

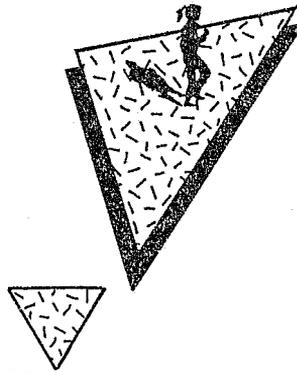
Treatment Programs

Substance abuse treatment programs include a wide variety of approaches designed to address motivations for use of substances.

It is not clear which types of substance abuse treatment programs are most effective for adolescent girls.

Treatment programs that address the special needs of drug-abusing girls and young women are rare.

Young women substance abusers require assistance with medical, social, family and legal concerns.



Treatment programs attempt to reduce or eliminate substance use among girls who have drug abuse problems. Models and theories of substance abuse treatment and rehabilitation are very diverse. The strongest point of agreement among contemporary treatment approaches is that girls' and young women's use and abuse of substances grow out of problems with peer influence, family, school and personal characteristics, as well as physical dependence. Psychosocial factors are important in the initiation of substance use, although dependence and addiction become increasingly important in maintaining regular use patterns.¹⁵ Treatments need to address these underlying psychosocial issues as well as levels of substance use to have a lasting impact.

Certain forms of treatment are more effective than others. Methadone-maintenance for heroin addicts, and outpatient and residential therapy have been shown to be successful treatments for some patients. Detoxification alone without treatment is relatively ineffective.¹⁰ Effectiveness usually increases with the length of time spent in the program. Little evidence is available on the relative effectiveness of various treatment programs for adolescents, let alone adolescent girls.

The need of female adolescents for substance abuse treatment programs is real. Girls comprised 40 percent of under-18 admissions to alcohol treatment programs in fiscal year 1985; they comprised 31 percent of under-18 admissions to drug treatment programs in that year.²¹ Yet the needs of these girls are not adequately addressed. Only about one third of girls in drug-free outpatient programs actually complete treatment.¹⁰ More information is needed to determine the special treatment needs of girls and young women.

Some obvious treatment needs of female drug abusers can be stated. Young women have special needs for medical care, especially related to gynecological and prenatal care.³⁰ Treatment programs need to provide counseling, with special emphasis on dealing with families and support systems. Legal counseling is also needed, especially around custody issues. Women addicts and illicit drug users report feeling less adequate as mothers, and less competent in dealing with their children.²⁹ Thus, there is a special need for child care services and parenting instruction to young mothers. Finally, young women desire vocational services, including training, referral, and assistance in seeking employment.¹⁰³ For girls and young women of racial and ethnic minorities, treatment programs that are culturally oriented toward the special issues of these populations can be effective.^{103,104}

Prevention Programs

Prevention programs attempt to prevent experimentation, or progression to further use of other substances.

Several types of prevention programs have been developed and tested.

Many contemporary programs utilize a social influence approach.

The social influence model focuses on social factors involved in the onset of substance use.

More evaluations of programs are needed to identify the most effective prevention program components.

While a number of different treatment approaches are currently practiced, the special needs of girls and young women who face substance abuse problems are not often addressed. Programs for female adolescent substance abusers should include attention to family, employment and cultural issues.



Substance use prevention programs attempt to reduce substance use among experimenters or keep participants from ever trying substances. Delaying the onset of first use reduces the likelihood of increased involvement, progression to use of other substances, addiction, and adverse health consequences.

Substance use prevention for young people has evolved through several stages. Initially, programs were based on moral objections to substance use, advocating temperance and legal sanctions. The second stage of prevention programs included fear approaches, in which youths were presented with all the possible negative consequences of substance use in an attempt to frighten them out of using licit and illicit drugs.

The third stage of programs presented the physical properties of substances and their effects, and emphasized the long-term health risks associated with use. A fourth stage emphasized values and attempted to address underlying personality issues, such as self-esteem and decision-making skills. The fifth and most contemporary stage focuses on social influences, and includes training in communication and resistance skills.

Social influence prevention programs for adolescents focus on different issues than might concern adults. While adults may be concerned about long-term health risks, that approach is relatively ineffective with youth. Programs that focus on education about substances and their long-term consequences, or personality variables such as self-esteem, have generally not been effective.^{15,16,95} Adolescents are more focused on the present, tend to deny addiction, and believe that they can stop using substances whenever they choose.¹¹⁰ Social factors play a significant role in decisions to use substances. The more effective contemporary programs for adolescents thus utilize a social influence model.¹⁴

The social influence model of prevention is aimed at improving interpersonal skills and addressing the social pressures that influence adolescents to use substances. This model is based on a social inoculation concept, which contends that teens can be inoculated against positive attitudes toward substances through mild exposure to persuasive messages. The underlying goal is to provide the skills to identify messages that encourage substance use and to resist social pressures to use substances. Such programs include the following elements: pressure resistance skills, knowledge about immediate negative consequences of substance use, and knowledge about the actual levels of substance use among adolescents and adults.¹⁴

While many prevention programs have been implemented based on these various models, too little is known about their effectiveness. Adequate program evaluation, including process evaluation and control groups, has been scarce. Many evaluations have focused on intermediate variables, such as self-esteem, knowledge, or attitudes and intentions toward

The social influence model of prevention has been successfully used in smoking programs.

The social influence model may also work for prevention of illicit drug use.

Alternative models for substance abuse prevention focus on the developmental issues of young girls.

substances rather than actual substance use. Rigorous program evaluation has only recently been implemented, and conclusions on the relative effectiveness of various approaches are tenuous and somewhat premature. Furthermore, most studies have not performed separate analyses based on gender or ethnic background. Thus, very little is known about which prevention programs are best suited to girls in general or to girls of different ages and backgrounds.

The most successful programs have been conducted for smoking prevention.¹⁰⁷ Such programs have been effective in reducing the number of experimental and regular smokers by one-third to one-half.¹⁵ A social influence program for smoking prevention includes identification of pro-smoking messages from peers, parents and media. Students then receive assertiveness instruction and help with saying no to peers in a socially graceful manner. Roleplaying situations may be included to provide actual practice and experience using new resistance skills. A public statement of commitment not to smoke may be included. Emphasis is placed on short-term rather than long-term health consequences, such as bad breath and stained teeth. Finally, information is presented and processed in group discussions, which can be led by teachers or peers. These programs are more effective when they involve frequent sessions over a relatively short time span. Follow-up studies show that program effects can last for up to two years. However, effects do decay over time, and program impact may be maximized if programs are followed by booster sessions.^{15,16}

There is good reason to believe that the social influence model of prevention can be successful with substances other than cigarettes. Many of the same factors that influence smoking onset also apply to illicit drugs. Also, some smoking prevention programs have reported an impact on marijuana use, though it is not well documented.⁸⁹ Some adjustments are needed to address other substances, such as looking at different social messages. Additionally, onset of illicit drug use occurs at a later age and usually follows experimentation with alcohol and cigarettes. Different strategies may be needed to discourage girls who smoke cigarettes from progressing to marijuana use.

The cognitive-developmental model of substance use prevention attempts to address progression from experimentation to regular use.⁵⁴ The model suggests a means of tailoring a social influence approach to the developmental needs of the teens. In addition to teaching refusal skills, programs attempt to address the cognitive interpretations girls make of substance using behavior. For example, an effort is made to point out that smoking is a dependence, not a sign of independence or maturity. It indicates poor coping skills and is not considered desirable by adults. Information is provided to help girls interpret their bodies' responses to smoking, such as coughing, burning nose and chest, and dizziness, as an indication of physical danger and alarm. This information is especially pertinent to girls who are already experimenting with smoking. Thus, the social influence model may be most effective for primary prevention of smoking, while the added cognitive-developmental components may be suited for prevention of progression from experimentation to regular use.⁹⁰ This hypothesis, as well as the general effectiveness of

The best balance of instruction in general life skills and specific social skills for prevention programs is still undetermined.

The use of same-age peers as leaders may increase program effectiveness.

Television and videotape elements have also been integrated into substance use prevention programs.

the cognitive-developmental model, remains to be tested by future research.

While the social influence model appears to be effective in smoking prevention, research has not yet established which components are most important. Some social influence prevention programs operate on a deficit theory, assuming that substance using teens have deficits in refusal skills or social skills. These programs focus largely on social skills and communication training. Developers of other programs attempt to address psychological issues and underlying motivations for using substances, and thus include program components which address general life skills, self-esteem and personal competency.¹⁶ While it is clear that other factors besides social and refusal skills play a role in the development of substance use among girls, there is no evidence that the generalized life skills approach improves the effectiveness of programs.⁵¹ Additionally, personality variables such as self-esteem are notoriously difficult to change. Continued program evaluation research is needed to determine whether a broad-based life skills training approach or a more narrow social skills training approach is more effective and cost efficient.

A second controversy concerning prevention program design involves the use of peer leaders. Several studies found more positive program effects when group discussions were led by same age or older peers.¹³⁰ This is consistent with the importance of peer influence in smoking onset, and the greater reliance on peers over parents by adolescents. In these programs, peers serve as role models by demonstrating nonuse of substances, by reinforcing the norm that substance use is deviant, and by modeling appropriate alternatives to use of substances.

The superiority of the peer-led approaches, however, has not been consistently replicated.²⁶ One Australian smoking prevention study found that both peer-led and teacher-led programs were effective for girls, but the peer-led programs produced only a modest effect once results were adjusted for social variables. The peer-led program was even less effective for boys.⁴⁰ This study raises questions about the superiority of peer-led programs, and about gender differences in response to peer leaders. One interesting aspect of the Australian program is that the peers were much more responsible for program implementation than in prior American studies. This may suggest that the positive impact of peer leaders is mediated by degree of involvement, with high levels of peer leadership reducing effectiveness.⁴² Thus, future evaluation research needs to determine the optimal level of peer leader responsibility for program implementation.

Some contemporary prevention programs are also evaluating the effectiveness of media components.^{44,130} These programs utilize television as a means of presenting information and reaching larger audiences. Use of television can broaden the scope of effective school-based programs to include families of at-risk youth and local communities.⁴³ Also, television or videotape portrayals of resistance skills can provide accurate modeling of skills taught in the program. The use of television as an adjunct to classroom programs is a promising new development that has not yet been stringently evaluated.

The design of a substance use prevention program requires attention to age of the audience.

Prevention programs must also address cultural issues of minority girls.

Gender issues must be considered when designing programs for girls and young women.

Prevention program goals can vary widely but should be clearly determined at the outset.

The design of a prevention program should address the specific substance use issues of the audience. The stages of substance use must be considered. For example, prevention programs for sixth grade students should focus on smoking prevention, as smoking onset occurs around the sixth grade. Programs for high school students should perhaps address regular use of alcohol, marijuana or other illicit drugs, which is generally initiated in high school. Prevention should be planned for transition points in the stages of progression. The substances addressed by prevention programs must be the ones that girls of that age are currently beginning to use.¹⁰⁷

Additionally, programs must take cultural differences into account, adapting to accommodate culturally-specific barriers and positive social forces in various subpopulations. This might involve use of churches and barrios as important community elements in working with black and Hispanic girls. Therefore, culture-specific prevention programs may be more family or community-based rather than school-based.¹⁰⁴ Some prevention programs have been effective when addressing the cultural issues of minority girls.⁵⁷

Some studies suggest that different types of prevention programs may be needed when working with girls. These differences appear to be related to the role models and program leaders who are chosen. One successful substance abuse prevention program in California, Project DARE, utilizes police officers as program leaders. This program was effective for boys, but produced no positive impact on girls' attitudes, knowledge or substance use behavior.³¹ Also, the Australian study described earlier found a mild positive effect for girls using a peer-led approach, while boys were not affected by this program. Thus, girls appear to respond slightly more positively to peer-led approaches than do boys, and more negatively to authority-led approaches.

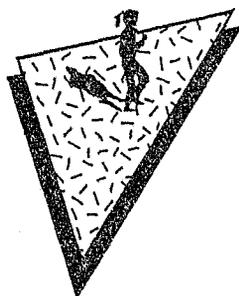
Another program issue involves clarifying prevention goals.⁹³ Choice of prevention goals for a program determines which girls will receive the program as well as how program effectiveness is measured. Goals can range from delay of first use, minimization of use, abstinence, or substance abuse prevention. Experimentation is widespread and does not appear to be a critical factor in determining substance abuse. Thus, abstinence may not be the only reasonable goal for prevention. Some adolescents may respond negatively to programs that insist on abstinence.¹⁰⁷ Age at first use of substances, however, is a critical predictor of subsequent degree of drug involvement. Therefore, delay of first use may be a worthy goal for prevention programs aimed at preventing substance abuse.

Although much progress has been made in recent years in the development of effective substance use prevention programs, further developments are necessary. The social influence model has been found effective for prevention of smoking and should be applied more extensively to prevention of use of other substances. The inclusion of peer leaders and of media components are promising new developments. Careful planning and evaluations of future programs can help determine which components are most effective for girls of varying backgrounds.

Directions for Future Research on Substance Use Among Girls

Further research is needed that clarifies and addresses the special needs of girls.

Differences between girls of various racial and ethnic backgrounds should be examined more carefully.



More detailed and specific research on substance use among girls is needed. Theories must be tested and validated with girls and young women to determine if they apply. Present research suggests that social factors, such as family and peers, may play a stronger role for girls than for boys in the development of substance abuse behavior. However, these hypotheses should be assessed by studies with girls, not merely by comparison to adolescent boys. Further, researchers should state clearly when results can be generalized to girls, and to what extent, rather than addressing adolescents as a homogenous group. While many gender differences are not large, they do suggest that special program needs of girls exist.

In areas where consistent gender-based differences have been found, little research has been conducted to explore and explain these differences. Thus, while more girls than boys are smoking, it is not clear why. What is unique about cigarettes that girls use them to a greater degree? What functional or symbolic role do they play in the development of adolescent girls?

Similarly, several studies suggest an interaction between gender and racial and ethnic background. Differences in rates of substance use and the role of influencing factors for subpopulations deserve more attention. Specialized programs for minority girls cannot be designed and evaluated until their needs are clearly identified. It is especially important that the special issues of minority girls and young women not be overlooked in the attempt to design large-scale programs.

Researchers in this field must continue to work to define and clarify the different forms of substance use and their consequences. Experimentation, occasional use, regular use and abuse are different behaviors, and for girls they are likely to have unique antecedents and consequences. The research suggests that girls may begin using substances for a variety of reasons. Some girls progress to greater involvement while others do not. A clearer understanding of these differences is strongly needed to guide intervention and prevention programs and to target girls most at risk for subsequent abuse and addiction.

The treatment and prevention programs that are most effective for girls remain to be identified and evaluated.

Further research is also necessary to determine the types of treatment and prevention approaches that are most effective for girls at different ages. Should single sex or mixed group discussions be utilized? How effective are family versus individual approaches? Which sex and age peer leaders serve as the best role models for girls? To what extent should substance abuse prevention and sex education be integrated? Given the different models of progression developed for girls, and the different rates of maturation in girls and boys, are there critical intervention points unique to girls? Girls have reported a greater influence by cigarette advertisements. What role should media play in prevention programs for girls?

Put simply, much more information is needed to determine which types of programs work best for girls.

Policy Issues on Substance Use Among Girls

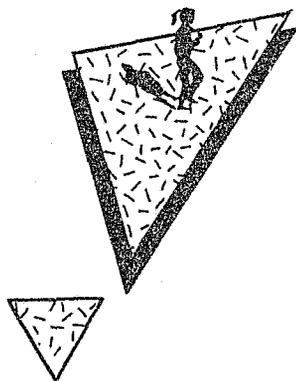
Public Policy

Initial legislative efforts controlled the sale and use of narcotics and cocaine.

The Controlled Substances Act of 1970 consolidated 50 years of federal laws.

Recent federal legislation addresses both supply and demand of illicit drugs. New policies initiate drug-testing programs in government agencies.

Recent public policy developments involve steps to minimize public smoking and use of alcohol.



Control of use and distribution of substances in the United States has been the subject of legislation for more than 100 years. States took the initiative in the late nineteenth century with laws directed toward restricting use and sale of illicit drugs. Federal legislation soon followed in the early twentieth century, designed to restrict use of opium and cocaine to medical purposes. The Pure Food and Drug Act of 1906 required labels on all products containing narcotics. The Harrison Narcotic Act of 1914 initiated tax and registration of narcotic medicines, and was the first legislative attempt to address abuse of illicit substances.⁹⁶

While initial state and federal attempts to control illicit substances focused on opium and cocaine, subsequent legislation addressed alcohol, marijuana and synthetic drugs. In 1970 Congress passed the Controlled Substances Act, which integrated and replaced many federal laws enacted in the prior 50 years. This Act covered all known narcotic and dangerous drugs. It provided for treatment of addictions, consolidation of government agencies, classifications of addictive substances into five categories with regulations for distribution, and described penalties for narcotic law violations.⁸⁸

In 1986, Congress passed the Anti-Drug Abuse Act, which called for increased penalties for various drug offenses such as manufacture, trafficking, sale and possession of illicit drugs. It also provided monies for prevention, treatment and research.²⁸ As part of the mandate to target substance use by government employees, the President issued an Executive Order that provided for training of supervisors to detect and address illicit drug use, employee assistance programs, and drug testing programs for some federal employees.⁹⁹

The Surgeon General of the United States declared the goal of a smoke-free society by the year 2000.⁸⁴ States are developing and passing ordinances that prohibit smoking in public facilities. As of mid-1988, all but the following states had passed such ordinances: Alabama, Illinois, Louisiana, Mississippi, North Carolina, Tennessee, Virginia, and Wyoming. Many municipalities and private companies have also adopted policies that guarantee nonsmokers a smoke-free working environment. These programs have met with great success.⁶⁹ Sale of cigarettes in vending machines is now being challenged. Social pressure is mounting to discourage smoking.

At a grassroots level, numerous organizations have been founded to eliminate alcohol-related automobile accidents. More stringent penalties for drunk driving, as well as employee

Private corporations are also developing policies on testing for substance use among employees.

Several issues of public concern have been raised by the development of drug testing programs.

Girls Clubs of America Policy

Girls Clubs of America is concerned that use of harmful substances by girls is a barrier to maintaining optimal health.

assistance programs and media campaigns against drinking and driving are becoming prevalent. A bill has been proposed in the U.S. House of Representatives suggesting that warning labels should be required on alcoholic beverages, describing the dangers of alcohol use during pregnancy, when driving and when using other drugs.¹³⁵ The legal drinking age has been raised to 21 in almost every state. Clearly, the American public is also concerned about alcohol.

At the private level, industry is following suit after government agencies. Most private companies are developing drug testing policies. Over one third of the Fortune 500 companies currently have some form of testing for drug use by employees.¹⁰¹ Policies vary widely, with some companies testing applicants as part of the routine hiring process.¹³⁹

A number of concerns have arisen in response to developing public policies. The majority of these pertain to legal and ethical issues regarding drug-testing programs, such as whether drug-testing programs violate the Fourth Amendment prohibition against unreasonable search and seizure, and citizens' rights to privacy. Research has not demonstrated whether use of substances during non-work hours impairs work performance. However, some tests can reveal substance use during personal time. Another privacy issue concerns the possible need for employees to report use of prescription medications, such as tranquilizers or antidepressants, to explain test results. Perhaps the greatest concern over drug-testing involves the incidence of false positives, or positive test results when no drugs have been used. Justifiably, there is concern about how test results will be used and what means of appeal will be available.

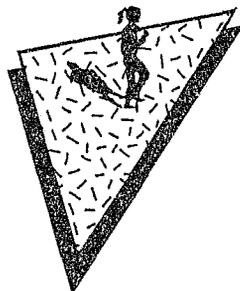
These issues and others signal that the policy issues connected with substance use are complex and multifaceted. Careful thought must be devoted to considering the costs and benefits of programs, especially long-term consequences. Civil liberties must be protected as public policies are put into place. The history of federal legislation controlling licit and illicit drugs is marked by fluctuating concerns over individual substances, political motivation, and increased recognition of the need for treatment and prevention. While much attention recently has been focused on public policy and federal action that address substance use and abuse, it is an issue that has a long history of public attention and will be an issue for public debate in the lives of girls and young women in years to come.



On April 25, 1983 the Council of Girls Clubs of America, Inc. adopted the following policy:

Girls Clubs of America (GCA) believes that being and staying healthy are of paramount importance to the quality of life. Therefore, GCA is committed to helping girls acquire positive health habits, accurate information, decision-making skills, and an attitude of personal responsibility for their own health. In addition, GCA affirms its responsibility to be an advocate for girls in health matters, including access to health education and quality health care services. GCA is particularly concerned about girls' health needs related to nutrition, physical fitness, substance abuse, and reproductive health.

Girls Clubs of America Programs on Substance Use Among Girls



The majority of local Girls Clubs offer some substance abuse prevention and education programming.

On the national level, Girls Clubs of America has taken a leadership role in preventing substance use among girls and young women.

Girls Clubs of America is in the process of developing a structured prevention program for high-risk girls that utilizes the peer leader approach.

Consistent with its policy statement, Girls Clubs of America has provided support and encouragement to member Clubs that offer substance abuse programs. Currently 88 percent of local Girls Clubs offer substance abuse education and prevention programs. These programs address girls ages 6 to 18, and involve both informal and structured approaches.

In 1985, Girls Clubs of America launched GIRL POWER: HEALTH POWER, a national health promotion program for preadolescent (ages 9-12) girls that focused on substance abuse and three other health topics. The introduction of this program was supported by training and technical assistance to local Clubs.

In 1988, the national organization coordinated a Girls Against Smoking Program (GASP) in conjunction with Girls Club Week. Clubs across the country sponsored community-wide events, as well as in-Club programs designed to discourage cigarette smoking among girls and young women.

FRIENDLY PEERSUASION is a targeted substance abuse education program currently under development by Girls Clubs of America. The program utilizes a peer leadership approach to prevention education, and is directed primarily at high-risk girls ages 11-14. Through a three-year project supported by the federal Office for Substance Abuse Prevention, Girls Clubs of America has developed the program and will soon replicate it in more than 200 Girls Club Centers across the country. Over 5000 girls will receive services during the three-year project, with almost 30,000 additional girls expected to be served in the five-year period after the project's conclusion.

Arlington Girls Club, TX is serving as the lead demonstration site for the project. Using two existing peer leadership models developed by Arlington, Girls Clubs of America is working in partnership with that Club to merge and refine the two programs into the Friendly PeerSuasion model. Four other Girls Clubs, located in Worcester, MA, Pinellas County, FL, Birmingham, AL, and Rapid City, SD have been selected to further test and refine the model, and to demonstrate its national replicability.

The overall goal of the Friendly PeerSuasion model is to promote girls' knowledge and understanding of appropriate life-management skills, and of how the use of harmful substances can affect their ability to apply these skills. The model program includes education, counseling, and referral. The curriculum utilizes "PeerSuader" learning in such areas as stress management, communications, decision-making and

problem-solving, refusal skills, recognizing and resisting negative social pressures, substance awareness, leadership skills, and accessing available community health resources. Upon completion of their training, small teams of PeerSuaders are assisted by Club staff in developing their own mini-curriculum for providing substance awareness and life-management skills training to younger girls. Each team develops its own learning approach and provides instruction for a group of up to ten younger girls.

In keeping with Girls Clubs of America's commitment to sound program evaluation, Friendly PeerSuasion incorporates a sophisticated evaluation component. Selected Clubs will serve as control sites, and will not implement the program until later in the project. Detailed information and feedback will be gathered from program participants, staff and local communities to evaluate the curriculum and assess the impact of the program on girls' behavior. Initial findings will be available in the summer of 1989.

Through Friendly PeerSuasion, much will be learned about practical strategies for preventing harmful substance use among high-risk girls ages 11-14. A peer leadership model for substance abuse prevention, including curriculum material, will have been developed, tested, evaluated, refined, and institutionalized as part of Girls Clubs of America's recommended services to more than 250,000 girls and young women members.

REFERENCES

1. Abel, E. L. (1985). Effects of prenatal exposure to cannabinoids. In T. M. Pinkert (Ed.), *Consequences of maternal drug abuse* (pp. 20-35). National Institute of Drug Abuse Research Monograph 59. (DHHS Publication No. ADM 87-1400). Washington, DC; U.S. Government Printing Office.
2. Bachman, J. G., O'Malley, P. & Johnston, L.D. (1986). Change and consistency in the correlates of drug use among high school seniors: 1975-1986. *Monitoring the future occasional paper series, Paper 21*. Ann Arbor, MI: Institute for Social Research.
3. Bachman, J.G., Johnston, L.D. & O'Malley, P.M. (1987). *Monitoring the future: Questionnaire responses from the nation's high school seniors, 1986*. Ann Arbor, MI: Institute for Social Research.
4. Bandura, A. (1977). *Social learning theory*. Englewood Cliff, NJ: Prentice-Hall.
5. Bank, B. J., Anderson, D.S., Hauge, R., Keats, D.M., Keats, J.A., Marlin, M.M. & Valatin, S. (1985). Comparative research on the social determinants of adolescent drinking. *Social Psychology Quarterly, 48*(2), 164-177.
6. Barnes, G. M. (1984). Adolescent alcohol abuse and other problem behaviors: Their relationships and common parental influences. *Journal of Youth and Adolescence, 13*(4), 329-348.
7. Barnes, G.M., Farrell, M.P. & Cairns, A. (1986). Parental socialization factors and adolescent drinking behaviors. *Journal of Marriage and the Family, 48*, 27-36.
8. Baumrind, D. (1985). Familial antecedents of adolescent drug use: A developmental perspective. In C.L. Jones & R.J. Battjes (Eds.), *Etiology of drug abuse: Implications for prevention* (pp. 13-44). National Institute on Drug Abuse Research Monograph 56. (DHHS Publication No. ADM 87-1335). Washington, DC: U.S. Government Printing Office.
9. Beauvais, F. (1987). High rate of drug use among Native American youth. *NIDA Notes, 2*(2), 14.
10. Beschner, G. & Thompson, P. (1981). *Women and drug abuse treatment: Needs and services*. (DHHS Publication No. ADM 81-1057). Washington, DC: U.S. Government Printing Office.
11. Beschner, G.M. & Treasure, K.G. (1979). Female adolescent drug use. In G.M. Beschner and A.S. Friedman (Eds.), *Youth drug abuse: Problems, issues, and treatment* (pp. 169-212). Lexington, MA: Lexington Books.
12. Blakeslee, S. (1988, July 21). 8-year study finds 2 sides to teenage drug use. *The New York Times*, pp. A2, A23.
13. Bloom, M.D. & Greenwald, M.A. (1984). Alcohol and cigarette use among early adolescents. *Journal of Drug Education, 14*(3), 195-205.
14. Botvin, G.J. (1983). Prevention of adolescent substance abuse through the development of personal and social competence. In T.J. Glynn, C.G. Leukefeld & J.P. Ludford (Eds.), *Preventing adolescent drug abuse: Intervention strategies* (pp. 115-153). National Institute on Drug Abuse Research Monograph 47. (DHHS Publication No. ADM 83-1280). Washington, DC: U.S. Government Printing Office.
15. Botvin, C.J. (1986). Substance abuse prevention research: Recent developments and future directions. *Journal of School Health, 56*(9), 369-374.
16. Botvin, G.L. & Wills, T.A. (1985). Personal and social skills training: Cognitive-behavioral approaches to substance abuse prevention. In C.S. Bell & R. Battjes (Eds.), *Prevention research: Detering drug abuse among children and adolescents* (pp. 8-49). National Institute on Drug Abuse Research Monograph 63. (DHHS Publication No ADM 85-1334). Washington, DC: U.S. Government Printing Office.
17. Braucht, G.N., Brakarsh, D., Follingstad, D. & Berry, K.L. (1973). Deviant drug use in adolescence: A review of psychosocial correlates. *Psychological Bulletin, 79*(2), 92-106.
18. Brook, J.S., Gordon, A.S. & Brook, D.W. (1980). Perceived paternal relationships, adolescent personality, and female marijuana use. *The Journal of Psychology, 105*, 277-285.
19. Brown, B.S. & Mills, A.R. (Eds). (1987). *Youth at high risk for substance abuse*. (DHHS Publication No. ADM 87-1537). Washington DC: U.S. Government Printing Office.
20. Bry, B. (1983). Empirical foundations of family-based approaches to adolescent substance abuse. In T.J. Glynn, C.G. Leukefeld & J.P. Ludford (Eds.), *Preventing adolescent drug abuse: Intervention strategies* (pp. 154-171). National Institute on Drug Abuse Research Monograph 47. (DHHS Publication No. ADM 83-1280). Washington, DC: U.S. Government Printing Office.
21. Butynski, W., Record, N. & Yates, J. (1985). *State resources and services for alcohol and drug abuse problems, fiscal year 1985: Analysis of state alcohol and drug abuse profile data*. (Report National Institute on Alcohol Abuse and Alcoholism Superintendent of Documents No. HE 20-8319). Washington, DC: U.S. Government Printing Office.
22. Chaiken, M.R. & Johnson, B.D. (1988). *Characteristics of different types of drug-involved offenders*. Washington, DC: U.S. Department of Justice.
23. Chasnoff, I.J. (1987). Perinatal effects of cocaine. *Contemporary OB/GYN, 29*(5), 163-179.
24. Chassin, L., Tetzloff, C. & Hershey, M. (1985). Self-image and social-image factors in adolescent alcohol use. *Journal of Studies on Alcohol, 46*(1), 39-47.

25. Cigarette smoking among high school students — Rhode Island. (1986). *Morbidity and Mortality Weekly Report*, **35**(32), 505-507.
26. Clarke, J.H., MacPherson, B., Holmes, D.R. & Jones, R. (1986). Reducing adolescent smoking: A comparison of peer-led, teacher-led and expert interventions. *Journal of School Health*, **56**(3), 102-106.
27. Cohen, S. (1981). Adolescence and drug abuse: Biomedical consequences. In D.J. Lettieri & J.P. Ludford (Eds.), *Drug abuse and the American adolescent* (pp. 104-112). National Institute on Drug Abuse Research Monograph 38. (DHHS Publication No. ADM 81-1166). Washington, DC: U.S. Government Printing Office.
28. Cohen, S. (1987). The drug-free American act of 1986: Will it do it? *Drug Abuse and Alcoholism Newsletter*, **16**(2).
29. Colten, M.E. (1980). A comparison of heroin-addicted and nonaddicted mothers: Their attitudes, beliefs and parenting experiences. In National Institute on Drug Abuse, *Heroin addicted parents and their children* (pp. 1-18). (DHHS Publication No. ADM 81-1028). Washington, DC: U.S. Government Printing Office.
30. Cuskey, W.R. & Wathey, R.B. (1982). *Female addiction: A longitudinal study*. Lexington, MA: Lexington Books.
31. DeLong, W. (1987). *Arresting the demand for drugs: Police and school partnerships to prevent drug abuse*. Washington, DC: National Institute of Justice, U.S. Government Printing Office.
32. Donovan, J.E. & Jessor, R. (1985). Structure of problem behavior in adolescence and young adulthood. *Journal of Consulting and Clinical Psychology*, **53**(6), 890-904.
33. Donovan, J.E., Jessor, R. & Costa, F.M. (in press). The syndrome of problem behavior in adolescence: A replication. *Journal of Consulting and Clinical Psychology*.
34. Dryfoos, J. (in press). *Adolescents at risk*. New York: Oxford University Press.
35. Eckert, D. (1983). Beyond the statistics of adolescent smoking. *American Journal of Public Health*, **73**(4), 439-441.
36. Elliott, D.S. & Morse, B.J. (1988). Delinquency and drug use as risk factors in teenage sexual activity and pregnancy. Unpublished manuscript, University of Colorado, Institute of Behavioral Science, Boulder.
37. Ensminger, M.E. (1987). Adolescent sexual behavior as it relates to other transition behaviors in youth. In S.L. Hofferth & C.D. Hayes (Eds.), *Risking the future: Adolescent sexuality, pregnancy and childbearing, Vol. 2*. Washington, DC: National Academy Press.
38. Fawzy, F.I., Coombs, R.H. & Gerber, B. (1983). Generational continuity in the use of substances: The impact of paternal substance use on adolescent substance use. *Addictive Behaviors*, **8**, 109-114.
39. Ferrence, R.G. & Whitehead, P.C. (1980). Sex differences in psychoactive drug use. In O.J. Kalant (Ed.), *Alcohol and drug problems in women: Research advances in alcohol and drug problems, Vol. 5* (pp. 125-194). New York: Plenum Press.
40. Fisher, D.A., Armstrong, B.K. & deKlerk, N.H. (1983, July). *A randomized-controlled trial of education for prevention of smoking in 12-year old children*. Paper presented at the Fifth World Conference on Smoking and Health. Winnipeg, Canada.
41. Fisher, D.G., Mackinnon, D.P., Anglin, M.D. & Thompson, J.P. (1987). Parental influences on substance use: Gender differences and stage theory. *Journal of Drug Education*, **17**(1), 69-86.
42. Flay, B. (1985). What we know about the social influences approach to smoking prevention: Review and recommendations. In C.S. Bell & R. Battjes (Eds.), *Prevention research: Detering drug abuse among children and adolescents* (pp. 67-112). National Institute on Drug Abuse Research Monograph 63. (DHHS Publication No. ADM 85-1334). Washington, DC: U.S. Government Printing Office.
43. Flay, B.R. (1986). Mass media linkages with school-based programs for drug abuse prevention. *Journal of School Health*, **56**(9), 402-406.
44. Flay, B.R., Brannon, B.R., Johnson, C.A., Hansen, W.B., Ulene, A.L., Whitney-Saitiel, D.A., Gleason, L.R., Sussman, S., Gavin, M.D., Glowacz, K.M., Sobol, D.F., & Saegel, D.C. (in press). The television school and family smoking prevention and cessation project: Theoretical basis and program development. *Preventive Medicine*.
45. Flay, B.R., d'Avernas, J.R., Best, J.A., Kersell, M.W., & Ryan, K.B. (1983). Cigarette smoking: Why young people do it and ways of preventing it. In P.J. McGrath & P. Firestone (Eds.), *Pediatric and adolescent behavioral medicine: Issues in treatment* (pp. 132-183). New York: Springer.
46. Flay, B.R. & Sobel, J.L. (1983). The role of mass media in preventing adolescent substance abuse. In T.J. Glynn, C.G. Leukefeld & J.P. Ludford (Eds.), *Preventing adolescent drug abuse: Interventions and strategies* (pp. 5-35). National Institute on Drug Abuse Research Monograph 47. (DHHS Publication No. ADM 83-1280). Washington, DC: U.S. Government Printing Office.
47. 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.
48. Fraser, M. & Hawkins, J.D. (1984). Social network analysis and drug misuse. *Social Service Review*, **58**, 1-97.

49. Freeland, J.B. & Campbell, R.S. (1973). The social context of first marijuana use. *The International Journal of the Addictions*, **8**(2), 317-324.
50. Fried, P.A. (1985). Postnatal consequences of maternal marijuana use. In T.M. Pinkert (Ed.), *Consequences of maternal drug abuse* (pp. 61-72). National Institute on Drug Abuse Research Monograph 59. (DHHS Publication No. ADM 87-1400). Washington, DC: U.S. Government Printing Office.
51. Glasgow, R.E. & McCaul, D.D. (1985). Social and personal skills training programs for smoking prevention: Critique and directions for future research. In C.S. Bell & R. Battjes (Eds.), *Prevention Research: Detering drug abuse among children and adolescents* (pp. 50-66). National Institute on Drug Abuse Research Monograph 63. (DHHS Publication No. ADM 85-1334). Washington, DC: U.S. Government Printing Office.
52. Glynn, T. (1981). From family to peer: Transitions of influence among drug-using youth. In D.J. Lettieri & J.P. Ludford (Eds.), *Drug abuse and the American adolescent* (pp. 57-81). National Institute on Drug Abuse Research Monograph 38. (DHHS Publication No. ADM 81-1166). Washington, DC: U.S. Printing Office.
53. Glynn, T.J. (1984). Adolescent drug use and the family environment: A review. *Journal of Drug Issues*, **14**(2), 271-295.
54. Glynn, K., Leventhal, H. & Hirschman, R. (1985). A cognitive developmental approach to smoking prevention. In C.S. Bell & J.P. Battjes (Eds.), *Prevention Research: Detering drug abuse among children and adolescents* (pp. 130-152). National Institute on Drug Abuse Research Monograph 63. (DHHS Publication No. ADM 85-1334). Washington, DC: U.S. Government Printing Office.
55. Goodwin, D.W., Schulsinger, F., Knop, J., Mednick, S. & Guze, S.B. (1977). Alcoholism and depression in adopted-out daughters of alcoholics. *Archives of General Psychiatry*, **34**, 751-755.
56. Gordon, N.P. (1986). Never smokers, triers and current smokers: Three distinct target groups for school-based antismoking programs. *Health Education Quarterly*, **13**(2), 163-180.
57. Harris, M.B. & Ford, V.L. (1988). Tobacco use in a fifth-grade southwestern sample. *Journal of Early Adolescence*, **8**(1), 83-96.
58. Hawkins, J.D., Lishner, D.M., Catalano, R.F. & Howard, M.O. (1986). Childhood predictors of adolescent substance abuse: Toward an empirically grounded theory. In S. Griswold-Ezekoye & W.J. Bukoski (Eds.), *Childhood and chemical abuse: Prevention and intervention* (pp. 11-48). New York: The Hayworth Press.
59. Hayes, C.D. (Ed.). (1987). *Risking the future: Adolescent sexuality, pregnancy and childbearing, Vol. 1*. Washington, DC: National Academy Press.
60. Hendin, H., Pollinger, A., Ulman, R. & Carr, A.C. (1981). *Adolescent marijuana abusers and their families*. National Institute on Drug Abuse Research Monograph 40. (DHHS Publication No. ADM 81-1168). Washington, DC: U.S. Government Printing Office.
61. Herd, D. (1987). *Gender role and socio-economic differences in drinking behavior in black and white women: Results from a national survey*. Paper presented at the International Council on Alcohol and Addiction, France.
62. Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.
63. Huba, G.J., Wingard, J.A., & Bentler, P.M. (1980). Longitudinal analysis of the role of peer support, adult models, and peer subcultures in beginning adolescent substance use: An application of setwise canonical correlation methods. *Multivariate Behavioral Research*, **15**, 259-279.
64. Hundleby, J.D. (1985). Drug usage and outstanding performance among young adolescents. *Addictive Behaviors*, **10**, 419-423.
65. Indiana Federation of Communities for Drug-Free Youth (1988). *Team up Indiana for drug free youth*. Pamphlet.
66. Jessor, R. (1976). Predicting time of onset of marijuana use: A developmental study of high school youth. *Journal of Consulting and Clinical Psychology*, **44**(1), 125-134.
67. Jessor, R., Chase, J.A., & Donovan, J.E. (1980). Psychosocial correlates of marijuana use and problem drinking in a national sample of adolescents. *American Journal of Public Health*, **70**(6), 604-613.
68. Jessor, R. & Jessor, S.L. (1975). Adolescent development and the onset of drinking: A longitudinal study. *Journal of Studies and Alcohol*, **36**(1), 27-51.
69. Johnson, C.A. (1986). Objectives of community programs to prevent drug abuse. *Journal of School Health*, **56**(9), 364-368.
70. Johnston, L.D. & O'Malley, P.M. (1986). Why do the nation's students use drugs and alcohol? Self-reported reasons from nine national surveys. *Journal of Drug Issues*, **16**(1), 29-66.
71. Johnston, L.D., O'Malley, P.M. Bachman, J.G. (1987). *National trends in drug use and related factors among American high school students and young adults, 1975-1986*. (DHHS Publication No. ADM 87-1535). Washington, DC: U.S. Government Printing Office.
72. Johnston, L.D., O'Malley, P.M. & Bachman, J.G. (in press). *Illicit drug use, smoking and drinking by America's high school students, college students, and young adults, 1975-1987*. National Institute on Drug Abuse. Washington, DC: U.S. Government Printing Office.

73. Jones, M.C. (1971). Personality antecedents and correlates of drinking patterns in women. *Journal of Consulting and Clinical Psychology, 36*(1), 61-69.
74. Kalant, O.J. (Ed.). (1980). *Alcohol and drug problems in women: Research advances in alcohol and drug problems, Vol. 5*. New York: Plenum Press.
75. Kandel, D. (1974). Inter-and intragenerational influences on adolescent marijuana use. *Journal of Social Issues, 30*(2), 107-135.
76. Kandel, D. (1981). Drug use by youth: An overview. In D.J. Lettieri & J.P. Ludford (Eds.), *Drug abuse and the American adolescent* (pp. 1-24). National Institute on Drug Abuse Research Monograph 38. (DHHS Publication No. ADM 81-1166). Washington, DC: U.S. Government Printing Office.
77. Kandel, D.B. & Adler, I. (1982). Socialization into marijuana use among French adolescents: A cross-cultural comparison with the United States. *Journal of Health and Social Behavior, 23*, 295-309.
78. Kandel, D.B. & Yamaguchi, K. (1985). Developmental patterns of the use of legal, illegal, and medically prescribed psychotropic drugs from adolescence to young adulthood. In C.L. Jones & R.J. Battjes (Eds.), *Etiology of drug abuse: Implications for prevention* (pp. 193-235). National Institute on Drug Abuse Research Monograph 56. (DHHS Publication No. ADM 87-1335). Washington, DC: U.S. Government Printing Office.
79. Kaplan, H.B., Martin, S.S. & Robbins, C. (1984). Pathways to adolescent drug use: Self-derogation, peer influence, weakening of social controls, and early substance use. *Journal of Health and Social Behavior, 25*, 270-289.
80. Kellam, S.G., Simon, M.B., and Ensminger, M.E. (1983). Antecedents in first grade of teenage substance use and psychological well-being: A ten-year community-wide prospective study. In D.F. Ricks (Ed.), *Origins of psychopathology: Problems in research and public policy* (pp. 17 - 42). Cambridge, MA: Cambridge University Press.
81. Khantzian, E.J. (1983). Psychopathological causes and consequences of drug dependence. In E. Gottheil, K.A. Druley, T.E. Skoloda & H.M. Waxman (Eds.), *Etiologic aspects of alcohol and drug abuse*. Springfield, IL: Charles C. Thomas.
82. Killen, J.D., Taylor, C.B., Telch, M.J., Saylor, K.E., Maron, D.J. & Robinson, T.N. (1987). Evidence for an alcohol-stress link among normal weight adolescents reporting purging behavior. *International Journal of Eating Disorders, 6*(3), 349-356.
83. Kolb, D., Gunderson, E.K.E. & Nail, R.L. (1974). Pre-service drug abuse: Family and social history characteristics. *Journal of Community Psychology, 2*, 278-282.
84. Koop, C.E. (1985). A smoke-free society by the year 2000. *New York State Journal of Medicine, 85*(7), 290-292.
85. Krohn, M.D., Massey, J.L., Skinner, W.F. & Laver, R.M. (1983). Social bonding theory and adolescent cigarette smoking: A longitudinal analysis. *Journal of Health and and Social Behavior, 24*, 337-349.
86. Labouvie, E.W. & McGee, C.R. (1986). Relation of personality to alcohol and drug use in adolescence. *Journal of Consulting and Clinical Psychology, 54*(3), 289-293.
87. Lerner, J.V. & Vicary, J.R. (1984). Difficult temperament and drug use: Analysis from the New York longitudinal study. *Journal of Drug Education, 14*(1), 1-8.
88. Levine, S.M. (1973). *Narcotics and drug abuse*. Cincinnati: W.H. Anderson Company.
89. McAlister, A.L., Perry, C., Killen, J., Slinkard, L.A. & Maccoby, N. (1980). Pilot study of smoking, alcohol, and drug abuse prevention. *American Journal of Public Health, 70*, 719-721.
90. McCarthy, W.J. (1985). The cognitive developmental model and other alternatives to the social skills deficit model of smoking onset. In C.S. Bell & R. Battjes (Eds.), *Prevention research: Detering drug abuse among children and adolescents* (pp 153-169). National Institute on Drug Abuse Research Monograph 63. (DHHS Publication No. ADM 85-1334). Washington, DC: U.S. Government Printing Office.
91. Miller, J. (1981). Epidemiology of drug use among adolescents. In D.J. Lettieri, & J.P. Ludford (Eds.), *Drug abuse and the American adolescent* (pp. 25-38). National Institute on Drug Abuse Research Monograph 38. (DHHS Publication No. ADM 81-1166). Washington, DC: U.S. Government Printing Office.
92. Miller, J.D. (1982). *National survey on drug abuse: Main findings 1982* (DHHS Publication No. ADM 83-1263). Washington, DC: U.S. Government Printing Office.
93. Moskowitz, J.M. (1983). Preventing adolescent substance abuse through drug education. In T.J. Glynn, C.G. Leukefeld & J.P. Ludford (Eds.), *Preventing adolescent drug abuse: Intervention strategies* (pp. 250-255). National Institute on Drug Abuse Research Monograph 47. (DHHS Publication No. ADM 83-1280). Washington, DC: U.S. Government Printing Office.
94. Mott, F.L. & Haurin, R.J. (1988). Linkages between sexual activity and alcohol and drug use among American adolescents. *Family Planning Perspectives, 20*(3), 128-136.
95. Murray, D.M. Luepker, R.V., Johnson, C.A. & Mittelmark, M.B. (1984). The prevention of cigarette smoking in children: A comparison of four strategies. *Journal of Applied Social Psychology, 14*(3), 274-288.

96. Musto, D.F. (1973). *The American disease: Origins of narcotic control*. New Haven: Yale University Press.
97. National Institute on Drug Abuse (1986). *NIDA Capsules: Aids and Drug Abuse*, CAP04.
98. National Institute on Drug Abuse (1987). *Drug abuse and drug abuse research* (DHHS Publication No. ADM 87-1486). Washington, DC: U.S. Government Printing Office.
99. National Institute on Drug Abuse (1988). *NIDA Capsules: Mandatory Guidelines for Federal Drug Testing Programs*, CAP26.
100. Newcomb, M.D., Huba, G.J. & Bentler, P.M. (1983). Mothers' influence on the drug use of their children: Confirmatory tests of direct modeling and mediational theories. *Developmental Psychology*, **19**(5), 714-726.
101. Newsweek (1986). *On the drug crisis*. Newsweek, Inc.
102. Norem-Hebeisen, A., Johnson, D.W., Anderson, D., & Johnson, R. (1984). Predictors and concomitants of changes in drug use patterns among teenagers. *The Journal of Social Psychology*, **124**, 43-50.
103. Obeso, P. & Bordatto, O. (1979). Cultural implications in treating the Puerto Rican female. *American Journal of Drug and Alcohol Abuse*, **6**(3), 337-344.
104. Orlandi, M.A. (1986). Community-based substance abuse prevention: A multi-cultural perspective. *Journal of School Health*, **56**(9), 394-401.
105. Paton, S.M. & Kandel, D.B. (1978). Psychological factors and adolescent illicit drug use: Ethnicity and sex differences. *Adolescence*, **13**(50), 187-200.
106. Penning, M. & Barnes, G.E. (1982). Adolescent marijuana use: A review. *The International Journal of the Addictions*, **17**(5), 749-791.
107. Perry, C.L. & Murray, D.M. (1985). The prevention of adolescent drug abuse: Implications from etiological, developmental, behavioral and environmental models. *Journal of Primary Prevention*, **6**(1), 31-52.
108. Pharmaceutical Manufacturers Association (1987). *Substance abuse: Drug and chemical charts*. Washington, D.C.: J P Printing.
109. Pletsch, P.K. (1988). Substance use and health activities of pregnant adolescents. *Journal of Adolescent Health Care*, **9**, 38-45.
110. Polich, J.M., Ellickson, P.L., Reuter, P. & Kahan, J.P. (1984). *Strategies for controlling adolescent drug use*. Santa Monica, CA: The Rand Corporation.
111. Rathod, N.H. & Thomson, I.G. (1971). Women alcoholics: A clinical study. *Quarterly Journal of Studies on Alcohol*, **32**, 45-52.
112. Robins, L.N. (1985, September). *Alcohol abuse in blacks and whites as indicated in the ECA*. Paper presented at the National Institute on Alcohol Abuse and Alcoholism Conference on Epidemiology of Alcohol Use and Abuse Among U.S. Ethnic Minorities. Bethesda, MD.
113. Robins, L.N. & Smith, E.M. (1980). Longitudinal studies of alcohol and drug problems: Sex differences. In O.J. Kalant (Ed.), *Alcohol and drug problems in women: Research advances in alcohol and drug problems, Vol. 5* (pp. 203-232). New York: Plenum Press.
114. Santo, Y., Hooper, E., Friedman, A.S., & Conner, W. (1981). Criminal behavior of adolescent nonheroin polydrug abusers in drug treatment programs. *Contemporary Drug Problems*, **9**, 301-325.
115. Scher, M.S., Richardson, G.A., Coble, P.A., Day, N.L. & Stoffer, D.S. (in press). The effects of prenatal alcohol and marijuana exposure: Disturbances in neonatal sleep cycling and arousal. *Pediatric Research*.
116. Schlegel, R.P. & Sanborn, M.D. (1979). Religious affiliation and adolescent drinking. *Journal of Studies on Alcohol*, **40**(7), 693-703.
117. Segal, B. Huba, G.J. & Singer, J.L. (1980). Reasons for drug and alcohol use by college students. *The International Journal of the Addictions*, **15**(4), 489-498.
118. Smart, R.G. & Fejer, D. (1972). Drug use among adolescents and their parents: Closing the generation gap in mood modification. *Journal of Abnormal Psychology*, **79**(2), 153-160.
119. Smith, G.M. & Fogg, C.P. (1979). Psychological antecedents of teen-age drug use. *Research in Community and Mental Health*, **1**, 87-102.
120. Snell, W.E., Beck, S.S., & Hawkins, R.C. (1987). Alcohol and drug use in stressful times: The influence of the masculine role and sex-related personality attributes. *Sex Roles*, **16**(7/8), 359-373.
121. Spotts, J.V. (1987). Study finds limits to sensation-seeking theory of drug abuse. *NIDA Notes*, **2**(2), 7.
122. Spotts, J.V. & Shontz, F.C. (1980). A life-theme theory of chronic drug abuse. In D.J. Lettieri, M. Sayers & H.W. Pearson (Eds.), *Theories on drug abuse: Selected contemporary perspectives* (pp. 59-70). National Institute on Drug Abuse Research Monograph 30. (DHHS Publication No. ADM 80-967). Washington, DC: U.S. Government Printing Office.
123. Spotts, J.V. & Shontz, F.C. (1984). Correlates of sensation seeking by heavy, chronic drug users. *Perceptual and Motor Skills*, **58**, 427-435.
124. Stenmark, D.E., Wackwitz, J.H., Pelfrey, M.C., & Dougherty, F. (1974). Substance use among juvenile offenders: Relationship to parental substance use and demographic characteristics. *Addictive Diseases: An International Journal*, **1**(10), 43-54.

125. Streissguth, A.P., Martin, D.C., Barr, H.M. & Sandman, B.M. (1984). Intrauterine alcohol and nicotine exposure: Attention and reaction time in 4-year old children. *Developmental Psychology*, **20**(4), 533-541.
126. Suffet, F. & Brotman, R. (1976). Female drug use: Some observations. *The International Journal of the Addictions*, **11**(1), 19-33.
127. Surgeon General's Report (1982). *The health consequences of smoking: Cancer*. (DHHS Publication No. PHS 82-50179). Washington, DC: U.S. Government Printing Office.
128. Surgeon General's Report (1983). *The health consequences of smoking: Cardiovascular disease*. (DHHS Publication No. PHS 84-50204). Washington, DC: U.S. Government Printing Office.
129. Surgeon General's Report (1985). *The health consequences of smoking: Cancer and chronic lung disease in the work place*. (DHHS Publication No. PHS 8550207). Washington, DC: U.S. Government Printing Office.
130. Telch, M.J., Miller, L.M., Killen, J.D., Cooke, S. & Maccoby, N. (in press). Social influences approach to smoking prevention: The effects of videotape delivery with and without same-age peer leader participation. *Addictive Behaviors*.
131. Tennes, K., Avitable, N., Blackard, C., Boyles, C., Hassoun, B., Holmes, L. & Kreye, M. (1985). Marijuana: Prenatal and postnatal exposure in the human. In T.M. Pinkert (Ed.), *Consequences of maternal drug abuse* (pp. 48-60). National Institute on Drug Abuse Research Monograph 59. (DHHS Publication No. ADM 87-1400). Washington, DC: U.S. Government Printing Office.
132. Thompson, K.M. & Wilsnack, R.W. (1987). Parental influence on adolescent drinking: Modeling, attitudes, or conflict? *Youth and Society*, **19**(1), 22-43.
133. Voss, H.L. & Clayton, R.R. (1987). Stages in involvement with drugs. *Pediatrician*, **14**(1-2), 25-31.
134. Wallack, L. (1986). Mass media, youth and the patient of substance abuse: Towards an integrated approach. In S. Griswold-Ezekoye, K.L. Kumpfer & W.J. Bukoski (Eds.), *Childhood and chemical abuse: Prevention and intervention*. New York: The Haworth Press.
135. Warning Labels (1988, April 12). *The Alcoholism Recort*, **16**(12), 4.
136. Watters, J.K., Reinerman, C. & Fagan, J. (1985). Causality, context and contingency: Relationships between drug abuse and delinquency. *Contemporary Drug Problems*, **5**(3), 351-373.
137. Welte, J.W. & Barnes, G.M. (1987). Alcohol use among adolescent minority groups. *Journal of Studies on Alcohol*, **48**(4), 329-336.
138. White, H.R., LaBouvie, E.W. & Bates, M.A. (1985). The relationship between sensation seeking and delinquency: A longitudinal analysis. *Journal of Research in Crime and Delinquency*, **22**(3), 197-211.
139. Willette, R.E. (1986). Drug testing programs. In R.L. Hawks & C.N. Chiang (Eds.), *Urine testing for drugs of abuse*. National Institute on Drug Abuse Research Monograph 73. (DHHS Publication No. ADM 87-1481). Washington, DC: U.S. Government Printing Office.
140. Wister, A.V. & Avison, W.R. (1982). "Friendly Persuasion": A social network analysis of sex differences in marijuana use. *The International Journal of the Addictions*, **17**(3), 523-541.
141. Wu, T.C., Tashkin, D.P., Djahed, B., & Rose, J.E. (1988). Pulmonary hazards of smoking marijuana as compared with tobacco. *The New England Journal of Medicine*, **318**(6), 347-351.
142. Yamaguchi, K. & Kandel, D.B. (1984). Patterns of drug use from adolescence to young adulthood: Predictors of progression. *American Journal of Public Health*, **74**(7), 673-681.
143. Yamaguchi, K. & Kandel, D. (1987). Drug use and other determinants of premarital pregnancy and its outcome: A dynamic analysis of competing life events. *Journal of Marriage and the Family*, **49**(5), 257-270.
144. Zucker, R.A. & DeVoe, C.I. (1973). Life history characteristics associated with problem drinking and antisocial behavior in adolescent girls: A comparison with male findings. In M. Roff, R. Wirt & G. Winokur (Eds.), *Life history research in psychopathology, Vol. 4*. Minneapolis, MN: University of Minneapolis Press.
145. Zuckerman, M. (1986). Sensation seeking and the endogenous deficit theory of drug abuse. In S.I. Szara (Ed.), *Neurobiology of behavioral control in drug abuse*. National Institute on Drug Abuse Research Monograph 74. (DHHS Publication No. ADM 87-1506). Washington, DC: U.S. Government Printing Office.