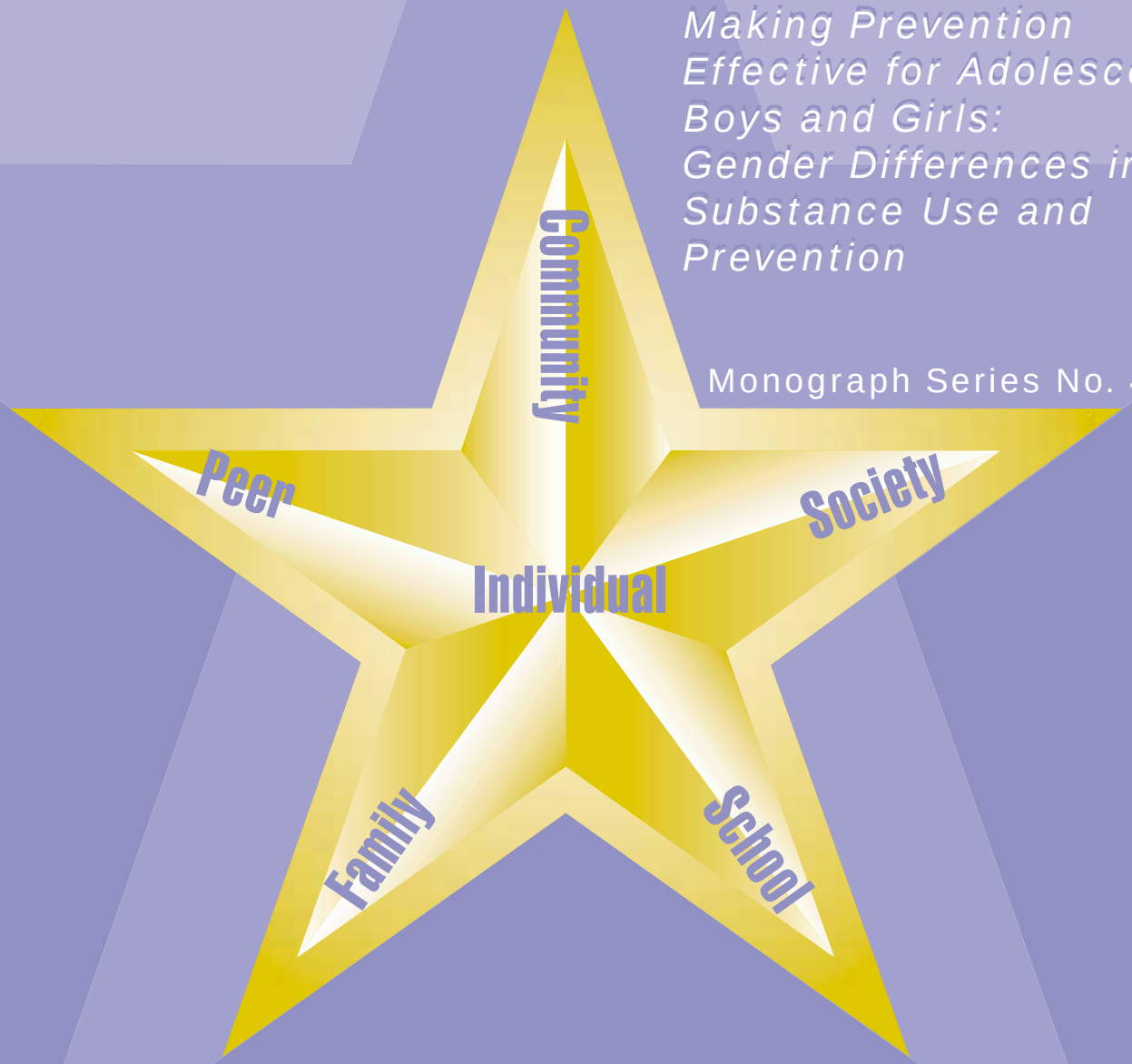
The National Cross-Site Evaluation of High-Risk Youth Programs

Making Prevention Effective for Adolescent Boys and Girls: Gender Differences in Substance Use and Prevention

Monograph Series No. 4



Points of Prevention

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Foreword

The Center for Substance Abuse Prevention (CSAP) in the Substance Abuse and Mental Health Services Administration (SAMHSA) is the Nation's lead agency for substance abuse prevention. The Center funds community-based organizations, universities, behavioral health providers, and public agencies to identify best practices in prevention services and disseminates findings, program models, and other prevention materials to practitioners and policymakers across the country. This document summarizes the findings of CSAP's National Cross-Site Evaluation of High-Risk Youth Programs. This large, multiple-site evaluation was designed to assess 48 prevention programs and to identify those program characteristics that are associated with strong substance abuse prevention outcomes. The rigor and relevance of the National Cross-Site Evaluation earned CSAP the 2000 Outstanding Study of the Year Award from the American Evaluation Association.

The National High-Risk Youth Demonstration (funded from 1987 to 1995) has been one of the most ambitious and productive of CSAP's funding initiatives. In its early years, the demonstration focused on identifying promising approaches to prevention. As the demonstration matured, individual site and cross-site research produced knowledge about risk and protective factors related to substance use and helped to identify model programs and best practices for effective prevention. Research and experience in the High-Risk Youth Demonstration also contributed to the awareness of the importance of culturally sensitive, age-appropriate, and gender-specific programming. This progress in prevention theory and practice laid the foundation for the research reported in this document, the largest and most comprehensive of CSAP's High-Risk Youth studies.

In addition to individual-level information on substance use, risk, and protection, the evaluation includes detailed information on the nature and amount of prevention services in which each child participated, as well as systematic process information on the study programs. This monograph highlights the study's contributions to the growing evidence that "Prevention Works." More specifically, this document summarizes major findings concerning patterns of substance use for high-risk girls and boys, similarities and differences in risk and protection for girls and boys, and similarities and differences in the way that girls and boys respond to prevention program participation.

This document is part of a series of Points of Prevention publications that document the contribution of CSAP's National Cross-Site Evaluation of High-Risk Youth Programs to prevention knowledge and provide science-based guidance for improved prevention policy and practice.

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Making Prevention Effective For Adolescent Boys And Girls: Gender Differences In Substance Use And Prevention

As experience and research continue to produce more evidence that "Prevention Works," there is concern that gender differences in youth have not received adequate attention in prevention research or practice. This monograph uses data from CSAP's National Cross-Site Evaluation of High-Risk Youth Programs to focus on gender differences and similarities in alcohol, tobacco, and illicit drug use and prevention for adolescent boys and girls at high risk for use of these substances. The monograph presents findings that support important conclusions concerning substance use and its prevention among high-risk girls and boys.

- Overall, boys and girls in the study respond to prevention differently. Boys experience significant reductions in substance use rates relative to comparison youth in the short run (i.e., at program exit and at 6 months after exit). Benefits for girls emerge later and endure throughout the study period.
- Well-designed and implemented prevention programs using multiple science-based components produce positive and lasting reductions in rates of substance use for both high-risk girls and boys relative to comparison youth. However, programs that emphasize behavioral life skills topics are particularly important for girls. Interactive methods of delivery are particularly important for boys.
- Programs for females only are no more effective in reducing rates of substance use for girls than mixed-gender programs. Female-only programs tend to emphasize affective program content, which is not associated with strong substance use outcomes.
- Girls report more family supervision than boys, which may reduce opportunities to use substances. Use by adolescent boys is more strongly related to neighborhood social environments that may increase opportunity to use. Connectedness to family and connectedness to school are important protective factors for both boys and girls.

The following sections specify findings, elaborate conclusions, and draw implications for understanding patterns of substance use by high-risk girls and boys and for making prevention more effective for both genders.

Gender Differences in Substance Use and Prevention: Changing Perspectives

Substance abuse and many of the social problems associated with it have typically been seen as primarily a "male" problem. Historically, most surveys of health behaviors in the general population have reinforced this popular assumption by finding higher levels of use among males than females. Recent research and social trends call the assumption that substance use is a male problem into question, and accentuate the need to develop effective prevention for both males and females. Increased understanding of the importance of substance use prevention for both females and males has come in several areas.

- Although use rates for young males remain slightly higher than those for females, the gap has been shrinking. Overall use of alcohol, tobacco, and illicit substances has been reduced in the United States since the late 1970's and early 1980's, but rates of decline have not been as great for girls and women as for boys and men (Johnston, O'Malley, and Bachman, 1999). Indeed, many indicators of use for young women have increased in this period. The rate of early initiation of alcohol and marijuana use by girls 10 through 14, for example, has risen substantially (SAMHSA, 1997). In 1998, one-fifth of all eighth-grade girls (ages 13 to 14) reported smoking a cigarette in the last 30 days, a slightly higher percentage than for boys (Monitoring the Future Survey, 1998-1997). In the same year, nearly one in four eighth-grade girls reported drinking alcohol in the past month, and 9 percent reported use of marijuana in the past month. These prevalence rates were lower but within a few percentage points of those reported by males the same age. In supporting the need to develop gender-specific prevention approaches, a recent study summarized current trends: "...(S)ubstance use among girls is increasing rapidly, and girls now surpass boys in stimulant use—tobacco, amphetamines, cocaine, crack, and inhalants—as well as in tranquilizers" (CSAP, 2000:5).
- Recent research has questioned assumptions that males are more susceptible to initiating substance use than females. Secondary analysis of National Household Survey on Drug Abuse (NHSDA) data from 1993, for example, has been used to conclude that girls are just as likely as boys to initiate use once they have the opportunity. Research on the situations in which adolescent boys and girls are given opportunity to use drugs (e.g., through offers to use) indicate differences in these opportunities. Boys are more at risk because they are more likely to be offered substances by male relatives, acquaintances, or strangers. Lower use rates among females are attributed to later and less frequent opportunity to use, not a reduced personal susceptibility (Van Etten, Neumark, and Anthony, 1999).
- There is growing research evidence that motivations for substance use initiation are different for boys than for girls. Boys initiate use to increase social bonding with other substance-using males (Newcomb et al., 1988), to enhance their sense of self (Liu and Kaplan, 1996), and for sensation seeking and boredom relief (Wilson and Herrnstein, 1985). Research has suggested that girls' reasons for use are differently motivated. Emotional problems, including relationship difficulties, loss, tension, and depression, are more likely to stimulate substance use among girls than the external acceptance and personal assertion motivations more prevalent among boys (Liu and Kaplan, 1996; Robbins, 1989).
- The view that substance use is predominantly a male problem may be partly attributed to the differences in problem co-morbidity for males and females. For males, substance use tends to be associated with higher levels of acting out and socially threatening behaviors. For example, 33 percent of ninth-grade boys reported carrying a weapon in the past month, compared to 10 percent of girls. Over half (56%) of ninth-grade boys report having been involved in a physical fight, compared to one-third of the girls (Youth Risk Behavior Survey, 1996).

  For girls, co-occurring problems tend to reflect internalizing, often self-destructive behaviors. For example, adolescent girls are much more likely to exhibit anxiety about weight (French and Perry, 1996) and have eating disorders (Thompson et al., 1999), and adolescent girls concerned about their weight are more likely to smoke and use amphetamines. With respect to other internalizing problems, ninth-grade girls are nearly twice as likely as boys to experience suicidal ideation (29% versus 16%) and more than twice as likely to actually attempt suicide (15% versus 6%). By the ages 14 to 15, girls are twice as likely as boys to suffer from depression (Carnegie Council on Adolescent Development, 1995).

In summary, the social threat posed by male problems co-occurring with substance use focuses policy and professional attention on male substance use. While the internalizing behaviors more typical of females may represent social costs that are just as high as the male behaviors in the long run, the fact that they are less immediately threatening to others may make them easier to overlook.

One of the consequences of the lower levels of visibility and overt awareness of substance use and its attendant problems in females has been a relative lack of attention to delivering prevention programs that are specifically appropriate for females. From a research perspective, "a major gap exists in research on prevention programs that address any unique causes of substance abuse in girls" (CSAP, 2000: 9).

While there is very little science-based knowledge on what prevention practices might be particularly effective for females, there is some evidence that the dominant approaches of current prevention programs benefit males more than they do females. For instance, CSAP's 48-site study of the Community Partnership program documented "statistically significant reductions in regular substance use by males but not females in the partnership communities" (CSAP, 2000:8). The study authors speculate on why community prevention efforts did not produce changes in female substance use:

> "One reason for this gender difference could be that many community drug prevention activities are implicitly aimed at males rather than females. For instance, a common strategy is to support alternative activities as a way of diverting youths from substance use. These activities ... may benefit males more than females" (CSAP, 2000:8).

Understanding gender differences in the initiation and development of substance use problems is important to the improvement of prevention practice and its effectiveness in promoting positive development among all youth. Indeed, CSAP has made the development of science-based knowledge concerning gender-specific prevention one focus within its mission to "generate new knowledge about the impact and effectiveness of prevention efforts" (CSAP, 1999:1).

This monograph presents findings from CSAP's National Cross-Site Evaluation of High-Risk Youth Programs concerning gender differences in substance use, factors that affect it, and effectiveness of prevention strategies for boys and girls. Indeed, the research-based suggestion that current prevention programming is less effective for females was one impetus to the development of the Female Adolescent Initiative under which 19 of the Cross-Site Evaluation programs were funded. The ability to compare male and female responses to prevention participation across a large number of programs over time provides the potential for generating new knowledge about the ways in which prevention programs impact males and females.

More specifically, this monograph uses data from the National Cross-Site Evaluation to extend our knowledge about making prevention effective for both males and females in the following ways.

- The monograph contributes to knowledge concerning the relative substance use rates and trajectories for adolescent boys and girls at high risk. Information on substance use is reported for males and females of different ages participating in the National Cross-Site Evaluation at the time the study was initiated. These use levels are compared to use in the general population of youth.
- The monograph contributes to understanding of gender differences in risk and protective factors related to substance use. Risk and protective factors that are more strongly related to substance use for boys or girls in the National Cross-Site Evaluation sample are identified.
- The monograph presents information on the prevention strategies adopted by study programs exclusively serving girls versus those serving boys, reflecting current practitioner thought concerning gender-specific programming.
- The monograph presents findings concerning the relative effectiveness of programs in the National Cross-Site Evaluation in preventing substance use among boys and girls at high risk. These findings contribute new knowledge concerning prevention practices that are most effective for males and females.

The implications of the findings and their utility for improving youth-serving programs and policies are the ultimate objective of CSAP's programs and studies. The following section briefly summarizes the design features of the National Cross-Site Evaluation of High-Risk Youth Programs. Subsequent sections will present information and findings.

The National Cross-Site Evaluation Of High-Risk Youth Programs

The National Cross-Site Evaluation of High-Risk Youth Programs is a 5-year study that CSAP began in 1995 (Sambrano, Springer, and Hermann, 1997). Forty-eight high-risk youth demonstration programs across the Nation participated in the study. These grantees were funded by CSAP to implement and assess programs to prevent and reduce the use of alcohol and other drugs among at-risk youth. A rigorous research design incorporating lessons from earlier evaluations of prevention service implementation and effectiveness guided the study. The evaluation used a quasi-experimental comparison group design to study more than 6,000 youth who were participating in the 48 demonstration programs, comparing them with more than 4,500 similar youth in the same communities who were not participating in the programs.

The study has several unique features, including:

- The use of a common questionnaire (the CSAP National Youth Survey) in all sites.
- Data collection at four points in time: program entry (baseline), program completion (exit), 6 months after program completion, and 18 months following program completion.
- A viable comparison group at each participating site.
- Complete documentation of the amount and type of program contact for each participant (dosage data).
- Detailed information on program implementation and prevention strategies at each site.

The study design allowed CSAP to test the effectiveness of programs by measuring changes in participants' risk, protection, and substance use over time and comparing the results to changes in similar youth who did not receive program services.

The analyses presented in the following sections utilize the gender diversity of this large national sample to make inferences about substance use and associated risk factors in adolescent boys and girls at risk, and to identify program characteristics and practices that contribute to effectiveness in achieving prevention goals for boys and for girls. While the National Cross-Site Evaluation data provide great opportunity to increase knowledge about gender-appropriate prevention strategies and practices, the limitations of these data must be acknowledged. First, the sample includes youth from ages 9 to 18, and self-reported substance use is very rare among the younger (9 to 11 years old) boys and girls in the study. Therefore, the analyses of program effectiveness in achieving reductions in substance use must be interpreted in this context (i.e., the potential for reducing use during the study period is small).

Second, the sample includes all youth enrolled in study programs and in the comparison group as identified in each site during the period of the study. The sites were not selected because they implemented model prevention programs that already showed evidence of success. These programs represent a variety of prevention practices as currently implemented in communities at high risk around the Nation. As a sample of youth in programs, the study does not provide valid estimates of substance use or other characteristics of youth in the full national population. As a sample across a large number of programs serving high-risk youth who are diverse by age, gender, race, and location, however, this sample constitutes a strong basis for identifying common findings and successful practices that are likely to apply across prevention programs implemented in realistic community conditions and aimed at youth at high risk. For example, a program strategy that proves more effective for females across this sample of programs is likely to be a positive practice in programs for high-risk females generally.

In summary, the National Cross-Site Evaluation of High-Risk Youth Programs is a large, national study that provides a unique opportunity to learn about the effectiveness of substance use prevention efforts aimed at adolescent boys and girls. The large sample of participating and comparison boys and girls provides a strong basis for identifying program effects for each gender. The comprehensive collection of program level information and the detailed collection of individual program participation (dosage) information strengthen the ability to attribute program effects to specific strategies and practices. The fact that the study is a large evaluation study, assessing the effects of actual programs implemented in diverse "real world" situations, strengthens the utility of findings for drawing inferences about what can realistically be achieved. The remainder of this monograph reports this data to improve understanding of the ways in which prevention may better address the unique needs of adolescent boys and girls, and to identify concrete ways of improving gender sensitivity in future prevention programming.

Substance Use, Risk, Protection, and Gender

The major objective of the interventions within the National Cross-Site Evaluation program sample is to work with youth to prevent or delay the initiation of substance use for those who have not yet used, and to eliminate or reduce use in those who have already initiated when they enter programs. Ultimately, the objective is to ameliorate youth's patterns of use that bring risk of harm, interfere with positive personal development, or increase the likelihood of adult substance abuse and associated problems. As more fully explained in other monographs within this series, these interventions are developed within the risk and protective factor approach that has been dominant in prevention research and practice over the past decade.

More specifically, the risk and protective factor approach reflects the "law of indirect effects" in prevention (Hansen, 1998). This law reflects the demonstrated superiority of intervention approaches that work with youth to strengthen protective factors, as compared to those that focus on the negative consequences of substance use directly. Protective factors represent the influences, orientations, and behaviors in youth's lives that contribute to positive development and help prevent negative behaviors and outcomes, such as substance use.

Within the protective factor orientation, researchers and practitioners are interested in finding those positive orientations and behaviors that are most strongly related to substance abuse. They want improved understanding of how substance use develops among young people and how protective factors influence that use. This knowledge may provide guidance concerning what protective factors should be emphasized in designing prevention strategies and implementing prevention practice.

To maximize prevention effectiveness for both genders, it is important to ask whether risk and protection operate differently for girls and boys. Family, peer, or other influences may operate differently for girls than for boys. For example, research has shown that boys and girls encounter different kinds of offers to use alcohol or illicit drugs in different kinds of circumstances. Similarly, the personal orientations that predispose youth to substance use, or protect them from it, may be different for girls than for boys.

The following discussion introduces the Cross-Site Evaluation sample and presents gender differences in the age trajectory of risk and protective factors for youth in the National Cross-Site Evaluation sample. Subsequent sections develop profiles of risk and protection similarities and differences for boys and girls.

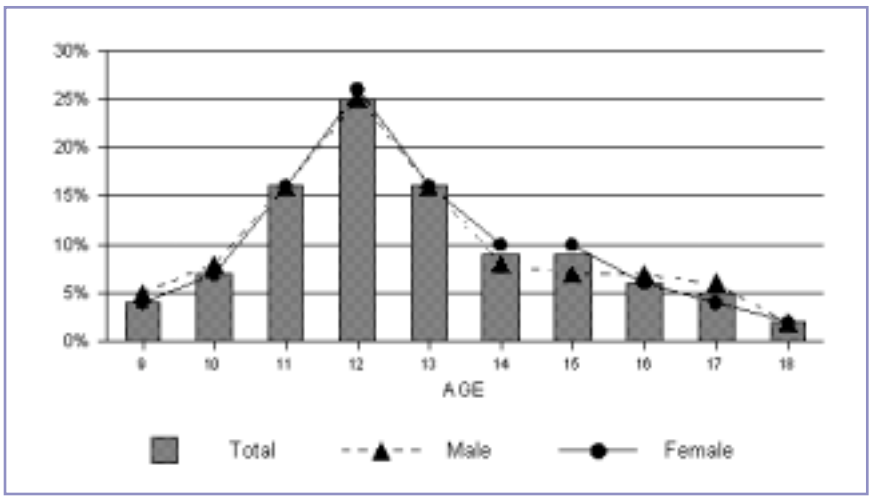
Boys and Girls in the National Cross-Site Evaluation Sample

The baseline sample for the National Cross-Site Evaluation consists of approximately 10,500 youth between the ages of 9 and 18. Just over 6,000 of these youth participate in 1 of the 48 CSAP-funded High-Risk Youth prevention programs in the Cross-Site Evaluation, and the remaining 4,500 are in comparison groups of youth similar in demographics and risk. Because 19 (40%) of the programs included in the study targeted female adolescents, there are many more females (66%) than males (34%) in the total sample. This gender distribution is presented in Figure 1.

Figure 1
Distribution of Boys and Girls in the National Cross-Site Evaluation Baseline Sample
(N = 10,473)

Youth selected for inclusion in CSAP's National Cross-Site Evaluation were limited to those between the ages of 9 and 18. Within that broad age range, from preadolescence through the late teens, the target focus of each program determined the age of the youth it served. Figure 2 displays age and gender information for youth (both program participants and comparison group youth) in the study sample.

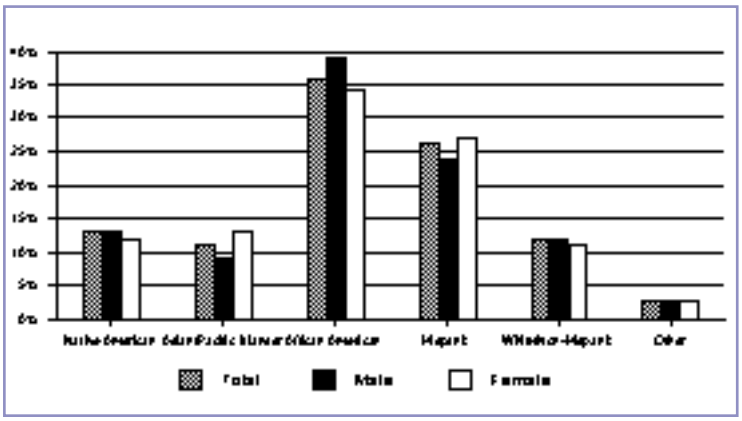
Figure 2
Distribution of Sample by Age and Gender
(N = 10,473)



More than half (57%) of the youth in the study were between 11 and 13 years of age when they entered the study, reflecting the fact that the prevention programs in this study recruited and served predominantly children of middle-school age. The gender-specific age profiles within Figure 1 indicate that, in this sample, the females are only slightly older than the males (mean female age = 12.84; male = 12.76), with a higher percentage of females in the 14- to 17-year-old age groups.

Many of the high-risk youth prevention programs were community based, focusing on particular community populations. Figure 3 indicates that these programs served diverse racial/ethnic groups. More than 33 percent of the youth identified themselves as African American, and approximately 25 percent considered themselves to be Hispanic. Of the remaining youth, approximately equal percentages (10%) reported themselves as Native American, Asian/Pacific Islander, and White/Non-Hispanic. There is cultural and/or regional diversity within the racial/ethnic groups as well (e.g., programs targeting youth in recent-immigrant communities). Males and females are approximately proportionally distributed, though there are more females in the Hispanic and Asian/Pacific Islander groups and slightly fewer in the African American group.

Figure 3
Distribution of Sample by Race and Gender
(N = 10,473)



Gender and Substance Use in the Baseline Sample

For the CSAP-funded High-Risk Youth Prevention programs, the prevention of substance use is a key marker of program success. The use of tobacco, alcohol, and illicit drugs is a focus for several reasons. It is a key behavioral manifestation of a host of internal and environmental risk factors that cumulatively contribute to negative personal and social outcomes as young people mature. Substance use is a major health and safety hazard in itself, threatening users in a variety of ways, including injury and trauma as well as chronic disease. Substance use is seen as a contributor to a range of social problems, including domestic violence, child abuse, violent and property crimes, and loss of economic productivity. Less apparent, but just as important, substance use is associated with the weakening of the crucial family and parenting support that is essential for positive development in young children. Prevention of substance use by youth is an important social strategy because early patterns of use contribute to the likelihood of adult abuse, and are related to a host of related immediate problems for youth, including school failure, accidental death and injury, and juvenile justice involvement. Thus, effective prevention of substance use will multiply its value through a broad range of personal and social benefits.

Substance Use Among Sample Youth

"Focusing on young people from early childhood through adolescence has long been recognized as central to an effective substance abuse prevention strategy" (CSAP, 1999:1). The High-Risk Youth Programs target a "selective" audience (Mrazek and Haggerty, 1994) of high-risk preadolescent and adolescent youth. These youth are at particular risk for early substance use and the poor outcomes with which early use is associated (Catalano et al., 1996). For the programs in the National Cross-Site Evaluation, this selective targeting was accomplished primarily by recruiting youth from school and community settings characterized by high levels of risk, such as poverty or crime. As an alternative, several programs based participant selection on a common individual behavioral or personal attribute. Specifically, two programs served youth who had been placed in a secure facility by court order; two programs targeted youth with disabilities (physical and developmental/emotional), one program focused on young women with histories of sexual abuse, and one program focused on youth in the foster care system. Predominantly, then, the study programs represent a targeting strategy that offers services to all youth in a neighborhood, neighborhood organization, or school that is characterized by high risk.

Table 1 provides evidence of the degree to which program recruitment strategies reached selective prevention targets. The table displays the percentage of sample boys and girls who have used cigarettes, alcohol, or marijuana in the last month and compares these rates with 12- to 18-year-olds in the 1998 National Household Survey on Drug Abuse (NHSDA) (SAMHSA/OAS,1998).

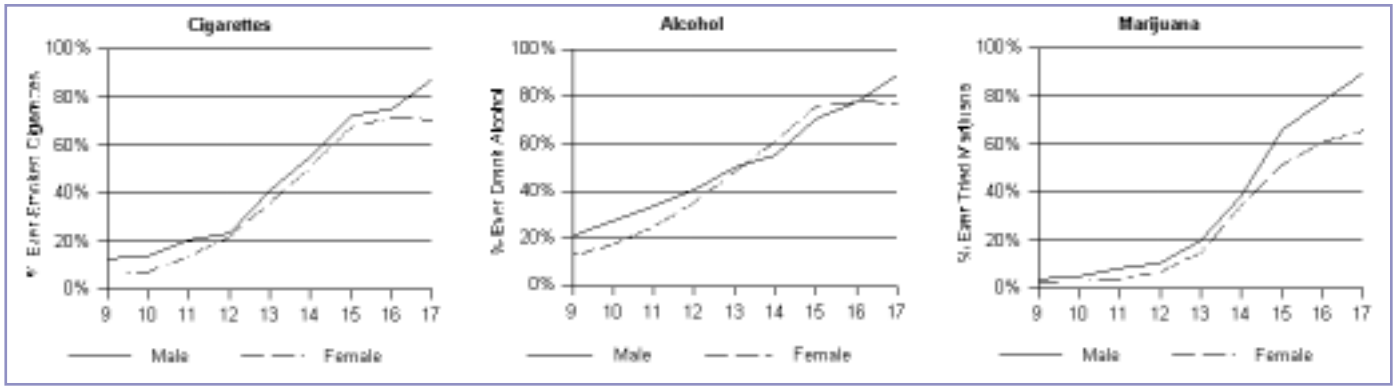
Table 1
Comparison of Substance Use in Two Samples by Gender and Age:
the National Household Survey on Drug Abuse (NHSDA) and High-Risk Youth (HRY)
NHSDA (1998) 12-17 age category, N = 6,742 HRY (1996-97) 12-17 age category, N =7,371

Age	30-day Cigarette Use				30-day Alcohol Use				30-day Marijuana Use			
	Male		Female		Male		Female		Male		Female	
	NHSDA	HRY	NHSDA	HRY	NHSDA	HRY	NHSDA	HRY	NHSDA	HRY	NHSDA	HRY
12-13	5.4%	11.1%	5.5%	9.6%	3.2%	13.1%	4.8%	11.2%	1.7%	7.4%	2.7%	5.7%
14-15	14.1%	38.3%	14.1%	31.6%	16.1%	31.3%	17.3%	31.6%	9.2%	33.3%	8.8%	25%
16-17	27.3%	66.1%	21.3%	41.9%	29.4%	59.3%	27%	38.5%	16.7%	70.4%	12%	31.3%

Several patterns are evident in the comparison. First, using baseline levels of use as criterion, it is clear that both boys and girls in the cross-site sample have initiated use of substances at higher rates than youth in the general population. Self-reported use in the last 30 days is much higher than for NHSDA respondents, particularly for marijuana. The girls in both the NHSDA and high-risk youth samples approximate the use rates of boys in the younger age groups, though it is clear that the older males in the high-risk youth sample are particularly heavy users relative to all of the groups. This is consistent with the nature of the sample programs serving older males in the program sample. Two of these programs are in secure facilities in which youth are placed by juvenile courts. In sum, the comparison confirms that the study programs serve both boys and girls that, as a group, use substances at higher rates than the general population. Earlier and higher rate use contributes to their risk for dependence in youth or later in life and the additional problems associated with use and abuse.

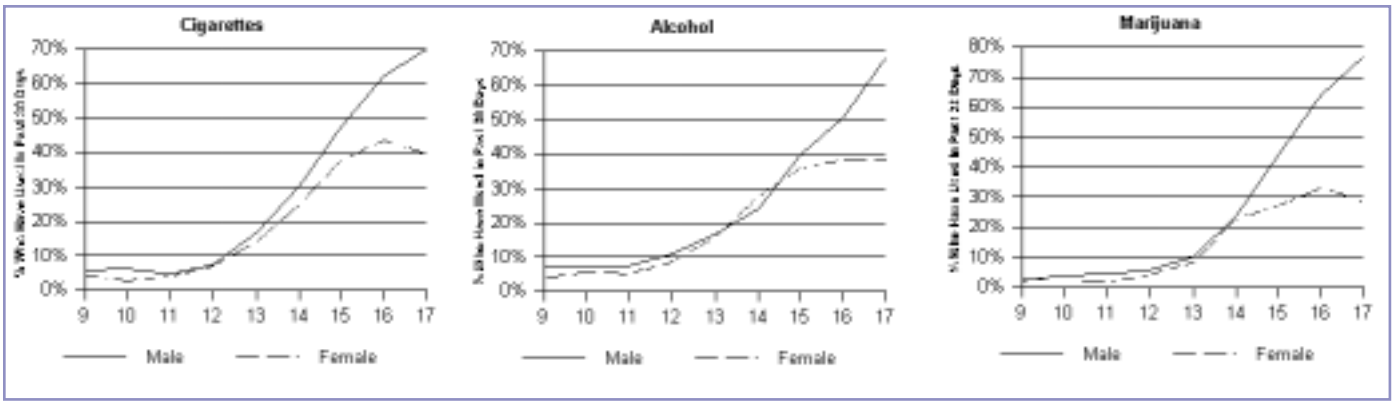
Lifetime Use. To gather information on initiation, the National Cross-Site Evaluation survey instrument asked youth if they had ever used cigarettes, alcohol, or marijuana in any amount. The percentages of boys and girls who reported that they had used these substances at some time in their lives is displayed by age in Figure 4. The increase in initiation of use through the adolescent years is clear for both boys and girls, with no major differences in rates during the mid-adolescent years. Consistent with other studies, alcohol use is initiated at the youngest age, and rates for very young girls are slightly lower than boys. Marijuana initiation comes later and escalates rapidly between 13 and 16. Overall, with the exception of marijuana for older youth, the percentages of sample boys and girls of the same age who have tried substances at least once are similar, and by the late teens, the great majority of youth have at least experimented with cigarettes, alcohol, or marijuana.

Figure 4
Percent of Sample Youth Reporting Lifetime Cigarette, Alcohol, and Marijuana Use by Age and Gender at Baseline
(N = 10,473)



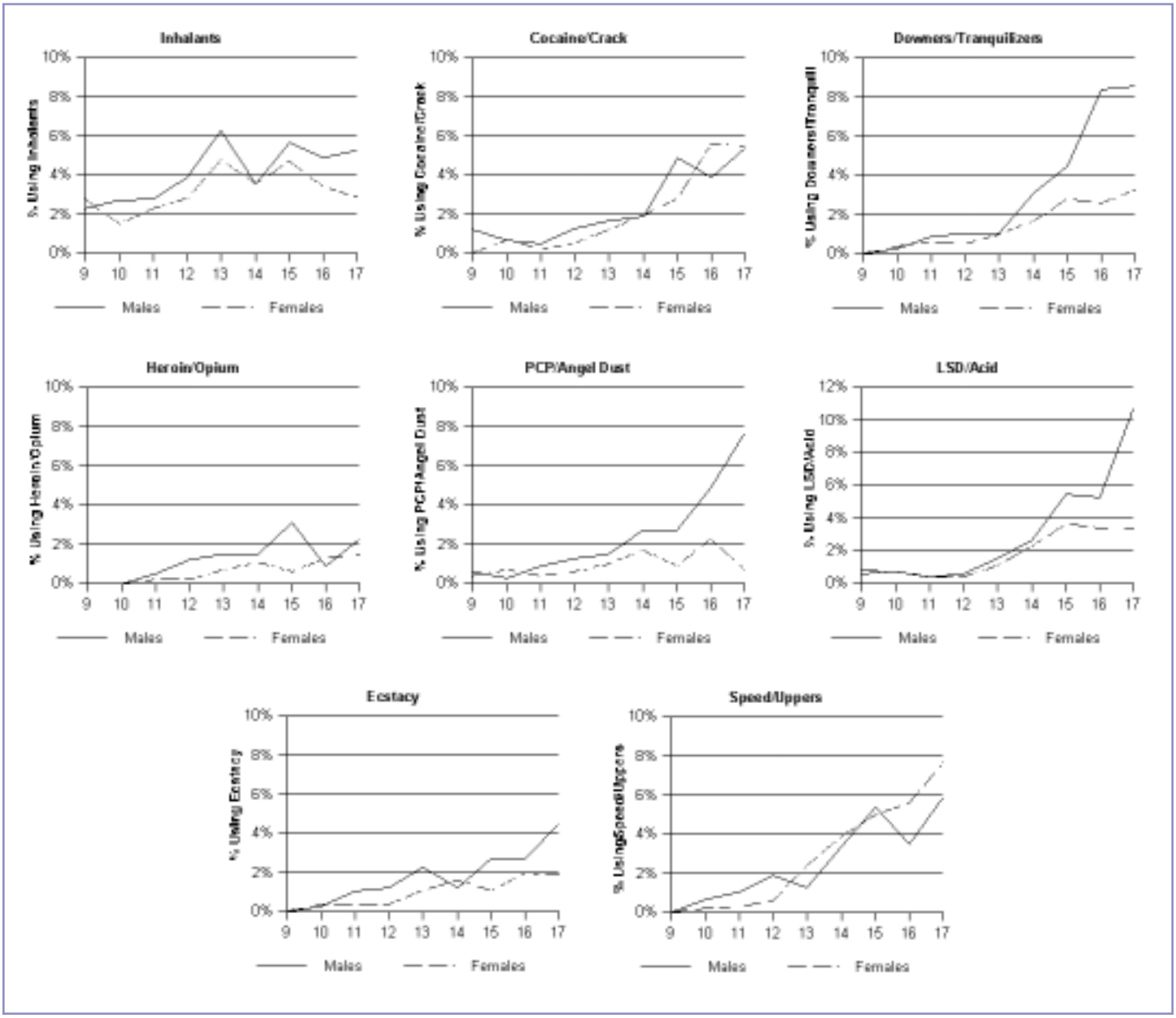
30-Day Use of Cigarettes, Alcohol, or Marijuana. Figure 5 presents the age distributions of the percentage of boys and girls who reported using cigarettes, alcohol, and marijuana within the month (30 days) prior to completing the baseline survey. This measure is an indication of recent use rather than whether the youth has ever tried the substance. It is also a better indicator of regular use than is the lifetime indicator. The graphs show the same escalation of use through the adolescent years, though the increase in 30-day use comes a little later. Notably, the boys in this sample who are older than 14 report higher rates of 30-day use than girls of the same age. This gap increases to age 17, again reflecting the presence of adjudicated youth at very high risk for substance use in two programs that serve older boys.

Figure 5
Percent of Sample Youth Reporting Cigarette, Alcohol, and Marijuana Use in Past 30 Days by Age and Gender at Baseline
(N = 10,473)



Use of Other Drugs. While cigarettes, alcohol, and marijuana were the substances most frequently used by boys and girls in the programs, youth also reported whether they had used eight additional drugs. Figure 6 reports findings for male and female use of each drug at the time the study was initiated. Use rates are not high for any one of these substances, and, with the exception of inhalants, youth are a year or two older when rates of use increase for these substances as compared to alcohol, cigarettes, or marijuana. Still, between 5 and 10 percent of the older youth report use of several of these substances in the past 30 days.

Figure 6
Percent of Sample Youth Reporting Use of Illicit Drugs in Past 30 Days by Age and Gender at Baseline
(N = 10,473)



While use rates for less frequently used drugs are sensitive to many factors in the specific social ecology of each site, including local availability and trends, some interesting patterns do appear.

- In this sample, the drugs that are more frequently reported are cocaine or crack cocaine, various forms of speed, various forms of tranquilizers or downers, and inhalants. Hallucinogens such as LSD, ecstasy, and PCP and opiates such as heroin are less frequently reported.
- With the exception of inhalant use, which peaks between 13 and 15 years of age, use of illicit drugs is much higher among youth who are 15 or older. Again, with the exception of inhalants, use rates for ages 12 and under are below 1 percent.
- There are some distinct patterns of drug use by gender. Girls older than 12 actually report higher rates of use of speed or uppers than do boys, mirroring recent national findings. One explanation for this drug preference is that girls are more likely to use amphetamines and other stimulants as a means of weight control. For cocaine or crack cocaine, girls approximate the male rates of use. Again, this reflects national findings in the overall population. For all other substances, girls tend to use more as they get older, but they do not use as much as boys at any age.

Summary. Information on self-reported substance use by youth in the National Cross-Site Evaluation confirms that the high-risk youth programs in the study recruit both boys and girls who are more likely to report recent use of cigarettes, alcohol, and marijuana than youth their age in the full population. The older males in the high-risk youth sample have a particularly high rate of reported use in the last 30 days. It follows that many of these programs serve an early intervention function for the portion of participants in which substance use is already indicated.

Girls over 14 years of age in the high-risk youth sample report lower use rates than boys, but these rates are still much higher than in the general population. For the less widely used illicit drugs, the rate of use in the last 30 days for cocaine and speed is approximately the same for boys and girls and slightly higher for boys for other substances.

Gender Differences in Risk, Protection, and Substance Use

As noted in the introduction to this monograph, the identification of specific risk and protective factors associated with substance use provides useful information for focusing objectives and strategies of prevention programs. For designers of programs targeting males or females, it is relevant to know whether there are differences in risk and protective influences on substance use. The implications of any such differences could be fundamental for prevention program design. If boys and girls are susceptible to different risks, or if they benefit from different protective factors, gender-appropriate interventions may best focus on different issues.

As CSAP's High-Risk Youth Demonstration matured beyond its early years of experimentation and discovery, it sought to bring greater theoretical coherence and focus to funded programs by asking that they specify how they would "address risk and protective factors within six domains...the individual, family, school, peer group, neighborhood, community, and society" (Sambrano, Springer, and Hermann, 1997). The National Cross-Site Evaluation simplified this range of risk and protective factors, categorizing them as a) external risk and protective factors in the youths' family, school, or surrounding neighborhood; b) internal risk and protective factors inherent to the youths' own attitudes, orientations, and behaviors; and c) the risk and protective influence of the expectations and behaviors (perceived normative environment) of significant others in family and peer groups. This categorization corresponds to important differences in how prevention programming is designed and implemented. The following section compares boys and girls in the baseline sample of the National Cross-Site Evaluation on the degree to which they report experiencing risk or protection in these areas as they age, and on the relationship between this reported experience and their self-reported use of substances.

External Risk and Protective Factors. Research on adolescent substance use has demonstrated that young boys and girls are introduced to drugs in different environments and under different circumstances (Moon et al., 1999). Boys, for instance, are more likely to receive offers from strangers or acquaintances outside the home. Girls, on the other hand, are more likely to receive early offers of drugs at home or from their closest friends. Differences in socialization patterns for boys and girls may produce differences in the salience of external influences on their early substance use. The family management practices of parents or family caregivers, the opportunities and policies of the school environment, and the quality of life and opportunities for participation that characterize the community all influence the development of positive or problem behaviors in youth, and they may impact boys and girls differently. The National Youth Survey designed for the Cross-Site Evaluation asked youth respondents about their perceptions of their family, school, and community and defined these factors as follows:

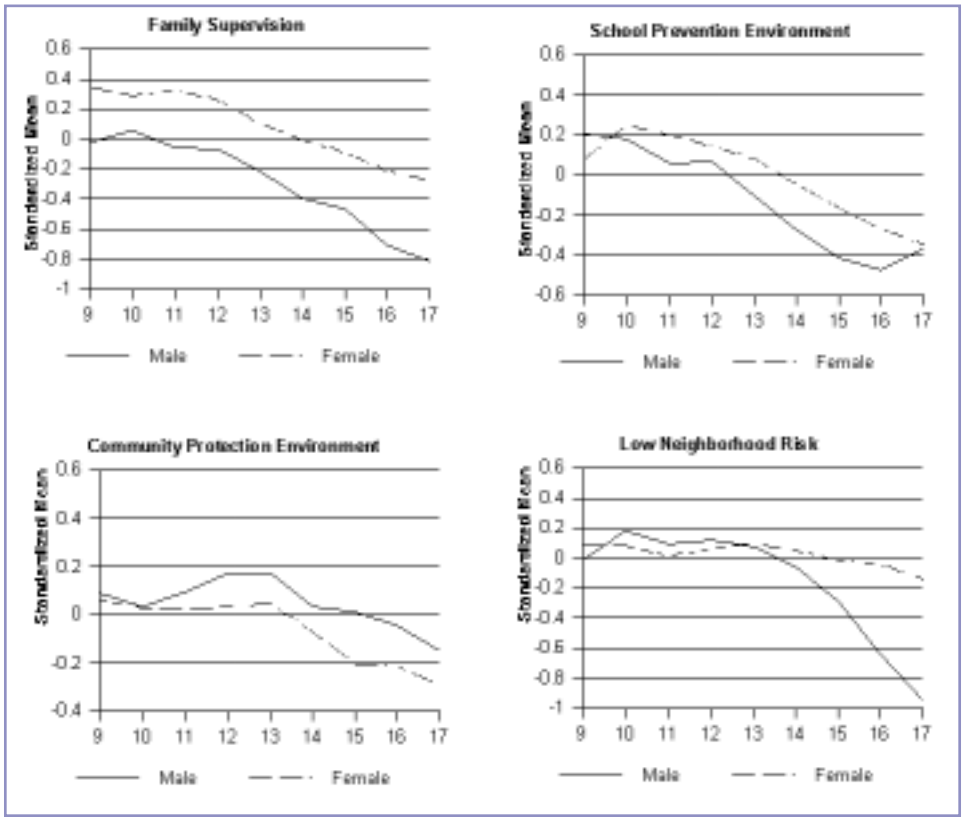
- Family supervision indicates the respondent's perceptions of the degree to which parents or caregivers set and monitor rules about the youth's behavior and are concerned about and aware of the youth's friends and activities.
- School prevention environment indicates the respondent's perceptions of the degree to which the classroom environment conveys prevention messages about substance use and positive personal development.
- Community protection environment indicates the degree to which the respondent participates in organized opportunities for positive activity in the community, including clubs, athletics, and learning opportunities.
- Neighborhood risk indicates the respondent's perceptions of neighborhood disorganization, including public substance use and crimes against persons and property.

Figure 7 compares the levels at which boys and girls in the cross-site baseline sample report experiencing risk or protection in each of these areas at different age levels. The displays indicate that, generally, youth report experiencing less protection and more risk as they move through the adolescent years. They also generally indicate that girls report more protective influences than boys within each dimension. This pattern is consistent with findings on substance use. Girls report higher levels of protection from family and are exposed to less risk (opportunity to use) in the community, which leads to their slightly lower levels of use, even among youth at high risk compared to the general population.

The pattern for family supervision exemplifies these general statements. Girls report more family supervision than do boys at all ages, and perceived levels of supervision decrease steadily for both girls and boys throughout the adolescent years. The pattern for school prevention is similar. While girls perceive a slightly greater presence of prevention messages in their classrooms, these perceptions decrease with age for both girls and boys.

For the remaining two measures of external protection, changes with age are distinct for boys and girls. Boys and girls at ages 9 to 11 demonstrate similar levels of protective involvement with the community, including participation in organized community activities such as sports, music or other skills lessons, or clubs, and regular positive communication with adults. Involvement for boys is highest at 12 and 13 and remains higher than girls' involvement, though it declines for both groups through the later teen years. However, this greater involvement for boys is entirely attributable to a much greater involvement in organized sports. The most dramatic differences in external sources of risk and protection for boys and girls is in their contact with high-risk environments in the neighborhood (or neighborhood risk), such as seeing drinking or drug use on the streets, or witnessing fights, crime, and arrests. Girls' involvement in these circumstances does not change with age, while boys involvement increases rapidly from age 13 to age 17.

Figure 7
External Risk and Protective Factors Reported by Youth in the Cross-Site Evaluation Sample at Baseline by Age and Gender



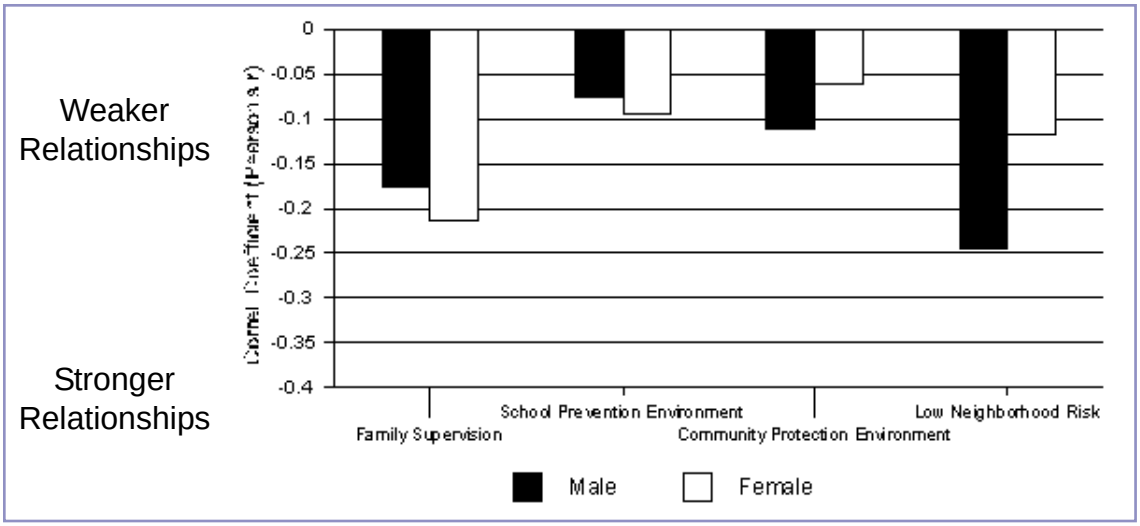
Note: All scores are coded so that higher scores indicate more positive behaviors.

Some of the trends in Figure 7, such as a decline in parental supervision and reduced involvement in organized youth activities, are expected with maturation through the teen years. Nevertheless, the patterns in external factors do demonstrate differences in the ways in which boys and girls experience risk and protection. Girls experience more supervision within the family, while boys are more involved in organized community activities, particularly sports. There is a notable contrast in the degree to which boys and girls report exposure to high-risk circumstances in their community environments. As boys move into the middle teen years, they report exposure to neighborhood risk much more frequently than girls. These patterns are consistent with research findings that boys more often initiate use through contact with acquaintances or strangers, while girls are more likely to initiate use at home or through offers from friends (Moon et al., 1999).

Figure 8 presents information on the degree to which levels of protection on each of the external influences is related to self-reported substance by these youth. This association is controlled for age; that is, it does not simply reflect the fact that both factors and use change with increasing age. While this analysis cannot prove that greater protection prevents use, the implication is that the longer bars indicate a stronger association between that factor and substance use.

The figure suggests that the degree of risk in their neighborhood environment is the more critical external risk and protective factor for boys. This factor is much less important for girls. Family supervision is the more salient factor for girls, and it is also salient for boys.

Figure 8
Partial Correlations Controlling for Age Between External Risk and Protective Factors and Substance Use: Males and Females
(N = 10,473)



Note: External risk and protective factors are scored so that higher scores indicate more positive behaviors.
Thirty-day substance use is coded so that higher scores indicate more use.

Internal Risk and Protection. The predispositions of youth, whether they express them as attitudes, in orientations to behavior, or in actual behavior, filter how they experience their external environment. Prevention researchers and practitioners have been particularly interested in internal risk and protective factors because they often find they cannot directly influence environmental factors beyond their program scope and resources. Programs that work directly with youth often experience difficulty implementing program components that involve the family, and prevention strategies that focus on community change require very different organization and capacity than programs that focus on direct work with youth (CSAP, 2000).

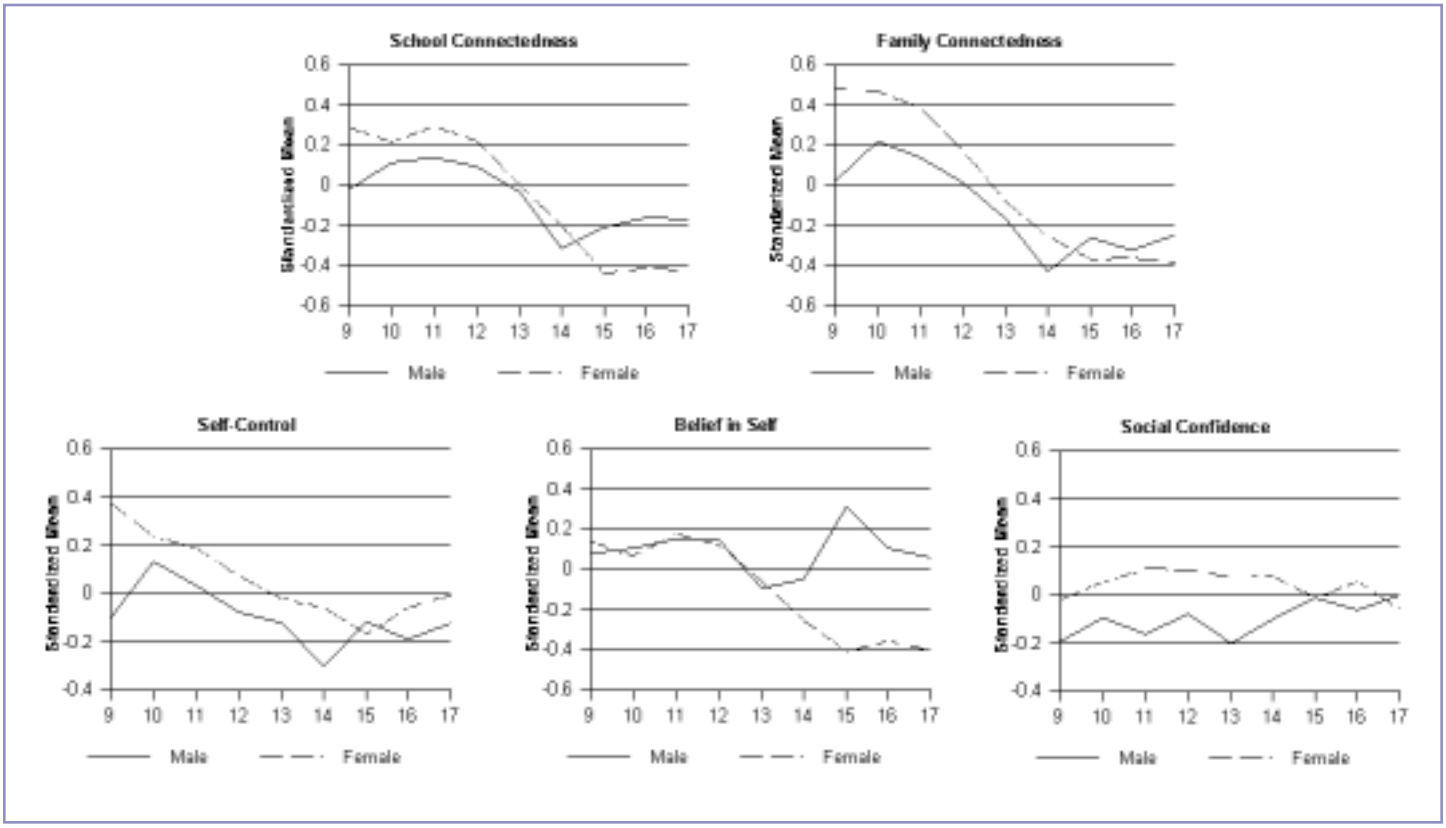
It follows that programs working directly with youth typically focus on building internal protective factors within the youth themselves. This was certainly the case for the High-Risk Youth Programs in the National Cross-Site Evaluation. One-half of the programs reported spending less than 5 percent of staff time working directly with the external environment (e.g., families, school, community) of the youth in their programs. Of those that did expend staff time working directly to strengthen protection in external environments, school staff were the most frequent participants in program efforts. In sum, the programs in the National Cross-Site Evaluation, like most prevention programs working directly with youth, focused their efforts on strengthening internal protective factors.

This makes identifying personal protective factors that will help youth resist negative environmental influences—and that prevention practitioners can help youth develop—a high priority. While there is little agreement among prevention researchers concerning the most important internal protective factors, there are identifiable emphases in the ways in which the internal orientations of youth serve to promote positive development and protection from risk. One orientation focuses in various ways on the idea that the development of a strong self-concept, internal confidence, and strong belief in one's own abilities will promote positive behaviors and "insulate" youth from negative influences that exist in their environment. This emphasis on individual strength and confidence is reflected in more specific protective factors, including self-control, belief in self, and social confidence.

Some prevention researchers and practitioners emphasize the importance of attachments to positive social influences, such as a caring and trusted adult (Benard, 1991). The influence of these attachments, sometimes called "bonding" or "connectedness," is a second orientation in the prevention literature. Most often, this bonding is seen as an individual (internal) attribute, the young person's belief that this external connection is important and meaningful to him or her. Bonded youth feel a stake in positive external environments. They believe that interacting and accomplishing in that environment are worthwhile and contribute to a positive future. Thus, developing a sense of connectedness (Resnick et al., 1997) to meaningful pieces of the environment that provide and support positive opportunities is an important aspect of the internal protective orientation of young people in high-risk environments.

While external protections such as those presented in the previous section naturally decrease as youth mature and become more independent, the natural pattern of maturational change in internal protective factors is not so clear. Figure 9 displays the change in average responses, with age, for each of the internal risk and protection factors in the baseline sample of boys and girls.

Figure 9
Internal Risk and Protective Factors Reported by Youth in the Cross-Site Evaluation Sample at Baseline by Age and Gender



Note: All scores are coded so that higher scores indicate more positive behaviors.

Overall, the trend in these factors is similar to that observed for external risk and protection. The responses of younger boys and girls are indicative of more protective orientations, including stronger perceptions of self-control, more belief in self, and stronger connectedness to family and school. The exception is social confidence, which rises slightly from preadolescence to the midteen years, particularly for boys. The rest of the orientations drop toward greater risk between the ages of 11 and 15, indicating a reduction in the internal protective orientations during the middle and early high school years.

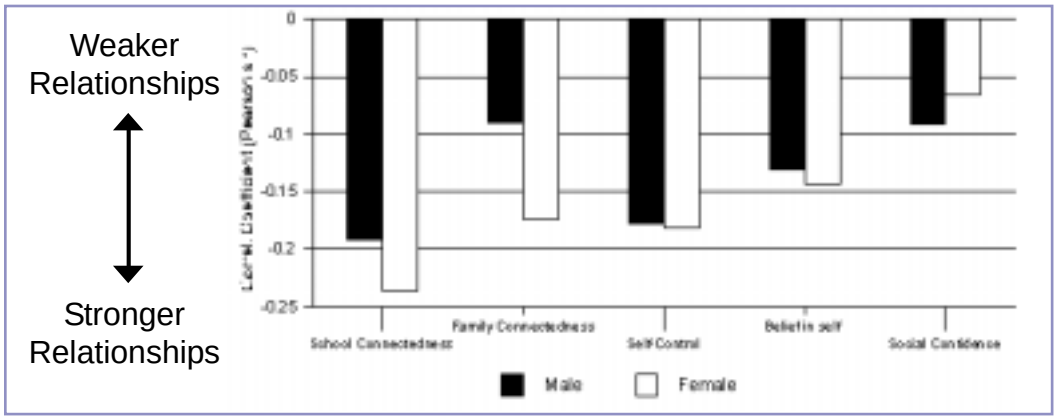
The trends displayed in Figure 9 summarize important similarities and differences in the ways that boys and girls in the high-risk youth sample change in internal risk and protection over time. Several of these patterns are summarized below.

- For two of the internal protective factors, self-control and social confidence, preadolescent girls report orientations that are more protective than boys, and in subsequently older age cohorts boys and girls become more similar in level of protection. Specifically, girls report more self-control at the younger ages, possibly because of monitoring by parents. Girls' self-control declines until they are 15, where they report approximately the same level of control as boys. With respect to confidence that they can make friends and are liked (social confidence), girls maintain similar perceptions across the ages, while boys begin with substantially lower levels of social confidence and increase to approximate female confidence at ages 15 and older.
- Reports of belief in self across ages demonstrate sharply different patterns for boys and girls. Specifically, girls report a sharp decline in this measure of self-concept between the ages of 12 and 15, while boys do not. This pattern is consistent with the concerns of many youth workers and researchers who identify issues of self-identity and self-concept as particularly important for young women (Liu and Kaplan, 1996; Rosenberg and Simmons, 1975; Bush and Simmons, 1987).
- Finally, boys and girls both show declines in self-reported connectedness to school and family from lower to higher age cohorts, though these differences are exaggerated for the girls. On both measures of connectedness, girls start with more protective orientations than boys in the youngest cohorts and end with lower protective orientations than boys in the oldest cohorts. For school connectedness, the girls experience a notably strong decline in indicators of the degree to which they feel efficacy in the school environment, as opposed to indicators of affective connection.

In summary, the evidence across age cohorts of youth at risk would suggest that girls report a greater decline in protection on these internal risk and protective factors between younger and older cohorts. The difference is clearest for belief in self, in which older girls score much lower than boys. Girls also report a greater decline across ages in school and family connectedness. While girls start with more self-control and social confidence than boys in the younger age groups, they are at approximately the same levels by their mid-teens. Thus, while boys show greater vulnerability to external risks in the neighborhood in the older cohorts in the study, girls tend to experience a greater decline in self-reported internal protection than boys through the crucial formative years encompassed by the National Cross-Site Evaluation.

Figure 10 displays the relative strength of the associations between individual risk and protective factors and self-reported substance use for girls and boys. Overall, the pattern of associations suggests a very similar configuration of internal risk and protective influences on substance use for boys and girls. School connectedness appears to be a relatively important protective factor for both genders. Self-control also shows a relatively substantial association with substance use for both genders; belief in self and social confidence are not strongly associated with substance use for either boys or girls. However, family connectedness is an important protective factor that does appear to operate differently for boys and girls, with a substantially stronger relationship to lower substance use among girls. Together with the higher levels of family supervision reported by girls as an external protective factor, this finding supports a conclusion that family factors provide one explanation for differences between substance use patterns in boys and girls. Family connectedness and higher levels of supervision for girls may reduce opportunities for substance use and result in somewhat lower levels of use of substances for girls.

Figure 10
Partial Correlations Controlling for Age Between Internal Risk and Protection Factors and 30-Day Substance Use: Males and Females



Note: Internal risk and protective factors are scored so that higher scores indicate more positive behaviors.
Thirty-day substance use is coded so that higher scores indicate more use.

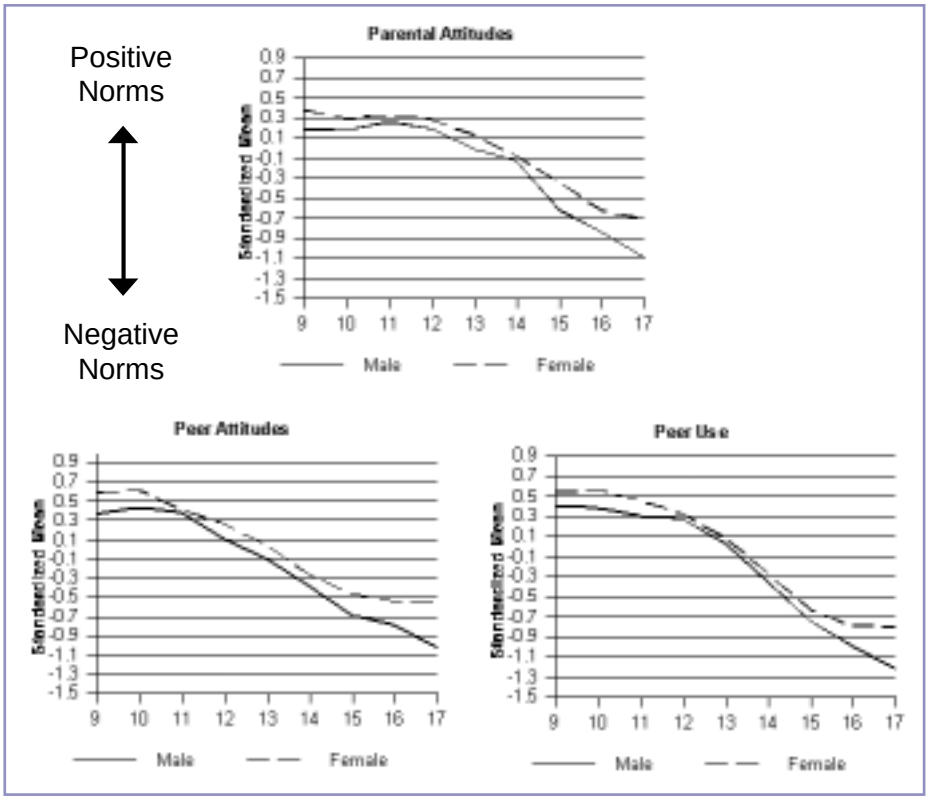
Substance Use Norms. The external and internal risk and protective factors identified in the preceding sections are generic indicators of youth development; these factors influence not only substance use, but many behaviors, including school completion and success, criminal justice involvement, and successful contributions to family and community. Because prevention of substance use was a major outcome objective for the study, CSAP's National Youth Survey measured risk and protective factors that were thought to have more focused relevance to the use of cigarettes, alcohol, and illicit drugs.

Social norms, and particularly the expectations and behaviors of peers, have often been observed as strong correlates of substance use among youth (Oetting and Beauvais, 1986). Accordingly, the National Cross-Site Evaluation included measures of several substance use norms in those social contexts that are closest to youth: parents and friends. Youth were asked to report their perceptions of their parents' reactions to substance use as well as their perceptions of their best friends' substance use behaviors and their best friends' attitudes toward use:

- Parental attitudes captures the degree to which the respondent believes his or her parents would be upset if they found out that the youth smoked cigarettes, drank alcohol, or used marijuana sometimes.
- Peer attitudes measures the respondent's assessment of the degree to which his or her best friend would disapprove if the best friend found out that the respondent smoked cigarettes, drank alcohol, or used marijuana sometimes.
- Peer use measures whether the respondent thinks his or her best friend smokes cigarettes, drinks alcohol, or uses marijuana sometimes.

As with the other risk and protection domains, youth's perceptions of substance use norms in these significant reference groups change rapidly with age. Figure 11 shows that, within the 5-year age range from 11 to 17, both boys and girls perceive substance use norms as moving from prohibitive to permissive. This change is more dramatic than those reported for other risk and protective factors. To underscore this change, 17 percent of the 10-year-olds compared with 73 percent of the 16-year-olds thought their best friend used alcohol sometimes.

Figure 11
Substance Use Norms Reported by Youth in the Cross-Site Evaluation Sample at Baseline by Age and Gender

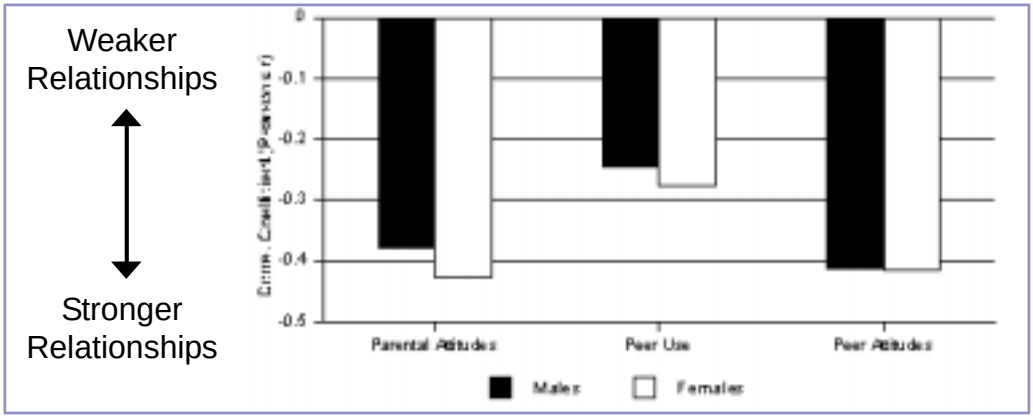


Note: All scores are coded so that higher scores indicate more positive behaviors.

Each of these graphs indicates a similar pattern. Younger boys and girls have relatively strong perceptions that parents and peers would be less accepting of their substance use and that their peers do not use. These perceptions are relatively stable from ages 9 to 12 with respect to parental and peer attitudes, though they begin to change at age 11 with respect to peer use. Perceptions of norms then change rapidly toward greater acceptance of use and greater use. For boys, this trend is constant through age 17. For girls, the decline appears to moderate at about age 16. Girls perceive that expectations and behaviors relevant to them are only slightly more protective than for boys. In sum, as youth age, they perceive a decline in the protective nature of substance use norms toward greater risk. These trends are very similar for both genders.

The pattern of importance of the substance use norms for individual use is very consistent for boys and girls. Parental and peer attitudes toward use are the strongest correlates of individual use in the study, and parental attitudes are only slightly more important for girls.

Figure 12
Partial Correlations Controlling for Age Between Substance Use Norms and 30-Day Substance Use: Males and Females

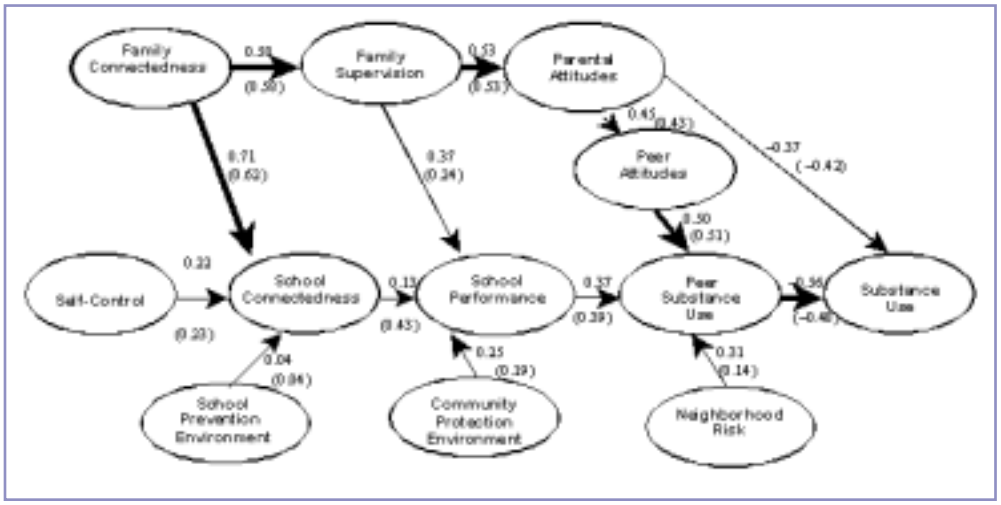


Note: Parental attitudes, peer use, and peer attitudes are scored so that higher scores indicate more positive behaviors.
Thirty-day substance use is coded so that higher scores indicate more use.

Modeling Differences in Risk and Protection for Boys and Girls

To provide an overall understanding of the way in which the multiple risk and protection factors described above may interact with each other to influence substance use, a statistical modeling technique was used to produce the picture of "paths of influence" presented in Figure 13. The model does not test cause-and-effect relationships but does provide estimates of the plausible strengths and order of sequential paths of influence between different risk and protective factors and substance use. The model depicted in Figure 13 provides separate estimates reflecting paths of influence for boys (top coefficients) and girls (coefficients in parentheses). A coefficient of "0" indicates no influence between two points in a path, and larger coefficients indicate greater influence. The negative paths leading to substance means that higher levels of protection go with lower levels of use.

Figure 13
Structured Equation Model Showing Paths of Influence for Boys and Girls
(Males, N = 3,596; Females, N = 6,941)



Summary Statistics
CFI = 0.90 RMSEA= 0.03
Note: Coefficients in parentheses are for females. Widest lines indicate correlations of 0.50 of more, medium-width lines are correlations ranging from 0.20 to 0.49, thin lines are correlations of less than 0.20.
All risk and protective factors are coded so that higher scores indicate more positive behaviors.
Thirty-day substance use is coded so that a higher score indicates more substance use.

The model depicts an overall configuration of risk and protection influences that work similarly for boys and girls.

- Family has an important influence on substance use for both boys and girls. Family connectedness initiates a key path of influence on substance use through family supervision and parental attitudes. When family bonding is high and family supervision is high, parental attitudes are positively associated with peer associations and substance. Family circumstances contribute to and reinforce school connectedness and performance for both boys and girls, and influence peer attitudes.
- Self-control as an individual characteristic has about the same relationship to school connectedness for both boys and girls.
- Although family factors are important for both boys and girls and indeed are slightly more important for boys in relationship to their school connectedness and performance, our prior analysis demonstrated that boys generally perceive less family supervision and perceive fewer protective attitudes than girls. Stronger family supervision for girls may be one factor reducing opportunity to use substances, resulting in lower use rates for girls.
- School connectedness is a stronger predictor of school performance for girls than for boys. The model suggests that school is a critical forum for developing self-efficacy and for positive youth development. The difference in path strength from connectedness to performance suggests that this forum may work better for high-risk girls than for high-risk boys.
- The model is consistent with other research in suggesting that the opportunities for substance use among boys are more associated with neighborhood environment, including both community protection and community risk, than those for girls.

In summary, the National Cross-Site Evaluation provides new information concerning the dynamics of risk and protection among adolescent girls and boys at high risk for substance use. The analysis confirms the importance of family connectedness as a protective factor for both boys and girls, and suggests that girls in the sample receive closer family supervision than boys, helping to protect them from substance use. School is an important forum for development of personal efficacy. School connectedness supports school performance, positive peer associations and reduced substance use. The stronger association of connectedness to performance for girls suggests that school is a more effective protective forum for girls at high risk than for boys. Finally, opportunities for substance use among boys at high risk are more heavily influenced by circumstances in their neighborhoods and communities than those for girls. Boys in neighborhoods characterized by higher risk are more likely to associate with peers who use substances and to use substances themselves.

Achieving Effective Substance Use Prevention For Adolescent Girls And Boys At High Risk

The reduction of substance use in the adolescent years is a primary outcome objective of the high-risk use prevention programs and a major issue concerning gender-sensitive prevention programming. Specifically, ensuring that boys and girls are both well-served by prevention programming for adolescent youth at high risk means focusing on achieving equally effective results in reducing substance use during the adolescent years.

As noted in the introduction to this monograph, prevention researchers and practitioners have been concerned, for a variety of reasons, that current prevention practices do not benefit boys and girls in the same ways. While there are reasons for this concern and some suggestions that boys benefit more than girls, the research findings on the issue are neither strong nor consistent. The strongest literature on the characteristics of effective prevention programs is based on secondary meta-analysis of studies of individual programs, and therefore does not isolate effects for boys and girls. Single site studies that identify differences for boys and girls cannot explain these differences in general terms that have been verified across multiple program contexts. The National Cross-Site Evaluation is the first study that provides the ability to analyze individual data comparing program outcomes for boys and girls across a large number of programs.

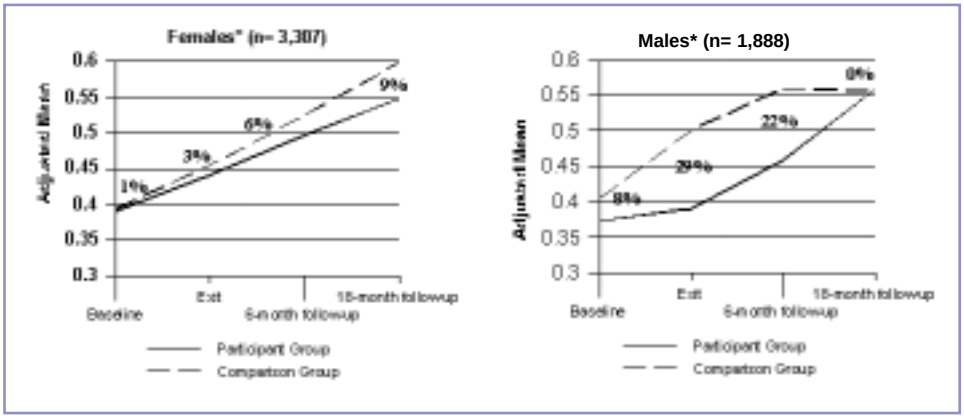
The analyses in this section present findings on gender differences in the effectiveness of the prevention programs included in the National Cross-Site Evaluation of High-Risk Youth Programs. The identification and explanation of gender differences in the effectiveness of programs in reducing rates of substance use among high-risk adolescents is approached in several ways. First, rates of substance use for boys and girls who participated in High-Risk Youth programs are compared to rates for boys and girls who did not have an opportunity to participate in High-Risk Youth or other prevention programs. These comparisons are made across the four measurement points in the study. The second set of analyses attempts to identify program factors, including participation in programs for female adolescents only, that may make programs more effective for either boys or girls. The final analysis compares effects for boys and girls among programs that incorporate prevention design characteristics and program implementation characteristics that have been identified in this study as contributing to positive prevention effects.

Prevention Effectiveness for Girls and Boys

The National Cross-Site Evaluation of High-Risk Youth Programs has supported important findings concerning the effectiveness of the programs in the study for preventing substance use by program participants. Overall study findings do not confirm the fear that prevention programs “work” for boys and not for girls, but they do support a conclusion that girls and boys respond differently to the high-risk youth prevention programs in the study. While both boys and girls demonstrate reduced rates of substance use relative to comparison youth, they do exhibit different patterns of program effect over the four time points at which data were gathered in the study. These differences are estimated across the 23 of the programs in which comparison youth had little opportunity for participation in other prevention programs to increase the accuracy of the estimate of program effects (see footnote 7 above).

As shown in Figure 14, analyses of prevention effects over all four points of data collection in the study show that the rate of substance use for participant group males at program exit is 29 percent lower than that for comparison males at program exit. For females, the difference between participant and comparison group use is only 3 percent at program exit. When separate analyses are conducted for the boys and girls while they are in the program (baseline to exit only), results show that the decrease in boys' use relative to comparison boys while they are in their programs is highly statistically significant. The difference between treatment and comparison girls at program exit is not statistically significant (at the .05 level of probability). Put simply, the overall pooled results for these programs suggests that, on average, boys use substances less while they are participating in a program, and no such immediate effect on substance use is evident for girls. This does not mean that none of the programs benefit girls while they are participating. Indeed, there is highly significant variation in effectiveness for girls across programs.

Figure 14
Thirty-Day Substance Use Over Time for Program Participants and Comparison Youth by Gender



Note: Analysis conducted using Hierarchical Linear Modeling.
*Statistically significant at .05 level.

However, female participants do significantly better than comparison females with respect to substance usage when use rates 6 and 18 months after program exit are considered. Usage rates for participant and comparison females steadily diverge throughout the study period, with rates for participant girls rising far less steeply than those for comparison girls. At 18 months, there is a 9 percent gap between participant and comparison group females. In contrast, usage rates by participant males move back closer to the rates of comparison males after prevention programs end. In summary, these data suggest that, on average, the substance use benefits in a range of community-based prevention programs are evident for males while they are in the programs, but they dissipate over time. On the other hand, on average, the substance use benefits for girls are not evident until after they leave the program. The Cross-Site Evaluation data suggest that 18 months after leaving the programs, these benefits are still evident.

In summary, the overall findings from the National Cross-Site Evaluation suggest that researchers may find differences between boys and girls in the apparent effects of prevention programs depending on what time frame is used to compare change over time. For these programs, an analysis of program effects at or shortly after exit would suggest that these interventions are more effective for boys. An analysis at a later point (i.e., 18 months for this study) would suggest greater efficacy for girls. In itself, this aggregate analysis does not tell us why these differences exist, nor does it provide guidance for how to strengthen effective programming for either boys or girls. Fortunately, however, the National Cross-Site Evaluation data set provides an opportunity to develop greater understanding of these observed differences and to assess their implications for improving prevention effectiveness for males and females.

Female Adolescent Programs

CSAP has promoted the development of programs addressing the needs of young women through its Female Adolescent Initiative, which funds grantees serving adolescent girls. The initiative recognizes the perceived need for special attention to risk and protection factors relevant to young women. It acknowledges that gender is an important factor in youth development and that current programming has been shaped predominantly by concerns for male use and associated behaviors. The Female Adolescent Initiative programs funded by CSAP within the larger framework of the High-Risk Youth Demonstration were designed to serve females only.

Since Female Adolescent programs were funded explicitly to support prevention programming to meet the needs of young girls, the strategies adopted in these programs provide insight into the kinds of programming that is currently seen as more appropriate for girls by prevention practitioners at the grassroots. Furthermore, understanding the program content and methods used in Female Adolescent programs may help explain prevention outcomes for the young women in the National Cross-Site Evaluation. If the 19 Female Adolescent programs in the study were designed to more effectively meet the substance use prevention needs of girls, the girls enrolled in those programs (57.3% of the girls in the study) should report greater reductions in their rate of substance use relative to comparison youth than girls enrolled in programs enrolling both boys and girls (46.7% of the study girls). However, contrasting the substance use effects for girls who participated in Female Adolescent programs in the Cross-Site Evaluation with girls who participated in mixed gender programs produced no statistically significant difference in prevention effects for substance use. Girls in Female Adolescent programs reduced their rate of substance use relative to comparison girls at essentially the same level as girls who participated in programs serving both boys and girls.

Interestingly, the mixed gender programs enroll virtually equal numbers of boys and girls. They exhibit no gender bias in their recruitment, and girls are just as likely as boys to be participants.

Program Focus

Even though the Female Adolescent programs did not achieve an enhanced substance use prevention effect over mixed gender programs, they were designed and implemented in ways that were intended to address risk and protective issues that appear to be particularly important for young women at risk.

The Female Adolescent programs are distinguished from the mixed gender programs in their focus on risk and protection issues that have been identified as distinctively important for women. Data on attendance in program sessions and detailed field information on the activities that were planned and implemented for these sessions were used to characterize each of the National Cross-Site study programs (CSAP, 2001c). Study programs were grouped according to four types of program content that are commonly distinguished in describing prevention interventions. A content type was considered dominant if program youth spent more time in that type of programming than in any of the other three.

Figure 15 compares the dominant program focuses for Female Adolescent programs with the dominant program focus for mixed gender programs. Clearly, the major distinguishing feature of the Female Adolescent programs is the number of programs that were dominantly affective. Nearly half (44.7%) of the Female Adolescent programs spent more program time in affective activities and content than in any other type. In clear contrast, only about 10 percent of the other programs emphasized affective programming. These programs focused on emotive and awareness factors thought to be associated with substance use. Following Tobler (1993), affective programming includes activities focusing on self-esteem, self-awareness, and attitudes, beliefs, and values associated with substance use and other problem behaviors.

The affective focus of the programs is evident in several recurring themes that run through the Female Adolescent programs. Issues of self-identity are a common focus across programs. Many program exercises focus on various aspects of identity and self-awareness, including identity as a female and often encompassing other shared characteristics of the girls in a program, such as identity as a young woman with disabilities, identity as a child of immigrants, or cultural identity related to racial or ethnic membership. These themes are reflected in the ambiance created by many programs (e.g., cultural artifacts and skills) as well as in session topics and content.

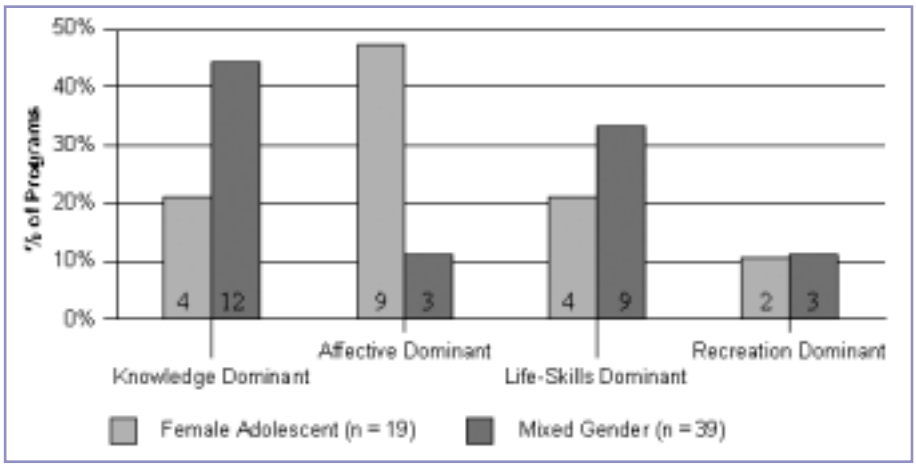
Other themes follow from the concern for positive identity and self-esteem among the girls. Many of the programs encourage self-affirmation through program content and exercises. Activities that reflect this orientation include photo essays on one's self, personal journals, and celebrations of self. These activities take various forms across the programs, but the theme is consistent. Identification and expression of emotions is another common issue addressed by Female Adolescent programs with an affective focus. "Feelings bags," in which girls write and store their emotional feelings, are one example. Expressing feelings is a frequently identified topic of program sessions or support groups.

The heavy affective focus of the Female Adolescent programs means that, as a group, they placed less emphasis on other major categories of program content. Female adolescent programs are much less likely to emphasize knowledge and information as a prevention activity (21.1% compared to 44.4% of mixed gender programs). When the programs do emphasize knowledge-building and information, they tend to include a range of issues of particular concern to adolescent girls rather than focusing on substance use knowledge and awareness. Common topics for knowledge-focused sessions in the Female Adolescent programs include physical and sexual abuse, hygiene and nutrition, pregnancy prevention, and AIDS prevention.

Life-skills interventions focus on specific attitudes and behavior skills often identified as "protective" in the risk and protection literature. As applied in the study programs, these skills include refusal skills, anger management, communications skills, decision and goal-setting skills, academic and vocational skills, and other social skills. The category also includes "recreation and enrichment" activities that focus on skills development (e.g., wilderness programming, ropes courses, programs of arts with competency emphasis). The life-skills category is characterized by a focus on behaviors in social situations rather than attitudes or normative issues. Female Adolescent programs are somewhat less likely to emphasize life-skills content than the other programs (21.1% compared to 33.3%).

Few of the Female Adolescent (10.5%) or the other programs (11.1%) made recreational activities their priority activity. Recreation and enrichment in Female Adolescent programs also had a distinctive "flavor," with culture, crafts, and art work (e.g., dance) having much more prominence than sports.

Figure 15
Comparison of Female Adolescent and Mixed Gender Programs by Dominant Prevention Strategy
(N = 48)

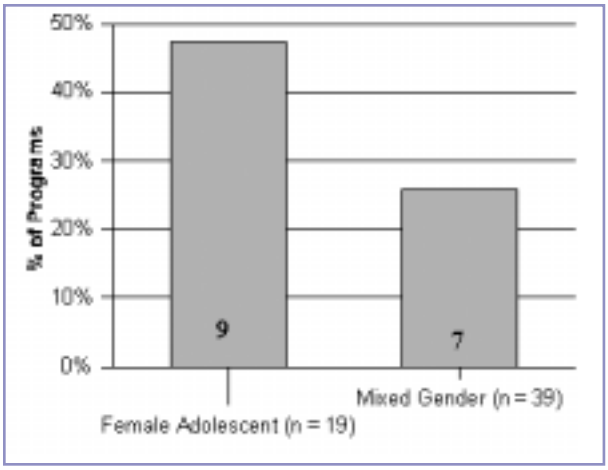


Delivery Methods

Female Adolescent programs are also more likely than mixed gender programs to use interactive methods of delivering prevention interventions. Programs in the National Cross-Site Evaluation used delivery methods ranging from primarily classroom-style, didactic programming, in which youth received information through lectures, videos or other similar means, to interactive and experiential programming, in which youth were required to actively participate, reflect on the subject at hand, and act upon it. Interactive programming, as defined for this analysis, includes roleplaying activities, team-building projects, outdoor wilderness experiences, or other activities that require youth to be actively engaged.

Figure 16 displays the percentage of programs in which interactive programming, rather than a more traditional classroom-type approach, was dominant. Those programs that are categorized as interactive used peer involvement as the central component of learning and development. Programs that utilized question-and-answer or discussion as a component of a classroom-style approach based on presentation of material "to be learned" are not considered predominantly interactive.

Figure 16
Comparison of Female Adolescent and Mixed Gender Programs by Interactive Delivery Method



The settings that utilized interactive delivery methods among the Female Adolescent programs tended to be small group discussions that explored affective topics, such as expression of feelings and self-image, or that are linked to skill-building or knowledge-based topics. Nearly half of the programs designed to meet the needs of young women (47.4%) used interactive delivery methods compared to just one-fourth of the mixed gender programs (25.9%). This is consistent with the reduced emphasis on knowledge and information as a prevention tool in the Female Adolescent programs.

Summary

In summary, the tendency for Female Adolescent programs to place a greater emphasis on affective programming is consistent with a belief that questions of self-concept (e.g., belief in self) and confidence are central to positive development in young girls (Rosenberg and Simmons, 1975). This emphasis is evident in typical session topics including self-image, self-efficacy, identifying feelings, appropriate expression of feelings, choosing a healthy lifestyle, personal values, spirituality, and cultural heritage. These topics are often addressed through discussion in supportive groups or in interactive exercises.

While this programming emphasis clearly addresses topics that are prominently identified in the literature on risk and protection for young girls, the programs do not produce greater prevention effects for girls with respect to substance use. These programs may produce benefits for adolescent girls in areas other than substance use, but there are plausible explanations for why they may not enhance prevention effects for substance use itself. First, as discussed more fully below, prevention researchers have consistently found that programs emphasizing affective intervention approaches tend to produce weak results with respect to substance use prevention. Second, the analysis of risk and protection for girls presented earlier in this monograph provides mixed evidence with respect to assumptions that belief in self and an affective programmatic emphasis address causes of substance use and related problems among adolescent females. While girls do indicate a substantial decline in belief in self during the mid-teen years compared to boys, their levels of belief in self are associated with only moderate differences in the likelihood of using substances, and this association is about the same as that for boys.

Program Characteristics and Prevention Effectiveness for Boys and Girls

Although Female Adolescent programs do not produce a differential prevention effect between boys and girls, other characteristics of programs in the National Cross-Site Evaluation may produce differential effects across genders. To test for this possibility, outcomes for boys and girls separately were contrasted between programs that were higher and lower with respect to each of the categories of program content and with respect to the presence of interactive programming methods. The question being addressed was "Do programs with specific program emphases produce more effective substance use prevention outcomes for boys or for girls?" The answer could provide guidance to strengthening the effectiveness of prevention programs serving each gender.

Program Characteristics Significantly Improving Prevention Effectiveness for Girls

Even though Female Adolescent programs focused on self-identity and other affective topics, the analysis of risk and protective factors in this monograph suggests that connectedness to school and family are particularly important considerations in influencing substance use among girls. This connectedness concept involves more than positive attitudes and bonding because connectedness includes the attainment of meaningful involvement (i.e., effective communication, self-efficacy, and skills necessary to attain accomplishments and positive inclusion in the setting). These skills are central to programs that emphasize life skills as a focus of session topics and program activities.

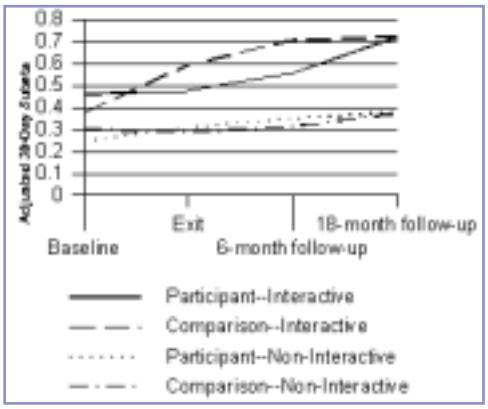
While programs emphasizing a knowledge focus, affective issues, recreation, or interactive program delivery did not produce stronger prevention outcomes for girls, those that emphasized life-skills programming produced stronger effects that were statistically significant. Figure 17 demonstrates that these sustained effects are more evident in girls who had participated in programs emphasizing life skills than in programs emphasizing other categories of program content. On average, there are no sustained benefits for girls in the other programs. Apparently, the benefits of life-skills approaches stay with these high-risk girls for at least 18 months after program graduation.

Figure 17
Thirty-Day Substance Use Over Time for Females in Life Skills- and Nonlife Skills-Oriented Programs by Group Status
(n = 3,307)

Program Characteristics Significantly Improving Prevention Effectiveness for Boys

The risk and protective factor analysis presented earlier in this monograph for boys suggests the importance of social interactions and milieu for adolescent substance use among males. As displayed in Figure 18, the only program characteristic that displays an independent statistically significant effect for substance use in boys was an emphasis on interactive modes of service delivery. This finding is consistent with an explanation based on the importance of social milieu and social opportunity. It may be that involving boys in interactive programming creates alcohol- and drug-free social opportunities and ties while the program is in session. Unfortunately, this explanation would also be consistent with the apparent dissipation of the positive prevention effect 18 months after the programs ended. Even though the positive effect of program participation produces a statistically significant difference in use trends after participants enter their program, the use patterns of treatment and comparison boys in interactive programs converge by the end of the study.

Figure 18
Thirty-Day Substance Use Over Time for Males in Interactive and Non-Interactive Programs by Group Status
(n = 1,888)



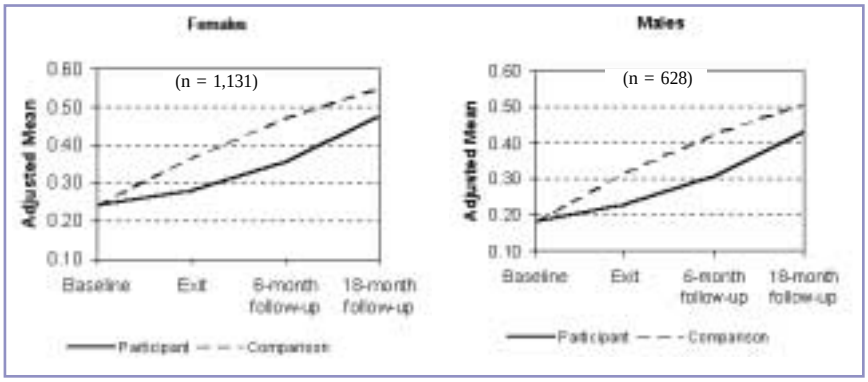
Prevention Effects for Boys and Girls in Programs with Positive Design and Implementation Characteristics

In recent years, prevention practitioners and researchers have begun to develop consistent evidence concerning the effectiveness of different prevention program designs and activities. The effectiveness of different prevention strategies for programs working directly with youth has included both the program content and the ways in which programs are delivered. National Cross-Site Evaluation findings reported elsewhere extended the growing body of knowledge in this area. In brief summary, the National Cross-Site Evaluation and other research (Tobler et al., 2000) has shown that programs that focus on developing behavioral life skills in youth are more effective than those that rely on affective programs that focus on attitudes and self-concept or knowledge-focused programs that emphasize information concerning substance use and its consequences. With respect to the ways in which programs are delivered, the National Cross-Site Evaluation findings confirmed the greater effectiveness of interactive programming versus classroom-style approaches (Tobler and Stratton, 1997; Tobler et al., 2000) and elaborated this lesson by identifying the particular importance of "thought-provoking and meaningful activities that encourage team-building" (CSAP, 2001c:38). Analysis of the High-Risk Youth programs also indicated that program intensity (i.e., the number of hours of programming per week) was a more important contributor to effectiveness than simple length of program from start to finish or total time spent in the program. While there is no close relationship of overall hours provided by a program and its effectiveness, very low dosage programs cannot be expected to produce prevention effects. Finally, the Cross-Site Evaluation (CSAP, 2001c) has demonstrated that cohesive programs that are planned and implemented according to a clearly articulated prevention strategy that relates program activities to expected outcomes are more effective than less cohesive programs.

It follows that programs with several of these characteristics may be more effective than programs with few or none of these characteristics. Within the National Cross-Site Evaluation sample, seven programs have been identified that have all of these characteristics or all but one of these characteristics. These programs represent those programs with the strongest design and implementation with respect to characteristics that have a demonstrated positive impact on program effectiveness.

The analyses in this monograph have demonstrated that there are differences in the manifestation and development of substance use in adolescent boys and girls at high risk. They also demonstrate that there are specific issues that youth workers should be aware of for boys and girls at this age. The positive characteristics identified in the Cross-Site Evaluation include those found to be particularly effective for both genders. Figure 19 provides evidence that strong prevention programs that are characterized by all or most of the positive program characteristics identified in the National Cross-Site Evaluation of High-Risk Youth Programs produce statistically significant and lasting reductions in the rate of substance use by program participants relative to comparison youth. Furthermore, there is no difference in these effects for boys and girls.

Figure 19
Thirty-Day Substance Use Over Time for Males and Females in Seven Sites With Positive Program Characteristics
(N = 1,759)



In summary, well-designed and implemented programs that include proven prevention strategies and practices can be equally effective for both girls and boys. Specific attention to risk and protective factors that are particularly salient for a given gender may have important benefits for young men and women, but it is not necessary to focus exclusively on these issues to achieve effective prevention for boys and girls. It is necessary to have strong, well-rounded programs with prevention strategies and activities with demonstrated effectiveness.

Conclusion

This monograph has presented a comprehensive view of gender differences relating to substance use and prevention of substance use in the sample of approximately 10,500 high-risk youth in CSAP's National Cross-Site Evaluation of High-Risk Youth Programs. The findings have contributed new information concerning patterns of substance use, the development of risk and protection and their relationship to substance use by these adolescent youth, prevention emphasis for programs serving girls as compared to those that also include boys, and effective prevention practices for boys and girls.

- **Findings for Girls**. Study findings on risk and protective factors are consistent with research that has identified the importance of family in shaping opportunities for substance use among girls (Van Etten, Newmark, and Anthony, 1999). Girls in the sample reported more family supervision at all ages than boys, an external protective factor that may lower opportunity for use. Indeed, reported use by girls is not as strongly related to risk in the neighborhood as for boys. Connectedness to school is also an important protective factor for girls. Girls with stronger connections to school tend to achieve higher academic performance and to use less. Although girls derive strong protective benefit from family and school, the study found that levels of family and school connectedness reported by girls declined particularly rapidly between early and late adolescence more sharply than for boys. This trend suggests that maintaining connectedness to family and school might be a particularly important focus in prevention work with girls.

  Although the study found that strongly designed and implemented programs with multiple science-based components have strong and lasting prevention effects for both girls and boys, it also suggests that programming that focuses on behavioral life skills is a key component of more effective and lasting prevention for girls, possibly because life skills programming often focuses on behavioral issues important to family and school. The study also found that girls in all female programs do no better than girls in mixed gender programs and that female-only programs tend to emphasize affective program topics and styles that were less effective in reducing 30-day use than the life-skills approaches.

  In summary, the study suggests that family connection and supervision are key influences that reduce opportunities for use among girls and that school connectedness and performance offer additional protective potential for girls. Participation in prevention programs did produce lasting reductions in rates of use relative to comparison girls, particularly when programs emphasized a life-skills approach.

- **Findings for Boys**. Boys in the High-Risk Youth study reported lower levels of family connectedness, and particularly of family supervision, than did the girls. School connectedness was only moderately associated with better school performance, suggesting the difficulty that schools represent for high-risk boys with respect to successful accomplishment. The relative lack of meaningful connection and supervision is consistent with the stronger relationship between substance use by boys and opportunity to use in the community environment.

  For boys, participation in prevention programs tended to produce relatively large reductions in rates of substance use relative to comparison youth at program exit. Interactive delivery methods that involved youth in peer group activities were particularly important program components for boys. However, in most programs these prevention gains for boys faded by 18 months after programs ended, particularly with respect to alcohol. Only well-designed and implemented programs incorporating multiple science-based components had lasting effects on all substances for boys.

  In summary, the study suggests that boys, in particular, need strengthened connectedness to family and school. Moreover, more effective family supervision and school environments that support performance by high-risk boys will be important for making this connection meaningful and protective. Prevention program participation does have positive outcomes for boys at high risk, and careful design and implementation of science-based program components are important to producing lasting benefits.

This monograph contributes to the growing understanding that substance use and its negative consequences are not simply, or even primarily, a male problem. Furthermore, the patterns explicated in this monograph suggest that prevention policy should support crucial positive contributors to positive development of both boys and girls in environments of high risk. Connectedness to families that supply appropriate supervision and positive expectations is important to both boys and girls. Connectedness to caring and supportive schools that support performance is important to both boys and girls. The study also suggests the importance of better understanding and response to the special needs of girls and boys. Girls do appear to experience more internal manifestations of risk than boys, particularly in the mid-teen years. While responses to this perceived need may take the form of affective (e.g., self-esteem) programming, this study suggests that more behavioral life skills orientations may be more effective in meeting the needs of girls at risk. More investigation is important here. Boys do appear to be more influenced by external factors in the social environment of their communities, and interactive programming as defined in this study appears an appropriate emphasis for boys. It also appears that a continuum of these kinds of services will be helpful. Finally, the study demonstrates that strong prevention programs that comprehensively and effectively implement proven features of strong prevention will produce lasting substance use prevention for both girls and boys.

Hopefully, this monograph has added to the growing understanding of how prevention programs can better meet the needs of adolescent boys and girls. The Female Adolescent Initiative represented here and other initiatives that explicitly address the specific needs of boys and girls are important contributors to growing knowledge in this area. This improved understanding, and continued efforts of prevention workers to develop appropriate practices, will help provide the best opportunities for positive futures for both girls and boys at risk.

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