In the last decade, prevention of substance abuse has become a standard part of the awareness and practice of teachers, youth workers, and community-based organizations. Beginning with the visible outbreak of illicit drug use among youth in the 1960's, awareness of the risk, harm, and reduction of opportunity associated with alcohol, tobacco, and drug use among young people has increased dramatically. Public agencies and private foundations have supported research that has produced important insights into the initiation and prevalence of substance use among youth, and into its association with poor educational, behavioral and social outcomes. Practitioners and evaluators have developed and tested prevention strategies and programs that contribute to positive youth development and reduce substance use. Social institutions and private citizens have made the prevention of substance use an integral part of efforts to support and promote positive future outcomes for America’s youth. Progress is evident.

Since its initiation as the Office of Substance Abuse Prevention (OSAP) in 1986, the current Center for Substance Abuse Prevention (CSAP) within the Substance Abuse and Mental Health Services Administration (SAMHSA) has been an important contributor to this progress. Through its focus on creating applicable knowledge concerning the effective delivery of prevention services, CSAP has provided critical leadership in the advance of prevention theory, program design, and service delivery. CSAP’s research programs focus on the ultimate test of prevention practice — do actual services delivered to youth at risk in the community produce substantiated positive outcomes? The agency’s important contribution to prevention knowledge is based on the actual experience of the tens of thousands of children, youth, families, and communities that have received direct services through agency-funded programs (CSAP, 1999a).

In its earlier research efforts, OSAP, then CSAP, contributed to the development of effective approaches to prevention for youth at risk and the communities in which they live. The High-Risk Youth Demonstration (HRY), focusing on youth at risk, funded over 400 projects during an eleven-year period. These programs were documented and assessed through hundreds of local evaluations and three national evaluations. Early findings from HRY local and national evaluations contributed to the prevention field by identifying promising practices; contributing to the risk and protection framework for understanding substance use in youth and developing prevention approaches; and identifying the need for diverse program approaches meeting the special circumstances and needs of youth differentiated by level of risk, age, gender, disability, or cultural membership (Sambrano, Springer, & Hermann, 1997).
As the prevention field has progressed, CSAP has maintained its leadership role by funding prevention services and research projects that address the increasingly refined knowledge needs of prevention practitioners. As the HRY demonstration matured, focused funding initiatives encouraged the development of programs designed to meet the special needs of female adolescents and the problem of substance-related violence. These initiatives also encouraged the replication of promising programs. Careful review of the accumulated evaluation record from HRY programs has identified eight proven programs to serve as guides for the proliferation of effective practices (CSAP, 1999a).

This volume reports findings from the National Cross-Site Evaluation of High-Risk Youth Programs, the third and final national evaluation of the CSAP HRY demonstration. This rigorous, multi-site, longitudinal study provides an unprecedented opportunity to develop systematic knowledge about the effectiveness of different prevention strategies and programs across diverse populations of youth. A brief summary of the purpose and design of the Cross-Site Evaluation provides an overview of the solid foundation of research that underlies the findings in this report.

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

The National Cross-Site Evaluation of HRY Programs was designed to produce systematic comparison of interventions and outcomes across a large number of programs funded by CSAP during 1994 (for five years) and 1995 (for three years). Unlike prior national evaluations of the HRY Demonstration that depended on secondary interpretation of (dissimilar) local outcome evaluations, this study was designed to collect primary data through common instrumentation across all participating programs. While study design, instrumentation, and implementation were common across participating sites, the interventions were locally determined within the general parameters of the funding solicitation. While the variation in intervention designs introduced complexity in data collection and analysis, it met the intent of beginning to “sort out” the interventions that were most effective for youth at risk. Allowing the local grantees discretion to design interventions for their local programs within general grant guidelines is also consistent with the history of the HRY demonstration which recognized that the ideas and experience of local prevention practitioners are an important contributor to a learning community that can identify, articulate, and disseminate successful intervention approaches in the developing prevention field.

The National Cross-Site Evaluation of HRY Programs was initiated with three major objectives.

- First, the study was designed to systematically document the process of prevention service delivery and of program implementation. Unlike previous Cross-Site studies that documented program activities through qualitative data alone, the study was designed to develop common measures of program activity that could be used to explain patterns of program effectiveness. This objective was fundamental to developing science-based knowledge about what intervention approaches and program characteristics contribute to attaining prevention objectives.

- Second, the study was designed to provide systematic information about the role of risk and protective factors in the substance abuse prevention interventions, including the linkages between risk and protection and substance use in the Cross-Site target population, the place of risk and protection as objectives of prevention effort, and the effects of program participation on the risk and protection experienced by youth at risk.
Third, the study was designed to assess and explain the impact of programs in preventing and reducing substance use among youth at high risk for such behavior.

To meet these study purposes, the Cross-Site Evaluation incorporated a uniquely comprehensive and rigorous study design. The major features of this design are summarized below.

**Study Design**

To successfully develop knowledge within the study's conceptual framework, the National Cross-Site Evaluation is guided by a rigorous research design that incorporates numerous lessons from prior evaluation of the implementation and effectiveness of prevention services. The research design has the following major features.

- **Diverse Program Sample.** Forty-eight sites\(^1\) funded through three initiatives of the HRY demonstration during 1994 and 1995 are included in the sample of programs. Programs were excluded if they served children primarily under the age of 9. Within this parameter, programs were selected to ensure coverage of different regions of the country, differing funding initiatives, and differing target population characteristics (e.g., age, gender, and race/ethnic membership). The sample drew 20 grantees from the general HRY funding solicitation; 19 from the Female Adolescents initiative; and 8 from the Replication Programs initiative.\(^2\)

  Importantly, no criteria related to quality of intervention design or of implementation plan were applied. The sample was selected to be representative of the range of program strategy, capability, and participation in the funding cohorts, and was not intended as a study of promising or proven programs only. The accompanying map (Figure I) indicates the location of participating programs throughout 22 states.

- **Participant and Comparison Youth Samples Within Each Site.** Across the 48 sites, the study involved more than 10,500 youth – 6,031 HRY program participants and 4,579 similar comparison youth who did not receive services from the participating CSAP programs.\(^3\) This design allows the effectiveness of programs to be tested through measurement of changes in risk, protection, and substance use over time as compared to changes in similar youth who did not receive program services.

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\(^1\) Two of the 48 sites in the study served incarcerated males between program entry (baseline) and program exit (exit). These youth were prohibited from using substances during this incarceration, dramatically decreasing their substance use between baseline and exit. These sites were therefore excluded from growth curve modeling of substance use change. The other sites in the study included a range of setting (e.g., schools, community-based organizations) where access to drugs might be greater in adjacent communities.

\(^2\) These funding initiatives are defined on page 2.2 of this report.

\(^3\) The number of youth in the final analysis was 10,743: 6,031 treatment group youth and 4,579 comparison group youth. Some youth were excluded from the final analysis because they fell below or above the 9 to 18 year old age range targeted for the study.
Instrumentation development included pilot testing of all measures with youth across varied backgrounds and age ranges.

**Common Survey Instrument.** All responses from program participants were collected using CSAP’s National Youth Survey (CNYS), a self-report instrument developed for this evaluation. The instrument includes sections titled “Facts About You” (personal attributes), “How Do You Feel?” (internal risk and protection), “Cigarettes, Alcohol, and Other Drugs” (self-reported use), and “You, Your Family, and Your Neighborhood” (external risk and protection, problem behavior). The questionnaire was written in both English and Spanish.

**Four Measurement Points.** The early evaluation literature for prevention programs relies heavily on simple pre- and post-program measurement designs. The findings reported in this volume present outcomes at program entry (baseline) and program exit (exit). It also includes information on outcomes at two follow-up measurement points beyond exit—one approximately six months after youth exited the program, and a final measurement approximately 18 months later. Thus, the study produces findings on programs that produce lasting change in the behavior of youth at risk.

**Detailed Program Contact (Dosage) Data.** Successful prevention programming must involve effective means of recruiting, engaging, and retaining youth in the program. If youth are not exposed to the intended program content, it can not impact them. Indeed, the degree of success in delivering an effective “dose” of prevention service is an important potential explanation of differential program effectiveness in achieving prevention objectives. Accordingly, detailed

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4 Instrumentation development included pilot testing of all measures with youth across varied backgrounds and age ranges.
information on program contact was collected for each program participant in the Cross-Site Evaluation. These data include information on the types of prevention activities in which each youth participated and the ways in which they were delivered.

- **Program-level Measures.** Measures of program setting, planned prevention strategies, and the implementation capacity of the organization delivering a program (e.g., staffing, adequacy of training and guidance, provision of adequate resources) are critical to identifying the elements of program design and implementation that produce desired outcomes. In single-site evaluations this information is part of the “process” context. In a multi-site study such as the National Cross-Site Evaluation, these measures are potentially important explanations of program effectiveness. For this study, program level measures were constructed from systematic data collected in each site through an intensive site visit and follow up telephone interviews. Program-level measures support analyses of those characteristics of program setting, prevention strategy, program dosage, and program implementation that are associated with positive program outcomes.

This introduction has provided a brief summary of the extensive data base that has been compiled during the five-year implementation of the National Cross-Site Evaluation. These data are the product of CSAP’s largest and most rigorous national study of HRY programs, and provide an unprecedented opportunity to develop systematic information across the diversity of youth and program strategies that constitute the current practice of prevention. By contributing to understanding of the factors that prevent substance abuse in youth, and producing science-based lessons about effective prevention strategies and prevention program practices, this major research effort holds the promise of more effective prevention, and more positive futures for America’s youth at risk.

**ORGANIZATION OF THE REPORT**

The major purpose of this report is to provide the prevention field with a comprehensive summary of findings from the National Cross-Site Evaluation of High-Risk Youth Programs, and to relate these findings to prevention policy and practice. The report does not focus on the research methods or analytic techniques employed in this five-year study, and provides statistical information only to the extent necessary to establish the strong evidentiary base for the many findings. Discussion of the complex, and often innovative, research procedures used in the study is reserved largely to the Technical Resource Volume that accompanies and elaborates this report. To guide the reader, the remainder of this introduction briefly summarizes the organization of this report in three parts.

- **Part One: Introduction and Summary of Findings** includes this introduction and Chapter One: Summary of Findings. The summary chapter provides the reader with a quick review of major findings of the study. The discussion focuses on evidence that participation in prevention programming reduces the rates of increase in substance use that occurs in the adolescent years, on implications for understanding the development of substance abuse in youth at risk, and on understanding how to design and implement more effective interventions for these youth.

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5 The National Cross-Site Evaluation design, sample characteristics, data collection and measurement procedures, and analysis techniques that produced the findings summarized in this volume are fully documented in an accompanying final report volume — CSAP’s National Cross-Site Evaluation of High-Risk Youth Programs: Technical Resource Volume.
Part Two: The Importance of Setting and Circumstance for Prevention Interventions provides an overview of the organizational and community settings of the study programs, variation in implementation and management, and the strategies that lie behind intervention activities in the programs. Setting and strategy are the topics of the Chapters Two and Three respectively, and Chapter Four presents information on risk and protective circumstances of youth as they relate to substance use when youth enter prevention programs.

Part Three: Effectiveness of National Cross-Site Programs summarizes study findings concerning the effectiveness of different program strategies. Building on Part Two findings, the discussion considers the settings and circumstances that influence the effectiveness of different prevention strategies. Chapter Five presents data on the degree to which study programs achieve outcome objectives for substance use, substance use attitudes, and important risk and protective factors. Chapter Six presents information that contributed to making programs more or less effective.
CHAPTER ONE
SUMMARY OF FINDINGS

The National Cross-Site Evaluation of High-Risk Youth Programs is a landmark public health study. The study provides strong evidence that substance abuse prevention programs in communities where youth face multiple risk factors do produce lasting reductions in substance use, and have important positive effects on the lives of youth at risk. These results are not hypothetical. They represent real accomplishments by real programs operating in these communities. The important information developed through this evaluation centers on the following major findings.

• Youth across the nation who took part in CSAP High-Risk Youth prevention programs decreased their alcohol and marijuana use relative to similar youth who did not participate in these programs.

• The more communities gave young people opportunities to take part in prevention activities, the greater the positive impact on substance use among these youth.

• Youth participating in CSAP prevention programs decreased their substance use even more over both the short and the longer terms relative to similar youth with only limited opportunities to take part in prevention programs.

• Youth who had already started to use cigarettes, alcohol, and marijuana before entering a CSAP prevention program reduced their use after joining the program.

• Prevention program results differed for males and females: Substance use outcomes were more positive for males than for females during the program. Positive outcomes developed later for females and lasted longer.

• More than two-thirds of CSAP Demonstration prevention programs had positive effects on participants’ substance use and/or on factors that make youth less likely to use substances.

• CSAP-funded prevention programs offered after school hours were more effective in reducing substance use for high-risk youth than those delivered during school hours.

• Prevention programs that focused on developing life-skills, including refusal skill-building, anger management, conflict resolution, social skills and academics were more effective in reducing substance use for high-risk youth than programs that emphasized other program content.

• Prevention programs that involved participants interactively were more effective in reducing substance use than programs that were less interactive.

• Prevention programs with more intense services (i.e. more than 4 hours per week) were more effective in achieving intended substance use outcomes than programs with less intense services.
• **High-risk youth who were connected to positive social environments (such as school and family) used substances less than those who lacked such connections. For youth at risk, connectedness plays an important role in effective prevention efforts.**

This *Summary of Findings* adds to the growing evidence that “prevention works.” Using a 48-site evaluation design of unprecedented scope, detail and rigor, the National Cross-Site Evaluation assessed and documented a broad range of prevention programs funded by CSAP in 1994 and 1995 to determine substance use and risk and protection outcomes. Implemented over five years, the study included more than 10,500 youth at high risk. Of that number, about 6,000 participated in CSAP prevention programs at the 48 sites; about 4,500 similar youth who did not take part in CSAP programs served as the comparison group.

This report briefly explains and offers support for the major study findings just highlighted. Additional findings, details, and lessons for prevention policy and practice will be available in a series of “Points of Prevention” monographs to be released by CSAP.

**PREVENTION OF SUBSTANCE USE AMONG YOUTH AT RISK**

Substance use is increasingly recognized as one of the nation’s most pervasive, costly, and challenging health and social problems. The use, and particularly the *early* use, of tobacco, alcohol, marijuana and other illicit drugs is intricately entwined with serious personal and social problems including school failure, crime, family violence and abuse, and a host of additional issues that constitute a continuing national tragedy. For over a decade, CSAP has been the federal agency responsible for providing leadership in preventing the profound negative consequences of substance use. Important components of this responsibility include design and funding of demonstration substance use prevention programs, followed by evaluation of these programs to identify prevention services that work in real community settings.

The prevention concept is simple. Society and individuals will benefit from action to change the social and personal conditions that promote and support substance use. Relying only on the costly options of treating the behavioral and physical health problems caused by use is less profitable. Attempting to control the negative social consequences of substance abuse through legal sanctions and enforcement is also less helpful.

Implementing the prevention concept, however, is complex. A growing body of research has documented a “web of influence” through which community, family, school, and peer factors may put youth at risk for substance use (CSAP, 1999). Despite this complexity, CSAP has made great progress in generating new knowledge about the design, implementation, and effectiveness of prevention strategies and activities. The most recent of these advances is CSAP’s completion of its National Cross-Site Evaluation of High-Risk Youth Programs—a study that offers many lessons for prevention policy and practice.

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6 Two of the 48 sites in the study served incarcerated males between program entry (baseline) and program exit (exit). These youth were prohibited from using substances during incarceration, dramatically decreasing their substance use between baseline and exit. These sites were therefore excluded from growth curve modeling of substance-use change.
Characteristics of the Study Sample

The study examined a broad range of programs implemented in a variety of organizations and community settings. Of the participating programs, 19 are funded through the Female Adolescents Initiative and serve young women exclusively; 8 of the programs are funded through a Replication Programs Initiative that models promising programs, and the remaining 21 program sites are part of the High-Risk Youth Initiative serving a diverse population of youth.

Approximately two-thirds (66%) of the study youth are female; and over half (57%) are of middle-school age (11 to 13 years old), with the youngest study participants being 9 years of age and the oldest being 18. The programs are in both rural and urban locations, and participants represent the diversity of the nation’s racial and ethnic makeup. More than one-third (36%) of the youth identify themselves as African American; approximately one fourth (26%) consider themselves to be Hispanic; and the remaining youth are relatively evenly distributed among Native American (13%), non-Hispanic White (12%), and Asian or Pacific Islander (11%) membership.

Study Considerations

The programs represent all the difficult realities of implementing demonstration programs in communities at high risk. Start-up, design, and administrative problems are inevitable in this context and inject a large dose of practical reality into the prevention ideal. Approximately one-third of the participant youth in the study, for example, attended less than 10 hours of prevention programming. Marginal participation by a significant portion of the target population is a reality of demonstration programming in high-risk communities. Thus, rather than representing the potential achievements of ideal programs, the findings from this study indicate actual achievements by a large number of typical programs implemented in the diverse and challenging realities of communities in which youth at high risk for substance use live.

In fact, when the full sample of programs is included in outcome analyses, the study substantially underestimates the positive effects of CSAP prevention programs. This is because comparison youth in about half the communities in which CSAP programs in this study operate can take part in or may be influenced by non-CSAP-sponsored prevention activities. The positive effects of those activities on the behaviors of comparison youth reduce the difference between results for participant and comparison youth. This concept is explained further in the following section.
1.4

**FINDING:** Youth across the nation who took part in CSAP High-Risk Youth prevention programs decreased their alcohol and marijuana use relative to similar youth who did not participate in these programs.

The National Cross-Site Evaluation makes a unique addition to science-based knowledge about prevention because it provides directly comparable information on a large number of prevention programs implemented under real community conditions. The study findings document the effectiveness of prevention activities delivered to youth at risk in the day-to-day implementation circumstances that prevention workers face in real community settings. Consequently, the design of the National Cross-Site Evaluation represents a conservative test of the effectiveness of prevention programs.

Even within the challenging parameters set by the evaluation design, the entire pool of participants across 46 programs had better outcomes in alcohol and marijuana use than did similar youth in the comparison groups (see Figure 1.1). For alcohol, participants showed small but statistically significant reductions in their rate of increase in use at program exit (exit) and at six months after exit. By 18 months after exit these effects had faded. For marijuana, use by program participants was higher than use by comparison youth at program entry, but this gap narrowed steadily throughout the study period. These positive results were statistically significant and reflect the sustained effects of program participation for approximately 18 months after youth leave the program.

The youth in this study are in precisely the age range when substance use begins and escalates to involve the majority of youth. Given this, the great majority of study youth (76%) reported no use of substances at baseline, making reduction of their use impossible. Accordingly, the fact that the overall reported use of alcohol and marijuana by participants did not increase as much as the reported use by comparison youth is a very important result. Analysis of the entire pooled sample demonstrates that “Prevention Works” for at-risk youth who participated in programs funded by CSAP during the study period. Subsequent sections clarify and elaborate this finding.
NOTE. Percentages represent differences in participant and comparison group use rates at each measure. Data excluded youth in two sites serving incarcerated youth. Adjusted mean use score based on hierarchical linear modeling analysis adjusting for age, gender, ethnic background, risk and protective factors and baseline 30-day substance use. Specific wording of question about 30-day use is “On how many days in the LAST MONTH did you (smoke a cigarette/have an alcoholic drink/use any marijuana)?” Response categories included (0) “none”; (1) “1-2 days”; (2) “3-5 days”; (3) “6-9 days” (4) “10-19 days”; (5) “20-31 days” in the last month.

FINDING: The more communities gave young people opportunities to take part in prevention activities, the smaller the increase in substance use among these youth.

In studies of operating programs in communities where youth are at high risk, youth who serve as comparisons may have access to prevention services similar to, or even more intensive than, the services being provided in the program under study. Because of this reality, the Cross-Site Evaluation categorized sites according to the degree to which comparison youth had the opportunity to participate in prevention activities in their community setting. The results support CSAP’s initiatives to encourage communities to expand prevention awareness and activities.

Of the sites, 23 had medium to high exposure of comparison group youth to prevention services; comparison group youth exposure at the other 23 sites was low. Comparison group youth with opportunities to take part in prevention activities reported substantially lower increases in alcohol, marijuana, and cigarette use (0.032, 0.030, and 0.029) than did comparison youth who had low opportunities for prevention participation (0.075, 0.076, and 0.090). More specifically, the average increase in 30-day substance use from baseline to exit for comparison group youth who had high opportunities to take part in prevention programming was from 57 percent to 68 percent lower than comparable increases for comparison youth.
youth with low opportunities for prevention participation. This finding indicates that widely available prevention activity reduces the degree to which youth begin and increase substance use in the critical adolescent years.

These findings have important implications for this study and for the prevention field. With respect to this study, these findings accentuate the fact that analyses based on the full sample of sites underestimate the degree to which prevention activities are effective. Second, analyses limited to data from the 23 sites where comparison group youth had low opportunities for prevention participation more accurately reflect differences between participant and comparison youth. For this reason, much of the evidence presented in the remainder of this report is based on the 23 sites with low-comparison group exposure to prevention activities.

For the larger understanding of prevention, this finding reinforces the positive effects of the availability of prevention programming in the community. Furthermore, it suggests that the effectiveness of prevention has probably been underestimated in past research using comparison groups in communities where prevention programming was available but its availability was not measured or considered in interpreting study results.
Participants in CSAP prevention programs showed significant improvement in substance use outcomes, even 18 months after program services ended, compared with youth who were similar in demographics, risk, and substance use at baseline but who had little opportunity to participate in prevention activities (those comparison group youth in the 23 sites where exposure to prevention activities was low).

This difference is clearly shown in Figure 1.3, where the gap between the two groups on a composite measure of 30-day cigarette, alcohol, and marijuana use increased from three percent at program entry to 12 percent at program exit. Eighteen months later the gap was six percent, still above the baseline difference. At all points, participating youth reported less use than comparison youth, and program participants significantly decreased their rate of increase in use relative to comparison youth.

Figure 1.3
Average 30-Day Substance Use Over Time for Participant and Comparison Group Youth
(n = 5,195)

NOTE. Calculated for the 23 sites with low comparison group exposure to prevention services. Averages include covariate adjustments. Percentages represent differences in participant and comparison group use rates at each measurement point.
FINDING: Youth who had already started to use cigarettes, alcohol, and marijuana before entering a CSAP High-Risk Youth prevention program reduced their use after joining the program.

The CSAP-funded programs in the National Cross-Site Evaluation predominantly served youth of middle-school age or younger. Although the majority of these youth had not yet begun to use substances, adolescents who had started to use substances reported higher levels of use than the general population. In high-risk communities, programming must prove effective with youth who have already begun to use substances, not just deter those who have not yet started. As Figure 1.4 shows, CSAP-funded programs proved highly effective in reducing substance use among participants who reported using cigarettes, alcohol or marijuana in the 30 days before entering their study program.

As Figure 1.4 also shows, program participant reports of use were 5 percent above comparison group reports at program entry among those who had already begun to use substances. By 18 months after program exit, comparison group youth reported 28 percent more use than program participants. This significant difference in use rates between program participants and nonparticipants points to the success of CSAP prevention programming.

NOTE: Calculated for youth at the 23 sites with low comparison group exposure to prevention services. Averages include covariate adjustments. Percentages represent differences in participant and comparison group use rates at each measurement point.

As Figure 1.4 also shows, program participant reports of use were 5 percent above comparison group reports at program entry among those who had already begun to use substances. By 18 months after program exit, comparison group youth reported 28 percent more use than program participants. This significant difference in use rates between program participants and nonparticipants points to the success of CSAP prevention programming.

NOTE: Calculated for youth at the 23 sites with low comparison group exposure to prevention services. Averages include covariate adjustments. Percentages represent differences in participant and comparison group use rates at each measurement point.

7 This sample included all youth who reported any substance use in the 30 days prior to program entry (baseline). Comparison data or substance use by the adolescent general population are from the 1998 National Household Survey on Drug Abuse.
Prevention practitioners and researchers have become increasingly aware of the differences in the development of substance use, and the nature of effective prevention, for males and females. 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 contributes new knowledge to our understanding of the ways in which prevention programs impact males and females.

As shown in Figure 1.5, analyses of prevention effects over all four points of data collection in the study show a large gap in substance use rates between participant and comparison group males at program exit (29%). For females, the difference between participant and comparison group use is only 3 percent program completion. However, female participants do significantly better than comparison females with respect to substance use when use rates 6 and 18 months after program exit are considered, with a 9 percent gap between participant and comparison group females. By contrast, use rates by participant males move back closer to the rates of comparison males after prevention programs end.

**Figure 1.5**

*Average 30-day Substance Use Over Time by Gender*

**FINDING:** Prevention program results differed for males and females: Substance use outcomes were more positive for males than for females during the program. Positive outcomes developed later for females and lasted longer.
In sites where exposure to prevention activities was low for comparison group youth, 70 percent of the CSAP programs showed a meaningful positive effect\(^8\) for participating youth (Figure 1.6). Six outcome objectives applied across sites were used to measure program effect. The six objectives were to reduce (1) cigarette use, (2) alcohol use, and (3) marijuana use for participants relative to comparison youth; to increase (4) school connectedness\(^9\) and (5) family connectedness; and to increase (6) non-accepting attitudes toward substance use.

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\(^8\) The measure of meaningful positive impact is the commonly accepted standard of an effect size greater than .20 (ES > .20). The effect size is the difference between the mean baseline-to-exit change in an outcome score for the participant group minus the mean change for the comparison group standardized to make it comparable across sites.

\(^9\) School connectedness is a measure combining school bonding and self-efficacy.
As Figure 1.6 also shows, baseline to exit analyses by outcome objective in those sites with low prevention-activity exposure for comparison youth indicate that:

- 30 percent of the sites had a meaningful positive impact on alcohol use;
- Over 25 percent of the sites had a positive impact on non-accepting attitudes toward substance use or on school connectedness, an important protective factor that indicates a positive connection to school;
- 13 percent had a positive effect on marijuana use and on cigarette use; and
- Less than 10 percent had a positive impact on family connectedness, an important protective factor that indicates a meaningful positive connection to family.

**FINDING:** CSAP-funded Prevention programs offered after school hours were more effective in reducing substance use for high-risk youth than those delivered during school hours.

The National Cross-Site Evaluation data allow analysis of the characteristics of program design or implementation that contribute to greater success in reaching program outcome objectives. It appears that the timing of prevention program delivery influences its effectiveness with youth in high-risk environments. As Figure 1.7 shows, the average effect on 30-day substance use was four times as great in programs delivered outside of school hours as it was for programs delivered during school hours. After-school programs provided greater opportunities for drug-free interaction, more intense services, which may account for these differences.

\[\text{Effect size} \]
FINDING: Prevention programs that focused on developing life skills, including refusal skill-building, anger management, conflict resolution, social skills, and academics were more effective in reducing substance use for high-risk youth than programs that emphasized other program content.

The Cross-Site study offers an excellent opportunity to test differences in effectiveness based on program content because the participating sites use an array of program designs with different emphases and learning methods. Four areas of emphasis for programming emerged from program-level and individual-level analyses of program content; (1) programs that focused on developing life-skills (e.g., refusal skills, communication skills, anger management, and other social skills); (2) programs that primarily provided knowledge of substance abuse, and other attendant problems (e.g., teen pregnancy, AIDS, gangs and violence); (3) programs focused on developing self-esteem, or “affective-dominant” programs; and (4) recreation-dominant programming.

Program Content and 30-Day Use

Figure 1.8 displays the median effect sizes for 30-day use in the four content areas. Programs that focused on delivering life skills programming were significantly more effective than other programs in reducing substance use. Programs that focused on knowledge and prevention concerning alcohol, drugs, and other attendant issues, were significantly less effective than other programs. These findings support prior research on prevention strategies for at-risk youth (Tobler, 2000).
Prior research has indicated that method of delivering prevention services can play a key role in explaining differences in outcomes across programs. Meta-analysis prevention program evaluations have demonstrated that interactive programs are more effective than those that are noninteractive (Tobler, 2000). The National Cross-Site study programs range in delivery method from primarily classroom-style, didactic programming in which youth receive information through lectures, videos or other similar means, to interactive and experiential programming where youth are required to actively participate, reflect on the subject at hand, and act upon it. Typically, interactive programming includes role play activities, team-building projects, outdoor wilderness experiences, or other activities requiring active engagement. While the desirability of interactive programming as a prevention tool has been consistently supported in recent prevention research, the understanding of exactly what constitutes effective interactive programming has not been clearly developed. The richness of the information on Cross-Site program interventions allowed a more in-depth exploration of the nature of interactive programming and why it is effective. Specifically, the Cross-Site study team developed three dimensions of interactive delivery methods. These measures included (1) the degree of introspection (personal reflection) required; (2) the degree of active participation required; and (3) the amount of emphasis placed on team-building or collective activity. A summary variable assessing the overall emphasis these three interactive activity was also created and analyzed.
Substance Use

Figure 1.9 presents median effect sizes for the substance use variable for each of the dimensions and the summary measure of interaction.

Programs emphasizing building connectedness had significantly higher effect sizes than programs that emphasized individual strategies. The extent to which programs helped youth understand their own orientations and behaviors was also important, with significantly higher effects for programs that were oriented toward introspective activities. The type of participation was less influential, although patterns of effect sizes for youth in programs with active rather than passive activities suggest that these programs were more effective. The overall measure of interaction was also significant. Programs that actively engage youth in thought provoking and meaningful activities that encourage team-building are likely to produce positive effects.
The collection of individual-level “dosage” data in the National Cross-Site Evaluation allows for accurate assessment regarding the importance of the amount and intensity of services to program success. The Cross-Site Evaluation team has collected a unique dosage data set that includes detailed information or more than 216,000 points of contact. As shown in Figure 1.10, the intensity of services delivered (or number of contact units per week) influenced program outcomes. Programs with more intense services were more successful in changing substance use patterns than less intense programs.

**FINDING:** Prevention programs with more intense services (i.e. more than 4 hours per week) were more effective in achieving intended substance use outcomes than programs with less intense services.

**Figure 1.10**

Average Effects for Substance Use Measures by Program Intensity*

*(n = 46)*

NOTE. Intensity is a measure of the number of units of service received per week.

* Statistically significant at the 0.05 level (one-tailed, Wilcoxon test).
Improved understanding of the risk factors that contribute to substance use and the protective factors that guard against it influences prevention program design. The National Cross-Site Evaluation makes a strong contribution to knowledge about risk and protective influences on youth, particularly with respect to the ways in which conditions in the community, school, family, and peer environments (external risk and protection factors) interact with youths’ personal orientations (internal risk and protection factors).

The high-risk youth programs focus on working directly with youth. Few aim activities at changing the family, school, or community environments, although many involve families in youth activities. Program interventions focus mainly on changing youth’s internal risk and protection factors.

The National Cross-Site Evaluation demonstrates the importance of connectedness to positive social environments such as family and school as a protective orientation for youth. Two analyses support this finding.

Figure 1.11 demonstrates the interconnections between risk and protective factors and substance use. The statistical model displayed uses a set of risk and protective factors representing community, school, family, peer and individual characteristics affecting use. School connectedness is a connectedness factor representing youth’s perceptions that school is a positive and rewarding environment in which they can succeed. Family connectedness is a connectedness factor representing youth’s perception that the family is a positive and rewarding environment in which they are heard and supported. The arrows represent plausible pathways through which the various factors interrelate in their influence on substance use. The width of the arrow indicates the strength of the association.

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11 Structural equation modeling was conducted using LISREL (Joreskog and Sorbom, 1999).

12 More specifically, the model demonstrates that family connectedness works through family supervision and parental attitudes regarding substance use to influence association with peers who do not support or engage in substance use. Moreover, family connectedness also works through school connectedness and school performance to influence peer substance use and ultimately substance use.
Individual protective factors measured in the study included school bonding, family connectedness, self-control, belief-in-self, and social confidence.

It is clear that peer attitudes and peer use are very associated with personal substance use, a frequent finding in the prevention literature. Family connectedness and school connectedness are also important factors that work through family environment, school environment and peer associations as plausible influences on substance use. Connectedness is the beginning point for protective conditions and behaviors in family, school, and peer associations.

Figure 1.12 illustrates the direct relationship between each of the internal risk and protection factors measured in the study and substance use. These are the same factors often targeted by prevention programs. This analysis permits comparison of the effects of the connectedness factors – school bonding and family connectedness – with the influence of other internal factors on substance use. Its conclusions are similar to those presented in Figure 1.8, although it does not consider interrelationships among factors. Positive orientations toward school (school bonding) and family (family bonding) are more strongly associated with less substance use than are the other internal factors.

13 Individual protective factors measured in the study included school bonding, family connectedness, self-control, belief-in-self, and social confidence.
This analysis suggests that individual protective factors that are *catalysts and facilitators for building connectedness with positive external environments* (i.e., family connectedness and school connectedness) are more strongly linked to lower levels of substance use than are individual protective factors that are primarily “inoculations” against negative environmental influences (i.e., belief-in-self and social confidence). These data, and the more complex findings of the risk and protective factor modeling process in Figure 1.8, are consistent with a recent research review that concluded that “closeness to and connectedness with family and school were the most salient, cross-cutting protective factors” (Resnick, 1999).

**Figure 1.12**

*Summary of Associations Between Internal Risk and Protective Factors and Substance Use for Youth at All 48 Sites (N = 10,473)*

![Diagram showing associations between internal risk and protective factors and substance use](image)

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**CONCLUSION**

CSAP’s National Cross-Site Evaluation of High-Risk Youth Programs has added important new evaluative information documenting the effectiveness of prevention programming. This report has identified and elaborated ten major findings that have implications for prevention policy and practice.

For prevention policymakers, the National Cross-Site Evaluation of High-Risk Youth Programs provides important confirmation that “Prevention Works” for youth at risk. Overall, this rigorous study of a broad range of programs implemented in real communities demonstrated the following:

- Youth at risk who participated in prevention programming used substances less than those without the opportunity to participate, and the positive effects of the programs participation on substance use continued for at least 18 months after the programs ended, throughout the study follow-up period.
• CSAP prevention programs had significant impacts on youth who had already started to use substances, actually reducing their use.

• More than two-thirds of the high-risk youth prevention programs had a substantial positive impact on one or more of three substance use outcomes (30-day cigarette, alcohol, or marijuana use) or three protective outcomes (school connectedness, family connectedness, or non-accepting attitudes toward substance use).

• Family, school, peer, and community risk and protective factors, as well as the individual risk and protective factors targeted by these high-risk youth programs, were shown to influence substance use, confirming that prevention policy should support a variety of strategies to promote protection in these important environments.

The National Cross-Site Evaluation goes beyond demonstrating that “Prevention Works” to identify “what works” and why. For prevention practitioners, the study provides lessons for refining and strengthening prevention programming in several areas. The evaluation also has important implications for emphases in prevention design and implementation:

• The connectedness that youth experience with positive social environments such as family and school is important to reduced substance use, and an important emphasis for prevention programming.

• Program strategy and method of delivery make a difference. Programs focusing on life skills programming were more effective in reducing substance use than programs emphasizing other program content. Programs with a more interactive focus were also more effective in reducing substance use than programs that were less interactive.

• Programming delivered outside school hours is more effective in changing substance use patterns for youth at high risk than prevention programming offered during school hours. Although schools are critical forums for positive youth development, the classroom may not be the best place to directly impact substance use through prevention programming.

• The positive effects of participation in prevention programming tend to fade for males but not for females after leaving the program, suggesting that continuing programming support may be especially important for young males at risk.

An initial objective of the National Cross-Site Evaluation was to use rigorous research to examine the experiences of actual prevention programs to extract lessons for improving future programming. This Final Report represents the first step in realizing that objective. As a next step, CSAP’s “Points of Prevention” monograph series elaborates the rich and detailed findings of the study and their many implications for prevention practice. The final step belongs to the prevention policymakers and practitioners, whose charge it is to put these lessons to work for the benefit of our nation’s youth at risk.