

1. Introduction

This is the third in a series of semiannual reports based on the National Survey of Parents and Youth (NSPY), a continuing survey designed to evaluate the National Youth Anti-Drug Media Campaign. The National Youth Anti-Drug Media Campaign (the Media Campaign) is part of an effort by the Office of National Drug Control Policy (ONDCP) to educate and enable America's youth to reject illegal drugs by means of an advertising and social marketing program about the dangers of drugs. Other important Media Campaign goals are to convince youth who are occasional users of drugs to stop using them, to enhance adult perceptions of harm associated with the use of marijuana and inhalants, and to emphasize to parents and influential adults that their actions can make a critical difference in preventing youth drug use.

This third report is both descriptive and evaluative in content. Chapter 2 describes the evaluation design and analytic logic. Chapter 3 provides descriptions of message exposure achieved by the Campaign from September 1999 through June 2001. Chapter 4 presents evidence about changes in behavior among youth. Chapters 5 and 6 present evidence about effects of the Campaign. Chapter 5 focuses on targeted youth attitudes and beliefs about drug use. Chapter 6 focuses on parent behavior, and parental attitudes and beliefs about engagement with their children to prevent drug use. Both chapters 5 and 6 feature evidence about changes in the outcome indicators since the beginning of Phase III in late 1999, as well as evidence that exposure to the Campaign is related to these outcomes.

The introductory chapter reviews the nature of the Media Campaign, its paid advertising component, other components of the Campaign, the administrative structure of the evaluation, and the structure of this report.

1.1 Nature of the Media Campaign in Phase III

This report summarizes material from previous reports (Hornik et al., 2000; Hornik et al., 2001) and updates that information with descriptions of activities undertaken between January and June 2001, the period covered by this report. The Media Campaign is now in Phase III. Phase I involved pilot testing the intervention in 12 metropolitan areas, using existing Partnership for a Drug-Free America (PDFA) advertisements. During Phase I of the Media Campaign, ads were placed on television and radio, in newspapers, and on billboards. In Phase II, these advertisements appeared nationwide, not just in the test areas. Some new advertisements were added to the Media Campaign. The advertisements appeared not only on television, radio, billboards, and in newspapers and magazines, but also on cable television, Channel One (educational television within schools), in movie theaters, on the Internet, on schoolbook covers, and on basketball backboards. Table 1-A shows the Media Campaign phases.

Phase III marks the full implementation of the Media Campaign. As in the past, an extensive range of media is used to disseminate Media Campaign messages to a national audience of youth and parents. In addition, Phase III features a significant interactive media component, involving content-based web sites and Internet advertising. Most of the ads used in Phase III are new, although some existing ads that were considered effective in the past also have been used. New ads are developed and

Table 1-A. Media Campaign phases

Phase I January 1998 - June 1998	Phase II July 1998 - July 1999	Phase III September 1999 - Continuing
<ul style="list-style-type: none"> ■ Pilot test in 12 metropolitan areas, with 12 sites selected for comparison ■ Previously produced ads ■ Paid and donated advertising (pro bono ad matching required) 	<ul style="list-style-type: none"> ■ National level intervention ■ Previously produced and new ads ■ Paid and donated advertising on a full range of media (pro bono ad matching required) 	<ul style="list-style-type: none"> ■ National level intervention ■ New ads ■ Paid and donated advertising on a full range of media (pro bono ad matching required) ■ Partnerships with media, entertainment, and sports industries, and civic, professional, and community groups ■ News media outreach through public relations activity

disseminated according to the National Youth Anti-Drug Media Campaign Communication Strategy Statement, which was developed over the course of a year with the help of hundreds of individuals and organizations with expertise in teen marketing, advertising and communication, behavior change, and drug prevention.

The development of the ads follows a complex process involving four major organizations. The primary supervisor for the production of most of the ads has been PDFA, which has historically led anti-drug advertising efforts. However, since ONDCP uses Federal funds to finance some production costs as well as purchase media time, it has instituted a multifaceted review process for defining broad behavior change strategies and for developing and approving specific ads. Behavior change expertise comes from a continuing panel of experts who are responsible for designing behavioral briefs that provide a framework for creative development, specifying objectives and message strategies for each priority audience. The panel reviews strategies and advertising executions at bimonthly meetings to ensure behavioral relevance. ONDCP performs overall management of the Media Campaign. Under that overall leadership, responsibility for media buying, some supportive research, assuring a coherent advertising strategy, and the day-to-day management of the advertising component of the Media Campaign lie with Ogilvy, a national advertising agency.

Ogilvy has organized the participation (as subcontractors) of five agencies that specialize in communicating with minority audiences. Special attention has focused on sufficiently exposing Media Campaign messages to African Americans, Asian Americans, Pacific Islanders, Hispanic Americans, American Indians, Alaskan Natives, and Aleuts. Ogilvy has also supervised a substantial research effort to provide ongoing support to the Media Campaign decisionmaking. These include monthly mall-based tracking surveys and focus groups, across the country with both parents and youth, to review and generate feedback on developing ads and initiatives. Working with the specialized agencies, Ogilvy formulates, designs, and manages the implementation of multicultural research initiatives. Ogilvy and its subcontractors prepare recommendations on advertising content and buying strategies, which are then reviewed by ONDCP, which provides final approval for all major Campaign decisions and for all advertising content.

Phase III of the Media Campaign is “an integrated social marketing and public health communications Campaign.” Thus, it attempts to reach the target audience indirectly and directly

through advertising. Two critical components of the Media Campaign in Phase III involve (1) partnerships with civic, professional, and community groups and (2) outreach to the media, entertainment, and sports industries. Through the partner organizations, the Media Campaign strives to strengthen local anti-drug efforts. Through outreach, the Media Campaign encourages the news media to run articles that convey Campaign messages. In the early part of Phase III, the pro bono match was used to encourage the entertainment industry to portray drug use in ways that are based on accurate information, including the depiction of the consequences of drug use. Although the explicit tie to the pro bono match has been eliminated, the Media Campaign provides producers, script writers, directors, and journalists access to the latest drug information, and high-level experts through a regular series of briefings. The overarching goal is to encourage popular culture to dispel myths about drug use and accurately portray consequences of drug use.

It is expected that any youth may receive anti-drug messages from each of the following sources:

- Exposure to Media Campaign messages;
- Interaction with friends and other peers;
- Interaction with parents; and
- Involvement with organizations.

Youth exposure to Media Campaign messages may occur as a result of direct paid advertising or as a result of content fostered through outreach to the news media and entertainment industries. Further opportunities for exposure to anti-drug messages may be enhanced through personal involvement with organizations that have become partners as a result of Phase III Media Campaign outreach activities. Exposure to anti-drug messages through interactions with friends, peers, or parents may occur as a direct result of either or both of these Media Campaign efforts. Although it is difficult to measure, exposure may also occur indirectly, as a result of a social environment in which prevention of drug abuse is a salient issue; the Media Campaign may contribute to this environment.

The following two sections outline many of the activities of the Media Campaign in Phase III. These accomplishments will provide a sense of the magnitude of Media Campaign efforts to prevent or reduce drug use through various channels.

1.2 Paid and Donated Advertising

The Media Campaign had budgets of \$195 million in FY 1998 and \$185 million in FY 1999 through FY 2001. Of that, during Phase III, \$144 million was spent on the purchase of advertising time in year 1 and \$131 million in year 2. Congress mandated that media organizations accepting Media Campaign advertising must match Media Campaign purchases with in-kind advertising time or space, or with other public service of equal value. The match component of the Campaign, coordinated by The Advertising Council, includes public service advertising that promotes support to parents, youth, and organizations that foster positive development for children and youth, and thereby contributes to some of the overall goals of the Campaign.

Chapter 3 presents the Phase III media-buying strategies for youth and parents in detail, including how much paid advertising was directed through each channel. The Campaign delivers specific anti-drug messages each month nationally and locally through more than 1,300 media outlets. The target

audience was reached nationally through television networks ABC, CBS, NBC, FOX, UPN, and the WB; through cable networks; and through national radio networks. Additional advertising was purchased in 102 television and 106 radio “spot” markets representing about 86 percent of the population. On-line advertising was placed on 37 web sites and on America Online. Additionally, the Media Campaign has paid for advertising banners to appear on commercial web sites. Media Campaign messages are also disseminated in newspapers and magazines, on home video, and in movie theaters. Parents are further addressed through billboards, bus shelter placards, and other outdoor advertising.

Between year 1 (starting July 1999) and year 2 (starting July 2000) of Phase III, there was substantial inflation in the cost of purchasing media time. To deal with this, the Campaign made the following changes in its media buying:

- A hiatus in advertising directed at parents during December 2000.
- A net decrease in the number of weeks that ads aired on TV and radio from 52 to 35.
- The following adjustments in the media mix for parent messages:
 - Decreased usage of Network TV;
 - Increased use of Cable TV and Network Radio in Wave 2 (July to December 2000) and increased use of outdoor, Internet, and magazine advertising in Wave 3 (January to June 2001); and
 - Use of shorter message lengths (15 seconds) in addition to 30-second units.

The paid advertising component of the Media Campaign was expected to reach 90 percent of America’s youth at least four times per week during the course of the Media Campaign (ONDCP Fact Sheet, “Summary of Campaign Accomplishments,” March 2000). More than three-quarters of the total multicultural advertising budget of \$17 million for year 1 of Phase III (July 1999 to June 2000) (National Youth Anti-Drug Media Campaign Fact Sheet, “Multicultural Outreach,” March 2000) was planned to reach African American and Spanish-speaking youth, with the rest focusing on the other ethnic groups listed above.

The Media Campaign targets youth aged 9 to 18, with a focus on 11- to 13-year-olds, also known as “tweens”; parents of youth in these age ranges; and other influential adults. The paid advertising plan more specifically targets 11- to 17-year-olds. Also, the Media Campaign is designing advertising for sensation-seeking youth who have been shown in research as more at risk for drug use (Palmgreen et al., 2001). Sensation seeking is a biologically-based trait “based on the idea that persons differ reliably in their preferences for, or aversions to, stimuli or experiences with high-arousal potential” (Zuckerman, 1988, p. 174). Individuals who are high in their need for sensation, desire complex and stimulating experiences and are willing to take risks to obtain them. Several studies show that the variation in sensation seeking predicts behavioral differences, especially illicit drug use.

For both parent and youth audiences, the Media Campaign chose to focus on a limited set of message themes.

For parents, the themes included the following:

- Your child at risk. Every child is at risk for drug use, even yours.
- Parenting skills and personal efficacy. Parents can learn simple skills to help their child avoid drugs. There has been a particular emphasis on parental monitoring. Parents should know where their children are, who they are with, and when they will be back.
- Perceptions of harm. Parents need to be aware of the harmful effects of inhalants and marijuana on their child's life and future.

For youth, the themes included the following:

- Resistance skills and self-efficacy. These ads help in building confidence that individuals can avoid drugs.
- Normative education/positive consequences. These ads convey that most other youth don't use drugs and that not using drugs leads to good consequences.
- Negative consequences. Many negative consequences can accompany drug use (e.g., loss of parental approval, reduced performance in school and as an athlete, and specific drug effects).

Starting with Phase III, the Media Campaign has begun to incorporate branding to unify its advertising. This began with the parent Campaign, which focused on the idea of "The Anti-Drug" (e.g., Love: The Anti-Drug; Communication: The Anti-Drug). In the fall of 2000, the branding initiative was extended to the youth Campaign. The Campaign launched "My Anti-Drug," a multimedia initiative aimed at youth aged 11 to 17 years. Youth were asked to answer the question, "What's Your Anti-Drug?" with the goal of engaging them in defining their anti-drug. Youth were encouraged to submit ideas to ONDCP by post card or by the Web.¹ These ideas were incorporated into advertising for early 2001 that suggested activities that might serve as "anti-drugs" and allowed audience members to fill in their own (e.g., Soccer: My Anti-Drug). The "My Anti-Drug" Campaign's overall goal is to create and reinforce anti-drug norms by identifying positive alternatives in young people's own words.

The first half of 2001 has seen new ads with the anti-drug theme, more celebrity partnerships, and increased efforts to reach minority audiences. For example, eight new national television, radio, and magazine ads began running in spring 2001, featuring youth and their anti-drug submissions, such as drawing, skateboarding, and poetry. In a new celebrity partnership with the Campaign, the popular band *NSYNC appears in a new anti-drug ad that features band members talking about their anti-drugs—the people or things in their lives that stand between them and drugs. The ad has been shown at each concert in *NSYNC's 45-city summer tour and is also available on *NSYNC's web site (www.nsync.com). Finally, a new \$3 million initiative increased efforts to reach American Indians and Alaska Natives through nonadvertising media outreach and new TV, radio, and print ads. The Campaign has run ads in 79 local tribal newspapers, and aired messages on 14 local radio stations with specific reach to American Indian audiences, 29 radio stations that reach Alaska Native communities, and on TV throughout Alaska.

In addition to running ads concerning marijuana and inhalants, the Campaign has launched a \$5 million advertising and public communications effort to combat the use of the drug, MDMA, also

¹ To facilitate on-line submissions, the on-line media unit allowed kids to submit their anti-drug as a vote and upload a creative expression articulating their anti-drug in the form of a story or picture file.

commonly known as “ecstasy.” The Campaign places ecstasy ads on national radio networks and spot radio in 14 markets where ecstasy usage is high. Also, banner ads are placed on web sites.

Among the celebrities who appeared in anti-drug advertising during Phase III were singers Mary J. Blige, Lauryn Hill, the Dixie Chicks, and the late Scatman John; and athletes included tennis stars Venus and Serena Williams, professional skateboarder Andy MacDonald, track star Michael Johnson, Olympic figure skater Tara Lipinski, and members of the U.S. Women’s World Cup Soccer Team. Celebrities, however, were only one part of the advertising effort. There were more than 110 distinct paid ads played or scheduled to be played during this period from September 1999 through June 2001, including radio and television, general market, African American- and Hispanic-specific ads, and ads for parents as well as youth. A complete set of ad descriptions appears in Appendix D of this report. Most of the ads can be viewed or played by visitors to ONDCP’s web site: <http://www.whitehousedrugpolicy.gov>.

1.3 Public Communications Activities

Although advertising is the cornerstone of the Media Campaign, nonadvertising activities are also considered important to Media Campaign success. With an annual budget for nonadvertising of approximately \$9.6 million, public relations contractor Fleishman-Hillard develops and coordinates such nonadvertising activities related to the Media Campaign. The Media Campaign is a comprehensive social marketing campaign that seeks to reach the audience directly and indirectly, through both traditional and nontraditional channels. It is designed to strengthen existing anti-drug efforts in communities, to generate talk among youth and parents about drug use, to give youth and parents the tools they need to pursue drug-free strategies such as resistance skills and parenting strategies, and to increase the salience of drugs as an issue generally. In short, nonadvertising Media Campaign activities are designed to foster or enhance an environment in which drug use is noticed, recognized as a problem, and discussed. In such an environment, advertising can be expected to have a greater and more lasting impact.

Youth

Internet outreach efforts have grown in the first half of 2001 according to the Campaign. Fleishman-Hillard expanded its youth anti-drug web site, Freevibe.com, and added a new component directed to children of substance abusers. New web site features attracting Spanish-speaking youth were produced. Fleishman-Hillard reported that there were 1.5 million visitors to the Campaign’s youth web site in the first 6 months of 2001.

Additional web sites have been developed by other organizations in response to the Campaign. For example, in May, a new Internet site called ePeervoices.com began as a grassroots extension of the Campaign. The new web site combines information about drugs, alcohol, tobacco, and links to other authoritative web sites, and provides the opportunity for young people to talk with peers about related issues.

Previous semiannual reports have noted that the Media Campaign had formed partnerships with several national and local organizations already involved with drug prevention: Community Anti-drug Coalitions of America, National Association of State Alcohol and Drug Abuse Directors, Prevention through Service Alliance, National Drug Prevention League, Youth Service America, ASPIRA, United Indian Tribal Youth Corporation, National Middle School Association, Drug Abuse Resistance Education (D.A.R.E.), and National Association of Student Assistance Professionals and

the YMCA. The Media Campaign also partnered with community and multicultural organizations (e.g., the Boys and Girls Club of America, the Girl Scouts of America, PowerUP, and 100 Black Men). Partnerships with these organizations are intended to increase the amount of drug-related information in communities, including information about the negative consequences of drug use and how to resist drugs.

Popular institutions also supported the Media Campaign. Fleishman-Hillard reports that media outreach efforts resulted in placement of youth and drug-related topics in major national print media and large market daily newspapers, television coverage in the largest media markets, hundreds of articles in smaller and mid-size market community papers, and features in multicultural publications and broadcast media. *USA Today* distributed nationally a special eight-page supplement newspaper insert on November 27, 2000, to promote the “My Anti-Drug” initiative. This supplement continues to be available from Campaign web sites. Some of these efforts are as a result of the contributions made as part of the pro bono match.

Because the entertainment industry produces creative material that is highly visible, credible, and often influential, ONDCP has been interested in affecting how drug use was portrayed in popular culture. The overarching goal has been to encourage popular culture to, in particular, dispel myths about drug use and portray the consequences of drug use accurately. This was accomplished by sharing accurate information about illegal drugs with producers, scriptwriters, directors, and journalists from major broadcast networks and media, in order to encourage the development and dissemination of accurate anti-drug messages. A variety of popular television programs have incorporated information about drug use.

The Campaign also turned its attention to the power of teachers in its nonadvertising efforts. ONDCP partnered with “Cable in the Classroom” and the Association for Supervision in Curriculum Development, an organization of school administrators and teachers dedicated to education excellence, to create a training video called “Connected Teaching: Helping Students Make Positive Choices.” It was developed to show teachers how to include anti-drug and pro-social education in classroom lessons. The Campaign’s Behavioral Change Expert Panel advised on the video’s content, and national cable networks A&E, Nickelodeon, Discovery, and Court TV included it as part of their educational programming.

Parents

In addition to youth outreach, Fleishman-Hillard aimed activities at engaging parents as well. In spring 2001, advertising and nonadvertising activities were coordinated to result in an extensive parent-focused campaign to raise awareness about the dangers of inhalants. To complement the advertising focused on inhalants, the Media Campaign partnered with government agencies and industry representatives to promote National Inhalants and Poisons Awareness Week. Fleishman-Hillard executed an extensive public outreach effort that generated national and local print, radio, and television coverage in more than 50 markets nationwide. This outreach resulted in an influx of callers to ONDCP’s toll free information line with calls registering a 193 percent increase in one 2-week period.

At the beginning of 2001, Fleishman-Hillard executed an outreach effort to promote the availability of drug prevention information online at a redesigned web site for parents (www.TheAntiDrug.com). The regularly updated web site provides parenting tips and resources. Other on-line resources include a media tool kit for anti-drug action, print ads for community groups, new banner ads for web sites;

TV, print, and radio ads; and a “Lawyers and Substance Abuse Prevention Brochure.” In addition, the Campaign offered brochures such as “What Parents Need to Know about Marijuana” in four languages on their Asian language web site (www.druganswer.com). A new bilingual brochure titled “Inhalant Abuse: America’s Hidden Drug Problem” was prepared for publication in summer 2001 in English with four Asian language texts included.

The Campaign also partnered with the National Guard, the Community Anti-Drug Coalitions of America, and the Center for Substance Abuse Prevention to promote a series of satellite broadcasts intended to educate adult influencer audiences on specific drugs including ecstasy, heroin, and marijuana. In addition, one broadcast aired in February includes a “Teachable Moments” segment. It was designed to help peer advisors and adults who work with youth learn approaches to enhance adult and teen communication about substance abuse prevention, including how to effectively discuss drug use and its consequences with young people, recognize and take advantage of opportunities to intervene, teach appropriate behavior, and reinforce the positive consequences of staying drug free.

The Campaign is also supporting anti-drug groups through television, radio, print, and Internet banner ads encouraging the public to “find out more about drug-prevention organizations in your area,” (Update Newsletter, Spring 2001). Each ad gives a toll-free telephone number and a web site address for information about drug prevention, anti-drug coalitions and how people can get involved, as well as information on local volunteer opportunities.

Community Outreach

The Campaign has collaborated with a variety of community groups such as the National Education Association (NEA), faith-based groups, and Girl Scouts of America. The Campaign worked with the NEA to develop tools and resources to communicate prevention messages to students, educators, and school employees and their families. NEA is using print, satellite, and Internet communication channels to deliver Campaign messages to its members. Working with faith-based institutions, the Campaign developed materials to help youth leaders incorporate substance-abuse messages and up-to-date information on drug prevention into existing programs. The materials include a brochure that introduces ways for clergy and faith leaders to elevate youth substance-abuse prevention on faith agendas. The Campaign collaborated with Girl Scouts of America to create a series of new programs. There is a new Girl Scout patch, earned by completing a set of drug-prevention activities. There are also satellite broadcasts and an “Issues for Girls” series aimed at discussing issues, including drug use, facing girls today.

In addition to community groups, the Campaign collaborated with a variety of media industries. For example, the Media Campaign conducted an expert roundtable for entertainment writers in New York and Los Angeles on inhalants, ecstasy, and steroid abuse by teens. Attendees included representatives from all the networks, writers and producers from popular television shows, and major circulation magazines. The Media Campaign partnered with noneditorial staff at the New York Times for the Newspapers In Education anti-drug program. This program produced a standards-based anti-drug classroom guide for middle-school teachers that demonstrates how to incorporate the daily newspaper into classroom lessons to help youth develop skills to resist the use of illicit drugs, alcohol, and tobacco. Other anti-drug activities include the Mural Project, continuing from 2000.

Throughout Phase III of the Media Campaign, interactive media have been used as a message source, as noted in the previous sections. The Media Campaign maintains a number of web sites that provide drug-related information and a forum for young people to discuss drug use and consequences of drug

use, as well for parents and other community members to discover ways to help kids avoid drugs. The current sites include www.mediacampaign.org; www.theantidrug.com (available in Spanish, Chinese, Cambodian, Korean, and Vietnamese); the AOL Parents Drug Resource Center (keyword: Drug Help); www.freevibe.com; www.icountadvisors.com; AOL Its Your Life (keyword: Your Life) for kids; and www.teachersguide.org for teachers.

Traffic is routed to these sites from traditional and online advertising, through links from other web sites, and through Internet search engines. In addition to managing the Campaign's web sites, Fleishman-Hillard conducts extensive outreach to place content on other Internet web sites frequented by youth and parent audiences. For example, drug prevention content has been carried free of charge on 13 Internet portals including the highly trafficked Lycos.com and Yahoooligans! (the kids portal at Yahoo!), and on popular sites such as Oxygen.com, MSNBC.com, and on lesser known web sites. Together, the Media Campaign has reported almost 6 million user sessions, defined as "entries onto a web site," on these sites from January to December 2000 (Fleishman-Hillard Inc, "Web Site Traffic and Phone Call Data Report," December 2000).

1.4 Administrative Structure for the Evaluation

ONDCP has implemented the Campaign in three phases, each with an evaluation component. With the impact evaluations, ONDCP was able to detect changes in awareness of anti-drug messages presented through the media during Phases I and II of the Media Campaign. Changes in perceptions and attitudes about drug use are expected to occur within 1 to 2 years of full implementation of the Media Campaign and changes in behavior within 2 to 3 years. Because of the short time periods for the evaluations of Phases I and II, those evaluations focused primarily on change in awareness of anti-drug ads that are part of the Media Campaign.

The Phase III evaluation is being accomplished through a national household-based survey of youth and parents from the same household, including youth aged 9 to 18 years old and their parents. The evaluation includes the full range of youth, starting at ages 9 to 10, and their parents, so that initial interviews can be conducted with children before drug use is likely to begin and before they enter the "tween" ages, which is the primary target group for the campaign. They are then followed up at least once a year to evaluate the impact of the campaign as they enter the "tween" years.

The evaluation includes a longitudinal component in which youth and parents in the same household will be interviewed three times over the evaluation period. These repeated interviews will allow measurement of aspects of adolescent development and will thereby allow a much better assessment of the causal processes associated with youth drug use than is possible with cross-sectional studies, such as the Monitoring the Future Study and National Household Survey on Drug Abuse. It will also assess awareness of the paid anti-drug ads that are central to the full implementation of the Media Campaign.

Westat and the Annenberg School for Communication are conducting the evaluation under contract to the National Institute on Drug Abuse (NIDA). The funding for the evaluation is provided by ONDCP from the appropriation for the Media Campaign. NIDA prepared a tentative research design based on a meeting with experts in the field, and then contracted with Westat and its subcontractors to fully develop the design and carry out the study. Westat has general responsibility for all aspects of the project and, in particular, for supervising all aspects of sample design, data collection, and data preparation. The Annenberg School for Communication at the University of Pennsylvania, the

subcontractor, has lead responsibility for study design and data analysis. A second subcontractor for the first 2 years of the project, the National Development and Research Institute, provided expertise in the development of the drug usage questions and assisted in the preparation of the first special report on historical trends in drug use.

1.5 Structure of the Report

The report is organized in six chapters and five appendices, along with an extensive set of detail tables. Questionnaires for Wave 3 can be found on the NIDA web site at <http://www.nida.nih.gov/DESPR/Westat/index.html> and on the ONDCP web site at <http://www.whitehousedrugpolicy.gov>.

This chapter and the next provide background for the Media Campaign and the Evaluation.

Chapter 3 gives estimates on general and specific exposure measures of youth and their parents to the Campaign. Chapter 4 discusses self-reported youth use of marijuana and inhalants. Chapter 5 covers norms, attitudes, beliefs, and intentions of youth toward the use of marijuana and inhalants. Chapter 5 also assesses the association between youth exposure to the Campaign and drug beliefs, norms, attitudes, and intentions. Chapter 6 covers the effects of the Media Campaign on parental talking with their children about drugs, on parental monitoring practices, and on the frequency of their engaging with their children in fun activities. This chapter also assesses the association between campaign exposure and parental behaviors. The main body of the report provides what the evaluators viewed as the essential results of the survey.

The remainder of the report provides a large number of detail tables supporting and supplementing each of the text chapters. In some cases, these tables present results from some additional variables not presented in the text, and often provide detailed breakdowns of responses by age, gender, ethnicity, urbanicity, region, and sensation-seeking score for youth and for parents, by child age and other child characteristics, as well as parent education, gender, ethnicity, urbanicity, and region. The five appendices provide detailed information about sample design, weighting, variance estimation and geography (Appendix A), data collection procedures (Appendix B), methods used to control for the effects of confounding variables (Appendix C), the ads in the Media Campaign (Appendix D), and the preparation of exposure indices and outcome indices (Appendix E).

References

- Hornik, R., Maklan, D., Judkins, D., Cadell, D., Yanovitzky, I., Zador, P., Southwell, B., Mak, K., Das, B., Prado, A., Barmada, C., Jacobsohn, L., Morin, C., Steele, D., Baskin, R., and Zanutto, E. (2001). *Evaluation of the National Youth Anti-Drug Media Campaign: Second Semi-Annual Report of Findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.
- Hornik, R., Maklan, D., Cadell, D., Judkins, D., Sayeed, S., Zador, P., Southwell, B., Appleyard, J., Hennessy, M., Morin, C., and Steele, D. (2000). *Evaluation of the National Youth Anti-Drug Media Campaign: Campaign Exposure and Baseline Measurement of Correlates of Illicit Drug Use from November 1999 through May 2000*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063). Washington DC: Westat.
- National Youth Anti-Drug Media Campaign Fact Sheet. (March 2000). *Multicultural Outreach*.
- National Youth Anti-Drug Media Campaign Communication Strategy Statement. (1997). Washington, DC Office of National Drug Control Policy.
- Palmgreen, P., Donohew, L., Lorch, E., Pugzles, H., Rick H., and Stephenson, M.T. (2001). "Television Campaign and Adolescent Marijuana Use: Tests of Sensation Seeking Targeting," *American Journal of Public Health. Taking On Tobacco*. 91(2):292-296.
- Update on National Youth Anti-Drug Media Campaign. Washington, DC Office of National Drug Control Policy, Winter/Spring 2001.
- Zuckerman, M. (1988). *Behavior and biology: research on sensation seeking and reactions to the media*. In: L. Donohew and H.E. Sypher (Eds.), *The roles of affect, schemas and cognition, communication, social cognition, and affect*. Hillsdale, NJ: Lawrence Erlbaum Assocs., Inc., 1988, pg. 195-218.

2. Summary of Evaluation Plan

The Media Campaign seeks to educate and enable America's youth to reject illegal drugs; prevent youth from initiating use of drugs, especially marijuana and inhalants; and keep trial users of drugs from becoming regular users. It is the task of the Media Campaign Evaluation to determine how successful the Media Campaign is in achieving these goals and to provide ongoing feedback useful to support decisionmaking for the Media Campaign. This chapter focuses on the Evaluation Study's approach to assessing the Campaign's progress and success. Accordingly, it summarizes the models for Media Campaign actions and effects in Section 2.1. The next section presents the study's sample design and data collection methodology followed, in Section 2.3, by a description of the study samples of parents and youth. The chapter concludes with a brief overview of three analysis issues.

2.1 Models for Media Campaign Action

This section includes a presentation of the focus of the Evaluation and an extended presentation of the presumed models for how the Campaign is expected to affect its target audiences. The models underpin the construction of the design and the measuring instruments for the Evaluation.

2.1.1 Focus and Scope of the Evaluation

Although there are literally hundreds of questions that the Evaluation can and will answer, four overarching questions form the central focus of the Evaluation: (1) Is the Media Campaign getting its messages to the target populations? (2) Are the desired outcomes going in the right direction? (3) Is the Media Campaign influencing changes in the outcomes? (4) What is learned from the overall evaluation that can support ongoing decisionmaking for the Media Campaign?

The range of additional questions that will be answered is indicated by the following five major objectives for the Evaluation:

- To measure changes in drug-related knowledge, attitudes, beliefs, and behavior in youth and their parents;
- To assess the relationship between changes in drug-related knowledge, attitudes, beliefs, and behavior and their association with self-reported measures of media exposure, including the salience of messages;
- To assess the association between parents' drug-related knowledge, attitudes, beliefs, and behavior and those of their children;
- To assess changes in the association between parents' drug-related knowledge, attitudes, beliefs, and behavior and those of their children that may be related to the Media Campaign; and
- To compare groups of people with high exposure to other groups with low exposure. The circumstances of the Media Campaign present a serious challenge to evaluation. Because the Media Campaign goal is to reach out to youth all across America to help them avoid drug

problems, it is not appropriate to use experimentation to evaluate the Media Campaign. Experimentation would require conducting the Media Campaign in a random sample of media markets, which was not consistent with the Campaign's implementation plans for Phase III. Instead, the Media Campaign will be evaluated by studying natural variation in exposure to the Media Campaign and how this variation appears to correlate with phenomena predicted by the theoretical model for the Media Campaign. This means comparing groups of people with high exposure to other groups with low exposure. The Evaluation has been designed to make it very sensitive to variation in Campaign exposure. The primary tool for the Evaluation is a new household survey, the National Survey of Parents and Youth (NSPY).

Groups have been shown to have different levels of exposure to the Media Campaign. It is possible that there are pre-existing differences between the groups that might explain both the variation in exposure and variation in outcomes. In anticipation of this finding of variable exposure, NSPY includes many questions on personal and family history, which have been used to correct the association of exposure with outcomes.

2.1.2 Model of Media Campaign Influence

In developing the overarching Media Campaign model, two foundations are relied on: basic theory about communication and health behavior change, and evidence about what influences drug use. The overarching model of Media Campaign influence can be largely presented in the form of four interrelated figures, each of which describes a component of the overall model in detail. Three of these figures focus on influences on youth drug use. The other outlines influences on parents' actions with regard to their children's drug use. However, these figures cannot portray some complex ideas about how the Media Campaign may produce its effects. For this reason, five routes by which the Media Campaign may have influenced behavior are described in text rather than graphically. These five routes of influence reflect current thinking in public health communication theory and have driven the process of data collection and analysis. The figures are presented first, followed by text descriptions of the five potential routes of Campaign influence.

2.1.3 Overview of the Figures

Figure 2-A presents the overall model of effects. It includes the model for Media Campaign influence in broad outline and names the categories of external variables likely to influence the process. All of the Media Campaign activities (advertising, work with partnership organizations, encouragement of parent and peer conversations about drug use) are intended to increase youth exposure to anti-drug messages. The process through which these activities will produce exposures is laid out in Figure 2-B. Those exposures are meant to produce changes in young people's thinking about drugs, their perceptions about what others expect them to do, and their skills to resist drugs. These influence paths are laid out in some detail in Figure 2-C. A youth's changed thinking about drugs is meant to reduce his or her intention to try drugs, or to graduate from trial to occasional or regular use of drugs.

Figure 2-A. Overall model of Media Campaign influence

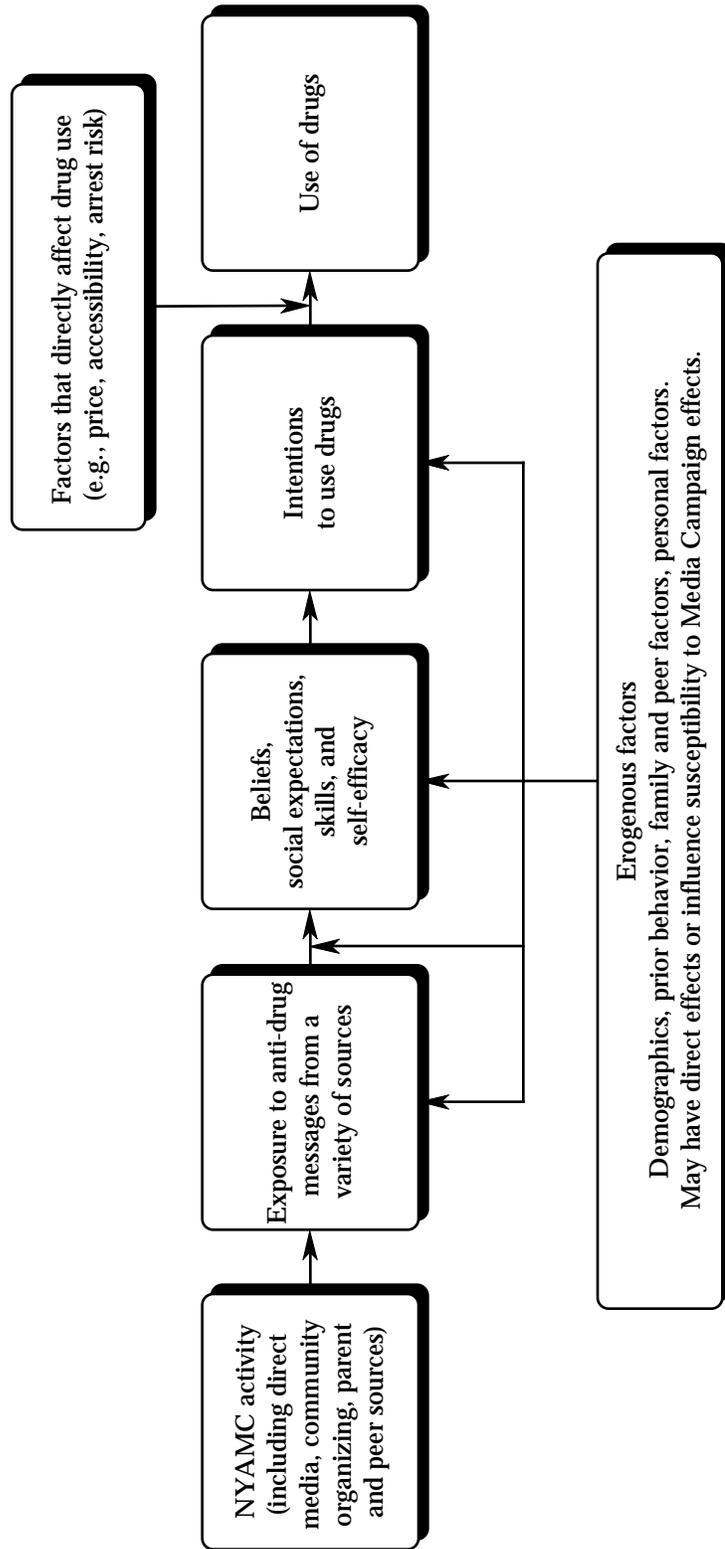
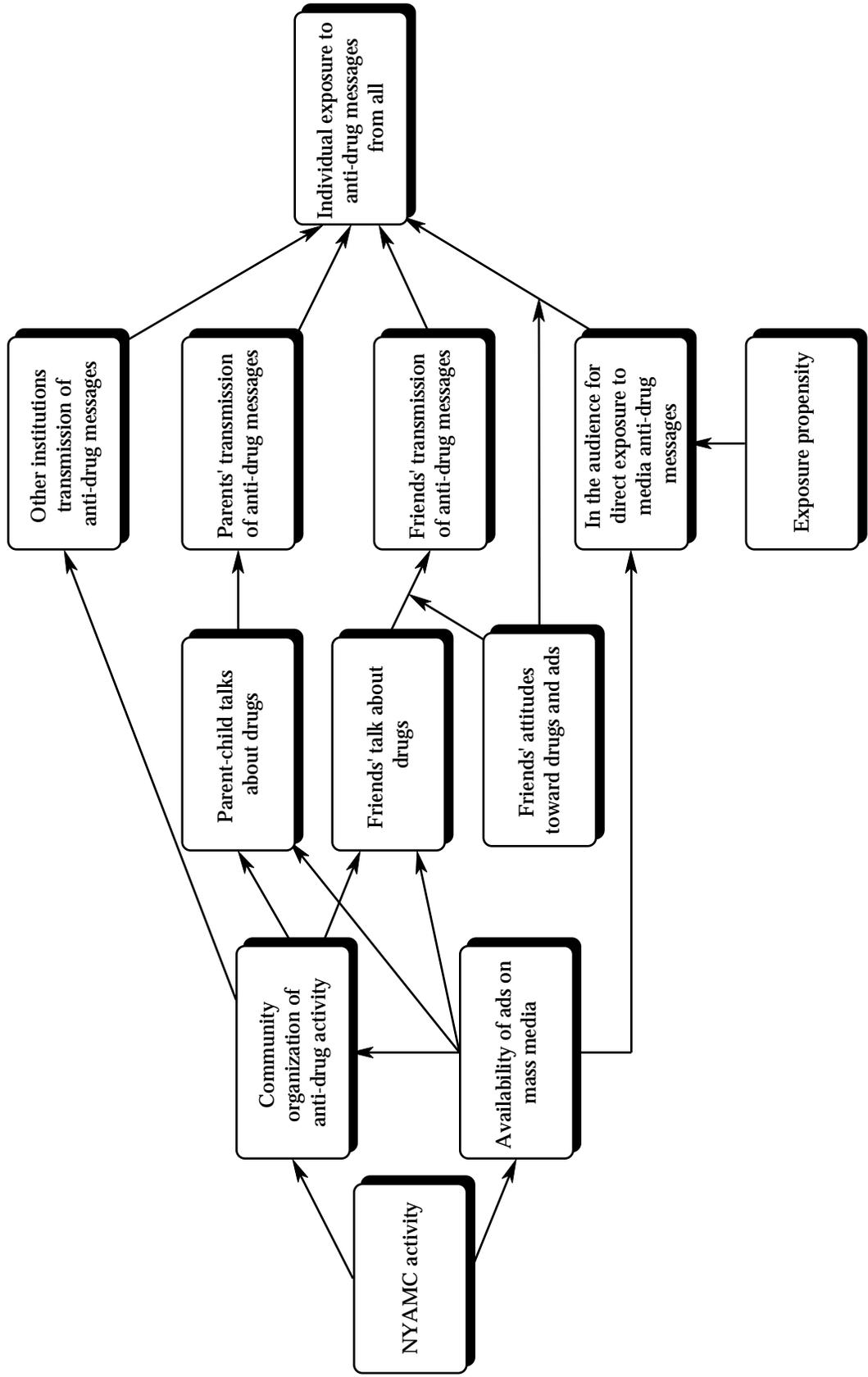
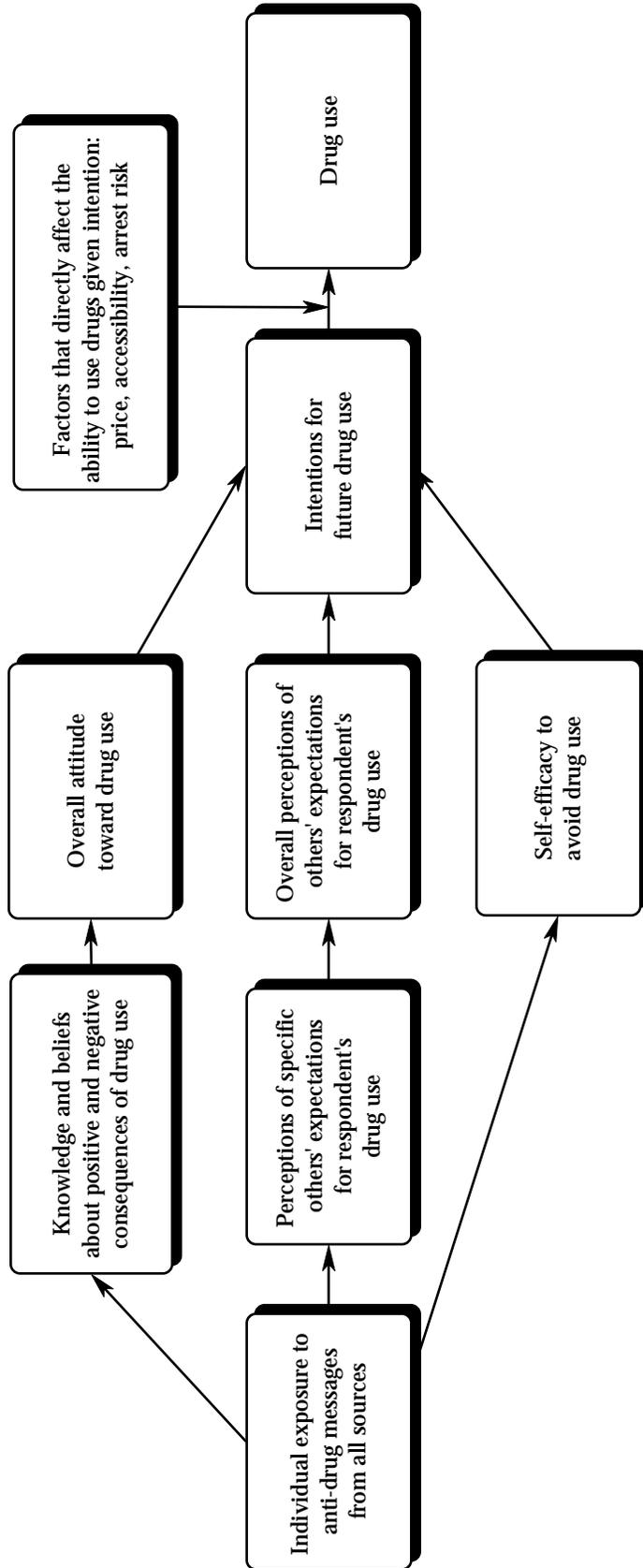


Figure 2-B. Model of influences on exposure to anti-drug messages



Other exogenous factors listed in Figures 2-A and 2-B are likely to directly influence some or all of these variables. Influence arrows not presented for clarity.

Figure 2-C. Model of influences of exposure to drug outcomes



Exogenous factors that may influence all variables in this model and may also influence susceptibility to effects of Media Campaign exposure on all belief outcomes. (Relationships not pictured for clarity.)		
Demographics: gender, age, ethnicity	Family and peer factors: parental monitoring, family functioning, friends' attitudes and behaviors, involvement with youth engaged in risk behaviors	Personal factors: sensation seeking (Section 2.3.5), academic success, ambitions, religious involvement, drug experience

Audience Exposure

Figure 2-B portrays the complex and multiple routes through which the Media Campaign will work. The audience may receive anti-drug messages from each of the following four sources.

- **Exposure to media messages.** The audience may be directly exposed to Media Campaign advertisements that appear on television, on the radio, in print, on the Internet, and elsewhere. Direct exposure to unplanned anti-drug media messages is also a possibility, if, for example, youth or parents see messages directed to the other audience, or they see messages produced under the pro bono match, or the news media increase their coverage of the issue as the result of Media Campaign activity. The likelihood of direct exposure to anti-drug messages depends on two factors: first, media consumption patterns, and second, the number and nature of advertisements that are placed on that medium in a given time period.
- **Interaction with friends and other peers.** Anti-drug messages may be relayed during conversations with friends. These conversations may have been stimulated by the presence of the Media Campaign, whether by advertisements or by activities undertaken by other organizations.

However, although the Media Campaign might increase the number of drug-related messages heard by respondents through a process of social diffusion, the nature of these messages may not always reflect the intentions of the Media Campaign. The Media Campaign may inadvertently stimulate discussion that rejects anti-drug messages or even reinforces pro-drug messages. The attitudes of friends may have an important influence on the positive or negative spin put on any message retransmission. For this reason, friends' attitudes are incorporated into the model in Figure 2-B.

- **Interaction with parents.** Anti-drug messages may come from parent-child conversations. One of the Media Campaign's early emphases has been to encourage parents' involvement in their children's lives and, in particular, to encourage conversations about drugs and drug use. If the mass media advertisements are successful, there should be more parent-child talk about drugs and thus a greater transmission of anti-drug messages.
- **Interaction with organizations.** Partnership organizations, including general youth organizations (sports teams, scouts, and religious groups) and anti-drug-focused institutions, are expected to increase their active transmission of anti-drug messages. These organizations may reach enrolled youth directly or through parents or peers as intermediaries.

Influence of Exposure on Behavior

Figure 2-C focuses on how exposure to anti-drug messages might influence behavior. The model relies fundamentally on the Theory of Reasoned Action, developed by Martin Fishbein and Icek Ajzen (1975), and is supplemented by the arguments of Albert Bandura (1986) concerning the importance of self-efficacy. The model assumes that intention to undertake an action is the primary determinant of behavior, although external forces (e.g., the price of drugs, their availability, and the risk of arrest) may constrain the transition from intention to action. The model assumes that intentions are largely a function of three influences: attitudes toward specific drug behaviors, perceptions of how important others expect one to act, and the belief that one has the skills to take an action (called self-efficacy). Attitude is a function of an individual's beliefs about the expected positive or negative consequences of performing specific behaviors. Perceived social expectations are a function of an individual's beliefs about what each of a number of important others (parents, friends) expect of them. The model

assumes that exposure to anti-drug messages will influence beliefs, and thereby influence attitudes and perceived social expectations. Finally, the model assumes that exposure to messages will directly influence self-efficacy, the individuals' belief in their ability to avoid drug use.

Although Figure 2-C specifies drug use as its outcome, use of that general term should be understood as shorthand. The four distinct behaviors on which the Media Campaign originally planned to focus were (1) trial use of marijuana, (2) trial use of inhalants, (3) transition from trial to occasional or regular use of marijuana, and (4) transition from trial to occasional or regular use of inhalants. Until recently, the Campaign has focused almost exclusively on marijuana behaviors, however. Each of these behaviors may be influenced by different factors. For example, fear of parental disapproval may be a particularly important determinant of the trial use of marijuana, whereas a more important determinant of regular marijuana use may be concern about becoming dependent on the drug. For this reason, each behavior and its determinants are measured distinctly.

External Factors

All elements of the Media Campaign's intended process of influence must operate in the context of a series of external factors. These factors are noted in Figure 2-A and presented in greater detail in Figure 2-C. In estimating the size of Media Campaign effects, such potential confounding influences have been controlled. In addition, in some cases researchers will be able to test whether individuals who vary on these external factors are more or less susceptible to Campaign influence.

External factors that will be considered in the Evaluation are parental monitoring, family functioning, friends' attitudes and behaviors, academic success, ambition, religious involvement, and prior drug involvement. Because it is argued that sensation seeking (Section 2.3.5) is an important determinant, not only of drug use but also of responsiveness to advertising messages of a particular style, sensation seeking will also be measured.

Parent Component of the Media Campaign

The Media Campaign seeks to address three distinct parent behaviors, each of which is modeled separately in Figure 2-D. The original parent objectives related to three parent behaviors: (1) parent-child talk about drugs, (2) parental monitoring of youth behavior, and (3) support for community anti-drug activity. These objectives reflected the state of scientific knowledge as the Campaign initiated its work. In addition, during the early period of Phase III, the Campaign encouraged parents to increase their engagement with their children's lives by encouraging the parents to do more fun activities with their children. Given their relative importance in the Media Campaign, the models for the first two behaviors are presented in greater detail. In all models, a box simply labeled "NYAMC activity" represents the Media Campaign, much as it is described in Figure 2-B.

Model A in Figure 2-D describes a limited set of determinants for parental monitoring behavior. NSPY includes measures of past and intended monitoring behavior. Only two of the determinants of intention are measured: attitudes toward monitoring and self-efficacy to engage in monitoring. In turn, and consistent with basic health behavior theory, attitudes are seen as related to beliefs about the consequences of such monitoring. Those consequences are divided into two parts: drug-related consequences (whether the parent thinks that the degree of monitoring will affect a child's drug use) and other consequences (including expected effects on the relationship between parent and child).

Figure 2-D. Model A – Effects of parental monitoring

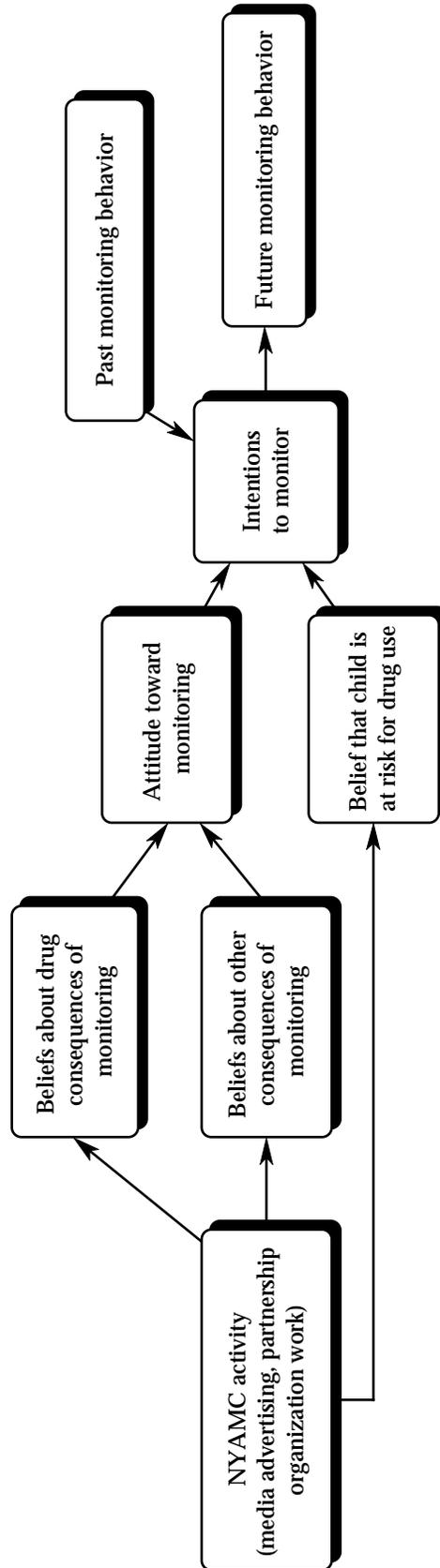


Figure 2-D. Model B – Effects on parent-child talk

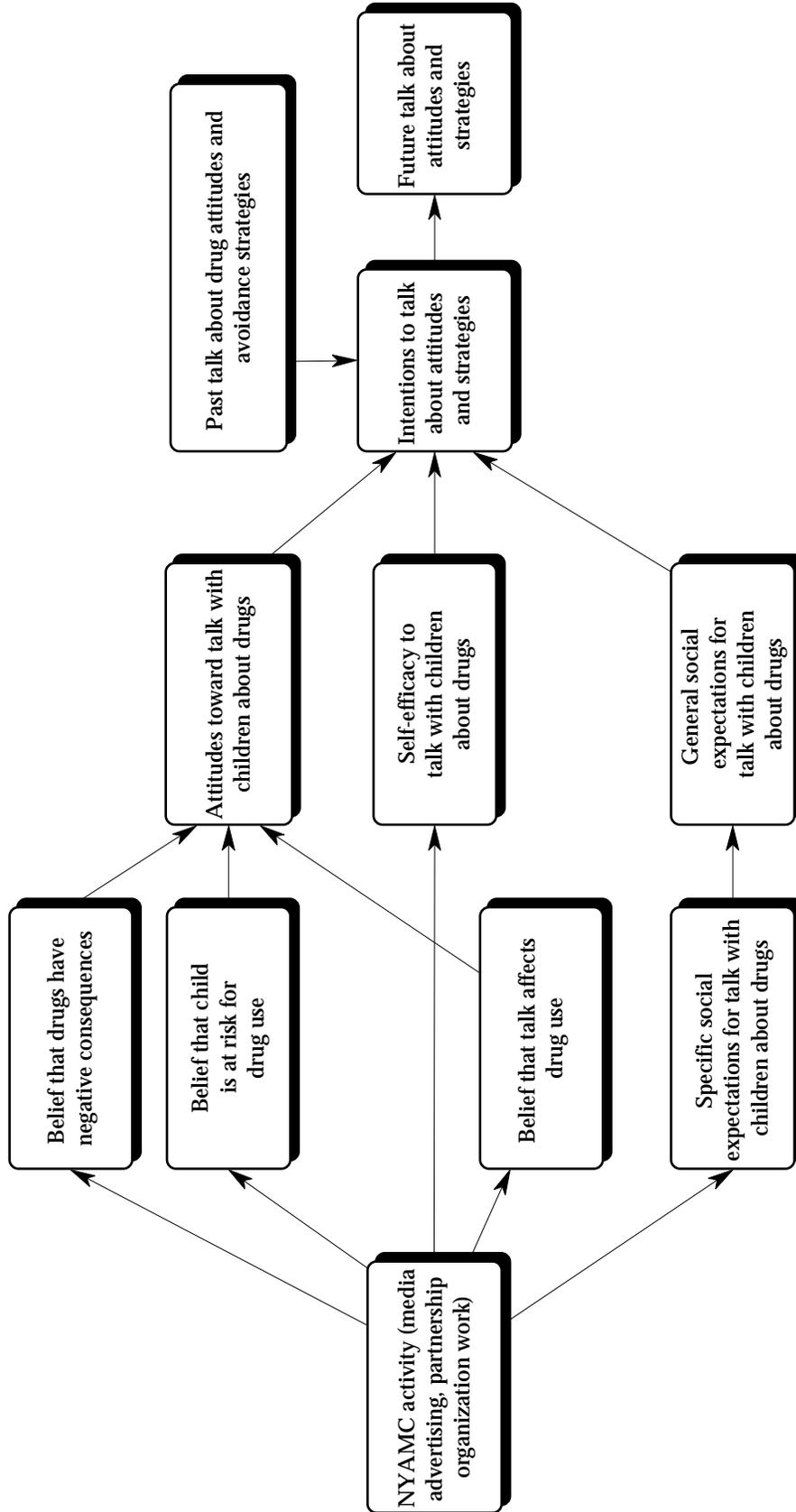
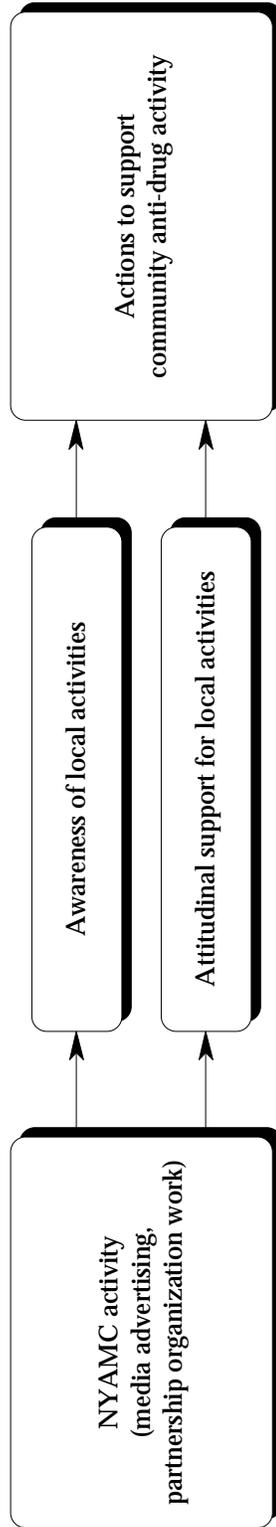


Figure 2-D. Model C – Effects on parental support for community anti-drug activity



A decision to increase monitoring may be seen by a parent as having both positive and negative consequences. Media Campaign activities are presumed to affect both beliefs in the positive consequences of monitoring and the self-efficacy of parents to engage in monitoring behavior.

Model B in Figure 2-D describes a more complete process for the influence of the Media Campaign on parent-child talk about drugs. Talk has been separated into two types of conversations: those dealing with drug use in general and those involving talk about specific strategies and skills for avoiding drug use. Although both are targets of the Media Campaign, one may occur independently of the other. Intentions for future talk are seen as the product of attitudes toward talking, self-efficacy to engage in talking, and general social expectations about whether one ought to talk with one's child about drugs. Attitudes are presumed to reflect three types of beliefs: belief that drug use has negative consequences for the reference child, belief that the reference child is at risk for drug use, and belief that parent-child talk is likely to discourage drug use by the reference child. General social expectations are hypothesized to be a function of the specific social expectations of others that the parent talk with the child. Media Campaign activity is presumed to affect all of the beliefs, self-efficacy, and specific social expectations for conversation about drugs.

Model C in Figure 2-D focuses on parents' actions to support community anti-drug activities. Although this outcome behavior is included among Media Campaign outcomes, it has taken a secondary priority to other objectives. Space considerations have meant that none of the process variables that may lead from Media Campaign activity to this behavior will be specifically measured. Similarly, there are no measures of the process variables that might lead to increased levels of parents engaging in fun activities with their children. Only the behavior itself is assessed.

Routes of Influence

In this section, five overlapping routes through which the Media Campaign may have influenced behavior are presented. These routes include several factors that are difficult to portray in figures. First, it is possible that there will be time lags between Media Campaign activities and their effects. Second, it is possible that effects are realized through social interactions and institutions instead of (or in addition to) being realized through personal exposure to media messages. Third, it is possible that messages directed toward a specific belief or behavior will generalize to other beliefs or behaviors. The five routes are summarized below.

1. **Immediate learning.** As a direct result of Media Campaign advertisements, youth immediately learn things about particular drugs that lead them to make different decisions about using those drugs. For example, they learn that trying marijuana has bad consequences so they are less likely to try marijuana. This new knowledge could have immediate consequences, which should be apparent in associations between exposure, beliefs, and behavior. In this way, young people may learn negative and positive consequences of their using a particular drug, social expectations about drug use, and skills and self-efficacy to avoid drug use if they wish.
2. **Delayed learning.** As a direct result of Media Campaign advertisements, youth learn things that lead them to make different decisions about drug use at a later time. The advertisements might have a delayed impact; their influence will show up immediately in associations between exposure and affected beliefs, but current exposure will predict only subsequent behavior. This might be particularly true for 9- to 11-year-olds (and possibly for 12- to 13-year-olds), where current learning would be expected to influence future behavior when opportunities to engage in drug use increase.

- 3. Generalized learning.** Media Campaign advertisements provide direct exposure to specific messages about particular forms of drug use, but youth learn things that lead them to make decisions about drug use in general. Thus, if they learn that cocaine has a particular negative consequence or that medical authorities are opposed to cocaine use, they may generalize those cognitions to a broad negative view of other types of drug use. From the perspective of the Evaluation, this generalized learning would mean that exposure effects are not message specific and will not necessarily operate through an intervening path of acceptance of the specific consequences emphasized. This seems particularly likely among younger children, who may read the meta-message of the barrage of advertisements as saying that drug use is bad but without learning an elaborate set of specific rationales for that attitude.
- 4. Social diffusion.** The advertisements stimulate discussion among peers and between youth and parents, and that discussion affects cognitions about drug use. The discussions may provide new information about consequences or social expectations, as well as new skills or self-efficacy. That information may be derived directly from the advertisements or merely stimulated by the presence of the advertisements regardless of their particular messages. Discussions may take place between individuals who have seen the advertisements and those who have not; thus, the effects would not be limited to those who have been personally exposed to or learned things from the advertisements. Discussions may produce or reinforce anti-drug ideas, or they may produce pro-drug ideas. (This is called reactance.)
- 5. Institutional diffusion.** The presence of advertisements (and the other elements of the Media Campaign) produces a broad response among other public institutions, affecting the nature of what they do with regard to drug use. In turn, institutional actions affect youth cognitions and social expectations about drug use and their own drug use behavior. Thus, Media Campaign activities may stimulate concern about drug use among school boards and lead them to allocate more time to drug education. Religious, athletic, and other private youth organizations may increase their anti-drug activities. News organizations may cover drug issues more actively, and the nature of their messages may change. Popular culture institutions (movie theaters, music, and entertainment television) may change the level of attention to, and the content of, drug-related messages. Like the social diffusion route, institutional diffusion does not require an individual-level association between exposure and beliefs or behavior. From the perspective of the Evaluation, this path of influence is expected to be seen only at the community level of analysis. Also, institutional diffusion is a slow process, and there would be a relatively long lag between Media Campaign activities and institutional response and an even longer lag until the effects on youth beliefs or behavior become apparent.

2.2 Sample Design and Data Collection Methodology

The data in the report are based on initial NSPY interviews with youth aged 9 to 18, their parents and other caregivers. The data collection period for the waves were November 1999 through May 2000 for Wave 1; July 2000 through December 2000 for Wave 2; and January 2001 through June 2001 for Wave 3. The number of completed youth interviews for each wave include Wave 1 – 3,312 youth aged 9 to 18; Wave 2 – 2,363 youth aged 9 to 18; Wave 3 – 2,459 youth aged 9 to 18. The number of completed parent or caregiver interviews for each wave include Wave 1 – 2,293 parents; Wave 2 – 1,632 parents; Wave 3 – 1,681 parents. The numbers of interviewed youth who also had an interviewed parent were 3,120 in Wave 1; 2,210 in Wave 2; and 2,307 in Wave 3.

2.2.1 Sampling

The youth and their parents were found by door-to-door screening of a scientifically selected sample of about 34,700 dwelling units for Wave 1, a sample of 23,000 dwelling units for Wave 2, and a sample of 23,300 dwelling units for Wave 3. These dwelling units were spread across about 1,300 neighborhoods in Wave 1 and approximately 800 neighborhoods in both Wave 2 and Wave 3. There were 90 primary sampling units (PSUs) in all three waves. The sample was selected in such a manner as to provide an efficient and nearly unbiased cross-section of America's youth and their parents. All types of residential housing were included in the sample. Youth living in institutions, group homes, and dormitories were excluded.

The sampling was arranged to get adequate numbers of youth in each of three targeted age ranges: 9 to 11, 12 to 13, and 14 to 18. These age ranges were judged to be important analytically for evaluating the impact of the Media Campaign. Within households with multiple eligible youth, up to two youth were selected.

Parents were defined to include natural parents, adoptive parents, and foster parents who lived in the same household as the sample youth. Stepparents were also usually treated the same as parents unless they had lived with the child for less than 6 months. When there were no parents present, an adult caregiver was usually identified and interviewed in the same manner as actual parents. No absentee parents were selected. When more than one parent or caregiver was present, one of the eligible parents was randomly selected. No preference was given to selecting mothers over fathers. Parents of both genders were selected at equal rates. This was done in order to measure the impact of the Media Campaign separately on mothers and fathers. When there were two sample youth who were not siblings living in the same household, a parent was selected for each.

The response rates were very consistent across the initial three data collection waves. The response rate in Waves 1 through 3 for screening dwelling units to find out whether any eligible youth were present was about 95 to 96 percent. Among dwelling units that were eligible for the survey, 74 to 75 percent in Waves 1 through 3 allowed the interviewer to enumerate the occupants and to select youth and parents for extended interviews. After selection of youth and parents, the interviewer sought signed consent from a parent to interview the sample youth. After that, the interviewer also sought signed assent from the sample youth. The interviewer then attempted to get extended interviews with the selected youth and parents. Among selected youth, the response rate was approximately 91 to 92 percent in Waves 1 through 3. This means that 91 to 92 percent of the youth received parental consent, signed to their own assent, and completed an extended interview. Among sample parents, approximately 88 percent completed the extended interview in Waves 1 through 3. The parent providing consent to the youth was frequently different than the parent sampled for the extended interview. This explains the fact that the parental response rate was lower than the parental consent rate for youth interviews.

2.2.2 Extended Interview Methods and Content

Prior to beginning the interview, respondents were assured that their data would be held as confidential. To strengthen such assurances, a Certificate of Confidentiality was obtained for the study. Under the certificate, the Federal Government pledged that the Evaluation team cannot be compelled by any person or court of law to release a respondent's name or to link a respondent's

name with any answers he/she gives. Interviewers showed a copy of the certificate to respondents prior to the interview upon request.

The extended interviews were administered with the aid of laptop computers that the interviewers carried into the homes. Each interview had sections where the interviewer read the questions out loud and entered the responses into the computer and sections where the respondents donned a set of headphones, listened to prerecorded questions, and entered their own responses into the computer. The self-administered sections were arranged to promote a feeling of confidentiality for the respondent. In particular, it was designed to allow people to respond honestly to sensitive questions without allowing other members of the household to learn their answers. As part of the parental consent, parents were informed that only the child would see his or her responses. Interviewers were trained to discourage parents from looking at the screens while the youth completed the interview.

The computer played back a prerecorded reading of the questions rather than just having the respondent read the screen in order to facilitate the involvement of slow readers and cognitively-impaired youth. A touch-sensitive screen was used so that no typing skills were required. To help the respondent understand multiple choice questions, the computer highlighted the response alternatives while it recited them. The interview could take place in either English or Spanish. This approach was highly successful; in Wave 1 just 0.4 percent of sample youth and parents were willing but unable to complete the questionnaire for reasons of physical or mental disability or because they could speak neither English nor Spanish, the two languages in which interviews could take place. In Wave 2, 0.7 percent of the parents and 0.4 percent of the youth were willing but unable to complete the questionnaire for the reasons above. In Wave 3, just 0.6 percent of the parents and 0.3 percent of the youth were unable to complete the questionnaire for these reasons. Youth and parents who did not wish to hear the questions read aloud could remove the headphones and complete the interview by simply reading and answering the questions on the screen.

The youth questionnaire included sections on basic demographics; school and religion; media consumption; extra-curricular activities; personal usage of cigarettes, alcohol, marijuana, and inhalants; expectations for future use of marijuana; feelings of self-efficacy to resist future offers of marijuana use; knowledge of friends' and classmates' use of marijuana; receipt of marijuana offers; family functioning; anti-social behavior of self and friends; approval/disapproval and perceived risk of marijuana and inhalants; perceived ease of parental discussion on drugs and perceived parental reactions to personal drug use; past discussions about drugs with parents, friends, and others; awareness of drug-related media stories and advertising; recollection and assessment of specific Media Campaign-sponsored anti-drug advertisements on TV and radio; Internet usage; and participation in drug education classes and programs. In Wave 3, questions were added to the teen questionnaire concerning ecstasy trial and use, recollection of the "branding" statement in specific advertisements, and doing fun things with parents.

The parent interview included sections on media consumption; communication with child; monitoring of child; family functioning; knowledge about child's use of cigarettes, alcohol, marijuana, and inhalants; personal participation in community drug prevention activities; awareness of drug-related media stories and advertising; recollection and assessment of specific Media Campaign-sponsored anti-drug advertisements on TV and radio; personal usage of cigarettes, alcohol, marijuana, and inhalants; basic demographics; and education, income, and religion. When parents were being asked about their children, each such question was targeted to a specific sampled child and repeated for every sampled child in the household. Other questions that were not about their children were, of

course, only asked once. In Wave 3, questions were added to the parent questionnaire about recollection of the “branding” statement in specific advertisements, and the parent’s perception of the efficacy of talking to children about drugs.

The laptop computer played the TV and radio advertisements for both youth and parents to help them recall their prior viewing more accurately. In order to limit the response burden for respondents, usually a maximum of four TV ads were played for each youth and parent. However, there was special advertising aimed at African Americans and at bilingual English/Spanish speakers. In order to measure their recall of the special advertising as well as the general advertising, as many as six TV ads were shown to respondents in these groups. For radio ads, up to two ads were played for most parents and most teens, and none for children aged 9 to 11. As with TV ads, for African American respondents and bilingual English/Spanish speakers, another two radio ads were sometimes played in order to measure exposure to special and general advertising.

In Wave 1, a total of 37 TV ads and 26 radio ads were aired during the wave and shown to respondents. See Appendix D for a short description of each ad. The TV ads included 21 (16 in English and 5 in Spanish) aimed at parents and 16 (11 in English and 5 in Spanish) aimed at youth. The radio ads included 11 (8 in English and 3 in Spanish) aimed at parents and 21 (15 in English and 6 in Spanish) aimed at youth. There were additional radio ads that were audio versions of TV ads during Wave 1. These were not played for survey respondents for the reasons given in Chapter 3 of this report.

In Wave 2, a total of 31 TV ads and 19 radio ads were aired during this wave and shown to respondents. Appendix D contains a short description of each ad. The TV ads included 16 (13 in English and 3 in Spanish) aimed at parents and 34 (32 in English and 2 in Spanish) aimed at youth. The radio ads included 9 (8 in English and 1 in Spanish) aimed at parents and 20 (15 in English and 5 in Spanish) aimed at youth. Wave 2 was not hampered by the issue of audio versions of TV ads, for only one of the Campaign Spanish radio ads was an audio duplicate of a television ad.

In Wave 3, a total of 22 TV ads and 27 radio ads were aired during this wave and shown to respondents. Again, Appendix D contains a short description of each ad. The TV ads included 10 (7 in English and 3 in Spanish) aimed at parents and 12 (9 in English and 3 in Spanish) aimed at youth. The radio ads included 16 (12 in English and 4 in Spanish) aimed at parents and 11 (8 in English and 3 in Spanish) aimed at youth. In Wave 3, six parent radio ads were played that were audio duplicates of a television ad. No youth radio ad was a duplicate of a television ad.

A random sample of the ads that were scheduled to air in the two calendar months preceding the month of interview were selected for each respondent.¹ As it turned out, air dates sometimes changed between the time that the sampling software was initiated and the date of interview. For analysis purposes, exposure to ads were counted only when the ad aired during the 60 days immediately preceding the date of interview. The interview also contained a ringer TV ad—an ad that had not actually been shown. This was done to allow study of the accuracy of ad recall. Some analyses of

¹ The time period of 2 months was selected as a reasonable balancing point between minimization of bias (due to memory decay) and including a long enough period so that a variety of ads and a reasonable number of exposure opportunities could be included. Bias due to memory decay would be minimized by having a very short reference period such as the preceding day. However, such a reference period would likely produce a very unstable estimate of the exposure an individual respondent received typically. Results presented previously have established the 2-month reference period is working well (Hornik et al., 2001).

these results were presented in Appendix C of the Second Semi-annual report, which presented strong evidence for the validity of the NSPY approach to measuring ad recall.

2.2.3 Weighting

Weights were developed to adjust the analysis for differential probabilities of selection, differential response rates, and differential coverage. In Waves 2 and 3, youth in the age range of 12 to 13 and youth in the age range of 9 to 11 had the same probability of selection whereas youth in the age range 14 to 18 had a smaller probability of selection. In Wave 1, youth in the 12 to 13 age range had the largest probability of selection since they were oversampled. Youth in the 9 to 11 age range had somewhat smaller probabilities of selection, and youth in the 14 to 18 age range had the smallest probability of selection. Youth in the 14 to 18 and 9 to 11 age ranges with siblings in the 12 to 13 age range had higher probabilities of selection than those with no such siblings. (This was done to get more benefit out of each parent interview.) Youth with siblings in the same age range had smaller probabilities of selection since just one youth was selected per age range. Parents with spouses had smaller probabilities than single parents since generally only one parent was selected per household.

Response rates were found to vary geographically. Data from the 1990 Decennial Census were used to sort the sample into groups with different response rates. Within a group, the weights were adjusted upward by the inverse of the response rate. This has the effect of increasing the weights for difficult-to-reach households.

Coverage also varied geographically and by age. Table 2-A shows coverage rates by age. Overall, coverage was slightly less than 70 percent for all waves. It would appear, based on census estimates, that about 30 percent of screener respondents with children in the desired age range chose not to reveal the presence of their children. Perhaps this was an easy way to refuse participation in the survey without being impolite. To compensate for this as best as possible, the weights were adjusted so that estimates of sample youth were consistent with those from U.S. Census Bureau estimates by gender, age group, race and ethnicity, and region. The U.S. Census Bureau estimates were a synthesis of data from the Current Population Survey (CPS) and the Decennial Census. The January 2000 CPS data were used to adjust Wave 1 and October 2000 was used to adjust Wave 2. However, for Wave 3, the average of March 2001 and April 2001 CPS data was used for adjustment. The ordinary CPS totals could not be used in the adjustment because the CPS counts youth in dormitories at their parents' homes, but this is not done in NSPY. In the synthesis, CPS estimates were adjusted to remove estimated counts of youth living in dormitories. These were created by a special tabulation of the 1990 Decennial Census PUMS (Public Use Microdata Samples) that counted youth in dormitories in April 1990. It should also be noted that the CPS is itself adjusted for undercoverage and also for undercoverage in the Decennial Census; in October 1994, the CPS coverage rate for youth aged 15 was 89.5 percent (Montaquila, et al., 1996).

Table 2-A. Coverage rates by age

Age group	Wave 1 Coverage rate (%)	Wave 2 Coverage rate (%)	Wave 3 Coverage rate (%)
9 to 11	70	69	64
12 to 13	74	71	68
14 to 18	67	67	62

2.2.4 Confidence Intervals and Data Suppression

Confidence intervals have been provided for every statistic in the detail tables. These intervals indicate the margin for error due to the fact that a sample was drawn rather than conducting a census. If the same general sampling procedures were repeated independently a large number of times and a statistic of interest and its confidence interval were recalculated on each of those independent replications, the average of the replicated statistics would be contained within 95 percent of the calculated confidence intervals.

The confidence intervals reflect the effects of sampling and of the adjustments that were made to the weights. They do not generally reflect measurement variance in the questionnaires. The intervals are based on variance estimation techniques that will be available in separate technical reports. In brief, subsamples of the sample were drawn and put through the same estimation techniques. The adjusted variation among the subsamples provides an estimate of the variance of the total sample. Details on how confidence intervals were calculated from variance estimates may be found in Appendix A.

Some estimates are suppressed. This was done when the reliability of a statistic was poor. This was measured in terms of the sample size and the width of the confidence interval. Estimated proportions near 0 percent and 100 percent are more likely to be suppressed than other estimates since it is difficult to estimate rare characteristics well. The exact criteria for this suppression are given in Appendix A.

2.2.5 Exposure Index and Imputation of Ad Recall

Because there were more ads being aired than could be reasonably shown to every survey respondent, a sample of ads was drawn as discussed above. Also as noted above, this was not a simple random sample of ads. Additional ads were selected and shown to African American respondents and bilingual respondents. In order to create a measure of ad recall that was consistent across race and language groups, the decision was made to impute recall for all ads that could have been shown to the respondent but were not. The imputation was based on two different procedures depending on how many individuals had seen an ad. When fewer than 500 cases were available, the imputation was based on drawing respondents from similar pools and transferring values in what is known colloquially as a hot-deck imputation. The donor pools were defined in terms of general recall of anti-drug advertisements (measured prior to showing any specific ads), cable subscription (yes/no), and the length of time the ad had been on the air prior to the interview. If the ad had not been aired at all within the 60 days preceding the interview, it was not included in the calculations. When more than 500 cases were available for a particular ad, a procedure called MART (Multiple Additive Regression Trees) was used to develop an imputation model. These procedures are fully presented in Appendix E, Section E.3.3.

2.2.6 Future Waves of Data Collection

Waves 1 through 3 will be followed by additional waves of data collection. NSPY has a two-phase design where the first phase recruits and interviews a sample of eligible youth and their parents and the second phase follows them for two additional interviews at intervals of 6 to 24 months. The recruitment/initial interview phase is broken into three national cross-sectional surveys or waves that each last about 6 months. The followup phase began in July 2001, following the completion of Wave 3 and lasts through June 2003. Youth who move within the NSPY sampled PSUs will be followed. Parents will also be re-interviewed although some may be replaced in the event of separation from the

child for various reasons. Combining the initial data collection and followup phases, there will be seven 6-month waves from which national semiannual estimates will be prepared. This report contains data from Waves 1, 2 and 3, the three initial data collection waves.

2.3 Sample Description

This section presents the youth and parent sample sizes for Waves 1 through 3 and defines the characteristics (i.e., race/ethnicity, region, urbanicity, sensation seeking, past marijuana usage, and dyads) of the samples.

2.3.1 Youth

Detail Table 2-1 shows the sample size in the initial waves for youth by age and other characteristics. The total Wave 1 sample size of 3,312 youth is nearly evenly split among the three targeted age groups. The Wave 2 sample size of 2,362 is larger in both the 14 to 18 age group and the 9 to 11 age group. The sample size is deliberately slightly larger for the youth aged 14 to 18 because larger design effects were anticipated for this age domain. The Wave 3 sample size of 2,459 is larger in the 9 to 11 age group but about even for the other two age groups. Many of the tables also show estimates for youth aged 14 to 15 and for youth aged 16 to 18. These are much less reliable than the other age breaks since the sample sizes are only 552 and 611 for Wave 1, 394 and 387 for Wave 2, and 378 and 380 for Wave 3. Thus, when the sample is broken down by an additional demographic such as gender, separate detail for the finer age breaks is never shown.

The estimated number of eligible youth in the nation is 39.6 million. As mentioned above, this excludes youth in institutions, group homes, and dormitories, as well as other types of group housing. The estimate of confidence intervals is so tight on this statistic because of the controlling of this estimate to agree with a synthesis of census information. Table 2-1 also shows breakdowns of the sample and the population by gender, race/ethnicity, region, urbanicity, and sensation seeking. Further, for youth aged 12 to 13 and 14 to 18, there are breakdowns by past marijuana usage. Some of these breakdowns require some elaboration.

2.3.2 Race/Ethnicity

The categories used in all tables are White, African American, and Hispanic. These are short labels for more complex concepts. White means White but not Hispanic. African American also excludes Hispanics. Race and ethnicity were asked as two separate questions. For older youth, aged 12 to 18, self-reported race and ethnicity were typically used. For children aged 9 to 11, race and ethnicity reported by the screener respondent were typically used. In both cases, respondents were first allowed to choose multiple races from the standard list of five races:

- White
- African American
- Asian
- Native Hawaiian or other Pacific Islander
- American Indian or Alaska Native

For those who chose more than one category, there was a followup question to pick just one. For those who could not pick just one, interviewer observation was used. Separate detail is not shown in any of the tables for the last three categories because of the low reliability associated with small sample sizes. The total number of interviewed youth who are Asian, Native Hawaiian, other Pacific Islander, American Indian, or Alaska Native was just 115 for Wave 1, with about 38 per age range. For Wave 2 the total was 93 youth and for Wave 3 the total was again 115. Within age ranges there were about 30 for each age range for Wave 2 and from 30 to 44 in the age ranges for Wave 3. However, there are some respondents in every age group, and their responses are used in the overall estimates.

2.3.3 Region

The four major regions of the United States for which data are presented represent groups of states as standardly defined by the U. S. Census Bureau:

- Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont;
- Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin;
- South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; and
- West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

2.3.4 Urbanicity

The three levels of urbanicity given in this report are a function of a national coding scheme developed by a private company called Claritas. The urban and suburban concepts jointly cover areas with a minimum density of about 960 persons per square mile where there is a population center with a minimum population of about 37,000 people. Within areas where the population density climbs much higher, those areas with the highest density are considered urban while the rest are considered suburban. Suburban areas never have a density greater than 6,811 persons per square mile, but the dividing line between urban and suburban population density slides upward from 960 to 6,811 depending on the density at the population center. The town and rural concept covers the rest of the country.

2.3.5 Sensation Seeking

Sensation seeking is a biologically-based trait "based on the idea that persons differ reliably in their preferences for or aversions to stimuli or experiences with high-arousal potential" (Zuckerman, 1988, p. 174). Individuals who are high in the need for sensation desire complex and stimulating experiences and are willing to take risks to obtain them. This drive for novel, complex, and intense sensations and experiences is satisfied by a willingness to take more social risks (e.g., impulsive behaviors, sexual promiscuity), physical risks (e.g., skydiving, bungee jumping, driving fast), legal risks (e.g., getting

arrested and put in jail), and financial risks (e.g., paying fines, impulsive purchases) (Zuckerman, 1979, 1994).

Several studies show that the variation in sensation seeking predicts behavioral differences, especially illicit drug use. High sensation seekers are more likely to begin experimenting and using drugs earlier than low sensation seekers, as well as use higher levels of a variety of different drugs (Donohew, 1988, 1990). High sensation seekers in junior high are four times as likely as low sensation seekers to use marijuana; in senior high, high sensation seekers were three times more likely to use marijuana than low sensation seekers (Donohew, 1988).

Sensation seeking among middle and high school students is generally measured using a 20-item scale developed specifically for adolescents (Stephenson, 1999; Zuckerman, 1979, 1994). More recent evidence suggests that an 8-item scale from the original 20 items has levels of reliability and validity sufficient to replace the 20-item scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2000). In a personal communication, Dr. Philip Donohew reports a comparison between the eight-item and a reduced four-item scale on a sample of 6,529 seventh through twelfth graders surveyed by the Partnership for a Drug Free America in 1999. The eight-item scale had an internal reliability of 0.85, while the four-item scale was reduced only slightly to 0.81. The two correlated at 0.94. Although the evidence of these two studies is unpublished, it suggests that the four-item sensation-seeking scale is both a valid and reliable predictor of drug use and intention in middle and high school years.

This reduced series of four questions on sensation seeking were asked in the youth interviews. Respondents were asked to rank their agreement on a scale of 1 to 5 with the following statements:

- a. I would like to explore strange places.
- b. I like to do frightening things.
- c. I like new and exciting experiences, even if I have to break the rules.
- d. I prefer friends who are exciting and unpredictable.

Those with an average response greater than 2.5 were classified as being high sensation seekers. This was the overall median score on the four items. Given a fixed cutoff that does not vary by age or sex, one would expect the prevalence of high sensation seekers to be greater among males than females and to increase with age. This is also the pattern observed. It was decided to use a single threshold to facilitate comparisons across groups and time.

2.3.6 Past Marijuana Usage

Youth were broken down into four categories of marijuana usage, only two of which are shown in most tables. The nonuser row is for youth who have never tried marijuana. The occasional user row is for youth who have used marijuana 1 to 9 times in the past 12 months. Youth who have used more frequently in the past year are classified as regular users and youth who have tried marijuana but not smoked it in the last 12 months are called former users. There were too few former users and regular users for these categories to be used as standard row variables in tables.

2.3.7 Parents

Detail Table 2-2 shows sample sizes for parents, weighted population estimates, and confidence intervals on the population estimates. Using NSPY definitions and procedures, there are about 43.5 million parents of youth aged 9 to 18 in this country. As mentioned above, the NSPY definition of parent excludes noncustodial parents but does include stepparents, foster parents, and even nonparental caregivers if no parent lived with sample youth. The NSPY definition also excludes parents whose children live in group facilities and dormitories.

In addition to the breakdowns of race/ethnicity, region, and urbanicity used in the youth tables, there are breakdowns by parental gender, parental education, and age of children. In the NSPY definition, about 38 percent of "interviewed parents" were male for Wave 1, about 44 percent of "interviewed parents" were male for Wave 2, and about 40 percent of "interviewed parents" were male for Wave 3. The sample size by age of children add to more than the total sample size since a parent with multiple children will be counted in each applicable row.

2.3.8 Dyads

Detail Table 2-3 shows sample sizes for dyads, weighted population estimates, and confidence intervals on the population estimates. A dyad is defined to be the combination of a youth and a parent for that youth. The sample size is smaller for dyads than for all youth because for dyad analysis, it was required that both the youth and his/her parent respond to NSPY. For dyad statistics, the rows are defined in terms of the characteristics of the youth. For youth with two parents, the confidence intervals reflect the assumption that both parents would have given the identical response about the youth. The only parent variables that are used in dyad tabulations are those that are specifically about the sample youth.

2.4 Potential Analysis Modes

In order to gauge the impact of the National Youth Anti-Drug Media Campaign on (1) awareness, (2) attitudes, and (3) behavior, the Evaluation team has to answer three types of questions:

- Is the Media Campaign reaching its target audiences?
- Is there desirable change in the outcomes addressed by the Media Campaign, in drug use behavior, and in the beliefs and attitudes that underpin that use?
- How much of the observed changes in outcomes can we attribute to the Media Campaign?

Section 2.4.1 explains some of the approaches we will use to answer each of those questions.

2.4.1 Measuring Exposure to the Media Campaign

The Media Campaign has and will continue to publish information about how much media time it has purchased. More specifically, for each audience of youth or parents, information is available on the proportion that would have been in the audience for each ad and all ads. These data are summarized as gross rating points (GRPs), which are the customary unit for measuring exposure to ads within the advertising industry. A fuller explanation for GRP is presented on page 3-1 of

Chapter 3. The Evaluation team's task with regard to exposure is to measure the extent to which placement of the ads and other Media Campaign communication efforts broke through into the minds of the audience—that is, are audiences aware of the Media Campaign and is awareness increasing over time? Can target audiences recall the ONDCP-sponsored ads and other messages that were shown? Audience awareness is being assessed in two ways:

- A set of general questions is asked about advertising recall for each medium: radio and television, print, movie theaters, outdoor advertising, and Internet. Each respondent is asked whether and how often he or she recalls seeing anti-drug messages from each source.² These measures may be reasonably interpreted as providing a general sense of level of exposure, rather than a precise measure of recent exposure. They ask respondents to summarize a lot of viewing, listening, or reading experience and express it in a single number.
- To improve the precision of the exposure measurement, a second major approach to exposure measurement, the recall of specific Campaign ads, is being made. Thus far, radio and television advertising represent the largest part of the advertising effort. Focus is on those channels for this next type of measure. Through the use of Westat's Audio Computer-Assisted Self-Interview (ACASI) format, each respondent is shown Media Campaign television and radio ads at full length on a laptop computer brought to the respondent's home by a member of Westat's field interviewing workforce. (See Section 2.2 for a description of the NSPY.) The ads shown are all ads that have been broadcast nationally in the previous 2 months, according to the Media Campaign. For each respondent, a subsample of the Media Campaign's recent and ongoing ads (four television and two radio) is shown. Parent-targeted ads are played for parents and youth-targeted ads for youth. Ad samples for African American and bilingual (English/Spanish) respondents are also selected to permit separate evaluations of ads targeted toward these special populations. Each respondent is asked to tell whether they have ever seen the ad, how often they had seen the ad recently, and their assessment of the ad.³
- It is possible that respondents might report that they have seen an ad even though they had not because they forgot or because they want to be agreeable. If so, and all claims were taken at face value, exposure might be overestimated. Therefore, each respondent is asked whether he or she has seen an ad that has, in fact, never been broadcast. This provides a benchmark to assess true exposure.
- In addition, the Evaluation team recognizes that while the Media Campaign is spending much of its budget buying media time, it also seeks to enhance the extent to which anti-drug communication is on the air, more generally. The Media Campaign is working with national and local organizations; it is working with corporate partners; it is making efforts to disseminate information through mass media outreach and other public relations efforts. To try and capture the extent to which target audiences are aware of these efforts, a series of measures that can detect change in these more general aspects of the public communication environment were developed. Questions asked include the frequency of exposure to drug-related stories in a variety of media channels; the extent to which respondents have heard public discussion of several drug issues; and the amount of talk within families and among friends about drug issues. For all of these measures the Evaluation team will examine whether the intensity of Media Campaign efforts is translating into changes in the perceived public communication environment about drugs. The Evaluation design will likely not permit separate attribution of effects on parent and youth outcomes to the operation of these

² See, for example, question D10 in the Teen questionnaire. All the NSPY questionnaires can be found on the NIDA web site.

³ See, for example, question D17 of the Teen questionnaire.

components of the Campaign. However, it will be possible to examine whether these efforts are associated with increases in the “buzz” about drug-related issues.

2.4.2 Measuring Changes in Attitudes and Behaviors

The second evaluation question addressed is whether observed outcomes are moving in the right direction. Models were developed based on existing theories of health behavior change and of communication effects. These suggest how the Media Campaign might work, if it was successful. They have determined what measures were incorporated into the survey questionnaires. The outcomes being measured capture quite a range of objectives for this Campaign:

- **Behavior:** Trial and regular use of marijuana and of inhalants, primarily, with some additional measurement of alcohol and tobacco use; behaviors of parents—particularly parent-child discussions about drug use and parent monitoring of and engagement with their children’s lives; past behavior and intentions to engage in these behaviors in the near future.
- **Attitudes and beliefs:** Beliefs and attitudes that research has shown to be closely related to these behaviors. For example, with regard to youth drug use, beliefs about the health consequences, the mental functioning consequences, and the performance consequences of drug use are measured.
- **Social pressures:** Perceived social pressures to engage in these behaviors, for example, to use or not use drugs—what peers are doing, what confidence respondents have in their ability to resist drug use, what parents and friends would say about drug use.

In the first semiannual report (Hornik, et al., 2000), the Evaluation team provided estimates of the simultaneous association of cognitions and behavior, while controlling statistically for the effects of confounding variables. In the second semiannual report, the team presented estimates of change in cognitions and behaviors between the first and second halves of 2000 and provided estimates of the association of Campaign exposure with these outcomes. In this report, the change analysis is extended through the three initial waves of data collection, focusing on the difference between data collected largely during the first half of 2000 and data collected during the first half of 2001. Analysis of association between exposure and outcomes is done for youth and parents interviewed in all three waves. In future reports, the Evaluation team will also report on lagged associations of Campaign exposure and cognitive and behavioral outcomes.

2.4.3 Attributing Observed Changes in Attitudes and Behavior to the Media Campaign

This is the most difficult task confronting the Evaluation—making a clear case for or against the influence of exposure to the Media Campaign on observed attitudes, intentions, and behaviors, both overall, and for particular subpopulations of interest. The approach is outlined below.

In this report, as in the second semiannual report, the combined data from Waves 1, 2, and 3 are used to measure the association of exposure with outcomes. For example, are youth who report heavy exposure to Campaign messages more likely to have desirable beliefs about the negative physical consequences of marijuana than do youth who report less exposure? A sophisticated statistical technique called “propensity scoring” is used to reduce the risk that observed differences are the result of the influence of confounding variables rather than the result of the effects of exposure on outcomes. Findings from these analyses are given in Chapter 5 for youth and Chapter 6 for parents. They are

linked to evidence of positive trends in outcomes, as an additional support for claims of Campaign effects.

- Presented for the first time in this report, there is an examination of whether the evidence for effects differs depending on the characteristics of the youth or his/her parents. Do effects differ depending on gender, ethnicity, urbanicity of residence, or parent's educational background or gender? Do they differ depending on the child's personality characteristics (e.g., a high sensation seeker or not)? Evidence for diversity in effects is presented along with the overall results in Chapters 5 and 6, for youth and parents respectively.
- Starting with Wave 4, these cross-sectional causal analyses will be supplemented with longitudinal causal analyses. The same national sample of youth and their parents will be followed for 2 or 3 years. Therefore, researchers will be able to examine whether a young person who reported high versus low exposure on the first, second, or third wave, progressed at a different rate on drug-related beliefs and practices in subsequent waves. Compared to the relatively more simple cross-sectional analysis, this longitudinal analysis capability will allow the Evaluation team to improve the ability to reject threats to causal claims related to omitted confounding variables. In addition, it will permit response to concerns about ambiguity of causal direction (i.e., that the cross-sectional association between exposure and beliefs is the result of beliefs affecting recall of exposure rather than exposure affecting beliefs). These analyses will commence once there is sufficient followup data and will make their initial appearance in the fourth semiannual report scheduled for spring 2002.
- In addition, some of the models of Media Campaign influence suggest that the effects of the Media Campaign will be felt not just among individuals but, more broadly, among communities. If there is sufficient variation in exposure across communities, some of these analyses will be repeated at the level of the community (i.e., primary sampling unit level) to see whether communities that have a relatively high versus low level of exposure to anti-drug messages show different patterns of progression on the outcome measures. These analyses are expected to be part of later semiannual reports.

References

- Bandura, A. (1986). *Special foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Donohew, L., Finn, S., and Christ, W.G. (1988). The nature of news revisited. In L. Donohew and H.E. Sypher (Eds.), *Communication, social cognition, and affect* (pp. 195-218). Hillsdale, NJ: Lawrence Erlbaum Assocs., Inc.
- Donohew, L. (1990). Public health campaigns: Individual message strategies and a model. In E.B. Ray and L. Donohew (Eds.), *Communication and health, systems and applications* (pg. 136-152). New Jersey: Lawrence Erlbaum.
- Fishbein, M., and Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Hornik, R., Maklan, D., Cadell, D., Judkins, D., Sayeed, S., Zador, P., Southwell, B., Appleyard, J., Hennessy, M., Morin, C., and Steele, D. (2000). *Evaluation of the National Youth Anti-Drug Media Campaign: Campaign Exposure and Baseline Measurement of Correlates of Illicit Drug Use from November 1999 through May 2000*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063).
- Hornik, R., Maklan, D., Judkins, D., Cadell, D., Yanovitzky, I., Zador, P., Southwell, B., Mak, K., Das, B., Prado, A., Barmada, C., Jacobsohn, L., Morin, C., Steele, D., Baskin, R., and Zanutto, E. (2001). *Evaluation of the National Youth Anti-Drug Media Campaign: Second Semi-Annual Report of Findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.
- Hoyle, R., Stephenson, M., Palmgreen, P., Lorch, E., and Donohew, L. (In press). Reliability and Validity of a Brief Measure of Sensation Seeking. *Personality and Individual Differences*.
- Montaquila, J.M., Mohadjer, L., Waksberg, J., and Khare, M. (1996). *A detailed look at coverage in the Third National Health and Nutrition Examination Survey (NHANES III, 1988-1994)*. Proceedings of the Survey Methods Section of the American Statistical Association. pp. 532-537.
- Stephenson, M., Palmgreen, P., Hoyle, R., Donohew, L., Lorch, E., and Colon, S. (1999). Short term effects of an anti-marijuana media campaign targeting high sensation seeking adolescents. *Journal of Applied Communication Research*. 27, 175-195.
- Zuckerman, M. (1988). Behavior and biology: research on sensation seeking and reactions to the media. In: L. Donohew and H.E. Sypher (Eds.), *The roles of affect, schemas and cognition, communication, social cognition, and affect* (pp. 195-218). Hillsdale, NJ: Lawrence Erlbaum Assocs., Inc., 1988.
- Zuckerman, M., and Neeb, M. (1979). Demographic influences in sensation seeking and expressions of sensation seeking in religion, smoking and driving habits. *Personality and Individual Differences*, 1, 197-206.
- Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. Cambridge; New York: Cambridge University Press.

3. Exposure to Anti-Drug Messages

This chapter focuses on exposure to both Media Campaign efforts and exposure to noncampaign anti-drug efforts during the period from late 1999 through mid-2001. First, the chapter discusses advertising placement activities of the Media Campaign. Next, it presents statistics regarding the level of ad recall among youth and parents, with some focus on people's recognition of specific television and radio ads from the Campaign. The third section provides assessments of the TV advertisements recognized by youth and parents, as they provide one way of gauging the population's judgment of prominent Media Campaign content. The fourth section discusses youth and parent exposure to other drug information, including encounters with drug information on the Internet, drug education classes, discussions about drugs, discussions about anti-drug ads, and perception of media and community attention to drug use. The last section presents a summary and conclusions.

What are Gross Rating Points (GRPs)?

GRPs are the customary unit for measuring exposure to ads within the advertising industry. If 1 percent of the target population sees an ad one time, the ad earns one GRP. It is also quite typical to report GRPs on a weekly basis. So, 100 GRPs is equivalent to one weekly exposure to one ad for each person in the target population. In more common language, an ad that earns 100 GRPs in a week, is projected to have been seen by the average person 1.0 times, and an ad that earned 250 GRPs would have been seen by the average person 2.5 times in that week. Exposure to multiple ads, or to ads available through multiple channels, is calculated by summing the GRPs for each of the individual ads for each channel. GRP estimates are averages across the relevant population.

If 100 GRPs have been purchased for a week, that means that the average number of times that a random person saw or heard programs, billboards, newspapers, or magazines carrying the ad was 1.0. This does not mean that everyone saw the ad exactly once. It is quite possible that some saw it many times while others saw it rarely, but the average number of times for a random person is 1.0.

GRPs are estimated for each ad based on the projected audience for a particular channel and program. For example, based on television ratings data from Nielsen Media Research, the audience for a particular television program at a particular hour can be estimated. If an ad plays during that program, it is assigned the program's GRPs. For example, if 10 percent of the 12- to 17-year-old audience is estimated to be in the audience for program A from 8 to 9 p.m., then an ad played on that program earns 10 GRPs. Parallel projections of audience size are made for all media channels based on data from a variety of media monitoring companies, and GRP estimates are calculated accordingly. Clearly GRP estimates are accurate only to the degree that the estimates of audience size are accurate. Also, at best, GRPs capture availability of an audience. They do not guarantee that an audience member was actually paying attention to the ad.

3.1 Media Buying Reports

- **Based on Media Campaign reports of purchased time and space, it is estimated that the average youth has been exposed to 2.7 youth-targeted ads per week and that the average parent has been exposed to 2.3 parent-targeted ads per week, during the period from September 1999 through June 2001.** (These estimates include Media Campaign advertisements intended for either general market youth or general market adults; they do not include exposure by youth or parents to advertisements intended for other audiences, often called “spill.” They also do not include supplementary targeting efforts intended for special audiences; e.g., Spanish-speaking Hispanics, which are described later.)

Estimates of expected Campaign exposure for this report are derived from reports of media time purchased by Ogilvy on behalf of the Media Campaign for the 95-week period from September 1999 through June 2001. Those estimates suggest that Ogilvy obtained a total of approximately 25,477 gross rating points (GRPs) for advertisements intended for general market youth and approximately 21,403 GRPs for advertisements intended for general market parents.¹ These totals translate into an average of 266 targeted GRPs for general market youth per week and 225 targeted GRPs for general market parents per week. In turn, such estimates are equivalent to 2.7 targeted ad exposures for general market youth and 2.3 targeted ad exposures per week for general market parents.

Table 3-A provides more detail about these estimates. The distribution of GRPs across various media and channels reveals the predominance of particular media as sources of GRPs for each of the two audiences: television and radio make up 80 percent of GRPs for youth, while outdoor media, radio, and TV make up 83 percent of GRPs for parents.

Table 3-A. Targeted gross rating points (average per week and per medium)

	Youth GRPs	Percent of Youth	Parent GRPs	Percent of Parents
All media for 95 wks (9/99 – 6/01)	25,477		21,403	
All media per week	267	100	226	100
Television per week	139	52	51	23
Radio per week	73	28	64	28
Print per week	25	10	34	16
Outdoor per week	--	--	72	32
Other per week	29	10	5	<1

NOTE: The “other” category for youth includes advertising on basketball backboards, in movie theaters, on the Internet, and other activities such as postings of flyers; the “other” category for adults includes movie theaters and Internet.

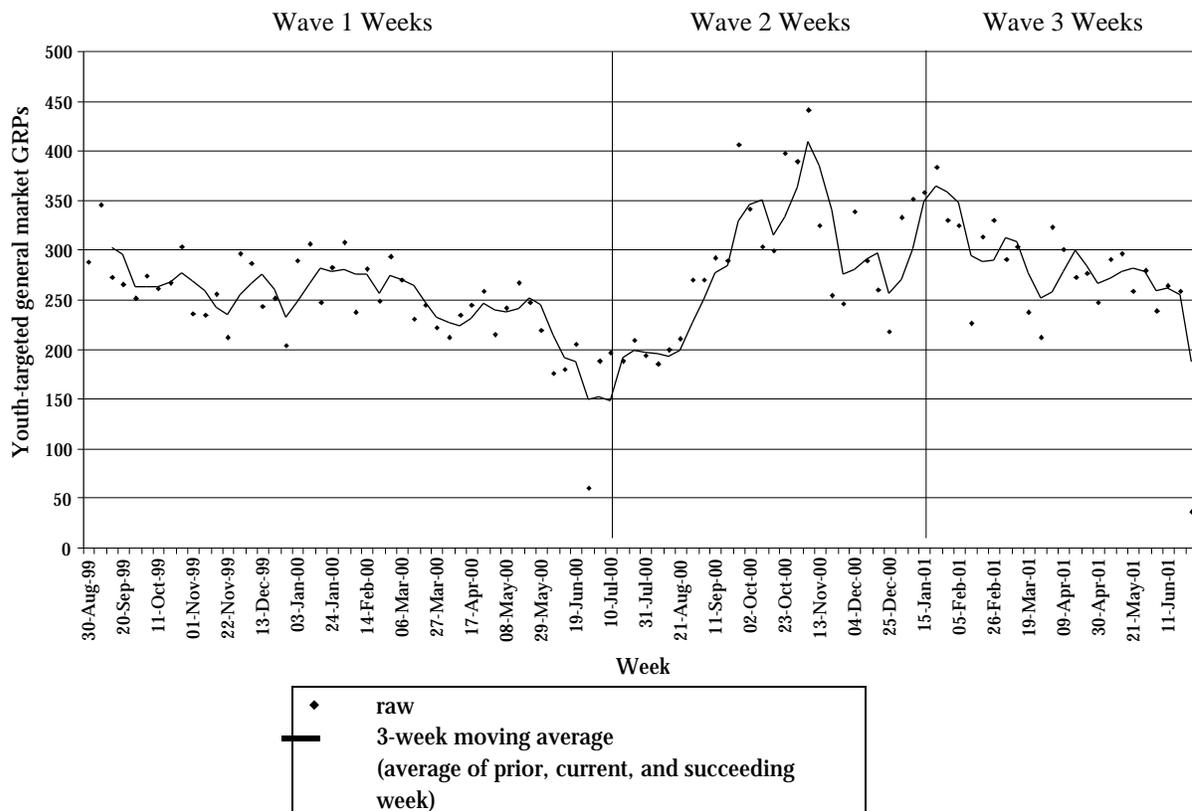
- **The number of GRPs to which youth and parents were exposed varied over the 95 weeks of the Campaign.** As depicted in Figures 3-A and 3-B, youth GRP exposure was more consistent than that of parents. This variation in GRP exposure is due partly to ad **flighting**. **Flighting** involves running advertising only for specific periods of time, such as 4 weeks, rather than running it continuously. GRPs are grouped into flights and run within behavioral messaging platforms to achieve Campaign communication goals. GRPs vary within flights depending upon the goals for

¹ Ogilvy has provided the Evaluation team with detailed information about the media purchases made, organized by channel, by week, and for many channels by the name of ad. The GRP data presented in this report are derived from that information, supplied as of August 17, 2001. It should be recognized that these are not definitive buying information. Some of the information is based on postbroadcast confirmed buys, some of it on prebroadcast scheduled buys, and some on estimated buys. Also, there are survey errors of unreported magnitudes in the audience surveys.

a particular platform, the total GRPs purchased for the time period, and the media mix used for each platform.

As illustrated in Figure 3-A, the youth GRP pattern is somewhat stable, but there are several exceptions worth noting. The first is a drop in weekly general market GRPs in the summer months of 2000, which likely coincides with summer vacations and may reflect decreased availability for certain types of media consumption; the start of a similar decline is suggested in June 2001. A second shift occurred in September 2000 when youth GRPs began to rise again to reach a high of 400 in November 2000, close to the end of Wave 2. A final shift is apparent at the start of Wave 3. Youth GRPs were again relatively high, just over 350, and then began to slowly decline.

Figure 3-A. Weekly youth-targeted general market GRPs (September 1999 through June 2001)



As can be seen in Figure 3-B, compared to the youth GRP pattern, the adult GRP pattern is irregular. The striking decrease seen in the second half of 2000 reflects an effort on the part of the Campaign to focus more intensively on youth relative to parents during late 2000.² In the final 6 weeks of 2000, the parent Campaign effectively went on hiatus, as described in Chapter 1. Then in early 2001, the parent Campaign returned strongly and GRPs continued to increase to levels seen in early 2000.

This variation in purchased GRPs is summarized in Table 3-B. A fairly stable number of GRPs per week were bought for youth during Waves 1 and 2 (an average of 256), but this is up about 14 percent for Wave 3 at 292. For adults, the Wave 1 purchases had fallen sharply by Wave 2, and then largely recovered by Wave 3. Section 3.1.1 provides some additional information about the adult pattern, which makes this rise and fall appear to be less extreme.

² Email communication with Ogilvy, February 9, 2001.

Figure 3-B. Weekly adult-targeted general market GRPs (September 1999 through June 2001)

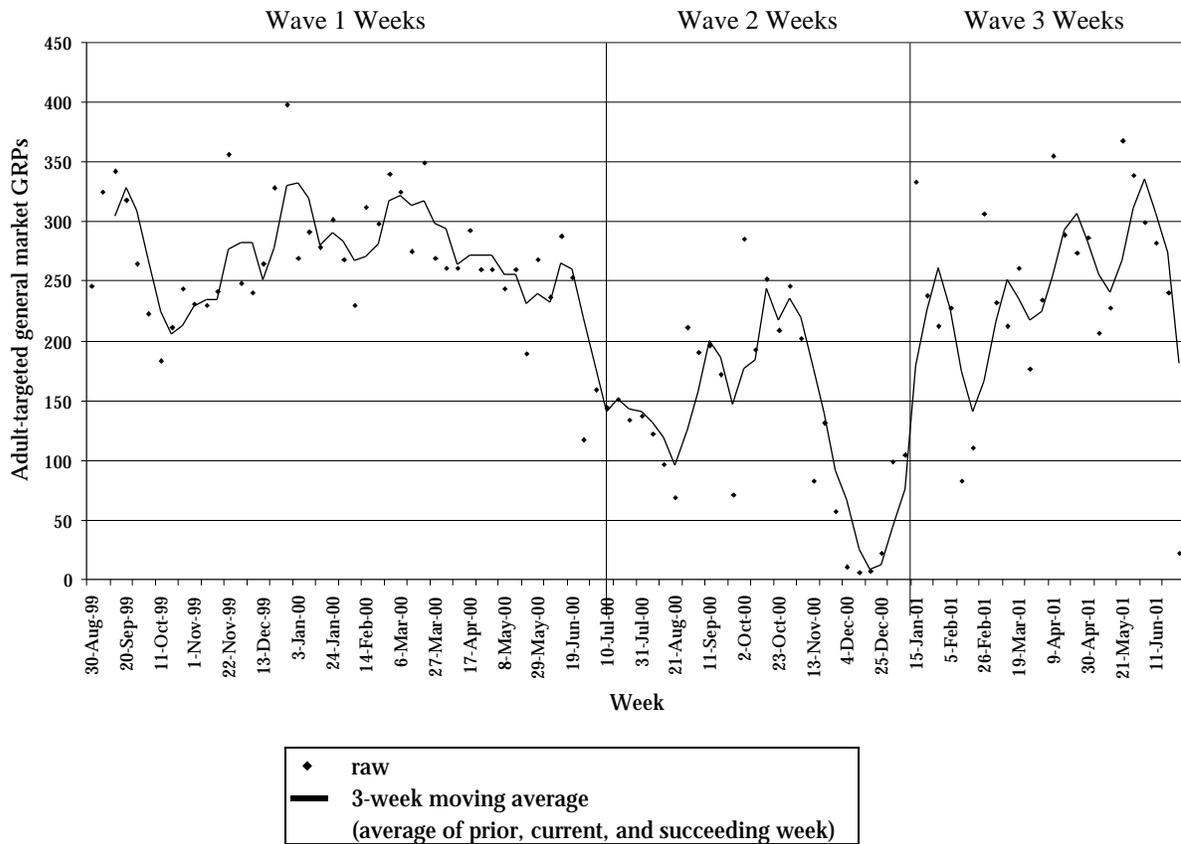


Table 3-B. Distribution of youth and adult GRPs across waves

	Wave 1	Wave 2	Wave 3
Youth	259	254	292
Adults	275	152	240

- The Campaign also reported additional Campaign-related exposure beyond the main general market efforts intended for youth and adults.** In addition to the estimated general market exposure reported above, youth and parents also might have been exposed to advertising intended for people other than themselves or to unpaid advertising donated as a pro bono match to the paid advertising.

Insofar as youth saw or heard an anti-drug advertisement intended for parents or vice versa, one could argue that the advertisement garnered exposure not only among its target audience but also that there was “spill” exposure generated among a secondary audience. Estimates of the potential amount of such spill are substantial. For the period of June 2000 to June 2001 (which overlaps with the period covered by this report), for example, youth GRP estimates would increase by approximately 41 percent³ if spill exposure to parent advertisements were added to the youth total. This is worth noting from the standpoint of general awareness of the Media Campaign’s efforts. However, the Campaign has distinguished between youth and parent audiences and has developed explicit and distinct objectives and advertising efforts for each group. In doing so, they have assumed that the

³ According to an August 17, 2001 Ogilvy estimate, youth GRPs for June 2000 through June 2001 were approximately 14,113 with spill exposure accounting for 5,827 GRPs.

exposure to *particular* targeted messages, rather than to *any* anti-drug messages in general, is crucial. Therefore, much of this report focuses on expected and reported exposure to communication efforts specifically intended for, or targeted toward, each group.

The Media Campaign also reported additional efforts to reach specific populations with advertisements developed and intended specifically for those groups, such as Spanish-language ads for Hispanics attending to Spanish media programming. Table 3-C describes each of these efforts. There are two ways these advertising efforts can affect exposure. They can add to the overall exposure for the general population and they can add to the specific exposure among the target populations. These are considered separately. These extra GRPs do not add a great deal to the overall level of GRP exposure. Table 3-C illustrates the relatively small contribution to overall general market GRPs that these efforts would contribute if they were combined. The first row reflects the average weekly GRPs reported exclusively for each group. One hundred GRPs for Hispanics, for example, could reflect a one-time reach of all U.S. Hispanics. Those totals then can be viewed in terms of their potential contribution to the general population's Campaign experience.

The numbers presented in Table 3-C reflect the approximate number of additional age group-specific GRPs that the general population could have been exposed to as a result of the special targeting efforts. For African American youth, for example, roughly 55 GRPs were obtained for targeted efforts among that population in an average week. Given that African American youth constitute approximately 16 percent of the U.S. population of 9- to 18-year-olds, these targeted efforts would contribute an additional estimated 9 GRPs (i.e., 55×0.16) to the average U.S. youth's communication experience. This addition reflects only a 3 percent increase over and above the general market GRPs obtained for U.S. youth, which, while noteworthy, does not alter the larger picture of GRP distribution substantially.

Table 3-C. Estimated additional GRPs generated exclusively to reach specific groups

	African American youth	African American adults	Hispanic youth	Hispanic adults	Residents of Puerto Rico (youth)	Residents of Puerto Rico (adults)
Weekly within-group GRPs for targeted efforts	55.0	20.0	48.0	54.7	190.27	94.7
Percentage of U.S. population for age group	16%*	13%*	15%*	14%*	1%**	1%**
Additional general population GRPs per week	8.8	2.6	7.2	7.7	1.9	0.9
Percentage additional weekly general population GRPs	3%	1%	3%	4%	<1%	<1%

* From NSPY. Percentages reflect percent of total U.S. 9- to 18-year-old youth or of total U.S. parents.

** From U.S. Census (www.census.gov, accessed February 9, 2001). Same percentage used for youth and adults.

There is no easy way to assess the add-on effect of these extra GRPs for the specific populations. If the respective audiences had received a full dose of the general market advertising and then received this focused advertising as an add-on, this would be a major addition. However, this is an unlikely result for primary Spanish language speakers. The Spanish language advertising is designed, presumably, to

make up for the fact that English language advertising is inaccessible to primary Spanish language speakers. It might be that the GRPs for Hispanic/Latino audiences represent a large portion of the Campaign GRPs for primary Spanish speakers, including many Puerto Rican residents, rather than being an add-on.

For African American audiences and Hispanic bilinguals, the issue is less clear. However, these two groups and general market audiences have different media use patterns. Presumably, the general market media buys reflect media use across the entire population. Then it might be expected that African American and Hispanic bilingual audiences would be either less or more exposed, on average, to the general market materials than would the general market audience. Thus, the buys reflected in Table 3-C, even for the African American audience, are in unknown portions an add-on to and a make-up for reduced access under the general market media buy. However, as will be shown below, there is consistent evidence that Hispanic and African American audiences do report higher total exposure to most Campaign channels; this may reflect either an advantage with regard to general market exposures or add-on effects of targeted exposures.

3.1.1 Distribution of Exposure

Reported GRP numbers are average estimates of exposure across the entire population for the specified group. It is possible that the same level of GRP performance can be achieved by producing many exposures for relatively few people or a few exposures for many people. For example, a media buying plan that bought four exposures per week for half of a population would achieve the same GRP level ($200=4 \times 0.50 \times 100$) as a media-buying plan that purchased two exposures per week for all of the population ($200=2 \times 1.00 \times 100$). This is why media buying strategies customarily are expressed in terms of both reach and frequency, or more broadly, in terms of the distribution of exposure, rather than just the average exposure.

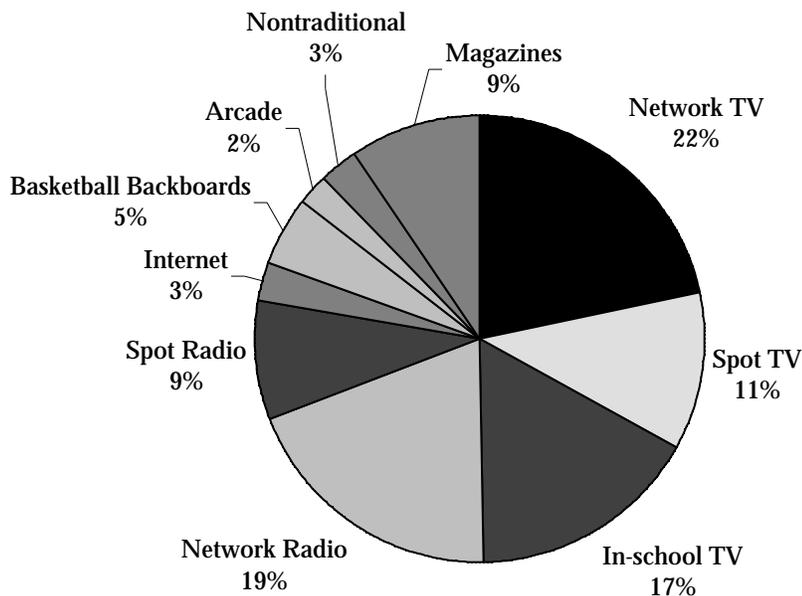
NSPY provides direct estimates of the reach and frequency of ad viewing and hearing.⁴ Before presenting those estimates, it is useful to look at the general viewership levels of each of the channels in which advertising was bought. By doing so, GRPs can be classified as having been bought either on channels with wide reach or on channels with relatively less wide reach. One pattern that stands out across both groups is the predominance of television and radio GRPs, particularly for youth.

- **Television and radio GRPs composed the vast majority (about 80%) of total youth-targeted GRPs.**

- While advertisements intended for youth were placed in a variety of media, most GRPs for youth-targeted ads were generated through television and radio channels. More than 20 percent of youth GRPs resulted from combined network and cable television placement, 17 percent resulted from in-school television (largely through the Channel One program), and another 11 percent came from “spot” TV in more than 100 metropolitan areas around the country. (See Figure 3-C.)

⁴ The Media Campaign provided data in a variety of formats. Most of the information used in this report exploits the information about weekly purchases of media time for specific ads and/or on specific channels. In addition, the Campaign has supplied estimates for overall reach and frequency for an advertising platform across all channels cumulatively for the weeks the platform was on the air. These estimates depend on complex assumptions about the probability of an individual who is exposed to a message on one channel being exposed to the message on a second channel. They are not presented in this report. The survey-based estimates reported in the remainder of this chapter present parallel information and describe the distribution of recalled exposure. Evidence for the validity of these measures was provided in previous reports (Appendix C, Second Semiannual Report.)

Figure 3-C. Targeted youth media placements by medium
(September 1999 through June 2001)

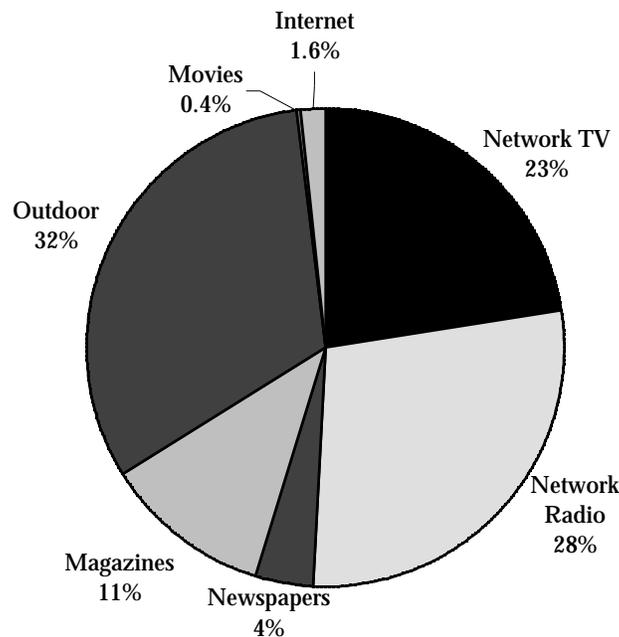


- About two-thirds of targeted youth GRPs were obtained in media with the potential for wide reach, and about one-third in media with less wide reach. For instance, network radio (19% of the GRPs) and network and cable television⁵ combined (22% of GRPs) have the potential to reach most of the population. With all TV and radio buys, nonetheless, the specific reach and frequency will depend strongly on the particular buys in terms of programs and times. Channels with less wide reach among youth include in-school television (17% of youth GRPs mostly on Channel One), basketball backboards (5%), arcades (2%), and so-called nontraditional media, such as movie theaters and flyer postings (3%). In addition, the Campaign reports roughly 3 percent of youth-targeted GRPs arose from Internet efforts. Another media outlet used by the Media Campaign to a limited extent, magazines (9% of youth GRPs), also has considerably lower reach than television or radio.
- **While television and radio represented the great majority of GRPs for youth, television- and radio-generated GRPs constituted only about half of all GRPs for parents.**
- While the Media Campaign purchased 139 targeted GRPs per week for youth on television, for example, it purchased only 51 such GRPs per week for parents on television. As can be seen in Figure 3-D, many of the general market adult GRPs came from media other than television or radio or even print. In fact, approximately 32 percent of all of the GRPs came from outdoor media (billboards, bus shelter placards, etc.). The Campaign purchased outdoor advertising intended for general market adults in only 10 major media markets⁶, which collectively contain roughly a third of the U.S. population.

⁵ The combination of network and cable television is sometimes referred to as network TV in presented graphs.

⁶ According to Ogilvy, those markets included New York, Chicago, Los Angeles, Philadelphia, San Francisco, Dallas/Ft. Worth, Atlanta, Boston, Detroit, and Washington, DC.

Figure 3-D. Targeted adult media placements by medium
(September 1999 through June 2001)



■ For parents, the balance between wide-reach media and other media is approximately half and half. Approximately half of the GRPs came from wide-reaching network TV (23% of GRPs) and network radio (28% of GRPs); with the other half coming from media with less reach, newspapers (4% of GRPs), magazines (11% of GRPs) and outdoor media (32% of GRPs).

- **The proportion of wide reach and narrow reach media used by the Campaign was stable for youth across waves. In contrast, for adults, that ratio varied sharply.** Table 3-D presents the proportion of GRPs purchased across waves according to whether they were purchased on wide or narrow reach media. For youth, wide reach media make up around 80 percent of the purchased GRPs across all three waves. In contrast, the cross-wave pattern for parents is quite different. Just less than 50 percent of all GRPs were on wider reach media for Waves 1 and 3, but for Wave 2, although overall GRPs were down, a larger proportion (63%) were secured on wider reach media. Thus, even though the total adult GRPs declined by a great deal in Wave 2 (down by 45% from Wave 1), the GRPs on the wider reach media declined less (down by 29%). Thus the proportion of the population likely to have been reached at some level would have been more stable than what was suggested by the overall GRP figures.

3.1.2 Distribution of General Market Ad Platforms

The Media Campaign strategy for both youth and adults has been to focus on a limited number of themes, or broad messages, called message platforms. Furthermore, the Campaign planned to focus much of the advertising during any particular period on one specific platform so that the message of that period received maximum exposure.

Tables 3-E and 3-F outline the major platforms for both general market audiences. Each ad that was broadcast was associated with a particular platform (or platforms) on the basis of the concepts it addressed. Tables 3-E and 3-F also list the names of television and radio Campaign ads airing during the period from late 1999 through early 2001, according to their respective platforms. Descriptions of the ads are provided in Appendix D.

Table 3-D. GRPs per week purchased for youth and parents across waves by reach of the media

Youth	Reach	Expected weekly exposures (% of all exposures)			
		Wave 1	Wave 2	Wave 3	All Waves
	Wider reach channels (Network, Cable and Spot TV, Network and Spot Radio)	1.54 (59%)	1.59 (63%)	1.76 (60%)	1.62 (61%)
	Narrower reach channels (magazines, movie theaters, Internet, In-school TV, etc.)	1.05 (41%)	.95 (37%)	1.16 (40%)	1.04 (39%)
	Total per week	2.59	2.54	2.92	2.67
Adults	Wider reach channels (Network and Cable TV, Network Radio)	1.33 (48%)	.95 (63%)	1.10 (46%)	1.14 (51%)
	Narrower reach channels (newspapers, magazines, outdoor media, Internet, movie theaters)	1.42 (52%)	.57 (37%)	1.30 (54%)	1.11 (49%)
	Total per week	2.75	1.52	2.40	2.26

Table 3-E. Distribution of youth message platforms on general market TV and radio

Advertising platform	Percentage of television GRPs ¹	Ads in this platform during NSPY Waves 1,2, and 3 ²	Percentage of radio GRPs ¹	Ads in this platform during NSPY Waves 1, 2, and 3 ²
Negative consequences	20.1	Brothers ³ , No Thanks, Hockey, Mother/Daughter, No Skill, Vision Warrior	11.2	Brothers, Make You Think, Stressed, Brother Jeff, If Pot Were a Person, Money, The First Time, The Rant
Normative positive consequences	55.5	Mary J. Blige ³ , Drugs Kill Dreams (Williams Sisters) ³ , Andy MacDonald, Scatman ³ , Dixie Chicks, DJ, Family, Football, Friends, Icon, Love, Most Teens, Swimming, Tara Lipinski, US Women's Soccer Team, Dance, Music, Famous, Drawing, Music-Mix Tapes, Being Myself/My Future	46.0	Mary J. Blige, Drugs Kill Dreams, Scatman, What's Yours, What's Yours- Urban, Margot, Alberto, Basketball, Cross-Country, Limericks, What's Yours, What's Yours-Urban
Resistance skills	31.8	Drugs Kill Dreams ³ , How to Say No, No Thanks, Michael Johnson, It's ok to Pass, What I Need	30.0	Drugs Kill Dreams, Excuses, Orientation, What to Say- Boy, What to Say- Girl, Moment of Truth
Other	<1	Ads not associated with the major platforms include Lauryn Hill, Layla, I'm Free, Miss America, and others	12.8	Ads not associated with major platforms

¹ Some ads were counted in more than one platform, so percentages sum to more than 100 percent.

² This table describes general market platform distribution. The Campaign also produced some advertisements exclusively for special audiences, such as Spanish-language ads for Hispanics. TV ads exclusively intended for Hispanics included Fast Food, Second Trip, You Know How to Say It, Natural High, and Test. Such radio ads included Laugh, Weekend, Boy Meets Girl, Typical Story, She Did It, and The First Time.

³ On both television and radio.

Table 3-F. Distribution of adult message platforms on general market TV and radio

Advertising platform	Proportion of television GRPs	Ads that were in this platform during NSPY Waves 1, 2, and 3 ¹	Proportion of radio GRPs	Ads that were in this platform during NSPY Waves 1, 2, and 3 ¹
Parenting skills/ personal efficacy	59.9	Clinic, Phone, Office, Email, TV, Instructions ads (Stay Involved and Praise and Reward), Smoke, Keep Trying, Smoke, My Hero ² , My Hero-African American, Thanks ² O'Connor, Anyway You Can, and Kitchen	67.9	Tree Fort, Cooking Dinner, Basketball, Keep Trying, Desperate
Your child at risk	23.4	Pipe ² , Roach, Weed, Drugs, Clip ² , Pot, Bag ²	14.5	Pipe, Clip, Grass, Bag
Perceptions of harm	16.5	Symptoms, Under Your Nose, Funeral, Deal-African American, Clinic, Needle/Spray Can ²	16.6	Happy Birthday Steven, Kathy Abel, Symptoms Sooner/Later-David, Sooner/Later-Megan
Other	<1	Ads not associated with the major platforms: Car	<1	Ads unidentified in GRP reports.

¹ This table describes general market platform distribution. The Campaign also produced some advertisements exclusively for special audiences, such as Spanish-language ads for Hispanics. TV ads exclusively included for Hispanics included Mirrors, Heroes: Dancing, Heroes: Swimming, Game Show, and Natural High. Such radio ads included Sharing (Pepperoni) and Game Show.

² On both television and radio.

For youth, for example, 55 percent of the general market television exposures (GRPs) emphasized positive normative consequences, which involve the idea that most youth do not use drugs and/or that others expect the youth not to use drugs. This emphasis at least partially reflects the introduction (in late 2000 and early 2001) of a series of “What’s Your Anti-Drug?” spots that stressed the number and variety of youth who do not use drugs (along with their favorite alternative behaviors). From the standpoint of the Campaign, all of these ads fit into the positive normative consequences platform. Discussion of resistance skills (e.g., how to refuse drug offers) received roughly one-third of the TV GRPs and negative consequences (e.g., physical or mental health or schooling outcomes of drug use) received approximately 20 percent of the GRPs. (It is worth noting that ads could represent more than one platform and a small number did so.) The pattern is similar for radio platforms.

For parents, the major emphases were on parenting skills and on boosting personal efficacy to intervene (60%), with secondary emphases on the idea that one’s child is at risk of drug use (16%) and on the harm resulting from drug use (23%). As with youth, a similar pattern was seen regarding radio platforms.

- The Campaign emphasis on different platforms varied sharply across waves for both youth and parents. Tables 3-G and 3-H present the proportion of television and radio GRPs that were

dedicated to each of the major platforms across the three waves for youth and adults, respectively. For youth, the Wave 1 division across three platforms gave way to a focus on Normative Positive Consequences for Wave 2, and a division between Normative Positive Consequences and Resistance Skills for Wave 3. Negative Consequences messages had largely disappeared (Table 3-G).

Table 3-G. GRPs per week purchased for specific youth platforms across waves (TV and radio)

Platform	Wave 1	Wave 2	Wave 3
Negative Consequences	24.7%	16.8%	0.0%
Normative Positive Consequences	40.1%	70.7%	41.5%
Resistance Skills	33.0%	3.1%	46.5%
Other	2.2%	9.4%	11.9%

For parents, there was also substantial variation in emphasis across waves. Perceptions of Harm, which received nearly one-third of GRPs in the first wave, disappeared in subsequent waves. Your Child at Risk (which includes the anti-inhalant advertising) takes a substantial portion of the GRPs only in the third wave. Parenting Skills/Personal Efficacy was strongly present across all three waves, and almost alone during Wave 2 (Table 3-H).

Table 3-H. GRPs per week purchased for specific parent platforms across waves (TV and radio)

Platform	Wave 1	Wave 2	Wave 3
Parenting Skills/Personal Efficacy	53.9%	98.9%	48.2%
Your Child at Risk	13.9%	0.0%	51.8%
Perceptions of Harm	30.7%	1.1%	0.0%
Other	1.5%	0.0%	0.0%

3.2 Recall of Exposure from NSPY Questionnaires

To assess exposure to the Campaign, NSPY included two complementary measurement approaches. First, all respondents were asked for an estimate of how often they had seen or heard anti-drug advertisements in each of the major channels in which the Media Campaign had purchased time (including radio and television, newspapers and magazines, outdoor venues, or movies). These questions were modeled after a measure used in the Monitoring the Future (MTF) study so as to maximize comparability across surveys⁷. These measures are intended to provide a general impression of the intensity of recent exposure and will be particularly helpful in comparisons over time and across channels.⁸ They are likely to capture both exposure to advertising from a variety of sources directed to the particular group of respondents (youth or parents) and also the aforementioned “spill” exposure to advertising directed toward the other audience as well as some pro bono advertising.

In addition, to improve the precision of the measurement of exposure, questions also were included regarding the recognition of specific ads. Radio and television advertising represented a large part of the advertising effort, particularly for youth, and was the focus for this measure.

⁷ Previous reports (Hornik et al., December 1999) discuss the differences between MTF and NSPY findings, and plausible reasons for the differences.

⁸ See questions D10-D13 of the Teen and Child questionnaires and questions F1-F4 of the Parent questionnaire—all on the NIDA web page.

3.2.1 General Measures of Exposure

The great majority of youth and parents recall some exposure to anti-drug advertising, which can include paid, pro bono, and spill. (Table 3-I). The four general recall questions were transformed into quantitative measures of exposure and summed to provide rough estimates of total recalled exposure.⁹ Using these measures, roughly 90 percent of youth and approximately 93 percent of parents recalled seeing or hearing some form of anti-drug advertising at least once per month. Moreover, this degree of reported general high exposure was relatively constant across Waves 1, 2, and 3 of NSPY.

Table 3-I. Overall recalled exposure to anti-drug ads across all media (November 1999 through July 2001)

Exposures per month	Percentage of Parents				Percentage of Youth			
	Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
Less than one	7.4	6.3	7.0	6.9	10.3	9.8	9.8	10.0
1 to <4	21.6	22.6	21.4	21.9	17.5	16.7	17.9	17.4
4 or more	71.0	71.0	71.7	71.2	72.4	73.5	72.3	72.6
Median exposures	10.0	9.68	9.50	10.0	11.0	12.0	11.0	12.0

- **More than 70 percent of youth report weekly exposure from the combination of the sources (Table 3-I).** Thus, the purchase of approximately 2.7 targeted general market exposures per week among youth, according to the GRP data above, produced recall of at least one ad per week among 73 percent of the youth population but less than that among 27 percent of the population (Table 3-I). The median number of recalled ad exposures by youth was 12 per month, across all sources. (The median number of ads recalled is the number of exposures such that half the audience saw the ads as many or more times and half the audience saw them as many or fewer times.) These numbers can be compared, though only roughly and with caution, with the estimates of potential exposure generated from the aforementioned GRP data. The median recall of 12 ads per month for youth translates into around 3 exposures per week; GRP estimates would suggest a strikingly similar 2.7.
- **The proportion of youth recalling exposure more than once per week increases with child’s age.** Approximately 78 percent of 14- to 18-year-olds and 76 percent of 12- to 13-year-olds recalled ads at a frequency of weekly or higher while only about 62 percent of 9- to 11-year-olds recalled ads at this frequency. This differential pattern of recalled exposure by age is consistent with the media-buying plan of the Campaign. In general, outlets were chosen to maximize exposure among teens rather than 9- to 11-year-olds. (Channel One, for example, is less available to the younger children.) (See Detail Table 3-27.)
- **Approximately the same amount of parents, 71 percent, as youth report weekly exposure from the combination of the sources (Table 3-I).** The Media Campaign purchased roughly 2.3

⁹ Each general recall question had answer categories shown below. Each category was recoded as indicated. The recoded answers were then summed to get the rough estimate of total recalled exposure.

Answer Category	Recoded times per month
Not at all.....	0.0
Less than one time a month	0.5
1 to 3 times a month.....	2.0
1 to 3 times a week.....	8.0
Daily or almost daily.....	30.0
More than 1 time a day	45.0

targeted general market exposures per week for parents, somewhat less than the level achieved for youth. As with the youth estimate, this number can be roughly compared with the estimates of potential exposure generated from the GRP data. For parents, the median recall of 10 ads per month translates into around 2.5 exposures per week, quite similar to the GRP level of 2.3.

- **The data suggests no changes in youth or parent overall recall of Campaign ads.** This is somewhat surprising when one considers that the average weekly GRPs did show some change across Waves, particularly for parents. For youths, Wave 1 average GRPs were 2.6, Wave 2 average GRPs were 2.5, and in Wave 3 average weekly youth GRPs were 2.9. Parent GRPs exhibited an up-down pattern: Wave 1 average adult weekly GRPs were 2.7, Wave 2 average adult weekly GRPs were 1.5, and Wave 3 average weekly adult GRPs were 2.4. Why is it that the general exposure measure did not seem to track the GRP purchase information? The general exposure measure may include recall of advertising for the other audience, anti-drug advertising included in the pro bono match, and advertising perceived as anti-drug but not sponsored by the Campaign. Also, while respondents are asked to recall ads seen or heard in recent months, they may include longer periods, stretching back to previous waves, in their recall estimates. As a result, the general exposure measure may not be so sensitive to the magnitude of changes in GRP purchases that occurred across the three waves. This contrasts with the greater sensitivity to recall exhibited for the specific ad exposure measures presented below. The general measure might be sensitive to larger magnitude changes over a longer term.
- **Recalled exposure varies across different media channels.** Table 3-J displays reports of weekly exposure to each of the various channels employed by the Campaign. While approximately half of youth and parents recall seeing radio or television ads weekly, only about one-quarter recall such frequent exposure to print or outdoor advertising, and fewer than one-tenth recall weekly exposure to movie or video messages.
 - Estimates of general recall are largely consistent with the focus of GRP purchases, with 80 percent of youth-targeted GRPs and 51 percent of parent-targeted GRPs estimated for radio and television.
 - Youth and parents report similar general exposure within various media, even though not all media carried equal amounts of content officially targeted to both groups. The Media Campaign mostly purchased outdoor advertising to reach parents, for example, and yet comparable percentages of youth and parents report at least weekly exposure to billboard ads or other public postings.

Table 3-J. Recall of general anti-drug advertising by media (November 1999 through June 2001)

Group	Percent who recall seeing or hearing ads at least weekly			
	TV and radio ads	Newspaper and magazine ads	Movie theaters and video rental ads	Billboard and other public postings
9 to 11	42.9	19.3	9.5	22.8
12 to 13	53.3	27.0	8.5	27.8
14 to 15	60.3	29.5	6.3	27.8
16 to 18	56.4	26.0	7.1	25.2
12 to 18	56.8	27.4	7.3	26.8
Parents	50.1	21.3	3.3	23.2

- **There were few statistically significant changes between waves in recall of exposure to any of the specific media, either overall or for subgroups (Detail Tables 3-28 through 3-31).**

- Among youth, 14- to 18-year-olds in Wave 2 reported more exposure to television and radio anti-drug advertising than their counterparts in Wave 1, but by Wave 3 were reporting a level of exposure equivalent to the Wave 1 level. No other age group demonstrated any change. Suburban youth showed a positive change in reported exposure between Waves 1 and 2, but saw declines in reported exposure between Waves 2 and 3. Among Hispanic youth, there was an increase in reported exposure to TV and radio anti-drug ads between Waves 1 and 3 for a total increase of 13 percentage points. This increase served to lessen the gap among Hispanics, Whites, and African Americans in recall of anti-drug television and radio advertising (Detail Table 3-28).
- All youth aged 12 to 18 showed increased recall of print advertising between Waves 1 and 2, but it appears not to have been sustained through Wave 3, except among urban youth. There was no change for any subgroup for movie/video sources.
- Among youth living in towns and rural areas, there was a decrease of 5 percentage points in reported recall of billboard or other publicly posted anti-drug ads weekly between Waves 2 and 3 (Detail Table 3-31).
- Among parents there were few changes of any size. Fathers reported more TV and radio ad exposure and print ad exposure in Wave 3 than in Wave 2, but that did not produce an overall significant Wave 1 to Wave 3 change. (Detail Table 3-33).
- There was an increase among all parents having seen movie theater or video rental ads at least weekly between Waves 2 and 3, from 2.6 percent to 4.1 percent. Over the Wave 1 to Wave 3 period, there was an increase of 2 percentage points among parents with children aged 9 to 11. A slightly larger increase (3 percentage points) was observed in parents of children aged 12 to 13 (Detail Table 3-35).
- **Across the various media, while patterns of claimed weekly recall of exposure within the major subgroups are similar, differences exist (Detail Tables 3-28 through 3-31).**
 - White youth report less exposure to print, movie, and billboard anti-drug ads than Hispanic and African American youth. Reports of exposure to television and radio ads are similar.
 - Youth aged 9 to 11 are less likely than all older youth to report general recall of television, radio, print, and billboard ads at least weekly.
 - High sensation-seeking youth report more exposure than their low sensation-seeking counterparts to television, radio, and billboard ads at least weekly.
 - Across all channels, White parents were less likely to recall anti-drug advertisements than African American or Hispanic parents. African American parents generally had the highest levels of recall.
 - For TV, radio, and print ads, parents with a college degree had significantly lower levels of recall than did parents with less education. And although not significant, parents with a college degree also had lower levels of recall for movie and billboard ads.
 - More urban parents recalled at least weekly encounters with print, movie, and billboard ads than did suburban, and town and rural parents.

The general recall measures, as noted, provide an overall sense of parent and youth exposure across each of the major Media Campaign channels and they correspond, on average, to the aforementioned GRP data. They are particularly useful for comparisons among channels and will continue to be useful in future reports for comparisons over time. They also provide confirmation that there is some spill exposure, in that ads targeted to a particular audience also probably were seen by another group. This is clearest for youth reports of exposure to outdoor media, where recalled exposure is comparable to parents' recall, even though few youth-specific outdoor media buys were made.

However, these questions are quite general and depend on respondents' ability to recall and summarize exposure without very much assistance or prompting information. For discussion of estimates with arguably more precision, the chapter now turns to evidence about the specific recall of television and radio ads.

3.2.2 Specific Advertising Recall

Respondents were shown a sample of specific Campaign television ads and played a sample of Campaign radio ads at full length on their laptop computers. Each respondent was presented ads that were broadcast nationally in the 2 calendar months previous to the interview and asked whether they had ever seen the ad, how often they had seen the ad in recent months, and how they evaluated the ad. The validity of recall data was a concern in that respondents who did not want to admit to forgetfulness or simply wanted to be agreeable might claim to have seen an ad even if they had not. To assess this tendency, each respondent was asked whether he or she had seen one of three ads (otherwise known as "ringer ads") that had never been broadcast.

Previous Campaign evaluation reports (Hornik et al., 2000; Hornik et al., 2001) provide strong evidence for the validity of the measures. The specific television ad recall measures, for example, tracked the GRP data closely, ad by ad, for youth.

Evidence also suggests that parent TV recall measures also are valid, although this evidence is less impressive than for youth.

Television Recall

Across the first three waves of NSPY, approximately 52 percent of the total youth-targeted GRPs were obtained through television (including network TV, cable TV, spot TV, in-school TV, and televisions in arcades). Each week, the Media Campaign purchased about 139 general market youth-targeted television GRPs, on average, indicating that the average youth respondent should have been exposed to 1.4 television ads per week. For parents, general market television efforts were less substantial, enough to produce an average of 51 GRPs per week, or about 0.5 weekly TV exposures for the average adult. How do those numbers compare with evidence about youth and parental recall of the specific ads that they were shown?

In selecting ads to play for NSPY respondents, there was strict segmentation by the parent-youth dimension and by language. In other words, youth-targeted ads were never shown to parents and vice versa. This means that youth-parent "spill" has not been measured and is not reflected in these specific ad recognition results. Spill is the phenomenon of ads targeted to one group being watched by members of another group. Similarly, a person who speaks only English or only Spanish was

never shown an ad in the opposite language. Bilingual English-Spanish speakers were shown both sets of ads, and special efforts were taken to be sure that African American respondents had targeted ads played for them.

Each respondent was asked about how many times he or she had seen each ad in “recent months.”

Imputation was used to fill in reasonable projections for the remaining ads. The results were then recoded and summed across ads.¹⁰

- About 83 percent of youth and about 64 percent of parents recalled seeing at least one of the ads that had been playing in the previous 60 days. The total number of times that a respondent had seen one or more of the ads aired in the 60 days before the interview are presented in Table 3-K.
- The median number of recalled viewings of youth-targeted TV ads by youth was 6.0 over recent months or about 0.75 times per week. The mean was considerably higher at 8.4 or about 1 exposure per week. Such a difference between the mean and the median is consistent with a pattern of uneven distribution of exposure where some youth saw the ads many times, while others saw the ads much less frequently or not at all.
- The median number of viewings of parent-targeted TV ads in recent months by parents was 3 or about 0.4 per week. As with youth, the mean was considerably higher at about 5.5 or about half an exposure a week, indicating an uneven distribution where some parents recalled seeing the ads many times, while others recalled seeing them much less frequently or never saw the ads.
- There were opposite patterns of change over time among youth and parents. All youth reported a mean of 7.5 exposures in recent months at Wave 1 (probably equivalent to a little less than one exposure per week). By Wave 3 their mean had risen to 9.5, an increase of 27 percent. In contrast, parent recall of these specific television ads was declining from 6.1 to 5.1, down 16 percent. Medians were stable at 3 across waves. (See Table 3-K.) These findings are consistent with patterns that the aforementioned GRP figures would suggest, in that the Campaign obtained more youth-targeted TV GRPs, on average, than parent-targeted TV GRPs, and that parent-targeted GRPs declined across waves while youth-targeted GRPs increased. The decline for parents continued through Wave 3, although purchased GRPs for parents recovered somewhat during that wave. This may have reflected the fact that GRP purchase recovery occurred only gradually during the wave (Figure 3-B). Also, respondents were questioned about their recall of ads on the air in the previous 2 months, so interviews in Wave 3 actually covered the period from the final 2 months of Wave 2 and the first 5 months of Wave 3.

Diversity in Patterns of Change

- Older youth increased their recalled exposure to these television ads more than younger children. (See Table 3-L.) While there was a 5 percentage point gain among 9- to 11-year-olds in reported

¹⁰ Recoding of NSPY and recall data

Question: Here is another TV ad. Have you ever seen or heard this ad?	[If yes,] In recent months, how many times have you seen or heard this ad?	Recoded Response
No		0.0
Don't know		0.5
Yes	Not at all	0.0
Yes	Once	1.0
Yes	2 to 4 times	3.0
Yes	5 to 10 times	7.5
Yes	More than 10 times	12.5

weekly TV ad exposure from Wave 1 to Wave 3, there was nearly an 18 percentage point gain among 16- to 18-year-olds over the same period. By Wave 3, almost half of all three of the older age groups (12 to 13, 14 to 15, and 16 to 18) were reporting at least weekly television ad exposure.

Table 3-K. Respondent recognition of Campaign TV ads in recent months
(November 1999 through June 2001)

Exposures in recent months*	Parents (%)				Youth (%)			
	Wave 1	Wave 2	Wave 3	Total	Wave 1	Wave 2	Wave 3	Total
0	33.9	41.7	33.4	36.3	18.4	14.5	17.4	16.8
.01 to 1.9	7.9	7.0	9.0	8.0	9.2	8.5	5.9	7.9
2 to 7.9	32.8	29.2	36.6	32.9	38.6	40.5	32.4	37.1
8 to 23.9	20.0	17.5	17.5	18.3	27.9	29.7	34.9	30.9
24 or more times	5.4	4.6	3.5	4.5	5.9	6.8	9.3	7.3
Mean times	6.07	5.35	5.08**	5.50	7.48	8.12	9.52#	8.38
Median times	3	3	3	3	4	6	7.50	6

* Times per week are estimated assuming that "recent months" is equivalent to 2 months.

** Change from Wave 1 to 2, and Wave 1 to 3 significant at $p < 0.05$

Change from Wave 2 to 3 and from Wave 1 to 3 significant at $p < 0.05$

Table 3-L. Percent recalling having seen TV ads at least once per week across waves
(November 1999 through June 2001)

Age of Youth	Wave 1	Wave 2	Wave 3	Wave 1 – 3 Change	Confidence Interval Wave 1 to 3 change
9 to 11	30.1	32.2	35.5	5.4*	+0.4 to +10.4
12 to 13	39.5	42.9	50.6	11.1*	+5.7 to +16.5
14 to 15	39.4	37.9	48.0	8.6*	+0.0 to +17.2
16 to 18	29.3	35.6	46.9	17.6*	+10.2 to +25.0
12 to 18	35.4	38.5	48.3	12.9*	+8.3 to +17.5
Parents	25.4	22.1	21.0	-4.4*	-8.5 to -0.03

* Between wave change significant at $p < 0.05$

- Most subgroups of 12- to 18-year-olds increased in exposure at statistically indistinguishable rates. African Americans gained less than others, but they had a high rate of exposure at Wave 1, so they remained comparable in level of exposure to Whites at Wave 3. Hispanic youth, with a lower exposure rate than African American youth at the start, were the highest group by Wave 3, at 60.5 percent with weekly exposure (Detail Table 3-1).
- Among parents, most subgroups were also indistinguishable from the overall declining trend. However, Hispanic parents showed the opposite pattern to their children. While Hispanic youth were striking in their rate of increase, Hispanic parents were striking for their rate of decrease. Overall, the decline for all parents of 4.4 percentage points in weekly exposure contrasted with a decline of nearly 18 percentage points for Hispanic parents. However, Hispanics had a far higher level of exposure at the start (47.5% weekly exposure versus 20.9% for Whites at Wave 1) so their Wave 3 exposure was still higher than Whites' Wave 3 exposure (29.6% versus 19.1%) (Detail Table 3-6).

Diversity in Overall Exposure

- **Age and race influence recall of Campaign TV ads.** Nine- to 11-year-olds and 14- to 18-year-olds reported less exposure to television ads than did 12- to 13-year-olds. Across the three waves, the mean frequency of reported exposure to Campaign TV ads over recent months was 7.4 for the 9- to 11-year-olds, 9.5 for 12- to 13-year-olds, and 8.6 for 14- to 18-year-olds (Detail Table 3-2). Likewise, White youth recalled fewer ads than African American and Hispanic youth. Thirty-eight percent of White youth report having seen TV ads at least once a week, while more than 47 percent of African American and Hispanic youth recalled having seen such ads (Detail Table 3-1).
- **Parents' race, education, and urbanicity affect recall.** Fewer White parents than African American and Hispanic parents recall having seen TV ads at least once per week. This is also true of suburban parents who recalled fewer ads than urban, or town and rural parents. Education apparently also plays a role in recall of Campaign TV ads. Parents with college degrees are less likely than all other parents to recall the ads. Similarly, parents with at least a high school education or some college education report less recall than parents with less than a high school education (Detail Table 3-6).
- **Anti-inhalant television advertising was recalled during Wave 3 by about one-half of the parents who were shown such ads.** During Wave 3, the Campaign launched a series of new parent ads that focused on the risks of inhalants. Parents were asked about recall if an anti-inhalant ad had been on the air in the 60 days before their interview. A little more than half of the eligible parents (52.2%) recalled such ads with around 6 percent recalling having seen four or more ads during recent months (Detail Table 3-11).

Radio Recall

The Media Campaign complemented its purchases of television time with purchases of radio time. For youth that included roughly 73 targeted GRPs per week, on average, and for parents approximately 64 weekly targeted GRPs. As previously noted, a sample of radio ads was played for each parent or youth between 12 and 18 years of age. Respondents were asked whether they had ever heard each ad, and how often, following the format for the television ads.

Wave 1 radio estimates for youth are not used because many of the radio ads broadcast were essentially soundtracks from television ads, and it is likely respondents would have been unable to recall whether they had heard or seen an ad on radio or television if they had been exposed to it through both media, potentially making exposure estimates erroneous. Their responses to the questions about television ads, asked about first, likely would have reflected their total exposure through both channels rather than uniquely indicating radio exposure. Such issues did not hamper Wave 2 or Wave 3 data; no network radio ads for youth were audio duplicates of a television ad. The same cannot be said of the parent data. In Wave 3, two adult ads, Needle/Spray Can and My Hero received a considerable number of GRPs on both network TV (38%) and network radio (63%). However, beginning in Wave 3 for both parents and youth, all radio ads were played for respondents, regardless of whether they were audio duplicates of TV ads. Parent radio recall estimates, therefore, should be considered with caution.

- **Overall, Media Campaign radio ads reached approximately half of youth or adults, although for both youth and parents, Wave 3 radio recall was noticeably higher than recall from previous waves.**

About half of youth and parents recognized specific radio ads from the Campaign. Tables 3-M and 3-N summarize relevant radio ad recognition data. Approximately 52 percent of 12- to 18-year-olds reported no recognition of the Campaign radio ads presented during Waves 2 and 3. The mean number of targeted radio ad encounters among this age group in recent months was 2.2, whereas the median was 0 over Waves 2 and 3 combined. This pattern suggests that the majority of youth heard no radio ads from the Campaign during the two waves. Instead, the GRPs obtained likely reached a minority of adolescents hearing some ads repeatedly.

Table 3-M. Change in youth recall of radio ads heard per month across waves

Number of ads heard in recent months	Wave 2** (%)	Wave 3 (%)	Total (%)	Change across Waves (%)	Confidence Interval
0 times	64.2	42.6	51.6	-21.6*	-26.0 to -17.2
0.01 to 1.9	11.2	17.3	15.0	6.1*	+3.0 to +9.2
2 to 7.9	20.9	27.9	26.1	7.0*	+3.2 to +10.8
8 to 23.9	3.5	10.9	6.7	7.4*	+5.2 to +9.6
24 or more times	0.2	1.3	0.6	1.1*	+0.4 to +1.8
Mean	1.39	3.06	2.18	1.67*	1.32 to 2.02

* Between wave change significant at $p < 0.05$

** No Wave 1 radio estimates for youth were generated because many of the radio ads were soundtracks from the TV ads.

Table 3-N. Change in parent recall of radio ads heard per month across waves

Number of ads heard in recent months	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Total (%)	Change across Waves (%)	Confidence Interval
0 times	51.7	54.7	41.8	49.3	-9.9*	-14.1 to -5.7*
0.01 to 1.9	9.2	6.0	11.0	8.7	1.8	-0.4 to +4.0
2 to 7.9	29.4	29.1	30.7	29.7	1.3	-2.0 to +4.6
8 to 23.9	8.4	9.8	14.7	11.0	6.3*	+3.6 to +9.0
24 or more times	1.4	0.5	1.9	1.3	0.5	-0.6 to +1.6
Mean	2.90	2.84	3.94	3.23	1.04*	+0.54 to +1.54*

* Between wave change significant at $p < 0.05$

- **Youth recall of radio ads is increasing.** As described in Table 3-M, in Wave 2 less than 36 percent of youth claimed to have heard any Campaign ads in recent months; however, in Wave 3 this increased to 57 percent, a 21-point increase. These increases are seen in all ages, genders, and ethnicities (Detail Table 3-17).
- **About 50 percent of parents had heard at least one of the radio ads** (Table 3-N). The mean number of encounters with radio ads by parents in recent months was 3.2, (Detail Table 3-22) with only roughly 12 percent who had heard a Campaign radio ad at least once a week (Detail Table 3-21).
- **Parent recall of Campaign radio ads did increase.** Table 3-N shows that less than 50 percent of parents claimed recall of radio campaign ads in recent months in Waves 1 and 2, but recall increased to almost 60 percent in Wave 3.
- **About 40 percent of eligible parents recall hearing inhalant-specific radio ads during Wave 3.** Only parents who were interviewed within 60 days of the broadcast of the radio ads were eligible

to be asked about the ads. Almost 7 percent recalled hearing the ads more than 4 times per month.

3.2.3 Recall of the “Brand”

One of the major innovations of Phase III of the Campaign has been the inclusion of a “brand” for the Campaign. A brand is used in many advertising campaigns to provide a recognizable element (a name, a slogan, a unique visual presentation, a unifying concept, or all four) to coordinate components of a Campaign including print, radio, and television advertisements, as well as nonadvertising activities. Insofar as the brand is recognized and positively regarded, the familiar presence of the brand may create some initial positive response to any new ad. It also may increase the perception that each ad is part of a larger program and that may influence acceptance of the Campaign’s messages.

The Campaign introduced the parent brand first, which involved a series of phrases that included a set-up word, such as “Communication,” and ended with a colon and the phrase: “the Anti-Drug,” for example, “Communication: The Anti-Drug.” The youth brand, introduced at the end of 2000, used a similar approach. In the first series of ads, youth were asked to name what their anti-drug was—meaning what it is that keeps them from using drugs. In a typical ad, a series of blanks would precede the phrase: |_| |_| |_| |_| |_|: My Anti-Drug. In some ads, the blanks would have a possible response filled in, e.g.: “*Music*: My Anti-Drug” as if it were written in by the respondent.

To evaluate the extent to which youth and parents recognize the brand, Wave 3 of NSPY included a section focusing on brand recall. This section was presented to respondents before presenting the Campaign ads for recall since the ads often included the brand.

Youth were asked:

“We want to ask you about some brief phrases that might or might not have appeared in the media around here, as part of ads against drug use. In recent months, have you seen or heard ... the following phrases?”

They were then shown “|_| |_| |_| |_| |_|: My Anti-Drug.” They were also shown one of two phrases that were not the Campaign brand, discussed below.

- Overall, about 60 percent of the 12- to 18-year-old respondents who were asked this question reported recall of the Campaign brand.

Parents were asked:

In recent months, have you seen or heard any ads containing phrases such as “Communication: the Anti-Drug” or “Parents: the Anti-Drug”?

- About 46 percent of the parents responded positively to these phrases.

These were substantial recognition rates, but there is a concern. It is possible that some of the youth and parents may have said “yes” because they wanted to appear knowledgeable, or because the phrase sounded familiar enough that they thought they might have heard it, even if they had not. Therefore, it is important to try to measure the recall as if the brand had not been used by the Campaign.

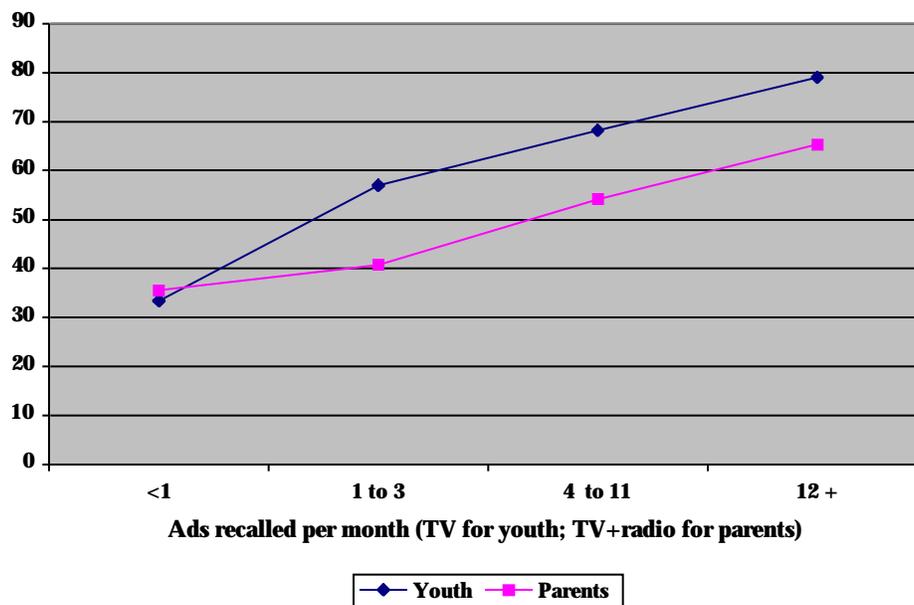
It was not possible to obtain an estimate of recall before the brand was introduced, which would have been the strongest way to estimate a baseline level. Therefore, two other approaches were used in the evaluation instead.

In one approach, used for both youth and parents, the brand recall rates were compared across levels of the specific ad exposure measure used above. If the brand recall claims were reliable, they should be substantially related to the specific Campaign ad recall claims since the ads often included the brand. Those with more exposure to such ads would have had many more opportunities to see or hear the brand. (Evidence for the validity of the specific recall measures was strong,¹¹ so if the brand recall was associated with it, there would be reason to accept the brand recall as credible as well.)

The second approach, used with the youth only, was to ask about recall of phrases that sounded like they might have been used but had not been. However, on the basis of intensive analysis, it appears that these alternative ringers were not fair matches to the true phrase and did not provide a good estimate for what would have been claimed, absent the Campaign's diffusion of the brand.¹²

The results of the analysis of brand recall and specific exposure is captured in Figure 3-E. For youth, only 33 percent of the lowest exposure group said they recognized the brand, while 79 percent of the highest exposure group—those who had seen the ads more than 12 times per month—did so. For parents, 36 percent of the lowest exposure group and 65 percent of the highest exposure group recalled the brand phrase. These are large and significant differences. The more people were exposed to the Campaign, the more they recalled the brand, just as would be expected.

Figure 3-E. Recall of brand phrase by specific ad recall (%)



¹¹ Hornik et al. (2001). Appendix C, pages C-1-C-5.

¹² The recall of the false phrases (“ringers”) was about the same as the true Campaign brand. However, while the recall of the Campaign phrase was closely associated with specific recall, the recall of the ringers was not so associated. We speculate that the high average recall of the ringers was the result of their reasonableness as possible phrases to be included in ads. The two phrases: “I’m drug free and I’m doing just fine” and “Drugs—I don’t need them” were much more conventional sounding than the true brand. This may have meant that they produced high recall because they sounded reasonable, while the high recall of the true brand reflected mostly true recall. The strong association of the true brand with specific exposure suggests that this is the most likely explanation.

There is an important caveat here. Because we cannot directly assess what the false brand recall would have been without the Campaign, we cannot precisely estimate true brand recall rates. The lowest exposure groups do *not* represent the level that would be expected without the Campaign because they include parents and youth who might have been exposed to the brand through other channels—not only through the ads captured by the specific recall measure. On the other hand, true brand recall rates may not have been as high as the observed average youth and parent recall—60 percent and 46 percent respectively, since some of the claimed recall could have been due to false recall. However, both these rates were significantly higher than their counterpart rates for those with minimal TV and radio exposure, suggesting that substantial brand learning occurred.

Thus, while the magnitude cannot be precisely estimated, there is good evidence for brand learning, particularly among youth.

3.2.4 Television Ad Evaluation

All respondents were asked to evaluate a subset of the television ads they reported having seen. The goal was to assess how individuals interpret and evaluate ads from the Media Campaign when they encounter them. In addition, these data will be used in future reports to see whether the evaluative response to the ads affects respondents' susceptibility to Media Campaign effects. Researchers will be able to examine whether individuals who are less convinced by or more skeptical of the ads are less likely to avoid initiation or continuation of drug use.

The three positively phrased questions (indicating that a particular ad was attention getting, convincing, or said something important to the respondent) were summed to create a mean positive evaluation score for each ad and for each respondent. Additionally, a single skeptical item (whether the ad exaggerated the problem) was analyzed separately. It was recoded so a higher score indicated less belief that the ad exaggerated. Both positive and negative responses were placed on a scale from -2 to +2, with 0 representing a neutral response.

- **Overall, youth tend to favorably rate the television Campaign ads they were shown for the duration of Waves 1 through 3** (Detail Tables 3-12 and 3-13). There was very little change in evaluations of television ads across the three waves.
 - On a five-point scale ranging from -2 to +2, mean responses from the four groups of youth interviewed (9- to 11-year-olds, 12- to 13-year-olds, 14- to 15-year-olds, and 16- to 18-year-olds) ranged from 0.55 to 1.0. The responses to the “exaggerate the problem” question told a similar story, with an average tendency for youth respondents to somewhat disagree with the notion that an ad exaggerated the problem. (See Table 3-O.)
 - There are several subgroup differences in evaluations of the ads worth noting. Older youth, White youth, and males tend to be more skeptical in their ad evaluations. High sensation seekers and occasional marijuana users are also more skeptical (Detail Table 3-12).

Table 3-O. Television ad evaluation among youth and parents (November 1999 through June 2001)

Age	Mean evaluation score	Disagree that the ad exaggerated the problem
9 to 11	0.88	N/A
12 to 13	0.99	0.82
14 to 15	0.76	0.74
16 to 18	0.55	0.65
Parents	1.13	1.08

NOTE: Evaluation scale runs from -2 to +2 with + 2 being most positive.

- Similar subgroup differences were seen regarding thinking that TV ads exaggerate the problem. Males, high sensation seekers, and occasional marijuana users were more likely to agree with this statement.
- There was no overall change in evaluation across the three waves. There had been a few significant changes among subgroups between Waves 1 and 2, but the only change in youth evaluations of Campaign ads sustained across three waves was a 0.16 decrease in 9- to 11-year-olds' mean evaluation score. Given the large number of comparisons made, this may not be a reliable result. The appropriate conclusion is that evaluations are generally positive and they have been consistent across waves, even as the sets of ads have changed (Detail Table 3-12).
- **Parents evaluated the Campaign ads slightly more positively than the youth respondents. Their already positive evaluations increased across waves (Detail Tables 3-13 and 3-14).**

 - Mean response from parents for the evaluation scale was 1.13, suggesting that parents, like youth, tended to rate the ads more favorably than negatively. Parents also tended to disagree that an ad exaggerated the problem. (See Table 3-P.)
 - There was an overall improvement in parents' evaluation of the ads, a gain of 0.16 (Table 3-P). This positive change was made by most of the subgroups (Detail Table 3-14). Parents also became less likely to agree that TV ads exaggerate the drug problem from Wave 1 to Wave 3—their score on that scale went from 0.93 at Wave 1 to 1.21 at Wave 3 (Detail Table 3-15).
 - Most demographic groups of parents offered largely similar average assessments of Media Campaign TV ads, though some differences did appear. Mothers rated the ads more favorably than fathers. African American and Hispanic parents were somewhat more favorable in their response to Media Campaign TV ads than were White parents. Town and rural parents gave less favorable assessments than urban and suburban parents (Detail Table 3-14).

Table 3-P. Change in TV ad evaluation among parents (November 1999 through June 2001)

	Wave 1	Wave 2	Wave 3	Waves 1 – 3 Change (%)	95% Confidence Interval
Mean evaluation score	1.07	1.07	1.23	0.16*	+0.10 to +0.22
Disagree that the ad exaggerated the problem	0.93	1.05	1.21	0.28*	+0.20 to +0.36

NOTE: Evaluation scale runs from -2 to +2 with + 2 being most positive.

* Between wave change significant at p<0.05

3.2.5 Internet Use and Encounters with Drug Information On Line

Youth Internet Use

Results from the first three waves of NSPY suggest that the vast majority of adolescents now have at least minimal contact with the Internet, as can be seen in Table 3-Q (and Detail Table 3-37).

Approximately 85 percent of adolescents report using the Internet in the past 6 months. The percentage has continued to increase across the three waves of measurement.

Table 3-Q. Internet use and encounters with drug information on line (November 1999 through June 2001)

	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval
Percent using the Internet at least a few times	83.1	86.6	89.6	6.5*	+3.8 to +9.2
Percent visiting anti-drug Internet site among all youth	10.0	9.1	10.7	0.7	-2.2 to +3.6
Percent visiting pro-drug Internet site among all youth	6.3	3.9	6.6	0.3	-1.7 to +2.3

* Between wave change significant at p<0.05

Despite this wide diffusion of access to the Internet, most youth currently do not encounter information related to drugs on line. Approximately 10 percent of adolescents across the three waves report visiting a web site with anti-drug information in the previous 6 months (Detail Tables 3-41 and 3-42). A smaller percentage of adolescents, 5.6 percent, report visiting a pro-drug Internet site. The rate of usage of the Internet for encountering drug-related information has not changed over the course of the Evaluation.

- **While gender does not appear to affect Internet use, several other demographic factors and sensation seeking may.** White adolescents report higher rates of Internet use than either African American or Hispanic youth. Youth living in urban areas report less use than youth living in either suburban or town and rural areas. Compared with their low sensation-seeking peers, a slightly higher percentage of high sensation-seeking youth report having had at least minimal contact with the Internet in the past 6 months (Detail Table 3-37).

- **Internet use has increased more among particular groups of youth.** African American and Hispanic youth, who had sharply lower rates of Internet use than White youth, both experienced significantly larger gains over the Wave 1 to Wave 3 period, as described in Table 3-R. Youth living in urban areas (13.8%) witnessed greater gains in Internet use than youth in other areas.

Table 3-R. Internet use across waves by ethnicity (November 1999 through June 2001)

	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	Confidence Interval
White adolescents	89.0	90. 9	92. 3	3.3*	+0.7 to +5.9
African American adolescents	70.6	79. 4	85. 1	14.5*	+5.9 to +23.1
Hispanic adolescents	65.8	75. 1	81. 0	15.2*	+6.4 to +24.0

* Between wave change significant at $p < 0.05$

- **High sensation-seeking adolescents are more likely to visit both anti- and pro-drug Internet sites.** Approximately 11 percent of high sensation-seeking youth reportedly visited anti-drug sites in the past 6 months, whereas only roughly 8 percent of their low sensation-seeking counterparts did so. Likewise, while 8 percent of high sensation-seeking adolescents visited pro-drug sites, only approximately 2 percent of low sensation-seeking youth visited such sites (Detail Tables 3-38 to 3-39).
- **There were no significant overall or subgroup changes in the percentage of youth visiting anti-drug or pro-drug Internet sites from Wave 1 to Wave 3.** The significant decreases seen among certain subgroups from Wave 1 to Wave 2 were reversed from Wave 2 to Wave 3 (Detail Tables 3-38 to 3-39).

Parent Internet Use

In terms of the proportion using the Internet at least minimally in the past 6 months, parents as a group appear to be less engaged with the medium than youth currently. Only 66 percent of parents report such use across the three waves, compared with approximately 85 percent of youth. However, compared to the 6 percentage point increase seen among youth, there is an overall increase in Internet use among parents of 10 percentage points, from 60 percent in Wave 1 to 70 percent in Wave 3 (Detail Table 3-40).

Patterns among parents overall are similar to patterns among youth in terms of accessing information about drugs on line. About 7 percent of parents report visiting an Internet site with anti-drug information in the past 6 months. A similarly small number, approximately 9 percent, report visiting an Internet site that included information about parenting skills during the previous 6 months (Detail Tables 3-41 and 3-42). However, there were significant increases in claims of visiting both anti-drug sites and parenting skill sites.

- **During Wave 1, 6 percent of parents recalled visiting an anti-drug site; that had increased to 9.3 percent by Wave 3, a statistically significant change.** This change was observed among almost all parent subgroups. It is larger than would be expected on the basis of the 10-percentage-point change in the Internet use (Detail Table 3-41).

- **Reports of visits to parenting skill sites changed in a parallel way.** Among all parents, 7 percent reported such visits during Wave 1, and 10 percent reported these visits at Wave 3. These changes were widely shared among subgroups (Detail Table 3-42).
- **Among parents, wide disparities in use by education, race, ethnicity, and urbanicity persist.** Across all waves of NSPY, 90 percent of parents who are college graduates report use of the Internet in the past 6 months, whereas only 27 percent of those parents with less than a high school diploma claim such recent use. In addition, African American and Hispanic parents report a substantially lower likelihood of some contact with the Internet than do White parents, and suburbanites are heavier users than urban and town/rural parents (Detail Table 3-40).
- **Education is a telling variable in regard to visiting anti-drug sites and parenting skill Internet sites.** A higher percentage of parents with at least some college experience visited anti-drug Internet sites than parents with less education, and more of them visited parenting skill Internet sites (Detail Table 3-41). This is in proportion to their overall heavier use of the Internet.

The material in this chapter has thus far focused on exposure to Campaign-generated messages, through mass media channels or through the Internet. The next section shifts the focus from exposure to materials directly attributable to the Campaign, to anti-drug messages that come from other institutions. One of the Campaign's methods of influence is to persuade other community institutions to increase their anti-drug efforts. A separate analysis of the environmental context effects of the Campaign on community institutions is underway, and a report is due in January 2002. Evidence that youth and parents are exposed to anti-drug messages from these community institutions, and particularly that exposure to those messages is increasing over time, may be seen as evidence supportive of indirect Campaign exposure. It will not be possible to definitively attribute any observed changes to the Campaign, since many forces may influence the actions of these community institutions. Still, this evidence provides some information about whether there is broad community change and thus whether indirect effects might have occurred.

3.3 Youth and Parent Exposure to Other Drug Information

The Media Campaign is not the only source of drug information reaching the population. This section describes the nature of, and change in, other sources of drug education and information for youth and parents. Young people were asked whether they received drug education in school and outside of school, how frequently they engaged in drug-related conversation with parents and friends, and about the content of those conversations. Youth were also asked whether and how frequently they were exposed to anti-drug stories through a variety of media. Parents were asked about exposure to drug prevention efforts in their communities, including proposed drug laws and enforcement of existing laws, speeches by public officials, and existence of anti-drug programs. They were also asked about how often they recalled seeing drug-related stories in the media and about their involvement in anti-drug or parental effectiveness programs.

3.3.1 Anti-Drug Education

Most youth report receiving anti-drug education in school during the past year and in previous years. More than 70 percent of 12- to 18-year-old youth responded that they had ever attended a drug education class or program in school and more than 60 percent report attending such an event within the past year. Out-of-school drug education class or program attendance was much lower; 11 percent

report attending in past years and only 7 percent report attending in the previous 12 months (Table 3-S and Detail Tables 3-43 through 3-46).

Table 3-S. In-school and out-of-school drug education across waves

	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval
In-school drug education in previous years	78.6	80.0	75.7	-2.9	-6.6 to +0.8
Past year in-school drug education	66.6	65.6	64.6	-2.0	-7.1 to +3.1
Out-of-school drug education in previous years	12.5	10.9	10.0	-2.5*	-4.9 to -0.1
Past year out-of-school drug education	7.9	6.8	5.6	-2.3*	-4.1 to -0.05

* Between wave change significant at $p < 0.05$

- There is no evidence of increases in any of these forms of drug education. In-school education shows no change, and out-of-school anti-drug education, as low as it was at Wave 1, has declined slightly further. The Wave 1 level of nearly 8 percent of youth reporting anti-drug education out-of-school had fallen to less than 6 percent by Wave 3. (Detail Tables 3-44 and 3-46).
- **Ethnicity and age have some effect on anti-drug class and program exposure.** African American youth report greater exposure than other youth to in-school drug education and significantly more exposure to out-of-school education. And while 12- to 13-year-olds report significantly more attendance at both lifetime and past year attendance at in-school drug education classes or programs, they report less attendance at out-of-school classes or programs (Detail Tables 3-43 to 3-46).
- **Fewer 16- to 18-year-olds report ever attending an in-school anti-drug program or class and attending such an event in the past 12 months.** For previous years' attendance, a relatively small decrease of 2.6 percentage points from Wave 1 to Wave 2 became a significant overall decrease of 7.2 percentage points from Wave 1 to Wave 3. Regarding past year attendance, a large significant decrease of 8.6 percentage points from Wave 1 to Wave 2 became slightly larger from Wave 2 to Wave 3, to result in a total decrease from Wave 1 to Wave 3 of 9.6 percentage points (Detail Tables 3-43 and 3-45).
- **Similar trends were seen among females and suburban youth in their ever having attended an in-school anti-drug program or class.** Among suburban youth, there was a 4.4 percentage point decrease from Wave 1 to Wave 2 in attending drug education classes in school and a 2.5 percentage point decrease from Wave 2 to Wave 3, to result in a total decrease from Wave 1 to Wave 3 of just under 7 percentage points. For females, a 0.7 percentage point decrease from Wave 1 to Wave 2 grew slightly into a significant overall decrease of 5.4 percentage points from Wave 1 to Wave 3 (Detail Table 3-43).
- **Similar to in-school drug education changes, 16- to 18- year olds report less attendance at out-of-school anti-drug programs or classes in previous years and in the past 12 months.** For lifetime attendance, a decrease of 5.2 percentage points from Wave 1 to Wave 2 became slightly larger from Wave 2 to Wave 3 to result in a total decrease from Wave 1 to Wave 3 of 6.5

percentage points. Regarding attendance in the past year, a decline between Waves 1 and 2 of 4.4 percent did not continue from Wave 2 to Wave 3 (Detail Tables 3-44 and 3-46).

3.3.2 Discussion about Drugs

Most youth have conversations about drugs, and many of them have such conversations frequently. However, the percentage of youth reporting conversations about drugs with their parents declined, although there was no such decline reported by parents.

- About 90 percent of youth ages 12 to 18 report having had at least one conversation about drugs with parents or friends in the previous 6 months and more than 50 percent reporting having had four or more conversations with parents or friends about drugs in the past 6 months (Detail Tables 3-47 to 3-48, 3-52 to 3-54).
- Youth reports of conversations about drugs were relatively stable, although among youth 12 to 13 the percentages declined between Waves 1 and 3 (Table 3-T).
- Youth reports about conversations with parents showed an overall significant decline, and the drop tended to be largest for younger respondents. Thus, nearly 63 percent of 9- to 11-year-olds reported two or more anti-drug conversations with their parents in Wave 1; this had dropped nearly 13 percentage points by Wave 3 (Table 3-T and Detail Table 3-53).
- Parents reported higher levels of conversation with their children at all ages, and the level remained consistent across waves. This inconsistency with the child reports is difficult to explain. It is addressed further in Chapter 6, where effects of the Campaign on parent-child talking is discussed.
- **Age influences patterns of conversations with friends and parents.** While there are no significant differences among age groups in youth reporting any conversations with parents about drugs in the past 6 months, older adolescents are more likely than younger adolescents to report having had conversations with friends about drugs in the past 6 months. In addition, more older adolescents report having had two or more such conversations with friends or parents than younger adolescents (Detail Tables 3-47 through 3-54).

Table 3-T. Change in drug-related conversations across waves

Percent with two or more conversations in the past 6 months	Popula-tion	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval on Change (%)	
With friends reported by youth of ages:	9 to 11	29.3	22.9	27.5	-1.6	-5.9	to +2.3
	12 to 13	44.4	43.8	39.1	-5.3*	-10.5	to +0.01
	14 to 15	69.4	51.9	65.1	-4.3	-11.3	to +2.7
	16 to 18	67.6	71.1	70.1	2.5	-3.5	to +8.5
With parents, reported by youth of ages:	9 to 11	62.7	57.4	50.2	-12.5*	-17.5	to -7.5
	12 to 13	59.2	56.2	53.0	-6.2*	-11.3	to -1.1
	14 to 15	58.4	52.1	53.1	-5.5	-13.1	to +2.5
	16 to 18	48.4	51.7	44.7	-3.7	-11.0	to +3.6
By parents with children of ages:	9 to 11	71.4	72.5	74.0	2.6	-3.3	to +8.5
	12 to 13	80.3	78.2	81.2	0.9	-4.0	to +5.8
	14 to 15	81.7	79.3	82.2	0.5	-6.1	to +7.1
	16 to 18	78.2	79.4	83.4	5.2	-1.1	to +11.5

* Between wave change significant at $p < 0.05$

- Gender, ethnicity, and sensation seeking appear to play a role in conversations about drugs with friends.** Females are more likely than males to have had conversations about drugs with friends; White adolescents are more likely than African American or Hispanic adolescents to have had frequent conversations about drugs with friends; and high sensation seekers report having had more drug conversations with friends than do low sensation seekers (Detail Tables 3-47, 3-48, and 3-54).
- Recent drug use and sensation seeking are associated with frequency of conversations about drug use.** Youth who used marijuana in the past year are much more likely than nonusers to have conversations about drugs, and this effect increases with age. Similarly, among older youth, sensation-seeking levels are correlated with frequency of drug conversations. Older high sensation seekers have more conversations about drug use than those who are not sensation seekers.

Content of Drug Conversations

In the course of conversations about drug use, young people of all ages discuss negative consequences that happen because of drugs, but some also speak positively about drugs. Around 50 percent of young people aged 12 to 18 reported talking with their friends about “bad things that happen if you use drugs” within the past 6 months, and around 30 percent say they talked about “specific things I could do to stay away from drugs.”

- From Wave 1 to Wave 3 there were no significant changes in the proportion of youth who reported conversations about either positive or negative consequences of drug use (Detail Tables 3-49 to 3-51).
- Saying positive things about drugs appears to be partly a function of age.** While few 12- to 13-year-olds report engaging in conversation about how “marijuana use isn’t so bad,” 21 percent of

14- to 15-year-olds and 34 percent of 16- to 18-year-olds have been involved in such a conversation. (See Table 3-U.)

Table 3-U. Topics of conversation with friends by age group (Waves 1, 2, and 3 of NSPY)

Age group	Specific things I could do to stay away from drugs (%)	Bad things that happen if you use drugs (%)	Marijuana use isn't so bad (%)
12 to 13	31.6	45.3	9.3
14 to 15	29.6	50.5	20.6
16 to 18	27.9	55.2	33.8

- Ethnicity, gender, and sensation seeking somewhat affect the types of conversations adolescents have about drugs.** White adolescents were significantly less likely than non-Whites to have had conversations with friends about specific things they could do to stay away from drugs. Males were more likely than females to have had conversations about marijuana use not being so bad, but females were more likely to have had conversations about bad things that can happen if you use drugs. High sensation seekers were more likely to have had conversations about how marijuana use isn't so bad and about bad things than happen if you use drugs, but were less likely to have had conversations with friends in the past 6 months about specific things they could do to stay away from drugs (Detail Tables 3-49 through 3-51).

3.3.3 Discussions about Anti-Drug Ads

Around one-half of the youth report conversations with parents or others about anti-drug ads. Thirty-three percent of all youth report having a conversation about the anti-drug ads with their parents and 41 percent of 12- to 18-year-olds recalled having such a conversation with friends or others (9- to 11-year-olds were asked only about conversation with parents) (Table 3-V).

- Overall, there was no significant change in talk with parents or others about anti-drug ads.** There was a significant decline for 9- to 11-year-olds only, and that concerned conversations with parents (Table 3-V). Discussions with parents about anti-drug ads decreased 3.5 percentage points from Wave 1 to Wave 2, and an additional 5.3 percentage points from Wave 2 to Wave 3.

Table 3-V. Changes in conversations about anti-drug ads from Wave 1 to Wave 3

Group and discussion partner	Percent with at least one conversation about anti-drug ads in past 6 months				
	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval on Change (%)
Discussions with parents:					
Youth aged 9 to 11	49.7	46.2	40.9	-8.8*	-13.9 to -3.7
Youth aged 12 to 13	40.1	37.4	36.8	-3.3	-8.0 to +1.4
Youth aged 14 to 15	30.8	30.0	28.5	-2.3	-8.9 to +4.3
Youth aged 16 to 18	21.2	16.3	20.0	-1.2	-7.1 to +4.7
Discussions with others (friends, other adults):					
Youth aged 9 to 11	NA	NA	NA	NA	NA
Youth aged 12 to 13	39.7	44.5	39.4	-0.03	-5.5 to +4.9
Youth aged 14 to 15	45.0	39.9	41.7	-3.3	-10.0 to +3.4
Youth aged 16 to 18	45.6	34.5	39.1	-6.5	-13.2 to +0.2

* Significant between waves change at $p < 0.05$; NA: not asked

- **There was a significant decrease for Hispanic youth.** Hispanic youths' reports of conversations with parents declined 4 percentage points from Wave 1 to Wave 2 and an additional 13 percentage points from Wave 2 to Wave 3 (Detail Table 3-55).
- **There was an overall pattern of decline in talks about the drug ads with others besides parents.** The decline between Wave 1 and 3 from 45 percent to 40 percent was significant for 14- to 18-year-olds.
- **Age, gender, ethnicity, and sensation seeking are related to conversations with parents about anti-drug ads.** Female and younger adolescents report more conversations with their parents about anti-drug ads than do male and older adolescents. Likewise low sensation-seeking adolescents and African American youth report more anti-drug ad conversations with their parents than do high sensation-seeking adolescents and White and Hispanic youth (Detail Tables 3-55).
- **Gender and urbanicity influence conversations about anti-drug ads with people other than the youth's parents.** Females were significantly more likely than males to have talked with friends or other adults about anti-drug ads in recent months. And youth living in urban areas were significantly more likely than youth living in town and rural areas to have had such conversations (Detail Table 3-56).

3.3.4 Perceptions of Media and Community Attention to Drug Use

Youth see and hear a good deal about drug use among young people in the mass media. More than 95 percent of all youth reported at least monthly exposure to media stories about young people and drug use.¹³ The media channels that respondents were asked about were television and radio news;

¹³ See question D9 in the Teen questionnaire.

television movies, sitcoms, and dramas; television talk shows; rental and theater movies; and magazines. There was almost no change in these reported exposures to drug-related coverage over the three waves of measurement.

- **More than half of all youth noticed media coverage about drug use among young people at least once a week on at least one of these media channels.** About one-third noticed such stories weekly on television or radio news, and more than 20 percent recalled such stories appearing weekly in television movies, sitcoms, or dramas, and on television talk shows. Fewer young people noticed such stories appearing weekly in movies or in magazines (Detail Tables 3-57 through 3-62).
- **There was only one significant overall change in recall of stories about young people and drug use in the mass media from Wave 1 to Wave 3.** There was a 3.4 percentage point increase in adolescents recalling stories about drugs in movies at least once a week. There were no changes for any of the other media, or for any subgroups for any of the other media (Detail Table 3-60).
- **Recall of drug stories on various media is related to gender, age, and ethnicity.** Younger adolescents aged 12 to 13 years report less exposure to stories about drugs and youth than older youth across all types of media, and significantly less on three types: TV movies, sitcoms, and dramas; TV talk shows and movies (theater/rental). African American youth were more likely than White and Hispanic youth to recall stories about youth and drugs in all media and were significantly more likely than White youth to recall such stories in four of the five media about which they were asked. Females report more exposure than males to stories about drugs among youth on all media types except movies, and significantly more on four of the five media (Detail Tables 3-57 through 3-61).

Parents' Exposure to Non-Campaign Anti-Drug or Parenting Messages

Across waves, parents reported often seeing drug themes presented in the media. Nearly 85 percent of parents report weekly exposure to at least one source dealing with the issues of youth and drugs (Table 3-W).

- **Half of all parents report having seen or heard stories about drug use on television or radio news programs at least weekly in recent months.** Approximately 30 percent noticed such stories appearing weekly in newspapers and in television entertainment programs; and nearly one-quarter saw drug-related stories on television talk shows or television news magazines (Detail Tables 3-63 through 3-69).
- **There was no overall increase or decline in parental awareness of drug-related stories between Waves 1 and 3.** While there were positive significant increases from Wave 2 to Wave 3 for specific sources for all parents, there were no overall significant differences from Wave 1 to Wave 3.
- **There were some subgroup changes in the percent who recalled hearing or seeing a weekly drug-related story in at least one medium.** Father reports increased from 84 percent to 90 percent between Wave 1 and Wave 3; reports by those with less than a high school degree increased from 81 percent to 91 percent, while reports by those with some college decreased by 4 percentage points, from 90 percent to 86 percent. There were also scattered significant declines for subgroups of parents for particular sources (Detail Tables 3-63 through 3-70).

- Ethnicity, education, and urbanicity influence recall of exposure to stories about youth and drugs in the media.** White parents were less likely than both African American and Hispanic parents to report having noticed stories dealing with drug use among young people in all media except newspapers. African American parents report the greatest recall in all media except noticing stories on TV or radio news programs, where Hispanic parents recall higher exposure. College graduates were less likely to report having noticed stories on all media except magazine and newspaper articles. Urban parents recall higher exposure across all media (Detail Tables 3-63 to 3-69).

Table 3-W. Parents exposure to weekly media stories about drugs (Waves 1, 2, and 3 of NSPY)

	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval on Change (%)
TV or radio news	51.0	49.1	50.9	-0.01	-3.7 to +3.5
Newspapers	33.1	31.3	34.0	0.90	-3.0 to +4.8
TV dramas, sitcoms, movies	30.4	27.2	32.4	2.00	-1.6 to +5.6
TV talk, magazine shows	23.8	21.1	23.7	-0.01	-3.3 to +3.1
Radio (not news)	13.7	12.5	14.7	1.00	-1.6 to +3.6
Movies	9.6	8.5	10.0	0.40	-2.0 to +2.8
Magazines	8.2	8.1	8.2	0.00	-2.1 to +2.1
At least one source	85.3	83.4	86.6	1.30	-1.4 to +4.0

Parent Reports of Local Anti-Drug Activity

Most parents report some awareness of anti-drug activity in their localities. Almost 45 percent of all parents report having heard a lot about police crackdowns on drug use or drug sales in their community within the past year and almost 35 percent have “heard a lot” about anti-drug programs in schools or community centers. Reports of political focus on drugs is less prominent than legal enforcement or prevention programs; only 17 percent of all parents heard a lot about drug-related laws proposed by state or local governments within the year, 15 percent reported hearing public officials speak about drugs, and only 8 percent heard a lot about drug-related propositions or referenda on the ballot for public voting (Detail Tables 3-71 through 3-75).

There was only one significant overall change from Wave 1 to Wave 3 on any of the measures of local activity (Table 3-X). There were some significant changes among subgroups (Detail Tables 3-71 to 3-75).

- The only significant overall change from Wave 1 to Wave 3 occurred in the proportion of parents saying they had heard a lot about drug-related propositions/referenda on ballots for public voting.** There was a 3 percentage point increase from Wave 1 to Wave 3 (Detail Table 3-75).
- Ethnicity and urbanicity are associated with extensive awareness of political and legal anti-drug activities.** White parents were less likely to have heard a lot about political and legal activities compared to Hispanic parents. African American parents were the most likely to have heard a lot about these activities. More urban parents have heard a lot about political and legal anti-drug activities than suburban and town and rural parents (Detail Tables 3-71 through 3-75).

- **Differences exist between subgroups on various drug activities/controversies.** Mothers and parents with college degrees are much more aware of anti-drug programs in schools and community centers than are fathers and parents with less education (Detail Table 3-71). Parents who live in the West, parents with less than a high school education, and urban parents have heard more about drug-related propositions or referenda on ballots for public voting (Detail Table 3-75).

Table 3-X. Change in parent exposure to drug-related communication across waves

Measure	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Waves 1 – 3 Change (%)	95% Confidence Interval on Change (%)
Percentage hearing a lot about anti-drug programs in community in past year	32.0	36.0	32.2	0.02	-3.7 to +4.1
Percentage hearing a lot about speeches about drugs by public officials in past year	15.0	15.3	13.3	-1.70	-4.6 to +1.2
Percentage hearing a lot about anti-drug laws in past year	15.7	19.3	16.2	0.50	-2.4 to +3.4
Percentage hearing a lot about drug-related referenda in past year	6.2	9.3	9.1	3.00*	+0.8 to +5.2
Percentage hearing a lot about police crackdowns on drug use or sales in past year	44.2	44.9	42.4	-1.80	-6.5 to +2.9
Percentage attending drug prevention programs in past year**	28.9	31.8	29.6	3.07	-3.5 to +4.9
Percentage attending parent effectiveness programs in past year**	27.4	30.2	28.6	1.20	-3.6 to +6.0

* Between wave change significant at $p < 0.05$

** For parents with children 12 to 18

Less than a third of parents report having attended drug prevention or parent effectiveness programs. On average across waves, 31 percent reported attendance at a drug abuse prevention activity in the previous 12 months and 29 percent said they attended a parent effectiveness program in the previous year (Table 3-X and Detail Tables 3-76 and 3-77). There was no significant change in such attendance across the three waves.

- **Ethnicity is associated with attendance at both drug abuse prevention programs and parent effectiveness programs.** African American parents report significantly higher attendance at both types of programs than either White or Hispanic parents. White parents report the second highest levels of attendance (Table 3-X and Detail Tables 3-76 and 3-77).
- **There was little change in parents' reported attendance at drug prevention or parenting skills programs.** There were no overall or subgroup significant attendance increases or decreases among parents for either of these programs across waves.

3.4 Summary and Conclusions

The data provided to the evaluators by the Media Campaign describes what media time and space have been purchased over the 95-week period starting September 1999 and running through June 2001. On average, the Campaign purchased enough media time to expect the average youth to be

exposed to 2.7 directly targeted messages per week, and the average parent about 2.3 exposures per week. While there was some variation in media time bought each week, over each measurement wave (around 6 months) there was a fairly stable amount of Gross Ratings Points (GRPs) purchased for youth. For parents, there was much more instability: during the Wave 1 period, media time was enough to expect 2.7 exposures per week; during Wave 2 it fell to 1.5 exposures and climbed back to 2.6 exposures per week in Wave 3.

The Campaign also varied the ad platforms in each wave. The available data allowed classification of the TV and radio ads, which make up 80 percent of all GRPs for youth, although only about half for parents. For youth, an early focus on negative consequences of drug use had almost disappeared by Wave 3. A focus on normative positive consequences was strong in all three waves, while resistance skills were emphasized in Waves 1 and 3, but not included in Wave 2. For parents, parenting skills/personal efficacy was maintained through all three waves, but “your child at risk” received only some weight at Wave 3, while “perceptions of harm” was only included at Wave 1. Some of the “your child at risk” advertising in Wave 3 focused on the risks of inhalants.

The Evaluation used two types of measures of exposure to Campaign messages. The first, a general exposure measure, combined recall of exposure to anti-drug messages on four media (TV and radio, print, outdoor media, and movies/videotapes). Both parents and youth reported high exposure on those measures. The median response for parents was 10 exposures and for youth 12 exposures per month, probably equivalent to between 2-3 exposures per week. However there was no detectable change across the three waves of data collection, suggesting this measure was insensitive to the changes in media purchases.

The second Campaign message exposure measure asked for recalled frequency of viewing specific ads on television and radio that were on the air in the 60 days before an interview took place. These produce rather lower estimates of exposure to the Campaign, with parents reporting 5 exposures to TV ads and youth reporting a median of 6 exposures “in recent months,” equivalent to 0.60 to 0.75 exposures per week.

On these specific exposure measures, parents and youth diverged sharply in trends over time. Consistent with the sharp drop in GRPs during Wave 2, parent recall of TV ads declined both during Wave 2 and during Wave 3, presumably reflecting the carryover effects of very low GRPs at the end of Wave 2. Using the mean as an estimator, parents declined from 6 to around 5 exposures in recent months. In notable contrast, youth reported a substantially higher level of recall of specific ads, with the mean climbing from 7.5 at Wave 1 to 9.5 at Wave 3. By Wave 3, youth were reporting nearly double the level of exposure to TV ads than were parents. Given that the Campaign had reversed its Wave 2 strategy during Wave 3, it would be expected that the next wave of data collection will show a higher level of exposure for parents.

Recall of specific radio ads was assessed for youth during Waves 2 and 3, and for parents across all three waves. The absolute level of recall of radio ads remained much lower than for television in both groups, but there was a substantial increase by Wave 3 in radio recall. While at Wave 2, 36 percent of youth said they had heard radio ads, this had increased to 57 percent at Wave 3; for parents, recall increased from 48 percent at Wave 1 to 58 percent at Wave 3. Recall of radio increased from Wave 1 to Wave 3, although its contribution to total exposure remained small.

All youth and parents were asked to provide their assessments of the ads they had been shown. Both groups remained generally positive. Youth were largely unchanging across waves, while parents, who were already higher than youth at Wave 1, had increased their positive regard by Wave 3.

Overall use of the Internet continued to grow for youth and for parents. However, the level of visits to anti- (or pro-) drug sites was below 10 percent and unchanging for youth. Parent claims that they had visited either anti-drug sites or parenting skills sites both grew over the three waves of measurement, although their absolute levels remained less than 10 percent.

In addition to distributing messages directly, the Campaign hopes also to reach its audiences indirectly, through other institutions and routes. While for many of these channels there was a substantial level of exposure to anti-drug messages, there was little evidence that this was increasing over the course of Phase III of the Campaign. Thus it is difficult to attribute these complementary exposures as indirect exposures produced by the Campaign.

The Campaign's efforts with respect to youth recovery organizations has focused on integrating drug prevention messages and strategies into existing organizations' educational programs and extra-curricular activities. Most youth reported recent in-school drug education, but this remained unchanged across the three waves. Potential Campaign influence through out-of-school activities was also examined. However, youth reported these activities were both rare and actually declining across waves.

Parents reported lots of discussions with their children, but no more at Wave 3 than at Wave 1. Youth reported a substantial level of such conversation, if less than their parents did. However, Wave 3 youth reported fewer conversations than did Wave 1 youth. No changes were reported in the content of drug-related conversations.

One series of questions asked about exposure to drug and youth stories across a variety of mass media; another asked about awareness of any local anti-drug activity. While there were reasonably high levels of recall of mass media stories, and sometimes of local activities, there was no change on most of them across waves. Around 30 percent of parents reported attending drug abuse prevention programs and parenting effectiveness programs in the past year, but these did not change significantly over time.

Overall, the Campaign has provided a heavy dose of media messages, and youth and parents do recall seeing and hearing them. Notable Wave 3 changes include increases in recall of specific TV ads and radio ads for youth, and for radio ads for parents. These contrast to the decline in TV ad recall for parents, probably reflecting the big decline in parent GRP buys during Wave 2. Youth are still not reporting much contact with anti-drug information on the Internet; parents also report low level of such contact, but there was a small increase for them. There was little evidence that anti-drug messages from other institutions were increasing over the course of the Campaign, and in some cases there were slight declines (children's reports of talking with parents and attendance at anti-drug programs outside of school).

References

Hornik, R., Maklan, D., Cadell, D., Judkins, D., Sayeed, S., Zador, P., Southwell, B., Appleyard, J., Hennessy, M., Morin, C., and Steele, D. (2000). *Evaluation of the national youth Anti-Drug Media Campaign: Campaign exposure and baseline measurement of correlates of illicit drug use from November 1999 through May 2000*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

Hornik, R., Maklan, D., Judkins, D., Cadell, D., Yanovitzky, I., Zador, P., Southwell, B., Mak, K., Das, B., Prado, A., Barmada, C., Jacobsohn, L., Morin, C., Steele, D., Baskin, R., and Zanutto, E. (2001). *Evaluation of the National Youth Anti-Drug Media Campaign: Second semi-annual report of findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

Hornik, R., Judkins, D., Golub, A., Johnson, B., Maklan, D., Duncan, D., Zador, P., and Cadell, D., (1999). *Evaluation of the National Youth Anti-Drug Media Campaign: Historical trends in drug use and design of the phase III evaluation*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

4 Marijuana and Inhalant Use Among Youth

This chapter focuses on marijuana use as reported by youth during the three NSPY waves of data collection completed to date. Because use was so low across the three waves among 9- to 11-year-old youth, the analysis concentrates on youth between the ages of 12 and 18. Data are also presented regarding youth inhalant use. As noted previously in this report, this evaluation recognizes that the Campaign may well take longer to affect behavior than the attitudes and beliefs (i.e., cognitions) that underpin behavior. With respect to marijuana use, the Campaign has had an average of only 12 months to institute an effect that is measurable through NSPY—the time interval between the midpoint of Wave 1 and the midpoint of Wave 3. As reported in Chapter 3, there has been very little inhalant-focused advertising for youth through Phase III of the Campaign. Therefore, even if all possible forces for change in drug use other than the Campaign remained constant since the start of Phase III, the evaluation would not expect to find significant change in either marijuana or inhalant use by youth between NSPY Waves 1 and 3.

4.1 Marijuana Use

This section presents findings from NSPY regarding changes in marijuana use by youth across its three waves of data collection. It then turns to an examination of marijuana offer.

4.1.1 Changes in Marijuana Use by Age Groups

The previous report for Wave 2 summarized evidence for the year 2000, indicating that marijuana use by youth had showed little change between 1999 and 2000. That report relied on data from both the Monitoring the Future Study (MTF), the best source of data about long-term trends in marijuana use by youth, and the data gathered in the NSPY. This has now been confirmed by the publication of the 2000 National Household Survey of Drug Abuse (NHSDA), which showed no significant change for youth aged 12 to 17, as well as 12 to 13, 14 to 15, and 16 to 17 in lifetime, annual, or past month marijuana use between 1999 and 2000 (<http://www.samhsa.gov/hhsurvey/hhsurvey.html>). Although the 2001 MTF data are not yet available, the third NSPY survey largely confirms the pattern from the previous report. Overall, the Wave 3 data, collected in the first half of 2001, shows that most use of marijuana is not significantly different from use estimates during Wave 1 or Wave 2. Table 4-A presents the data for reports of marijuana use in the past year.¹

This basic pattern is largely repeated for three other measures of marijuana use: lifetime use, past month use, and regular use (defined as use every month or almost every month), and for each of the age groups. These results are presented in Detail Tables 4-1 through 4-4. There are two exceptions.

¹ The NSPY question series for marijuana use was as follows: The next questions are about marijuana and hashish. Marijuana is sometimes called pot, grass, or weed. Marijuana is usually smoked, either in cigarettes, called joints, or in a pipe. Hashish is a form of marijuana that is also called hash. From now on, when marijuana is mentioned, it means marijuana or hashish. Have you ever, even once, used marijuana? How long has it been since you last used marijuana? [During the last 30 days; More than 30 days ago but within the last 12 months; More than 12 months ago].

The 12- to 13-year-old group reported very little marijuana use, but there was a pattern of decline in reported use. Table 4-B presents the data for all 12- to 13-year-olds across the four measures.

Table 4-A. Use of marijuana by age (NSPY reports)

Age group	Percent marijuana use in the past year				95% Confidence Interval on W1 – W3 % Change
	Wave 1 11/99– 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 – Wave 3 % Change	
9 to 11	0.8	0.0	0.3	-0.5	-1.2 to +0.2
12 to 13	3.3	3.2	2.0	-1.3	-3.0 to +0.4
14 to 15	11.2	11.5	14.4	3.2	-2.1 to +8.5
16 to 18	28.9	29.3	27.6	-1.3	-8.1 to +5.5
12 to 18	15.9	15.8	15.6	-0.3	-3.7 to +3.1

The only significant trend for the entire 12- to 13-year-old group was for “past month” use. However, Detail Tables 4-1 through 4-3 also present trend data for subpopulations of the 12- to 13-year-olds for the “ever,” “past year,” and “past month” measures. The great majority of those were negative, and a few were significantly negative, supporting an inference of a negative trend.

Table 4-B. Use of marijuana among 12- to 13-year-olds (NSPY reports)

Use measure	Percent reporting use				95% Confidence Interval on Change (%)
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 – Wave 3 % Change	
Lifetime	5.1	4.7	3.4	-1.7	-3.8 to 0.4
Past year	3.3	3.2	2.0	-1.3	-3.0 to 0.4
Past month	1.8	1.0	0.7	-1.1*	-2.2 to 0.0
Regular	0.6	0.5	0.2	-0.4	-1.1 to 0.3

* Between wave change significant at p<0.05

The opposite pattern was found for 14- to 15-year-olds. While the absolute level of regular marijuana use among this group was low, it has shown a significant increase (from 2.1% to 5.6%) between Waves 1 and 3 (Table 4-C and Detail Table 4.4). While none of the other marijuana behaviors for this age group show a statistically significant trend, all of them are in the same direction and of a similar magnitude, increasing a little more than 3 percentage points from Wave 1 (Table 4-C). There was not a large enough number of 14- to 15-year-olds to examine subgroups of them looking for additional evidence of change; in the subpopulation analyses below they are combined with 16- to 18-year-olds, who did not show any sign of a positive trend.

Table 4-C. Use of marijuana among 14- to 15-year-olds (NSPY reports)

Use measure	Percent reporting use				95% Confidence Interval on Change (%)
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 – Wave 3 % Change	
Lifetime	16.5	13.8	20.6	4.1	-2.0 to +10.2
Past year	11.2	11.5	14.4	3.2	-2.1 to +8.5
Past month	3.1	4.0	6.6	3.5	-0.3 to +7.3
Regular	2.1	2.2	5.6	3.5*	+0.3 to +6.7

* Between wave change significant at $p < 0.05$

Both the 12- to 13-year-olds and the 14- to 15-year-old youth are important audiences for the Campaign. The absolute size of the changes in both age groups is small, but the relative change, if it is reliable, is more meaningful. However, there is a caveat. While the four measures in both cases are of similar magnitude, they are not independent measures. If a respondent said no to “ever use,” he or she was not asked the subsequent questions. Thus the finding that all of the measures for each age subgroup go in the same direction is not independent evidence of effects. Second, there is a concern that with so many different comparisons made across four age groups and four measures, some might reach conventional significance by chance.

4.1.2 Changes in Marijuana Use Among Subpopulations

Detail Tables 4-1 through 4-4 present comparative patterns of change in marijuana use according to youth status on five characteristics (gender, race/ethnicity, region of residence, urbanicity of residence, and sensation seeking) among younger (12-13) and older (14-18) teens. Regular use was so rare among 12- to 13-year-olds (0.4% on average over the three waves) that it was not subject to subgroup analysis.

For the 12- to 13-year-olds, 42 trend comparisons were possible. Of those, 38 were trends in the direction of a decline in marijuana use; 7 of the subgroup trends were statistically significant. Four of the significant subgroup trends were for “past month” use where the age group as a whole was significant. The four subgroups showing statistically significant declines in “past month” use are White, urban, town, and rural, and low sensation-seeking 12- to 13-year-old youth. In addition, Whites had a statistically significant declining trend for “ever” use, Midwesterners for “past year” use, and town and rural youth for “past year” use. This pattern of results provides greater confidence that the trends in Table 4-B represent real declines among 12- to 13-year-old youth.

Overall there was no significant change on any of the measures for 14- to 18-year-olds. There were a total of 56 different subgroup Wave 1 to Wave 3 comparisons for 14- to 18-year-olds for the four measures of use. Of those, four were statistically significant, one negative and three positive. Urban youth declined in past year use (-8.3 percentage points); suburban youth increased in past month use (+7.9), and regular use (+6.6); and low sensation-seeking youth also reported increased past month use (+3.5).

Taken as a single population of 12- to 18-year-olds, there is not much evidence of consistent change either positive or negative. However, this may obscure two opposite trends: a small reduction in use among 12- to 13-year-olds, and a small increase in use among 14- to 15-year-olds.

4.2 Marijuana Offers

This section reviews the evidence about trends in youth reports of receiving offers of marijuana. This is an important behavioral outcome, both because the Campaign has aired some messages that encourage resistance to offers of marijuana, and because offers are closely related to marijuana use. Among 12- to 18-year-olds who had used marijuana in the past year, 86 percent received an offer of marijuana in the past month, while among those who did not use in the past year, only 19 percent received an offer in the past month. From the opposite perspective, those who receive offers are much more likely to be users: of those who did not receive an offer in the past month, less than 0.5 percent reported use in the past month. Of those who did receive offers, 24 percent reported use in the past month.

While receiving offers is closely related to use, most who received offers did not report use. Seventy-five percent of those who received offers did not use—a substantial majority reported they said “no.”

Whether getting offers leads to use, or prior use leads to getting offers, or both, cannot be sorted out from this association. However, there is little surprise then in the next results: that the lack of change in marijuana use is matched by the overall lack of change in receiving marijuana offers.

No age group shows a statistically significant change in receiving offers at all or in the past 30 days. Detail Tables 4-6 and 4-7 present this information. Table 4-D focuses on the proportion of youth within each age group that reported receiving offers in the previous 30 days. Youth aged 9 to 11 were not asked about recent offers of marijuana. The table shows the strong age gradient of offers and the lack of any significant change across the three waves.

Table 4-D. Receiving offers of marijuana by age

Age group	Percent receiving offers in previous 30 days				95% Confidence Interval on Change (%)
	Wave 1 1/00 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 – Wave 3 % Change	
12 to 13	9.9	9.8	9.9	0.0	3.1 to +3.1
14 to 15	29.9	23.5	29.1	-0.8	8.7 to +7.1
16 to 18	48.3	45.0	46.6	-1.7	9.1 to +5.7
12 to 18	31.3	27.7	30.0	-1.3	5.5 to +2.9

As shown in Detail Tables 4-6 and 4-7, there are only a few subpopulations that show statistically significant changes in offers between Waves 1 and 3. In the context of a large number of results, these few significant findings probably cannot be interpreted as reliable evidence that there has been a decline on offers of marijuana.

Given the high association of use and offers, an additional perspective comes from examining the trend in current use among youth who do report recent offers. This trend indicates whether the tendency to turn down marijuana offers is increasing, a desirable outcome for a campaign that

encourages youth to resist drugs. Table 4-E compares the rates of previous month marijuana use over the three waves among those who received offers and those who did not. Three results are clear from that table. Receiving an offer is highly associated with use; if a teen did not report an offer of marijuana in the previous 30 days, he or she did not report use of the drug. Second, the great majority of youth who do report an offer do not report use either. This is true for both 12- to 13-year-olds and 14- to 18-year-olds. Most youth were turning down drug offers. Finally, there is no statistically reliable change over the three waves in the proportion using marijuana either for those who received offers or for those who did not. At first glance, the drop in the proportion of 12- to 13-year-olds who received offers and used marijuana (from 17% to 7% between Waves 1 and 3) indicates a promising trend. However, this is not a statistically reliable change. The sample sizes for these comparisons are too small to conclude that changes of this magnitude are statistically significant. Less than one tenth of the 12- to 13-year-old sample actually received offers.

Table 4-E. Previous month use of marijuana by offers

Age group	Received an offer in past 30 days?	Percent who reported use of marijuana in previous month				95% Confidence Interval on Change (%)
		Wave 1 1/00 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 – Wave 3 % Change	
12 to 13	No	0.1	0.0	0.0	-0.1	-0.3 to +0.2
	Yes	17.0	10.0	7.1	-10.0	-21.4 to +1.4
14 to 18	No	0.7	0.7	0.7	0.0	-1.3 to +1.3
	Yes	21.0	28.7	25.5	4.5	-3.1 to +12.2

4.3 Comparison with MTF and NHSDA Measures

Hornik et al., (2000) reported marked differences in estimates of marijuana use throughout the 1990s among the MTF², NHSDA³, and the Partnership Attitude Tracking Study (PATS),⁴ which is sponsored by the Partnership for a Drug-Free America (PDFA). In general, the estimates provided by PATS were the highest, followed by MTF, and those provided by NHSDA were the lowest. Given the variation in these estimates across surveys, the estimates from the NSPY are expected to vary somewhat from those presented in these three surveys. However, because both PATS and MTF are school-based surveys, and NHSDA and NSPY are home-based surveys, one would expect that the estimates from NSPY would be closer to those from NHSDA. In fact, that was the case.

² The Monitoring the Future study is sponsored by the National Institute on Drug Abuse (NIDA). It is conducted every spring using nationally representative samples of 8th, 10th, and 12th graders in their classrooms. Students in both public and private secondary schools are represented. Data collection is via a self-administered paper-and-pencil questionnaire. The number of schools sampled has been about 425 in recent years, and the number of responding students ranges between 45,000 to 51,000. From 1991 to 1999, the MTF study has maintained a student response rate between 82 and 91 percent in participating schools. The main reason for student nonresponse is student's absence from class at the time of data collection. The study uses a standard set of three questions to determine usage levels for the various drugs. For instance, the questions about marijuana use are as follows: "On how many occasions (if any), have you used marijuana... (a) in your lifetime?, (b) during the past 12 months?, (c) during the last 30 days?" Each of the three questions is answered on the same scale: 0 occasions, 1-2 occasions, 3-5, 6-9, 10-19, 20-39, and 40 or more occasions. Because of its longevity, the MTF study serves as an important benchmark for comparing results and judging the nations' success in combating drug use by youth.

³ The National Household Survey of Drug Abuse (NHSDA), is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). This survey system can be used to measure change from the 70s and 80s until 1998 and from 1999 forward but cannot be easily used to measure change from 1998 and earlier, to 1999 and later, because of a major redesign in 1999 that disrupted the time series very substantially.

⁴ The Partnership Attitude Tracking Study (PATS) is sponsored by the Partnership for a Drug-Free America (PDFA).

4.3.1 Marijuana Use

NSPY 2000 estimates of use of marijuana are within sampling error limits of NHSDA estimates from the 2000 data (Table 4-F). This can be seen even without the sampling error and confidence interval estimates from the NHSDA results, which are not yet available. The NHSDA also reported no statistically significant change in marijuana use among 12- to 17-year-old youth between 1999 and 2000 with regard to ever use, past year use, or use in the past month. NSPY data does not cover 1999.

MTF 2000 estimates of marijuana use are higher than the NSPY 2000 estimates (Table 4-G). As noted earlier, the MTF estimates were also higher than the NHSDA estimates throughout the 1990s. The reasons for these differences are not entirely clear. They may stem from the wording of the

Table 4-F. Comparison of published NHSDA 2000 data with NSPY 2000 (Waves 1 and 2) data on use of marijuana among youth 12 to 17 (percentages and confidence intervals)

All 12- to 17-year-olds	Marijuana Use		
	Ever (%)	Past year (%)	Past month (%)
NHSDA 2000	18.3	13.4	7.2
NSPY 2000 (Waves 1 and 2)	19.2 (17.4-21.1)	14.0 (12.5-15.7)	6.0 (5.0-7.3)

* NHSDA results from <http://www.samhsa.gov/hhsurvey/hhsurvey.html> accessed on 10/06/01

Table 4-G. Comparison of MTF 2000 and NSPY 2000 (Waves 1 and 2) data on use of marijuana

Survey and grade	Marijuana use		
	Ever (%)	Past year (%)	Past month (%)
MTF 8	20.3	15.6	9.1
NSPY 8	13.5	9.3	3.1
MTF 10	40.3	32.2	21.6
NSPY 10	31.0	20.3	9.4
MTF 12	48.8	36.5	21.6
NSPY 12	45.4	36.5	16.2

questionnaire, the setting for the interviews (school versus home), response rates, coverage rates, some combination thereof, or other factors such as edit/imputation rules. It is also possible that the discrepancy may be accounted for in part by the fact that MTF is conducted during April of each year, while NSPY data is collected throughout the year. On average, respondents to NSPY in a given grade may be 4 months younger, based on date of interview, than are respondents to the MTF survey.⁵ To the extent that changes in behavior took place during this period, they are likely to be reflected in differential estimates of marijuana use.

⁵ This difference reflects two factors: NSPY respondents are interviewed throughout the year, and all respondents interviewed after the end of an academic year are assigned to the grade they are entering.

4.3.2 Inhalant Use

As reported in Chapter 3, there has been very little inhalant-focused advertising for youth through Phase III. If inhalant use were to be affected, it would be only because youth generalized from the broader anti-drug advertising to which they were exposed. In contrast, in the last months of the Wave 3 measurement period, there was a focused effort to reach adults with an anti-inhalant message. However, it would be unlikely to see effects of that advertising translated into youth reports of inhalant use this soon, given that influence on the parents would have to trickle down to their children, or youth would have had to have been affected by the ads directed at parents. These inhalant data may be appropriately interpreted as a baseline for possible future change if the Campaign maintains or adds an inhalant component to its promotion efforts.

Inhalant use was stable between 1999-2000, according to MTF, and between November 1999 and June 2001, according to comparisons across the three waves of NSPY. Table 4-H presents the MTF data through 2000, while Table 4-I presents the NSPY data through three waves.

Table 4-H. Inhalant use by grade 1997- 2000 (MTF reports)

	Percent Using Inhalants in Previous Year				
	1997	1998	1999	2000	'99-00 change
8th grade	11.8	11.1	10.3	9.4	-0.9
10th grade	8.7	8.0	7.2	7.3	+0.1
12th grade	6.7	6.2	5.6	5.9	+0.3

Table 4-I. Use of inhalants by age and wave (NSPY reports)

Age group	Percent Inhalant Use in the Past Year				95% Confidence Interval on Change (%)
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/00 – 6/01 (%)	Wave 1 – Wave 3 % Change	
9 to 11	0.4	0.2	0.3	-0.1	0.7 to +0.5
12 to 13	1.1	0.6	1.4	0.3	0.9 to +1.5
14 to 15	2.4	2.8	2.9	0.5	1.9 to +2.9
16 to 18	3.1	3.1	3.2	0.1	2.7 to +2.9
12 to 18	2.3	2.2	2.6	0.3	1.1 to +1.7

The trends in MTF and NSPY results for the period of the Campaign are quite parallel, although they only partially overlap in time. MTF reports no significant change between spring 1999 and spring 2000. This covers the period from about 4 months after the start of the national broadcasts of the Campaign during Phase II through about 7 months into Phase III. NSPY shows no evidence of significant change between the first half of 2000 and the first half of 2001. Both NSPY and MTF do not find significant change in their respective time periods for other measures of inhalant use as well: ever use, past month use, and regular use. The third national survey, NHSDA, reported no statistically significant change on these three measures of inhalant use among 12- to 17-year-old youth between calendar years 1999 and 2000. In their trends, the three approaches are parallel.

However, the levels of use reported in the MTF and NSPY are quite different, with MTF providing much higher estimates of use. The NHSDA 2000 reported levels of use for 12- to 17-year-olds suggest that its estimates lie between the MTF and NSPY estimates (ever: 8.9%; past year: 3.5%; and last

month: 1.0%). The reasons for these differences are not known. They may be caused by question wording, the school versus home setting for the interviews, response or coverage rates, the data collection methods implemented, or some combination of these possible causes. The issue of question wording deserves particular attention. The questionnaire wording used by NSPY and MTF are presented in Figure 4-A. NSPY used more abstract language than did MTF. MTF asked specifically about having “sniffed glue” instead of the more abstract wording of having “used inhalants.” The NHSDA asked a still more detailed series of questions covering specific types of inhalants, in order to determine whether a respondent ever used inhalants (the NHSDA questionnaire can be found at <http://www.samhsa.gov/hhsurevy/hhsurvey.html>). The choice to use the more abstract language in NSPY was a response to a concern that more direct language might teach youth how to inhale, particularly since the questions were to be asked of children as young as nine, while MTF questions were asked of youth who were already in 8th grade. However, the use of abstraction may have had a cost if respondents did not always know what was to be considered inhalants. Also, the NSPY begins with a “gate” question that asks whether inhalants have ever been used. Only respondents who report ever having used inhalants are asked about use in the past year. In contrast, the MTF questionnaire has no “gate” question on ever having used a substance. Rather, it asks of everyone the frequency of usage over different time intervals.

Figure 4-A. NSPY and MTF inhalant question sequences

<p>The NSPY sequence asks: “The next questions are about inhalants. Inhalants are liquids, sprays, and gases that people sniff, huff, or inhale to get high or make them feel good. Have you ever, even once, used an inhalant for kicks or to get high? [if yes] During the <i>last 12 months</i>, on how many occasions have you used an inhalant for kicks or to get high?”</p> <p>The MTF question asks: “On how many occasions (if any) have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any other gases or sprays in order to get high during the last 12 months?”</p>

A particular anomaly in the two tables is the different age gradient for the two studies. The MTF shows a negative age gradient: older youth report less use in the prior 12 months than do younger respondents. In contrast, the NSPY results show the opposite pattern with older respondents reporting more rather than less recent inhalant use. There is no ready explanation for this difference in pattern. However, it may be worth noting that the third major study of drug use among adolescents, the National Household Survey of Drug Abuse (NHSDA), reports estimates between MTF and NSPY overall, and does not find any age gradient at all in inhalant use. Only 1999 data are available from NHSDA as of this writing so the results are not reported here since they do not cover the period of Phase III. However, future reports will incorporate comparisons with NHSDA as well as with MTF.

Detail Tables 4-8 through 4-10 present inhalant use evidence for “ever,” “past year,” “past month,” and “regular” use. In addition to the trend data for each age subgroup, these tables also present trends for subgroups organized by gender, race/ethnicity, region, urbanicity, and sensation-seeking within the age subgroups of 12- to 13-year-olds and 14- to 18-year-olds. There are three significant Wave 1 to Wave 3 trends in those tables. However, given the large number of comparisons made, and the rarely found significant results, these are not yet interpretable as reliable results.

4.4 Summary

Through the first three waves of NSPY data collection, there are no significant reductions in past year use for any of the target age groups in levels of marijuana or inhalant use. There was some evidence of a decline in the already very low past month marijuana use among 12- to 13-year-olds and, contrarily, an increase in the low level of regular use among 14- to 15-year-olds. Some evidence for increases in marijuana use were also found among suburban 14- to 18-year-olds. This covers the period from November 1999 through June 2001, substantially parallel to Phase III of the National Youth Anti-drug Media Campaign.

This analysis could not detect changes if they had already occurred before the initiation of Phase III, for example, with the initiation of the national broadcasts in Phase II at the beginning of 1998. However, MTF data do cover that earlier period. MTF reports indicate that marijuana use had been stable from 1998 through April 2000, the end point for currently available data. The publication of MTF data from the 2001 data collection later this year will provide a stronger test of these patterns of change, given the larger samples and longer time line of that study. The NSPY measures of inhalant use may be insensitive to some inhalant use, so it will be important to see whether MTF or NHSDA reports of inhalant use for 2000 and 2001 provide parallel results.

Youth reports of receiving offers of marijuana were stable. There was no statistically reliable evidence that the rate of offer refusal was changing during Phase III.

Previous reports in this series have noted the strong association of marijuana use with age and with sensation seeking. Those relationships remain strong with the addition of the Wave 3 sample. In addition, there are some differences within age groups. Among 12- to 13-year-olds, Hispanics report more annual marijuana use than Whites (6% versus 2%), with African Americans not statistically different from either group. This pattern is reversed among 14- to 18-year-olds, with Whites reporting more annual use than African Americans (23% versus 17%), with Hispanics not different from the other groups. Also, significantly more 14- to 18-year-old males than females report past year marijuana use (23% versus 19%).

Thus far, neither the NSPY data, nor the limited data available from MTF provide consistent support for a claim of change in drug use. The hints of a reduction in use among 12- to 13-year-olds and an increase in use among 14- to 15-year-olds will deserve further attention during the next reports. While a reduction in use would have been desirable from the perspective of the Campaign, the lack of such evidence is certainly not definitive. It may be that data yet to come from the 2001 MTF study, with its larger sample of youth, will detect changes that are not detectable with NSPY. Moreover, the model underlying the Campaign recognizes that behavior may well take longer to change than cognitions, the beliefs and attitudes that underpin behavior. Accordingly, the Campaign established initial impact targets that it estimated would take perhaps 2 to 3 years to achieve, with additional years required to achieve its ultimate goals for 2007—for instance, reducing the prevalence of past month illegal drug use by 50 percent (ONDCP 1999). The evaluation approach is consistent with the Campaign's underlying model (Hornik et al., July 2000). Therefore, while immediate change in behavior is desirable, it may be that such change will come at a later time, and that all that can realistically be expected from this first 22 months of Phase III of the Campaign are changes in prior cognitions. Chapter 5 traces those results. Also, it is possible that the Campaign is having success with influencing parents who will later affect youth behavior. Chapter 6 looks at evidence for effects on parent behavior.

Finally, it is possible that a stable trend in drug use is the result of two counteracting trends: an increasing tendency to use drugs reflecting outside forces and the downward pressure resulting from the Campaign's efforts (along with those of other interventions with parallel goals). It might have been that the use of drugs would have been worse over this period were it not for anti-drug efforts like the Campaign. Analysis of the responses of youth with more and less exposure to the Campaign may allow some sorting of these trends; this occurs in Chapter 5, but will be very closely examined after the first repeat interviews of youth in Waves 4 and 5 permit us to compare the trajectories of differently exposed youth.

Reference

- Hornik, R., Judkins, D., Golub, A., Johnson, B., and Duncan, D. (July, 2000). *Evaluation of the National Youth Anti-Drug Media Campaign: Historical trends in drug use and design of the phase III evaluation*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063).
- Hornik, R., Maklan, D., Cadell, D., Judkins, D., Sayeed, S., Zador, P., Southwell, B., Appleyard, J., Hennessy, M., Morin, C., and Steele, D. (2000). *Evaluation of the National Youth Anti-Drug Media Campaign: Campaign exposure and baseline measurement of correlates of illicit drug use from November 1999 through May 2000*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063).
- Office of National Drug Control Policy, Executive Office of the President (1999). *National Drug Control Strategy: 1999 Performance measure of effectiveness: Implementation of findings*.

5. Campaign Effects on Youth

The primary audience for the Campaign are young people, with some focus on youth in the early teen years who are seen as particularly vulnerable to initiation of drug use. The objectives of the Campaign include reducing the number of young people who try marijuana at all, and reducing the number of trial users who go on to regular use. Current regular users are not a primary target audience for the Campaign. The Campaign has at times focused on a variety of drugs (methamphetamines, club drugs like ecstasy, inhalants, and others). Nonetheless, the major focus has been on drugs overall and marijuana specifically. Aside from alcohol and nicotine, marijuana is the illicit drug by far the most likely to be used by youth. Marijuana is thus the focus of the analyses presented here, and some attention is also paid to inhalants.

In part, the Campaign has expected to affect youth drug use through influencing the behavior of parents and other adults important in youth lives. Increased adult engagement in youth lives is accepted as an important intervention in preventing drug use. The success of the Campaign in reaching and affecting adults is discussed in Chapter 6. However, the Campaign expects to influence youth directly through its heavy promotion of anti-drug messages with advertising and other efforts. This chapter focuses on the assessment of this direct path of effect. Chapter 4 presented evidence for changes in drug use over Phase III of the Campaign. There was inadequate evidence to support a claim of change in marijuana use thus far, although there were some hints of reduced use among 12- to 13-year-olds and increased use among 14- to 15-year-olds. This chapter focuses back one step in the process of change, to the cognitive precursors of behavior outlined in the Campaign model laid out in Chapter 2. Is there evidence that the Campaign is influencing intentions to use marijuana, beliefs and attitudes about the outcomes of marijuana use, perceived social norms about marijuana use, or self-efficacy to turn down marijuana?

5.1 The Logic of Inferences About Effects

It would be desirable to show that target outcomes, including improved cognitions about marijuana use, are trending in a direction consistent with Campaign objectives. However, any observed positive trend may reflect only external forces other than the Campaign. There are many forces in society that potentially affect adolescent drug use (e.g., drug prices, drug availability, content of popular media), and a trend alone won't permit unambiguous attribution to the Campaign. An observed lack of a positive trend might also miss real Campaign effects. The Campaign might be successfully keeping the level of drug use and its cognitive precursors from getting worse as the result of other negative forces, or it might be that this study lacked the statistical sensitivity to detect a small change.

Still, despite these ambiguities, it will be easier to accept Campaign effects in the context of "good" trends than to have to explain why the lack of "good" trends is still consistent with a Campaign effect. Given that the bad trend between 1992 and 1998 toward increased drug use justified the Campaign, finding a reversal of that trend is desirable.

A positive trend can be more credibly linked to the Campaign if it is possible to provide a second class of evidence: that youth who were more exposed to the Campaign are "better" on the desired

outcomes. Were youth who reported seeing Campaign ads two or three times a week more likely to believe there were negative outcomes of marijuana use than those who reported ad exposure less than once a week?

This associational data is subject to three concerns. First, there is the risk that the observed association between exposure and outcomes is the result of other variables that affect them both; for example, youth who do less well in school are more likely to turn to drugs and also may spend more time watching television and thus seeing ads. The threat to an inference of Campaign effects from these other variables is addressed directly through the implementation of statistical controls for potential confounding variables. The procedure used for that purpose, propensity scoring, is described in detail in Appendix C.

The second concern in making inferences from cross-sectional associations is that the association might be the result of the influence of outcomes on exposure rather than exposure on outcomes. For example, is it possible that youth with a negative view of drugs are more likely to remember anti-drug advertising? This could explain the association just as well as the idea that exposure to that advertising affected their view of drugs. This concern, called the threat of reverse causation, cannot be eliminated under most circumstances with cross-sectional data. Only when there are, over time, cohort data available is it possible to sort out with some confidence the causal order between variables. Thus the analyses below will not definitively eliminate this concern about causal claims from cross-sectional associations; only when the Wave 4 and Wave 5 followup data are available will it be possible to do this more effectively.

Third, the absence of an association between exposure and outcome does not permit definitive rejection of all Campaign effects. Chapter 2 recognized the possibility of effects not detectable through comparisons between more and less well-exposed individuals. To the extent that effects are shared in social networks, or diffused through changes in institutional practices, they may not be detectable through individual level comparisons. Despite this possibility, finding an association, like finding a good trend, is desirable, since the individual effects route is an important one.

In this report, the best evidence consistent with a Campaign effect is a positive association of reported exposure to the Campaign with the target outcomes statistically controlled for likely confounders. If this is accompanied by evidence of a positive trend in the outcome, the argument that there was a Campaign effect is strengthened.

The failure to find either or both types of evidence will not lead to a definitive rejection of the idea of Campaign effects. If neither trend nor association is detected, the conclusion is that the effects have not been shown, although it might be that they would be in the future as the evaluation collects over-time cohort data and is able to analyze data at levels of aggregation higher than the individual. The presence of associational evidence (assuming that the associations are in the hypothesized direction) support the Campaign, but do not eliminate the concern about reverse causation. If there is a trend but no association, the conclusion is also ambiguous; the trend might have been due to outside forces, or the effects of the Campaign might not have been captured by individual level comparisons, or the samples available were too small to detect true associations. In each of these cases, the threat to a claim of effect remains substantial and suggests waiting until more data are available to see if the evidence becomes more convincing. This recommendation for patience is not merely rationalization. This plea accompanied the ambiguous evidence about parental effects and youth presented in the Evaluation's Second Semi-Annual Report of Findings (Hornik et al., 2001). As will be seen in

Chapter 6, the evidence is now more favorable for parents, although as presented in this chapter, it is now less favorable for youth.

The overall analysis focuses on effects among current nonusers of marijuana who are 12- to 18-year-olds. There are very few 9- to 11-year-olds who report any drug use, or anything but strong negative attitudes toward drugs. Their data are presented in the Detail Tables, but they are not a primary focus of the major analysis sections in the chapter, as they are not a primary focus for the Campaign. Also, current users do not get a great deal of attention in the presentation. The Campaign would like to affect the resistance of these youth to increased use of marijuana. However, there are not enough of them in the samples, particularly at younger ages, to provide very much statistical sensitivity to their changes. Although more than 40 percent of 16- to 18-year-olds report prior use, the numbers for 12- to 13-year-olds and 14- to 15-year-olds are much less, and thus analyses with those samples cannot detect anything but very large changes in outcomes, which the Campaign does not expect in the short run.

In addition to the overall analysis, this chapter presents both trend data and associational data for subgroups of youth. The subgroup analyses are used for two purposes. If there is an overall effect for all 12- to 18-year-olds, there is a search for evidence that the trends or the association is significantly larger or smaller for particular groups. If there is no overall effect, the subgroups are examined to see if there is evidence of effect for only a subpopulation.

In these analyses, younger and older children, those who live in urban versus suburban or town and rural areas, boys and girls, and high and low sensation seekers are compared. While some data are presented by race/ethnicity and by region, in general the small numbers in some of these subgroups mean that it is quite difficult to show differences between subgroups.

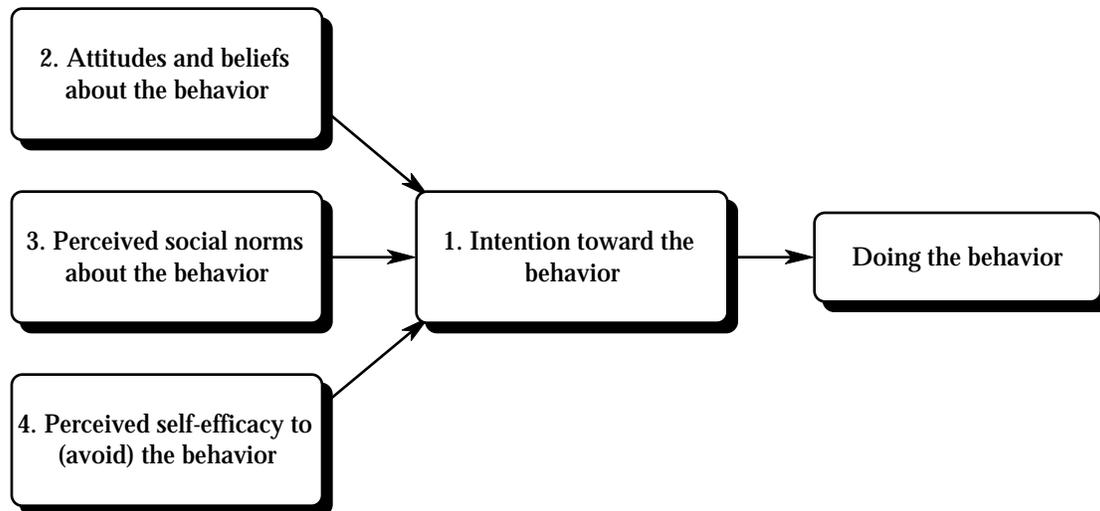
5.2 Development of Overall Scales, Combining Trial and Regular Use, and Summarizing Multiple Related Items

The Detail Tables provide information about trends in a total of 33 cognitive outcomes related to use of marijuana and 5 outcomes related to use of inhalants. In order to present that information efficiently, and to maximize the power of the analyses, this chapter presents that information largely through the use of a small number of summed indices. The indices reflect the expected theoretical model of Campaign effects. The use of these scales provides several advantages:

- Summed indices are, in general, more reliable than single measures, thus allowing easier detection of meaningful trends and associations;
- Using a small number of indices reduces the risk of chance findings of statistical significance when a very large number of tests are examined—a risk compounded when subgroups are to be examined for possible differential effects;
- Given the particular structure of the youth questionnaire, the use of summed indices permits a sharp increase in the numbers of respondents eligible for particular analyses, again increasing sensitivity to any true effects; and
- A theory-driven analysis featuring a small number of indices allows for a focused presentation of results.

In Chapter 2, the basic theoretical model underpinning the evaluation was presented. The model argues that if the Campaign were to be successful, it would affect behavior through one or more of the paths depicted in Figure 5-A.

Figure 5-A. The expected relationships among cognitive outcomes



The analysis of marijuana cognitive outcomes focuses on four measures that correspond to the expected four predictors of behavior:

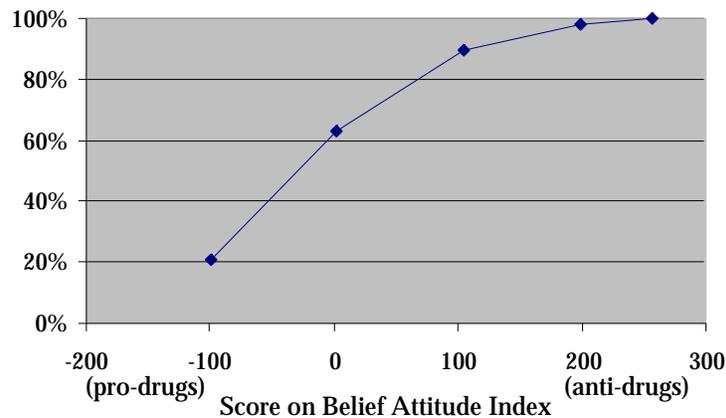
- **Intentions to use marijuana at all in the next year.** The question asked how likely it was that the respondent would use marijuana even once or twice in the next year, and permitted answers of definitely not, probably not, probably yes, and definitely yes. A substantial majority, 87 percent, of current nonusers 12 to 18 said, “definitely not.” In the analyses below, this group is compared to the 13 percent of nonusers who were not definite in their intended rejection of use. It is worth noting that this measure is highly correlated with prior use. While 87 percent of prior nonusers said definitely not, only 27 percent of prior users said definitely not to use in the next year.
- **Beliefs and attitudes about marijuana.** All youth respondents were asked questions about how likely it was that a series of specific consequences would result if “you” use marijuana, either regularly (every month or almost every month) or once or twice over the next year. The eight consequences asked about for “once or twice” use included “Upset my parents,” “Get in trouble with the law,” “Lose control of myself,” “Start using stronger drugs,” “Be more relaxed,” “Have a good time with friends,” “Feel better,” and “Be like the coolest kids.” The eight consequences asked about for regular use included “Damage my brain,” “Mess up my life,” “Do worse in school,” “Be acting against my moral beliefs,” “Lose my ambition,” “Lose my friends’ respect,” “Have a good time with friends,” and “Be more creative and imaginative.” Each nonusing respondent was randomly asked one of the eight belief sequences. They were also each asked two questions that assessed overall attitude toward either “once or twice” use or regular use. All of the youth with prior use experience were asked about the consequences of and attitudes toward regular use.

It is useful to look at the two behaviors (using once or twice, and using regularly) as distinct. In the previous reports, analysis focused on distinguishing between the two sets of outcomes. However, for this report it was decided to sacrifice the distinctions to allow the creation of a single index to capture beliefs and attitudes about marijuana. This permitted the maximization of the

number of youth who could be studied in a particular analysis and thus the power to detect an effect if any were present. Since nonusers were randomly assigned to answer questions about “once or twice” or regular use, it was possible to equilibrate the two sets of responses on a single scale.

The following steps were used to create the index. All nonusers were divided into two groups: those who had been randomly assigned to answer the questions about “once or twice” use, and the rest who were assigned to answer the questions about regular use. Each subgroup was then used in separate analyses in which intention to use was predicted from the eight consequence beliefs and two attitudes in a logistic regression equation. The scores from the prediction equation were then used to weight each of the items for a summed index. The same weights derived from the nonusers’ equations were used to assign index scores to the population of prior users to ease interpretation. Each of the summed indices was then adjusted so that its mean and standard deviation were equal to 100 for the 12- to 18-year-old nonusers at Wave 1. Then both indices were combined with higher scores corresponding to more anti-drug attitudes and beliefs. The new index could be used for all respondents, regardless of which sequence of questions they answered. The development of this and each of the following indices is described in more detail in Appendix E.

Figure 5-B. Marijuana nonuse intention by belief/attitude index

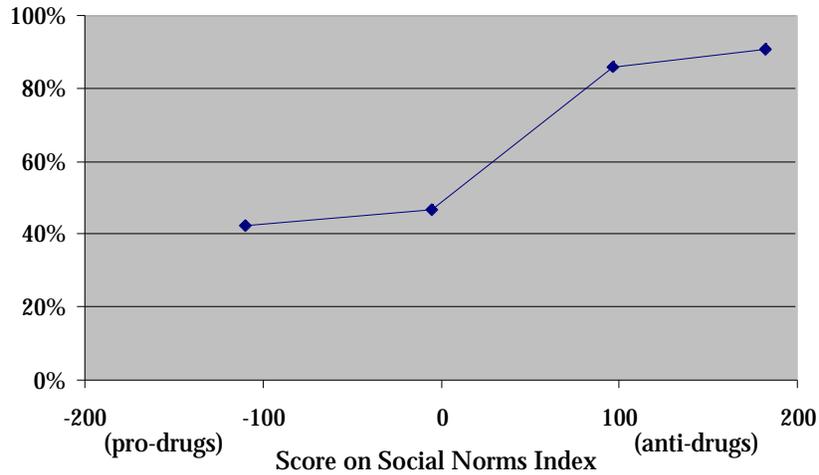


The summed belief/attitude index, as expected, was substantially associated with the intention to use marijuana in the next year. Figure 5-B presents that relationship graphically. Only 20 percent of those with the lowest scores on that index said “definitely not” to marijuana use in the next year, while almost 100 percent of those who were at the highest levels rejected such use.

- Perceived social norms.** The perceived social norms index was formed in a parallel way to the belief/attitude index. There were five parallel questions that assessed social normative pressure with regard to each of “once or twice” and regular use of marijuana. They asked about the perception of friends’ use of marijuana, other peers’ use of marijuana, parents’ disapproval of “your” marijuana use, friends disapproval of “your” marijuana use, and disapproval of “your” marijuana use by most people important to you, in each case in the context of “once or twice” use or regular use over the next year. The questions were weighted according to their ability to predict the intention to use marijuana once or twice in the next year. The indices for nonusing youth randomly assigned to answer the “once or twice” or regular use questions were both set to a mean of 100 and a standard deviation of 100. The youth who had previously used marijuana, and who had been asked the social norm questions about regular use, were assigned index scores using the weights developed for the nonusers. Once again, all respondents were then assigned their score on the overall index based on their scores on the separate indices.

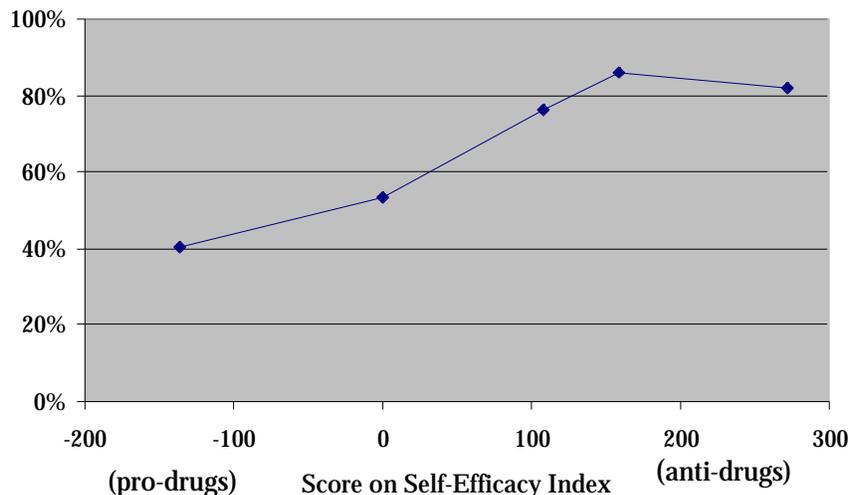
The perceived social norms index was substantially correlated with intentions, although the relationship was not quite so strong as that between the belief/attitude index and intention (Figure 5-C).

Figure 5-C. Marijuana nonuse intention by social norms index



- Self-efficacy to refuse marijuana.** All respondents were asked the same five questions about their confidence that they could turn down the use of marijuana under various circumstances (“How sure are you that you can say no to marijuana, if you really wanted to, if: You are at a party where most people are using it; A very close friend suggests you use it; You are home alone and feeling sad or bored; You are on school property and someone offers it; You are hanging out at a friend's house whose parents aren't home”). The five questions were used to predict the intention to use marijuana once or twice in the next year. Each question was then weighted in the overall index reflecting the coefficient of the item in the predictive equation. Once again, to ease interpretation, responses were standardized to a mean of 100 and a standard deviation of 100. The new index predicted intentions similarly, but less powerfully, than the other two indices (Figure 5-D).

Figure 5-D. Marijuana nonuse intention by self-efficacy index



5.3 Trends in Drug Attitudes and Beliefs and Intentions about Use of Marijuana among Nonusing 12- to 18-Year-Olds

This section covers intentions about trial use, beliefs and attitudes, and perceived social norms and self-efficacy about use, each broken out by age and wave. It also discusses the evidence for diversity in trends.

5.3.1 Intentions About Marijuana Trial Use by Age and by Wave

There are no statistically significant changes in intentions to use marijuana once or twice over the three waves of measurement among prior nonusers. Table 5-A presents these data. All of the Wave 1 to Wave 3 changes are small and their confidence intervals include zero. Interestingly, there had been statistically significant change between Waves 1 and 2 in intentions for the 12- to 18-year-olds (the change from 85.9% to 89.1% that appears in the table), but that positive move was completely counterbalanced by a reversal between Waves 2 and 3. This pattern of reversal in change is repeated in the tables presented below. The possible explanations for this pattern are considered in the discussion section of this chapter.

Table 5-A. Trends in intentions to use marijuana once or twice by child age

Age group	Percent of nonusers saying “definitely not”				95% Confidence Interval on W1 to W3 % Change
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 to Wave 3 % Change	
9 to 11	N/A	96.8	96.0	NA	NA
12 to 13	91.7	92.9	90.1	-1.6	-4.7 to +1.5
14 to 15	83.3	86.8	85.4	2.1	-4.4 to +8.6
16 to 18	82.1	87.3	80.8	-1.3	-8.4 to +5.8
12 to 18	85.9	89.1	85.8	-0.1	-3.5 to +3.3

“How likely is it that you will use *marijuana*, even once or twice, over the *next 12 months*? When we say *marijuana*, we mean *marijuana* or *hashish*.”

The table does provide two other pieces of information. Most nonusing youth, regardless of age, do not intend to use marijuana even once or twice in the next year. These reported intentions are consistent with the reported behavior of the population, and ever use rates starting at less than 1 percent among 9-year-olds and going to 46 percent among 18-year-olds. If the patterns of use currently reported remained unchanged, one would expect in the next year less than 1 percent new users among the 9- to 11-year-olds, 6 percent new users among the 12- to 13-year-olds, 10 percent new users among the 14- to 15-year-olds, and 5 percent new users among the 16- to 17-year-olds.

Also, there is some age association in these responses with 14- to 15-year-olds less likely to say definitely not than 12- to 13-year-olds who, in turn, are less likely to reject use than 9- to 11-year-olds. However, the age effects are understated, particularly with regard to the responses of 16- to 18-year-olds. This table presents only the responses of nonusers. Since nearly 40 percent of 16- to 18-year-olds were prior users, the numbers presented here are not reflective of the intentions of all youth in the age group. Overall, among nonusers, 96 percent of all 9- to 11-year-olds, 89 percent of all 12- to 13-year-

olds, 76 percent of all 14- to 15-year-olds, and 60 percent of all 16- to 18-year-olds say “definitely not” to this question.

5.3.2 Beliefs/Attitudes by Age and by Wave

The results for the belief and attitude index show essentially the same pattern as did the intentions question, perhaps unsurprising given the strong association between the two measures. Table 5-B presents the results for each age subgroup and the entire 12- to 18-year-olds sample. (See also Detail Table 5-2.)

Table 5-B. Trends in belief/attitude index about marijuana use among never users by child age

Age group	Score on Index				95% Confidence Interval on W1 to W3 Change
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	
12 to 13	122.0	136.3	117.4	-4.6	-16.7 to +7.5
14 to 15	89.9	113.8	105.5	15.7	-1.4 to +32.7
16 to 18	85.9	97.4	78.3	-7.6	-26.6 to +11.5
12 to 18	100.0	117.1	101.9	1.9	-8.3 to +12.1

Note: The index was standardized so 12- to 18-year-old nonusers had a mean and standard deviation of 100 at Wave 1.

The change from Wave 1 to Wave 2 was positive and statistically significant, as had been reported in the Wave 2 semiannual report. The Wave 1 to Wave 2 shift was positive for every age group. However, every age group went in the opposite direction during Wave 3. As a result, none of the cumulative changes between Wave 1 and Wave 3 were statistically significant. Only the 14- to 15-year-olds approached a significant change. The overall conclusion: over the three waves, the attitude/belief index did not maintain early gains.

This pattern of early gains given up during the Wave 2 to Wave 3 period is repeated for many of the specific items that make up the scale. (See Detail Tables 5-6, 5-9, 5-13, and 5-18.) In all of those cases where there were early gains, they had been reversed by Wave 3.

Table 5-B shows a clear age gradient, despite the omission of users from the analysis, with older nonusers expressing weaker anti-drug sentiments than younger nonusers. On average across the three waves, 12- to 13-year-olds had an index score of 125, while 16- to 18-year-olds had an index score of 87 (Detail Table 5-2). That difference of 37 points can be roughly converted to an effect size metric, where a difference of one standard between two groups’ deviation is considered an effect size of one. Then the difference of 37 is equivalent to an effect size of 0.37, generally considered a moderate effect.

5.3.3 Perceived Social Norms about Marijuana Use by Age and by Wave

The trend in perceived social norms follows the pattern of both of the previous indices. Table 5-C presents the essential results. The early, statistically significant change between Waves 1 and 2 was largely reversed by Wave 3, with only a nonsignificant positive trend for 14- to 15-year-olds left to testify to the earlier good trend (Table 5-C and Detail Table 5-3).

Table 5-C. Trends in social norms index about marijuana use among never users by child age

Age group	Score on Index				95% Confidence Interval on W1 to W3 Change
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	
12 to 13	131.5	142.3	131.5	-0.03	-10.4 to +10.3
14 to 15	87.9	106.4	106.0	18.10	-0.4 to +36.5
16 to 18	76.9	91.6	68.0	-8.80	-26.7 to +9.0
12 to 18	100.0	114.9	104.2	4.20	-4.9 to +13.3

Note: The index was standardized so 12- to 18-year-old nonusers had a mean and standard deviation of 100 at Wave 1.

There is no detectable overall trend for all 12- to 18-year-olds, and no significant trend for any group. There was a nonsignificant trend for the 14- to 15-year-olds (as there was for their performance on the belief/attitude index in Table 5-B).

Once again, the age gradient is clear, with older nonusers seeing a more accepting environment than younger nonusers. The 16- to 18-year-olds scored an average of 79 across the three waves; the 12- to 13-year-olds scored 56 points higher. This difference is even larger if both users and nonusers are considered together. All 12- to 13-year-olds had a social norm score of 129. All 16- to 18-year-olds had a social norm score of only 31.

5.3.4 Perceived Self-efficacy about Marijuana Use by Age and by Wave

The final index was the summed scale of five questions that dealt with the youths' confidence that they could turn down marijuana in a variety of circumstances. The overall results for the 12- to 18-year-olds as a group show no statistically significant changes between Waves 1 and 3. But those results appear to hide quite different trends for two of the age subgroups. The 14- to 15-year-olds display a significant improvement between Waves 1 and 3; the 16- to 18-year-olds display the opposite effect (Table 5-D and Detail Table 5-4). The interpretation of this unusual pattern is left for the final discussion section.

Table 5-D. Trends in self-efficacy index about marijuana use among never users by child age

Age group	Score on Index				95% Confidence Interval on W1 to W3 Change
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	
12 to 13	99.8	102.6	94.9	-5.0	-15.6 to +5.6
14 to 15	89.2	103.3	113.8	24.6*	+8.0 to +41.2
16 to 18	112.2	109.6	92.1	-20.1*	-37.6 to -2.5
12 to 18	100.0	104.9	100.6	0.6	-8.4 to +9.6

Note: The index was standardized so 12- to 18-year-old nonusers had mean and standard deviation of 100 at Wave 1.

* Between wave difference significant at $p < 0.05$

This contradictory result is further complicated by an examination of the results for boys and girls. Girls and boys shifted in opposite directions. This result is discussed in the next section on diversity of results.

5.3.5 Evidence for Diversity in Trends in Cognitions about Marijuana Use

There are 14 subgroups of 5 grouping variables (two sexes; three race/ethnicity groups; four regions, three urban levels; and two sensation-seeking groups). These groups are examined across four measures, making a total of 56 trend comparisons. By chance, one might expect about 5 percent of those 56, or three of those trends, to be statistically significant with conventional statistical standards. Three of them were significant, two in a positive direction and one in a negative direction. The subgroup results are presented in the following tables but, given the likelihood of chance significant effects, they should be interpreted with some caution.

Table 5-E summarizes the results for Hispanics across the four measures. Each shows a positive trend, although only the trend for the belief/attitude index is significant. Hispanics make up only about 15 percent of the respondents, so finding a trend among them is quite unlikely. The very large confidence intervals around each of the estimates of change makes that clear. The finding of one significant change along with three other changes substantially in a positive direction is likely worth some attention.

Table 5-E. Cognitions about marijuana use among Hispanic 12- to 18-year-old never users

Measure	Wave 1	Wave 2	Wave 3	Wave 1 – Wave 3	95% Confidence
	11/99 – 6/00	7/00 – 12/00	1/01 – 6/01	Change	Interval on W1 to W3 Change
No intentions (%)	84.2	90.5	89.0	4.8	-2.4 to +12.0
Belief/attitude	92.3	111.6	121.2	28.8*	+5.0 to +52.6
Social norms	97.0	110.7	119.2	22.2	-2.5 to +47.0
Self-efficacy	89.2	86.3	102.6	13.4	-14.4 to +41.2

* Between wave difference significant at p<0.05

The other statistically significant changes were for boys and girls on the self-efficacy measures. This appears in Table 5-F. Boys started out lower than girls but increased their self-efficacy to resist use. Girls went in the opposite direction. A 17-point advantage to girls turned into nearly a 9-point deficit by Wave 3. This male-female difference was not significant for any of the other indices, although it is noteworthy that girls did decline between Wave 2 and Wave 3 on each of the other measures, including intentions.

Table 5-F. Trends in self-efficacy index about marijuana use among 12- to 18-year-old never users by sex

Age group	Score on Index				95% Confidence Interval on W1 to W3 Change
	Wave 1	Wave 2	Wave 3	Wave 1 – Wave 3	
	11/99 – 6/00	7/00 – 12/00	1/01 – 6/01	Change	
Male	91.5	103.2	104.9	13.4*	+1.2 to +25.6
Female	108.5	106.6	96.3	-12.2*	-24.4 to -0.02

Note: The index was standardized so 12- to 18-year-old nonusers had mean and standard deviation of 100 at Wave 1.

* Between wave difference significant at p<0.05

There is a minimal pattern of positive change across all four measures for boys, but none except this one is statistically significant, or even close. For girls, two other measures show a negative trend, while one shows a positive trend; again the efficacy trend is the only one that is significant. (See Detail Tables 5-1 through 5-4.) The Campaign did not expect differential effects between the sexes. After the patterns of associations are reported, the issue of how to interpret this finding will be considered.

The Campaign has focused much of its attention on the group of youth called high sensation seekers who are particularly at risk of drug use. The Campaign has made special efforts to reach this group of adolescents. Thus there is a particular interest in whether high sensation-seeking youth were changing more than other youth. High sensation seekers are very different from low sensation seekers on marijuana use and on all the cognitions surrounding use. There was, however, no evidence of differential trends among high and low sensation seekers on any of the four indices. (See Detail Tables 5-1 through 5-4.)

5.4 Associations of Anti-Drug Advertising Exposure with Attitudes, Beliefs, and Intentions about Marijuana Use among 12- to 18-Year-Old Nonusers

The trend data finds only scattered evidence of “good” trends matched by some evidence of “bad” trends. The next step in the analysis turns to the examination of associations of recalled exposure and the four major outcomes. The trend data is useful for knowing whether the population’s responses were moving in a desirable direction but could not separate the effects of the Campaign from other forces operating simultaneously. The associational data provide a different perspective on evaluating Campaign effects. In contrast to the trend data, the associational evidence speaks directly to the influence of individual exposure to the Campaign. That is its strength, particularly when statistical controls are used to reduce the potential influence of confounding variables. Its possible weakness is that it does not allow a clear statement of causal direction between exposure and outcomes. However, this weakness does not come into play until a pattern of association is detected. The analyses below report only rare evidence of association, and the observed associations are as likely to be negative as positive.

Chapter 3 describes the two types of exposure measures available for analysis. One, called general exposure, represents the sum of recalled exposure in recent months to anti-drug advertising in four different types of sources (television and radio, movies and videos, print media including newspapers and magazines, and outdoor media). Some of that exposure could have represented recall of ads directed to parents, and some recall of ads presented by other institutions. The specific exposure measure sums the recalled exposure to the youth-targeted individual Campaign television ads that had been on the air in the 2 months before the interview. The general exposure measures display substantially higher levels than do the specific exposure levels.

Table 5-G presents the exposure levels for the 12- to 18-year-old population overall. The distribution of exposures among nonusers, who are the focus of the analyses reported below, are very close to these overall estimates.

Table 5-G. Exposure reported by 12- to 18-year-olds

	<1 exposure (%)	1 – 3 exposures (%)	4 – 11 exposures (%)	12+ exposures (%)
General exposure	22.7		23.9	53.3
Specific exposure	20.7	38.2	33.2	7.7

For example, more than 53 percent of youth reported general exposure 12 or more times per month, but less than 8 percent reported specific exposure at that level. There are three factors that may contribute to that difference: the general exposure measure included more sources than the specific exposure measure; the general exposure measure allows recall of advertising that was directed to other audiences, while the specific exposure measure focuses only on television¹ ads directed to the youth; and finally, the general exposure measure may be less demanding since it does not require the respondent to claim that he or she has seen a specific ad. One might speculate therefore that it is at greater risk of inflated reporting. Since the two measures may capture different aspects of exposure, the evidence of association is presented for both of them, with the interpretation strengthened when both show the same pattern of effects.

The general exposure association tables compare youth who reported exposure less than 4 times per month, 4 to 11 times per month, and 12 or more times per month. There were very few youth who reported no exposure so they could not be considered separately. The specific exposure tables include four categories, since it was feasible to break out the lowest exposure group into those who recalled exposure less than 1 time per month and those who recalled ad exposure 1 to 3 times per month. However, the highest exposure group for the specific exposure measure is quite small, so in many of the tables the estimates for outcomes for this group have a very wide confidence interval. Usually the specific exposure claims must rely on the differences among the other three exposure groups.

In exposure analyses, the effects are corrected for the influence of confounder variables using the propensity scoring procedures described in Appendix C. They are the estimates of what people at each level of exposure would have been like had they all been similar on variables that were associated with exposure.

All analyses are restricted to 12- to 18-year-olds who reported never using marijuana. Each of the detail tables that present these associational results (Detailed Tables 5-33 through 5-40) also provides estimates for subgroups of that population defined by youth characteristics (age, gender, race/ethnicity, urbanicity, and sensation-seeking). Regional results are not displayed because the numbers of youth available in each region were too small for meaningful analysis.

Each table presents three different estimators of Campaign effect. The first, called the direct campaign effect, compares the score on the outcome variable (e.g., intention to use marijuana even once or twice in the next year) for the entire sample with the score achieved by the lowest exposure group. It asks whether the average person was different from those who had minimal exposure. It is the best estimate

¹ The measures of specific exposure include only reports of exposure to television advertising. During Wave 1, the measure of exposure to radio advertising excluded ads that were only audio versions of television ads, which were the great majority of the ads. It was not meaningful to include specific radio exposure with the television exposure in the specific exposure index for that wave. Although all radio ads were asked about in Waves 2 and 3, and the exposure to them is reported in Chapter 3, they were not included in the exposure index for the analyses reported in this chapter so that comparability across waves could be maintained. However, recall of television advertising was, in any case, much greater than recall of radio ads, so it is unlikely that this exclusion is substantially affecting the associations reported here. The average 12- to 18-year-old recalled about 9.5 television ads but only about 2 radio ads during Waves 2 and 3 (Detail Tables 3-2 and 3-17).

of the average effects of the Campaign across the population. The second estimator is a significance test that indicates whether there is an overall pattern for those who have higher exposure to be higher on the outcome variable. Each table has an asterisk in this column where the test for monotonic association (Jonckheere-Terpstra) is significant at the $p < .05$ level. This test is best at estimating whether exposure to the Campaign affected youth who were exposed, and it is the one used in the final summary to capture effects. The final measure, called the maximum campaign effect, compares youth with the highest and lowest levels of exposure. De facto it answers the question: If the Campaign had been able to give everyone 12 or more exposures per month, how much of an effect would there have been?

5.4.1 Four Cognitive Measures by Exposure, Overall Analyses

There is no detectable association between either exposure measure and intentions to use marijuana for the entire 12- to 18-year-old population on any of the three indicators of Campaign effect. (See Table 5-H and Detail Table 5-33 and 5-34.) While there is no overall association, there is an apparent negative trend for 12- to 13-year-olds for the general exposure measure and intentions. That result is discussed below.

Table 5-H. Exposure and intentions to use marijuana reported by 12- to 18-year-olds

Percent saying “definitely not” to likelihood of using marijuana even once or twice- overall average=86.9%							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	87.6		86.2	86.6	-0.7 -3.8 to 2.3	NO	-1.0 -4.9 to 2.8
Specific exposure	87.1	87.3	85.9	87.9	-0.2 -3.0 to 2.6	NO	0.8 -7.2 to 8.8

Similarly, there is no detectable association of exposure and the Attitude/Belief Index. This is shown in Table 5-I as well as in Detail Tables 5-35 and 5-36. Also, none of the subgroup analyses by age or by any other characteristic display a detectable association.

Table 5-I. Exposure and Attitude/Belief Index among 12- to 18-year-olds

Score on Attitude/Belief Index: average for the sample=106.8							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	104.9		105.4	107.2	1.8 -9.0 to 12.6	NO	2.3 -11.4 to 15.9
Specific exposure	109.1	108.0	102.9	110.2	-2.4 -11.5 to 6.8	NO	1.0 -19.3 to 21.4

The results for the association of Campaign ad exposure and the Social Norms Index are presented in Table 5-J. The overall results are consistent with the findings for the first two indices: no detectable effect. (See also Detail Tables 5-37 and 5-38.)

Table 5-J. Exposure and Social Norms Index among 12- to 18-year-olds

Score on social norms index: average for the sample=106.2							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	107.2		103.1	107.1	-1.0 -9.0 to 6.9	NO	-0.1 -9.6 to 9.4
Specific exposure	108.6	108.4	103.0	106.4	-2.5 -11.5 to 6.6	NO	-2.2 -17.1 to 12.7

Only the results for the self-efficacy scale suggest possible overall effects, and those effects are hard to interpret across the two exposure measures. Table 5-K summarizes those results. (See also Detail Tables 5-39 and 5-40.)

Table 5-K. Exposure and self-efficacy to refuse marijuana index among 12- to 18-year-olds

Score on self-efficacy index: average for the sample=102.7							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	99.6		96.8	107.2	3.1 -5.8 to 12.1	YES*	7.7 -3.0 to 18.3
Specific exposure	110.8	98.6	102.7	115.0	-8.0* -15.4 to -0.6	NO	4.2 -11.3 to 19.8

* Significant at p<0.05

The general exposure results show a significant monotonic trend, consistent with a positive effect of the Campaign. Those reporting 12 or more exposures to all of the channels carrying anti-drug information (about half of the sample) are more likely to report that they were prepared to reject marijuana than were the less exposed groups. However, when the results for the specific exposure analysis are presented, they produce the only other significant overall effect across all four outcome measures, and that effect is in the opposite direction. The estimate of direct effect of the Campaign (the one that compares the overall population average of 102.7 with the lowest exposure group's score of 110.8) shows a significant negative effect. This suggests that the average youth is worse off than the youth who had virtually no exposure to the ads. How is this contradiction to be explained?

A closer look at the data may offer a likely resolution. The general exposure measure shows that the two groups with exposure less than 12 times per month are roughly similar in their self-efficacy scores, and both are sharply lower than the 12+ exposure group. For the specific exposure row there is a positive monotonic pattern for the groups who have 1 to 3, 4 to 11, and 12+ exposures, fairly parallel to the pattern for the general exposure group. It is only the <1 specific exposure group that shows a much higher score and that produced the apparent direct effect result. The general exposure measure collapses the <1 and 1 to 3 exposures groups, so it does not permit differentiation of those two groups. Essentially, the two analyses are examining different parts of the exposure distribution. Only 6 percent of youth are in the <1 general exposure category; that was too few to obtain stable estimates and led to the decision to collapse the two categories to increase the stability of estimates. In order to understand whether the two exposure measures are really supporting opposite inferences, Table 5-L presents the general exposure and specific exposure estimates from Table 5-K and compares them with the estimates breaking the general exposure measure into four rather than three categories. The

estimates in the unadjusted row are not corrected for the effects of confounding variables through the counterfactual estimation procedure.

Table 5-L provides two types of information. First, the unadjusted and the adjusted analyses for general exposure are close to one another. The adjustments for confounders did not have a profound effect on the observed associations. Second, once broken out into four categories, the general exposure-defined scores on self-efficacy are similar in order to those found for the specific exposure measure. This elaboration of the results of Table 5-K suggests that the general and specific exposure results are probably consistent rather than contradictory. They also suggest that there is not a meaningful (i.e., monotonically increasing or decreasing) association of either exposure measure with self-efficacy.

Table 5-L. Self-efficacy and exposure

Score on self-efficacy index: average for the sample=102.7				
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures
General exposure – adjusted	99.6		96.8	107.2
Specific exposure – adjusted	110.8	98.6	102.7	115.0
General exposure– unadjusted	110.2	96.4	97.2	106.2

The conclusion then is that there is no supportive evidence that campaign exposure, however measured, is associated either positively or negatively with any of the four cognitive outcomes for the full sample of 12- to 18-year-olds. The next sections ask whether, in the absence of overall effects, there is any evidence of association for subgroups of the population.

5.4.2 Evidence of Diversity of Associations by Age of Youth

The Campaign has been particularly focused on younger teens as its primary audience. Thus, there is a particular interest in showing that there are effects among that group, represented here by the youth aged 12 to 13. They are, in general, not at high immediate risk of drug use; 95 percent of them have never used marijuana, and more than 90 percent of the current nonusers say they definitely won't use marijuana in the next year. However, they are maturing into the age when more of them will choose to try that and other drugs. Thus the Campaign has chosen them as the primary youth audience for the Campaign, and thus there is good reason for separating the results of younger (12 to 13) and older (14 to 18) teens to see if exposure to Campaign advertising affects one of these groups if not the other.

Detail Tables 5-33 through 5-40 present data for two age subgroups: youth aged 12 to 13 and youth aged 14 to 18. There are a total of 16 analyses presented: two age groups by two exposure measures by four cognitive measures. In that entire set there are two significant effects. One result is a repetition of the specific exposure effect seen in Table 5-K for 14- to 18-year-olds, where self-efficacy is highest for the lowest and highest exposure groups. This nonmonotonic result does not permit easy interpretation. The second and more interesting result is an apparent negative effect for general exposure on intentions to use marijuana for 12- to 13-year-olds. The results for both the general and specific exposure variables are presented in Table 5-M.

Table 5-M. Exposure and intentions to use marijuana reported by 12- to 13-year-olds

Percent saying “definitely not” to likelihood of using marijuana even once or twice- overall average=91.5%							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	95.2		90.8	90.7	-3.7* -6.0 to -1.5	YES*	-4.5* -7.3 to -1.7
Specific exposure	91.3	91.5	91.4	91.4	0.2 -2.6 to 2.9	NO	0.1 -5.5 to 5.6

*Association significant at p<0.05

All three of the effect estimators for general exposure are consistent with a negative Campaign effect for this subpopulation for this measure. (Also, breaking down the general exposure measure into four rather than three categories still shows the same monotonic pattern with unadjusted data.) On the other hand, the specific exposure measure shows no evidence of any effect whatsoever. The discussion section below continues the consideration of this result. There were no other significant exposure outcome associations for any of the other outcomes for either age group.

5.4.3 Evidence for Diversity in Association by Level of Sensation Seeking

The Campaign has been designed with a recognition that youth vary in their risk of drug use and, in particular, with an understanding that youth who score high on the personality characteristic called *sensation seeking* are at particular risk of use. The association between sensation seeking and marijuana use is strong. Among 12- to 13-year-olds, 8 percent of high sensation seekers have used marijuana, compared to 2 percent of low sensation seekers; among 14- to 15-year-olds the relative use is 24 percent to 8 percent; among 16- to 18-year-olds 50 percent of high sensation seekers are prior users but only 22 percent of low sensation seekers are prior users. Thus the Campaign has had a particular focus on and an interest in effects on this high risk group of high sensation seekers. Table 5-N presents the results for all four outcomes for both types of exposure for the high sensation-seeking sample.

Table 5-N. Exposure and outcomes among high sensation seekers

Outcome (average)		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
% (Not) intending to use (80.0%)	General exposure	78.8		80.1	80.1	1.2 -5.1 to 7.3	NO	-1.3 -6.0 to 8.5
	Specific exposure	81.0	80.4	79.3	80.4	-1.0 -5.5 to 3.4	NO	-0.6 -13.9 to 12.6
Attitude belief index (81.0)	General exposure	75.3		75.5	85.0	5.7 -10.9 to 22.2	NO	9.62 -9.8 to 29.0
	Specific exposure	83.2	81.4	78.7	90.4	-2.2 -14.8 to 10.4	NO	7.2 -26.3 to 40.7
Social norms index (82.6)	General exposure	80.9		83.4	83.2	1.7 -11.8 to 15.3	NO	2.3 -12.5 to 17.2
	Specific exposure	89.8	86.7	76.2	95.1	-7.2 -21.7 to 7.4	NO	5.3 -19.2 to 29.8
Self efficacy index (86.4)	General exposure	75.9		83.9	91.0	10.6 -5.6 to 26.7	YES*	15.1 -3.2 to 33.4
	Specific exposure	97.4	83.1	86.7	100.1	-10.9 -23.6 to 1.8	NO	2.7 -24.7 to 30.2

* Significant at $p < 0.05$

Of the eight analyses presented, there is one significant result for general exposure and the self-efficacy index. There is a positive monotonic trend, with the highest exposure group indicating greater ability to resist marijuana use than the lower exposure groups. The same result is not found with the specific exposure measure. In addition, there is no pattern of significant effects for the other outcomes using either exposure measure. Also, while these results are presented only in Detail Tables 5-33 through 5-40, there were no significant effects on any of the outcomes for either measure of exposure for the low sensation-seeking population.

5.4.4 Evidence for Diversity in Associations by Gender, Urban versus Rural, and Race/Ethnicity

In addition to the subgroup analyses by age and sensation seeking, for which the Campaign had clear expectations of subgroup effects, there were also subgroup analyses performed for subgroups defined by gender, race/ethnicity, and urbanicity. There were a total of 64 subgroup analyses examined: eight groups (defined by two genders, three race/ethnicities, and three urban levels) by four outcomes by two exposure measures. Since there were no a priori hypotheses about which of these groups were more or less likely to show effects, the possibility of chance effects needs particular attention. With 64 tests, it would be expected that 5 percent or about 4 tests would be significant at the conventional level by chance. In fact, two results were significant on at least one test. Urban youth showed a negative direct effect and monotone trend for specific exposure and the social norm index (Detail Table 5-38). White youth showed a negative direct effect for specific exposure and self-efficacy, but in the context of an overall nonmonotone association, essentially repeating the result already shown above in Table 5-M (Detail Table 5-40). Given the large number of tests performed and the paucity of significant results, these findings add little to the overall findings reported previously.

5.5 Campaign Effects on Inhalant Intentions and Attitudes Among Prior Nonusers

Toward the end of the Wave 3 data collection, the Campaign raised the profile of its anti-inhalant advertising, particularly that directed at parents, which might have been accessible to youth as well. It was too early then to expect to see much change in inhalant attitudes among youth, particularly if it was to be an indirect consequence of media content directed toward parents. However, this report can be used to set a baseline series for the inhalant cognitions, with an expectation that in the future, change might be expected as a result of the Campaign.

The analysis of trends focuses on two summary measures. The first is parallel to the marijuana intentions index used in the previous sections. The analysis is limited to 12- to 18-year-old prior nonusers of inhalants. The second index sums four questions that addressed the youths' attitudes about inhalant use: disapproval of once or twice and regular inhalant use by others, and perception of risk of harm from once or twice and regular inhalant use. These questions were modeled on questions asked in the Monitoring The Future survey for many years. They contrast with the more personal and specific questions that were asked about the consequences of marijuana use and which made up the indices used above. As with the marijuana Attitude/Belief Index, the responses to the four questions were summed according to weights derived from the prediction of the intentions question in a logistic regression equation, and standardized to have a mean and standard deviation of 100 for 12- to 18-year-olds at Wave 1.

5.5.1 Intentions and Attitudes about Inhalant Use by Age and by Wave

There is no statistically significant change for any of the age subgroups in their intention to use inhalants in the next year. Almost all youth said they would not use at Wave 1 and almost all youth said they would not use at Wave 3 (Table 5-O and Detail Table 5-27). This suggests a "ceiling effect"; the Campaign cannot show positive effects because the criterion outcome is already so high.

Table 5-O. Trends in intentions to use inhalants once or twice by youth age

Age group	Percent of nonusers saying “definitely not”				95% Confidence Interval on W1 to W3 % Change
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 to Wave 3 % Change	
12 to 13	95.4	95.5	94.1	-1.3	-3.5 to +0.9
14 to 15	93.5	93.2	96.3	2.8	-0.2 to +5.8
16 to 18	96.5	95.9	94.8	-1.7	-4.5 to +1.1
12 to 18	95.2	94.9	95.1	-0.1	-1.5 to +1.3

“How likely is it that you will use *inhalants* to get high, even once or twice over the *next 12 months*?”

The pattern for the attitude index has a little more variation in it (Table 5-P and Detail Table 5-28.). Older youth tend to be slightly more accepting of inhalant use than younger ones. (On average, 12- to 13-year-olds had a score of 117, while 16- to 18-year-olds had a score of 96.)

Table 5-P. Trends in attitude index about inhalant use by youth age

Age group	Score on Index among nonusers				95% Confidence Interval on W1 to W3 Change
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	
12 to 13	116.2	118.8	117.2	1.05	-7.9 to +10.0
14 to 15	96.7	103.4	85.2	-11.5	-30.1 to +7.1
16 to 18	90.3	91.1	105.6	15.4	-2.0 to +32.7
12 to 18	100.1	103.5	102.2	2.2	-7.9 to +12.2

Note: The index was standardized so 12- to 18-year-old nonusers had mean and standard deviation of 100 at Wave 1.

The overall trend for all nonusing 12- to 18-year-olds shows no statistically significant change across the three waves. However, that seems to obscure different trends among 14- to 15- versus 16- to 18-year-olds. The 14- to 15-year-olds show a significant negative trend, entirely occurring during the period between Wave 2 and Wave 3. The 16- to 18-year-olds show a positive trend that is not significantly different from zero, but is significantly different from the 14- to 15-year-old trend. There is no easy interpretation to this reversal, but no reason to think it reflects Campaign influence.

5.5.2 Evidence of Diversity in Trends

Aside from the age subgroup effects just described, there are no other detectable trend effects for any of the subgroups of interest (males versus females, Whites versus African American versus Hispanics, among the regional subgroups, among the urban level subgroups, or among sensation-seeking subgroups).

Although there are no differences in trends, there are sharp differences between high and low sensation seekers in both their intentions to use inhalants and their attitudes about inhalants. Among low sensation seekers, 98 percent say they definitely won't use in the next year; among high sensation seekers 93 percent, significantly less, reject such future use. Similarly low sensation seekers score 131 on the attitude index, in contrast to the high sensation seekers' score of 77. The identification of high sensation seekers as in greater risk of drug use is clearly reinforced by these results.

5.6 Summary and Discussion of Effects Results

The inferential logic laid out at the start of the chapter suggested that the most desirable result would be a favorable trend on a target outcome, and a favorable association between exposure to the Campaign and the outcome. There was no expectation that the inhalant results would be showing effects yet, so the following discussion focuses on cognitions about marijuana use.

Table 5-Q summarizes all the major results from the earlier parts of the chapter. The trends are not significant for any of the outcomes for the two major age groupings or for the entire sample of nonusing 12- to 18-year-olds.

Table 5-Q. Summary of trend and association results for youth

Index	12-13			14-18			12-18		
	Trend	Association		Trend	Association		Trend	Association	
		General	Specific		General	Specific		General	Specific
Intention	NO	YES (neg.)	NO	NO	NO	NO	NO	NO	NO
Attitude/Belief	NO	NO	NO	NO	NO	NO	NO	NO	NO
Norms	NO	NO	NO	NO	NO	NO	NO	NO	NO
Efficacy	NO	NO	NO	NO	NO	NO	NO	YES (pos.)	NO

The estimates reported in the table focus on evidence for monotonic associations. On average, were those with higher reported exposure more likely than those with less exposure to have desirable or undesirable scores on the four indices? Out of 24 tests for monotonic association, two showed a significant result, one negative and one positive. None were accompanied by evidence of a complementary trend. The negative association for 12- to 13-year-olds between exposure and intentions was accompanied by a nonsignificant decline in marijuana intentions. The positive association between general exposure and efficacy for 12- to 18-year-olds was accompanied by a virtually flat trend in efficacy over the three waves.

The overall pattern of “NOs” in the table, along with the fact that the only two significant associations go in opposite directions without any hint of complementary over time trends, is not consistent with an inference of direct Campaign effects on youth.

The evidence does not support an inference of effects for the entire population or for the specific age subgroups presented in this table. Is it possible that there are effects that have been missed here? There are two types of possibilities: effects on subgroups other than the ones featured in Table 5-Q, or effects that work through paths that will not be detected by the approach used in this chapter. Those two possibilities are examined in turn.

Throughout this chapter, there have been a variety of significant effects detected for subgroups of the population. The results are summarized in Table 5-R.

There are a total of five significant results out of 120 examined results. Three are positive and two are negative. This is exactly the number one might expect to find by chance. These data do not support an inference of effects among subgroups, consistent with the overall findings.

Table 5-R. Summary of trends and associations for marijuana cognitions by subgroups

	Intentions			Attitude/Belief			Social Norms			Efficacy		
	Trend	Association		Trend	Association		Trend	Association		Trend	Association	
		General	Specific		General	Specific		General	Specific		General	Specific
Gender	Male	NO	NO	NO	NO	NO	NO	NO	NO	YES (pos.)	NO	NO
	Female	NO	NO	NO	NO	NO	NO	NO	NO	YES (neg.)	NO	NO
Race/ Ethnicity	White	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	African American	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	Hisp.	NO	NO	NO	YES (pos.)	NO	NO	NO	NO	NO	NO	NO
Urbanicity	Urban	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES (neg.)
	Suburban	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	Town/ Rural	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Sensation seeking	High	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES (pos.)	NO
	Low	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Neither the overall results nor the subgroup analyses show consistent evidence supportive of a Campaign effect. However, this does not preclude the possibility of there having been an effect. These analyses may have missed real effects if any of the following three things were happening:

- The effects that were achieved were smaller than could be detected by the available samples. This is perhaps less of a problem for the overall analyses, where nearly 4,200 12- to 18-year-old nonusers were available for analysis across the three waves, and more so for some of the subgroup analyses where the sample sizes were much smaller. In both cases, the requirement to adjust observed sample sizes for the design effects associated with the complex sample design meant that the effective sample sizes were even smaller than the nominal sample sizes. Thus the failure to find significant results for the Hispanic population, who made up about 14 percent of the focus sample, are as likely to reflect low statistical power as lack of true effects. If effects have occurred for a subgroup, but the analyses are insensitive to those effects, they might have been missed. However, the most likely subgroup to show effects, the high sensation seekers, make up half of the 12- to 18-year-old nonuser sample, nearly 2,000 youth. They were given special attention in the analyses, but showed no consistent pattern of responsiveness.
- The effects of the Campaign will take longer to appear than the 22 months that have passed since the start of Phase III. It is possible that it will take more accumulated exposure before effects will be seen, given that the youth have already been exposed to many anti-drug messages through other sources. The incremental effect of the Campaign-associated exposure may not be enough to achieve short-term effects, even though they may have longer term cumulative effects.
- The effects of the Campaign won't be felt solely through the influence of individual exposure to ads affecting those individuals' beliefs and behavior. Rather, the effects will occur through a combination of direct and indirect exposure. The indirect exposure occurs when others in the youth's social network are exposed and diffuse what they hear and see to the youth; they occur

when parents see the ads and are influenced in their interactions with their children; they occur when other adults in the community see the ads and other anti-drug promotion information, and are encouraged to support anti-drug public policies and anti-drug actions of community institutions. None of these indirect routes can be captured by the exposure-outcome association analyses presented in this chapter, which are aimed at capturing direct effects only. The analyses in this chapter compare individuals with more or less personal exposure. If the Campaign effects had diffused from some individuals with more exposure to some of the individuals who had less personal exposure, the effects would have been underestimated. (On the other hand, if those effects had been widely diffused, and if they had been strong enough to overcome any external forces, the trend data could have shown the effects. However, the evidence of significant trends that appeared between Waves 1 and 2 largely disappeared by Wave 3. The possibility for such indirect effects remains a possibility but does not have empirical support at this time, either from the NSPY data nor from available MTF data.)

In summary, thus far there is relatively little evidence for effects of the Campaign on youth. While there are scattered positive results, they are balanced by scattered negative results. There are some anomalies in the evidence presented that are suggestive in one way or another. However, once one steps back and examines the entire evidence base, it is hard to be confident that any of these results are reliable.

One particularly interesting pattern is the apparent positive trend seen between Waves 1 and 2 for some of the outcome measures that had been reversed by the end of Wave 3. This may have been the result of seasonality in data collection: the similar Waves 1 and 3 were collected largely in the first half of each year, while Wave 2 was collected in the second half of the year. Still, it is unclear why the cognitive outcomes were affected by seasonality but the behavioral outcomes presented in Chapter 4 were not similarly affected. Another possibility is that there was a Campaign effect between Wave 1 and 2 that had dissipated by Wave 3. However, there was little evidence of association between exposure and cognitions when the analyses were restricted to the Wave 1 and 2 samples in the previous report (Hornik et al., 2001). Thus even when there was good trend data, it was not complemented by evidence associating beliefs with exposure to the Campaign.

Reference

Hornik, R., Maklan, D., Judkins, D., Cadell, D., Yanovitzky, I., Zador, P., Southwell, B., Mak, K., Das, B., Prado, A., Barmada, C., Jacobsohn, L., Morin, C., Steele, D., Baskin, R., and Zanutto, E. (2001). *Evaluation of the National Youth Anti-Drug Media Campaign: Second semi-annual report of findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

6. Campaign Effects on Parents

A continuing theme of the parent Campaign has been to encourage parents to engage with their children to protect them against the risk of drug use. This idea is summarized in the slogan, Parents: The Anti-Drug. The major component has been to encourage parents to monitor their children's behavior by knowing where they are and with whom, and by making sure they have adult supervision. A second component has been to encourage talking between parents and children about drugs. Also, although largely restricted to the time period covered by Wave 1 data collection, the Campaign had a substantial level of advertising that encouraged parents to do fun things with their children as a positive part of their engagement with them.

The evaluation examined evidence for Campaign effects on those three classes of outcomes: Talking with children about drugs, monitoring children's behavior, and engaging in fun activities with children. There is evidence supportive of Campaign effects on objectives related to talking with children, and for monitoring of children. The evidence about effects on fun activities is inconclusive, but is not consistent with a positive Campaign effect.

This chapter first discusses the logic supporting claims of Campaign effects and presents the primary outcome variables. It then turns to evidence for change in those outcome variables over the three waves of data collection. Section 6.3 presents the evidence for the association of exposure to Campaign advertising with the major outcome variables. Finally, Section 6.4, brings together the trend data and the associational data and discusses conclusions about Campaign effects.

6.1 The Logic of Inference and the Development of Parent Outcome Scales

As discussed in the previous chapter, it would be desirable to show that target outcomes are trending in a direction consistent with Campaign objectives: more talking, more monitoring, and more fun activities. This would be desirable even though trend data, by itself, is not definitive with regard to inferences about Campaign effects, recognizing that forces external to the Campaign may be influencing trends either for better or for worse.

Second, it would be desirable to show that parents who were more exposed to the Campaign displayed more of the desired outcomes than parents who were less exposed. For example, were parents who reported seeing Campaign ads two or three times a week more likely to have talked with their children about drugs than were parents who report ad exposure less than once a week? These observed associations are controlled for other confounder variables which might have influenced both of them and been the true cause of the observed association. (See Appendix C for the propensity score methodology that was used.) However, controlling for confounders does not allay a second concern, specifically, that the association might be the result of the influence of outcomes on exposure rather than exposure on outcomes. This concern, called the threat of reverse causation, cannot be eliminated under most circumstances with cross-sectional data. Only when there are cohort data available over time is it possible to sort out with some confidence the causal order between variables. Thus the analyses below will not definitively eliminate this concern about causal claims from cross-sectional

associations; only when the Wave 4 and Wave 5 followup data are available will it be possible to do this more effectively.

In this report, the best evidence consistent with a Campaign effect is a positive association of reported exposure to the Campaign, with the target outcomes statistically controlled for likely confounders. If this is accompanied by evidence of a positive trend in the outcome, the argument that there was a Campaign effect is strengthened.

The overall analysis focuses on effects among all parents of 12- to 18-year-olds. The age range is restricted to match the age range of the youth at risk of drug use and the primary focus of the previous chapter. In addition to the overall analysis, the chapter presents both trend data and associational data for subgroups of parents. In these analyses, parents of boys and girls, of younger and older children, of those who live in urban versus suburban or town and rural areas, parents divided by race and ethnicity, fathers and mothers, and parents of higher and lower educational levels are compared. The subgroup analyses are used for two purposes. If there is an overall effect for all parents, there is a search for evidence that the trends or the association is significantly larger or smaller for particular groups. If there is no overall effect, the subgroups are examined to see if there is evidence of effect for only a subpopulation.

The primary analyses presented focus on five summed outcome measures: talking behavior, talking cognitions, monitoring behavior, monitoring cognitions, and fun activities undertaken. These measures summarize 21 individual measures. Trends in all the individual measures are presented in the Detail Tables, but the Campaign effects analyses focus on these five measures. The use of only five measures reflects three purposes. The combination of multiple measures into single indices may increase the sensitivity of the measure in detecting effects. Multi-item indices are ordinarily less error prone than single item measures. Also, the more results that are presented the more likely it is that a result will be significant at the conventional ($p=.05$) level by chance. By focusing on a smaller number of outcomes, particularly when it comes to subgroup analyses, the risk of making inferences on the basis of rare and misleading significant results is reduced. Finally, the presentation of five distinct outcomes is more focused, allowing writers and readers to make sense of the results more easily.

The choice of indices and the procedures for weighting the individual items in the summed indices is described next. The three behavioral indices follow the procedures that have been used in the previous semiannual reports. The talking behavior index, with a range of 0 to 3, gives a point to parents for each of the following: for talking with their son or daughter about drugs at least twice in the previous 6 months, for having discussed family rules about drug use, and for having discussed specific things that the child could do to stay away from drugs. The monitoring behavior index, which also varied from 0 to 3, gave points to parents for saying they “always or almost always” knew what their child was doing when he/she was away from home, had a pretty good idea about the child’s plans for the coming day, and for saying their child never spent free time in the afternoon hanging out with friends without adult supervision. These questions were also asked of youth so that youth and parent responses could be directly compared. The fun activities variable combined the responses of parents to questions about the frequency of in-home joint projects and activities, and going together to out-of-home activities. Parents who reported doing the sum of both activities three or more times each week were assigned one, with everyone else assigned zero.

The two cognitive indices were constructed on a different basis, and parallel to the way the indices in Chapter 5 were created. These belief and attitude variables, presented in Figure 6-A, were summed with weights reflecting their independent prediction of the behavioral scales just described. Thus the eight items that addressed beliefs and attitudes about monitoring were entered into a multinomial logistic regression equation predicting the parent score on the behavioral scale. Similarly, the seven items that addressed self-efficacy about and general attitudes toward talking with children were used to predict the parent-child talk behavior scale. Appendix E describes the procedures for developing these indices in detail. However, the substantive logic for this approach reflects the underlying models of the campaign presented in Chapter 2. The beliefs and attitudes are important not for their own sake, but only insofar as they account for behavior. By weighting them according to their predictive strength, they make up an index of cognitions maximized for its ability to account for behavior. This strategy of weighting beliefs and attitudes permits an argument that if the Campaign affects these cognitive outcomes, it also forecasts effects on behavior. These weighted summed scores had no natural metric. To ease their interpretation, the two scales were standardized so that the entire population of parents had a mean of 100 and a standard deviation of 100 at Wave 1. This provides a natural metric for comparing the magnitude of change over time and between groups.

Figure 6-A. Beliefs and attitudes about monitoring

Monitoring Cognitions:

1. Closely monitoring [CHILD NAME]'s daily activities is:

a. Extremely bad	1	2	3	4	5	6	7	Extremely good
b. Extremely unpleasant	1	2	3	4	5	6	7	Extremely pleasant
c. Extremely unimportant	1	2	3	4	5	6	7	Extremely important

Please indicate how much you disagree or agree with each of the following statements. Think about the next 12 months.

2. Closely monitoring [CHILD NAME]'s daily activities will:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Make it more likely that [CHILD NAME] will do well in school	1	2	3	4	5
b. Make me feel like I am doing my job as a parent	1	2	3	4	5
d. Make it less likely that [CHILD NAME] will try any drug, even once or twice	1	2	3	4	5
e. Make it less likely that [CHILD NAME] will use any drug nearly every month	1	2	3	4	5
f. Make [CHILD NAME] feel I am invading [his/her] privacy	1	2	3	4	5

Talking Cognitions:

Discussing drug use in the next 12 months with [CHILD NAME], would be:

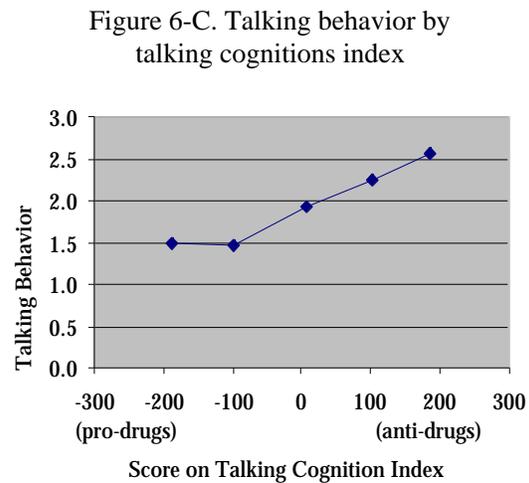
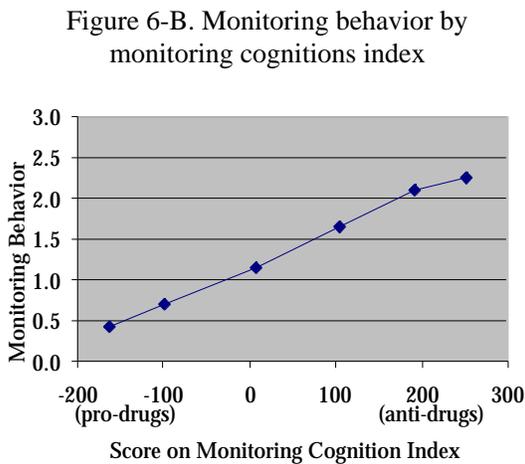
a. Extremely bad	1	2	3	4	5	6	7	Extremely good
b. Extremely unpleasant	1	2	3	4	5	6	7	Extremely pleasant
c. Extremely unimportant	1	2	3	4	5	6	7	Extremely important

How sure are you that you would be able to talk about illicit drug use with [CHILD NAME], under each of the following circumstances:

	Very unsure	Unsure	Neither sure nor unsure	Sure	Very sure
a. If [CHILD NAME] asked me questions about drug use in general?	1	2	3	4	5
b. If [CHILD NAME] asked me what specific things [he/she] could do to stay away from drugs? ...	1	2	3	4	5
c. If [CHILD NAME] and I had been having conflicts over other things not related to drugs, and our relationship was tense?	1	2	3	4	5
d. If [CHILD NAME] asked me about my own past use of drugs?	1	2	3	4	5

Figures 6-B and 6-C present the association between each of the cognition indices with their respective behavioral outcome. In both cases there is a substantial pattern of association. The monitoring association is almost a perfect linear relation, with the parents at the low end of the monitoring cognition scale doing less than 0.50 of the three monitoring behaviors while those at the high end undertake two of the three behaviors.

Figure 6-C shows a relationship between talking cognitions and behavior, but perhaps one that is less clear cut than for the monitoring variables. Also, it is clear that the talking behaviors are more common than the monitoring behaviors (with a mean of 2.25 for talking versus 1.6 for monitoring on the 0 to 3 scale) and even the parents with the least supportive cognitions are doing half of the three talking behaviors.



The next section begins with evidence for trends on the five indices.

6.2 Trends in Outcomes

This section covers monitoring behaviors and cognitions, talking behaviors and cognitions, engagement in fun activities, and evidence for diversity in observed trends.

6.2.1 Monitoring Behaviors

Table 6-A presents evidence of changes in monitoring behavior over the three waves of data collection, and the test for statistical significance of the total change between Wave 1 and Wave 3 (see also Detail Table 6-3). Three conclusions can be drawn from this table.

First, focusing on the entire population of parents of 12- to 18-year-olds, there is a just significant trend toward a positive change, with 0 as the exact lower limit of the confidence interval around change. Finally, there is a statistically significant positive trend for two of the age subgroups, parents of 9- to 11-year-olds and 12- to 13-year-olds. Since the recommendation for increased monitoring as an approach to prevention of drug use has often focused on middle school aged youth, the finding of a significant trend among these parents is particularly encouraging. Thus the overall conclusion is that

at Wave 3 parents are reporting they monitor their children, particularly their younger children, more than at Wave 1.

Second, parents monitor children of different ages to different degrees. Older children are much less monitored than younger children. Detail Tables 6-11 through 6-13 present the data for each of the three behaviors that make up the scale. On average, 79 percent of 9- to 11-year-olds' parents, but only 51 percent of 16- to 18-year-olds' parents, say they always or almost always know where their children are when they are away from home. Likewise 76 percent of 9- to 11-year-olds' parents versus 51 percent of 16- to 18-year-olds' parents always or almost always know the child's plans for the coming day. Finally, 54 percent of 9- to 11-year-olds' parents versus 17 percent of 16- to 18-year-olds' parents claim that their child never spends time with other children without adult supervision.

Table 6-A. Parental monitoring behavior by child age (Parent reports)

Age group	Number of Monitoring Behaviors				95% Confidence
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change
9 to 11	2.07	2.01	2.19	0.12*	+0.02 to +0.22
12 to 13	1.65	1.65	1.83	0.18*	+0.08 to +0.28
14 to 15	1.50	1.44	1.45	-0.05	-0.20 to +0.10
16 to 18	1.13	1.22	1.21	0.08	-0.07 to +0.23
12 to 18	1.40	1.42	1.48	0.08*	+0.00 to +0.16

*Between wave difference significant at $p < 0.05$

Youth report that their parents engage in these behaviors less frequently than do parents, at every age. As examples, while 60 percent of parents of 12- to 18-year-olds claimed they always or almost always knew where children were when they were away from home, only 47 percent of youth agreed; 58 percent of parents but only 31 percent of youth claimed that parents always or almost always knew the child's plans for the coming day. Finally, 26 percent of parents, but only 10 percent of youth said they never spent time alone with other children without adult supervision. Also, as can be seen in Table 6-B, the pattern of change in youth claims only reinforces parents' claims for the 9- to 11-year-olds. For the other three groups the trend appears to be close to flat. For 12- to 18-year-olds, parents claim to be monitoring more, but youth do not report a similar change. (See also Detail Table 6-3.)

Table 6-B. Parental monitoring behavior by child age (Youth reports)

Age group	Number of Monitoring Behaviors				95% Confidence
	Wave 1 11/99– 6/00	Wave 2 7/01 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change
9 to 11	1.17	1.19	1.30	0.13*	+0.00 to +0.26
12 to 13	1.03	1.02	1.06	0.03	-0.07 to +0.13
14 to 15	0.89	0.85	0.86	-0.03	-0.17 to +0.11
16 to 18	0.74	0.76	0.71	-0.03	-0.17 to +0.11
12 to 18	0.87	0.87	0.86	-0.01	-0.09 to +0.07

*Between wave difference significant at $p < 0.05$

6.2.2 Monitoring Cognitions

The change in parents' monitoring cognitions over the three waves is quite parallel to the claims of behavior change. Table 6-C presents the data for each of the youth subgroups. (See also Detail Table 6-1.)

Table 6-C. Parental monitoring cognitions by youth age

Age group	Score on the index with 100 as the average*				95% Confidence
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change
9 to 11	130.8	132.3	138.1	7.4**	+0.3 to +14.4
12 to 13	114.8	114.9	125.5	10.7**	+0.7 to +20.8
14 to 15	88.6	94.5	92.4	3.8	-11.7 to +19.4
16 to 18	61.7	62.2	69.2	7.5	-9.1 to +24.1
12 to 18	85.8	88.5	93.7	7.9	-1.7 to +17.5

* The scale has a mean of 100 and a standard deviation of 100 for all parents at Wave 1.

**Between wave difference significant at $p < 0.05$

The cognitive results show statistically significant positive trends for parents of the 9- to 11-year-old and 12- to 13-year-old groups, similar to the behavior results. The changes for the parents of 14- to 15-year-olds and 16- to 18-year-olds are not significant, although both are at least positive. Because the lower limit of the 95 percent confidence interval for the entire group of parents of 12- to 18-year-olds is less than zero for cognitions but was exactly zero for behavior, the level of confidence in overall change is less. Still, it is hard to disregard the closely parallel patterns of change in the two tables.

Trends in the individual questions that make up the monitoring cognitions scale are presented in Detail Tables 6-39 through 6-51. In general, there are very few significant changes in responses to the individual questions. There were three significant changes in the analyses by age groups, with two positive and one negative. It is only when the set of measures are weighted and summed that the pattern of significant effects, at least for parents of the younger children, appears.

6.2.3 Talking Behaviors

Table 6-D summarizes the information about the extent of parent-child conversations about drugs. Parents could earn up to three points if they reported talking about drugs at least twice in the past 6 months as well as talking about family rules about drugs, and about specific things a child could do to avoid drugs.

Parents are widely claiming to do a good deal of talking about drugs with their children. The average parent claims to engage in 2.25 out of the 3 measured talking behaviors. In contrast with the monitoring results above, parents do not differentiate by age of child in their frequency of talk.

This table also shows an overall tendency toward a pattern of increasing talk. The overall trend for parents of 12- to 18-year-olds just misses statistical significance. Only the parents of 16- to 18-year-olds show a significant positive trend, but all show positive change on average. Also, as will be presented in Section 6.2.6 below, the trends are statistically significant for three subgroups of parents, including the parents of girls. The size of the change is absolutely small, from 2.23 to 2.38. Each of the

individual questions showed a change of only around 3 percent (see Detail Tables 6-6, 6-7, and 6-10). However, given the close to significant overall trend and the presence of statistically significant trends for important subgroups, the data are consistent with a claim that the Campaign is associated with a positive trend in parent reports of talk for some groups and perhaps for all parents of 12- to 18-year-olds.

The parallel data from youth about the same talk questions provide a very different picture from the parent reports (Table 6-E and Detail Table 6-4). First, the youth report sharply different talk frequencies by age, with older youth much less likely to recall the three types of talk than younger respondents. Second, the absolute levels of reported talk are less. While parents report undertaking 2.25 out of 3 behaviors, their children report less than 1.6 of those behaviors. Finally, while parents showed a small but positive trend, the youth reports show a negative trend. Every age group of children, except for the 16- to 18-year-olds, shows a significant negative trend. As will be shown below, there is evidence that these good parent-reported trends among parents of 16- to 18-year-olds complement a strong association between exposure and talking behavior. However, the lack of support in child reports of talking will undermine an otherwise strong inference that the Campaign affected parent and youth talk about drugs.

Table 6-D. Parent-child talk about drugs by youth age (Parent reports)

Age group	Number of Talking Behaviors (0 to 3)				95% Confidence
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change
9 to 11	2.17	2.17	2.18	0.01	-0.010 to +0.012
12 to 13	2.32	2.26	2.40	0.08	-0.003 to +0.019
14 to 15	2.29	2.27	2.31	0.02	-0.015 to +0.019
16 to 18	2.20	2.22	2.38	0.18*	+0.001 to +0.035
12 to 18	2.27	2.25	2.36	0.09	-0.001 to +0.019

*Between wave difference significant at $p < 0.05$

Table 6-E. Parent-child talk about drugs by youth age (Youth reports)

Age group	Number of Talking Behaviors				95% Confidence
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change
9 to 11	1.97	1.85	1.67	-0.30*	-0.44 to -0.16
12 to 13	1.78	1.69	1.62	-0.16*	-0.30 to -0.02
14 to 15	1.65	1.48	1.44	-0.21*	-0.39 to -0.03
16 to 18	1.26	1.37	1.24	-0.02	-0.16 to +0.12
12 to 18	1.53	1.50	1.42	-0.11*	-0.21 to -0.01

*Between wave difference significant at $p < 0.05$

In addition to questions about general talk with youth about drugs, all parents and youth were asked whether they had ever talked specifically about the anti-drug ads. About half of the parents of 12- to 18-year-olds and a little less than one-third of youth of those ages reported such conversations. There was no evidence that the rate of conversations was increasing or decreasing across the three waves. The only exception to this was for Hispanic parents and youth; both groups showed substantial declines in conversation across the three waves. For parents, 56 percent who reported conversations at

Wave 1 declined to 46 percent by Wave 3, although this change was not statistically significant; for youth the Wave 1 start at 38 percent declined significantly to 20 percent by Wave 2 (Detail Table 6-24).

6.2.4 Talking Cognitions

Table 6-F presents the data about the summed scale for parent attitudes and beliefs about talking with their children about drugs. (See also Detail Table 6-2.) There is no significant pattern of increase or decrease for parents of children in any age group. However, there is one intriguing pattern of difference for one subgroup: parents of high sensation seekers show improvement in these cognitions. That result is discussed below in the presentation about diversity in response to the Campaign.

Table 6-F. Parent cognitions about talk about drugs by youth age

Age group	Score on summed scale with average =100 at Wave 1				95% Confidence	
	Wave 1 11/99 – 6/00	Wave 2 7/00 – 12/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	Interval on W1 to W3 Change	
9 to 11	106.6	107.3	106.5	-0.1	-9.3 to +9.0	
12 to 13	112.1	106.7	117.1	5.0	-5.5 to +15.5	
14 to 15	104.1	102.2	103.2	-1.0	-16.0 to +14.1	
16 to 18	79.9	83.8	92.4	12.5	-2.2 to +27.3	
12 to 18	97.0	96.6	103.3	6.3	-2.0 to +14.7	

The trends for the individual items that make up these scales are presented in Detail Tables 6-26 through 6-31. None of the self-efficacy items shows any trend. However, the attitude scales do show a positive trend for all parents of 12- to 18-year-olds. The Wave 1 mean of 6.16 on the 7-point scale increased to 6.22 by Wave 3. The increase was particularly strong for parents of the oldest teens, 16- to 18-year-olds, who increased from 5.99 to 6.15 between Waves 1 and 3 (Detail Table 6-31). In this case, the attitude measure alone corresponds to the talk behavior measure. While the combined self-efficacy/attitude measure obscured the relationship somewhat in that the changes are no longer significant, the change is in the right direction, particularly for the parents of the oldest youth (Table 6-F).

An additional single measure focused on perceived social expectations of others for the parents' talk with their children. Detail Table 6-32 presents that data and it is summarized in Table 6-G. Similar to the data for attitudes, social expectations show a positive significant relationship for parents of 16- to 18-year-olds.

Table 6-G. Parent perceived social expectations for talk about drugs by youth age

Age group	Percent saying others think parent should definitely talk					95% Confidence Interval on W1 to W3	
	Wave 1 11/99-6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 to Wave 3 % Change	Wave 1 to Wave 3 % Change	W3 % Change	
9 to 11	56.1	57.7	62.2	6.1	-0.1		to +12.3
12 to 13	62.6	59.6	64.5	1.9	-4.4		to +8.2
14 to 15	65.7	69.4	65.7	0.0	-8.7		to +8.7
16 to 18	57.9	62.5	66.1	8.2*	+0.9		to +15.5
12 to 18	61.8	63.9	65.5	3.7	-1.2		to +8.6

*Between wave difference significant at $p < 0.05$

6.2.5 Fun Activities

During the first period of Phase III, corresponding to the Wave 1 data collection period, the Campaign encouraged parents to engage in fun activities with their children. The variable presented in Table 6-H indicates the proportion of parents who claimed to do at least three or more activities with their child each week, either at home or out-of-home. (See also Detail Table 6-5.)

Table 6-H. Parents doing fun activities with their child by youth age

Age group	Percent saying they did three or more activities per week					95% Confidence Interval on W1 to W3	
	Wave 1 11/99 – 6/00 (%)	Wave 2 7/00 – 12/00 (%)	Wave 3 1/01 – 6/01 (%)	Wave 1 to Wave 3 % Change	Wave 1 to Wave 3 % Change	W3 % Change	
9 to 11	83.3	82.0	81.9	-1.4			-5.1 to +2.3
12 to 13	74.5	75.2	72.9	-1.6			-5.7 to +2.5
14 to 15	67.4	68.2	59.9	-7.5			-15.5 to +0.5
16 to 18	49.2	53.2	50.5	1.3			-6.6 to +9.2
12 to 18	62.4	64.7	60.3	-2.1			-6.5 to +2.3

Table 6-H offers three striking results. First, parents report doing a lot of fun activities with their children. More than three-fifths claim to be doing three or more activities from the start. Less than 10 percent of all parents said they had not done any activities. This creates something of a ceiling for the Campaign: if most parents already see themselves as doing fun activities with their children, then a message to do fun activities may not suggest a deficit in current behavior that needs improvement. Second, the level of activity is sharply associated with the age of the child. Parents of 9- to 11-year-olds reported such activities 60 percent more often than parents of 16- to 18-year-olds. Finally, the evidence does not support a claim of increasing levels of activity. This theme was emphasized only during Wave 1; if there had been any effects, they were likely to have already been present for the de facto baseline wave.

6.2.6 Evidence for Diversity in Trends

Is it possible that the overall patterns presented above might vary for subgroups of parents? There are two circumstances of interest: when there was no overall significant trend but a particular subgroup does show a significant trend, and when two subgroups show different trends. The overall

presentation outlined the diversity of trends among parents with children of different ages. This section focuses on diversity among parents based on their children's gender, race/ethnicity, region, urbanicity, and sensation-seeking level, as well as the parent's gender and educational level. To maximize the statistical power of these analyses, parents of all youth 12 to 18 are included. If a parent had two children in the 12- to 18-year-old sample (one 12 to 13 and one 14 to 18), the parent was asked separate questions about each child's behavior and cognitions referring to each one. Both sets of answers are included in the overall results.

Diversity of Trends for Monitoring Behavior and Cognitions

Tables 6-A and 6-C presented the overall subgroup results for parents' monitoring behavior and cognitions by age of child. There was a just statistically significant overall effect for parents of 12- to 18-year-olds on monitoring behavior, so the question is whether effects were different for different subgroups. The observed change was absolutely larger for some groups than others (see Detail Table 6-3), and two of the subgroups showed statistically significant change (urban parents and parents with only a high school education). However, all of the confidence intervals for Wave 1 to Wave 3 change overlap with the confidence interval for the overall change estimate. The appropriate conclusion is that the evidence does not permit a claim for differential effects.

While the trends are not statistically significant, it is worth noting that the actual behaviors, averaged across the three waves, are different by subgroups. Parents are more likely to monitor girls (1.55 on the 0 to 3 scale) than they are boys (1.32). African American parents (1.29) report less monitoring than White parents (1.47), with Hispanic parents not statistically different from either group. It appears that parents monitor high sensation-seeking youth (1.32) less than they do low sensation-seeking youth (1.57). Although the specific estimates in Detail Table 6-3 are confounded by age (older children are less likely to be monitored and more likely to be high sensation seekers), the difference is maintained when age is controlled statistically. For example, among 14- to 15-year-olds, the parental monitoring score for high sensation-seeking youth is 1.38 and for low sensation-seeking youth is 1.62. Perhaps parents find it easier to monitor the less challenging low sensation-seekers. In addition, fathers are a little less likely (1.37) to report that their children are being monitored than are mothers (1.47). (Both parents are asked to report on the behavior in their families, not just on their personal behavior, possibly obscuring differences in what each parent does him or herself.) Finally, parent education is positively related to monitoring, with those with a high school education or less (1.3) less likely to monitor than those with some college education (1.46) who are, in turn, less likely to report monitoring than are college graduates (1.58). There were no statistically significant regional differences in monitoring behavior.

The monitoring cognitions scale showed a nonsignificant trend in the right direction for all parents of 12- to 18-year-olds. The only significant overall trends presented in Table 6-A were for parents of 9- to 11-year-olds and 12- to 13-year-olds. Thus it is appropriate to look both for evidence of significant trends among the other subgroups, and for evidence of diversity of trends. Two of those analyses merit discussion. It is clear that parents have beliefs that favor monitoring girls more than boys, in general, just as they did for the monitoring behavior (see Table 6-I). In addition, parents of females showed a significant change for the entire group of 12- to 18-year-olds, while parents of males did not. The evidence from the females' parent subgroup enhances confidence that there is real change going on in at least part of the parent population. However the changes are not significantly more for females' parents than males' parents. Thus the evidence is not sufficient to argue that there is a differential

trend, even though there is more confidence that the change is reliable for parents of females than for parents of males.

Table 6-I. Monitoring cognitions among 12- to 18-year-olds' parents by subgroups

Subgroup characteristic	Subgroup	Scale score*			95% Confidence Interval on W1 to W3 Change
		Wave 1 11/99 – 5/00	Wave 3 1/01 – 6/01	Wave 1 to Wave 3 Change	
Child gender	Male	77.3	82.5	5.2	-8.6 to +18.9
	Female	94.7	105.4	10.8**	+0.02 to +21.5
Parent gender	Male	64.8	86.2	21.4**	+5.3 to +37.6
	Female	96.0	97.6	1.6	-10.2 to +13.4

* 100 was set as the mean and standard deviation of all (9- to 18-year-olds') parents at Wave 1

** Between wave difference significant at $p < 0.05$

The pattern comparing male parents and female parents is also intriguing. While both fathers and mothers had reported on their household behavior, when it came to cognitions each respondent reported for himself or herself, alone. There was a very large difference in their ideas about monitoring, with fathers much less enthusiastic to start with than mothers. However, during the period between Waves 1 and 3, fathers became much more positive (although still less so than mothers). They increased a statistically significant 21 points, while mothers increased less than 2 points on the scale that had a mean and standard deviation of 100. The differences in the changes were very nearly significant ($t=1.94$, $p < 0.052$). The absolute size of the changes for fathers is impressive.

Diversity of Trends for Talking Behavior and Cognitions

Table 6-D presented the evidence about trends in talking behavior, establishing a close to statistically significant trend for all parents of 12- to 18-year-olds, with a significant trend for parents of 16- to 18-year-olds. In addition, a number of other subgroups showed significant change. Three of the subgroups displayed statistically significant change, including parents of girls, suburban parents, and Hispanic parents. While the other subgroups did not change significantly, in every case the trend was positive between Waves 1 and 3, and all of the rates of change are indistinguishable statistically. This can be seen quickly by examining the reported confidence intervals for change in Detail Table 6-4. The appropriate conclusion is that the observed change in talking behavior between waves was widely shared.

Although rates of change were shared, when averaged across waves some of the subgroups did show differences in talking that are worth noting. Parents were equally likely to report talking to their male and female children and their high and low sensation-seeking children, and regardless of the urbanicity or region of their residence or their own level of education. Mothers were more likely to report household talk than did fathers. This last result is consistent with mothers' higher reports of monitoring, as noted earlier.

Talking cognitions, as presented in Table 6-F, had no age of child subgroup with a significant change. However, Detail Table 6-2 shows that there were two subgroups of parents of 12- to 18-year-olds that did show significant change. Table 6-J summarizes the change data for high and low sensation-seeking youth and for fathers and mothers. Parents of high sensation seeking youth increased their

positive cognitions. Although parents of low sensation-seeking youth showed very little change, the confidence interval of their rate of change did overlap with the change for the parents of high sensation-seeking youth, so they cannot be reliably distinguished.

Table 6-J. Talking cognitions among 12- to 18-year-olds’ parents by subgroups

Subgroup characteristic	Subgroup	Scale score*			
		Wave 1 11/99 – 5/00	Wave 3 1/01 – 6/01	Wave 1 – Wave 3 Change	95% Confidence Interval on W1 to W3 Change
Child sensation-seeking	High	85.7	98.1	12.41**	+1.9 to +22.9
	Low	111.0	111.5	0.5	-12.7 to +13.8
Parent gender	Male	80.4	96.6	16.2**	+0.9 to +31.5
	Female	105.1	106.9	1.7	-9.2 to +12.7

* 100 was set as the mean and standard deviation of all (9 to 18 olds’) parents at Wave 1

**Between wave difference significant at p<0.05

Also, the comparison of fathers and mothers parallels the evidence presented in Table 6-I for monitoring cognitions. Fathers started with a much lower level of positive talking cognitions than did mothers, but they increased their level significantly between Waves 1 and 3. Once again, while mothers showed minimal change, their confidence interval around the change substantially overlaps with fathers’ confidence interval so the two groups cannot be reliably distinguished.

Fathers showed statistically significant changes in both monitoring and talking cognitions. In both cases they were reporting about their own attitudes and self-efficacy beliefs. They showed positive, but not statistically significant, change in their reports of the parallel behaviors. How is that distinction between behavior and cognitions to be explained? One interpretation is that they had learned the “right” answers but had not yet adopted new behaviors. Another is that the behavioral measures reflected not only their own behaviors but were merged with their perception of their partner’s behavior. As such, the behavioral change measures would not have been so sensitive to change in behavior by the fathers alone.

In summary, the trend data provides some positive evidence of change for both monitoring and talking behavior and cognitions, although not for fun activities. The chapter next turns to the complementary evidence about the association of exposure and these outcomes.

6.3 Association of Advertising Exposure with Parent Outcomes

Chapter 3 described the two types of exposure measures available for analysis. One, called general exposure, represents the sum of recalled exposure in recent months to advertising in four different types of sources (television and radio; movies and videos; print media, including newspapers and magazines; and outdoor media). The specific exposure measure sums the recalled exposure to the individual radio and television ads that had been on the air in the 2 months before the interview. The general exposure measures display substantially higher levels than do the specific exposure levels. For example, around 40 percent of parents reported general exposure 12 or more times per month, but less than 10 percent reported specific exposure at that level. There are three factors that may contribute to that difference: the general exposure measure included more sources than the specific exposure

measure; the general exposure measure allows recall of advertising that was directed to other audiences, while the specific exposure measure focuses only on ads directed to the parent; finally, the general exposure measure may be less demanding since it does not require the respondent to claim that he or she has seen a specific ad. One might speculate, therefore, that it is at greater risk of inflated reporting. Because the two measures may capture different aspects of exposure, the evidence of association is presented for both of them, with the interpretation strengthened when both show the same pattern of effects.

The general exposure association tables compare parents who reported exposure fewer than 4 times per month, 4 to 11 times per month, and 12 or more times per month. There were very few parents who reported no exposure so they could not be considered separately. The specific exposure tables include four categories, since it was feasible to break out the lowest exposure group into those who recalled exposure less than 1 time per month and those who recalled ad exposure 1 to 3 times per month. However, the highest exposure group for the specific exposure measure is quite small, so in many of the tables the estimates for outcomes for this group have a very wide confidence interval. Usually the specific exposure claims must rely on the differences among the other three exposure groups. Table 6-K presents the distributions for both general and specific exposure for all parents of 12- to 18-year-olds.

Table 6-K. Exposure reported by parents of 12- to 18-year-olds

	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures
General exposure	29.1%		27.7%	43.1%
Specific exposure	28.2%	34.7%	28.2%	8.9%

In all exposure analyses, the effects are corrected for the influence of confounder variables using the propensity scoring procedures described in Appendix C. They are the estimates of what people at each level of exposure would have been like had they all been similar on variables that were associated with exposure.

All analyses are restricted to parents of 12- to 18-year-olds. Each table also provides estimates for subgroups of that population defined by youth characteristics (age, gender, race/ethnicity, urbanicity) and parent characteristics (gender, education).

Each table presents three different estimators of Campaign effect. The first (called the direct campaign effect) compares the score on the outcome variable (e.g., parental monitoring behavior) for the entire sample with the score achieved by the lowest exposure group. It asks whether the average person was different from those who had minimal exposure. It is the best estimate of the average effects of the Campaign across the population. The second estimator is a significance test that indicates whether there is an overall pattern for those who have higher exposure to be higher on the outcome variable. Each table has an asterisk in this column where the test for monotonic association (Jonckheere-Terpstra) is significant at the $p < 0.05$ level. This test is best at estimating whether exposure to the Campaign affected parents at all, and it is the one used in the final summary to capture effects. The final measure, called the maximum campaign effect, compares parents with the highest and lowest levels of exposure. De facto, it answers the question: If the Campaign had been able to give everyone 12 or more exposures per month, how much of an effect would there have been?

6.3.1 Association of Monitoring Behavior Scale with General and Specific Exposure

Neither the general nor the specific exposure measure is associated with parent reports of monitoring behavior. This is true for all the parents of 12- to 18-year-olds, and for all of the subgroups, with one exception to be discussed below. It is true for all of the measures of effects. Table 6-L presents the summary data for both exposure measures, with the full version in Detail Table 6-61 and 6-62.

Table 6-L. Exposure and monitoring behavior reported by parents of 12- to 18-year-olds

Score on the monitoring behavior index, with 1.43 the overall mean across three waves							
	<1 exposure	1 – 3 exposures	4 – 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	1.44		1.42	1.47	-0.01 -0.07 to 0.07	No	0.03 -0.07 to 0.14
Specific exposure	1.43	1.41	1.44	1.49	0.00 -0.07 to 0.07	No	0.06 -0.11 to 0.22

In contrast to their reports of behavior, parent reports of cognitions around monitoring do show association with exposure. It is highly significant for general exposure, and in a consistent direction for the specific exposure measure. These data are presented in Table 6-M, which summarizes the information that is fully presented in Detail Tables 6-57 and 6-58.

Table 6-M. Exposure and monitoring cognitions reported by parents of 12- to 18-year-olds

Score on monitoring cognition index with 89.4 the overall mean across three waves							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	77.9		88.5	95.1	11.4* 4.0 to 18.8	Yes*	17.1* 6.8 to 27.5
Specific exposure	86.2	87.2	90.4	99.9	3.12 -4.0 to 10.3	No	13.7 -2.0 to 29.4

* Significant at p<0.05

Both exposure measures are correctly ordered with regard to the monitoring index, with the mean score larger at each succeeding level. For the general exposure measure, this is a significant monotonic tendency, and the difference between the lowest and highest exposure levels is 17 points.

6.3.2 Association of Talking Cognitions Scale and Talking Behavior Scale with General and Specific Exposure

If the monitoring behavior and cognitions show some inconsistency, the talking behavior and cognitions tables consistently support an inference of a Campaign effect. Table 6-N presents the evidence for the overall effect on talking behaviors. The general exposure measure is associated with talking for all three tests: direct effects, monotonic trend, and maximum potential effect; the specific exposure is associated according to the test of monotonic trend. Those who report more exposure to the Campaign’s messages are clearly more likely to report talking to their children as well.

Table 6-N. Exposure and talking behaviors reported by parents of 12- to 18-year-olds

Score on the 0 to 3 point scale, with overall average at 2.29							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	2.16		2.28	2.41	0.13* (0.05 to 0.22)	Yes*	0.25* (0.13 to 0.37)
Specific exposure	2.26	2.26	2.37	2.39	0.03 [-0.03 to 0.10]	Yes*	0.13 (-0.04 to 0.31)

* Significant at $p < 0.05$

Table 6-O provides closely parallel information for cognitions about talking. Against both measures of exposure, those who report seeing many ads are substantially more likely to report that they value talking with their children about drugs. Both analyses put the difference between the highest and lowest exposure groups at close to 30 points, after major potential confounding variables are controlled, a very large difference.

Table 6-O. Exposure and talking cognitions reported by parents of 12- to 18-year-olds

Score on the index with 99.0 the overall average across three waves							
	<1 exposure	1 – 3 exposures	4 – 11 exposures	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	83.1		90.7	113.7	15.9* 9.2 to 22.5	Yes*	30.6* 20.4 to 40.8
Specific exposure	93.2	93.5	106.4	120.2	5.8 -0.4 to 12.0	Yes*	27.0* 12.5 to 41.5

* Significant at $p < 0.05$

6.3.3 Association of Fun Activities with General and Specific Exposure

Table 6-P presents a strong picture of association between reported exposure to both general and specific advertising and the proportion of parents doing three or more activities per week with their children. For both the general exposure measure, and for the specific exposure measure, every test of association is statistically significant. This is a somewhat surprising result, given the lack of any upward trend whatsoever in the previously reported data (see Table 6-H, above) and the reduced emphasis on the fun activities objective after the first few months of data collection. This result is not merely the result of effects appearing during the first wave. The same pattern of association is present among respondents at each wave. The possible explanations for this result are discussed in the final section of the chapter.

Table 6-P. Exposure and fun activities reported by parents of 12- to 18-year-olds

Percent of parents doing three or more activities per week, with overall average at 63 percent							
	<1 exposure	1 – 3 exposures	4 – 11 exposure	12+ exposures	Direct effect (CI)	Monotonic trend	Maximum effect
General exposure	55		64	66	8* 4 to 10	Yes*	11* 6 to 15
Specific exposure	59	63	63	72	4* 1 to 7	Yes*	13* 6 to 21

* Significant at p<0.05

6.3.4 Evidence for Diversity in Associations

There are two ways to examine questions of diverse effects among subgroups. First, in situations where there was no overall evidence of an association, is there evidence that there were effects on some important subgroups? This is the focus for this section. Second, is there evidence that the associations are significantly different among subgroups? In fact, there is virtually no evidence of differential associations in Detail Tables 6-57 through 6-64 across subgroups.

The focus question for this subsection is: Are there effects for some subgroups where there were no effects for all parents of 12- to 18-year-olds? Each of the five outcome variables was subject to two tests for associations, using the general exposure and the specific exposure measure. Seven of the 10 overall association analyses were significant for all parents of 12- to 18-year-olds. These include the tests for association for both talking outcomes, doing fun activities, and the analysis of monitoring cognitions that used the general exposure measure. Generally, most of the subgroup analyses in each of those analyses were also significant, and none could be shown to be different in association from the overall pattern. There were 14 comparisons made for each set of associations (two child genders, three race-ethnicities, three urban levels, two parent genders, two parent education levels, and two child age groupings). There were 98 analyses examined for the seven sets of associations where there was an overall association. Out of a total of 98, 65 were statistically significant on the monotone dose-response test. Thus for these measures, the conclusion is that the effects were widely shared. (African-American and Hispanic parents were least likely to show statistically significant effects across the set of comparisons; however, this likely reflects the fact that they were small subgroups of the entire population.)

There were three analyses where the overall associations were not statistically significant: the monitoring behavior index with both general and specific exposure measures, and the monitoring cognition index with the specific exposure measure. Overall, in these three cases, the lack of an overall association was matched by a lack of subgroup associations. The subgroup analysis involved a total of 42 comparisons. Only 2 of the 42 showed a statistically significant association. In both of the cases, interestingly, the subgroup to show a significant effect was fathers. In the section on diverse results examining trends, there was also evidence for the idea that fathers were responding differently from mothers. The idea that some effects were specific to fathers is discussed in the next section.

In summary, where there were overall associations, most subgroups showed associations. Where there was no overall association, no subgroups showed associations. The only exception was for fathers.

6.4 Discussion of Effects Results

The inferential logic laid out at the start of the chapter suggested that the best support for Campaign effects would reflect two favorable results: a favorable trend on a target outcome, and a favorable association between exposure to the Campaign and the outcome. For four of the five outcomes, under this logic, there is good reason to claim some support for an inference of Campaign effects. Table 6-Q summarizes the evidence for the five-focus indices. There is no clean case in the table where there is both a significant trend and a pair of significant associations for the overall population of parents of 12- to 18-year-olds. The pattern of associations is clear and the trends for the talking and monitoring indices (but not the fun activities index) are positive but miss being statistically significant at the conventional $p < 0.05$ level. However, for each of the four talking and monitoring indices, there is an important subgroup that has shown both a significant positive trend and significant positive associations. Thus there is reliable evidence that the results meet the inferential requirement for important subgroups, and there is an overall pattern of results that is consistent with a claim that the effects are more widely shared. Each of the five outcomes is discussed in turn.

Table 6-Q. Summary of trend and association results for parents

Index	12 to 18			If No for 12 to 18, is there a significant subgroup?		
	Trend	Association		Trend	Association	
		General	Specific		General	Specific
Talking behavior	No	Yes	Yes	Girls' parents, suburbanites	--	--
Talking cognitions	No	Yes	Yes	Fathers	--	--
Monitoring behavior	Yes	No	No	--	No	Fathers
Monitoring cognitions	No	Yes	No	Fathers, 12- to 13-year-olds' parents	--	Fathers
Doing fun activities	No	Yes	Yes	No	--	--

Yes: Significant monotonic association at $p < 0.05$

--: Subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

6.4.1 Talking Behavior

Table 6-R presents the overall and subgroup specific results for the analyses of talking behavior.

The overall trend is close to significant for talking behavior ($p < .10$). The Wave 1 to Wave 3 trend showed a shift of 0.09 (with the standard deviation on this scale at close to 1.0, this is also an estimate of the effect size of the trend). This trend is accompanied by significant associations for both the specific and general measures of exposure. Confidence that this trend and its accompanying associations are reliable comes from the close examination of the other subgroup trends. All of them are positive and three are statistically significant. In the case of parents of girls, the trend and both associations are significant. There is reason to conclude that parents are changing, if only a little, in their reports of talking behavior, and that parents who most recall exposure to anti-drug advertising are the ones most likely to be talking with their children. This evidence meets the test criteria of trend and association. Insofar as it is possible to claim effects on the basis of cross-sectional data, this evidence meets the test.

Table 6-R. Effects analysis for talking behavior: overall and subgroups

Talk Behavior (0 to 3 scale; overall mean =2.29, SD=1.04)				
		W1 to W3 Trend	Test significant for monotone association?	
			General	Specific
Overall		.09	Yes	Yes
Child gender	Male	.04	Yes	--
	Female	.15*	Yes	Yes
Child race/ethnicity	White	.06	Yes	Yes
	African	.12	--	--
	Hispanic	.23*	--	--
Urbanicity	Urban	.10	--	--
	Suburban	.18*	Yes	--
	Town/Rural	.04	Yes	--
Child age	12 to 13	.08	Yes	Yes
	14 to 18	.11	Yes	--
Parent gender	Male	.06	Yes	Yes
	Female	.12	Yes	--
Parent education	Less than college	.10	Yes	--
	At least some	.09	Yes	--
	college			

* Significant trend at $p < 0.05$; "yes": significant monotonic association at $p < 0.05$

--: subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

However, there is one anomalous result. While there is an increase in parent reports that they are talking, youth are reporting the opposite result, as was seen in Table 6-E: the 12- to 18-year-old children of these parents report talking less than the parents say they are (2.29 versus 1.48 on the 0 to 3 scale), and more important, the youth reports of talking are declining over the three waves (-0.11 for the youth versus 0.09 for the parents). This means that there are at least two rival explanations for the observed pattern of results. One, parents have changed as the result of their exposure to the Campaign, but their children have not noticed this. Two, the parents have learned from the Campaign that they should be talking with their children about drugs and say that they are doing it, but despite their claims, the parents have not yet done what they now know they should do.

6.4.2 Talking Cognitions

The talking cognition results have a good deal in common with the talking behavior results. There is consistent evidence for association between both exposure measures and the talking cognition index. The trend for the entire population of parents of 12- to 18-year-olds is not significant, although it is substantially positive (see Table 6-S). There is one major subgroup, fathers, who do show a statistically significant trend between Waves 1 and 3. All the other subgroups, except for Hispanics, are positive in trend between Waves 1 and 3.

Table 6-S. Effects analysis for talking cognitions: overall and subgroups

		Talk Cognition (scale; overall mean =99.0, SD=100)		
		W1 to W3 Trend	Test significant for monotone association?	
			General	Specific
Overall		6.3 (-2.0 to 14.7)	Yes	Yes
Child gender	Male	8.6	Yes	Yes
	Female	3.9	Yes	Yes
Child race/ethnicity	White	7.3	Yes	Yes
	African American	5.9	--	--
	Hispanic	-9.9	--	--
Urbanicity	Urban	10.4	Yes	--
	Suburban	10.3	Yes	Yes
	Town/Rural	0.6	Yes	Yes
Child age	12 to 13	5.0	Yes	Yes
	14 to 18	6.8	Yes	Yes
Parent gender	Male	16.2*	Yes	Yes
	Female	1.7	Yes	Yes
Parent education	Less than college	1.6	Yes	--
	At least some college	10.7	Yes	Yes

* Significant trend at $p < 0.05$; "yes": significant monotonic association at $p < 0.05$

--: subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

Overall there seems to be a strong basis for a claim that, as the result of the Campaign, fathers are changing in the way they value talking with their children about drugs. There is support as well for a claim that there are effects that are shared more broadly. This reflects the consistency in the direction of trends among many of the other subgroups, along with the observed association of exposure and scores on the index. It is worth noting in support of this claim that none of the subgroup trends are statistically different from others, even when the apparent difference is large, as for fathers and mothers.

6.4.3 Monitoring Behavior

The evidence for effects on monitoring behavior is the weakest of all four of the talking and monitoring indices (see Table 6-T). There is some evidence of significant trends, overall, among

Table 6-T. Effects analysis for monitoring behavior: overall and subgroups

Monitoring Behavior (0 to 3 scale; overall mean =1.43, SD=1.04)				
		W1 to W3 Trend	Test significant for monotone association?	
			General	Specific
Overall		.08* (.00 to .16)	--	--
Child gender	Male	.10	--	--
	Female	.05	--	--
Child race/ethnicity	White	.08	--	--
	African American	.15	--	--
	Hispanic	-.01	--	--
Urbanicity	Urban	.20*	--	--
	Suburban	-.01	--	--
	Town/Rural	.03	--	--
Child age	12 to 13	.18*	--	--
	14 to 18	.03	--	--
Parent gender	Male	.12	--	Yes
	Female	.06	--	--
Parent education	Less than college	.10	--	--
	At least some college	.05	--	--

* Significant trend at p<0.05; “yes”: significant monotonic association at p<0.05

--: subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

parents of younger children and among urban parents. The literature suggests that close monitoring is particularly important for younger teens. Thus the evidence that the parents of 12- to 13-year-olds are the group showing the most substantial change is encouraging. However, there is minimal evidence for association between exposure and monitoring behavior. Only fathers show any association at all, and they show it only for one of the exposure measures. In contrast to the two previous cases and the next one, there is not good support for a Campaign effect on actual monitoring behavior. The trends that appear for some subgroups may well reflect influences external to the Campaign.

6.4.4 Monitoring Cognitions

The effects analysis for the monitoring cognitions index starts with a good deal in common with the talking cognition and talking behavior results. The overall trend for parents of 12- to 18-year-olds falls short of statistical significance (Table 6-U). However, there are three substantial subgroups with significant trends (parents of girls, fathers, and parents of 12- to 13-year-olds.) In addition, all of the other trends, except for suburban parents, show positive trends. Complementing the trend results, as in the earlier cases, there is strong evidence for the association of general exposure to anti-drug ads and the monitoring cognitive index. The one set of results that is inconsistent with the earlier ones relates to the specific exposure associations. Only one of those associations was significant, for fathers.

There is strong evidence for effects among fathers; there is a solid positive trend and evidence of association with both the general and the specific exposure measures. Fathers are increasing their acceptance of the value of monitoring, and it appears that men with the highest levels of exposure are

the men who are most accepting. Almost every subgroup shows an association for the general exposure measure, and the trends are consistently positive, and not distinguishable, one from another.

Table 6-U. Effects analysis for monitoring cognitions: overall and subgroups

Monitoring Cognition (scale; overall mean =89.3, SD=102)				
		W1 to W3 Trend	Test significant for monotone association?	
			General	Specific
Overall		7.9 (-1.7 to 17.5)	Yes	--
Child gender	Male	5.2	Yes	--
	Female	10.8*	Yes	--
Child race/ethnicity	White	5.8	Yes	--
	African American	3.9	Yes	--
	Hispanic	14.2	--	--
Urbanicity	Urban	15.2	--	--
	Suburban	-1.1	Yes	--
	Town/Rural	6.9	Yes	--
Child age	12 to 13	10.7*	Yes	--
	14 to 18	6.7	Yes	--
Parent gender	Male	21.4	Yes	Yes
	Female	1.6	Yes	--
Parent education	Less than college	10.2	--	--
	At least some college	4.4	Yes	--

* Significant trend at $p < 0.05$; "yes": significant monotonic association at $p < 0.05$

--: subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

While confidence is perhaps lessened by the lack of specific exposure association evidence, there is good support for a broader claim of effect for much of the population.

6.4.5 Engaging in Fun Activities

The last set of results give quite a different picture from the previous four. There is no evidence supporting a positive trend in the level of fun activities (Table 6-V). All but two of the subgroups have trended downward, but none approach a significant change. There is good evidence for association between the general exposure measure and, to a lesser extent, for the specific exposure measure with the report of doing fun activities with children. However, in the absence of any positive trend, the evidence only satisfies one of the criteria for an inference of Campaign effects. In the absence of evidence for an improving trend, there may not be a sufficient basis for claiming that exposure led to increased fun activity levels. The possibility of reverse causal direction remains an important threat to inference. It is possible that parents who are more engaged with their children, as reflected in their doing more fun activities with them, are more likely to attend to and recall messages that encourage such behavior. These results remain ambiguous with regard to any claims of Campaign effects.

6.5 Chapter Summary and Discussion

There is evidence consistent with an inference that the Campaign has affected parents' beliefs and behavior for three of the five focus outcomes examined in this chapter, including their beliefs and actual talking with their children about drugs and their beliefs about the value of monitoring their children.

Table 6-V. Effects analysis for engaging in fun activities: overall and subgroups

		Fun Activities (overall mean =62.4%)		
		W1 to W3 Trend	Test significant for monotone association?	
			General	Specific
Overall		-2.1 (-6.5 to 2.3)	Yes	Yes
Child gender	Male	-5.3	Yes	Yes
	Female	1.3	Yes	--
Child race/ethnicity	White	-2.1	Yes	--
	African American	-3.7	--	--
	Hispanic	-0.1	Yes	--
Urbanicity	Urban	-0.4	Yes	--
	Suburban	-0.6	Yes	Yes
	Town/Rural	-4.3	Yes	--
Child age	12 to 13	-1.6	--	--
	14 to 18	-2.3	Yes	Yes
Parent gender	Male	0.6	Yes	--
	Female	-3.5	Yes	Yes
Parent education	Less than college	-1.4	--	--
	At least some college	-2.5	Yes	Yes

--: subgroup test statistically nonsignificant but finding otherwise consistent with that for full sample

Talking with Children about Drugs. There have been small but statistically significant positive trends in parents' reports of talking with their 12- to 18-year-old children about drugs. This was significant for parents of girls, Hispanic children, and suburbanites, and close to significant for all parents of 12- to 18-year-olds. The scale used to assess talking behavior varied from 0 to 3; parents who had spoken to their children at least twice in the previous 6 months, who had talked about family rules about drug use, and who had talked about specific ways to avoid drugs earned all three points. The average parent claimed to do 2.27 of these three talking behaviors among those interviewed during the first half of 2000; parents who responded during the first half of 2001 reported 2.36 behaviors. Among parents of girls, the increase was 2.23 to 2.38 on this scale, an increase of 0.15. Almost all of the change appears to have occurred between the second and third wave of measurement, the second half of 2000 and the first half of 2001. For example, among girls' parents, the Wave 2 score (2.19) was slightly lower than the Wave 1 score. All of the change occurred after Wave 2.

While this change among parents of girls is a fairly small absolute level of change, it appears to be reliable. A claim that the trend was due to the Campaign is strengthened by the finding that the parents who recalled most exposure to Campaign advertising had the highest scores on the talking

behavior index. This was the case even after controlling statistically for other factors (confounding variables), which might have influenced both exposure and talking behavior. As one example, parents who reported exposure to fewer than four ads per month across all channels scored 2.14 on the talk behavior index. Parents who recalled hearing or seeing 12 or more ads per month scored 2.41 on the index.

While parents reporting talk with their children about drugs increased, reports among children decreased. Youth 12 to 18 were asked to reply to the same questions as their parents did; their average at Wave 1 was much lower than their parents' average (1.53 versus 2.27 on the 3 point scale), and while their parents had increased (+0.09) by Wave 3, the youth had declined (-0.11) significantly. Also, parent and youth reports are only moderately associated in general (Pearson's $r=.21$ for 12- to 18-year-old youth).

The moderate correlation between parent and youth reports, and the opposite direction of their trends may signal either that the parent behavior is not accurately reported by their children, or that the parent reports of behavior are closer to what they think they should have done than what they have actually done. There is no way to sort through the two interpretations of these results. If the first interpretation is correct, it suggests that the Campaign may have affected behavior; if the second interpretation is correct, it suggests that the Campaign may have only affected what parents think they should be doing.

The argument that the Campaign may have affected what parents think they should be doing, at least, is supported by the evidence about effects on talking cognitions. Parents were asked about how confident they were that they could talk to their child about drugs under a variety of circumstances, and they were asked about their general attitudes toward talking about drugs. The individual items were summed, with weights determined by how well each item predicted reported talk behavior. The overall pattern of results parallel those for the talk behavior index. There was an upward trend for the entire sample of parents of 12- to 18-year-olds, with a Wave 1 mean of 97.0 increasing to 103.3, although this shift was not significant. However, the shift did reach significance for fathers and for parents of high sensation-seeking youth among other subgroups. The upward trend was accompanied by a consistent pattern of association with exposure; for example, the index score for parents reporting fewer than 4 monthly exposures was 83.1, while for parents with 12 or more exposures it was 113.7.

Thus for both of the indices concerning parents talking with their children about drugs, there is good evidence consistent with a Campaign effect. The negative trend in reported talking behavior among youth raises some questions about whether the change in parent ideas about talking translated into behavior.

A separate issue is whether this talking behavior is actually related to the risk of drug use among youth. There is not good cross-sectional evidence that parents who talk more with their children have children who are at lower risk of drug use. Parents who talked more with their children had children who reported a slightly higher level of past year use (as well as higher "ever" use and "past month" use). This is shown in Figure 6-D. These results are likely to partially reflect parental talk that resulted from youth marijuana use rather than talk increasing such use. Thus it was worthwhile to see if there was evidence whether parent talk is protective of the intention to use marijuana in the next year, when the population is restricted to youth who have never used marijuana. The positive relation disappears, but it is not replaced by evidence for a protective effect. (See Figure 6-E.)

This does not call into question whether the Campaign affected these talking index scores, only whether the behavior itself was an important protective factor. These results for talking cognitions and behavior contrast with those for monitoring behavior and cognitions, and are discussed below.

Figure 6-D. Past-year marijuana use by parent-child talk

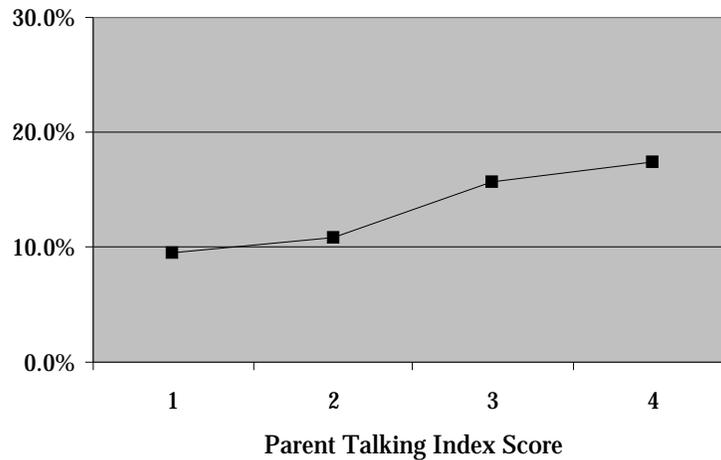
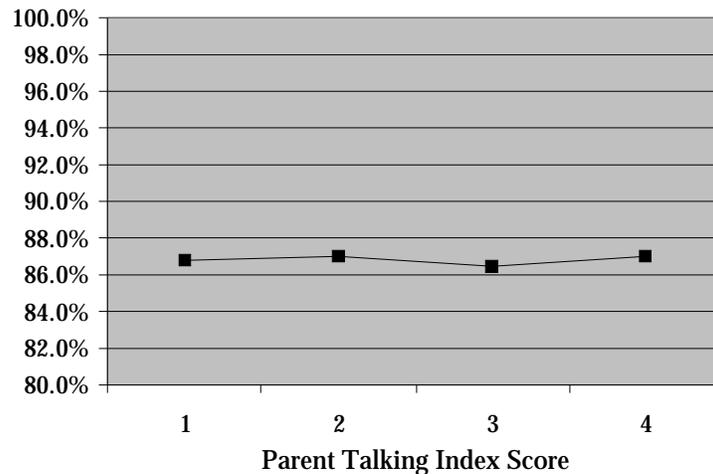


Figure 6-E. Never-users reporting no intention to use marijuana by parent-child talk



Monitoring Behavior and Cognitions. Monitoring behavior showed some upward trend, significant for the entire population of parents of 12- to 18-year-olds, and for parents of younger children (12 to 13) and urban parents. However, there was little consistent evidence for association of the behavior index with exposure. In contrast there was an upward trend in monitoring cognitions, clearly significant for important subgroups, and it was accompanied by significant associations of the index with the general exposure measure.

The monitoring behavior index was a three-point index. A parent earned a point if he or she said that she “always or almost always” knew what their child is doing when he/she is away from home, had a pretty good idea about the child’s plans for the coming day, and for saying their child never spent free time in the afternoon hanging out with friends without adult supervision. On average, parents of 12- to 18-year-olds, scored 1.43 on this index, while their children, when asked the same questions about

their parents monitoring, scored 0.87. The association between parents and children was moderate with the correlation at .30. The average parent of 12- to 18-year-olds scored 1.40 at Wave 1, increasing 0.08 by Wave 3, a just statistically significant change. The parents of 12- to 13-year-olds started at 1.65 and had increased to 1.83 by Wave 3. However, regardless of whether parents recalled heavy or light doses of exposure to Campaign advertising, their scores on the behavioral index were similar. For example, the parents who claimed exposure to fewer than four ads per month scored 1.44 on the index; parents with exposures of more than 12 per month scored a statistically indistinguishable 1.47.

In contrast to monitoring behavior results, the monitoring cognitions did show evidence consistent with Campaign effects. The monitoring cognitions index was a weighted scale based on the questions about attitudes toward monitoring and beliefs about the good outcomes of monitoring. The overall trend for parents of 12- to 18-year-olds was positive, but not significant. However, parents of girls, fathers, and parents of 12- to 13-year-olds did show significant positive trends. All parents of 12- to 18-year-olds moved from 85.8 to 93.7 between Waves 1 and 3, an increase of 7.9; parents of girls increased a significant 10.8, parents of 12- to 13-year-olds increased 10.7, and fathers increased a significant and quite large 21.4. In addition, the association with exposure was significant, at least for the general exposure measure: the low exposure parents scored 77.9, while the highest exposure parents scored 95.1 on the monitoring cognitions scale.

Thus while the Campaign effects on monitoring behavior were uncertain, the effects on monitoring cognitions are better supported. In addition, and in contrast to the results for parent talking, both monitoring indices as reported by parents are well related to child marijuana use and intention for use. Figures 6-F and 6-G present the results for 12- to 18-year-old youth who have never used marijuana. Their parents' monitoring behavior (Figure 6-F) and their parents' monitoring cognitions are both related to the youth's rejection of future marijuana use. Even stronger associations are found when all youth are included and marijuana use is predicted by monitoring behavior and cognitions.

The monitoring cognitions results, particularly, provide both evidence consistent with a Campaign effect, and evidence suggesting that the ideas that parents hold about monitoring (as well as their behavior) are substantially protective against drug use and intentions. If the evidence of Figure 6-G is accepted, a shift in monitoring cognitions by parents will have an effect on intention to use marijuana among their children.

Fun Activities with Children. The final measure examined was an indicator based on parent reports that they had participated with their children in fun activities, either inside or outside of the home. The indicator used in the analysis was whether the parent reported three or more such activities per week. This behavior is associated with a lower probability of children's using marijuana at every age, and it is associated with a lower probability of intention to use marijuana for youth between 12 and 16. The Campaign emphasized this theme in Wave 1 only.

About 62 percent of parents of 12- to 18-year-olds reported this level of activity at Wave 1; it was 60 percent at Wave 3, no significant change. The lack of overall change was matched by no change among any of the subgroups. More exposed parents were more likely to say they had engaged in fun activities with children. For example, 55 percent of the low exposed parents of 12- to 18-year-olds said they had done three activities per week with their children, while 66 percent of those with 12 or more exposures made the same claim. However, the evidence for this outcome is not yet adequate to support a claim of Campaign effects. With the next waves of data, it will be possible to look at the same individuals' progression over time. Then it may well be more feasible to sort out whether engagement is a cause or an effect of exposure.

Figure 6-F. Never-users reporting no intention to use marijuana by parent monitoring behavior

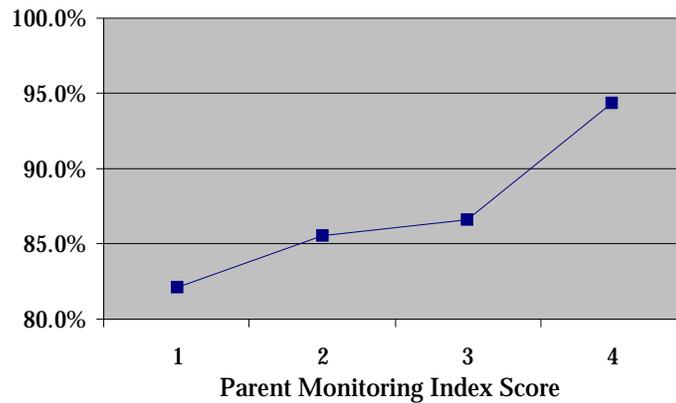
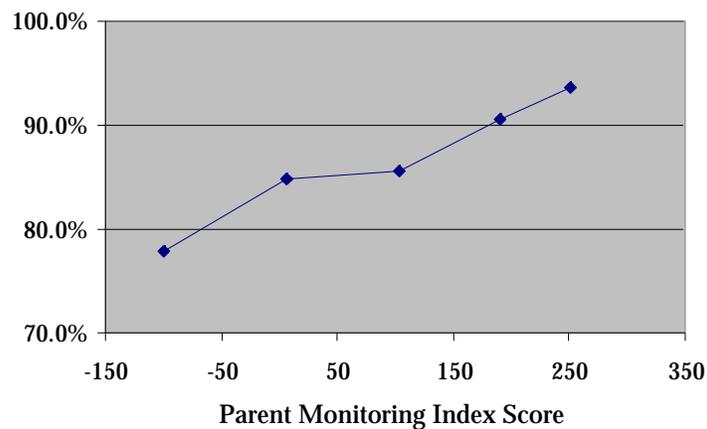


Figure 6-G. Never-users reporting no intention to use marijuana by parent monitoring cognitions



Overall then, what is the basic message of this chapter? The evidence is consistent with the Campaign affecting monitoring cognitions, talking cognitions, and talking behavior, with weaker evidence for effects on monitoring behavior and engaging in fun activities. The evidence is more impressive for some subgroups than for others, but a judgment that whatever effects may have occurred were widely shared is reasonable.

The Campaign’s eventual success depends on its influence on youth behavior. The previous chapter showed little evidence thus far that youth exposure to the Campaign is affecting their behavior directly. Thus, evidence in this chapter for effects on parents, and thus for potential eventual indirect effects on youth, are particularly important. However, the argument for indirect effects requires that there be evidence that parent behaviors are in fact protective: a demonstration that children whose parents talk with them, monitor them, and engage in fun activities with them, are less likely to use drugs. There is good correlational evidence that monitoring (both the behavior and the cognitions) and fun activities are related to drug use behavior and intentions. There is not similar evidence for the value of talking, at least in the ways measured in this study. Thus the evidence for Campaign influence on monitoring cognitions (and the less sure evidence for effects on monitoring behavior and engaging in fun activities) is particularly important. It says that the Campaign may be influencing beliefs and behavior that are shown to be protective against bad outcomes.

Finally, this chapter provides a reasonably optimistic picture of Campaign effects on parents. In many ways it provides the most encouraging results obtainable with only cross-sectional data to work with at present. Still, there remain possible challenges to claims of Campaign effects. It is possible that the good trends are the result of outside influences, and the observed associations reflect the effects of reverse causation or unmeasured confounders. When the next two rounds of data are available, it will be possible to look at longitudinal effects on youth and parents measured twice. When the evaluation is complete, each respondent will have been measured three times. With those data, the claims of effects—should the evidence still support them— can be based on a higher standard of inference. Thus the appropriate inference at this point in the Campaign evaluation is: Insofar as current evidence permits, there are positive indications of Campaign effects on parents.