

1. Introduction

This is the fifth 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 fifth 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 2002. 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, as well as on the effects of parent exposure on youth outcomes. 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. As in the previous report, both Chapters 5 and 6 in this report include the presentation of evidence about the association of early Campaign exposure with subsequent changes on the target outcome indicators.

This 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., April 2001, Hornik et al., October 2001, Hornik et al., May 2002) and updates that information with descriptions of activities undertaken between January and June 2002, the period covered by this report. It is worth noting that the period covered by this report is in the aftermath of the September 11 terrorist attacks. These events might have affected some of the outcomes included in this evaluation, namely conversation about drugs between youth and parents, with discussion of the tragedy crowding out discussion of other topics. Furthermore, the Media Campaign itself responded to this event with the broadcast of a new series of ads focused on Drugs and Terror, relating terrorist activities to drug money. This new theme will be discussed in later sections of this chapter.

The Media Campaign is now in Phase III. Phase I involved pilot testing the intervention in 12 metropolitan areas, using then 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, in addition to 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.

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

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 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, as well as to the National Youth Anti-Drug Media Campaign Communication Strategy Statement Supplement, which documents changes to the original statement as of August 2001 and reflects refinements of the Campaign.

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, Alaska Natives, and Aleuts. More than \$38 million in paid and negotiated pro bono advertising messages and outreach programs aimed at youth aged 11 to 17, parents, and other youth influencers are directed toward ethnic audiences each year. African Americans and Hispanics receive the dominant share of multicultural advertising exposure—more than 75 percent of the ethnic paid and pro bono investments (National Youth Anti-Drug Media Campaign Fact Sheet, “Multicultural Outreach,” July 2001). Ogilvy also has supervised a substantial research effort to provide ongoing support to the Media Campaign decisionmaking. Ogilvy has reported that these include regular focus groups with target audiences for both strategic development and concept evaluation purposes, monthly mall-based tracking surveys, and quantitative copy testing conducted across the country with both parents and youth. Working with the specialized agencies, Ogilvy formulates, designs, and manages the implementation of multicultural initiatives. Ogilvy and its subcontractors prepare recommendations on advertising content and buying strategies. ONDCP then reviews and 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 to avoid any appearance of government control over content, 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 other influential adults; 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, parents, or other adults 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

Table 1-B provides a summary of a historical media spending overview since July 1998 as reported to the evaluators by Ogilvy Mindshare.

**Table 1-B. Historical media spending overview
July 1998-July 2003 (in millions)**

Time period	July 1998 to June 1999	July 1999 to June 2000	July 2000 to June 2001	July 2001 to June 2002	June 2002 to July 2003
Net dollars (000)	Phase II (000)	Phase III Year One (000)	Phase III Year Two (000)	Phase III Year Three (000)	Phase III Year Four (000)
Original paid budget	\$149,500	\$144,000	\$130,000	\$135,300	\$130,000
Final paid budget	\$157,501	\$142,962	\$143,235	\$140,514	TBD
Special Match ¹	\$0	\$0	\$0	\$21,594	\$21,384
Print, Channel One, OOH Match ²	\$32,460	\$37,622	\$32,188	\$33,158	\$32,868
Grand total value	\$189,961	\$180,584	\$175,423	\$195,266	TBD

¹ Special Match: The term refers to pro bono match value fulfilled by TV and Radio networks by airing the same paid ad in fulfillment of the pro bono match.

² Print, Channel One, and Out of Home Match: This roll up of the match refers to ads for which 100 percent of the pro bono match is reflected in additional ad space for the same ads.

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 has delivered specific anti-drug messages nationally through television networks ABC, CBS, NBC, FOX, UPN, and the WB; through cable networks; and through national radio networks. On-line advertising was placed on approximately 40 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 videos, and in movie theaters. Parents are further addressed through billboards, bus shelter placards, and other outdoor advertising.

The Media Campaign originally targeted youth aged 9 to 18, with a focus on 11- to 13-year-olds, also known as “twens”; parents of youth in these age ranges; and other influential adults. The paid advertising plan, more specifically, targets 9- to 17-year-olds. As of August 2001, the Campaign shifted their creative focus to 11- to 14-year-olds to allow the campaign to more effectively reach

youth at the time they are most at risk for drug use (National Youth Anti-Drug Media Campaign Communication Strategy Statement Supplement, August 2001). More recently, as of May 2002, the ONDCP announced that the campaign will again shift its focus, this time to 14- to 16-year-olds. More focused advertising will be created to attack marijuana use, the most frequently abused drug in this age group (Executive Office of the President, ONDCP official announcement, May 23, 2002). Despite this narrowing of the creative target, the media buy is still expected to reach the full 9- to 17-year-old youth audience. 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), although this includes both advertising directed toward youth as well as advertising targeted to parents, which may also be seen by youth.

The Media Campaign also designs 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. Some results reinforcing this claim are presented in Chapter 4 of this report.

For both parent and youth audiences, the Media Campaign chose to focus on a limited set of message themes. As Phase III has matured, the Campaign developed a strategic plan to gain maximum awareness for each message platform. Much of the advertising during any one time period (called a "flight") focuses on one theme or behavioral message platform. The plan includes four flights per year, each running 10 to 12 weeks. In each flight, two to three ads are run, but all of them address one of the themes or message platforms. Chapter 3 presents the details of this plan. For parents, the themes previously included the following:

- **Your Child at Risk.** This platform sends the message to parents, "Every child is at risk for drug use, even yours."
- **Parenting Skills and Personal Efficacy.** This theme tells parents that they can learn simple skills to help their child avoid drugs, including communication and family management. There has been a particular emphasis on parental monitoring. Parents should know where their children are, whom they are with, and when they will be back.
- **Perceptions of Harm.** This platform stresses that parents need to be aware of the harmful effects of inhalants and marijuana on their child's life and future.

As mentioned earlier, Wave 5 included a new message theme, Drugs and Terror, meant to stimulate discussion between parents and youth, and among youth about the relationships between terrorist activities and drug money. The Drugs and Terror ads are intended to raise awareness about the possible connection between drug money and terrorist activities and to engage youth and influential adults in drug prevention (National Youth Anti-Drug Media Campaign, Campaign Flash, February, 2002).

In Wave 5, the Campaign strategy was that parent messages would be focused on one main platform for mass communication: Parenting Skills/Efficacy. Seventy-seven percent of the ads placed from

January to June 2002 were of the Parenting Skills/Efficacy theme, and 22.9 percent on the Drugs and Terror theme, first introduced during the 2002 Super Bowl broadcast.

For youth, the strategic message platforms have also evolved since the beginning of the campaign. Some of themes were merged together with the goal of increasing impact (National Youth Anti-Drug Media Campaign Communication Strategy Statement Supplement, August 2001). The current themes are:

- **Resistance Skills and Self-efficacy.** Ads in this platform attempt to enhance personal and social skills that promote positive lifestyle choices. Specifically, they try to help build confidence that youth can resist drug use. The Campaign reports that this theme has been dropped as of May 2002, at the end of the Wave 5 period.
- **Normative Education/Positive Messages.** The normative education theme ads evolved in the late summer of 2001 from instilling the belief that most young people do not use drugs to conveying the message that “cool people don’t use drugs.” The positive alternatives strategy reinforces positive uses of time as behavioral alternatives to drug use. For both of these platforms, celebrities and peer-to-peer messages are used in the advertisements.
- **Negative Consequences.** This platform attempts to enhance youth perceptions that drug use is likely to lead to a variety of negatively valued consequences, including loss of parental approval, reduced performance in school and as an athlete, and specific drug effects.

For youth, the new theme, Drugs and Terror falls under the “Negative Consequences” platform. Targeted at older teens (15 to 18) and young adults (18 to 24), and broadcast after 9:00 p.m. The Drugs and Terror ads follow a similar theme of unintended negative consequences: buying drugs may contribute to funding terrorist activities. In contrast with the traditional approach of communicating personal consequences of drug use, these ads are meant to appeal to the current mood of patriotism, thus providing the youth audience with a reason not to use drugs that is “bigger than themselves.”

Based on ad time purchased from January to June 2002, as presented in Chapter 3, 63.2 percent of youth ads were focused on the Negative Consequences platform under which the Drugs and Terror ads fall. About 19 percent of all of the youth ad time in this period went to the specific Drugs and Terror ads. Most of the rest of the ads conveyed the Normative Education/Positive Alternatives platform with little to no attention to Resistance Skills. There were distinct strategies for each of the multicultural target audiences, such as Spanish-language ads being developed for Hispanics who consume Spanish media programming.

Two Drugs and Terror ads debuted during Wave 5 at the Super Bowl 2002 telecast and were subsequently broadcast for youth audiences on cable and network television. Print versions for parents have also appeared in nearly 200 newspapers around the country, and in national magazines (ONDCP, Media Campaign Flash, February 2002). The Drugs and Terror initiative combines a wide range of communication activities in addition to broadcast and print advertising: in-school programming, online information, and community and news media outreach. The online component of the initiative includes banner and keyword advertising on the Media Campaign’s web sites for parents (www.theantidrug.com), for educators (www.teachersguide.com) and for entertainment writers (www.drugstory.org). The nonadvertising aspects of the initiative will be explored in the subsequent section of this chapter.

In addition to the introduction of the Drugs and Terror ads, there have been other changes to the campaign's advertising in Wave 5. Whereas in previous waves the Campaign aired ads focusing on the risk of inhalants and Ecstasy use, in Wave 5, the Campaign purchased no anti-inhalant or anti-Ecstasy ad time.

Starting with Phase III, the Media Campaign has been incorporating 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 postcard or by the Web.¹ These ideas, which were incorporated into advertising for 2001 and 2002, suggest activities that might serve as "anti-drugs" and allowed audience members to fill in their own (e.g., Soccer: My Anti-Drug). As reported by ONDCP, the "My Anti-Drug" Campaign's overall goal is "to present positive messages and cause youth to think about the things in their own lives that stand between themselves and drugs."

Among the other celebrities who appeared in anti-drug advertising during Phase III were singers Jimmy Lin, Mary J. Blige, Lauryn Hill, the Dixie Chicks, and the late Scatman John; athletes including tennis stars Venus and Serena Williams; professional skateboarder Andy MacDonald; track star Michael Johnson; Olympic figure skater Tara Lipinski; members of the U.S. Women's World Cup Soccer Team; and National Football League players Tiki Barber, Eddie George, and Derrick Brookes.

Celebrities, however, were only one part of the advertising effort. There were more than 1,495 distinct paid ads played or scheduled to be played between September 1999 through June 2002, including radio and television, general market, African American-, American Indian and Alaskan Native-, Asian-American and Pacific Islander-, and Hispanic-specific ads, and ads for parents as well as youth. A series of ads focusing on American Indian audiences was developed as part of ONDCP's \$5 million effort to reach American Indian audiences since the beginning of the campaign. The Campaign has now developed new ads for this audience, which are appearing in targeted media outlets across the country, in 61 newspapers, 66 radio stations, and television outlets in 15 markets that reach American Indian audiences. Developed by Albuquerque-based G&G Advertising, an American Indian firm, the ads focus on the positive influence of elders in the American Indian community, the role of parents, and the importance of Indian pride in keeping youth drug-free (ONDCP, Media Campaign Flash, May 2002). 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>.

Finally, as an example of a larger effort to enlist corporate America, the Campaign has teamed up with Safeway, the country's third largest grocery store chain, to launch an anti-drug campaign targeted at parents. The campaign will extend through fall 2002. Parenting messages have been displayed in several places throughout Safeway stores and on Safeway grocery bags. Additionally, some Safeway stores are also broadcasting public service announcements on in-store radio networks (ONDCP, Media Campaign Flash, May 2002).

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.

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 2002, according to the Campaign. Building on changes suggested by youth usability studies, the Campaign's youth web site, www.freevibe.com, was completely redesigned and then relaunched in the spring 2002. The site's expanded home page now allows for more visible promotion of site content, as well as special features including "Summit High," a new animated series about a group of freshman high school students navigating peer pressure to use drugs. Fleishman-Hillard reports that www.freevibe.com has attracted nearly 3 million visitors this fiscal year.

Strategic partnerships with high visibility portals, including Yahoo, Lycos, and About.com, allowed for content placement on many popular teen and tween sites. Celebrity endorsement of youth brand messaging was also featured on AOL's Kids Only site. Most recently, www.lycos.com, the world's fourth most visited web site, added a permanent youth anti-drug feature in the first half of 2002, and the Campaign partnered with www.mecca.com, a provider of popular Instant Message technology increasingly used by youth online to include anti-drug content on their site. Through a joint web site partnership with The National Campaign to Prevent Teen Pregnancy, content from freevibe.com was also featured on the web site www.teenpregnancy.org.

Popular institutions also supported the Media Campaign. Fleishman-Hillard reported 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, articles in smaller and mid-size market community papers, and features in multicultural publications and broadcast media. Some of those are described below. During the first half of 2002, youth outreach efforts continued to focus on extending the "What's Your Anti-Drug" brand. Fleishman-Hillard reports that thus far over 200,000 youth have submitted their anti-drugs, or what stands between them and drugs. In April 2002, Fleishman-Hillard placed "Skateboarding: My Anti-Drug" and "Softball: My Anti-Drug" posters on ABC's "The George Lopez Show" and MTV's "Undressed." Additionally, in early 2002, a new partnership was created between the Media Campaign and the U.S. Air Force to reach more than 3 million youth NASCAR fans. A "Racing: My Anti-Drug" car is running in 15 nationally televised NASCAR races in 2002. Coverage of the racing events was secured in Fox Sports/Totally NASCAR, RPM 2Night (ESPN), Junior Motorsports, the Dallas Morning News, the Fort-Worth Daily Press, Brandweek, ESPN The Magazine, Racing Milestones, and on

www.nascar.com. NASCAR driver Stuart Kirby and the Air Force created an anti-drug PSA for the campaign's pro bono match campaign. Additionally, the web site of another NASCAR driver, Jimmy Spencer, (www.jimmyspencer.com) now includes banner ads promoting the Media Campaign's web site for parents (www.theantidrug.com), and the youth's web site (www.freevibe.com). The National Football League has also been promoting drug prevention messages and "The Anti-Drug" brand to youth and parents at initiatives such as the NFL experience at the Super Bowl in early 2002. Additionally, drug prevention information and the new anti-drug ads are available on their web site (www.nfl.com).

In addition to the "What's Your Anti-Drug?" message, the Media Campaign also used nonadvertising efforts to promote the normative education message. In the fall of 2001, a partnership with newspapers, educators, and community coalitions helped the Campaign gain access to many U.S. markets to deliver its youth messages. "Majority Rules: Most Kids Don't Use Drugs" is a Campaign-generated template for local anti-drug newspaper supplements and is meant to correct misperceptions that most youth use drugs. The Campaign created and distributed the materials in collaboration with the Newspaper in Education (NIE) program of the Newspaper Association of America Foundation, Community Anti-Drug Coalitions of America (CADCA), the National Association of Student Assistance Professionals, and the National Middle School Association. Fleishman-Hillard reports that the first phase of the "Majority Rules" initiative involved more than 200 publications reaching more than 5 million readers. In the first half of 2002, more than 200 newspapers in 43 states selected to publish articles and artwork depicting positive alternatives to drug use generated by youth themselves.

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 (CADCA), 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.), National Association of Student Assistance Professionals, and the YMCA. In the fall of 2001, the Campaign, together with the YMCA, developed a substance abuse prevention tool: "Positively Drug Free: A Prevention Awareness Handbook". In early 2002, the handbook was finalized, and its distribution began to the more than 2,400 after-school YMCA programs. The YMCA will use the guide as a permanent tool in their leadership training, meant to help program leaders motivate and empower youth to stay drug free.

The Media Campaign also partnered with community and multicultural organizations (e.g., the Boys and Girls Clubs of America, the Girl Scouts of America, PowerUP, and 100 Black Men). Partnerships with these types of 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.

In addition, the Campaign targets special audiences in its outreach efforts. Based on research indicating that children of substance abusers are at high risk of becoming substance abusers themselves, the Campaign developed the message, "You're not alone: find someone you trust and talk about it." Other messages targeted at children of substance abusers, such as "I Was Afraid to Take a Friend Home," "It's Not Your Fault!," and "Think Again" were promoted in posters, brochures, web sites, and also on the occasion of events such as the National Children of Alcoholics Week, in February 2002. These activities were carried out in partnership with the National Association for Children of Alcoholics; the Child Welfare League of America; the National Institute on Alcohol

Abuse and Alcoholism; the Center for Substance Abuse Treatment; the National Association of Student Assistant Professionals; and national associations representing school nurses and counselors. Through public relations outreach to HBO, information for children of substance abusers was cross-promoted on www.theantidrug.com and the HBO web site. HBO also aired a program on Ecstasy in April 2002 on the consequences of substance abuse by parents.

The Campaign also recognizes the school as a key avenue in its nonadvertising efforts through a partnership with “Cable in the Classroom.” The cable TV industry’s educational arm is highlighting and distributing substance abuse-focused programming and curriculum support materials to teachers and students in 80,000 schools nationwide. Additionally, in an effort to reach kids during their school hours, the Campaign advertises on searchopolis.com, an N2H2 education portal, and channelone.com (National Youth Anti-Drug Media Campaign Fact Sheets, Partnerships for Action and Interactive Program, July 2001).

Parents and Other Adults

In addition to youth outreach, Fleishman-Hillard aimed activities at engaging parents as well. The Campaign’s parent web site, www.theantidrug.com, is a central part of this strategy and is promoted through partnership with popular web sites and Internet search engines as well as through advertising in various parent and youth audiences via general, ethnic, and niche market advertising. For example, partnership with Lycos was secured in May 2002, and the homepage of lycoszone.com now features the new “Parents: The Anti-Drug” microsite.

During the 6-month period from January to June 2002, the parent web site was expanded, in conjunction with the Drugs and Terror ads, to include information on the links between drugs and terrorism. According to Fleishman-Hillard, the monthly page views increased by an average of 153 percent in the first 3 months of the Drugs and Terror initiative, with the Drugs and Terror index page being the second most viewed page in April 2002. Fleishman-Hillard also reports that online subscription to free email parenting tips, which were also made available in Spanish in 2002, increased in the time period from October 2001 to June 2002.

The Media Campaign also expanded its existing web site for parents, in conjunction with the Campaign’s @Work program, to include a new feature designed for employers and human resource professionals, www.theantidrug.com/atwork. The Campaign’s @Work program, begun in August 2001, was designed to take advantage of the workplace as an avenue for reaching parents and other adult influencers with youth drug prevention information. The program provides campaign resources and materials to employers for distribution to their employees. The @Work web site offers employee newsletter articles, email parenting tips, and posters and brochures on drug prevention formatted for easy adaptation and customization by employers. Fleishman-Hillard reports that through June 2002, more than 4,000,000 employees have received drug prevention information through this program. The @Work program was officially launched on February 19, 2002, with ONDCP Director John Walters ringing the closing bell at the New York Stock Exchange. This event resulted in 5.3 million media impressions, according to Fleishman-Hillard.

In addition, as part of the @Work program, employers can call 1-800-788-2800 to obtain and distribute free materials such as “Keeping Your Kids Drug-Free: A How-To Guide for Parents and Caregivers,” a parenting brochure developed with the American Academy of Pediatrics (AAP) and the National PTA. This brochure was originally distributed by AAP in the summer of 2001 to its

55,000 members, and the PTA sent sample copies to their 3,000 leaders nationwide encouraging them to order additional copies. Other partners in this program include the National Families in Action, the National Family Partnership, the National Fatherhood Initiative, Parenting Coalition International, and the National Asian Pacific American Families Against Substance Abuse. The brochure continues to be available to employers as well as parents through the websites www.mediacampaign.org and www.theantidrug.com.

In partnership with the Centers for Disease Control and Prevention (CDC), and with *Good Housekeeping* magazine, a roundtable gathering parents and experts was conducted in January 2002 about the role of parenting in drug prevention. Fleishman-Hillard reports that the event resulted in nearly 1 million media impressions and provided content for the Campaign advertorial: “How Do You Raise a Drug-Free Child?” that appeared in *Good Housekeeping*’s May 2002 issue.

The Media Campaign also joined the National Inhalants Prevention Coalition, the National Guard Bureau, and the CDC to promote resources and tools to help parents, caregivers, and educators identify the dangers and prevent inhalant use. At the National Inhalants and Poison Awareness Week in March 2002, feature articles for local newspapers, prevention posters, classroom resources, and public service announcements in both English and Spanish were made available and distributed. A free satellite broadcast titled “Inhalants: Sniffing Out the Truth” gathered a panel of experts who discussed the effects of inhalant use on the individual, the family, and the community. In conjunction with this awareness week, an interactive feature discussing inhalant use and its prevention was placed on the parent website, www.theantidrug.com, and parenting tips on inhalants were distributed to more than 13,000 subscribers.

During the first half of 2002, the Campaign continued its outreach to community newspapers and ethnic media markets. The Campaign coordinated with Asian media to implement “Talk Radio” outreach, and monthly parenting tips in Asian publications. Parenting brochures on marijuana and inhalants use were developed in Korean and Vietnamese and were made available on the Asian language web site (www.druganswer.com). Media outreach activities were also carried out during the Asian/Pacific American Heritage Month in May 2002. Anti-drug and drug prevention messages were also disseminated to parents and youth in African American, Hispanic, American Indian, and Alaska Native communities.

In addition to parents and employers, the Campaign addressed other influential adult audiences. In the fall of 2001, Fleishman-Hillard worked to improve the content and awareness of the website www.teachersguide.org, a Web-based resource providing teachers with classroom activities, teaching tips, and other education resources to incorporate drug prevention into the classroom. Redesigned in 2002, the web site contains additional resources for educators. The Campaign developed new classroom activities that directly tie to education standards in partnership with the National Education Association’s Health Information Network. In early 2002, a teacher lesson was distributed to 210,000 high school educators who are in the Channel One network. In addition to the classroom activities, new promotional graphics were developed for the drug prevention resources on the teacher’s web site and for the New York Times’ “Media Literacy and Drug Prevention” guide available on www.teachersguide.org and partner sites. According to Fleishman-Hillard, visits to the site increased sharply in the first half of 2002. The teacher’s site continues to be promoted on a variety of web sites such as Cable in the Classroom and in The New York Times’ Newspaper in Education Program.

Grandparents were also an audience for the Campaign’s program to reach out to caregivers and other adult influencers. The Campaign began a partnership with AARP’s Grandparent’s Information

Center (GIC), to educate grandparents about substance abuse among youth and provide resources and tools to help keep youth drug free. The new web site (www.theantidrug.com/grandparents) features advice and tips for grandparents, pertinent news articles, guest columns, and a link to AARP's GIC.

Community Outreach

The Campaign has collaborated with a variety of community groups such as the National Education Association (NEA), faith-based groups, Boy Scouts of America, 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. The NEA used 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. A substance abuse prevention guide, titled "Pathways to Prevention," was developed for faith communities. The Campaign provided the Congress of National Black Churches with parenting and Campaign materials to distribute at their substance abuse prevention conference. Also, 8,200 parenting brochures were forwarded to United Church of Christ.

In addition to community groups, the Campaign continues to involve the entertainment industry as an influencer on both youth and parents. In the first half of 2002, the Campaign collaborated with a variety of media industries to reach entertainment, TV, and magazine writers. Five roundtables were held for entertainment writers, producers, and feature journalists to encourage accurate portrayal of drug consequences. Topics covered include drugs and terror, Ecstasy, drug treatment, parenting, and heroin. Representatives from all the major networks, as well as major production companies and media outlets, participated in one or more of these events. One example was the Ecstasy Roundtable convened at the MTV Networks in February 2002. This roundtable brought together reporters, magazine writers and editors, television producers, medical experts, narcotics officers, and former Ecstasy users. A wide range of topics was discussed, including physical and mental effects of Ecstasy use, the links between this drug and rave culture, availability of Ecstasy, as well as young people's misperceptions of Ecstasy as a "safe" drug.

In a series of satellite broadcast programs, sponsored by the ONDCP, panels of experts from the National Guard Counterdrug Office, Substance Abuse and Mental Health Services Administration (SAMHSA), National Institute on Drug Abuse (NIDA), and CADCA talked about topics such as "Marijuana: Weeding Out the Hype" and discussed the impact that media portrayals of marijuana use may have on youth attitudes toward drugs.

Through such roundtables and discussions, the Campaign identified the need for an online, user-friendly and accurate source of data for entertainment writers and feature journalists. Launched in December 2001, www.drugstory.org, the Campaign's web site for television and screenwriters, is a research and knowledge source to obtain facts on drugs and their effects, expert contact information, as well as access to first-person accounts and feature stories. The site promotes accurate, informative depictions of substance abuse-related issues in the media. The Campaign collaborated with the NIDA, the Drug Enforcement Agency, the Writers Guild Foundation, medical consultants, treatment and legal experts, and journalists to develop this resource. According to Fleishman-Hillard, as of May 2002, visitors have accessed more than 260,000 pages of drug-related information on this site.

The Corporate Partnership Initiative, launched in 2001, was designed to enhance the Media Campaign by engaging the financial and communications resources of America's businesses. In the first half of 2002, according to Fleishman-Hillard, more than 30 companies have committed to carrying out drug prevention messages through their own corporate advertising and in the work place. They estimated that \$8 million in marketing and communications value has been generated from this initiative.

1.4 Administrative Structure for the Evaluation

ONDCP has implemented the Campaign in three phases, each with an evaluation component. 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. ONDCP reported changes in awareness of anti-drug messages presented through the media. Changes in perceptions and attitudes about drug use were expected to occur within 1 to 2 years of full implementation of the Media Campaign and changes in behavior within 2 to 3 years.

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 was the primary target group for the campaign. They are then to be followed up to evaluate the impact of the campaign as they enter the "tween" and teen years.

The evaluation includes a longitudinal component in which youth and parents in the same household are to 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 Monitoring the Future and the 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 5 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 of youth and their parents to the Campaign. Chapter 4 discusses 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 cross-sectional and the longitudinal 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 cross-sectional and longitudinal association between campaign exposure and parental behaviors, and between parent campaign exposure and youth outcomes. 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, and sensation-seeking and “a risk of drug use” score for youth. For parents, there are breakdowns by child age, gender, and other child characteristics, as well as parent education, gender, and ethnicity. The five appendices provide detailed information about sample design, weighting, and variance estimation (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 the exposure indices and the outcome indices (Appendix E).

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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 convince occasional users of these and other drugs to stop using drugs. 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 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 illicit drug exposure, it was not possible to use experimentation to evaluate the Media Campaign. Experimentation would require conducting the Media Campaign in some media markets but not in others. Instead, the Media Campaign is evaluated by studying natural variation in exposure to the Media Campaign and how this variation appears to correlate with outcomes 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 found with 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 adjust or correct, through the use of statistical controls, 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

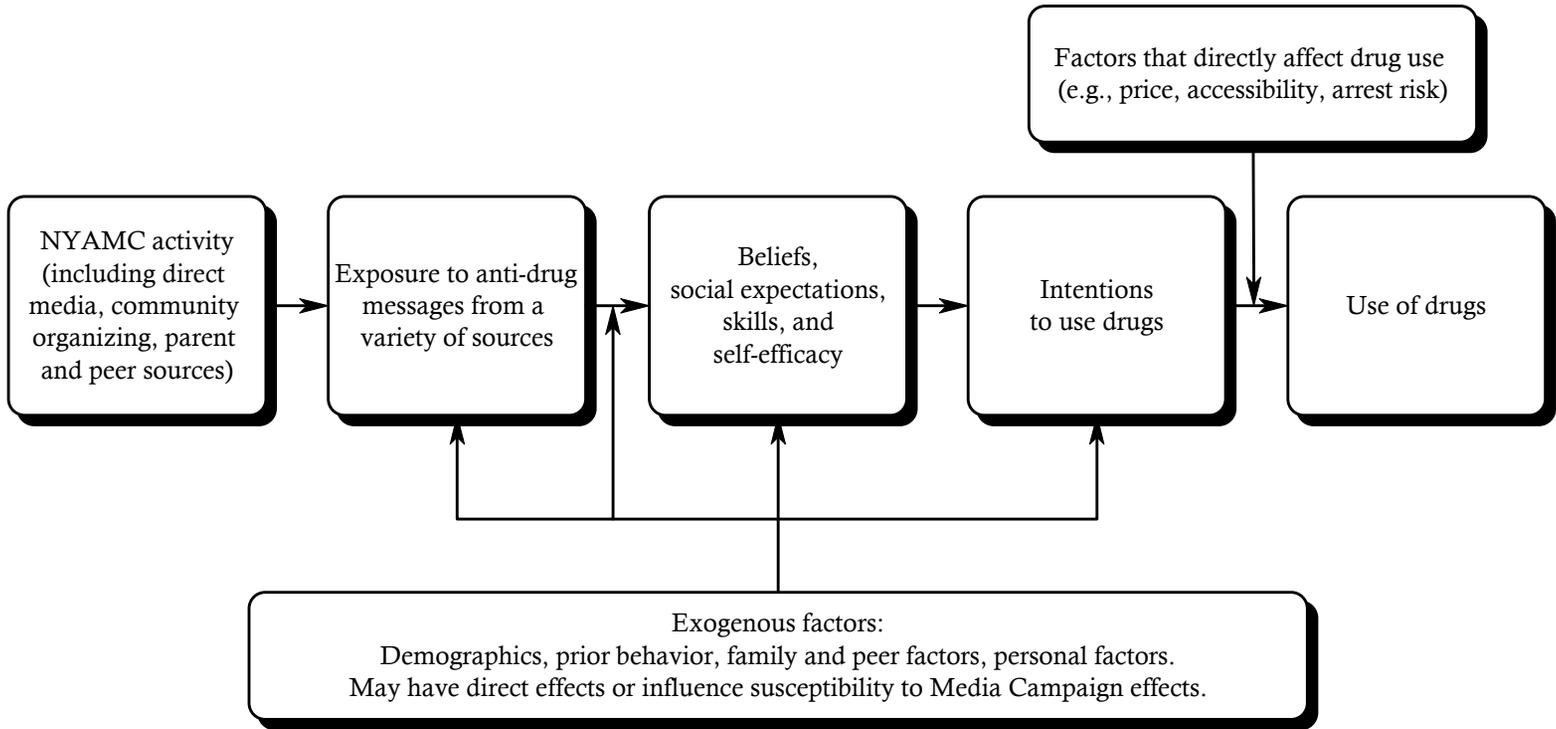
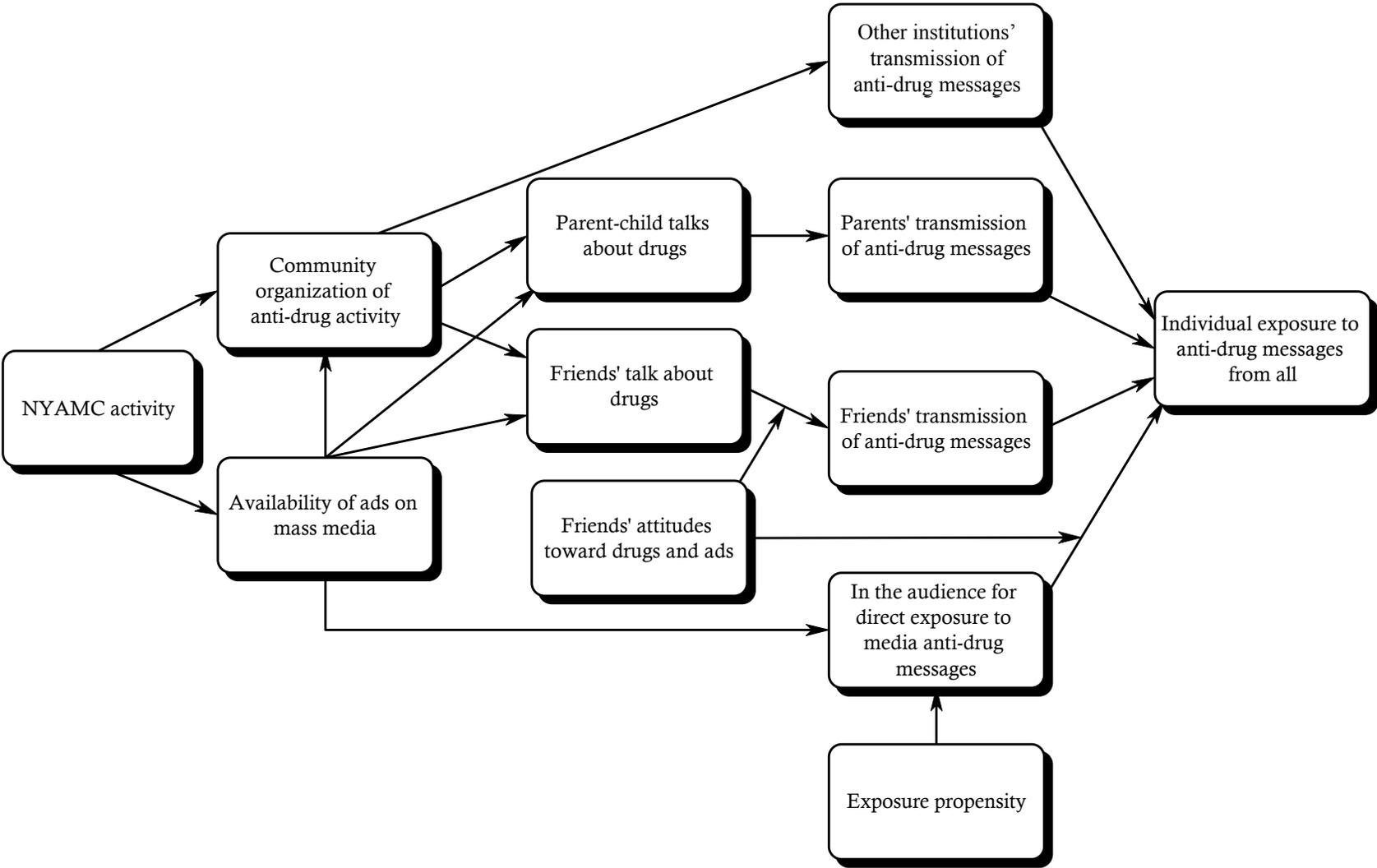
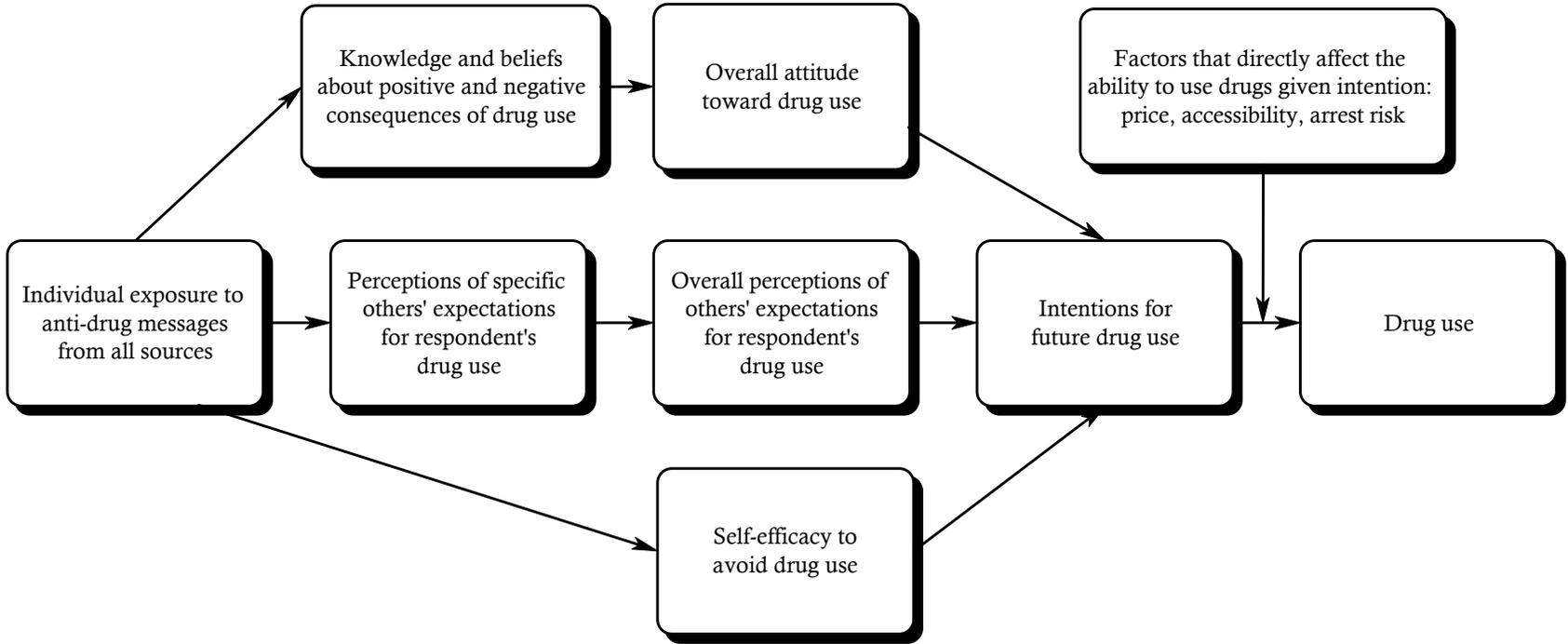


Figure 2-B. Model of influences on exposure to anti-drug messages



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, 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 valence of 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. In 2001, the Campaign 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 statistically. In addition, in some cases analyses test whether individuals who vary on these external factors are more or less susceptible to Campaign influence.

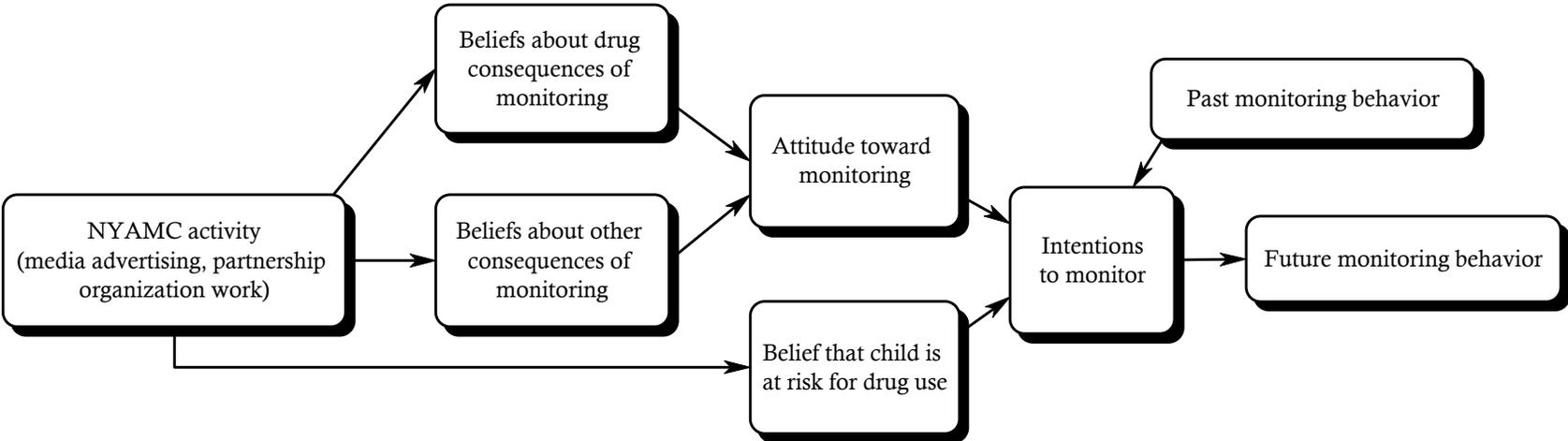
External factors that will be considered in the evaluation are parental monitoring, family functioning, friends' attitudes and behaviors, academic success, ambition, religious involvement, and prior drug involvement. Because it is argued that sensation seeking (Section 2.3.4) is an important determinant, not only of drug use but also of responsiveness to advertising messages of a particular style, sensation seeking will also be measured. Finally, the analyses make use of a risk of marijuana use scale for defining risk subgroups (Section 2.3.5). Risk incorporates sensation seeking, but is more comprehensive, including information about other relevant characteristics such as the child's prior alcohol and tobacco use. It is expected that the effects of the Campaign may differ among higher- and lower-risk youth. The Campaign expected that the higher risk youth would be more likely to show Campaign effects.

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. 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). 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.

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



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. Interview time 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.

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

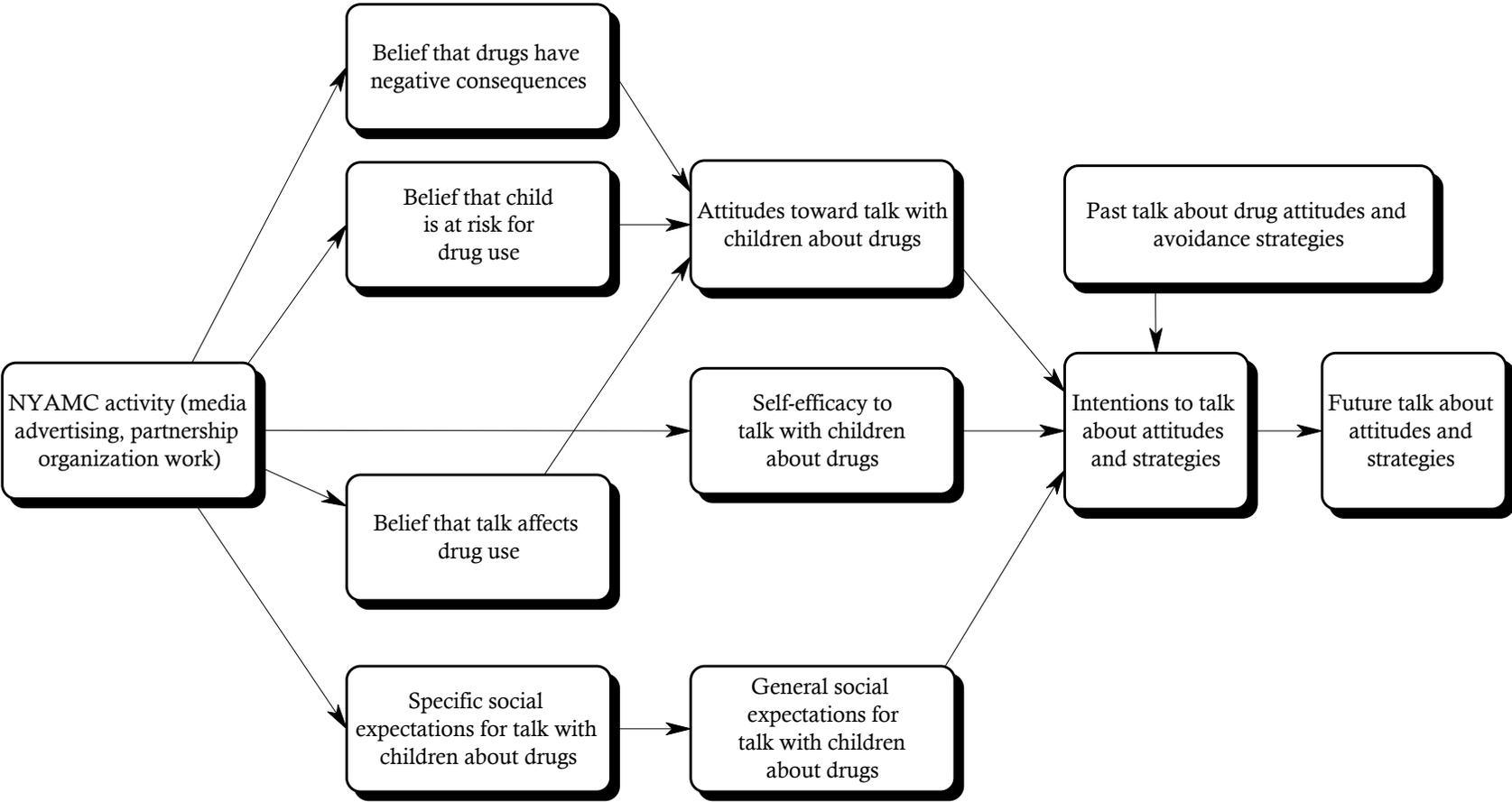
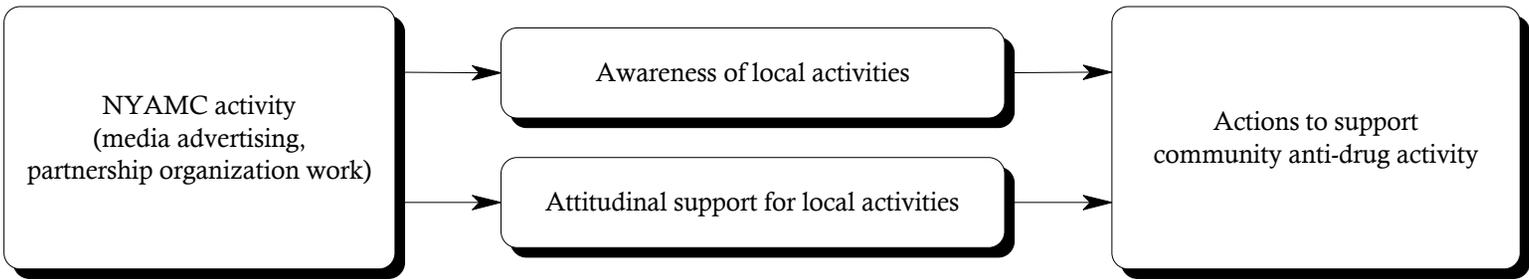


Figure 2-D. Model C - Effects on parental support for community anti-drug activity



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 (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. Institutional diffusion can be a slow process, and there might 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 this report are based on the initial data collection (Waves 1, 2, and 3) of NSPY as well as longitudinal data collection (Waves 4 and 5) of data from eligible sample members in the initial waves. Waves 1, 2, and 3 are referred to collectively as the initial recruitment phase (Round 1) while Waves 4 and 5 are referred to as the followup phase (Round 2). The data collection period for the waves were November 1999 through May 2000 for Wave 1; July 2000 through December 2000 for Wave 2; January 2001 through June 2001 for Wave 3; July 2001 through December 2001 for Wave 4; and January 2002 through June 2002 for Wave 5. The number of youth aged 9 to 18 with completed interviews, parent interviews, and youth–parent dyads are given for each wave in Table 2-A. (See Detail Tables 2-1, 2-2, and 2-3.)

Table 2-A. Completed interviews by wave

Age group	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Youth aged 9-18	3,299	2,362	2,458	2,477	4,040
Parents	2,284	1,632	1,680	1,752	2,882
Youth-Parent Dyads	3,108	2,210	2,305	2,354	3,876

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 the three initial waves. In all subsequent followup waves, respondents recruited in Waves 1 through 3 are being followed up if they live within or just outside of the boundaries of the 90 PSUs. 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. During the initial data collection, 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. In the followup survey, if the originally selected parent was no longer eligible, a new parent considered most knowledgeable about the youth was selected as a replacement.

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 determine whether any eligible youth were present was 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 percent in Waves 1 through 3. This means that 91 percent of the selected youth received parental consent, signed to their own assent, and completed an extended interview. Among sample parents, approximately 88 percent completed the interview in Waves 1 through 3.

For Wave 4, participants were located and eligibility was determined for approximately 87 percent of the parents and youth who completed an interview in Wave 1. Among those youth who were still eligible in the followup phase, the interview response rate was about 82 percent. Among those parents who were still eligible in the followup phase, the interview response rate was about 80 percent.

For Wave 5, participants were located and eligibility was determined for approximately 88 percent of the parents and 94 percent of the youth who completed an interview in Waves 2 or 3. Among those youth who were still eligible in the followup phase, the interview response rate was about 89 percent. Among those parents who were still eligible in the followup phase, the interview response rate was 88 percent.

The overall reduction in the number of completed interviews between Round 1 (Waves 1, 2, and 3) and Round 2 (Waves 4 and 5) was roughly 20 percent (see Detail Table 2-1). However, the corresponding drop off for the 12- to 18-year-old age group was negligible as 10- to 11-year-olds in the baseline samples moved in to replace youth who aged out of their respective waves in Round 2. Thus, for cross-sectional comparisons of the 12 to 18 age groups (where age is determined as of the time of the respective interview), there will be relatively little loss in power. For longitudinal comparisons, which require completed interviews for eligible youth at both Rounds 1 and 2, the overall reduction in sample size was about 16 percent (not including youth who were expected to age out prior to the first followup). This reduced sample size for longitudinal analysis corresponds roughly to an increase of about 9 percent in detectable differences. In other words, a difference that would be detectable with 80 percent power if there were no sample losses would now have to be larger by a factor of 1.09 to be detectable.

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. 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. 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; in Wave 4, the percentage was 0.6 for parents and 0.0 for youth; and in Wave 5, the percentage was 0.0 for both parents and youth.

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. In Wave 4, additional Ecstasy questions were added to the teen interview concerning the intentions to use, perceived expectations of use by peers and attitudes of use, including approval/disapproval of use and perceived harm of use. In Wave 5, a question about Campaign banner ads on the Internet was added to the teen instrument and the two "ringer" brand phrases were replaced in the teen branding question.

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. In Wave 4, there were no changes to the parent instrument. In Wave 5, the branding question was rephrased to ask about the correct parent brand and one of two ringer brands, mirroring the format of the teen branding question. Other additions to the parent instrument included a question about Campaign banner ads on the Internet, a question that asked about the presence and number of youth in the household in the age categories of interest; a question on parental perceptions of harm from trial of marijuana, inhalants, and Ecstasy; and a question on the likelihood of youth use of inhalants and Ecstasy.

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. 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. 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. 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.

In Wave 4, a total of 16 TV ads and 19 radio ads were aired during the wave and shown to respondents. The TV ads included seven (three in English and four in Spanish) aimed at parents and nine (six in English and three in Spanish) aimed at youth. The radio ads included 9 (4 in English and 5 in Spanish) aimed at parents and 10 (8 in English and 2 in Spanish) aimed at youth. In Wave 4, seven parent radio ads and one youth radio ad were played that were audio duplicates of television ads.

In Wave 5, a total of 25 TV ads and 21 radio ads were aired during the wave and shown to respondents. Four TV ads were targeted at both parents and youth and were shown to both groups. The TV ads included 14 (11 in English and 3 in Spanish) aimed at parents and 15 (13 in English and 2 in Spanish) aimed at youth. The radio ads included 8 (5 in English and 3 in Spanish) aimed at parents and 13 (10 in English and 3 in Spanish) aimed at youth. In Wave 5, two parent radio ads and six youth radio ads were played that were audio duplicates of television ads.

Appendix D contains a short description of each ad by wave. 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 was 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, or a “spill” TV ad—an ad that had been shown but was targeted at the other (parent or youth) audience. Youth were shown parent TV ads to assess their spill effects and vice versa. This was done to allow study of the accuracy of ad recall. Some analyses of the ringer ad 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 for analysis to reflect 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. For Waves 4 and 5, no new youth were selected. However, a new parent could be selected if the original sampled parent was no longer eligible for interview.

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.

In this report, coverage is defined to be the NSPY sample-based estimate of the number of persons in the target population prior to poststratification to the corresponding estimate based on Census/CPS data. Coverage also varied geographically and by age. Table 2-B shows coverage rates by age for the initial recruitment waves. Overall, coverage was slightly less than 70 percent for all three waves with somewhat higher coverage rates for the 12 to 13 age group, and lower coverage rates for the 14 to 18 age group. It would appear, based on census estimates, that 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

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).

Table 2-B. 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

Decennial Census. The January 2000 CPS data were used to adjust Wave 1 and October 2000 data was used to adjust Wave 2. However, for Wave 3, the average of March 2001 and April 2001 CPS data was used for adjustment. In Wave 4, a regression line was used to “smooth” 12 months of CPS estimates and the regression-based point estimate for October 2001 was used to adjust the Wave 4 weights. For Wave 5, the regression estimates were updated to estimate the population at the midpoint of March and April of 2002. However, since the 2002 CPS data was available only for January at the time the estimate was made, the point estimate is an extrapolation of 3 months past actual available data.

The ordinary CPS totals could not be used in the adjustment because the CPS counts youth in dormitories as residing 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).

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 used to derive the survey-based estimates rather than 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 samples, the “true” value of the statistic 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 calculated using variance estimates derived by replication techniques. In brief, subsamples of the full sample were identified 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 in the Detail Tables are suppressed. This was done when the reliability of a statistic was poor. Reliability 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 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. The imputation procedures are fully presented in Appendix E, Section E.3.3.

2.2.6 Future Waves of Data Collection

The NSPY is a two-phase design. During the first phase, the recruitment phase, eligible youth and parents are enrolled in the study and interviews are conducted. The recruitment phase (Waves 1 through 3) consisted of three national cross-sectional surveys lasting about 6 months each. During the second phase—the followup phase, Waves 4 through 7—parents and youth who participated in the recruitment phase are followed and, if determined eligible, are interviewed two additional times during the followup period. Wave 1 participants were reinterviewed for the first time in Wave 4 and will be reinterviewed again in Wave 6. Wave 2 and Wave 3 participants were reinterviewed during Wave 5 and will be reinterviewed again in Wave 7. Followup intervals can range from 6 to 24 months, depending on the participant’s situation. In total, participants can be interviewed up to three times over the study period. Combining the initial data collection and followup phases, there will be seven 6-month waves from which national semiannual estimates are prepared. This report contains data from Waves 1 through 5.

2.3 Sample Description

This section presents the youth and parent sample sizes for Waves 1 through 4 and defines the characteristics (i.e., race/ethnicity, sensation seeking, risk score, past marijuana usage, and dyads) of the samples.

2.3.1 Youth

Detail Table 2-1 shows the sample size in Waves 1 through 5 for youth by age and other characteristics. The total Wave 1 sample size of 3,299 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 2,458 is larger in the 9 to 11 age group but about even for the other two age groups. For Wave 4, which is the first followup of Wave 1 respondents, the total number of youth is 2,477 but the age groups are distributed differently from the other waves because of the aging of the Wave 1 sample. In Waves 1 through 3,

the 14- to 18-year-olds had been slightly over 50 percent of the sample whereas in Wave 4, 1,391 of the 2,477 youth were in the 14 to 18 age range, which represents 56 percent of the Wave 4 sample. 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 551 and 609 for Wave 1, 394 and 387 for Wave 2, 376 and 380 for Wave 3, 806 and 585 for Wave 4, and 1,009 and 854 for Wave 5. 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 12- to 18-year-old youth in the nation was 27.7 million during Wave 4 and 27.9 million during Wave 5. As mentioned above, this excludes youth in institutions, group homes, and dormitories, as well as other types of group housing. The confidence interval around this estimate is narrow because of the adjustments used to force the estimate to agree with 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. In Wave 4, the total dropped to 89 out of the 115 present in Wave 1 because 26 of these aged out of the sample. In Wave 5, the total of 208 from Wave 2 and Wave 3 dropped to 133. However, there are some respondents in every age group, and their responses are used in the overall estimates.

2.3.3 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, and Donohew, 2000). In a personal communication, Dr. Philip Palmgreen reports a comparison between the eight-item scale 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. In the current national sample of 9- to 18-year-olds, the internal reliability estimate for the four item scale is .78.

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.

2.3.4 Risk Score

A scale of risk of marijuana use was developed with the Wave 4 report. The risk score was an empirically-derived scale that predicts the risk of using marijuana derived from a number of youth and parent risk factors. It classifies youth into two risk categories—higher and lower risk. The rationale for creating the risk-based subgroups is similar to the subgroups developed using the sensation-seeking score. The risk score scale incorporates the sensation-seeking measure along with a number of other youth and parent risk factors. It can be argued that exposure to the Campaign may affect the higher risk groups differently from the lower risk groups. The role of the risk categories in moderating the relationship between exposure and outcomes is examined in this report.

A large number of measures were considered candidates for inclusion in the risk score. However, only those variables that were empirically predictive of marijuana use were actually included in the score and weighted according to their observed association, controlling for other variables. The measures that were included in the final risk score include:

- **Youth covariates**
 - Age (12-18)
 - Sensation seeking (high versus low)
 - Started smoking 12+ months ago
 - Started drinking 12+ months ago
 - Urbanicity 1 (urban versus rural)
 - Urbanicity 2 (suburban versus rural)
- **Parent covariates**
 - Marijuana use in past 5 years
 - Cigarette use in past month
 - Had no drink in past month
 - Attendance at religious services
 - Rating of importance of religion
 - Shares parenting with other adult in household

Further details of the methodology used to develop the risk score are discussed in Chapter 4.

2.3.5 Past Marijuana Use

Youth were divided into four categories of marijuana usage, only two of which are shown in most tables. The nonusers include youth who have never tried marijuana. The occasional users are 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 separate subgroups for analysis in tables.

2.3.6 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 were about 33.3 million parents of youth aged 12 to 18 in the United States during Wave 4 and about 33.5 million parents during Wave 5. 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 breakdown of race/ethnicity 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. For Wave 4, which is a followup of Wave 1, 37 percent of the interviewed parents were male. For Wave 5, which is a followup of Wave 2 and Wave 3, 35 percent of the interviewed parents were male. The sample sizes 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.

2.3.7 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 or 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 ratings 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 or listening or reading experience and express it in a single number. They are based on a question used consistently in the Monitoring the Future study.
- To improve the precision of the exposure measurement, a second major approach to exposure measurement, the recall of specific Campaign ads, is used. 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 a television 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

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.

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 are 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 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 were 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; and 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 the third semiannual report, the change analysis was 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 was done for youth and parents interviewed in all three waves. The fourth semi-annual report was the first permitting examination of longitudinal effects using the Wave 1 sample followed up at 18 months. The current report includes followup data on all parents and youth interviewed in Waves 1, 2, and 3, and reports in more detail on delayed-effects of Campaign exposure on 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 third and fourth semiannual report, the combined data from all waves 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.

The present report includes several new features intended to increase the capacity of the analysis to detect campaign effects:

- For the first time, data were examined to determine whether the evidence for effects differs according to the year of measurement, whether youth exposed to the campaign in 2000 showed a different pattern of associations of exposure and outcome than those interviewed in 2001 or in the first half of 2002. Also examined was the dependence of effects on the child’s risk of taking up marijuana and on other characteristics of the youth or his/her parents including age, gender, race/ethnicity, and level of sensation seeking. Evidence for diversity in effects is presented along with the overall results in Chapters 5 and 6, for youth and parents respectively.
- The cross-sectional causal analyses are supplemented with longitudinal causal analyses. The same national sample of youth and their parents is being followed for 2 or 3 years. This permits the examination of whether a young person who reported high versus low exposure when first interviewed 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 improves 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). Among nonusers at Waves 1, 2, and 3 (about 80% of the population), Campaign effects on marijuana use as well as on cognitions will be examined.
- In the initial three Semi-Annual Reports (Hornik 2000; Hornik, May 2001; Hornik, October 2001), examination of exposure effects was confined to direct pathways (i.e., youth exposure on youth outcomes and parent exposure on parent outcomes). As illustrated in Figure 2D, alternate pathways are also feasible. In the Fourth Semi-Annual Report of Findings (Hornik, 2002) one of these alternative pathways was examined, specifically, the effects of parent exposure on youth behavior. As with direct effects, both cross-sectional and longitudinal relationships were analyzed. In this Fifth Semi-Annual Report, the examination is further extended to include the association of parent exposure with youth beliefs and attitudes, as well as with youth behavior and the other youth belief and attitude outcomes.
- The essential approach to longitudinal analysis is called delayed-effects analysis. In delayed-effects analysis, exposure as measured at the first round of measurement (Wave 1 or 2 or 3) is

used to predict the individual's score on the relevant outcome variable at the second round (Wave 4 or 5). To make sure that any observed delayed-effects associations are not due to the influence of other variables, potential confounding variables are statistically controlled through the use of the propensity score procedure. These controlled confounders include the scores on the outcome variables for each respondent at Round 1. Because the Round 2 measurement of outcomes is later than the Round 1 measures of exposure, it is possible to claim that any causal relationship between these two measures reflects the influence of exposure on the outcome and not vice-versa. This was not a claim that could be made from the cross-sectional analyses when both exposure and outcome were measured simultaneously. This delayed-effects association will capture both the delayed-effects of exposure at Round 1 on outcome if that effect did not emerge until after Round 1, as well as the effects of exposure at Round 1 that flow through exposure at Round 2 to outcome at Round 2.

- As a supplement to these delayed-effects analyses, the report also shows the relationship between exposure at Round 2 and the change in the outcomes between Round 1 and Round 2. These are logically similar, but any inference from analysis is strengthened by replication across two approaches.
- The delayed-effects analyses were conducted for direct effects on parents, direct effects on youth, and indirect effects on youth through parent exposure. As with the cross-sectional analyses, two measures of exposure were examined: general and recall-aided specific.

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3. Exposure to Anti-Drug Messages

This chapter focuses on exposure to both Media Campaign efforts and exposure to non-Campaign anti-drug efforts during the period from September 1999 to June 2002. 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 offer 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. The major innovation in Wave 5 was the introduction of ads that linked terrorism and individual drug use (called Drugs and Terror ads). Throughout the chapter there is some focus on these ads, and there is a special discussion (Section 3.2.4) that provides evidence about their recalled exposure and their evaluation by youth and adult audiences, in comparison to other ads.

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 media, is calculated by summing the GRPs for each of the individual ads for each medium. 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 medium 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 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 was expected to be exposed to 2.5 youth-targeted ads per week and that the average parent was to be exposed to 2.2 parent-targeted ads per week, during the period from September 1999 through June 2002. (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 34-month period from September 1999 through June 2002. These estimates show that Ogilvy obtained a total of approximately 37,357 gross rating points (GRPs) for advertisements intended for general market youth and approximately 31,923 GRPs for advertisements intended for general market parents.¹ These totals translate into an average of 252 targeted GRPs for general market youth per week and 216 targeted GRPs for general market parents per week. In turn, such estimates are equivalent to 2.5 targeted ad exposures for general market youth and 2.2 targeted ad exposures per week for general market parents.

The youth campaign has described its goal as expecting to reach 90 percent of the youth audience four times per week, equivalent to 3.6 exposures per week for the entire population of youth. It is customary in reports for the advertising industry to report the proportion reached and the number of times the average person was reached as separate numbers. For example, rather than reporting that sufficient GRPs were purchased so the average youth would have 2.5 exposures per week, the standard format would have reported that there were enough GRPs purchased to reach 90 percent of the youths 2.78 ($=2.5/90$) times. This report does not follow this standard for three reasons. It is simpler to report the average for the entire population rather than constantly reporting both a reach and a frequency number; also the proportion of youth actually reporting some exposure is greater than 95 percent; finally, and of most importance, the expected population average based on 100 percent of youths is substantively appropriate. The congressionally-mandated audience for the Campaign is all youths, and all of the survey-based evidence, including drug use measures, is based on the entire population. It would be confusing and misleading to present the GRP data for 90 percent of the population, and all other measures for 100 percent of the population.

Table 3-A provides more detail about these estimates. The distribution of GRPs across various media reveals the predominance of particular media as sources of GRPs for each of the two audiences. Television and radio account for over 80 percent of GRPs for youth and 57 percent of GRPs for parents.

¹ Ogilvy has provided the Evaluation team with detailed information about the media purchases made, organized by medium, by week, and for many media by the name of ad. The GRP data presented in this report are derived from that information, supplied as of July 2002. 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, which serve as the basis for estimates of audience size, which in turn underpin GRP estimates.

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 148 weeks (9/99 – 06/02)	37,357		31,923	
Television per week	134	53	63	29
Radio per week	68	27	60	28
Print per week	26	10	33	15
Outdoor per week	--	--	56	26
Other per week	24	10	4	2
All media per week	252	100	216	100

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 parents includes movie theaters and Internet.

- The GRPs for both youth and parents increased during Wave 5 (January through June 2002), from the previous 6-month period, although more for youth than for parents.** The number of GRPs to which youth and parents were exposed has varied over the 34 months of Phase III of the Campaign. As depicted in Figure 3-A and Table 3-B, youth GRP exposure has shown upward and downward trends during the five waves of measurement (from September 1999 through June 2002). For Waves 1 through 3, youth GRPs were relatively high (265, 247, and 280 GRPs per week for Waves 1, 2, and 3 respectively) and then decreased 20 percent from the average of the previous levels during Wave 4, to an average of 209 GRPs per week from July through December 2001. A return to higher youth GRP levels was seen during Wave 5, when GRPs increased to an average of 255 per week (2.6 exposures per week).

Parent GRPs increased slightly during Wave 5 (Figure 3-B and Table 3-B), continuing the fluctuating pattern of the GRPs over the five waves. Parent GRPs per week had originally been high in Wave 1 (282), then sharply down in Wave 2 (144), up again in Wave 3 (230), back down in Wave 4 (194), and finally were up in Wave 5 (210). For both youth and parents, the Campaign has reported that these variations are consistent with planned media weight levels.

In addition to the broad up and down patterns across waves, there is a good deal of variation across weeks within waves, particularly for parents. This variation in GRP exposure is due partly to ad flighting. Flighting involves running advertising only for specific periods of time, such as four 10- to 12-week periods, 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 on the goals for a particular platform, the total GRPs purchased for the time period, and the media mix used for each platform. Section 3.1.1 provides some additional information about the parent pattern, which makes this rise and fall appear to be less extreme.

- 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.

Figure 3-A. Weekly youth-targeted general market GRPs (September 1999 through June 2002)

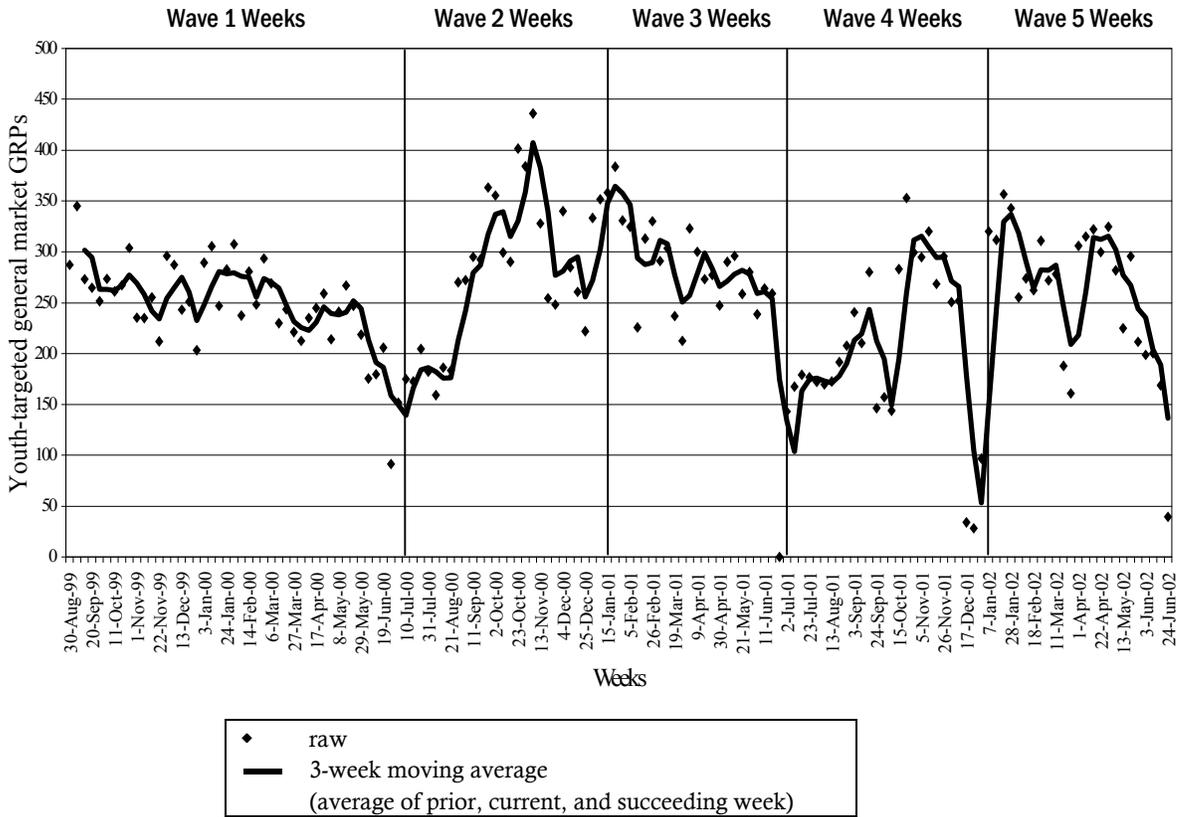


Figure 3-B. Weekly parent-targeted general market GRPs (September 1999 through June 2002)

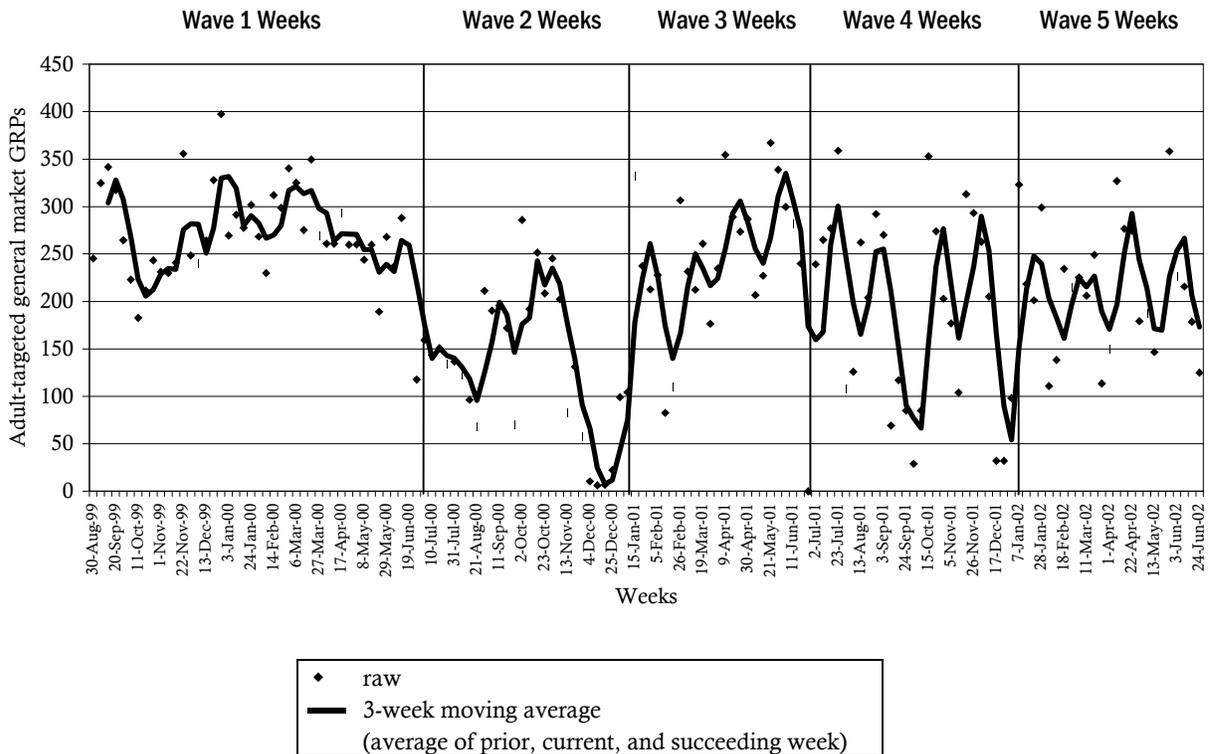


Table 3-B. Distribution of youth and parent average weekly GRPs across waves

	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 2002
Youth	265	247	280	209	255
Parents	282	144	230	194	210

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 January 2002 to June 2002 (which overlaps with the period covered by this report), for example, youth GRP estimates would increase by approximately 34 percent,² if spill exposure to parent advertisements were added to the youth total for Wave 5. 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 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. Wave 5 and the use of Drugs and Terror ads introduces a new circumstance to this analysis standard. The Media Campaign considers the Drugs and Terror ads as directed to both youth and parent audiences with the belief that the ads will be effective for both groups. Thus they are counted in GRP calculations for both groups. Some venues in which they have played are expected to reach more youth and some venues are expected to capture more parents, but if the other group is in the audience, their exposure is counted as well.

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.³ Before presenting those estimates, it is useful to look at the general viewership levels of each of the media in which advertising was bought. By doing so, GRPs can be classified as having been bought either on media with wide reach or on media with relatively less wide reach. One pattern that stands out across

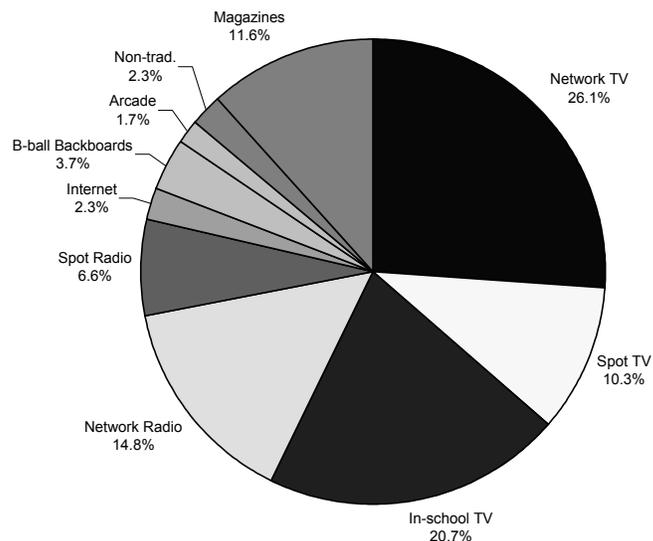
² According to a July 2002 Ogilvy estimate, youth GRPs for July 2001 through December 2001 were approximately 10,020 with spill exposure accounting for 3,394 GRPs.

³ 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 media. In addition, the Campaign has supplied estimates for overall reach and frequency for an advertising platform across all media 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 medium being exposed to the message on a second medium. 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).

both groups is the predominance of television and radio GRPs, particularly for youth. This section, except where noted, reports average data for the entire Phase III.

- **Television and radio GRPs composed the vast majority (over 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 media. Twenty-six percent of youth GRPs resulted from combined network and cable television placement, nearly 21 percent resulted from in-school television (largely through the Channel One program), and another 10 percent came from “spot” TV in about 100 metropolitan areas around the country. Approximately 21 percent of youth GRPs came from network and spot radio. (See Figure 3-C.)
 - About 60 percent of targeted youth GRPs were obtained in media with the potential for wide reach (network, cable and spot TV and network and spot radio), and about 40 percent in media with less wide reach. For instance, network radio (15% of the GRPs) and network and cable television⁴ combined (26% 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. Media with less wide reach among youth include in-school television (21% of youth GRPs mostly on Channel One), basketball backboards (4%), arcades (2%), and so-called nontraditional media, such as movie theaters and flyer postings (2%). In addition, the Campaign reports roughly 2 percent of youth-targeted GRPs arose from Internet efforts. Another media outlet used by the Media Campaign to a limited extent, magazines (12% of youth GRPs), also has considerably lower reach than television or radio.

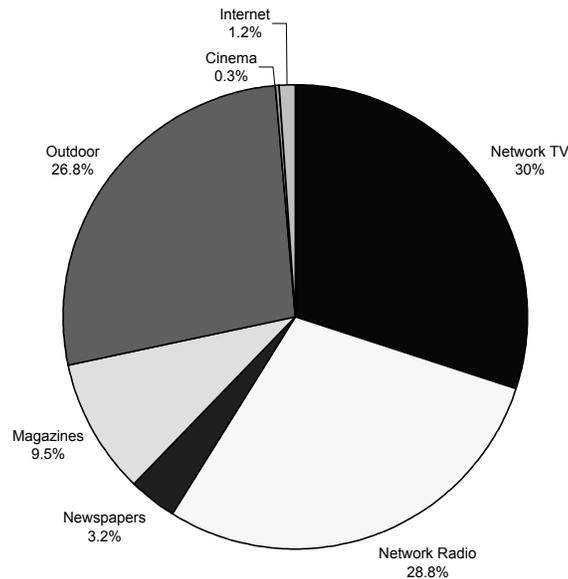
Figure 3-C. Targeted youth media placements by medium (September 1999 through June 2002)



⁴ The combination of network and cable television is referred to as network TV in presented graphs.

- **Television and radio represented the great majority of GRPs for youth and parents, though this was less the case for GRPs purchased for parents.**
 - While the Media Campaign purchased 134 targeted GRPs per week for youth on television, for example, it purchased only 63 such GRPs per week for adults 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, over a quarter 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 10 major media markets,⁵ which collectively contain roughly a third of the U.S. population.

Figure 3-D. Targeted adult media placements by medium (September 1999 through June 2002)



- For adults, the overall balance across waves between wide-reach media and other media is somewhat similar to that of youth (Table 3-C). Almost 60 percent of the GRPs came from wide-reaching network TV (30% of GRPs) and network radio (29% of GRPs); with the remaining GRPs coming from media with less reach, including newspapers (3% of GRPs), magazines (10% of GRPs), outdoor media (27% of GRPs), cinema (0.3% of GRPs), and Internet (1.2% 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-C 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 60 percent of the purchased GRPs across all five waves. The cross-wave pattern for parents is quite different. Around 50 percent of all adult GRPs were on wider reach media for Waves 1, 3, and 5. But for Waves 2 and 4, although overall GRPs were down, a larger proportion (63% and 85% of GRPs respectively) were secured on wider reach media. Thus, even though the total adult GRPs declined in Waves 2 and 4, the GRPs on the wider reach media were actually higher during Waves 2 and 4. 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.

⁵ According to Ogilvy, those markets included New York, Chicago, Los Angeles, Philadelphia, San Francisco, Dallas/Ft. Worth, Atlanta, Boston, Detroit, and Washington, DC.

Table 3-C. GRPs per week purchased for youth and adults across waves, by reach of the media

Youth	Reach	Expected weekly exposures (% of all exposures)					
		Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)	All Waves
	Wider reach media (Network, Cable, and Spot TV; Network and Spot Radio)	1.54 (59%)	1.59 (63%)	1.70 (61%)	1.30 (60%)	1.49 (57%)	1.51 (60%)
	Narrower reach media (Magazines, Movie Theaters, Internet, In-school TV, etc.)	1.05 (41%)	0.95 (37%)	1.1 (39%)	0.79 (40%)	1.12 (44%)	1.00 (40%)
	Total per week	2.59	2.54	2.80	2.09	2.61	2.51
Adults	Wider reach media (Network and Cable TV, Network Radio)	1.33 (48%)	.95 (63%)	1.06 (46%)	1.66 (85%)	1.14 (54%)	1.23 (58%)
	Narrower reach media (Newspapers, Magazines, Outdoor Media, Internet, Movie Theaters)	1.42 (52%)	0.57 (37%)	1.24 (54%)	0.28 (15%)	0.96 (46%)	0.89 (42%)
	Total per week	2.75	1.52	2.30	1.94	2.10	2.12

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-D and 3-E 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-D and 3-E also list the names of television and radio Campaign ads airing during the period from September 1999 through June 2002, according to their respective platforms. Descriptions of the ads are provided in Appendix D. (It is worth noting that ads could represent more than one platform and a small number did so.)

For youth, for example, almost 50 percent of the general market television exposures (GRPs) emphasized Normative Education/Positive Alternatives, 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, as part of the launch of the branding effort, 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 Normative Education/Positive Alternatives platform. Discussion of Resistance Skills (e.g., how to refuse drug offers) received approximately 22 percent of the GRPs, while Negative Consequences received approximately 34 percent of the GRPs each. The pattern is similar for radio platforms. Until Wave 5, the Negative Consequences ads focused on physical or mental health or schooling outcomes of drug use. Beginning in Wave 5, the Negative Consequences platform includes the Campaign’s new Drugs and Terror ads. These Drugs and Terror ads, part of a change in Campaign strategy as described in Chapter 1, were initiated during the Super Bowl of 2002, about 2 weeks into Wave 5. Their relative importance is much clearer in Table 3-F, which presents the changes in platform emphases over time.

Table 3-D. 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, 3, 4, and 5 ²	Percentage of radio GRPs ¹	Ads in this platform during NSPY Waves 1, 2, 3, 4, and 5 ²
Negative Consequences	34.2		24.9	
(Drugs and Terror ads)	4.8	AK-47, I Helped, Sophie, Timmy	0.0	
(Other Negative Consequences ads)	29.4	Two Brothers ³ , Hockey, Mother/Daughter, No Skill, Vision Warrior, Brain, Hello ³ , Water	24.9	Two Brothers, Make You Think, Stressed, Brother Jeff, If Pot Were a Person, Money, The First Time, The Rant, Hello, Train
Normative Education/ Positive Alternatives	48.7	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, U.S. Women's Soccer Team, Dance, Music, Famous, Drawing, Music-Mix Tapes, Being Myself/My Future, Tiki Barber ³ , Derrick Brooks, Allan Houston, Apolo ³ , Boxing, Chad ³ , Rosey ³	43.9	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, Rosey, Chad, Apolo, Tiki Barber
Resistance Skills	21.9	Drugs Kill Dreams ³ , How to Say No, No Thanks, Michael Johnson, It's OK to Pass, What I Need	21.7	Drugs Kill Dreams, Excuses, Orientation, What to Say- Boy, What to Say- Girl, Moment of Truth
Other	2.8	Ads not associated with the major platforms include Lauryn Hill, Layla, I'm Free, Miss America, and others	9.5	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, My World, Music, and Test. Such radio ads included Laugh, Weekend, Boy Meets Girl, Typical Story, She Did It, Good Advice, What Happened, and The First Time.

³ On both television and radio.

Table 3-E. Distribution of parent 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, 3, 4 and 5 ¹	Proportion of radio GRPs	Ads that were in this platform during NSPY Waves 1, 2, 3, 4 and 5 ¹
Parenting Skills/Personal Efficacy/Monitoring	71.9	Clinic, Phone, Office, E-mail, TV, Instructions ads (Stay Involved and Praise and Reward), Smoke, Keep Trying, My Hero ² , My Hero-African American, Thanks ² O'Connor, Anyway You Can, Kitchen, Ananda, Gene, Kid, Party, Loss	74.3	Tree Fort, Cooking Dinner, Basketball, Keep Trying, Desperate, My Hero, Thanks, I Know My Kid, Gene, Party, Kid
Your Child at Risk	8.6	Pipe ² , Roach, Weed, Drugs, Clip ² , Pot, Bag ²	9.9	Pipe, Clip, Grass, Bag, Alert-Dad, Alert-Mom
Perceptions of Harm	12.2	Symptoms, Under Your Nose, Funeral, Deal, Clinic, Needle/Spray Can ²	15.1	Happy Birthday Steven, Kathy Abel, Symptoms Sooner/Later-David, Sooner/Later-Megan
Other	<1	Ads not associated with the major platforms: Car, Derrick Brooks	<1	Ads unidentified in GRP reports.
Drugs and Terror Ads ³	7.1	AK47, I Helped, Sophie, Timmy	0.0	

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: Alert, Shadow Brochure, Shadow Monitoring, Heroes: Dancing, Heroes: Swimming, Game Show, and Natural High. Such radio ads included Sharing (Pepperoni), Shadow, and Game Show.

² On both television and radio.

³ These ads constitute unique messages, not a new platform as the messages fall under more than one platform.

For parents, the major emphases have been on Parenting Skills, including monitoring, and on boosting Personal Efficacy to intervene (74%), with secondary emphases on the idea that Your Child Is at Risk of drug use (9%) and on the Perceptions of Harm resulting from drug use (12%). In addition, the new Drugs and Terror messages, received 7 percent of the total parent GRPs since the start of Phase III of the Campaign, but, as will be noted below, about one-fifth of the GRPs in Wave 5. 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-F and 3-G present the proportion of television and radio GRPs that were dedicated to each of the major platforms across the five waves for youth and parents, respectively. For youth, the Wave 1 division across three platforms gave way to a focus on Normative Education/Positive Alternatives for Wave 2. In Wave 3, there was a division of ads between Normative Education/Positive Alternatives and Resistance Skills, and Negative Consequences messages had largely disappeared. However, in Waves 4 and 5, Negative Consequences were the focus of the majority of the ads. Normative Education/Positive Alternatives were also highlighted during these waves, but there was little attention to Resistance Skills (Table 3-F).

For parents, there was also substantial variation in platform emphasis across waves (Table 3-G). Ads stressing the Perceptions of Harm platform were seen only in Waves 1 and 3. The Your Child at Risk ad platform took a substantial portion of the GRPs only in Wave 1. The Parenting Skills/Personal Efficacy/Monitoring platform has been strongly present across all five waves, and accounted for almost all of the GRPs during Waves 2 and 4. During Wave 5, Parenting Skills/Personal

Efficacy/Monitoring ads continued to receive a majority of the GRPs, but less so due to the introduction of the Drugs and Terror ads, which received approximately a fifth of the total GRPs.

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

Platform	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)
Negative Consequences	30.9%	16.4%	0.0%	60.2%	63.2%
(Drugs and Terror)	0.0%	0.0%	0.0%	0.0%	19.0%
(Other Negative Consequences)	30.9%	16.4%	0.0%	60.2%	44.2%
Normative Education/Positive Alternatives	50.2%	70.3%	46.0%	35.6%	36.7%
Resistance Skills	41.3%	3.0%	51.5%	3.0%	0.0%
Other	2.8%	10.3%	3.3%	1.2%	0.5%

NOTE: For youth, some ads fell into more than one platform (e.g., negative consequences and resistance skills). However, the denominator is the actual total, which permits the percentages by category to total more than 100 percent. This differs from previous reports where the denominator for these analyses was the total GRPs purchased, inflated by including GRPs that fell into more than one platform multiple times (e.g., if an ad were in both negative consequences and resistance skills it would go into the total twice). The present method is more appropriate. Because adult ads never overlapped in category, the adult table is unaffected.

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

Platform	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)
Parenting Skills/Personal Efficacy/Monitoring	54.2%	98.8%	48.6%	91.2%	77.1%
Your Child at Risk	31.0%	1.0%	0.0%	0.0%	0.0%
Perceptions of Harm	13.6%	<0.1%	51.4%	7.8%	0.0%
Other	1.2%	<0.1%	0.0%	1.0%	<0.1%
Drugs and Terror Ads ¹	0.0%	0.0%	0.0%	0.0%	22.9%

¹ These ads constitute unique messages, not a new platform as the messages fall under more than one platform.

3.1.3 GRPs Purchased for Minority Audiences

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-H 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-H 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.

Table 3-H. Estimated additional Wave 5 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	82.8	27.2	17.0	95.7	154.6	28.6
Percentage of U.S. population for age group	16% ¹	13% ¹	15% ¹	14% ¹	1% ²	1% ²
Additional general population GRPs per week for Wave 5	12.7	3.4	2.5	12.9	1.5	0.29
Percentage additional weekly general population Wave 5 GRPs	5%	2%	1%	6%	<1%	<1%

¹ From NSPY. Percentages reflect percent of total U.S. 9- to 18-year-old youth or of total U.S. parents.

² From U.S. Census (www.census.gov, accessed February 9, 2001). Same percentage used for youth and adults.

The numbers presented in Table 3-H 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 during Wave 5. For African American youth, for example, roughly 83 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 13 GRPs (i.e., 83 x 0.16) to the average U.S. youth’s communication experience. This addition reflects only a 5 percentage point 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.

Data to assess the add-on effect of these extra GRPs for the specific target population are not available to the evaluators. 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 the Hispanic audience represent a large portion of the Campaign GRPs for primary Spanish speakers, including many Puerto Rican residents, rather than being an add-on. (The evaluation does not address effects of the Campaign in Puerto Rico.)

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-H, 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 media. This may reflect either an advantage with regard to general market exposures or add-on effects of targeted exposures.

3.1.4 Inhalant and Ecstasy GRPs

In previous waves, the Media Campaign made some efforts to reach parents and youth with ads that focus on the risks of inhalants and Ecstasy. In Wave 5, as described in Chapter 1, no anti-inhalant or anti-Ecstasy GRPs were purchased for youth or parents. A complete discussion of GRP purchases for youth and parent anti-inhalant and anti-Ecstasy ads can be found in the Fourth Semi-Annual Report in Chapter 3.

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 media in which the Media Campaign purchased time (including television and radio, 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 surveys. 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 media.⁶ 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.⁷

In addition, to improve the precision of the measurement of exposure, questions also were included regarding the recognition of specific ads. Television and radio advertising represented a large part of the advertising effort, particularly for youth, and was the focus for this measure. It is described in detail below.

3.2.1 General Measures of Exposure

The great majority of youth and parents recalled some exposure to anti-drug advertising, which can include paid, pro bono, and spill (Table 3-I).⁸ The four general recall questions were transformed into

⁶ See questions D10-D13 of the Teen and Child questionnaires and questions F1-F4 of the Parent questionnaire—all on the NIDA web page.

⁷ During Waves 1-3 there was a single question that asked about the combination of radio and television exposure, following the MTF model exactly. In Wave 4, in order to separate these two media, half of the sample was given either two questions that addressed each medium separately, or the single question that had been used in the previous waves. Since assignment to the two- or one-question sequence was done randomly, it was possible to calibrate the responses to maintain the previous scale. This permits over time comparisons. In Wave 5, all respondents were given separate radio and television questions, which were then combined into a single radio and television estimate for the over time comparisons, based on the Wave 4 calibration calculations.

⁸ In all tables throughout this section of Chapter 3, only youth aged 12 to 18 at any wave are included. In previous reports, youth aged 9 to 11 were also included in overall charts. Therefore the Waves 1, 2, and 3 estimates are not identical to those in previous reports.

Table 3-1. Overall recalled exposure to anti-drug ads across all media (November 1999 through June 2002)

Percentage of Parents						
Exposures per month	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)	Average All Waves
Less than 1	7.4	6.6	7.4	7.8	8.3	7.5
1 to less than 4	20.8	23.4	22.9	26.8	23.7	23.5
4 or more	71.8	70.0	69.7	65.4	68.0	69.0
Median exposures	10.0	9.5	9.0	8.0	8.3	9.0

Percentage of Youth						
Exposures per month	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)	Average All Waves
Less than 1	6.9	5.7	5.9	8.6	7.3	6.9
1 to less than 4	17.0	15.1	17.5	19.3	17.1	17.2
4 or more	76.1	79.2	76.6	72.1	75.6	75.9
Median exposures	12.0	16.0	12.5	11.3	16.1	12.5

quantitative measures of exposure and summed to provide rough estimates of total recalled exposure.⁹ Using these measures, over 90 percent of youth and parents recalled seeing or hearing some form of anti-drug advertising at least once per month, while the median recall for parents was 9 exposures and for youth was 12.5 exposures per month. Moreover, this degree of reported general high exposure was maintained across Waves 1, 2, 3, 4, and 5. Recall of exposure to particular media showed some changes comparing respondents interviewed in 2000 (Waves 1 and 2) with respondents interviewed during the first half of 2002 (Wave 5). Reports of exposure among youth were up for radio and television and for movies, down for print media, and unchanged for outdoor media. For parents, radio and television ad recall was up, but the other media showed no statistically significant changes.

- **Slightly fewer parents (about 70%) than youth reported weekly exposure from the combination of the sources (Table 3-1).** The Media Campaign purchased roughly 2.2 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 9.0 ads per month translated into around 2.1 exposures per week, which was also the targeted GRP level.
- **More than 75 percent of youth reported weekly exposure from the combination of sources (Table 3-1).** Thus, the purchase of approximately 2.5 targeted general market exposures per week among youth, according to the GRP data above, produced recall of at least one ad per week among 76 percent of the youth population but less than that among 24 percent of the population. The median number of recalled ad exposures by youth was 12.5 per month, across all sources. (The median number of ads recalled is the number of exposures such that half the audience saw

⁹ Each general recall question had the 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

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 12.5 ads per month for youth translated into around 2.9 exposures per week; GRP estimates would suggest a similar 2.5 for targeted GRPs alone.

- **Recalled exposure varied across different media.** Table 3-J displays reports of weekly exposure to each of the various media employed by the Campaign. While more than half of youth and parents recalled seeing radio or television ads weekly, only about one-quarter recalled such frequent exposure to print or outdoor advertising, and fewer than one-tenth recalled weekly exposure to movie or video messages.
 - Estimates of general recall were largely consistent with the focus of GRP purchases, with 80 percent of youth-targeted GRPs and 57 percent of parent-targeted GRPs estimated for radio and television.
 - Youth and parents reported similar relative 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 reported at least weekly exposure to billboard ads or other public postings. Interestingly, a slightly larger percentage of youth reported at least weekly exposure to billboards. Presumably this reflects youth recall of exposure to parent-directed ads, called spill.

Table 3-J. Recall of general anti-drug advertising by medium across all waves for parents and youth (November 1999 through June 2002)

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
Parents	50.5	20.5	3.4	23.4
Youth 12 to 13	55.8	25.1	8.7	27.6
Youth 14 to 15	61.6	28.0	7.5	28.4
Youth 16 to 18	57.4	24.0	6.8	25.7
Youth 12 to 18	58.3	25.6	7.6	27.1

Changes in General Exposure in Wave 5

- **The data suggests some changes in youth and parent overall recall of Campaign ads from earlier waves to Wave 5, but not closely coordinated with the changes in average weekly GRP variation across waves.** Figures 3-E and 3-F present the median exposures converted to an “exposures per week” scale and the GRPs per week for youth and parents respectively. The two measures did not track very closely. Why might recall of general exposures have not tracked GRPs more precisely? The general exposure measure may include recall of advertising for the other audience and advertising perceived as anti-drug, but not sponsored by the Campaign. Also, while respondents were asked to recall ads seen or heard in recent months, they may have included longer periods, stretching back to previous waves, in their recall estimates. The general exposure measure may not be very sensitive to the magnitude of changes in GRP purchases that occurred across the five waves.

Figure 3-E. Youth general exposure and GRPs by wave

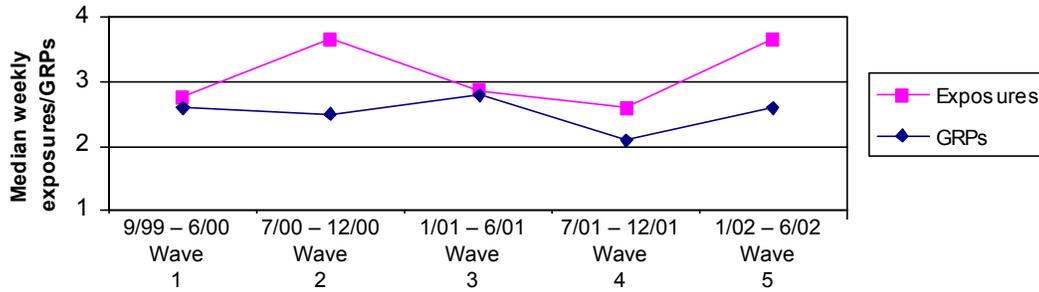
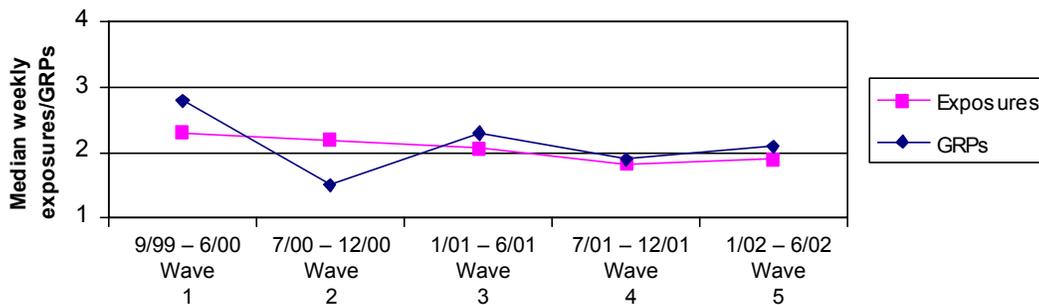


Figure 3-F. Parent general exposure and GRPs by wave



- **There were several statistically significant changes from 2000 and 2001 to Wave 5 overall, and in recall of exposure of specific media (Detail Tables 3-28 through 3-31).**
 - Overall, among youth, there was a significant favorable change for recall of general TV and radio advertising from 2000 to the first part of 2002. Among 12- to 18-year-olds, there was an 8 percentage point increase in reporting having seen or heard TV or radio ads at least weekly. A significant increase was seen in all subgroups. Much of the increase appears to have occurred between Wave 4 and Wave 5. During Wave 4, 56 percent reported weekly recall; in Wave 5, this increased to 65 percent. In previous waves, Hispanic, White, and African American youth reported relatively equivalent recall of anti-drug television and radio advertising. However from Wave 1 to Wave 5, African American youth reported a 17 percentage point increase in recall of anti-drug television and radio ads, while Hispanic youth reported an 11 percentage point increase, and White youth a 6 percentage point increase (Detail Table 3-28).
 - All youth aged 12 to 18 showed a significant decrease in recall (- 4%) of print advertising between 2000 and the first half of 2002 (Detail Table 3-29). Recall of print advertising seen at least once a week reached a high of 31 percent in Wave 2, declined to 22 percent by Wave 4, and rose slightly to 24 percent in Wave 5.
 - Among youth 12 to 18, recall of having seen anti-drug ads in movie theaters or videos at least weekly decreased slightly from 2000 to 2001, but then increased significantly in Wave 5. Overall, from 2000 to Wave 5, there was a significant increase in recall of ads in theaters or video rentals of 2 percent. Larger increases were seen among older youth from 2001 to Wave 5 (Detail Table 3-30). These increases are surprising, given that the Campaign reported no purchases of movie theater advertising since June 2000. There may have been some pro bono ads incorporated into videos, or it may be that respondents are confusing cinema/video with other sources.

- Among parents, overall recall of having seen or heard TV or radio ads at least weekly significantly increased. In 2000, 50 percent reported such recall; in 2001, 49 percent; and in Wave 5, 55 percent. From 2000 to the first half of 2002, significant changes were seen among all subgroups except White and African Americans parents, parents with some college education, and parents with children aged 14 to 18 (Detail Table 3-33).
- Among parents, there were no overall significant changes and only two significant subgroup changes in parents' reports of having seen newspaper or magazine ads, movie theater or video rental ads, or billboards at least weekly. Parents of 12- to 13-year-olds reported a 2 percent significant decrease in having seen movie theater or video rental ads at least weekly from 2001 to the first half of 2002, and White parents reported a 3 percent decrease in having seen newspaper or magazine ads at least weekly from 2000 to Wave 5 (Detail Tables 3-34 and 3-35).

The general recall measures, as noted, provide an overall sense of parent and youth exposure across each of the major Media Campaign media and they correspond, on average, to the aforementioned GRP data. They are useful for comparisons among media 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 are likely 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 Television and Radio 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 prior to the interview and asked whether they had ever seen or heard the ad, how often they had seen or heard 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) provided strong evidence for the validity of the measures. Actually, broadcast ads were much more often recalled than ringers. Also, the specific television ad recall measures tracked the GRP data closely, ad by ad, for youth and, to a lesser extent, for parents.

Television Recall

Across the first five waves, approximately 57 percent of the total youth-targeted GRPs were obtained through television (including network, cable, spot, in-school, and in arcades). Each week, the Media Campaign purchased about 134 general market youth-targeted television GRPs, on average, indicating that the average youth respondent should have been exposed to 1.3 television ads per week.

For parents, general market television efforts were less substantial, enough to produce an average of 63 GRPs per week, or about 0.6 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?

The following analyses rely on strict segmentation of ads by the parent–youth dimension and by language. In other words, youth-targeted ads are not considered in analyses for parents and vice versa. This means that youth–parent “spill” 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 shown a sample of the ads that had been broadcast during the previous two months and asked about how many times he or she had seen each ad in “recent months.” Imputation was used to fill in reasonable projections for any remaining ads that were not sampled and shown to each respondent. The results were then recoded and summed across ads.¹⁰

About 87 percent of youth and about 73 percent of parents recalled seeing at least one of the ads that had been playing in the previous 60 days. The median number of recalled viewings of youth-targeted TV ads by youth was 7.5 times over recent months or about 0.9 times per week. The mean was considerably higher at 9.8 times or about 1.1 exposures 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 4 times or about 0.5 per week. As with youth, the mean was considerably higher at about 7.3 times or about 0.8 of 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.

Changes from 2000 to 2002 and Diversity in Patterns of Change

There were different patterns of change over time among youth and parents. Among youth, both overall and for all age subgroups, recall increased through Wave 4 and then decreased significantly in Wave 5. This is not entirely consistent with the inter-wave results reported earlier for television and radio general exposure, where there was an increase over both Waves 4 and 5. Despite this, from 2000 to Wave 5, there was still a significant increase of 9 percent in the number of youth recalling having seen TV ads at least once a week, parallel to the increases reported for the general exposure version of this measure. Parent recall was declining across the first three waves, but then showed a sharp increase in Wave 4, and another sharp increase in Wave 5 (See Table 3-K).

¹⁰

Recoding of NSPY ad recall data

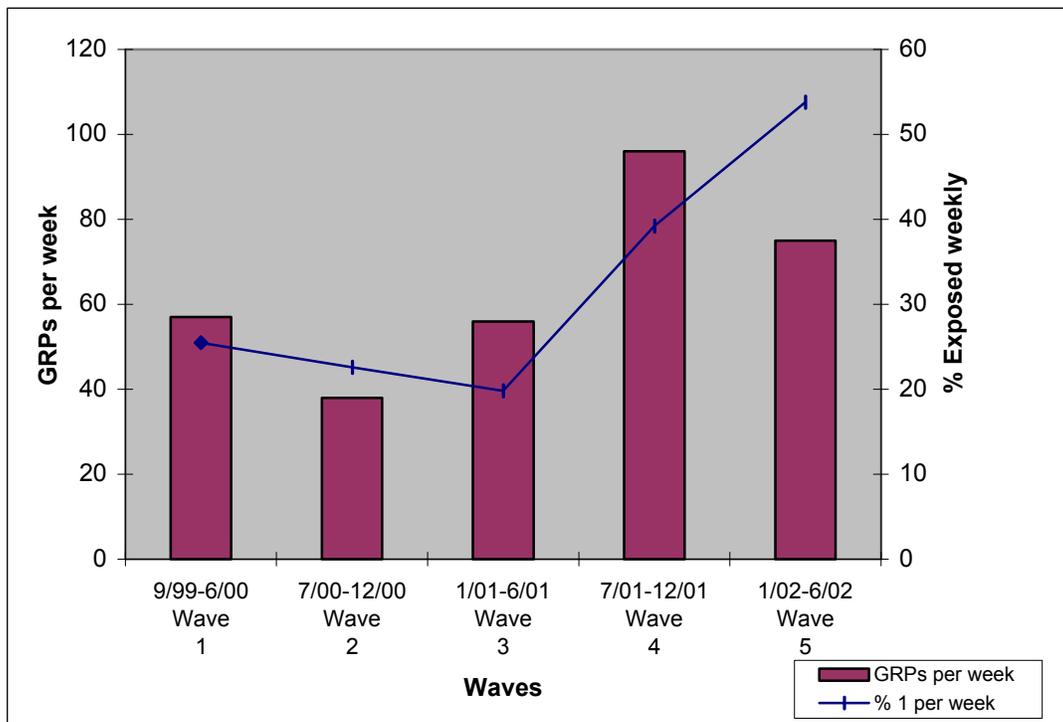
Question: Here is another TV ad. Have you ever seen or heard this ad?	[If yes,] In recent months, how many times have you seen or heard this ad?	Recoded Response
No		0.0
Don't know		0.5
Yes	Not at all	0.0
Yes	Once	1.0
Yes	2 to 4 times	3.0
Yes	5 to 10 times	7.5
Yes	More than 10 times	12.5

Table 3-K. Percent recalling having seen specific TV ads at least once per week across waves among parents and youth (November 1999 through June 2002)

Group	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 (Jan-June 2002)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Parents	25.5	22.6	19.8	39.2	51.6	27.5* (24.4 to 30.7)	21.9* (18.5 to 25.4)
Youth 12 to 13	39.5	42.9	50.6	59.7	49.9	8.6* (3.9 to 13.2)	-5.2* (-9.7 to -0.7)
Youth 14 to 15	39.4	37.9	48.0	59.7	47.9	9.3* (3.5 to 15.1)	-5.7 (-11.8 to 0.5)
Youth 16 to 18	29.3	35.6	46.9	47.8	42.9	10.5* (4.7 to 16.2)	-4.5 (-10.1 to 1.1)
Youth 12 to 18	35.4	38.5	48.3	53.0	46.5	9.5* (5.4 to 13.5)	-5.2* (-9.2 to -1.1)

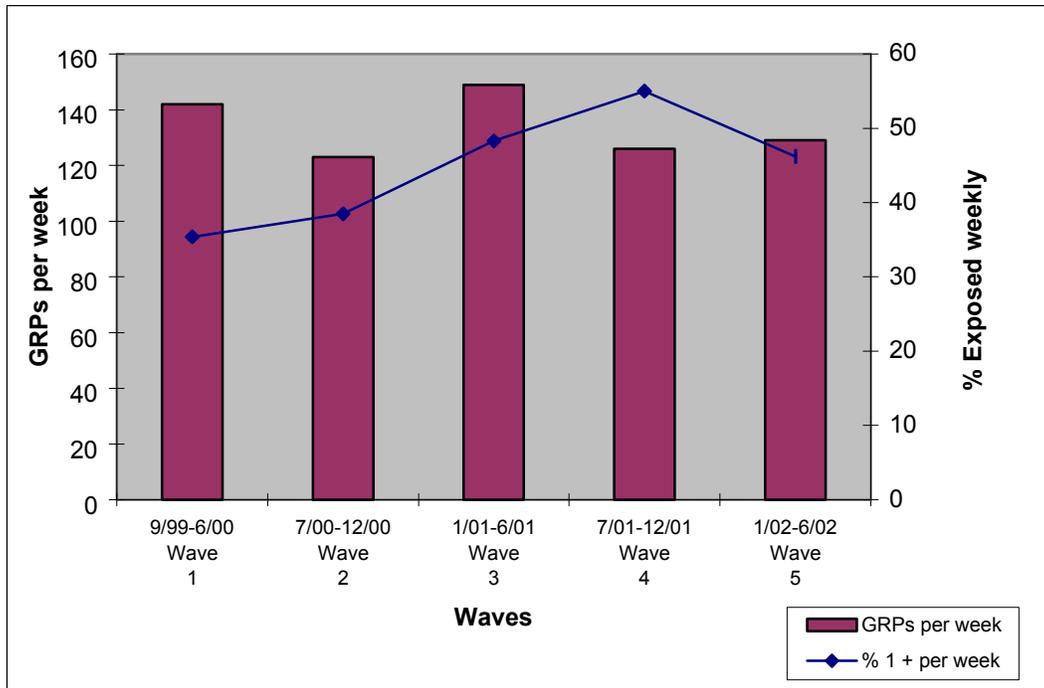
* Between year change significant at $p < 0.05$.

For parents, the pattern of variation in recall levels was relatively consistent with the variation over time in ad time purchased through Wave 4, but then in Wave 5, parent recall drastically increased, although GRP purchases were down from Wave 4. The reason behind this increase is unclear. There may have been carryover recall from the heavy dose of television GRPs throughout Wave 4. There may also have been a reinforcement of recall because radio and television broadcast very similar ads. The ads may have been more memorable. There may also have been more efficient ad purchases during Wave 5, so that the particular slots and media produced higher effective recall than suggested by the GRP purchase per se (Figure 3-G).

Figure 3-G. Parent TV GRPs and specific ad recall

For youth, these changes were somewhat less consistent than for parents. Figure 3-H shows that the up-and-down pattern in youth GRP purchases through Wave 4 does not match the straight upward pattern of youth TV ad recall through this period.

Figure 3-H. Youth TV GRPs and specific ad recall



The inconsistency in recall and GRP purchases for youth could be partially explained by the fact that for later time periods, some of the youth ads that were used in later waves also aired in earlier waves. So, it is possible that although youth were asked how frequently they had seen the ad in recent months, their answers may have reflected longer-term recall. A final explanation may relate to the presence of Drugs and Terror ads in Wave 5. These ads were counted as youth GRPs, but the Campaign has reported that buys for them may have focused on programs that reach older youth rather than the full range of 12- to 18-year-olds, thus inflating GRPs relative to the actual youth exposure likely.

Additionally, a possible reason for the inconsistency in recall and GRP purchases could be the fact that respondents were questioned about their recall of ads on the air in recent months (60 days), so interviews in Waves 2 through 5 actually covered the period from the final 2 months of the previous wave and the first 5 months of the current Wave. Finally, as will be discussed below, the Campaign TV ads were also sometimes used in soundtrack versions on radio. This was particularly true for the parent ads. Thus for instance, the high level of recall of Wave 4 TV ads may reflect confusion about the media on which an ad was heard or seen.

Overall recall of anti-inhalant ads was low, reflecting the relatively small amount of media time purchased for them. During Waves 1 and 3, the Campaign broadcast anti-inhalant ads for parents. Parents were asked about recall if an anti-inhalant ad had been on the air in recent months (60 days) prior to their interview. During Wave 1, about 7 percent of parents recalled seeing such ads and about 33 percent of parents recalled seeing one of these ads during Wave 3. Only 1 percent and 3.5 percent of all parents in those waves claimed to have seen the inhalant ads once a week or more (Detail Table

3-11). The GRPs for inhalant-focused ads in Wave 3 were purchased at more than three times the rate as those purchased in Wave 1, so this discrepancy is not surprising. No general market anti-inhalant ads targeted at parents were run during Waves 2, 4, or 5.

Radio Recall

The Media Campaign complemented its purchases of television time with purchases of radio time. For youth, that included an average of 68 weekly targeted GRPs and approximately 60 weekly targeted GRPs for parents. As previously noted, a sample of radio ads was played for each parent and youth between 12 and 18 years of age. Campaign radio ads were not played for children aged 9 to 11. Respondents were asked whether they had ever heard each radio ad, and how often, following the question format of the television ads.

Wave 1 radio estimates for youth are not used in this report because many of the radio ads broadcast during that period were essentially soundtracks from the television ads, and any Wave 1 radio ad that was an audio duplicate of a television ad was not played for Wave 1 respondents. There was a concern that respondents would not be able to recall whether they had heard or seen an ad on radio or television, if they had been exposed to it through both media. That confusion would potentially make radio exposure estimates inaccurate. Their responses to the questions about television ads, which were asked about first, likely would have reflected their total exposure through both TV and radio, rather than uniquely indicating radio exposure. Wave 1 radio estimates for parents are used in this report because the parent radio ads during that period were distinctly different from the parent television ads.

Beginning in Wave 2, however, all radio ads were played for both youth and parent respondents, regardless of whether they were audio duplicates of TV ads. Such media source issues did not compromise Wave 2 or Wave 3 data however, as no network radio ads for youth were audio duplicates of a television ad. But in Wave 4, “Two Brothers” appeared both as a network TV youth ad and a network radio youth ad, accounting for 46 percent of the television GRPs and for 36 percent of the radio GRPs. In Wave 5, all youth radio ads except one, “Train”, were also TV ads. “Train” received only 2 percent of radio GRPs, meaning that the remaining 98 percent of radio GRPs came from ads that were on both radio and TV. The parent data has a similar problem. In Wave 3, two adult ads, “Needle/Spray Can” and “My Hero” received a considerable number of parent GRPs on both network TV (38%) and network radio (63%). In Wave 4, “My Hero” and “Thanks” both received a considerable number of parent GRPs on both network TV (51%) and network radio (79%). In Wave 5, two ads, “Party” and “Kid” received both network radio (18%) and network TV (28%) GRPs. Parent radio recall estimates for Waves 3, 4, and 5, and youth radio recall estimates for Wave 4, and especially Wave 5, may be biased upward compared to previous wave estimates, given the heavy overlap in ads on both media.

Overall, Campaign radio ads were recognized by 35 percent of 12- to-18- year olds during Waves 2 through 5. This left 65 percent who reported no recognition of the Campaign radio ads presented. The mean number of targeted radio ad encounters among this age group in recent months was 1.52, whereas the median was 0.0 over Waves 2 through 5 (Table 3-L). This pattern suggests that the majority of youth heard no ads or only one radio ad from the Campaign during these waves. Instead, a minority of youth heard some ads repeatedly.

- **Youth recall of radio ads varies across waves.** As shown in Table 3-L, in Wave 2 less than 35 percent of youth claimed to have heard any Campaign radio ads in recent months. However, in Wave 3 this number increased to 57 percent, a 22-percentage point increase. But by Wave 4, this

trend had reversed. Approximately 31 percent of Wave 4 youth claimed to have heard any Campaign ads in recent months. And in Wave 5, recall decreased even more with only 14 percent of youth claiming to have heard any Campaign ads in recent months. This pattern also can be seen in all subgroups (Detail Tables 3-16 and 3-17). These patterns somewhat coincide with changes in per week radio GRP purchases: in Wave 2, 69 GRPs; in Wave 3, 78 GRPs; in Wave 4, 54 GRPs; and in Wave 5, 66 GRPs.

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

Number of ads heard in recent months	Wave 2 ¹ 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	Average for Waves 2-5 (%)
0 times	65.2	42.8	69.5	86.2	64.8
0.01 to 0.99	10.9	17.2	10.5	5.3	11.3
1-3.99	20.3	27.8	16.9	7.1	19.0
4 -11.99	3.4	10.9	2.7	1.4	4.5
12 or more	0.2	1.3	0.4	0.0	0.4
Mean	1.35	3.05	1.16	0.51	1.52
Median	0	1	0	0	0

¹ No Wave 1 radio estimates for youth were generated because many of the radio ads were soundtracks from the TV ads and were not played for respondents.

Overall, Campaign radio ads were recognized by 42 percent of parents during Waves 1 through 5. This left 58 percent who reported no recognition of the Campaign radio ads presented. The mean number of targeted radio ad encounters among parents in recent months was 2.87 (Table 3-M).

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

Number of ads heard in recent months	Wave 1 2000 (%)	Wave 2 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	Average for Waves 1-5 (%)
0 times	51.5	53.8	41.77	48.9	92.0	58.2
0.01 to 0.99	9.2	5.7	11.8	4.4	0.7	6.2
1 to 3.99	29.3	29.6	29.5	31.8	4.4	24.6
4 to 11.99	8.2	10.5	15.2	12.7	2.2	9.6
12 or more times	1.7	0.4	1.9	2.1	0.8	1.4
Mean	3.05	2.95	3.93	3.77	0.79	2.87
95% Confidence Interval for Means	(2.70 to 3.41)	(2.66 to 3.24)	(3.47 to 4.40)	(3.41 to 4.13)	(0.49 to 1.08)	(2.68 to 3.05)

Parent recall of Campaign radio ads decreased significantly in Wave 5. Table 3-M shows that while approximately 47 percent of parents recalled hearing radio ads in 2000, this increased to 55 percent in 2001, but decreased to 8 percent in Wave 5. A similar pattern is suggested by Table 3-N, which shows the percent of parents who recalled having heard a radio ad at least once a week.

Table 3-N. Change in parent recall of having heard radio ads at least once per week

Having heard radio ads at least weekly	Wave 1 2000 (%)	Wave 2 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 2002 (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Overall	10.0	11.0	17.1	14.9	3.0	-7.6* (-9.6 to -5.5)	-13.0* (-15.1 to -10.9)

* Between year change significant at p<0.05.

Only Wave 3 parents reported much exposure to inhalant radio ads. During Wave 1, only 9 percent of parents recalled radio inhalant ads. During this period, enough inhalant radio GRPs were purchased for the average parent to be exposed to approximately a tenth of an inhalant ad a week. In Wave 3, about 40 percent of parents recalled hearing inhalant radio ads. During this period, enough radio GRPs were purchased for the average parent to be exposed to approximately a fifth of an inhalant ad a week. No general market inhalant radio ads for parents were aired during Waves 2, 4, or 5 (Detail Table 3-26).

3.2.3 Recall of the “Brand”

One of the major innovations of Phase III of the Campaign was 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 non-advertising 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.

It is clear that the Campaign’s brand has diffused into the populations of both parents and youth with Wave 5 showing evidence for that even more strongly than previous waves. 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, Waves 3, 4, and 5 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.

- Recall of the brand is increasing. In Wave 3, about 60 percent of the 12- to 18-year-old respondents who were asked this question reported recall of the Campaign brand, in Wave 4, recall increased to 74 percent, and in Wave 5, recall of the brand increased to 83 percent.

Parents, in Waves 3 and 4, 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”?

In Wave 5, parents were asked:

In recent months, have you seen or heard either of the following phrases:

Parents were then shown the phrase “Parents: The Anti-Drug” and one of two phrases that were not the parent campaign brand.

- Approximately 46 percent of the parents responded positively to the Campaign brand in Wave 3. In Wave 4, Campaign brand recall among parents increased to 63 percent. In Wave 5, approximately 62 percent of parents responded positively to the newly worded campaign brand question.

These increases in reported brand recall are possibly the result of the brand having been on the air for a longer period of time, thus more youth and parents were exposed to it. 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 with the NSPY 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, 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.)

For youth in Waves 3 to 5, only 50 percent of the lowest exposure group said they recognized the brand, while 81 percent of the highest exposure group—those who had seen television ads more than 12 times per month—did so. For parents, in Waves 3 and 4, where recall of both television and radio ads are included in the exposure measure, 34 percent of the lowest exposure group and 74 percent of the highest exposure group recalled the brand phrase. In Wave 5, with the newly worded question, 40 percent of the lowest exposure group and 71 percent of the highest exposure group recalled the brand phrase. These are large and statistically significant differences. The more people were exposed to the Campaign, the more they recalled the brand, just as would be expected.

The second approach was to ask about recall of phrases that sounded like they might have been used but had not been. The two false brands that were played to youth respondents in Waves 3 and 4 were “I’m drug free and I’m doing just fine” and “Drugs—I don’t need them.” In Wave 3 the recall rates for the false brands was about equal to the recall rates for the true brands (all at around 60%). This was a surprising result, but there was evidence of brand learning on the basis of the association of ad recall and true brand recognition as described above. In Wave 4, the evidence for brand learning was much stronger. During Wave 4, for youth the average recall of the true brand was 74 percent, while the recall of the false brands had fallen to about 51 percent. Although the false recall remained surprisingly high, it was much lower than the true recall rates. Prompted by the idea that the high

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

recall rates of the false brands were in part a result of the false brands sounding like reasonable brands and were easily thought of as legitimate, a “new” false brand was introduced in Wave 5 “Drugs: one word–dead.” It was designed to sound less conventional. Evidence was found in support of this idea. While 55 percent of youth respondents in Wave 5 reported having seen or heard the false brand phrase “I’m drug free and I’m doing just fine,” only 35 percent reported having seen or heard the new false brand phrase “Drugs, one word–dead.” More significantly, recall of the true phrase was much higher, 83 percent. For parents, in Wave 5 where comparative phrases were used for the first time, there was a similar advantage to the true brand over the two false brands.

As additional support for the claim of true brand learning, there is no evidence of an association for youth between the measures of television ad recall and recall of the false brand. About the same proportions of youth claim to recall the false brands, regardless of their levels of television ad recall. For parents, comparative evidence was only available for the Wave 5 respondents. In contrast to the youth evidence, there was some association between specific exposure and false brand recall, however at a lower level than for the true brand recall. Also the true brand was much more recognized than the false brand, among parents.

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. We assume that the 35-50 percent levels for the false brands are at a higher level of false recall than would have been shown had we been able to use the true brands before their launch, because they have a less conventional appearance. Also, 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 media—not only through the television 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 recall of 73 percent, and average parent recall of 55 percent in Waves 3 and 4 and 62 percent in Wave 5, 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 that they reported having seen in recent months. The goal was to assess how individuals interpret and evaluate ads from the Media Campaign when they see or hear 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. There is controversy as to whether differences in ad evaluations are closely related to effects of those ads. Researchers will be able to examine whether individuals who were less convinced by or more skeptical of the ads were less likely to avoid initiation or continuation of drug use.

The three positively-phrased evaluative questions (whether the 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 summed again for each respondent across ads. Additionally, a single skeptical item (whether the ad exaggerated the problem) was analyzed separately. Both positive and negative responses were placed on a scale from –2 to +2, with 0 representing a neutral response and higher

scores indicating a more positive response to the ad (i.e., in the case of the exaggeration item, less belief that the ad exaggerated). Youth assessments were less favorable than were parent assessments, overall. The mean assessment for youth had not changed between 2000 and 2001. However, from 2001 to the first half of 2002, youth evaluations of the ads generally became more positive. In contrast, parents' evaluations of the ads had become more positive from 2000 to 2001, but they declined from 2001 to the first half of 2002.

- Overall, youth tend to favorably rate the television Campaign ads that they were shown across all waves (Table 3-O and Detail Tables 3-12 and 3-13).

Table 3-O. Television ad evaluation scores among parents and youth (November 1999 through June 2002)

Group	Waves 1 & 2 2000 (%)	Waves 3 & 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Mean Evaluation Score					
Parents	1.07	1.27	1.20	0.13* (0.07 to 0.19)	-0.07* (-0.12 to -0.02)
Youth 12 to 13	1.00	1.00	0.97	-0.03 (-0.10 to 0.05)	-0.02 (-0.10 to 0.05)
Youth 14 to 15	0.79	0.73	0.83	0.04 (-0.04 to 0.12)	0.10* (0.03 to 0.18)
Youth 16 to 18	0.54	0.59	0.65	0.10* (0.01 to 0.19)	0.06 (-0.02 to 0.13)
Youth 12 to 18	0.76	0.75	0.80	0.04 (-0.01 to 0.09)	0.05* (0.00 to 0.09)
Disagree that the ad exaggerated the problem					
Parents	0.99	1.22	1.14	0.15* (0.06 to 0.24)	-0.08* (-0.15 to -0.01)
Youth 12 to 13	0.84	0.76	0.90	0.06 (-0.04 to 0.17)	0.14* (0.04 to 0.23)
Youth 14 to 15	0.74	0.73	0.80	0.06 (-0.04 to 0.16)	0.07 (-0.02 to 0.16)
Youth 16 to 18	0.65	0.69	0.71	0.06 (-0.04 to 0.17)	0.02 (-0.08 to 0.13)
Youth 12 to 18	0.73	0.72	0.79	0.06 (0.00 to 0.12)	0.07* (0.01 to 0.13)

Note: Evaluation scale runs from -2 to +2 being most positive. Exaggeration scale, similarly, is coded so disagreement that an ad exaggerated gets a higher score on the -2 to +2 scale, so a higher score is positive toward the ad.

*Between year change significant at p<0.05.

- On a five-point scale ranging from -2 to +2, mean responses from the three age groups of youth interviewed (12- to 13-year-olds, 14- to 15-year-olds, and 16- to 18-year-olds) ranged from 0.54 to 1.0. The responses to the “exaggerated the problem” evaluative question told a similar story, with a tendency for youth respondents to somewhat disagree with the notion that an ad “exaggerated the problem.” The responses ranged from 0.65 to 0.84 (Detail Tables 3-12 and 3-13).
- There are several subgroup differences in evaluations of the ads worth noting. Older youth, White youth, and males tended to be more skeptical in their ad evaluations. High sensation-seekers, high-risk youth, and occasional marijuana users were also more skeptical (Detail Table 3-12).

- Similar subgroup differences were seen regarding the belief that the TV ads “exaggerated the problem.” Older youth, males, high sensation-seekers, high-risk youth, and occasional marijuana users were more likely to agree that the ads “exaggerated the problem” (Detail Table 3-13).
- **Among youth aged 12 to 18, favorability increased somewhat from 2001 to the first half of 2002.** Overall ad evaluations increased from 0.75 to 0.80 from 2001 to Wave 5. Disagreement with the “ad exaggerates” statement also increased from 0.72 to 0.79 (Detail Table 3-12).
- **While youths’ evaluations of the ads became slightly more positive in Wave 5, parents’ evaluations became more negative.**
 - In previous waves, parents’ evaluations were becoming increasingly positive, but this trend reversed between 2001 and Wave 5. Overall, there was a 0.07 point decrease in parents’ evaluations of the ads (Table 3-O and Detail Table 3-14).
 - However, the mean evaluation score over the 3 years from parents was 1.18, suggesting that parents, even more than youth, tended to rate the ads more favorably than negatively.
 - Overall, parents did tend to disagree that an ad exaggerated the problem; a similar pattern was seen on this measure as for mean ad evaluation. From 2000 to 2001, parents were less likely to agree that TV ads exaggerated the drug problem, but from 2001 to the first half of 2002 parents became more likely to agree that TV ads exaggerated the drug problem. There was an overall significant decrease of 0.08 (Detail Table 3-15).
 - Most demographic subgroups of parents offered largely similar average assessments of the Campaign TV ads, although some differences did appear. Mothers rated the ads more favorably than did fathers. African American and Hispanic parents were somewhat more favorable in their response to the TV ads than were White parents (Detail Table 3-14).

During Wave 5, a new series of ads was introduced that explicitly linked youth use of drugs to (unknowing) support of terrorism. They were targeted both to parents and to youth. As previously noted, the time purchased for them was about 20 percent of all the GRPs purchased on television for each audience group. In this section, these ads are considered as a set, and compared to the other ads broadcast on television during Wave 5.¹² The question is whether they were evaluated differently from other ads.

For youth, there were four ads that were designated as Drugs and Terror ads: Timmy, Sophie, I Helped, and AK-47. Four other ads received a substantial amount of broadcast time in Wave 5: Rosey, Apolo, Hello, Water, Chad, and Tiki Barber. (All of these ads are described in Appendix D.)

In Table 3-P, each line presents the evidence for one ad. The number of people who said they had previously seen the ad and provided an evaluation is presented in the second column,¹³ the mean

¹²The estimated sampling errors are based on the raw data, not corrected for the complex sample or for nonresponse errors. Since these specific ads were not available for viewing in the instrument until March 1, the respondents who answered questions about these ads are not representative of the population. The raw numbers can give an indication of trend of the data but the unweighted results may not be representative of the population.

¹³There were 3,074 youth 12 to 18 years old who were interviewed in Wave 5. The numbers who provided evaluation of a specific ad are well below that because (a) only ads that were played in the 2 months prior to the interview were eligible for inclusion, (b) each youth was shown a maximum of four ads, (c) evaluations were requested for only two of the four ads shown to each youth, and (d) only youth who indicated that they had ever seen the ad were asked the evaluation questions. If a non-Drugs and Terror ad was used in a previous wave and evaluated, the responses were used to estimate the overall evaluation.

evaluation score on the three item evaluation scale is in the third column and the score on the exaggeration item in the final column. (Both measures can vary from -2 to +2, with +2 being maximum positive evaluation.) Overall the Drugs and Terror ads are not distinguishable from the others ads on the mean evaluation scale. However, there is some tendency for them to be seen more often as exaggerating the problem. All four of the Drugs and Terror ads have exaggeration scores below all but one of the non-drugs and terror ads. One Drugs and Terror ad (Sophie) seems to be particularly poorly evaluated. However, because so few respondents provided evaluation of that ad, its scores must be considered unreliable.

Table 3-P. Youth recall and evaluations of Drugs and Terror versus other ads

Ad	Number of respondents	Mean Ad evaluation score (95% CI)	Number of respondents	Disagreement that ads exaggerate the problem (95% CI)
Drugs and Terror Ads				
Timmy	78	0.81 (0.60 to 1.02)	77	0.66 (0.39 to 0.94)
Sophie	38	0.68 (0.32 to 1.03)	37	0.19 (-0.20 to 0.58)
I Helped	696	0.85 (0.77 to 0.98)	704	0.60 (0.49 to 0.72)
AK-47	799	0.91 (0.81 to 1.00)	801	0.73 (0.61 to 0.86)
Overall Mean		0.87		0.66
Other ads				
Rosey	181	0.63 (0.49 to 0.78)	175	0.67 (0.51 to 0.84)
Apolo	106	0.92 (0.76 to 1.09)	102	0.83 (0.63 to 1.03)
Hello	237	0.87 (0.77 to 0.98)	235	0.85 (0.71 to 0.99)
Water	254	0.95 (0.86 to 1.05)	251	0.81 (0.68 to 0.94)
Chad	124	0.78 (0.63 to 0.94)	121	0.85 (0.74 to 0.96)
Tiki Barber	1,235	0.81 (0.76 to 0.86)	1,220	0.89 (0.84 to 0.95)
Overall Mean		0.82		0.85

Ads were assigned according to the month when youth were interviewed, and the month of interview was not randomly assigned. It is also known that youth evaluations of ads are in part a function of their own characteristics. In particular, youth with drug-using experience tend to be less positive about the ads than inexperienced youth. Is it possible that the poor ratings on the exaggeration scale for the Drugs and Terror ads reflected some bad luck with regard to who was being interviewed when those ads were in the eligible pool? In fact, this is not the explanation. First, the mean evaluation score was not lower for these ads, just the mean exaggeration estimate, while the effects of prior use on both were similar overall. Also, when the analysis was redone, but comparing among youth who were prior or not prior users of marijuana, this difference in comparing drugs and terror versus other ads remained.

The parallel analysis for parents is presented in Table 3-Q.

As with youth, the four designated Drugs and Terror ads for parents were Timmy, Sophie, I Helped, and AK-47. The other ads that received a substantial number of GRPs during Wave 5, and thus had a reasonable number of parents eligible to provide evaluations, were Ananda, My Hero, Gene, Loss, Party, and Kid.

Table 3-Q. Parent recall and evaluations of Drugs and Terror ads versus other ads

Ad	Number of eligible respondents	Mean Ad evaluation score (95% CI)	Number of respondents	Disagreement that ads exaggerate the problem (95% CI)
Drugs and Terror Ads				
Timmy	56	1.31 (1.12 to 1.50)	56	1.02 (0.71 to 1.32)
Sophie	41	1.07 (0.85 to 1.30)	41	0.95 (0.62 to 1.29)
I Helped	398	1.15 (1.07 to 1.22)	398	1.03 (0.92 to 1.14)
AK-47	267	1.12 (1.03 to 1.21)	266	0.99 (0.86 to 1.12)
Overall Mean		1.15		1.01
Other ads				
Ananda	911	1.22 (1.17 to 1.26)	909	1.22 (1.16 to 1.28)
My Hero	508	1.36 (1.32 to 1.41)	509	1.28 (1.22 to 1.35)
Gene	970	1.27 (1.23 to 1.31)	970	1.22 (1.16 to 1.28)
Loss	966	1.24 (1.13 to 1.35)	966	1.17 (1.01 to 1.32)
Party	177	1.21 (1.01 to 1.42)	177	1.21 (0.94 to 1.47)
Kid	39	1.07 (0.76 to 1.38)	38	0.89 (0.51 to 1.28)
Overall Mean		1.26		1.21

The parallel analysis of ad evaluations for parents, overall, shows a similar pattern to that for youth but now present for both the mean evaluation scores and the exaggerations scores. Among parents, the Drugs and Terror ads were less favorably evaluated and parents reported that these ads had a greater tendency to exaggerate the drug problem. This is particularly clear if the comparison focuses on ads seen by a substantial number of respondents (more than 100). The two frequently seen Drugs and Terror ads (AK 47 and I Helped) were evaluated at a lower level, and seen as more exaggerated than any of the non-Drugs and Terror ads evaluated by more than 100 parents. The confidence intervals for each of the ads in each set sometimes do not overlap. When they do not, it always favors the non-Drugs and Terror ads. The Drugs and Terror ads are still evaluated positively, but a little less so than the other ads.

3.2.5 Internet Use and Encounters with Drug Information On Line

Youth Internet Use

Results from the first five waves suggest that the vast majority of youth now have at least minimal contact with the Internet, as can be seen in Table 3-R (and Detail Table 3-37). Approximately 89 percent of youth report using the Internet in the past 6 months. Internet use among 12- to 18-year-olds significantly increased from 2000 to 2001, about 4 percentage points, and slightly more from 2001 to Wave 5, 0.5 percentage points. However visits to pro-drug and anti-drug sites did not significantly change across waves.

Race and sensation seeking were associated with Internet use. White youth reported higher rates of Internet use than either African American or Hispanic youth. Compared with their low sensation-seeking peers, a slightly higher percentage of high sensation-seeking youth reported having had at least minimal contact with the Internet in the past 6 months (Detail Table 3-37).

Table 3-R. Youth Internet use and encounters with drug information on line in past 6 months (November 1999 through June 2002)

	Waves 1 & 2 2000 (%)	Waves 3 & 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Percent using the Internet at least a few times	84.9	88.4	88.9	4.0* (1.7 to 6.2)	0.5 (-1.5 to 2.6)
Percent visiting anti-drug Internet site among all youth	9.5	10.0	9.3	-0.3 (-2.0 to 1.4)	-0.8 (-2.2 to 0.7)
Percent visiting pro-drug Internet site among all youth	5.0	5.5	4.9	-0.1 (-1.4 to 1.2)	-0.6 (-1.9 to 0.7)

* Between year change significant at $p < 0.05$.

Despite wide diffusion of access to the Internet, most youth currently do not encounter information related to drugs on-line. Approximately 10 percent of youth across the five waves reported visiting a web site with anti-drug information in the previous 6 months. A smaller percentage of youth, 5.2 percent, reported visiting a pro-drug Internet site (Detail Tables 3-41 and 3-42).

- High sensation-seeking youth and high-risk youth are more likely to visit pro-drug Internet sites. Approximately 7 percent of high sensation-seeking youth reportedly visited pro-drug sites in the past 6 months, whereas only roughly 2 percent of their low sensation-seeking counterparts did so. Likewise, high sensation-seeking and high-risk youth reported visiting anti-drug sites more than other youth; the difference was significant in 2001 and Wave 5 (Detail Tables 3-38 and 3-39).
- **The rate of Internet use for accessing drug-related information has not changed over time.** There were no statistically significant overall or subgroup changes in the percentage of youth visiting anti-drug or pro-drug Internet sites from Wave 1 to Wave 5 (Detail Tables 3-38 and 3-39).

Parent Internet Use

Parents remain less engaged with the Internet than are youth: only 74 percent of parents report any use in the previous 6 months compared with approximately 89 percent of youth. However, from 2000 and 2001 and again from 2001 to the first half of 2002, there were significant increases in the number of parents reporting Internet use. The number of parents reporting visiting anti-drug and parenting skill Internet sites has also increased since 2000.

- Among parents, wide disparities in Internet use by education and race-ethnicity persist. Across all waves, over 90 percent of parents who are college graduates reported use of the Internet in the past 6 months, whereas only 34 percent of those parents with less than a high school diploma claimed such recent use. In addition, African American and Hispanic parents reported a substantially lower likelihood of some contact with the Internet than did White parents (Detail Table 3-40).
- **Parental Internet use increased from 2000 and 2001 to Wave 5 (Table 3-S).** There was an overall statistically significant increase in Internet use among parents of 9.3 percentage points, from 2000 to Wave 5 (Detail Table 3-40).

**Table 3-S. Parent Internet use and encounters with drug information on line
(November 1999 through June 2002)**

	Waves 1 & 2 2000 (%)	Waves 3 & 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Percent using the Internet at least a few times	64.3	69.8	73.6	9.3* (4.9 to 13.7)	3.8* (0.4 to 7.2)
Percent visiting anti-drug Internet sites	6.7	8.6	8.9	2.2* (0.5 to 3.8)	0.2 (-1.5 to 2.0)
Percent visiting parenting skill Internet sites	7.7	9.4	10.4	2.7* (1.0 to 4.4)	1.1 (-0.7 to 2.8)

* Between year change significant at $p < 0.05$.

Patterns among parents are similar to patterns among youth in terms of accessing information about drugs on-line. About 9 percent of Wave 5 parents reported visiting an Internet site with anti-drug information in the past 6 months and 10 percent reported visiting an Internet site that included information about parenting skills during the previous 6 months (Detail Tables 3-41 and 3-42).

- Parental 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 education visited anti-drug Internet sites than did 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.
- **Visits to anti-drug sites and parenting skill sites increased significantly among parents from 2000 to the first half of 2002.** There was a 2.2 percentage point increase in reports of visiting anti-drug sites and a 2.7 percentage point increase in reports of visiting parenting skill sites from 2000 to the first half of 2002 (Detail Tables 3-41 and 3-42) (Table 3-Q). These increases from 2000 to Wave 5 are essentially consistent with the overall increase in Internet use.

The material in this chapter has thus far focused on exposure to Campaign-generated messages, through mass media or through the Internet. The next section shifts the focus from exposure to messages 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 organizations at the national level and on state prevention coordinators is available (Berkowitz et al., 2002). Evidence that youth and parents are exposed to anti-drug messages from these organizations, 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 organizations. Still, this analysis provides some information about whether there is broad community change and thus whether indirect effects might have occurred.

3.3 Anti-Drug Related Education

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 Youth In-school and Out-of-School Anti-Drug Education

Most youth reported receiving anti-drug education in school during the past year and in previous years. Across the five waves, approximately 76 percent of 12- to 18-year-olds responded that they had ever attended a drug education class or program in school and 64 percent reported attending such an event within the past year. Out-of-school drug education class or program attendance was much lower; 11 percent reported attending in past years and only 7 percent reported attending in the previous 12 months (Table 3-T and Detail Tables 3-43 through 3-46).

- Ethnicity, age, and a youth’s risk propensity have some association with anti-drug class and program exposure.** African American youth reported greater exposure than other youth to both in-school and out-of school drug education. Both younger age groups, 12- to 13-year-olds and 14- to 15-year olds, reported significantly more attendance at both lifetime and past year in-school drug education classes or programs than did 16- to 18-year-olds. (Detail Tables 3-43 through 3-46).

Table 3-T. In-school and out-of-school drug education across waves (12-to 18-year olds)

	Waves 1 & 2 2000 (%)	Waves 3 & 4 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
In-school drug education in previous years	79.3	75.4	73.1	-6.3* (-8.5 to -4.0)	-2.3* (-4.5 to -0.1)
Past year in-school drug education	66.2	65.0	63.7	-2.5* (-5.6 to -0.6)	-1.3 (-4.1 to 1.4)
Out-of-school drug education in previous years	11.7	10.3	11.3	-0.4 (-2.2 to 1.4)	1.0 (-1.0 to 2.9)
Past year out-of-school drug education	7.3	5.8	6.9	-0.4 (-2.1 to 1.3)	1.1 (-0.5 to 2.8)

* Between year change significant at p<0.05.

3.3.2 Changes in Youth Anti-Drug Education

There is evidence that in-school anti-drug education is decreasing. There was a significant decrease in the percentage of youth that reported ever attending drug education classes or programs in school from 2000 to Wave 5. The percent of youth that reported attending an in- school drug class in the past 12 months decreased significantly from 2000 to Wave 5. Out- of- school drug education, both past year and lifetime, decreased from 2000 to 2001, but increased slightly from 2001 to the first half of 2002; however, not returning to previous levels (Detail Tables 3-43 through 3-46).

- Overall, from 2000 to the first half of 2002, there was a statistically significant downward trend in youth reporting having attended an in-school drug education class in the past year, and in reporting ever having attended an in -school anti-drug education class.** From 2000 to the

first half of 2002, there was a total decrease of 2.5 percentage points in past year attendance (Table 3-T).

Most subgroups showed significant declines in ever having attended in school drug education classes from 2000 to 2002, with Hispanic youth showing a particularly sharp decline. Their overall decline of 13.4 percentage points (from 79.7% in 2000 to 66.3% in 2002) was significantly more than the 6 percentage point decline for White youth during the same period. African American youth reported the highest level of attendance, and did not decline (Detail Table 3-43).

- **There were no statistically significant changes in youth reporting attending a drug education class or program out-of-school in the past 12 months from 2000 to Wave 5.** There were also no significant changes in youth reporting attending such classes out of school in previous years from either 2000 or 2001 to Wave 5 (Detail Tables 3-44 through 3-46 and Table 3-T).

3.3.3 Parenting Skills and Anti-Drug Education

About a third of parents report having attended drug prevention or parent effectiveness programs. On average across the waves, 30 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 (Detail Tables 3-76 and 3-77).

Ethnicity is associated with attendance at parent effectiveness programs, with African American parents reporting significantly higher attendance than either White or Hispanic parents. Hispanic parents reported the second highest levels of attendance (Detail Tables 3-76 and 3-77).

- **There was little change in parents' reported attendance at drug prevention or parenting skills programs.** There was no overall change and only one subgroup reported statistically significant attendance increases or decreases among parents for either of these programs from 2000 or 2001 to Wave 5 (Detail Tables 3-76 and 3-77).

Hispanic parents reported an 8 percentage point decrease in attending drug abuse prevention programs from 2000 to 2001 (30% to 22%), but then from 2001 to Wave 5 they reported a 9 percentage point increase to 31 percent. Similarly, Hispanic parents reported a 6 percentage point decrease from 2000 to 2001 in attending parent effectiveness programs (26% to 20%), but then reported an 11 percentage point increase from 2001 to 31 percent by the first half of 2002 (Detail Tables 3-76 and 3-77).

3.4 Discussions about Drugs

In this section, evidence is presented about discussions among youth and parents and youth and friends concerning drug use, and about the drug advertisements. There is some discussion about the content of talk about drugs and some focus on changes in conversations across time. Differences between youth and parent reports of their conversations are striking.

3.4.1 Youth Discussions with Friends and Parents about Drugs

Most youth have conversations about drugs, and many of them have such conversations frequently. About 74 percent of youth aged 12 to 18 years reported having had at least one conversation about drugs with friends in the previous 6 months. Approximately 71 percent reported having had at least

one conversation with parents about drugs in the previous 6 months, and 47 percent reported having had four or more conversations with parents or friends about drugs in the past 6 months (Detail Tables 3-47 and 3-48, 3-52 through 3-54). The analyses that follow present evidence about the association of respondent characteristics and year of interview with both youth and parent reports of discussions about drugs. They use the percentage of youth or parents who report two or more conversations in the previous 6 months as the criterion measure. Overall, 60 percent of youth report this number of conversations with friends and 49 percent with parents. In contrast, over 80 percent of parents reported two or more conversations with their children (Detail Table 6-10). These differences will be explored further in Chapter 6.

- **Age, gender, and ethnicity played a role in conversations with friends about drugs.** Older youth aged 16 to 18 were more likely to report having had two or more such conversations with friends than younger youth; the difference between the percentage points for 12- to 13-year-olds and 16- to 18-year-olds reporting two or more such conversations was over 25 percentage points (Detail Table 3-48). Additionally, females were more likely than males to report discussions about drugs. While in earlier waves White youth were significantly more likely than African American youth to have had two or more conversations about drugs with friends, this gap has narrowed. Waves 4 and 5 have witnessed an increase in the number of African American youth reporting having had two or more conversations with friends (Detail Tables 3-48).
- **Sensation-seeking and risk score were also associated with conversations with friends about drug use.** High sensation-seeking youth and high-risk youth reported markedly higher levels of drug conversations than their respective low sensation-seeking and lower risk counterparts. For instance, 77 percent of high-risk youth reported having had two or more conversations with friends about drugs in the past 6 months, compared to only 49 percent of low-risk youth. Similarly, 70 percent of high sensation-seeking youth reported having had two or more conversations with friends about drugs in the past 6 months, while only 48 percent of low sensation-seeking youth reported having had two or more such conversations (Detail Table 3-48). These associations are, in part, an artifact given that older youth have higher sensation-seeking and risk levels and also report a higher rate of conversations.
- **In contrast, youth reports of two or more conversations with parents did not significantly vary by age, but did significantly vary by gender, race-ethnicity, and sensation-seeking tendency of the child.** Female youth were significantly more likely than male youth to have had two or more conversations with their parents about drugs and African-American youth were more likely to have had two or more conversations about drugs with parents than White or Hispanic youth.

3.4.2 Changes in Drug Conversations Across Years

Youth reports of drug conversations with friends overall were stable. Youth reports of drug conversations with parents, however, decreased significantly from 2000 to the first half of 2002, both overall and among several subgroups.

- **Overall, the percent of youth reporting two or more drug conversations with parents significantly declined by 5 percentage points from year 2000 to Wave 5.** This decrease was apparent for all age subgroups, although significant only for 12- to 13-year-olds. Among this youngest group, there was a 9 percentage point decrease in the percent of youth reporting having had two or more drug conversations with parents. Significant decreases were also seen among males, White youth, lower risk youth, and both high and low sensation seekers (Detail Table 3-53 and Table 3-U).
- **Only younger youths' (12- to 13-year-olds) drug conversations with friends changed significantly from 2001 to Wave 5** (Table 3-U and Detail Table 3-48). From 2000 to 2001, 12- to

13-year-olds reported a significant decrease in having had two or more drug conversations with friends in the past 6 months. However in Wave 5, reports of such conversations among this age group increased, returning to the original level seen in 2000. All other age groups and other subgroups showed no statistically significant change (Detail Tables 3-48 through 3-51 and Table 3-U).

Table 3-U. Change in drug-related conversations by youth across waves

Percent with two or more conversations in the past 6 months	Age Groups	Waves 1 & 2	Waves 3 & 4	Wave 5	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
		2000 (%)	2001 (%)	(Jan-June 2002) (%)		
With friends, reported by youth of ages:	12 to 13	44.2	39.2	43.7	-0.6 (-4.3 to 3.2)	4.4* (0.6 to 8.2)
	14 to 15	60.4	65.1	61.7	1.3 (-3.8 to 6.5)	-3.4 (-7.7 to 0.9)
	16 to 18	69.5	70.7	69.5	0.0 (-4.5 to 4.5)	-1.2 (-5.2 to 2.9)
With parents, reported by youth of ages:	12 to 13	57.8	52.0	49.1	-8.7* (-13.1 to -4.3)	-2.9 (-7.4 to 1.6)
	14 to 15	55.2	51.7	51.0	-4.2 (-8.9 to 0.4)	-0.7 (-6.2 to 4.7)
	16 to 18	50.0	46.4	47.5	-2.5 (-7.6 to 2.6)	1.1 (-3.8 to 6.1)
By parents with children of ages:	12 to 13	79.2	81.3	82.3	3.1* (0.4 to 5.8)	1.0 (-1.9 to 4.0)
	14 to 15	80.5	84.1	85.4	4.9 (-0.4 to 10.3)	1.3 (-2.9 to 5.6)
	16 to 18	79.0	82.6	83.0	3.9 (-0.7 to 8.6)	0.4 (-3.5 to 4.4)

* Between year change significant at $p < 0.05$.

- Parents reported much higher levels of conversation with their children at all ages than youth report, but the parent and youth reports are going in different directions.** Conflicting statistically significant changes over the time of the Campaign underscore the disparity. Parent reports of two or more drug-related conversations significantly increased 4 percentage points from year 2000 to Wave 5 whereas youth reports of such conversations decreased significantly by 5 percentage points over the same time period. In contrast to the moderately lower youth reports of conversations with parents among older youth, parent reports showed essentially no variation across ages of youth, and little variation with other characteristics of youth (Detail Table 6-10). This inconsistency with the youth reports is addressed further in Chapter 6, where the effects of the Campaign on parent-child talking are discussed.

Content of Drug Conversations

In the course of conversations about drug use, young people of all ages discussed the negative consequences that happen because of drugs, but some also spoke 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. Approximately 26 percent said they talked about “specific things I could do to stay away from drugs,” and around 22 percent had conversations about how “marijuana use isn’t so bad” (Detail Tables 3-49 to 3-51). The only significant overall change in content of drug conversations was a decline in youth having conversations about specific things they could do to stay away from drugs. Subgroups differed significantly on the frequency of having different types of drug conversations.

Saying positive things about drugs appears to be largely a function of age. While few 12- to 13-year-olds reported engaging in conversation about how “marijuana use isn’t so bad,” 20 percent of 14- to 15-year-olds and 33 percent of 16- to 18-year-olds have been involved in such conversations. Age had a smaller effect on the other two discussion types. Older youth, those 16- to 18-year-olds, had fewer conversations about “specific things I could do to stay away from drugs” than younger teens, but had more conversations about the “bad things that happen if you use drugs” than younger teens (Table 3-V).

Table 3-V. Youth topics of conversation with friends by age group across all waves

Age groups	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	29.1	45.5	6.9
14 to 15	27.4	49.8	19.9
16 to 18	23.3	51.7	33.0

Sensation seeking and risk score are strongly associated with a youth’s likelihood of having conversations about how “marijuana use isn’t so bad.” While 32 percent of high sensation-seeking youth had such conversations in the past 6 months, only 10 percent of low sensation-seeking youth had them. And compared to the relatively small 9 percent of low-risk youth who had conversations about how “marijuana use isn’t so bad,” 40 percent of high-risk youth had similar talks with friends. Sensation-seeking and risk also appear to be associated with other types of drug conversations. Fewer high sensation-seeking youth and high-risk youth had conversations in the past 6 months about “specific things they could do to stay away from drugs” than their low sensation-seeking and low-risk counterparts, but they had more conversations in the past 6 months about “bad things that happen if you use drugs” (Detail Tables 3-49 through 3-51).

Ethnicity was also associated with the types of conversations that youth had about drugs. White youth were significantly less likely than youth of other ethnicities to have had conversations with friends about “specific things they could do to stay away from drugs” and Hispanic youth were more likely to discuss negative consequences of drug use than other ethnicities (Detail Tables 3-49 through 3-51).

- **From 2000 to Wave 5, there was a significant unfavorable decline of 4 percentage points in the proportion of all youth who reported conversations about “specific things I could do to stay away from drugs”** (Detail Tables 3-49 to 3-51). In 2000, 30 percent of the overall sample of youth reported such conversations; while in Wave 5, only 26 percent reported the same. The percent of all youth having conversations about negative consequences of drug use or about marijuana use “not being so bad” did not change significantly over this time period.
- **There were both significant favorable and unfavorable changes among age subgroups.** Twelve- to 13-year-olds showed a favorable change with a 3 percentage point decrease from 2000 to Wave 5 in the proportion reporting conversations that “marijuana use isn’t so bad” and a 3 percentage point increase in conversations about “bad things that happen if you use drugs” between 2001 and Wave 5. This follows a decline from 2000 to 2001. Conversely, 14- to 18-year-olds appeared to change unfavorably over this time period. Among this age group, there was a statistically significant 4 percentage point decrease in conversations about the “specific things that I could do to stay away from drugs” from 2000 to Wave 5 and a significant decrease of 4 percentage points in discussions about “bad things that happen if you use drugs” (Detail Tables 3-49 through 3-51).

3.4.3 Discussions about Anti-Drug Ads

Youth reported having conversations about the Campaign anti-drug ads (Table 3-W). Twenty-eight percent of 12- to 18-year-olds reported having a conversation about the anti-drug ads with their parents and 41 percent recalled having such a conversation with friends or others in the previous 6 months (Detail Table 3-55 and 3-56). There were no overall statistically significant changes in discussions about anti-drug ads from 2000 to Wave 5, or 2001 to Wave 5; moreover, with one exception, subgroups showed no significant changes as well.

Table 3-W. Changes in youth conversations about anti-drug ads from Wave 1 to Wave 5

Age group and discussion partner	Percent with at least one conversation about anti-drug ads in past 6 months			2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
	Waves 1 & 2 2000 (%)	Waves 3 & 4 2001 (%)	Wave 5 (Jan-June 2002) (%)		
Discussions with parents:					
Youth aged 12 to 13	38.7	36.0	35.5	-3.2 (-7.2 to 0.8)	-0.4 (-4.6 to 3.7)
Youth aged 14 to 15	30.4	28.0	27.2	-3.3 (-7.5 to 1.0)	-0.8 (-5.6 to 3.9)
Youth aged 16 to 18	18.8	21.2	22.1	3.3 (-0.5 to 7.1)	0.9 (-3.4 to 3.3)
Discussions with others (friends, other adults):					
Youth aged 12 to 13	42.2	38.3	39.8	-2.4 (-7.1 to 2.3)	1.5 (-2.24 to 5.4)
Youth aged 14 to 15	42.4	41.8	43.0	0.6 (-4.3 to 5.4)	1.3 (-3.2 to 5.7)
Youth aged 16 to 18	40.1	37.8	39.5	-0.8 (-3.3 to 1.6)	1.4 (-1.5 to 4.4)

- **Age, ethnicity, sensation seeking, and risk score were related to conversations with parents about the anti-drug ads.** A higher percent of young youth aged 12 to 13 years reported conversations with their parents about anti-drug ads than older youth. Similarly, a greater proportion of low sensation-seeking and low-risk youth reported anti-drug ad conversations with their parents than high sensation-seeking and high-risk youth. Also, African-American youth have significantly more such conversations with parents compared to White and Hispanic youth (Detail Table 3-55).
- **Gender was strongly associated with anti-drug ad conversations with friends and adults other than parents.** Females were significantly more likely than males to have talked with friends or other adults about the anti-drug ads (Detail Table 3-56).
- **Overall, youth conversations about anti-drug ads with parents and with friends remained stable between 2000 and Wave 5.** The only exception was a statistically significant decline in such conversations with parents reported by Hispanic youth, from 35 percent to 28 percent.

3.5 Perceptions of Media and Community Attention to Drug Use

3.5.1 Youth's Perceived Media Coverage of Youth and Drugs

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.¹⁴ The media sources that respondents were asked about included television and radio news; television movies, sitcoms, and dramas; television talk shows; rental and theater movies; and magazines. However, there was a statistically significant decrease in the reported overall exposure to drug-related coverage from 2000 to the first half of 2002, as well as significant decreases in exposure to certain media and among certain subgroups.

- **Almost 50 percent of youth noticed media coverage about drug use among young people at least once a week on at least one of these media.** Almost 30 percent 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 3-61).

¹⁴See question D9 in the Teen questionnaire.

Recall of drug stories on various media is related to gender, age, and ethnicity. Younger youth, aged 12 to 13, reported less exposure to stories about drugs and youth than did older youth across all types of media, and significantly less on TV talk shows. 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 movies. Females reported more exposure than males to stories about drugs among youth on all media types except movies, and significantly more on TV talk shows (Detail Tables 3-57 through 3-61).

- **From 2000 to Wave 5, there was an overall statistically significant decrease of 5 percentage points in youth recalling stories about drug use in at least one medium in recent months.** In 2000, slightly more than 50 percent of youth recalled stories with drug themes in at least one medium in recent months, but in 2001, this had declined to 48.8 percent and then to 47.1 percent in the first half of 2002. This pattern may not fairly represent the actual trends over time, however. Waves 1 through 3 were all quite similar (around 50%); the noticeable decline (to 44%) occurred only in Wave 4, (the second half of 2001), and continued through Wave 5. From 2000 to the first half of 2002, declines were also significant for TV or radio news (-5 percentage points) and TV talk shows (-3 percentage points) (Detail Tables 3-57, 3-59 and 3-62).

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

Across waves, parents reported often seeing drug themes presented in the media. Nearly 65 percent of parents reported weekly exposure to at least one media source dealing with the issues of youth and drugs (Table 3-V). Slightly less than half of all parents reported having seen or heard stories about drug use on television or radio news programs at least weekly in recent months. More than 30 percent of parents noticed such stories appearing weekly in newspapers and in television entertainment programs; and more than 20 percent saw drug-related stories on television talk shows or television news magazines. Fewer parents reported weekly exposure to drug stories from non-news radio, movies, and magazines (Detail Tables 3-63 through 3-69). Statistically significant changes in recall of exposure to stories about youth and drugs that were heard or seen in particular media sources are discussed below.

- **Ethnicity and education were associated with 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. College graduates were less likely to report having noticed stories on all media except magazine and newspaper articles (Detail Tables 3-63 through 3-69).
- **There was little overall change from 2000 or 2001 to Wave 5 in parents' recall of having seen media stories about young people and drug use at least weekly.** However, statistically significant changes were seen in three media sources. Parents' reports of having noticed such stories in TV movies, sitcoms, or dramas increased by 5 percentage points from 2000 to the first half of 2002. Parents' reports of noticing stories about young people and drug use on non-news radio programs increased 3 percentage points from 2000 to Wave 5, and parents' recall of having noticed such stories in magazines at least weekly increased 3 percentage points from 2001 to the first half of 2002 (Table 3-X and Detail Table 3-64 to 3-68).
- **Significant subgroup differences were also reported in several types of media from 2000 or 2001 to Wave 5.** Most notably, Hispanic parents reported a 13 percentage point increase from 2000 to Wave 5 in having noticed stories in TV movies, sitcoms, or dramas, which was more than White parents. African American parents reported a 7 percentage point increase from 2000 to Wave 5 in noticing stories in magazine articles and parents with some college experience noted a

5 percentage point decrease in noticing stories in newspaper articles (Detail Table 3–65, 3-67 through 3-69).

Table 3-X. Parents' exposure to weekly media stories about drugs across waves

	Waves 1 & 2	Waves 3 & 4	Wave 5	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
	2000 (%)	2001 (%)	(Jan-June 2002) (%)		
TV or radio news	50.4	47.5	48.4	-2.0 (-5.0 to 1.0)	0.9 (-2.4 to 4.1)
Newspapers	32.8	31.3	31.1	-1.7 (-4.5 to 1.1)	-0.2 (-3.0 to 2.6)
TV dramas, sitcoms, movies	28.6	32.5	33.3	4.7* (1.8 to 7.6)	0.8 (-2.4 to 4.0)
TV talk, magazine shows	22.8	21.4	22.8	0.0 (-3.2 to 3.2)	1.4 (-1.5 to 4.3)
Radio (not news)	13.2	14.6	16.4	3.2* (0.4 to 6.1)	1.8 (-0.9 to 4.5)
Movies	9.4	9.5	11.2	1.8 (-0.2 to 3.8)	1.7 (-0.3 to 3.6)
Magazines	8.2	7.6	10.2	2.0 (-0.1 to 4.0)	2.6* (0.7 to 4.4)
At least one source	64.0	63.1	63.5	-0.5 (-3.1 to 2.1)	0.4 (-2.8 to 3.7)

* Between year change significant at $p < 0.05$.

Parent Reports of Local Anti-Drug Activity

Most parents reported some awareness of anti-drug activity in their localities. About 45 percent of all parents reported having heard a lot about police crackdowns on drug use or drug sales in their community within the past year and over 30 percent had “heard a lot” about anti-drug programs in schools or community centers. Reports of a political focus on drugs were less prominent than legal enforcement or prevention programs. Only 17 percent of all parents had heard a lot about drug-related laws proposed by state or local governments within the past year. Thirteen percent reported hearing public officials speak about drugs, and 7 percent had heard a lot about drug-related propositions or referenda on the ballot for public voting (Table 3-Y, Detail Tables 3-71 through 3-75).

There was only one statistically significant change from 2000 or 2001 to the first half of 2002 in parents' awareness of drug activities; a 4 percentage point decrease in parents saying they had heard a lot about anti-drug programs in schools or community centers from 2000 to Wave 5 (Table 3-Y).

- Ethnicity and education are associated with knowledge of various types of drug-related activities. White parents were less likely to have heard a lot about political and legal activities compared to Hispanic and African American parents; African American parents were the most likely to have heard a lot about these activities (Detail Tables 3-71 through 3-75). Parents with less than a high school education were more likely to have heard a lot about drug-related propositions/referenda and about speeches about drugs (Detail Table 3-72 and 3-75).

3.6 Summary and Conclusions

The data provided to the evaluators by the Media Campaign describes what media time and space have been purchased over the 34-month period from September 1999 to June 2002. On average, the Campaign purchased enough media time to expect the average youth to be exposed to 2.5 directly targeted messages per week, and the average parent to be exposed to about 2.2 messages per week. For both parents and youth, there was some instability in the amount of GRPs bought over each measurement wave (roughly 6 months). For youth, exposures per week in Waves 1 and 2 were quite similar at 2.6 and 2.5, respectively. They increased to 2.8 exposures per week in Wave 3, and then

Table 3-Y. Change in parent exposure to drug-related communication across waves¹

Measure	Waves 1 & 2	Waves 3 & 4	Wave 5	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
	2000 (%)	2001 (%)	(Jan-June 2002) (%)		
Percentage hearing a lot about anti-drug programs in community in past year	34.4	30.2	30.7	-3.7* (-6.4 to -0.9)	0.5 (-2.6 to 3.6)
Percentage hearing a lot about speeches about drugs by public officials in past year	15.2	13.4	12.6	-2.5* (-5.4 to -0.3)	-0.8 (-2.9 to 1.3)
Percentage hearing a lot about anti-drug laws in past year	17.8	16.4	16.7	-1.1 (-3.3 to 1.1)	0.3 (-1.9 to 2.5)
Percentage hearing a lot about drug-related referenda in past year	7.9	8.0	7.4	-0.5 (-2.4 to 1.4)	-0.6 (-2.8 to 1.6)
Percentage hearing a lot about police crackdowns on drug use or sales in past year	45.6	43.8	44.9	-0.8 (-4.4 to 2.9)	1.1 (-2.4 to 4.6)

¹ For parents with children aged 12 to 18.

* Between year change significant at p<0.05.

decreased to 2.1 per week in Wave 4. In Wave 5, youth GRPs increased again to 2.6 per week. For parents, there was more exposure instability across waves. During Wave 1, media time purchased for parents was enough to expect 2.7 exposures per week. During Wave 2 it fell to 1.5 exposures per week, then climbed back to 2.3 exposures per week in Wave 3. In Wave 4, parent exposures fell again to 1.9 per week, and slightly increased to 2.1 per week in Wave 5.

The Campaign also varied the emphasis on the behavioral ad platforms in each wave. The available data allowed classification of the Campaign TV and radio ads, which made up 80 percent of all GRPs for youth, although only about 60 percent of all GRPs for parents. For youth, an early focus on Negative Consequences of drug use had almost disappeared by Wave 3, but was revitalized in Wave 4 and remained strong in Wave 5. A focus on Normative Education/Positive Alternatives was strong across all five waves, while Resistance Skills were emphasized in Waves 1 and 3, but not included in Waves 2, 4 or 5. For parents, the Parenting Skills/Personal Efficacy/Monitoring platform was maintained through all five waves, and was especially strong in Waves 2 and 4. But the Your Child at Risk platform received only some weight at Wave 3, while the Perceptions of Harm platform was included only at Wave 1. Some of the Your Child at Risk platform advertising in Waves 3 and 4 focused on the risks of inhalants. For parents, the new Drugs and Terror messages received approximately a fifth of the GRPs in Wave 5.

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 was 9 exposures per month for parents and 12.5 exposures per month for youth. This was probably equivalent to between 2 to 3 exposures per week. There was no overall detectable change in exposure from 2000 to Wave 5, suggesting this general exposure measure was insensitive to the changes in media purchases.

The second exposure measure asked for recalled frequency of viewing specific ads on television and radio that were on the air in the 60 days prior to the interview. These produced lower estimates of exposure to the Campaign, with parents reporting a median of 4 exposures and youth reporting a median of 7.5 exposures to the TV ads “in recent months.” This was probably equivalent to 0.4 to 1.1 exposures per week respectively. For both youth and parents, there was a substantial increase in recalled specific exposure across the five waves (with some up and down movement). For parents, recall of weekly television ad exposure was up 28 percentage points (from 26% to 52%) between 2000 and the first half of 2002, while youth recall on the same measure increased slightly more than 11 percentage points (from 35% to 47%) over the same period.

Recall of specific radio ads was assessed for youth during Waves 2, 3, 4, and 5, and for parents across all five waves. The absolute level of recall of radio ads remained much lower than for television ads in both groups. Among youth at Wave 2, 3 percent of youth said they had heard radio ads weekly; this had increased to 11 percent at Wave 3, then decreased to 3 percent in Wave 4, and decreased slightly again to 1.4 percent in Wave 5. For parents, weekly recall increased from 8 percent at Wave 1 to 11 percent at Wave 2, increased to 15 percent in Wave 3, decreased to 13 percent at Wave 4, and declined further to 2 percent in Wave 5. The pattern of youth recall of radio ads tracks GRP radio purchases reasonably well, for parents the match is less clear.

All youth and parents were asked to provide their assessments of the ads they had been shown. Both groups remained generally positive. Youth evaluations of the ads became more positive from 2000 to the first part of 2002, while parent evaluations increased from 2000 to 2001, but decreased somewhat in Wave 5, while still remaining more enthusiastic than youth.

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 from 2000 to Wave 5, although their absolute levels remained relatively low at just over 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 other informational sources there was a substantial level of exposure to anti-drug messages, there was little evidence that exposure to such messages was increasing over the course of the Campaign. Thus it is difficult to claim these complementary exposures as indirect exposures produced by the Campaign. Rather they are best understood as an ongoing context for the Campaign.

The Campaign’s efforts with respect to youth organizations has focused on integrating drug prevention messages and strategies into existing organizations’ educational programs and extra-curricular activities. Approximately two-thirds of the youth reported recent in-school drug education but that had declined between 2000 and the first half of 2002. Potential Campaign influence through out-of-school activities was also examined. Youth reported that these activities were relatively rare; attendance at such activities had decreased from 2000 to 2001, but rebounded in the first half of 2002, while still remaining low.

Parents reported lots of drug-related discussions with their children, with a statistically significant increase of 4 percentage points between 2000 to the first half of 2002. Youth reported a substantial level of such conversations, even if less than their parents claimed. However, from 2000 to the first half of 2002, youth reported significantly fewer conversations with their parents. Additionally, from

2000 to Wave 5, there was a significant decline of 4 percentage points in the proportion of all youth who reported conversations about “specific things I could do to stay away from drugs.”

Both youth and parents were asked about exposure to drug and youth stories across a variety of mass media. Parents were asked about their awareness of any local anti-drug activity. Among youth, there was a 5 percentage point increase in exposure to such stories from 2000 to Wave 5, and although no overall significant changes were seen for parents, exposure did increase among specific media sources. While there were reasonably high levels of recall of mass media stories, and sometimes of local anti-drug activities, there was no change for 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 this did not change significantly over time.

Overall, the Campaign purchased enough media messages to expect the average youth to be exposed to more than two targeted messages per week, and youth and parents did recall seeing and hearing them. Notable changes from 2000 and 2001 to Wave 5 include increases in recall of specific TV ads for youth and parents, an increase in recall of radio ads for youth, and a decrease in recall of radio ads for parents. Youth were still not reporting much contact with anti-drug information on the Internet; parents also reported low levels of such contact, with some small increase over time. 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, including for in-school drug education and in children’s reports of talking with parents, while parents were reporting a positive trend in such conversations.

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4. Trends in Youth Marijuana and Inhalant Use

This chapter focuses on trends in youth marijuana and inhalant use as reported by three sources: the Monitoring the Future (MTF), the National Household Survey of Drug Abuse (NHSDA) and the Media Campaign’s evaluation survey—National Survey of Parents and Youth (NSPY). Data are also presented regarding trends in youth reports of marijuana offers.

Along with cross-sectional analyses based on the five waves of NSPY data collection, this chapter also presents results from longitudinal analyses of reported marijuana use. The NSPY study to date has two rounds of data for most respondents: Wave 1 respondents were reinterviewed at Wave 4, and Wave 2 and Wave 3 respondents were followed up at Wave 5. Longitudinal analyses will look at overall changes from Round 1 (Waves 1, 2, and 3) to Round 2 (Waves 4 and 5).

4.1 MTF Trends in Marijuana Use

The MTF 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 schools are represented. Data collection is via a self-administered paper-and-pencil questionnaire. The number of schools sampled has been about 420 in recent years, and the number of responding students approximately 50,000. From 1991 to 2001, the MTF has maintained a student response rate between 82 and 91 percent in participating schools, varying by grade level. The main reason for student nonresponse is student 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 nation’s success in combating drug use by youth.

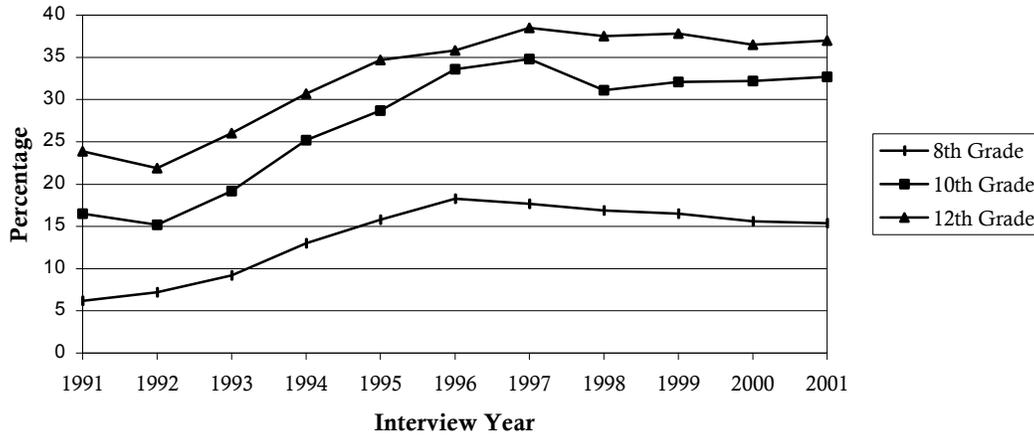
According to the latest MTF study, there are no significant changes in lifetime, annual, or past month marijuana use. For 8th, 10th, and 12th graders, 2001 levels are essentially the same as they were in 2000, which had not changed significantly from 1999 levels (Table 4-A).

Table 4-A. MTF lifetime, annual, and past-month marijuana use in 1999, 2000, and 2001

Grade	Marijuana use								
	Ever (%)			Past year (%)			Past month (%)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
8th	22.0	20.3	20.4	16.5	15.6	15.4	9.7	9.1	9.2
10th	40.9	40.3	40.1	32.1	32.2	32.7	19.4	19.7	19.8
12th	49.7	48.8	49.0	37.8	36.5	37.0	23.1	21.6	22.4

MTF researchers conclude that after reaching a peak in 1996 among 8th graders and in 1997 among 10th and 12th graders, annual marijuana use has declined only very modestly, with no significant changes in more recent years (Johnston, O'Malley, and Bachman, 2002). This long-term trend is evident in Figure 4-A.

Figure 4-A. Percentage of 8th, 10th, and 12th graders reporting annual marijuana use: MTF 1991-2001



The 11-year trends for lifetime and past month use were similar, with sharp increases in the early 1990s followed by stabilization and some declines starting in 1996. MTF researchers note that the two directional changes registered in the past decade for many illicit drugs, among them marijuana, were first evident among 8th graders. They interpret this as a suggestion that “8th graders may be the most immediately responsive to changing influences in the larger social environment” (Johnston, O’Malley, and Bachman, 2001). While there is a fairly steady decline among eighth graders since 1996, there is no suggestion that the decline can be attributed to the Media Campaign. The decline has not accelerated since the start of the nationwide Media Campaign in 1998, nor since the start of Phase III in late 1999. In addition, the decline remains small in absolute terms; the 2001 rate for 8th graders of 15 percent remains well above the all time low rate in 1991 of 6 percent.

4.2 NHSDA Trends in Marijuana Use

The National Household Survey on Drug Abuse (NHSDA) is an annual survey that provides information on the use of illicit drugs, alcohol, and tobacco by the civilian, noninstitutionalized population of the United States aged 12 years old and older. Initiated in 1971, the survey is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). Until 1999, the survey collected data by self-administered questionnaires given to a representative sample of the population in face-to-face interviews at their place of residence. Since 1999, the NHSDA interview has been carried out using a computer-assisted interviewing methodology. Because of the major redesign of the sample and data collection method in 1999, estimates for 1999 and later are generally not comparable with estimates from 1998 and earlier. The NHSDA interviews approximately 70,000 people, including samples in every state, over each 12-month period.

Table 4-B presents patterns of marijuana use for 1999, 2000, and 2001. No significant changes in all the three measures of marijuana use are reported between 1999 and 2000. However, between 2000 and 2001, significant increases in lifetime, past year, and past month marijuana use were found for 12- to 17-year-olds. For lifetime and past year marijuana use, similar increases were found for the older youth (16 to 17 and 14 to 15) but not for the younger ones (12 to 13).

Table 4-B. NHSDA lifetime, annual, and past-month marijuana use in 1999, 2000, and 2001

Age groups	Marijuana use								
	Lifetime (%)			Past year (%)			Past month (%)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
12 to 13	4.0	4.0	3.9	3.2	2.7	3.1	1.5	1.1	1.5
14 to 15	17.6	17.5	18.8	13.5	13.3	14.8*	6.9	6.9	7.6
16 to 17	34.3	34.0	36.4*	25.5	24.5	27.6*	13.2	13.7	14.9
12 to 17	18.7	18.3	19.7*	14.2	13.4	15.2*	7.2	7.2	8.0*

* Difference with regard to previous year is significant at $p < .05$.

The NHSDA provides significance tests only for changes between adjacent years. The NHSDA estimates of marijuana use do not increase or decrease monotonically from 1999 to 2001; therefore, in the absence of the appropriate tests of significance between nonadjacent years, it is unclear whether changes in marijuana use between 1999 and 2001 are significant.

4.3 NSPY Trends in Marijuana Use

This section focuses on marijuana use as reported by youth during the five NSPY waves of data collection completed to date. As in the previous report, rates for 9- to 11-year-olds are not available because many of the youth initially in this age group aged into the next group (12- and 13-year-olds) by the followup wave of data collection. Rates of marijuana use for 9- to 11-year-olds at the time of their initial interview, however, were quite low across all measures of marijuana use (lifetime, past year, and past month), with the highest at 1.3 percent for lifetime use at Wave 1. This analysis concentrates on youth between the ages of 12 and 18.

The previous report found that there were no significant reductions in marijuana use for any of the target age groups between the years 2000 (the average estimate of Waves 1 and 2) and 2001 (the average estimate of Waves 3 and 4). However, there was evidence of increases among 14- to 15-year-olds for past month and regular use between 2000 and 2001.

This report focuses on changes between year 2000 and Wave 5 and between year 2001 and Wave 5. Overall, there are no significant changes (declines or increases) in lifetime, past year, past month, or regular use of marijuana. Detail Tables 4-1 through 4-4 present this information for a variety of subgroups. Table 4-C presents overall estimates (for all youth aged 12 to 18), along with estimates of the proportion of youth within each age group that reported marijuana use across the four measures.

It was noted in the previous report that the absolute levels of past month and regular use among 14- to 15-year-olds doubled from 2000 to 2001. The corresponding levels in the Wave 5 data, however, are not statistically different from either the 2000 or the 2001 levels. As Wave 5 covers only the first half of 2002, the lack of Wave 5 versus 2000 and 2001 differences may be a sample size or seasonality issue. Thus, while encouraging that the increase did not continue, it is premature to conclude that the pattern of increased past month and regular use among 14- to 15-year-olds found in the previous

report has disappeared in 2002. Wave 5 data for 2002 are consistent with the absence of trends in marijuana use reported by the MTF surveys for previous years, from 1999 to 2001.

Table 4-C. NSPY trends in marijuana use across measures by age group

Use measure	Age groups	Percent reporting use				
		Year 2000 (%)	Year 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Lifetime						
	12 to 13	4.9	4.1	4.9	-0.1 (-1.8 to 1.6)	0.7 (-1.0 to 2.5)
	14 to 15	15.1	18.9	19.5	4.5 (-0.5 to 9.4)	0.7 (-3.6 to 5.0)
	16 to 18	40.3	39.9	38.9	-1.3 (-6.4 to 3.7)	-1.0 (-5.6 to 3.6)
	12 to 18	21.8	22.6	23.0	1.2 (-1.2 to 3.7)	0.4 (-2.0 to 2.7)
Past year						
	12 to 13	3.3	2.6	3.2	-0.1 (-1.4 to 1.2)	0.6 (-1.0 to 2.1)
	14 to 15	11.3	13.8	13.2	1.8 (-1.9 to 5.5)	-0.6 (-4.1 to 2.9)
	16 to 18	29.1	26.8	26.3	-2.8 (-7.5 to 1.9)	-0.5 (-4.8 to 3.7)
	12 to 18	15.8	15.5	15.5	-0.3 (-2.3 to 1.7)	0.0 (-2.0 to 2.0)
Past month						
	12 to 13	1.4	1.1	1.1	-0.3 (-1.1 to 0.4)	0.0 (-1.1 to 1.0)
	14 to 15	3.6	7.2	6.2	2.6 (-0.3 to 5.5)	-1.0 (-3.6 to 1.5)
	16 to 18	14.7	14.0	15.3	0.7 (-2.7 to 4.0)	1.3 (-2.3 to 5.0)
	12 to 18	7.2	8.0	8.4	1.2 (-0.5 to 2.8)	0.3 (-1.2 to 1.9)
Regular						
	12 to 13	0.5	0.3	0.6	0.1 (-0.5 to 0.7)	0.3 (-0.3 to 0.9)
	14 to 15	2.2	5.4	3.8	1.7 (-0.1 to 3.5)	-1.6 (-3.7 to 0.5)
	16 to 18	12.4	11.7	11.7	-0.8 (-3.9 to 2.4)	0.0 (-3.2 to 3.3)
	12 to 18	5.6	6.3	6.1	0.4 (-0.9 to 1.7)	-0.3 (-1.7 to 1.2)

4.4 NSPY Comparison with MTF and NHSDA Data

Hornik et al., (2000) reported similar direction of trends over time but marked differences in absolute levels of estimates of marijuana use throughout the 1990s among the MTF, NHSDA¹, and the Partnership Attitude Tracking Study (PATS)². 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 were 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.

NSPY 2000 estimates of use of marijuana are within sampling error limits of NHSDA estimates from the 2000 data (Table 4-D). The NHSDA also reported no statistically significant change in marijuana

¹ 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 substantially disrupted the time series.

² The Partnership Attitude Tracking Study (PATS) is sponsored by the Partnership for a Drug-Free America (PDFA).

use among 12- to 17-year-old youth between 1999 and 2000; NSPY data do not cover 1999 and so cannot be used for direct comparisons for that year. NHSDA confidence interval estimates for 2001 have not yet been published so comparisons with 2001 NSPY results cannot be made.

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

All 12- to 17-year-olds	Marijuana use		
	Lifetime % (CI)	Past year % (CI)	Past month % (CI)
NHSDA 2000*	18.3 (17.7 to 18.9)	13.4 (12.86 to 13.94)	7.2 (6.78 to 7.62)
NSPY 2000 (Waves 1 and 2)	19.2 (17.4 to 21.1)	14.0 (12.5 to 15.7)	6.0 (5.0 to 7.3)

* NHSDA results <http://www.samhsa.gov/publications/publications.html>

The NHSDA study reported significant increases in all three estimates of marijuana use among 12- to 17-year-olds between 2000 and 2001. With a smaller sample size, the NSPY detected a significant increase in marijuana use between 2000 and 2001 only for 14- to 15-year-olds and only with respect to past month and regular marijuana use. No NHSDA data are available for 2002 to enable comparisons with the absence of trends found in the NSPY data between both 2000 and 2001, and the first half of 2002.

MTF 2000 and 2001 estimates of marijuana use are higher than the NSPY 2000 and 2001 estimates (Table 4-E). There are no published MTF estimates for 2002 as yet. 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 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 the spring 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.³ To the extent that changes in behavior took place during this period, they are likely to be reflected in differential estimates of marijuana use.

Table 4-E. Comparison of MTF and NSPY 2000 and 2001 data on marijuana use

Survey and grade	Marijuana use					
	Lifetime (%)		Past year (%)		Past month (%)	
	2000	2001	2000	2001	2000	2001
MTF 8th	20.3	20.4	15.6	15.4	9.1	9.2
NSPY 8th	9.5	10.3	6.4	7.1	2.4	3.5
MTF 10th	40.3	40.1	32.2	32.7	19.7	19.8
NSPY 10th	27.2	23.1	19.3	17.0	9.1	9.7
MTF 12th	48.8	49.0	36.5	37.0	21.6	22.4
NSPY12th	40.0	47.2	30.8	32.1	16.5	19.0

³ 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.

4.5 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. The association between offers and use is also discussed.

In the previous report, no age group showed a statistically significant change in receiving offers at all or in the past 30 days. Across all subpopulations, youth reports of receiving marijuana offers were stable between years 2000 and 2001.

Incorporating Wave 5 data, reports of marijuana offers are stable over time as well. Table 4-F focuses on the proportion of youth within each age group that reported never receiving offers and receiving offers in the previous 30 days. The table shows the strong age gradient of offers and the lack of any significant changes from 2000 and 2001 to Wave 5.

Table 4-F. NSPY trends in youth reports of marijuana offers

Use measure	Age groups	Percent reporting marijuana offers				
		Year 2000 (%)	Year 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Never received offers						
	12 to 13	81.7	82.9	81.6	-0.1 (-3.8 to 3.6)	-1.3 (-4.5 to 2.0)
	14 to 15	53.8	54.9	53.4	-0.3 (-5.0 to 4.3)	-1.5 (-6.8 to 3.9)
	16 to 18	29.4	29.6	32.0	2.6 (-1.8 to 6.9)	2.4 (-2.2 to 6.9)
	12 to 18	52.5	53.4	53.2	0.7 (-2.0 to 3.4)	-0.2 (-2.9 to 2.5)
Received offers in the past month						
	12 to 13	9.9	9.0	9.7	-0.2 (-2.1 to 1.8)	0.7 (-1.4 to 2.7)
	14 to 15	26.6	27.8	29.8	3.3 (-1.5 to 8.0)	2.0 (-2.6 to 6.6)
	16 to 18	46.6	46.6	46.7	0.1 (-4.5 to 4.7)	0.1 (-5.2 to 5.5)
	12 to 18	29.4	29.6	30.7	1.2 (-1.1 to 3.6)	1.1 (-1.3 to 3.6)

In addition, as shown in Detail Tables 4-6 and 4-7, there are no subpopulations that show consistent significant changes in offers between the average estimates for 2000 and 2001, and Wave 5.

Whereas cross-sectional data on the association between offers and marijuana use does not enable one to make any claims as to directionality, longitudinal data allow one to clarify whether receiving offers precedes use or is only a correlate of it. The previous report found that nonusers who reported receiving marijuana offers at Wave 1 were much more likely to have initiated marijuana use by Wave 4 than were nonusers who reported never having received an offer.

This pattern is confirmed with the full followup sample; Table 4-G presents this information. The analysis includes only youth who indicated that they had not used marijuana at Round 1 (i.e., initial interview) and were 12 to 18 years old at Round 2, (i.e., first follow-up interview). Within each age group, initiation of marijuana use by Round 2 is compared for those who had indicated at Round 1 that they had received an offer with those who said they had not received an offer.

Table 4-G. Marijuana initiation at Round 2 by marijuana offers received at Round 1 among nonusers by age group

	Age group at Round 2					
	12 to 13		14 to 15		16 to 18	
	Ever received offer at R1 % (CI)		Ever received offer at R1 % (CI)		Ever received offer at R1 % (CI)	
	No	Yes	No	Yes	No	Yes
Initiated marijuana use by R2	2.7 (1.9 to 3.7)	21.8 (14.6 to 31.3)	8.0 (6.1 to 10.5)	30.8 (24.9 to 37.4)	13.6 (10.3 to 17.6)	30.9 (26.4 to 30.9)

Across age groups, nonusers who reported having received marijuana offers at Round 1 were much more likely to have initiated marijuana use by Round 2 than were nonusers who reported never having received an offer. As can be seen in Table 4-G, among 14- to 15-year-olds who had never used marijuana at Round 1, nearly 31 percent of those who reported having received offer(s) had used marijuana by Round 2, while only 8 percent of those who reported never having received an offer had used marijuana by Round 2. Among the youngest group, the comparable percentages are nearly 22 and 3 percent. It is important to note, however, that while receiving offers is closely related to use, most of those who received offers did not report use. Nearly 70 percent of the oldest nonusers who reported ever receiving marijuana offers at Round 1 had still not initiated marijuana use by Round 2.

4.6 NSPY, MTF, and NHSDA Trends in Inhalant Use

As reported in Chapter 3, there has been very little inhalant-focused advertising for youth through Phase III. Only in Wave 4 were any youth inhalant ads broadcast, and they were only 4 percent of the broadcast media GRPs even in that wave. This was estimated to be enough to reach only 7 in 100 youths in the average week. It would seem unlikely that this would be enough exposure to produce a detectable inhalant-specific effect on youth. If there were Campaign effects on inhalant use, it would more likely reflect the effects of the generalized anti-drug message of the Campaign, which the youth had then applied to inhalants. In Wave 5, no inhalant-related ads were broadcast.

The MTF results for inhalants are presented in Table 4-H for 1999 through 2001. MTF provides significance tests only for changes between adjacent years. Only two results are significant against that criterion: lifetime use for 8th graders declined between 1999 and 2000, and past year use for 12th graders declined between 2000 and 2001. However, if tests were provided for the 1999 to 2001 period, it is likely that additional declines would have been significant.

Table 4-H. MTF lifetime, annual and past month inhalant use 1999, 2000, and 2001

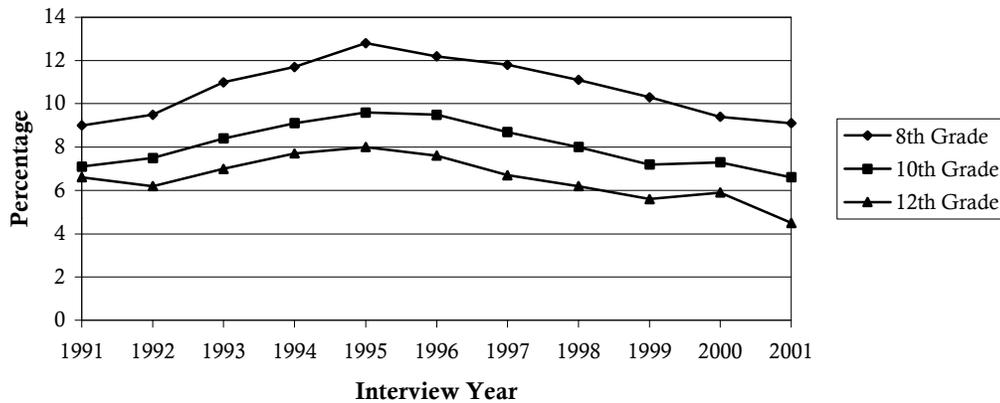
	Inhalant use								
	Lifetime (%)			Past year (%)			Past month (%)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
8th	19.7	17.9*	17.1	10.3	9.4	9.1	5.0	4.5	4.0
10th	17.0	16.6	15.2	7.2	7.3	6.6	2.6	2.6	2.4
12th	15.4	14.2	13.0	5.6	5.9	4.5*	2.0	2.2	1.7

* Difference with regard to previous year is significant at $p < .05$.

Indeed (Figure 4-B), MTF researchers note that inhalant use among youth increased in the early 1990s through 1995, with all grades exhibiting a steady decline since then (Johnston, O'Malley, and

Bachman, 2002). Given those long-term trends initiated in 1995, the observed recent declines, which seem mostly to continue the secular trend, cannot be easily attributed to the Campaign.

Figure 4-B Percentage of 8th, 10th, and 12th graders reporting annual inhalant use: MTF 1991-2001



The NHSDA results for inhalant use are reported in Table 4-I. As noted previously, the NHSDA provides significance tests only for changes between adjacent years. There were no statistically significant changes on the three measures of inhalant use among 12- to 17-year-olds between 1999 and 2000, and between 2000 and 2001. However, between 1999 and 2000, significant decreases in past year and past month inhalant use were found for 12- to 13-year-olds.

Table 4-I. NHSDA lifetime, annual and past month inhalant use 1999, 2000, and 2001

Age groups	Inhalant use								
	Lifetime (%)			Past year (%)			Past month (%)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
12 to 13	6.8	6.8	6.1	3.5	2.8*	2.9	1.3	0.7*	0.9
14 to 15	9.9	9.9	9.7	4.2	4.1	4.2	1.0	1.2	1.3
16 to 17	10.6	10.0	10.0	4.0	3.7	3.4	0.9	1.0	0.7
12 to 17	9.1	8.9	8.6	3.9	3.5	3.5	1.1	1.0	1.0

*Difference with regard to previous year is significant at $p < .05$.

The previous report found that NSPY levels of lifetime use decreased significantly by 1.3 percentage points among all youth aged 12 to 18 from 2000 to 2001. The Wave 5 level of lifetime inhalant use is not significantly different from either of the corresponding levels in 2000 and 2001. As this may be due to sample size issues, similarly to marijuana use, it is premature to conclude that the decrease in lifetime inhalant use for 12- to 18-year-olds found in the previous report between years 2000 and 2001 has disappeared in 2002. For the first half of 2002, the comparison of Wave 5 estimates with the average estimates for year 2000 and 2001 shows no significant decreases in any of the four measures of inhalant use (Table 4-J).

There are significant increases in past month inhalant use for 14- to 15-year-olds from year 2000 to Wave 5, and in regular use for 12- to 13-year-olds from year 2001 to Wave 5. Examination of single wave estimates, however, reveals fluctuating patterns of inhalant use for both age groups. Estimates of past month inhalant use among 14- to 15-year-olds for Waves 1 through 5 are 0.5, 0.1, 1.2, 0.4, and 1.1, respectively. Estimates of regular inhalant use among 12- to 13-year-olds for Waves 1 through 5

Table 4-J. NSPY trends in inhalant use

Use measure	Age groups	Percent reporting use				
		Year 2000 (%)	Year 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
Lifetime						
	12 to 13	1.3	1.7	1.7	0.4 (-0.6 to 1.5)	0.1 (-1.0 to 1.1)
	14 to 15	5.7	3.6	3.6	-2.2 (-4.9 to 0.6)	0.0 (-1.8 to 1.7)
	16 to 18	7.8	5.8	6.8	-1.0 (-3.4 to 1.3)	0.9 (-1.3 to 3.2)
	12 to 18	5.2	3.9	4.3	-0.9 (-2.3 to 0.4)	0.4 (-0.6 to 1.5)
Past year						
	12 to 13	0.8	1.1	0.9	0.1 (-0.6 to 0.8)	-0.2 (-1.0 to 0.5)
	14 to 15	2.6	1.9	2.3	-0.3 (-1.7 to 1.2)	0.5 (-1.0 to 2.0)
	16 to 18	3.1	2.3	2.1	-1.0 (-2.8 to 0.9)	-0.2 (-1.7 to 1.3)
	12 to 18	2.3	1.8	1.8	-0.5 (-1.3 to 0.4)	0.0 (-0.7 to 0.8)
Past month						
	12 to 13	0.2	0.4	0.5	0.3 (-0.1 to 0.6)	0.1 (-0.5 to 0.6)
	14 to 15	0.3	0.8	1.1	0.8 * (0.0 to 1.5)	0.3 (-0.7 to 1.2)
	16 to 18	0.9	0.4	1.0	0.1 (-0.9 to 1.2)	0.6 (-0.3 to 1.4)
	12 to 18	0.5	0.5	0.9	0.4 (-0.1 to 0.9)	0.3 (-0.1 to 0.8)
Regular						
	12 to 13	0.1	0.0	0.3	0.2 (-0.1 to 0.5)	0.3* (0.0 to 0.5)
	14 to 15	0.2	0.2	0.4	0.2 (-0.3 to 0.8)	0.2 (-0.3 to 0.7)
	16 to 18	0.4	0.4	0.2	-0.2 (-0.7 to 0.3)	-0.1 (-0.6 to 0.4)
	12 to 18	0.3	0.2	0.3	0.0 (-0.2 to 0.3)	0.1 (-0.2 to 0.4)

*Change significant at $p < .05$.

are 0.0, 0.2, 0.0, 0.0, and 0.3, respectively. Given these fluctuations and the fact that the absolute level of these use estimates is fairly low, it would seem more appropriate to focus on the overall stability of inhalant use.

Also, Detail Tables 4-8 to 4-11 show that, with one exception, there are no significant changes consistently found across measures of inhalant use for specific subpopulations. Higher risk 14- to 18-year-olds report significant decreases in lifetime and past year inhalant use from year 2000 to Wave 5.

As noted in the previous report also, the levels of use reported in the MTF and NSPY are quite different, with NSPY continuing to report much lower estimates of use than MTF. The NHSDA 2001 reported levels of use for 12- to 17-year-olds suggest that its estimates lie between the MTF and NSPY estimates (lifetime: 8.6%; 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-C. 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/publications/publications.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 were 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-C. NSPY and MTF inhalant question sequences

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 last 12 months, on how many occasions have you used an inhalant for kicks or to get high?”

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?”

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 across measures 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 NHSDA, reports estimates between MTF and NSPY overall and does not find any age gradient at all in inhalant use.

4.7 Predictors of Marijuana Use and the Development of a Risk Model

The previous report incorporated a new subgroup category defined by a youth’s risk of marijuana use. Youth were stratified into lower and higher risk subgroups. This reflected the expectations of Campaign implementers who argued from the start of the Campaign that their target audience was those youth at risk of marijuana use. Previously, risk had been represented by sensation-seeking; however, beginning with the fourth report, the idea of risk has been extended to include other characteristics that put a child at risk of marijuana use. This section briefly describes the development of the risk model, the measures used, and its effectiveness in predicting marijuana use.

Stratification into risk subgroups was made on the basis of cross-predicted risk probabilities for marijuana use in the past year. The sample for the development of the “risk score” (the predicted probability of the undesired event) was aggregated across the first three NSPY waves of data collection. Only youth who were 12 to 18 years old were included, a total of 4,804 cases.

The outcome variable was defined as marijuana use that began or continued in the last 12 months. Youth who had used in previous years but not in the past year were excluded from the analysis. The list of youth and parental covariates was gleaned from existing literature on risk factors for adolescent problem behavior in general and for substance use in particular. However, the consideration of what variables were to be included was subject to an additional limitation. No variable that might have been affected by the Campaign directly or indirectly or that could be a consequence as well as a cause of marijuana use was eligible for inclusion. For example, a well known predictor of risk is the number of friends an individual has who use marijuana. However, there is some risk that the friend's use may be an effect of the individual's use as well as a cause. Including such variables in the risk model would have created ambiguity in the interpretation of the risk variable, in its relationship to possible Campaign effects. Where it was possible, some variables that could have held such ambiguous relationships were constructed so that they would not. Thus, child cigarette and alcohol use as antecedent covariates are well established in the literature; the measures used here were constructed so as to avoid capturing reciprocal effects between them and marijuana use. Only cigarette or alcohol use that had occurred more than 1 year prior to the interview was included. That was temporally precedent to current use. Given the cross-sectional nature of the data, other promising risk covariates were excluded in order to avoid such causal ambiguity, for example, marijuana offers, association with deviant peers, child-parent conflict, among others.

Table 4-K presents the results for the final model.⁴ The strongest predictors are: having started smoking prior to the past 12 months, sensation seeking, age, and having started drinking prior to the past 12 months, all of which are youth characteristics and behaviors. To ease interpretation, the last column presents the adjusted odds ratio estimates. Children who had started using cigarettes prior to the past year were nearly four and a half times more likely (i.e., the odds ratio) to use marijuana in the past year than were children who had not started smoking prior to the past 12 months. Each 1-point increase in the child's sensation-seeking tendencies was associated with an increase of 116 percent in the odds of marijuana use in the past 12 months. Each 1-year increase in age was associated with a 42 percent increase in the odds of marijuana use in the past 12 months. Children who had started drinking prior to the past year had approximately twice the odds of using marijuana in the past year, than did children who had not started alcohol use before that period. Children living in large urban areas had 31 percent greater odds of having used marijuana in the past year than children living in towns and rural areas.

The strength of parental factors included in the model was, overall, of lower magnitude; and some variables did not achieve statistical significance at the conventional level ($p < .05$) in the final model. Children from households in which parenting is shared have only 0.64 times the odds of using marijuana in the past year as children living in single parent households. Children whose parent reported tobacco use in the past month had 1.5 times greater odds of using marijuana in the past year than children whose parent had not smoked cigarettes in the preceding month. Likewise, parental marijuana use was associated with a 40 percent increase in the odds of child past-year marijuana use.⁵

⁴ With regard to the analytical procedure, the data set was split into 10 random groups; one of these was randomly dropped, and a logistic regression model was fitted to the remaining 9 groups. The fitted model was then used to assign the risk scores of persons in the omitted group. The logistic regression model was run so that each of the 10 groups was dropped in turn, resulting in a cross-predicted risk score for every person in the sample. In a second step, all 10 models were rerun using only variables that had been found to be significant in any of the previous analyses. Coefficients were averaged across these latter 10 models, and they were the basis for the cross-predicted probability.

⁵ Covariates that did not make it into the risk measure are wave, youth gender, youth race/ethnicity, parent binge drinking in past 30 days, age of parent, parental education, and annual household income.

Table 4-K. Youth and parent covariates for youth past year marijuana use

	Estimate	Standard error	Waldc ²	Significance level	Odds ratio ¹
Intercept	-9.9651	.5842	290.9522	<.0001	
Youth covariates					
Age (12-18)	.3530	.0323	119.2926	<.0001	1.4233
Sensation seeking (high versus low)	.7730	.0692	124.8318	<.0001	2.1663
Started smoking 12+ months ago	1.4890	.1250	141.9463	<.0001	4.4327
Started drinking 12+ months ago	.7655	.1216	39.6234	<.0001	2.1501
Urbanicity 1 (urban vs. rural)	.2704	.0815	11.0169	.0009	1.3105
Urbanicity 2 (suburban versus rural)	-.0036	.0852	.0018	.9661	.9964
Parent covariates					
Marijuana use in past 5 years	.3361	.1678	4.0142	.0451	1.3995
Cigarette use in past month	.4127	.1233	11.1949	.0008	1.5109
Had no drink in past month	-.1727	.1180	2.1418	.1433	.8414
Attendance at religious services	-.0943	.0656	2.0703	.1502	.9100
Rating of importance of religion	-.0768	.0713	1.1595	.2816	.9261
Shares parenting with other adult in household	-.4396	.1186	13.7378	.0002	.6443

¹Likelihood of a youth using marijuana in the past year.

Across the first three NSPY waves of data collection, the sample used to develop the risk model, only about 11.5 percent of youth reported marijuana use during the preceding year. Given such a low base rate, the risk probabilities for nonusers tend to be fairly low. The average 12- to 18-year-old had about a 12 percent predicted probability of annual marijuana use, with half of the youth having less than a 4 percent risk of use.

Across the five waves of data collection to date, subgroup analyses by risk yield statistically significant differences in marijuana use. During this period, about a third of the sample was classified as at higher risk, set at having a risk of use equal to or greater than 8 percent. While an 8 percent cutoff seems low, this measure represents a relative risk and not an absolute risk, hence the use of the terms “higher” and “lower.” Though there are no differences in trends by risk group (see Detail Tables 4-1 through 4-4), there are considerable differences in the absolute levels of youth reports of marijuana use by risk group. Because child’s age is an important predictor in the risk model, it is important to determine whether the differences by risk group do not disappear when controlling for age. Table 4-L presents the results for different measures of marijuana use by risk subgroup within age groups, averaging estimates across the five waves of data collection.

Table 4-L. Differences in percent of youth reporting marijuana use by age and risk subgroup across five waves

Youth Characteristics		Marijuana Use Measure			
Age groups	Risk group	Lifetime % (CI)	Past Year % (CI)	Past Month % (CI)	Regular % (CI)
12 to 13					
	Higher	29.1 (22.8 to 35.5)	21.1 (15.6 to 26.6)	8.6 (4.9 to 12.3)	4.2 (2.3 to 7.4)
	Lower	2.1 (1.5 to 2.7)	1.3 (0.8 to 1.8)	0.5 (0.2 to 0.8)	0.1 (0.0 to 0.4))
14 to 18					
	Higher	50.1 (47.4 to 52.7)	35.8 (33.5 to 38.1)	18.4 (16.7 to 20.2)	14.7 (13.1 to 16.4)
	Lower	6.3 (5.1 to 7.6)	4.3 (3.2 to 5.5)	1.8 (1.2 to 2.5)	1.1 (.7 to 1.9)

Marijuana use reported by children at higher risk is on average 16 times larger than that reported by children at lower risk across the different measures and age groups. For example, among 12- to 13-year-olds, 0.5 percent of children at lower risk and 8.6 percent of children at higher risk reported past month marijuana use during this period. Among the older group, a little less than 2 percent of children at lower risk and 18 percent of children at higher risk reported past month use in the same period.

In addition to examining cross-sectional trends, analyses by risk probabilities can be useful for studying changes in marijuana use over time. The previous report found considerable differences in marijuana initiation at Wave 4 by child risk among youth who had never used marijuana at the time of first interview. This pattern is confirmed with the full followup sample. Excluding those who reported use at the first time point, children at higher risk do progress into use at greater rates than children at lower risk, even after controlling for age, as can be seen in Table 4-M.

Table 4-M. Marijuana initiation at Round 2 by child risk and age among nonusers at Round 1

	Age group at Round 2					
	12 to 13		14 to 15		16 to 18	
	Risk group at R1 % (CI)		Risk group at R1 % (CI)		Risk group at R1 % (CI)	
Initiated marijuana use by R2	Higher	Lower	Higher	Lower	Higher	Lower
	22.9 (14.3 to 34.5)	2.8 (2.0 to 3.9)	33.7 (26.6 to 41.7)	6.8 (5.1 to 8.9)	31.3 (26.6 to 36.4)	8.7 (6.0 to 12.6)

Overall for the whole sample, while 31 percent of nonusing children at higher risk had initiated marijuana use by followup, only 5.5 percent of lower risk children had done so. This pattern is replicated within age groups.

Summary

These analyses do not show any significant reductions in marijuana or inhalant use associated with the initiation of the Campaign for any of the target age groups.

The NSPY data collection covers the period from November 1999 through June 2002, substantially parallel to Phase III of the National Youth Anti-Drug Media Campaign. As noted in prior reports, 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 2001, the end point for currently available data. Indeed, the only evidence for change in marijuana use comes from the NHSDA, and the NHSDA evidence suggests an increase and not a decrease in marijuana use for 12- to-17-year-olds.

The NSPY results (for 2000 through 2002) showed no decline in inhalant use. In contrast, the MTF results did show a decline in inhalant use between 1999 and 2001. The NHSDA results suggest a decline in inhalant use between 1999 and 2000 for 12- to 13-year-olds only; the decline did not continue between 2000 and 2001. However, the MTF decline was a continuation of the downward trend begun before the initiation of the Campaign; the NHSDA data do not permit sorting out trend effects from Campaign effect. Thus none of these data suggest that the Campaign was associated with a new decline in inhalant use.

As in the previous report, youth reports of receiving offers of marijuana were stable. Also, temporal order of the association between offers of marijuana and use was further clarified in analyses of the differences in marijuana initiation at followup among nonusing children who had reported receiving offers at time of first interview. It is important to note, however, that for both longitudinal analyses of marijuana initiation at Round 2, around 70 percent of youth who had received offers at Round 1 and a similar proportion of youth at higher risk for marijuana use had not initiated marijuana use at followup.

There are, likewise, substantial differences in absolute levels of use of both marijuana and inhalants by youth stratification into higher and lower risk subgroups. Moreover, longitudinal analyses show a strong association between predicted risk among nonusers at Round 1 and progression into marijuana use by Round 2. Youth at high risk were the particular target for the Campaign, and thus any evidence for a decline in drug use among them would be of particular interest. However, there is no evidence from the trend data that the introduction of the Campaign was associated with a reduction of use among these high risk youth. Their pattern of use over time is stable, parallel to that of other youth.

References

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5. Campaign Effects on Youth

The primary audience for the Campaign is young people, with some focus until recently 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. Although the Campaign has at times focused on a variety of drugs (methamphetamines, Ecstasy, inhalants, and others), 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 aimed to affect youth drug use through influencing the behavior of parents and other adults important in youths' lives. Increased adult engagement in youths' 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 also 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 during Phase III of the Campaign. The evidence presented there did not support a claim of change in marijuana use overall or in any of the subgroups thus far. 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, that is, a trend favorable to the campaign, 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 favorable 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 favorable trends than to have to explain why the lack of such a trend is still consistent with a Campaign effect. Given that the trend between 1992 and 1998 toward increased drug use justified the mounting of the Campaign, finding a reversal of that trend is desirable.

For a favorable trend to be more firmly linked to the Campaign, the presence of a second class of evidence is required: that youth who were more exposed to the Campaign do "better" on the desired outcomes (i.e., that youth who reported seeing Campaign ads two or three times a week are more

likely to believe, for instance, that there were negative outcomes of marijuana use than those who reported ad exposure less than once a week). However, even were such associations to be found, the results would be 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.

Second, 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 are sometimes not detectable through individual level comparisons.

The third 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. Therefore, in the face of significant associational results, it will be necessary to have data that will give evidence of causal order. Longitudinal analysis, described next, may provide such evidence.

With the Waves 4 and 5 data collections, the Campaign evaluation has access to over time, cohort data, with youth interviewed at Waves 1, 2, and 3 having been re-interviewed at Waves 4 and 5. As previously described in Chapter 2, the primary longitudinal analysis is delayed-effects analysis. This examines the association between exposure at Round 1, or Waves 1, 2, and 3, and outcomes measured at Round 2, or Waves 4 and 5. Because Round 1 exposure is measured prior to Round 2 outcomes, this analysis permits the sorting of causal order. However, a causal inference from the delayed-effects association is still threatened by possible effects of confounders, as are the cross-sectional analyses. The same statistical procedure, propensity scoring, was used to address those concerns. It is described in Appendix C.¹ With these delayed-effects associations, we are able to establish that any observed association between exposure and the later outcome cannot be the result of the outcome affecting exposure. Any delayed-effects association would either reflect delayed-effects of exposure at Round 1 directly on outcomes after Round 1, or that the effects of exposure at Round 1 would reflect continuing levels of subsequent exposure through Round 2 which, in turn, affects outcome at Round 2. Both of these routes are consistent with a claim of influence of Campaign exposure on outcome.

¹ The delayed-effects association would ordinarily be controlled for the Round 1 value of the outcome measures. This could not be done for the whole sample, in this case, because the youth who were aged 9 to 11 at Round 1 but older than 12 at Round 2 did not receive the full battery of outcome questions at Round 1. This should not bias the results, since as shown previously and show again in this report, there is no association between simultaneously measured exposure and outcome. Thus the Round 1 outcome could not account for the Round 1 exposure—Round 2 outcome association. However, since most such measures for the 9- to 11-year-olds are not available, it cannot be stated with absolute certainty that the lack of simultaneous association would hold for them as well.

The additional explanatory power gained by the delayed-effects associations is critical. This followup data can serve to sort out with some confidence the causal order between variables. Thus, the longitudinal analyses included in this chapter address one major concern raised above about making causal claims from cross-sectional associations. The remaining challenge to a claim of causal influence of exposure on outcome is that there was some additional confounder, not measured at Round 1, which influenced exposure at Round 1 and outcome at Round 2, but not outcome at Round 1.

In sum, the best cross-sectional evidence consistent with a Campaign effect is an association of reported exposure to the Campaign with the target outcomes statistically controlled for likely confounders. If this is accompanied by evidence of a favorable trend in the outcome, the argument that there was a Campaign effect is strengthened. Finally, evidence for a delayed effect provides a clearer understanding of the causal order between exposure and outcomes.

The overall analysis focuses on effects among current nonusers of marijuana who are 12- to 18-year-olds. Baseline current users do not receive a great deal of attention in the presentation. The Campaign would like to increase the resistance of these youth to 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 almost 40 percent of 16- to 18-year-olds report prior use, fewer 12- to 13-year-olds (less than 5%) and 14- to 15-year-olds (less than 20%) report use. Therefore, analyses with those samples will be able to detect only large changes in outcomes.

In addition to the overall analysis, this chapter presents trend and cross-sectional associational results 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. As with the previous report, this chapter will include subgroup analyses by youth's risk for marijuana use with youth classified as "higher" or "lower" risk. This report also introduces the analysis of subgroups defined by wave at first interview. This was meant to permit the examination of whether different periods of the Campaign had different effects on the outcomes. A favorable increase across waves in the cross-sectional exposure-outcome association, for example, would be consistent with a claim that the Campaign's message was increasing in effectiveness. These subgroups are described later in this chapter and in further detail in Chapter 4. Subgroups' differences are noted when they show a consistent pattern. All trend, cross-sectional, and delayed-effects associational analyses are fully presented in the Detail Tables and summarized in the text.

The chapter contains a large number of analyses designed to examine Campaign effects, using several different analytic approaches and conducting analyses both for the full sample and for many different subgroups. Statistical tests of significance are used for each analysis to establish whether any effects observed might be simply the result of sampling error. In assessing the findings from these significance tests, it needs to be recognized that, even if there were no Campaign effects whatsoever, some of the large number of tests will produce significant results. Thus, for example, in the simplified case of 100 completely independent statistical tests with no effect present for any of them, one would expect that five of the tests would be significant if a 5 percent significance level is used. Considerable caution should therefore be exercised in assessing an isolated significant effect when many tests are conducted. For this reason, in interpreting the many analyses in this chapter, consistent patterns of effects are highlighted and individual significant effects are downplayed.

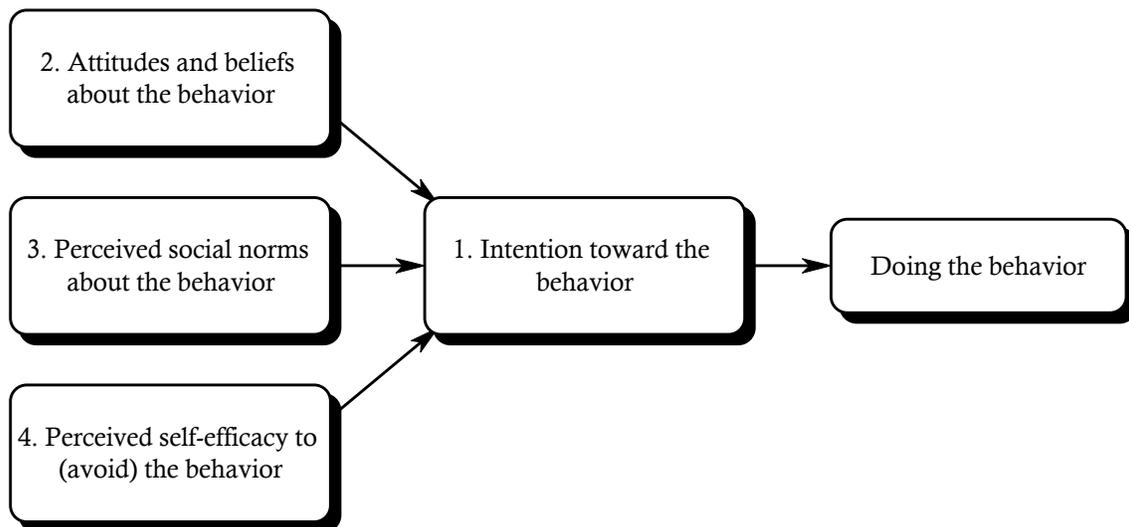
5.2 Development of Overall Scales, Combining Trial and Regular Use, and Summarizing Multiple Related Items

The Detail Tables provide information about trends in a total of 34 cognitive outcomes related to use of marijuana and 6 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, in which not all respondents are asked identical sets of questions, 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 aged 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. Intentions are a very strong predictor of future behavior. Among Round 1 nonusers, 10 percent of those who said “definitely not” to any use of marijuana over the next year had initiated use by Round 2 (12 to 18 months later). Of those who said anything other than “definitely not” the rate of initiation was 42 percent.

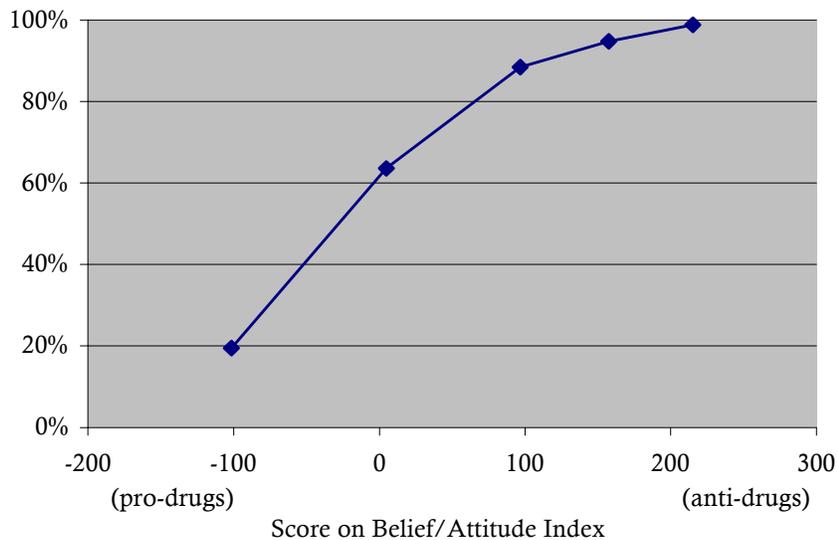
- **Attitudes and beliefs about marijuana.** All youth respondents were asked questions about how likely it was that a series of specific consequences would result if “you” use marijuana, either regularly (every month or almost every month) or once or twice over the next year. The eight consequences 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 about one of the two 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 attitudes and beliefs about the two behaviors—using once or twice, and using regularly—as distinct. In the earlier reports, analysis focused on distinguishing between the two sets of outcomes. However, beginning with the Third Semi-Annual Report, it was decided to sacrifice the distinctions to allow the creation of a single index to capture beliefs and attitudes about marijuana. Since youth who have never used marijuana, referred to in this report as “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. 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.

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 regression coefficients from the prediction equation were then used to weight each of the items for a summed index. The weights derived from the nonusers’ equations were also used to construct index scores for the population of prior users to ease interpretation. Each of the summed indices was then calibrated so that its mean and standard deviation were equal to 100 for the 12- to 18-year-old nonusers at Wave 1. Then the two indices were treated as equivalent to a single index with higher scores corresponding to more anti-drug attitudes and beliefs. This 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.

The summed Attitudes/Beliefs Index, as expected, was substantially associated with the intention to use marijuana in the next year. Figure 5-B presents that relationship graphically. Twenty 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.

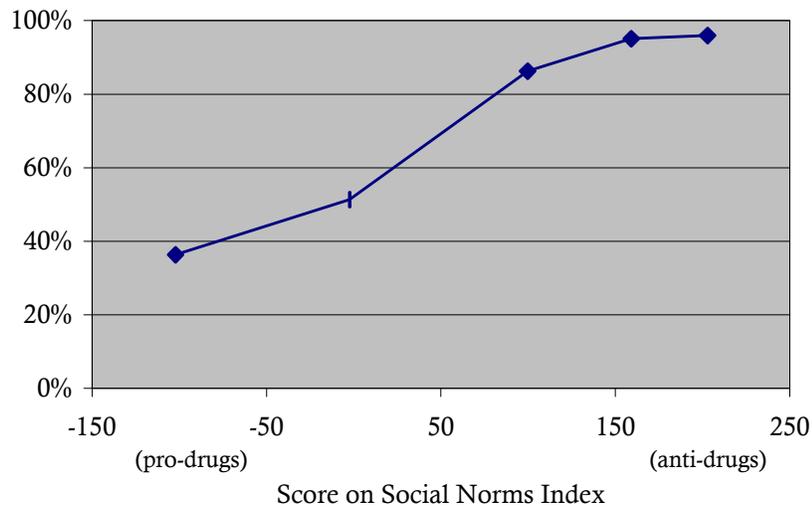
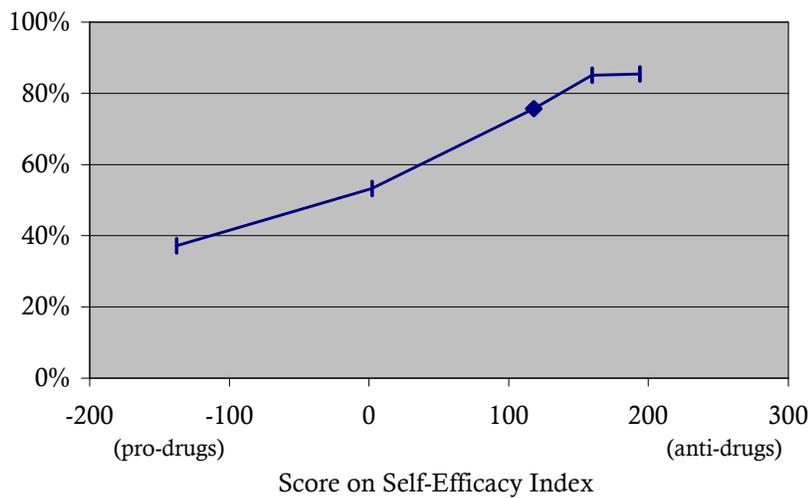
Figure 5-B. Marijuana nonuse intention by Attitudes/Beliefs Index



- **Perceived social norms.** The perceived Social Norms Index was formed in a parallel way to the Attitudes/Beliefs 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. Using a regression model, the questions were then 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 for 12- to 18-year-old nonusers at Wave 1. 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 as strong as that between the Attitudes/Beliefs Index and intention (Figure 5-C).

- **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”). Using a regression model, 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 for Wave 1 12- to 18-year-old nonusers. The new index predicted intentions similarly, but less powerfully, than the other two indices (Figure 5-D).

Figure 5-C. Marijuana nonuse intention by Social Norms Index**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 trends in intentions about trial use, attitudes and beliefs, perceived social norms, and self-efficacy about use across NSPY waves. The trends are broken out by age. It also discusses the evidence for diversity in trends across various subgroups.

All indices are scaled so that a higher score indicates stronger anti-drug attitudes, beliefs, and intentions.

5.3.1 Intentions About Marijuana Trial Use by Age and by Wave

There is no statistically significant change for the full 12- to 18-year-old sample in intentions to use marijuana once or twice over the five waves of measurement among prior nonusers. There is, however, a small trend, unfavorable to the Campaign, on marijuana intentions among 14- to 18-year-old nonusers. The downward trend appears to be statistically equivalent among both the 14- to 15-year-olds and 16- to 18-year-olds. Table 5-A presents these data. (See also Detail Table 5-1.)

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

Age groups	Percent of nonusers saying “definitely not”				
	Year 2000 (%)	Year 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	92.3	90.9	91.7	-0.6 (-2.8, 1.7)	0.9 (-1.7, 3.4)
14 to 15	85.1	83.8	82.1	-3.0 (-6.8, 0.7)	-1.7 (-4.9, 1.4)
16 to 18	84.6	83.5	82.0	-2.6 (-7.3, 2.0)	-1.5 (-6.0, 3.0)
14 to 18	84.9	83.7	82.0	-2.9* (-5.6, -0.1)	-1.6 (-4.3, 1.0)
12 to 18	87.5	86.3	85.6	-1.9 (-3.9, 0.1)	-0.7 (-2.5, 1.0)

Note: The question asked was, “ 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.”

* Between-year difference significant at $p < 0.05$.

The table provides 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. It is possible to compare the levels of lifetime use reported by each age level, and from that information estimate what the annual rate of initiation is among nonusers. For 12- to 13-year-olds, the annual rate of marijuana initiation is about 6 percent; for 14- to 15-year-olds it is 11 percent, and for 16- to 17-year-olds it is 12 percent. Each of these numbers is close to two-thirds of the numbers of youth who do not indicate they will “definitely not” initiate marijuana use in the next year.

Also, there is some age association in these responses, with 14- to 18-year-olds less likely to say definitely not than 12- to 13-year-olds. However, the age effects are understated in this table, because the table presents only the responses of nonusers. Since almost 40 percent of 16- to 18-year-olds in Wave 5 were prior users, the numbers presented here are not reflective of the intentions of all youth in the age group. In Wave 5, among nonusers, 92 percent of all 12- to 13-year-olds, 82 percent of all 14- to 15-year-olds, and 82 percent of all 16- to 18-year-olds say “definitely not” to this question. Among both prior and nonusers, 78 percent of all 12- to 13-year-olds, 65 percent of all 14- to 15-year-olds, and 59 percent of all 16- to 18-year-olds say “definitely not” to this question.

5.3.2 Attitudes/Beliefs by Age and by Wave

The results for the Attitudes/Beliefs Index show no overall effects and no significant effects for any of the age subgroups. Table 5-B presents the results for each age subgroup and the entire sample of 12- to 18-year-olds. (See also Detail Table 5-2.) Table 5-B shows no statistically significant trend for the full sample comparing Year 2000 with Wave 5 and Year 2001 with Wave 5.

Table 5-B. Trends in Attitudes/Beliefs Index about marijuana use among nonusers by child age

Age groups	Score on Index				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	129.20	121.40	127.21	-1.99 (-8.60, 4.63)	5.81 (-1.60, 13.23)
14 to 15	102.29	100.85	101.33	-0.96 (-11.53, 9.60)	0.48 (-7.57, 8.53)
16 to 18	91.31	85.13	94.02	2.71 (-8.95, 14.37)	8.89 (-3.01, 20.79)
14 to 18	97.28	93.42	97.64	0.36 (-6.94, 7.66)	4.22 (-2.58, 11.02)
12 to 18	108.55	103.49	108.17	-0.38 (-5.49, 4.73)	4.68 (-0.57, 9.93)

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

Table 5-B does show a clear age gradient, despite the omission of marijuana users from the analysis, with older nonusers expressing weaker anti-drug sentiments than younger nonusers. In Wave 5, 12- to 13-year-olds had an index score of 127, while 16- to 18-year-olds had an index score of 94 (Detail Table 5-2).

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

Social norms against marijuana use show a significant decline from 2000 to Wave 5 for the full sample. The effects are apparently shared among all of the age groups. Table 5-C presents the essential results with additional detail presented in Detail Table 5-3.

Table 5-C. Trends in Social Norms Index about marijuana use among nonusers by child age

Age groups	Score on Index				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	136.87	129.47	129.63	-7.24* (-13.08, -1.40)	0.15 (-6.34, 6.64)
14 to 15	97.63	98.22	91.34	-6.29 (-17.17, 4.59)	-6.89 (-16.93, 3.16)
16 to 18	83.91	70.65	75.53	-8.38 (-20.52, 3.75)	4.88 (-7.84, 17.59)
14 to 18	91.37	85.19	83.36	-8.01 (-16.34, 0.33)	-1.83 (-10.26, 6.59)
12 to 18	107.43	101.12	99.83	-7.60* (-13.28, -1.93)	-1.29 (-7.04, 4.45)

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

* Between-year difference significant at $p < 0.05$.

Once again, the age gradient is clear, with older nonusers exhibiting more pro-drug norms than younger nonusers. The 16- to 18-year-olds scored an average of 76 in Wave 5; the 12- to 13-year-olds scored 54 points higher, even though marijuana users are excluded from the table.

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

The self-efficacy results suggest a trend favorable to the Campaign. 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 significant favorable changes between Year 2000 and Wave 5 and between 2001 and Wave 5. The trend for each age group is statistically equivalent to the overall sample trend (Table 5-D and Detail Table 5-4).

Table 5-D. Trends in Self-Efficacy Index about marijuana use among nonusers by child age

Age groups	Score on Index				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	101.14	100.85	119.34	18.20* (11.45, 24.95)	18.50* (11.30, 25.69)
14 to 15	96.62	111.95	111.64	15.02* (3.83, 26.21)	-0.31 (-8.41, 7.79)
16 to 18	110.79	108.73	121.80	11.01 (-1.42, 23.44)	13.07* (1.62, 24.51)
14 to 18	103.09	110.43	116.77	13.68* (4.73, 22.63)	6.34 (-0.28, 12.96)
12 to 18	102.40	106.98	117.68	15.28* (8.89, 21.67)	10.70* (5.79, 15.61)

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

* Between-year difference significant at p<0.05.

There is no age gradient in Table 5-D for the self-efficacy measure among nonusers. However, when users are included there is a small association (12- to 13-year-olds=98.2; 14- to 15-year-olds=89.9, and 16- to 18-year-olds=88.0.)

5.3.5 Evidence for Diversity in Trends in Cognitions about Marijuana Use

The diversity effects analyses address two complementary questions. When there was not evidence of a significant overall trend, was there evidence of such a trend for a subgroup, in addition to the age subgroup effects described above? Alternately, when there was overall evidence of trend, did any subgroup show a significantly different trend? Altogether, there are seven subgroups of three grouping variables (two sexes; three race/ethnicity groups; two risk groups²). These groups are examined across four measures, making a total of 28 trend comparisons. For two of the outcomes (social norms and efficacy) there was an overall trend. All of the subgroups' trends were statistically consistent with the overall trend effects. For the other two outcomes, intentions and the attitude/belief index, for which the overall trend was not significant, there is only one subgroup trend that does not match the overall trend. Specifically, for the intentions outcome, there was a negative trend for the lower risk subgroup.

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

The next step in the analysis turns to the examination of associations of recalled exposure and the four major outcomes. In contrast to the trend data, the associational evidence speaks directly to the influence of individual exposure to the Campaign. The analyses below show only rare evidence of association, and the observed associations are more often unfavorable than favorable.

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

² The Detail Tables present trend information for high and low risk groups and sensation-seeking groups. The risk group variable incorporates the sensation-seeking variable as well as other predictors of drug use. To avoid substantial redundancy of reporting, the text includes consideration of only the risk subgroups.

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 two months before the interview.

Table 5-E presents the exposure levels for the 12- to 18-year-old population overall (i.e., across Waves 1 through 5). The distribution of exposures among nonusers, who are the focus of the analyses reported below, are very close to these overall estimates.

Table 5-E. Exposure per month reported by 12- to 18-year-olds

	<1 exposure (%)	1 - 3 exposures (%)	4 - 11 exposures (%)	12+ exposures (%)
General exposure	22.9		23.3	52.2
Specific exposure	19.7	34.4	35.7	10.2

The general exposure measures display substantially higher levels than do the specific exposure levels. For example, 52 percent of youth reported general exposure 12 or more times per month, but 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 television³ 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 very wide confidence intervals. Usually the specific exposure claims must rely on the differences among the other three exposure groups. Subsequently, when the longitudinal analyses that rely on a reduced sample are presented, only three categories of specific exposure are used, with the top two categories collapsed.

In the exposure analyses that follow, 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 measured variables that were associated with exposure.

³ 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 through 5, 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 (Detail Tables 3-2 and 3-17).

All cross-sectional analyses of exposure include data from all five waves, but are restricted to 12- to 18-year-olds who reported never using marijuana.⁴ 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, risk of marijuana use, and sensation-seeking).

Each table presents three different measures 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 projected to be achieved by the lowest exposure group if the entire population had received that level of exposure. It asks whether the average person was different from those who had minimal exposure. It is the best estimate of the average effect of the Campaign across the population. In addition, in order to have an estimate of the magnitude of association, the gamma coefficient is presented. Like the Pearson correlation coefficient, gamma varies from -1 to $+1$, with 0 being no relationship.⁵ 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? While each table reports all three tests, the presentation focuses on the gamma estimate to determine whether there is an overall effect. There is a risk that the use of three tests to examine each effect increases the likelihood of misleadingly claiming chance effects. Given the need to choose only one test, gamma was the one chosen. It is the only one of the tests that uses all of the data, and thus provides the fullest picture of association. The other tests are used to provide alternative views of the results, but they are not the focus of claims about Campaign effects.

5.4.1 Overall Analyses of Four Cognitive Measures by Exposure

After controlling for confounders by propensity scoring, there is no significant cross-sectional association between either exposure measure and intentions to use marijuana for the entire Wave 1 through Wave 5 population of 12- to 18-year-old youth (see Table 5-F and Detail Tables 5-33 and 5-34).

There is also no statistically significant cross-sectional association between general exposure and the Attitudes/Beliefs Index, nor between specific exposure and the Attitudes/Belief Index as shown by the nonsignificant gammas in the table above. However, there is a significant direct effect (comparing the lowest exposed group with the average group) of specific exposure on the Attitudes/Belief Index, in an unfavorable direction. This is shown in Table 5-G as well as in Detail Tables 5-35 and 5-36.

Table 5-F. Exposure per month and intentions to use marijuana reported by nonuser 12- to 18-year-olds

⁴ These analyses treat all interviews as independent, although the Waves 4 and 5 interviews were done with youth first interviewed in Waves 1 through 3. This would violate the assumption of independence of observations ordinarily required for the calculation of standard errors from a sample. However, the estimation procedures used in these analyses, making use of the WESVAR program, adjust for any nonindependence.

⁵ Unlike the Pearson correlation, gamma does not assume that both exposure and the outcome are measured as interval level variables. It is appropriately used to estimate associations between ordered variables. In previous reports this association was estimated with the Spearman rho coefficient for magnitude and the Jonkheere-Terpstra test for significance. Since the last report was published, staff statisticians have developed a procedure for estimating both the magnitude and the statistical significance for a single commonly reported coefficient, Goodman and Kruskal's gamma, in the context of the complex sample design. Using a single coefficient and statistical test provides a clearer presentation approach. Moreover, they found that it gamma produces virtually identical inferences about the nature of the observed associations as were produced by the previous two-part procedure.

Percent saying "definitely not" to likelihood of using marijuana even once or twice - overall average= 86.6%							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	87.8		85.5	86.4	-1.2 (-3.6 to 1.3)	-.037 (-.12 to .05)	-1.3 (-4.2 to 1.6)
Specific exposure	88.6	87.1	85.2	88.0	-2.0 (-4.2 to 0.1)	-.028 (-.14 to .09)	-0.6 (-6.0 to 4.7)

Table 5-G. Exposure per month and Attitudes/Beliefs Index among nonuser 12- to 18-year-olds

Mean score on attitudes/belief index: average for the sample= 106.6							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	108.25		104.63	107.66	-1.63 (-8.47 to 5.20)	.001 (-.03 to .04)	-0.59 (-9.22 to 8.05)
Specific exposure	114.40	107.92	102.03	110.37	-7.78* (-14.45 to -1.11)	-0.020 (-.06 to .02)	-4.02 (-16.26 to 8.21)

* Significant at $p < 0.05$.

The results for the cross-sectional association of Campaign ad exposure and the Social Norms Index are presented in Table 5-H. There is again no significant overall effect for youth aged 12 to 18. (See also Detail Tables 5-37 and 5-38.)

Table 5-H. Exposure per month and Social Norms Index among 12- to 18-year-olds

Mean score on Social Norms Index: average for the sample=103.2							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	105.92		99.79	103.41	-2.70 (-8.98 to 3.58)	-.010 (-.04 to .02)	-2.51 (-9.59 to 4.57)
Specific exposure	109.45	105.47	100.63	104.30	-6.22 (-12.67 to 0.22)	-.19 (-.06 to .02)	-5.15 (-17.67 to 7.36)

The cross-sectional results for the self-efficacy scale are essentially consistent with the Attitudes/Beliefs Index. There is no statistically significant cross-sectional association of general exposure and the Self Efficacy to Refuse Index, nor of specific exposure and Self-Efficacy. There is a significant direct effect of specific exposure on the Self Efficacy Index in an unfavorable direction. Table 5-I summarizes the self-efficacy results (see also Detail Tables 5-39 and 5-40).

Table 5-I. Exposure per month and Self-Efficacy to Refuse Marijuana Index among 12- to 18-year-olds

Mean score on Self-Efficacy Index: average for the sample=107.9							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	105.73		103.66	110.87	2.17 (-4.43 to 8.78)	0.005 (-.03 to .05)	5.14 (-3.13 to 13.40)
Specific exposure	115.22	106.30	106.79	123.54	-7.31 * (-12.82 to -1.81)	.014 (-.04 to .07)	8.33 (-0.06 to 16.71)

* Significant at $p < 0.05$.

In conclusion then, the gamma statistic provides no supportive evidence that concurrent campaign exposure is associated either favorably or unfavorably with any of the four cognitive outcomes for the full sample of 12- to 18-year-olds. The direct effect suggests an unfavorable association between

specific exposure and attitudes/behavior and self-efficacy. 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, Risk Group, Gender, and Race/Ethnicity

Through the period covered by this report, the Campaign has been particularly focused on younger teens as its primary audience. Thus, there has been 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 report having 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 try marijuana and other drugs. Thus they are of primary importance as an audience for the Campaign, and separating the results of younger (12 to 13) and older (14 to 18) teens is, therefore, informative.

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 no significant effects.

The Campaign has also had a particular interest in reaching higher risk individuals. Accordingly, the Campaign has been designed with a recognition that youth vary in their risk of drug use and tries to reach the subgroup category of high risk youth. There were no overall significant associations for either of the risk subgroups.

In addition to the subgroup analyses by age and risk, for which the Campaign had clear expectations of subgroup effects, separate analyses were also performed for subgroups defined by gender and race/ethnicity. There were a total of 40 such subgroup analyses examined: five groups (defined by two genders and three race/ethnicities) 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 40 tests, it might be expected that a few tests would be significant at the conventional level by chance. In fact, there were no significant results.

5.5 Summary and Discussion of Trend and Cross-sectional Results for Marijuana Cognitions

This section summarizes the trend and cross-sectional associational results presented thus far for marijuana cognitions. As noted above, the most desirable result for a claim of Campaign effects from these data would be a favorable trend on a target outcome, and a favorable association between exposure to the Campaign and the outcome. The trends are significant for two of the outcomes (social norms and self-efficacy) for the entire population but in opposite directions, favorable to the Campaign for self-efficacy and unfavorable to the Campaign for social norms. In addition, there was an unfavorable effect for intentions for 14- to 18-year-olds, and an unfavorable effect on the attitude/belief index for youth who were at lower risk for marijuana use.

There was no evidence (judged by gamma) for statistically significant associations overall, nor for either of the age subgroups nor for any of the other subgroups. The trend results provide mixed evidence about favorable versus unfavorable, versus no Campaign effects, but the associational data

does not support any claims of effects in either direction. Thus far then, the analyses do not support an inference of Campaign effects.

5.6 Campaign Effects on Inhalant Intentions and Attitudes Among Prior Nonusers

During the Wave 3 data collection, the Campaign raised the profile of its anti-inhalant advertising, particularly those ads directed at parents, which might have been accessible to youth as well. About 43 percent of all radio and television GRPs for parents in Wave 3 related to inhalants. However, no parent anti-inhalant ad time was purchased in Waves 4 or 5. For general market youth, no anti-inhalant ads were run during Wave 3, and only a small amount of inhalant-specific advertising was directed toward youth in Wave 4 (about 4% of all youth-directed GRPs—see Table 3-I), and none in Wave 5. This pattern of buys may not be consistent with expecting changes among youth in behavior or cognitions. Nonetheless, this section of the report examines change in inhalant cognitions across time.

The analysis of trends focuses on two summary measures. The first is parallel to the marijuana intentions measure 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 presented above. As with the marijuana Attitudes/Beliefs 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.

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

There is no statistically significant change between Year 2000 to Wave 5 and Year 2001 to Wave 5 for any of the age subgroups in their intention to use inhalants in the next year. Almost all youth said they would not use in Wave 5 and almost all youth said they would not use in Years 2000 and 2001 (Table 5-J and Detail Table 5-27). This may be the result of a "ceiling effect"; the Campaign cannot show significant favorable effects because the criterion outcome is already so high.

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

Age groups	Percent of nonusers saying "definitely not"				
	Year 2000 (%)	Year 2001 (%)	Wave 5 (Jan-June 2002) (%)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	95.4	94.4	94.0	-1.5 (-3.4 to 0.4)	-0.5 (-2.8 to 1.8)
14 to 15	93.3	95.7	95.2	1.9 (-0.4 to 4.2)	-0.4 (-2.6 to 1.7)
16 to 18	96.2	94.8	96.4	0.2 (-1.7 to 2.1)	1.6 (-0.9 to 4.2)
12 to 18	95.1	95.0	95.3	0.3 (-0.8 to 1.4)	0.3 (-1.0 to 1.7)

Note: The question asked, "How likely is it that you will use inhalants to get high, even once or twice over the next 12 months?"

Table 5-K shows a statistically significant favorable trend in the Attitudes/Beliefs Index for the overall sample (see also Detail Table 5-28). The index’s pattern also shows a little more variation by age: older youth tend to be slightly more accepting of inhalant use than younger ones though, in general, the age gradient is less clear cut than for marijuana. On average in Wave 5, 12- to 13-year-olds had a score of 122, while 16- to 18-year-olds had a score of 101.

Table 5-K. Trends in Attitudes/Beliefs Index about inhalant use by youth age

Age groups	Score on Index				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	117.34	117.77	122.26	4.92 (-1.64 to 11.48)	4.49 (-2.86 to 11.83)
14 to 15	100.10	91.61	104.44	4.35 (-5.58 to 14.27)	12.83* (2.00 to 23.66)
16 to 18	90.64	102.86	101.01	10.37 (-1.63 to 22.38)	-1.85 (-13.28 to 9.57)
12 to 18	101.73	103.64	108.33	6.60* (1.14 to 12.06)	4.69 (-1.21 to 10.58)

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

* Significant at p < .05

All nonusing 12- to 18-year-olds show a positive significant change in attitudes and beliefs from Year 2000 to Wave 5, hence a favorable overall trend. Additionally, the 14- to 15-year-olds show a significant favorable trend from the Year 2001 to Wave 5, however, this largely represents a reversal of the decline from Year 2000 to 2001 and a return to its original level.

5.6.2 Evidence of Diversity in Trends

Aside from the age subgroup effects just described, there are no other significant trend effects for intentions in any of the subgroups of interest (males vs. females, Whites vs. African American vs. Hispanics, or among risk subgroups).

There are, however, significant trends in attitudes and beliefs about inhalant use for two subgroups: males and low-risk respondents. From Year 2000 to Wave 5, males show statistically significant positive change in anti-drug beliefs and attitudes, increasing from a score of 102 to 112, a clearly favorable trend. In addition, there is also an improvement from Year 2001 to Wave 5 in attitudes and beliefs for low-risk individuals consistent with Campaign goals. These results show a contrasting picture to the more unfavorable trend results regarding marijuana use.

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

This section presents an analysis of cohort data: the youth who were initially interviewed at Waves 1, 2, or 3 (Round 1), and again at Waves 4 or 5 (Round 2). With these youth, who averaged 12 to 18 months between their Round 1 and Round 2 interviews, it is possible to examine whether level of exposure to advertising at Round 1 predicts subsequent changes on the important outcomes by

Round 2.⁶ Given the lack of evidence of Campaign effects shown in the previous sections, finding evidence for a delayed effect on the cognitive outcomes and on reported marijuana use had not been expected. Nonetheless, while the trend data showed both favorable and unfavorable changes since the start of the Campaign, and the cross-sectional analysis showed no evidence of effects at all, the longitudinal analysis exhibits a mix of no effect and unfavorable effect results. Where there are any effects, those who were more exposed to the Campaign at Round 1 tended to move more markedly in a “pro-drug” direction as they aged than those who were less exposed. These are consistent with the results from the previous report (Hornik, et al 2002).

The delayed-effects exposure analysis commences with a display of the fully adjusted results for the 12- to 18-year-olds. It then discusses results for each of the major subgroups. These analyses are adjusted for the complex sample design and the full set of potential confounders. The confounder adjustments follow the same procedures used for the cross-sectional association analyses above, although the propensity scores used for adjusting were based on the propensity models for the Round 1 exposure scores for this sample (see Appendix C). Only youth who were nonusers at Round 1 and were re-interviewed at Round 2 were eligible for this analysis.

Table 5-L presents the results of the delayed-effects analysis for the sample of youth who were 12- to 18-year-olds at Round 2 but who had never used marijuana at Round 1. (These results and the ones for subgroups are found also in Detail Tables 5-41 through 5-50.) The table shows 10 results. For the eight cognitive outcomes, all of the gammas are negative with four of the eight results statistically significant for the full sample. These outcomes involve intentions, social norms, and self-efficacy. The associations between both general and specific exposure at Round 1, with Round 2 intentions to not use marijuana, are unfavorable and statistically significant. Youth who were higher on exposure at Round 1 were more likely to intend to use marijuana at Round 2 than those with lower exposure at Round 1. A similar relationship was found for social norms. Youth with higher general exposure at Round 1 had more “pro-drug” social norms at Round 2 than those with lower exposure at Round 1. There is also a significant unfavorable relationship between specific exposure and self-efficacy. That is, youth with higher exposure at Round 1 had lower self-efficacy at Round 2 than those with lower exposure at Round 1. Only the attitude/belief index shows no association at all with either measure of prior exposure.

In contrast to the evidence from the cognitive variables, the overall results do not show any effect of Campaign exposure on behavior; i.e., the initiation of use. About 13 percent of all of these nonusing youth initiated marijuana use between the measurement waves. However the level of exposure youth reported at Round 1 does not predict their initiation, once the propensity scoring adjustments are incorporated.

The next question to be addressed is whether these results are consistent for the subgroups. When there was a significant unfavorable overall effect, were the subgroups showing consistent results? And, in the cases where there was no significant overall effect, was there evidence of a significant effect for one or more subgroups?

⁶ Youth measured first in Wave 1 or Wave 2 had an average of 18 months between interviews; youth interviewed first in Wave 3 had only 12 months between interviews. The annual rate of initiation for all groups was about the same (9.6%) with annual initiation rates of 9.2%, 8.7%, and 10.8% for Waves 1, 2, and 3, which are not significantly different from one another. Thus there was no evidence of seasonality in their rates of initiation, although the groups were interviewed in different halves of the year. In addition, as will be shown in Table 5-M below, there was no difference in effects observed across subgroups defined by Wave at first interview.

Table 5-L. Exposure per month at Round 1 and outcomes at Round 2 among 12- to 18-year-olds who were nonusers of marijuana at Round 1

Round 2 outcome (average)		Round 1 Exposure				Gamma (95% CI)
		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	
Percent (Not) intending to use	General exposure	84.0%		78.4%	77.4%	-.14* (-.25 to -.03)
	Specific exposure	82.3%	78.2%	76.5%		-.12* (-.21 to -.02)
Attitudes/Beliefs Index (Mean score)	General exposure	99.55		87.38	90.46	-.03 (-.08 to .01)
	Specific exposure	92.34	93.39	85.98		-.03 (-.08 to .02)
Social Norms Index (Mean score)	General exposure	99.19		79.53	82.96	-.07* (-.12 to -.02)
	Specific exposure	90.21	85.89	77.79		-.05 (-.11 to .00)
Self-Efficacy Index (Mean score)	General exposure	105.80		105.81	106.66	-.01 (-.07 to .05)
	Specific exposure	119.96	102.17	104.33		-.08* (-.15 to -.02)
Percent Initiation of Use	General exposure	12.0%	11.8%	13.2%		.04 (-.10 to .18)
	Specific exposure	12.8%	13.2%	12.8%		.00 (-.11 to .11)

* Significant at $p < .05$.

In general, where there were overall effects, the subgroups were not significantly different from the full sample, or from one another. Where there were overall effects some of the subgroups showed significant effects themselves, and the rest showed effects that were statistically consistent with the overall effects. This pattern is displayed in Table 5-M, focusing on the rows where there was a significant overall effect. In this table, for the cognitive outcomes, which are all scaled so that a high score is anti-drug, a negative gamma is unfavorable to the Campaign. For the initiation of marijuana use measure, a positive gamma indicates that exposure is associated with more initiation, and is unfavorable to the Campaign.

The diversity issue worth more attention is whether there were significant effects for subgroups when there was no overall effect. A summary of these results can be seen in Table 5-M as well, focusing on the rows where the overall gamma was not significant.

Neither of the measures of exposure was related to the attitude belief index for the subgroups, with two exceptions. There was a significant unfavorable association between the general exposure model among youth first interviewed at Wave 2, and the youth who were at low risk.

The social norms index was related, overall, with prior general exposure, in an unfavorable direction. The overall association was negative but not statistically significant for the specific exposure index, however it was significant for those first interviewed at Wave 1 and those first interviewed at Wave 3. In addition, the coefficient for specific exposure was negative for every one of the subgroups, reinforcing the appearance of a general unfavorable effect for this index as well.

Table 5-M. Association (gamma) between Exposure at Round 1 and Youth Outcomes at Round 2¹

	Exposure Measure (gamma)	Age		Gender		Race/ethnicity			Risk of MJ Use		Wave of 1 st interview		
		12-13	14-18	Male	Fem.	White	Afri-Amer.	Hisp	High	Low	1	2	3
Percent (Not) intending to use	General (-.14)	-.40*	-.07	-.17*	-.10	-.18*	-.20	.12	-.00	-.27*	-.05	-.29*	-.08
	Specific (-.12)	-.11	-.13*	-.06	-.18*	-.12	-.28*	.02	-.06	-.15*	-.14	-.06	-.17
Attitudes /Beliefs Index	General (-.03)	-.07	-.01	-.05	-.02	-.03	-.09	-.01	.05	-.06	-.02	-.10*	.02
	Specific (-.03)	-.08	-.02	-.03	-.03	-.03	-.06	.02	.01	-.02	-.03	-.02	-.05
Social Norms Index	General (-.07)	-.05	-.04	-.06	-.07*	-.05	-.07	-.12*	.05	-.09*	.00	-.06	-.13*
	Specific (-.05)	-.04	-.06	-.03	-.07	-.05	-.06	-.03	-.04	-.06	-.08*	.02	-.11*
Self-Efficacy Index	General (-.01)	-.05	.01	-.03	.01	-.03	-.09	.11	.02	-.06	.02	-.07	.03
	Specific (-.08)	-.03	-.11	-.08	-.09	-.09*	.04	-.12	-.10	-.06	-.09	-.08	-.07
Percent Initiation of MJ Use	General (.04)	.00	.02	.06	.02	.07	-.08	.02	-.03	.07	-.15	.15	.14
	Specific (.00)	.12	-.02	-.05	.06	.07	-.21	-.18	.09	-.09	.13	-.09	.03

* Significant at $p < .05$.

¹ In this table a positive association is favorable to the Campaign for the cognitive outcomes, but unfavorable to the Campaign for initiation of marijuana use.

Although the specific exposure scale was significantly associated with self-efficacy, the general exposure measure was not associated with the self-efficacy index. This lack of significant associations with general exposure was also the case for each of the subgroup analyses.

Similarly, initiation of marijuana use, which showed no overall association, also showed no significant association for any of the subgroups. This is a potentially important result for two reasons. The other measures, particularly intentions, are highly related to use, and are predictive of initiation of use. The intention measure does show a strong negative association with prior exposure, making the failure to find one for initiation itself surprising. In addition, in the previous report there was statistically significant evidence for a possible effect of specific exposure on initiation for some subgroups in the Wave 1 sample (females, 12- to 13-year-olds, lower risk youth) but they are not replicated here where the Waves 2 and 3 samples are also included.⁷ It is worth noting, however, that there are a total of 120 results for subgroups presented in Table 5-M. Nineteen of those subgroup results are statistically significant. Every one of these statistically significant results is unfavorable to the Campaign.

⁷ Close examination of three of these subgroups when all waves are considered (Whites, 12- to 13-year-olds and females) shows that there was still an unfavorable association for these groups between the specific exposure index and marijuana initiation before introducing the confounder controls through propensity scoring. The gamma for the Whites was .176, for the 12- to 13-year-olds was .262, and for the Females, .214. However the introduction of the propensity model sharply increases the sampling error around the gammas, and although the confounder controlled estimates of gamma for these three groups are still positive (unfavorable), the confidence limits are now sufficiently wide so that it is not possible to say whether they are different from no association at all.

This report introduces the analysis of subgroups defined by wave at first interview. This was meant to permit the examination of whether different periods of the Campaign had different effects on the outcomes. The final three columns of Table 5-M present that evidence. None of the gammas in those columns are statistically different than the overall pattern in the row. Both the youth who were first interviewed in Wave 2 and those who were interviewed in Wave 3 show two significant effects, while those interviewed during Wave 1 show one significant effect and all five are unfavorable. In all three columns the predominant pattern of gammas is unfavorable. These results provide no support for a claim that the delayed-effects of the Campaign have varied across the three first waves.

While the negative results described above are not desirable from the perspective of the Campaign, they are consistent with the similarly unfavorable results published in the last semi-annual report. However it was again important to make sure that the observed results were not an artifact of the complex adjustment procedures. While the adjustments for confounders were based in statistical theory, it would provide additional strength if the apparent results did not only appear at the end of that process. In Table 5-N, the overall results are presented again, unadjusted for confounder control, but incorporating NSPY sample weights.

Table 5-N. Exposure per month at Round 1 and outcomes at Round 2 among 12- to 18-year-olds who were nonusers of marijuana at Round 1- (data not corrected for confounders)

Outcome (average)		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Gamma (95% CI)
Percent (Not) intending to use	General exposure	85.4%		80.1%	75.1%	-.22* (-.31,-.14)
	Specific exposure	85.7%	78.8%	74.9%		-.20* (-.27,-.13)
Attitudes/Beliefs Index (Mean score)	General exposure	106.5		91.2	83.6	-.08* (-.11,-.05)
	Specific exposure	102.3	94.7	81.3		-.08* (-.11,-.04)
Social Norms Index (Mean score)	General exposure	106.2		84.8	74.7	-.13* (-.17,-.09)
	Specific exposure	103.4	88.7	70.8		-.12* (-.16,-.09)
Self-Efficacy Index (Mean score)	General exposure	109.5		110.5	105.8	-.05* (-.10,-0.0)
	Specific exposure	123.8	104.1	102.7		-.09* (-.14,-.04)
Percent Initiation of Marijuana use	General exposure	10.6%		11.6%	14.1%	.12* (.01,.23)
	Specific exposure	10.4%	12.9%	13.8%		.09 (-.01,.19)
N	General exposure	1053-1068		993-1008	2345-2371	4390-4448
N	Specific exposure	957-972	1635-1655	1798-1821		4390-4448

* Significant at p < .05

These results make it clear that the unfavorable associations do not result from the procedures used to adjust for confounders. For both measures of exposure, and for all of the four cognitive outcomes and for general exposure with the measure of initiation of use, the relationship is unfavorable and

significant. Therefore, the pattern in Table 5-N is consistent with the unfavorable delayed-effects results found for the fully adjusted data. Indeed, in almost every case, the original association was less unfavorable to the Campaign after the confounder controls were introduced.

5.8 Summary and Discussion

In this chapter, a number of results were presented pertinent to direct Campaign effects on youth.⁸ For each of the four cognitive indices plus reported use of marijuana, this report examined:

1) trends/changes from 2000 to the first half of 2002, 2) cross-sectional associations with both general and specific exposure, and 3) delayed-effects associations for the youth first interviewed in Waves 1, 2, and 3.

Chapter 4 presented the trends for marijuana use. There was no trend in marijuana use from the NSPY between 2000 and the start of 2002, neither overall nor for any of the age subgroups. The MTF findings through 2001 similarly showed no recent trend in use. However the just published NHSDA 2001 results suggested a significant increase in marijuana use for the population of 12- to 17-year-olds between 2000 and 2001 for all three indicators of use: lifetime, past year, and past month. The absolute size of the changes was small, and statistically detectable because of the NHSDA's large sample size. A change of a similar magnitude would not be detectable for NSPY.

This chapter presents the trends for cognitive outcomes to complement the use data from Chapter 4. The trends are significant for two of the outcomes (social norms and self-efficacy) for the entire youth population but in opposite directions, favorable to the Campaign for self-efficacy and unfavorable to the Campaign for social norms. In addition, there was an unfavorable effect for intentions for 14- to 18-year-olds, and an unfavorable effect on the attitude/belief index for youth who were at lower risk for marijuana use. However, trends alone, whether favorable or unfavorable to the Campaign, do not establish Campaign effect. Other forces may be affecting marijuana use in addition to the Campaign and influencing its upward or downward movement, regardless of Campaign effects.

The next step of analysis was to look at the cross-sectional associations between individual exposure to the Campaign and the several outcomes, as an additional strategy for sorting out Campaign effects. This analysis focused entirely on nonusers of marijuana at the time of the interview. The Wave 5 results largely confirm a pattern that was observed in the earlier reports from Waves 2 to 4. Scores on all of the cognitive outcomes did not vary systematically with levels of either the general or the specific exposure scale. No significant cross-sectional associations were observed, neither overall nor for any of the many subgroups examined, using the gamma coefficient as the criterion for a claim. None of the central analyses of effects supported a favorable Campaign effect and none supported an unfavorable effect on intentions, attitudes and beliefs, perceived social norms, or self-efficacy with regard to marijuana use, once the effects of potential confounders were removed.

The final step of the analysis utilized the availability of two rounds of measurement, 12 to 18 months apart, for the entire sample of youth. This made it possible to examine the association of exposure to advertising at the first measurement occasion (Round 1) and the subsequent scores on the outcomes, including the four cognitive outcomes, as well as marijuana use. This analysis was restricted to youth who were nonusers at Round 1, so the measure of marijuana use at Round 2 was effectively a measure of initiation of use. The delayed-effects results provided no evidence of a favorable Campaign

⁸ Indirect effects mediated through parent exposure are presented in Chapter 6.

effect. On the contrary, all of the evidence from the delayed-effects analysis suggested either no Campaign effect, or an unfavorable effect. Three of the four cognitive outcomes showed an unfavorable significant association of exposure and outcomes for one or both of the exposure measures. The youth, who reported more exposure to Campaign advertising at Round 1, were more likely subsequently to show some intention to use marijuana and to report less self-efficacy to resist marijuana if it was available to them. However, they were not more likely to actually report more initiation of marijuana, once the full set of confounders were statistically controlled, nor were they more likely to report higher pro-marijuana scores on an index of beliefs and attitudes. The delayed-effects analysis suggests an unfavorable effect of the Campaign. The significant unfavorable effects on intentions, self-efficacy, and to some extent, social norms, have not yet produced statistically significant effects on marijuana initiation. However, those cognitive measures are very strongly predictive of subsequent marijuana initiation. Among nonusing youth, the odds of initiating use by Round 2 were 8 times as great for those who did not versus those who did say “definitely not” to the intentions question at Round 1. Thus these analyses do not support an inference of a favorable Campaign effect. In addition, there continues to be evidence that exposure to the Campaign predicts poorer, rather than better outcomes.

Can the results from the delayed-effects analysis be due to a statistical artifact? There are two logical threats to a causal claim that the Campaign produced an unfavorable effect. The first is that in the sheer complexity of the statistical analysis, with its adjustment for confounder effects, some error crept in and that the observed results are merely an artifact of that process. Multiple points argue against this theory. First, the fully weighted and controlled model provides similar results to a simple analysis of the uncontrolled data. The basic effects are all in the same direction. Second, the complex analysis has been undertaken with extended checks and quality control oversight.

There are two specific risks to causal inference associated with the analysis approach undertaken. First, is it possible that the potential covariates that were included in the analysis were not adequately controlled in the process? Second, is it possible that some unmeasured covariates could account for the observed negative association?

Propensity scoring is designed to remove the effects of confounding variables from the association between outcomes and exposures. It is possible to detect the success of that process by showing that the potential covariates do not vary across the adjusted exposure categories. This property is referred to as balance. If a confounder has been successfully balanced, it will have the same average score across all exposure levels, once propensity has been controlled. If confounders are not balanced, results can be biased. The ability to assess balance is an important advance of propensity scoring over traditional analysis of covariance (Rosenbaum and Rubin, 1984). A number of tests of balance were conducted for the overall data, as well as for the subgroups including age, race, gender, sensation seeking, risk-score, and wave. For each of these subgroups, the tests of balance were conducted on a large number of variables (more than a hundred variables, including some variables that were not in the original model). The analysis paid special attention to balancing variables that we considered to be substantively important. Overall, the number of covariates out of balance for the full sample and for the age subgroups were very few (fewer than 5% of the variables tested for balance).

The second threat is more substantive in character. Is it possible that there is some unmeasured covariate? Is there some variable not included in the propensity model that could have influenced recall of exposure to the television advertising at Round 1 and the outcomes at Round 2? An unmeasured covariate can bias the effect estimates even if all the measured covariates are perfectly

balanced. One can never be sure, of course. That is the difference between a randomized experiment and an observational study. It is always possible that some unmeasured characteristic accounts for an observed result.

However, such an unmeasured variable would have to have a particular character. The obvious possibility would be that youth with more interest in marijuana, with more positive beliefs and perceived social norms, pay more attention to the advertising. However, insofar as this can be examined, that does not appear to be a viable explanation. Baseline data are lacking on many of the cognitive measures for the youth who were just 9- to 11-years-old at Round 1, and these make up a substantial portion of the 12- to 13-year-olds at Round 2. Therefore, control could be implemented for these baseline cognitions only for the older youth. However, these Round 1 cognitions do not account for the observed unfavorable effect. There is no cross-sectional association between exposure and the outcomes. Thus the unmeasured variable would have to be one that suggests that youth who reported high exposure at Round 1 would have had a different trajectory regardless of that exposure, that the exposure was only an indicator of the already present tendency to move toward a more pro-drug position. The difference in trajectories would have to be not associated with any of the other variables that were measurable at Round 1, including projected risk of drug use, which predicted a great deal of the transition to drug use, and which was not associated with exposure levels.

This unmeasured covariate problem is related to the internal validity threat of *selection-maturation* (Cook and Campbell, 1979), which often must be confronted in quasi-experimental studies of youth. Here, such a threat occurs if the highest exposure groups have differential rates of “normal growth” between Round 1 and Round 2. Practically speaking, this is likely to occur if the measured variables do not fully capture the “selection” process producing the various exposure levels. Thus far there is no specific evidence that this is true, although it may be. Given the above findings, the evaluation team must proceed with caution, but with the recognition that the relationship has not been rejected by the challenges to it undertaken thus far.

How can it be that there is no significant trend in marijuana use, and there is no significant cross-sectional association of specific exposure and outcomes, but there is a robust unfavorable delayed-effects association? The following paragraphs offer some speculations.

Trend effects are, in fact, partly consistent with an unfavorable Campaign effect. There was evidence for an unfavorable, overall trend in social norms, and an unfavorable trend in intentions for 14- to 18-year-olds. Also, the newly published NHSDA results suggest that there was a small increase in marijuana use between 2000 and 2001, an increase that would not have been detectable with the NSPY sample. However, the favorable trend on the self-efficacy index is not consistent with the evidence for an unfavorable delayed-effects on the same outcome.

A more difficult inconsistency has to do with the failure to find any cross-sectional association between either measure of exposure and any of the cognitive outcomes. How can it be that there is an unfavorable delayed-effects but no cross-sectional association? The limited sets of analyses performed to investigate this issue have not yet provided a good answer.

There is then some difficulty, certainly, in reconciling the full set of results. The inference logic set at the outset asked for three mutually supportive results to make a claim for positive Campaign effects: a favorable trend, a favorable association, and evidence for a favorable delayed-effects. Obviously these have not been found, and thus there are no grounds to make a claim that the Campaign has had a

favorable effect on youth thus far. Still, if those same criteria were applied to claiming unfavorable Campaign effects, they have not been met for that purpose either.

Despite the above uncertainties, there is one more problem to address. How could it be that the Campaign could have produced an unfavorable effect? Through what mechanism could the Campaign have produced such an effect on intentions (both exposure measures), perceived norms (general exposure only), and perceptions of self-efficacy (specific exposure only)? The theory underlying the Campaign and the evaluation were all about the process of producing anti-drug beliefs and behavior. At this point in the evaluation, any explanation for the observed result is based on speculation.

Some of the strongest results relate to social norms. There are unfavorable trend and delayed-effects of general exposure present for that outcome for the entire population. At the same time, there is a strong delayed effect of specific exposure on self-efficacy. Is it possible that the Campaign, while its explicit message is anti-drug, provides a second implicit message—that drugs are a big problem and their use is widespread? The Campaign’s communication plan had proposed using messages that would say that most kids don’t use drugs. But, in fact, there were very few messages broadcast during Wave 1 through 3 that put this idea forward. Contrarily, the messages that were broadcast—negative consequences (20%), normative positive consequences (56%), and resistance skills (32%)—all have as an implicit assumption that drugs are a problem. Is it possible that youth took from these messages that drug use is expected behavior, and that resistance to drug use (as measured by self-efficacy) may be difficult given its pervasiveness?

A second speculation is that youth do not like being told what to do. The more they are told what to do the more resistant they are to the messages. A body of psychological theory refers to this phenomenon as “reactance.” The more heavily exposed to the ads youth were, the more resistant to their ideas they became. As far as we know, there has not been prior evidence of reactance in published evaluation of campaigns. Snyder (2002) published a meta-analysis of 48 behavior change programs that made use of mass media. None of them showed an unfavorable effect. All of the evidence supporting this reactance hypothesis has come from experimental studies. Nonetheless, it may be possible that youth have gotten so much anti-drug information from school and elsewhere that their response to this extra exposure has been to go in the opposite direction.

5.8.1 Conclusion

Overall, the results are mixed. Some are consistent with no Campaign effects on youth, while some, particularly the delayed-effects analyses, are consistent with an unfavorable effect. This report did not find any evidence that the unfavorable effects were restricted to one of the periods of the Campaign. The previous report was based on only about 40 percent of the current sample, and at that time it was promised that the current report would provide a more definitive determination. By and large the current report sustains the unfavorable results from the previous one. The major exception is the lack of statistically significant evidence now for an unfavorable prediction of marijuana initiation for any subgroup once the full confounder set is controlled. An unfavorable result is a surprising result, both because it was unexpected for the Campaign and because it has no real precedent in the published communication campaign literature. Explanations presented for a possible unfavorable Campaign effect are speculation with only a small amount of empirical support.

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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: monitoring children's behavior, talking with children about drugs, and engaging in fun activities with children. In the previous reports, based on both favorable trends over time and cross-sectional associations, there was evidence supportive of Campaign effects on objectives related to talking with children; for beliefs and attitudes regarding monitoring of children; and, in the case of the cross-sectional associations, for doing fun activities with them. These results still hold when Wave 5 is added. The interpretation of these trend and cross-sectional results were somewhat ambiguous as to whether the observed cross-sectional association reflected the influence of the Campaign on the outcomes or the influence of parents' engagement with youth on their tendency to recall the Campaign's messages. The previous report addressed these concerns with a longitudinal sample of parents interviewed at Wave 1 and re-interviewed at Wave 4. With this report it is possible to examine followup data with parents interviewed at Round 1 (including Waves 1, 2, and 3) and re-interviewed at Round 2 (Waves 4 and 5), which represents an increase of 150 percent in the longitudinal sample compared to the Wave 4 report, which included only 40 percent of the full sample. This permits a more sensitive examination of the possibility that Round 1 exposure to messages predicted change by Round 2 in the outcomes, thus helping to address the concern about causal direction.

This chapter first discusses the logic supporting claims of Campaign effects and presents the primary outcome variables. In Section 6.2 it turns to evidence for change in those outcome variables over the five waves of data collection. Sections 6.3 and 6.4 present the evidence for cross-sectional and delayed-effects associations of exposure to Campaign advertising with the major outcome variables. The following section reviews results from cross-sectional and delayed-effects analyses of parent exposure on youth outcomes. Finally, Section 6.6 brings together the trend, associational, and delayed-effects analyses 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 favorable¹ to Campaign objectives: more monitoring, more talking, 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 a large number of confounder variables that might have influenced both exposure and outcome and, therefore, were the true cause of the observed association. (See Appendix C for the propensity score methodology that was used.)

Using cross-sectional data, several previous reports presented a favorable association of reported exposure to the Campaign with the target outcomes statistically controlled for likely confounders as the best evidence consistent with a Campaign effect. If this was accompanied by evidence of a favorable trend in the outcome, the argument that there was a Campaign effect was strengthened. Capitalizing on a much larger longitudinal sample than the previous report, this report continues to explore delayed-effects analyses that allow a clearer understanding of the causal order between exposure and outcomes.

The threat of reverse causation, a major concern with cross-sectional analyses, is that the association might be the result of the influence of outcomes on exposure rather than exposure on outcomes. This report, as did the previous one, benefits from cohort data available over time; parents interviewed at Wave 1 were re-interviewed at Wave 4, and parents interviewed at Wave 2 and at Wave 3 were re-interviewed at Wave 5. As explained in Chapter 2, the delayed-effects analysis involves examining the association between exposure measured at Round 1 and outcome measured at Round 2, statistically controlling both for the Round 1 levels of the outcomes and for confounders. This delayed-effects association captures both the delayed-effects of exposure at Round 1 if that effect did not emerge until after Round 1, as well as the effects of exposure at Round 1 that flow through exposure at Round 2 to outcome at Round 2.

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, associational, and longitudinal data for subgroups of parents. This report introduces analysis of subgroup of parents defined by wave of interview, allowing an examination of whether the effects of the Campaign might vary across the measurement periods. The cross-sectional results are presented according to year of current interview, while the delayed-effects association results are presented according to wave of first interview. 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

¹ Throughout this chapter both trends and associations consistent with Campaign objectives are called “favorable.” Trends and associations that go in the opposite direction from those expected by the Campaign are called “unfavorable.”

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 or 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.

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 <i>nearly every month</i>	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

The previous report illustrated the cross-sectional association between the cognitive indices and their respective behavioral outcomes, which the addition of Wave 5 data only confirms. The association between monitoring cognitions and behavior is particularly strong, with parents at the low end of the monitoring cognition scale doing 0.50 of the three monitoring behaviors while those at the high end undertake 2.2 of the three behaviors. The association between talking cognitions and behavior, though less clear cut, is also substantial, with parents at the low end of the talking cognitions scale reporting 1.5 of the three talking behaviors while those at the high end report 2.7 of the three behaviors.

Delayed-effects analyses of the association between parent behaviors and cognitions at Round 1 and youth outcomes at Round 2 provide additional support for both the validity of the parent measures and, more generally, for Media Campaign goals regarding parental monitoring and involvement in fun activities. The following analyses exclude youth who had used marijuana at Round 1 and their parents.

Figures 6B and 6C present the association between parental reports of monitoring behavior and cognitions at Round 1 and youth reports of marijuana initiation at Round 2. In both cases there is a significant and strong favorable relationship, which holds up even after controlling for youth age (not shown). While only 5 percent of children whose parents reported performing the three monitoring

behaviors at Round 1 had initiated marijuana use at Round 2, 20 percent of children whose parents reported no monitoring behaviors had initiated marijuana use by Round 2. Likewise, and with a more clearly cut linear association, among children of parents who scored on the high end of the monitoring cognitions index at Round 1 only 8 percent reported marijuana initiation at Round 2 versus nearly 33 percent of children with parents scoring on the low end at Round 1.

Figure 6-B. Youth marijuana initiation at Round 2 by parent monitoring behavior at Round 1

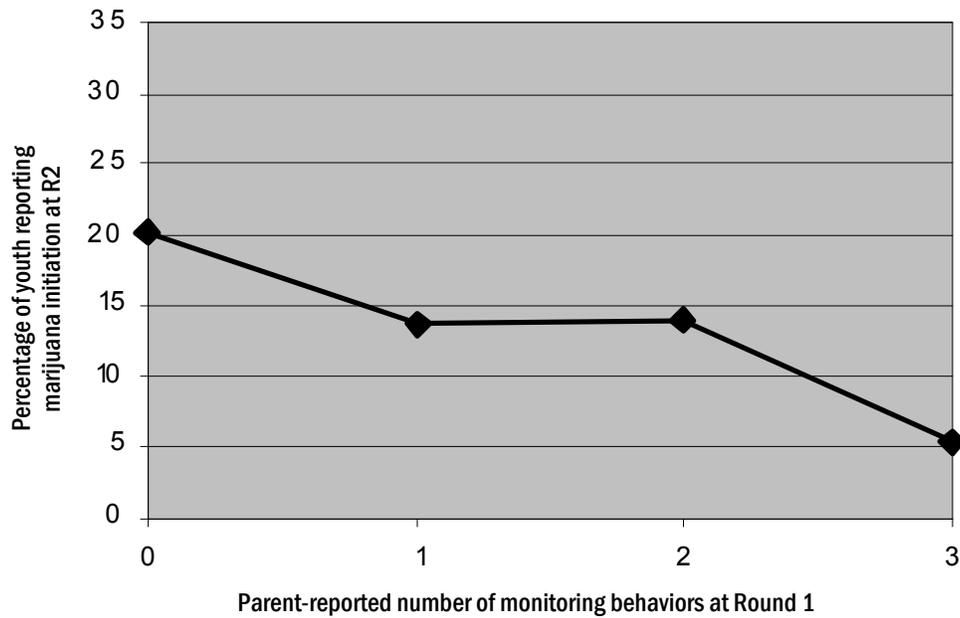
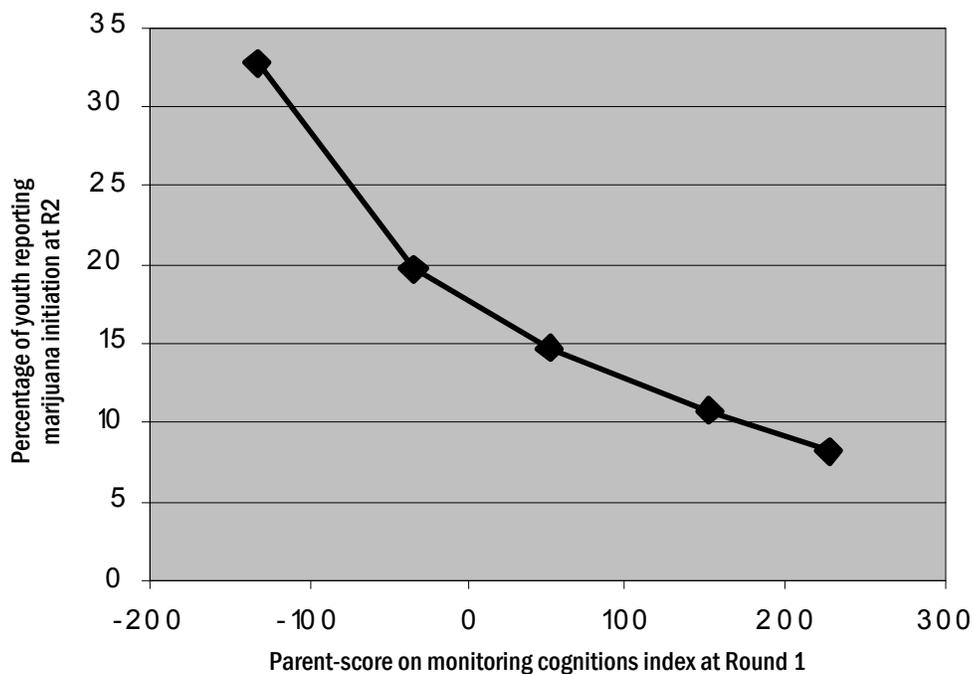
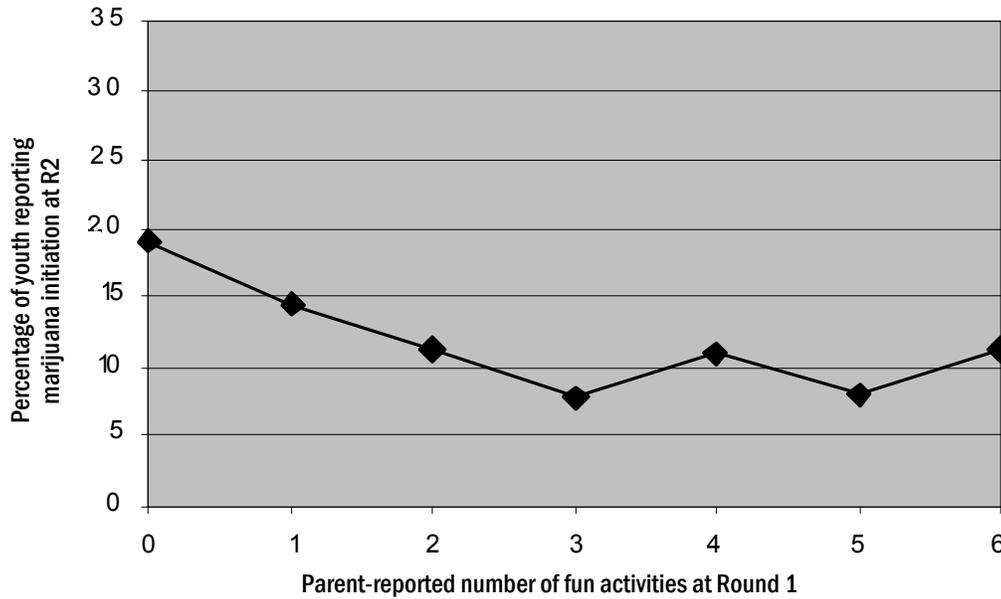


Figure 6-C. Youth marijuana initiation at Round 2 by parent monitoring cognitions at Round 1



The delayed-effects association between parent-reported involvement in fun activities at Round 1 and youth marijuana initiation at Round 2 is also substantial and statistically significant (Figure 6-D). Nineteen percent of children whose parents reported no fun activities in the preceding week at Round 1 reported marijuana initiation at Round 2, as compared to only 11 percent of children whose parents reported having engaged in six fun activities at Round 1.

Figure 6-D. Youth marijuana initiation at Round 2 by parent-reported fun activities at Round 1



By contrast, there is no delayed-effects association between parental reports of talking behaviors and cognitions and youth marijuana initiation. Marijuana initiation at Round 2 was at 13 percent for children of parents who reported no household conversation about drugs and of those who reported all three talking behaviors at Round 1 (Figure 6-E). Children whose parents had earlier reported unfavorable talking cognitions were as likely to initiate marijuana use at Round 2 as were children whose parents scored high on talking cognitions (Figure 6-F).

Figure 6-E. Youth marijuana initiation at Round 2 by parent talking behavior at Round 1

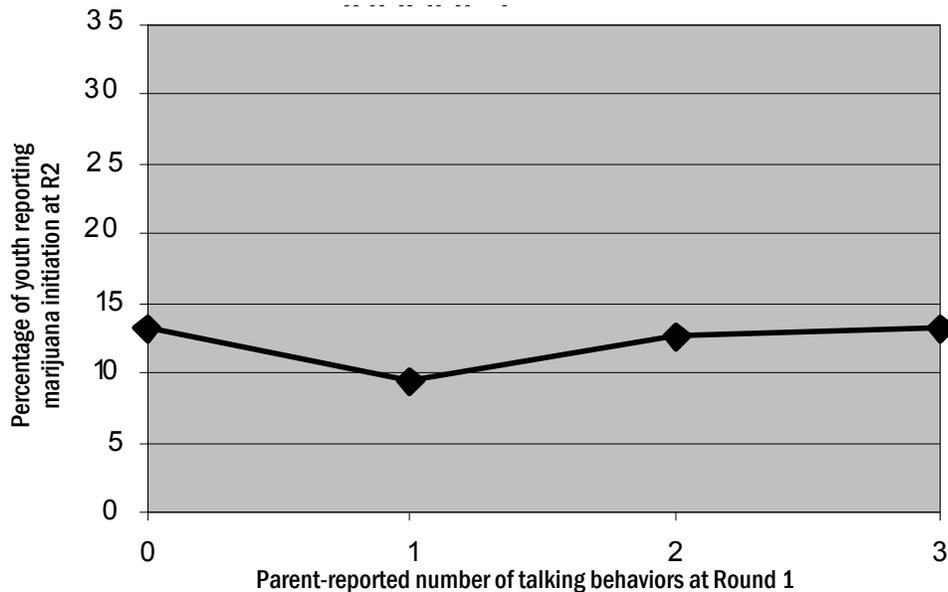
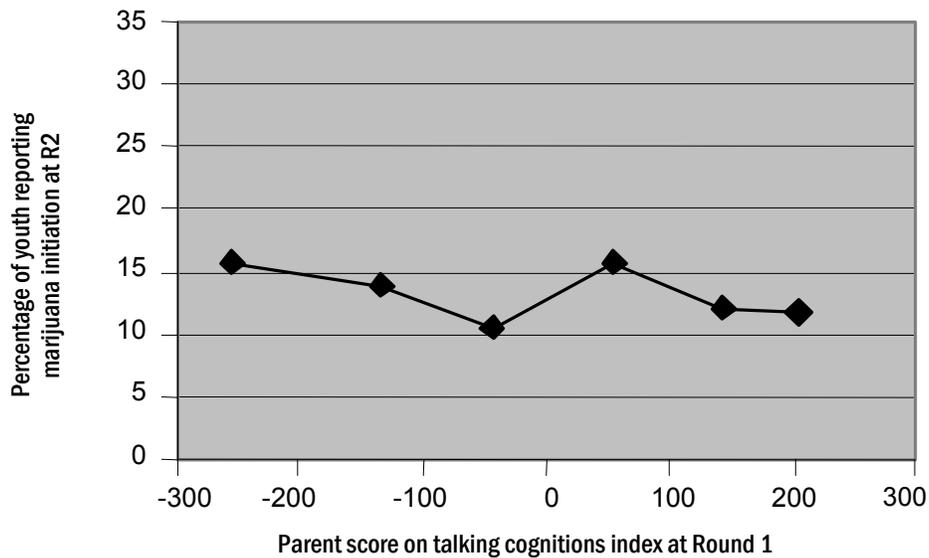


Figure 6-F. Youth marijuana initiation at Round 2 by parent talking cognitions at Round 1

These delayed-effects results are consistent with the cross-sectional results reported in the Third Semi-Annual Report (Hornik et al, 2001). That report showed clear associations of monitoring cognitions and behavior with drug use and intentions, but no such favorable associations for talking cognitions or behavior with drug use or intentions. There are also strong associations between parent reports of engaging in fun activities with their children and marijuana intentions and behaviors. Parents who engage in more activities with their children are less likely to have children who intend to use, or who actually report use of marijuana, even controlling for age of child.

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. Trend analyses will focus on changes between year 2000 and Wave 5 (January to June, 2002) given that these largely reflect pre-existing patterns between the yearly averages for years 2000 and 2001. Changes between year 2001 and Wave 5 are in the same direction but, for the most part, are not statistically significant (see Detail Tables 6-1 to 6-54).

6.2.1 Monitoring Behaviors

Table 6-A presents evidence of changes in monitoring behavior over the study period and the test for statistical significance of the difference between estimates for 2000 (Waves 1 and 2) and the first half of 2002. Three conclusions can be drawn from this table (see also Detail Table 6-3).

First, focusing on the entire population of parents of 12- to 18-year-olds, there is a statistically significant trend toward a favorable change. There is also a statistically significant favorable trend for two of the age subgroups, parents of 12- to 13-year-olds and of 14- to 15-year-olds. Since the recommendation for increased monitoring as an approach to prevention of drug use has often focused

on younger children, the finding of a significant trend among these parents is particularly encouraging. Thus the overall conclusion is that in the first half of 2002 parents are reporting they monitor their children, particularly their younger children, more than in 2000.

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

Age groups	Number of Monitoring Behaviors				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	1.65	1.80	1.82	0.17* (0.06 to 0.28)	0.02 (-0.07 to 0.11)
14 to 15	1.47	1.46	1.60	0.13* (0.02 to 0.23)	0.14* (0.04 to 0.25)
16 to 18	1.17	1.21	1.21	0.04 (-0.06 to 0.14)	0.00 (-0.11 to 0.12)
14 to 18	1.31	1.32	1.38	0.07 (-0.01 to 0.15)	0.06 (-0.03 to 0.14)
12 to 18	1.41	1.46	1.51	0.10* (0.04 to 0.16)	0.05 (-0.02 to 0.11)

* Change significant at $p < 0.05$.

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, 71 percent of 12- to 13-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, 72 percent of 12- to 13-year-olds' parents versus 53 percent of 16- to 18-year-olds' parents always or almost always know their child's plans for the coming day. Finally, 38 percent of 12- to 13-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.

Youth report that their parents engage in these behaviors less frequently than do parents, at every age. As examples, while 62 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 49 percent of youth agreed; 63 percent of parents but only 32 percent of youth claimed that parents always or almost always knew the child's plans for the coming day. Finally, 27 percent of parents, but only 8 percent of youth said they never spent time alone with other children without adult supervision. Also, as can be seen in Table 6-B, there is no parallel pattern of change in youth reports that would reinforce parents' claims. 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 groups	Number of Monitoring Behaviors				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	1.03	1.08	1.10	0.07 (-0.01 to 0.15)	0.01 (-0.07 to 0.09)
14 to 15	0.87	0.88	0.94	0.07 (-0.03 to 0.17)	0.05 (-0.05 to 0.16)
16 to 18	0.75	0.70	0.71	-0.04 (-0.11 to 0.04)	0.01 (-0.07 to 0.09)
14 to 18	0.80	0.78	0.81	0.01 (-0.06 to 0.07)	0.02 (-0.04 to 0.09)
12 to 18	0.87	0.87	0.89	0.03 (-0.02 to 0.07)	0.02 (-0.03 to 0.07)

6.2.2 Monitoring Cognitions

The change in parents' monitoring cognitions over the five waves is parallel to the claims of behavior change. Table 6-C presents the data for each of the youth age subgroups (see also Detail Table 6-1). The cognitive results show an overall statistically significant favorable trend for parents of all youth aged 12 to 18 with all of the age subgroups showing change in the same direction. All of the change on this measure had apparently taken place between 2000 and 2001, with the 2001 level already at 92.66 for the parents of 12- to 18-year-olds.

Table 6-C. Parental monitoring cognitions by youth age

Age groups	Score on the index with 100 as the average ¹				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	114.80	122.95	122.20	7.40 (-0.73 to 15.53)	0.75 (-7.34 to 5.84)
14 to 15	91.55	94.47	94.93	3.39 (-6.69 to 13.46)	0.46 (-8.41 to 9.33)
16 to 18	62.07	67.43	68.51	6.43 (-2.47 to 15.34)	1.08 (-10.76 to 12.92)
14 to 18	75.67	79.96	79.95	4.28 (-2.66 to 11.23)	-0.01 (-7.69 to 7.68)
12 to 18	87.18	92.66	92.55	5.38* (0.31 to 10.44)	-0.11 (-5.93 to 5.71)

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

* Change significant at $p < 0.05$.

Trends in the individual questions that make up the monitoring cognitions scale are presented in Detail Tables 6-39 through 6-44 and Detail Table 6-51. Many of the individual questions show a parallel pattern of favorable change.

6.2.3 Talking Behaviors

Table 6-D summarizes the information about the extent of parent-child conversations about drugs (see also Detail Table 6-4). 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.

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

Age groups	Number of Talking Behaviors (0 to 3)				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	2.29	2.38	2.42	0.13* (0.06 to 0.21)	0.04 (-0.04 to 0.13)
14 to 15	2.28	2.39	2.48	0.20* (0.06 to 0.3)	0.09* (0.00 to 0.18)
16 to 18	2.21	2.33	2.31	0.10 (-0.03 to 0.23)	-0.01 (-0.13 to 0.10)
14 to 18	2.24	2.36	2.39	0.14* (0.03 to 0.25)	0.03 (-0.04 to 0.10)
12 to 18	2.26	2.36	2.40	0.14* (0.06 to 0.23)	0.03 (-0.03 to 0.10)

* Change significant at $p < 0.05$.

Parents are widely claiming to do a good deal of talking about drugs with their children. The average parent claims to engage in 2.4 out of the 3 measured talking behaviors. As with the monitoring results above, parents report more frequent talk with younger children than with 16- to 18-year-olds.

This table also shows an overall pattern of increasing talk. The size of the absolute change is small, from 2.26 to 2.40. Each of the individual questions showed a change of only around 4.5 percent. (See Detail Tables 6-6, 6-7, and 6-10.) Despite the small magnitude of change, the data are consistent with a claim that the Campaign is associated with a favorable trend in parent reports of talk 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), with much lower absolute levels of reported talk. While parents report undertaking 2.4 out of 3 behaviors, their children report approximately 1.5 of those behaviors. Finally, while parents showed a small but favorable change, the youth reports show an unfavorable change of the same magnitude, which is also statistically significant. Every age group of children, except for the 16- to 18-year-olds, shows a statistically significant unfavorable trend. As will be shown below, there is evidence that these favorable parent-reported trends among parents of all youth aged 12 to 18 complement a strong cross-sectional association between exposure and talking behavior. However, the lack of support in child reports of talking behavior brings into question an otherwise strong inference about Campaign effects on parent and youth talk about drugs.

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

Age groups	Number of Talking Behaviors (0 to 3)				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	1.74	1.58	1.53	-0.20* (-0.32 to -0.09)	-0.05 (-0.17 to 0.07)
14 to 15	1.56	1.42	1.42	-0.14* (-0.26 to -0.02)	0.00 (-0.14 to 0.14)
16 to 18	1.32	1.27	1.24	-0.08 (-0.18 to 0.02)	-0.03 (-0.14 to 0.07)
14 to 18	1.43	1.34	1.31	-0.11* (-0.19 to -0.04)	-0.02 (-0.11 to 0.06)
12 to 18	1.52	1.41	1.38	-0.14* (-0.20 to -0.07)	-0.03 (-0.10 to 0.04)

* Change 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 with the other group. About half of the parents of 12- to 18-year-olds and a little more than one-quarter of youth reported such conversations. There is evidence that the rate of conversations about the anti-drug ads reported by parents increased from 2000 to the first half of 2002. Youth reports, however, show no significant change over this same period (see also 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 overall statistically significant pattern of improvement for parents of all youth aged 12 to 18, although the 95 percent confidence interval barely overlaps zero. There is a statistically significant favorable trend for parents of 14- to 18-year-olds (see also Detail Table 6-2).

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

Age groups	Score on summed scale with average = 100 at Wave 1				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	109.29	112.07	107.84	-1.45 (-9.03 to 6.13)	-4.23 (-12.96 to 4.50)
14 to 15	103.15	108.63	108.97	5.82 (-4.87 to 16.50)	0.34 (-10.06 to 10.73)
16 to 18	81.63	90.74	92.90	11.27* (1.39 to 21.15)	2.16 (-8.04 to 12.36)
14 to 18	91.56	99.03	99.86	8.30* (1.19 to 15.41)	0.83 (-7.07 to 8.73)
12 to 18	96.77	102.88	102.24	5.47 (-0.11 to 11.04)	-0.64 (-7.15 to 5.87)

* Change 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-G 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 Tables 6-5, 6-16, and 6-17).

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

Age groups	Percent saying they did three or more activities per week				
	Year 2000 (Mean)	Year 2001 (Mean)	Wave 5 (Jan-June 2002) (Mean)	2000 to Wave 5 Change (95% CI)	2001 to Wave 5 Change (95% CI)
12 to 13	74.8	74.7	73.4	-1.4 (-5.0 to 2.1)	-1.3 (-4.9 to 2.4)
14 to 15	67.8	64.3	62.5	-5.3* (-10.3 to -0.3)	-1.9 (-6.5 to 2.8)
16 to 18	51.1	51.9	50.9	-0.1 (-5.4 to 5.1)	-1.0 (-5.7 to 3.8)
14 to 18	58.8	57.7	55.9	-2.8 (-6.5 to 0.8)	-1.7 (-5.1 to 1.7)
12 to 18	63.5	62.7	61.2	-2.4 (-5.4 to 0.7)	-2.4 (-4.3 to 1.2)

* Change significant at $p < 0.05$.

Table 6-G offers three striking results. First, parents report doing a lot of fun activities with their children. More than 60 percent claim to be doing three or more activities from the start. This created something of a ceiling for the Campaign: if most parents already saw themselves as doing fun activities with their children, then a message to do fun activities might not have suggested a deficit in current behavior that needed improvement. Second, the level of activity is sharply associated with the age of the child. Across all five waves, nearly three-fourths of parents of 12- to 13-year-olds reported such activities, while only about half the parents of 16- to 18-year-olds did so (Detail Table 6-5). In contrast to the results for talking and monitoring, youth and parent reports of fun activities are consistent in their average levels. The fun activities questions were asked of youth only in 2001 and 2002. However in those years, the proportions claiming to do three or more activities were within one percentage point for youth and parents. Finally, the evidence does not support a claim of increasing levels of activity for parents of 12- to 18-year olds or any subgroups. This theme was emphasized only during Wave 1 of the Campaign; if there had been any effects, they were likely to have already been present when respondents were first interviewed. The lack of upward trend after that wave may reflect the subsequent change in Campaign focus.

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 is 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, sensation-seeking level, and risk for marijuana use, as well as the parent's gender and educational level. Also, 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 favorable change for parents of 12- to 18-year-olds on monitoring behavior, so the question is whether trends were different for different subgroups. The observed absolute change from year 2000 to the first half of 2002 was larger for some groups than others (see Detail Table 6-3), and 11 subgroups showed statistical significance. However, all of the confidence intervals for yearly 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 trends.

While the differences in trends are not statistically significant, it is worth noting that the actual behaviors, averaged across the five waves, are different by subgroups. Parents are more likely to monitor girls (1.54 on the 0 to 3 scale) than they are boys (1.28), although boy monitoring is catching up: boy monitoring showed a significant increase from 2000 to the first half of 2002, while girl monitoring also increased but not significantly so. Most notably, the previous report, which first incorporated risk for marijuana use in the subgroup analyses, found consistent differences with regard to monitoring behavior and various measures of monitoring beliefs and attitudes by risk group. These differences held up even after controlling for child age.

Wave 5 data confirm this pattern of significant differences by child risk. Table 6-H presents the five-wave averages of parent reports of monitoring behaviors, monitoring cognitions, and intentions to monitor. Only parents of youth aged 12 to 18 who had never used marijuana are used for these analyses of differences by risk so as to avoid making inferences where reverse causation might be a greater concern.

Eight of the nine comparisons yield statistically significant differences when controlling for child age. Parents of children at higher risk across all age groups report fewer monitoring behaviors and hold less favorable views regarding monitoring. Parents of the youngest and oldest youth at higher risk also report fewer intentions to monitor.

Table 6-H. Parent monitoring behaviors and cognitions by child age and risk

Youth characteristics		Parent reports averaged across five waves of:		
Age groups	Risk	Monitoring behavior mean (CI)	Monitoring cognitions mean (CI)	Intention to monitor mean (CI)
12 to 13	Higher	1.34 (1.20 to 1.49)	88.2 (73.5 to 102.9)	1.38 (1.30 to 1.46)
	Lower	1.81 (1.76 to 1.85)	124.6 (119.1 to 125.3)	1.57 (1.55 to 1.59)
14 to 15	Higher	1.38 (1.26 to 1.50)	71.32 (59.2 to 83.5)	1.43 (1.38 to 1.48)
	Lower	1.65 (1.59 to 1.71)	111.5 (105.8 to 117.3)	1.51 (1.47 to 1.54)
16 to 18	Higher	1.21 (1.10 to 1.31)	70.3 (59.9 to 80.7)	1.12 (1.06 to 1.18)
	Lower	1.55 (1.45 to 1.65)	96.5 (87.8 to 105.2)	1.30 (1.25 to 1.36)

NOTE: Significant differences between parents of higher and lower risk children within age groups are in bold type.

Diversity of Trends for Talking Behavior and Cognitions

Table 6-D presented the evidence about trends in talking behavior, establishing a statistically significant trend for all parents of 12- to 18-year-olds. In addition, a number of subgroups showed significant change, but the confidence intervals around their rates of change overlapped with the overall change estimate (see Detail Table 6-4). The appropriate conclusion is that the observed change in talking behavior between years was widely shared.

Talking cognitions, as presented in Table 6-F, showed no significant change from 2000 to the first half of 2002 for the full population of parents of youth aged 12 to 18. There were significant favorable trends for parents of 14- to 18-year-olds (see Detail Table 6-2).

There were, however, a few significant subgroup differences in absolute levels of talking behavior and cognitions averaged across the five waves. Mothers were more likely to report household talk than were fathers (2.45 vs. 2.30); mothers also reported significantly more favorable talking cognitions than did fathers (111 vs. 87). Parents of African American and Hispanic children reported more household talk than parents of White children (2.57 and 2.66 vs. 2.31); they also reported significantly more favorable talking cognitions than did parents of White children (136 and 124 vs. 90). Finally, parents with a high school education or less reported significantly more favorable talking cognitions than parents with some college education or more (106 vs. 95).

In sharp contrast with the consistent differences in monitoring behavior and cognitions by risk subgroup, the previous report found that parents of children at higher and lower risk report similar levels of talking behavior and cognitions within age subgroups. This absence of subgroup differences is confirmed in Wave 5.

Given that the predicted risk probability for marijuana use did not incorporate parental monitoring or talking behaviors, finding consistent differences between parents of higher and lower risk children for the one and not the other is striking. Parents of youth at higher risk for marijuana use consistently report fewer monitoring behaviors and less favorable monitoring cognitions than parents of youth at lower risk, whereas parental reports of household talking behavior and cognitions do not vary by child risk.

Looking at the risk model more closely (see Chapter 4, section 4-6), the strongest predictors of marijuana use are child cigarette use, sensation-seeking, age, and alcohol use. Parental factors that are incorporated into the risk measure and have significant effects are parental cigarette use and family

structure. Perhaps parents of children who use cigarettes have higher sensation-seeking tendencies, are older, use alcohol, and find it harder to monitor them, and that is also reflected in their beliefs and attitudes about monitoring.

Interestingly, as in the previous report, children's accounts of parental monitoring and talking behaviors parallel these results. That is, across all age groups, children at higher risk for marijuana use report their parents are performing significantly fewer monitoring behaviors than do children at lower risk. There are no differences in child reports of parental talking behaviors by risk subgroup.

Diversity of Trends for Reports of Fun Activities

No trend was found in reports of fun activities for the total population of parents of 12- to 18-year-olds (Table 6-G). When the data for subgroups were examined, almost all differences between the average estimates for year 2000 and the first half of 2002 were not statistically significant but all were in an unfavorable direction, overall and for any subgroup. There were two subgroups for which a monotonically decreasing trend was found from 2000 to the first half of 2002: parents of 14- to 15-year-olds, and parents of high sensation-seekers.

In summary, the trend data provides evidence of favorable change for both monitoring behavior and cognitions, and for talking behavior for part of the sample for talking cognitions, and no change at all for fun activities. In general, there are no patterns of consistent trend differences for particular subgroups, though child risk for marijuana use yields interesting differences in absolute levels of parental and child reports of monitoring. This chapter next turns to the complementary evidence about the association of exposure and these outcomes.

6.3 Cross-sectional 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 43 percent of parents reported general exposure 12 or more times per month, but only 12 percent reported specific exposure at that level. There are three factors that may contribute to that difference: the general exposure measure includes 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 general exposure 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-I presents the distributions for both general and specific exposure for all parents of 12- to 18-year-olds (see also Detail Tables 6-55, 6-66).

Table 6-I. Exposures per month reported by parents of 12- to 18-year-olds across five waves

	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures
General exposure	30.7%		26.7%	42.6%
Specific exposure	24.1%	32.6%	31.6%	11.6%

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 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 what the average person in the entire population is projected to have been like had the population only had minimal exposure. It is the best estimate of the average effects of the Campaign across the population. Gamma, the second estimator, is a measure of the magnitude of association that indicates whether there is an overall pattern for those who have higher exposure to be higher on the outcome variable. It varies from -1 to $+1$, with estimates closer to either end showing stronger associations. Where the confidence interval for gamma does not include 0, the association between exposure and outcome is statistically significant at the $p < .05$ 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 make a claim for Campaign 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? The detail tables also provide estimates for subgroups of that population defined by youth characteristics (age, gender, race/ethnicity) and parent characteristics (gender, education), and by interview rounds (Waves 1 to 3 and Waves 4 and 5).

6.3.1 Cross-sectional Association of Monitoring Behavior and Cognitions Scales 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-J presents the summary data for both exposure measures, with the full version in Detail Tables 6-61 and 6-62.

Table 6-J. Cross-sectional association of exposure per month and monitoring behavior reported by parents of 12- to 18-year-olds

Score on the monitoring behavior index, with 1.45 the overall mean across five waves							
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	1.44		1.45	1.49	0.02 (-0.05 to 0.08)	0.024 (-0.02 to 0.07)	0.05 (-0.04 to 0.14)
Specific exposure	1.45	1.43	1.46	1.50	0.00 (-0.06 to 0.06)	0.019 (-0.03 to 0.07)	0.05 (-0.10 to 0.20)

In contrast to their reports of behavior, parent reports of cognitions about monitoring do show association with exposure. All three estimates of effects are statistically significant for general exposure, and in a consistent direction for the specific exposure measure. However, none of the estimates of effects for specific exposure was significant. These data are presented in Table 6-K, which summarizes the information that is fully presented in Detail Tables 6-57 and 6-58.

Table 6-K. Cross-sectional association of exposure per month and monitoring cognitions reported by parents of 12- to 18-year-olds

Score on monitoring cognition index with 90.55 the overall mean across five waves							
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	82.99		88.00	96.50	7.56* (1.95 to 13.17)	0.053* (0.02 to 0.08)	13.51* (5.61 to 21.41)
Specific exposure	86.41	87.85	90.62	97.52	4.14 (-2.83 to 11.11)	0.028 (-0.01 to 0.07)	11.11 (-3.03 to 25.24)

* Significant at $p < 0.05$.

The general exposure measure is correctly ordered with regard to the monitoring cognitions index, with the mean score larger at each succeeding level. Though larger than for the association between the two measures of exposure and monitoring behavior, the gamma estimates for the associations with monitoring cognitions are fairly small (0.053 and 0.028 for general and specific exposure, respectively).

6.3.2 Cross-sectional Association of Talking Behavior and Cognitions Scales 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-L presents the evidence for the association with talking behaviors, with the complete results in Detail Tables 6-63 and 6-64.

Table 6-L. Cross-sectional association of exposure per month and talking behaviors reported by parents of 12- to 18-year-olds

Score on the 0 to 3 point scale, with overall average at 2.33 across five waves							
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	2.19		2.32	2.46	0.14* (0.08 to 0.19)	0.149* (0.10 to 0.20)	0.26* (0.18 to 0.35)
Specific exposure	2.26	2.27	2.41	2.46	0.07* (0.01 to 0.13)	0.129* (0.07 to 0.18)	0.20* (0.08 to 0.31)

* Significant at $p < 0.05$.

Both the general and specific exposure measures are associated with talking for all three tests: direct effects, gamma, and maximum potential effect. That is, parents of 12- to 18-year olds who report more exposure to the Campaign's messages are more likely to report talking to their children as well.

Table 6-M 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 greater than 20 percentage points, after major potential confounding variables are controlled, a very large difference. Likewise, gamma estimates for the association between both talking behavior and cognitions with general and specific exposure are larger than for their association with monitoring behavior and cognition.

Table 6-M. Cross-sectional association of exposure per month and talking cognitions reported by parents of 12- to 18-year-olds

Score on the talking cognitions index with 100.35 the overall average across five waves							
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General exposure	86.57		94.55	115.84	13.78* (9.03 to 18.52)	0.102* (0.07 to 0.13)	29.26* (21.77 to 36.76)
Specific exposure	92.31	93.18	106.72	118.96	8.04* (1.57 to 14.51)	0.084* (0.04 to 0.12)	26.65* (13.65 to 39.65)

* Significant at $p < 0.05$.

6.3.3 Cross-sectional Association of Fun Activities with General and Specific Exposure

Table 6-N 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 and the specific exposure measures, all three tests of association are statistically significant. This is a somewhat surprising result, given the lack of an overall upward trend in the previously reported data (see Table 6-G) 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-N. Cross-sectional association of exposure per month 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 across five waves							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	56.9		63.2	65.5	5.8* (3.2 to 8.4)	0.121* (7 to 17)	8.6* (5.0 to 12.2)
Specific	55.3	62.6	63.0	71.7	7.4* (4.5 to 10.3)	0.175* (12 to 23)	16.4* (10.7 to 22.1)

* Significant at $p < 0.05$.

6.3.4 Evidence for Diversity in Cross-sectional 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? Second, in the presence of overall associations, is there evidence that these are significantly different among subgroups? This section addresses these two questions. In general, there is no evidence of differential associations in Detail Tables 6-57 through 6-66 across subgroups.

Each of the five outcome variables was subject to three 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: the associations of general and specific exposure with the two talking outcomes, with reports of fun activities, and the association between general exposure and monitoring cognitions. Generally, most of the subgroup analyses in each of those analyses were also significant, and none could be shown to be different in terms of its overall association (gamma) from the pattern found for the whole sample. There were three analyses where the overall associations were not statistically significant: both general and specific exposure measures with the monitoring behavior index, and the specific exposure measure with the monitoring cognitions index. 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 117 comparisons. Only 2 of the 117 showed a statistically significant association as measured by gamma. Both times, the subgroup to show a significant effect was fathers. Thus, in 9 out of 10 outcomes, the reasonable inference was that there was an association for fathers: either the overall association was significant (and the fathers' association was not different from the overall significant association), or there was a subgroup association for fathers in the absence of an overall association. The only exception was for the general exposure association with monitoring behavior.

In summary, where there were overall associations, most subgroups also showed statistically significant associations as well. Where there was no association for the entire population, only one subgroup, fathers, showed a significant association.

6.4 Delayed-effects Analyses of Parent Outcomes

Delayed-effects analyses involve examining the association between exposure measured at Round 1 and outcome measured at Round 2, statistically controlling for Round 1 values of the outcomes as well as confounders. This delayed-effects association captures both the delayed-effects of exposure at Round 1 if that effect did not emerge until after Round 1, as well as the effects of exposure at Round 1

that flow through exposure at Round 2 to outcome at Round 2. These analyses examine the association of Round 1 exposure and Round 2 outcomes, over and above the association of Round 1 exposure with Round 1 outcomes. They will not detect any effects of exposure on outcomes that have already affected the Round 1 measures. The focus of delayed-effects analyses presented here is parents of youth who were 12 to 18 at Round 2, when they were re-interviewed. The detail tables also contain information about each specific longitudinal pair-up (Wave 1 with Wave 4, Wave 2 with Wave 5, and Wave 3 with Wave 5). Though emphasis is placed on Round 1 to Round 2 analyses, distinctive patterns of change for specific longitudinal pair-ups are also noted. Subgroup and subsample differences are also noted, though longitudinal results yield fewer of these than cross-sectional analyses did.

Delayed-effects analyses uses the same two exposure measures presented in the preceding section, general and specific exposure, both reported at Round 1. As with cross-sectional results, parents reported general exposure at substantially higher levels than specific exposure. For example, 43 percent of parents reported general exposure 12 or more times per month, but only 9 percent reported specific exposure at that level (Table 6-O). For delayed-effects analyses involving the specific exposure measure, only three categories of exposure are used: parents who reported exposure less than 1 time per month, 1 to 3 times per month, and 4 or more times per month. As it was explained previously, because the two measures may capture different aspects of exposure, the evidence of delayed-effects association is presented for both, with the interpretation strengthened when both show the same pattern of effects. In all exposure analyses, the effects are corrected for the influence of outcomes measured at Round 1 and 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 measured variables that were associated with exposure. Also, the same three different estimators of Campaign effects are presented in the associational tables: direct effect, gamma, and maximum effect.

Table 6-O. Exposures per month reported by parents at Round 1

	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures
General exposure	29.1%		27.8%	43.1
Specific exposure	28.5%	34.6%	36.9%	

6.4.1 Delayed-effects Association of General and Specific Exposure with Monitoring Behavior and Cognitions Scales

The previous report found that neither the general nor the specific exposure measure were associated with longitudinal parent reports of monitoring behavior. This remains true for all the parents of 12- to 18-year-olds and for all measures of effects in this report as well. Table 6-P presents the summary data for both exposure measures. These results parallel those for cross-sectional analyses reported in Table 6-J, with neither general nor specific exposure significantly associated with parent monitoring behavior measured at the same time.

No delayed-effects subgroup associations were found for specific exposure. For general exposure, there were a few scattered additional results across subgroups. Given the number of tests of statistical significance performed and the lack of significant overall subgroup associations, it is plausible that these results reflect mere chance associations.

Table 6-P. Delayed-effects analyses of exposure per month and monitoring behavior reported by parents of 12- to 18-year-olds

Score on the monitoring behavior index at Round 2 by exposure at Round 1, with 1.49 the overall mean							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	1.55		1.44	1.51	-0.07 (-0.14 to 0.01)	-0.019 (-0.07 to 0.04)	-0.04 (-0.15 to 0.07)
Specific	1.47	1.43	1.49		0.02 (-0.07 to 0.11)	0.008 (-0.06 to 0.07)	0.02 (-0.11 to 0.15)

Delayed-effects analyses of the association between general and specific exposure with monitoring cognitions do not render any overall significant effect either (Table 6-Q). The previous report noted a significant unfavorable direct effect of general exposure on monitoring cognitions; this finding is not sustained with the complete Round 1-Round 2 sample. Despite the fact that the propensity scores were re-estimated since the last report, the Wave 1 to Wave 4 delayed-effects association still holds, with significant unfavorable direct and maximum effects (see Detail Tables 6-67 and 6-68).

Table 6-Q. Delayed-effects analyses of exposure per month and monitoring cognitions reported by parents of 12- to 18-year-olds

Score on monitoring cognition index at Round 2 with 90.76 the overall mean, by parental exposure at Round 1							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	99.21		92.40	95.77	-8.45 (-17.55 to 0.65)	-0.020 (-0.06 to 0.03)	-3.45 (-15.34 to 8.45)
Specific	92.26	89.45	89.67		-1.49 (-11.35 to 8.36)	-0.011 (-0.07 to 0.05)	-2.59 (-18.64 to 13.47)

Thus, while the cross-sectional results yielded favorable direct, overall and maximum associations of general exposure with monitoring cognitions, there is no evidence for any additional delayed-effects of general exposure at Round 1 on monitoring cognitions at Round 2.

There is also no evidence of consistent patterns of subgroup effects in the delayed-effects associations of general and specific exposure and monitoring cognitions (see Detail Tables 6-67 and 6-68).

6.4.2 Delayed-effects Association of General and Specific Exposure with Talking Behavior and Cognitions Scales

The previous report found no significant delayed-effects associations of either exposure measure with talking behavior. In contrast, with the current larger samples for parents of 12- to 18-year-olds, there was a favorable overall effect of general exposure on talking behavior (Table 6-R). That is, parents who reported more general exposure at Round 1 reported significantly more household talk at Round 2. The association is also monotonic. However, the effect as measured by gamma is fairly small (0.083).

There is no evidence of significant delayed-effects associations of specific exposure and talking behavior for the whole sample nor for any subgroup or subsample (see Detail Table 6-74).

Table 6-R. Delayed-effects analyses of exposure per month and talking behavior reported by parents of 12- to 18-year-olds

Score on the 0 to 3 point talking behavior scale at Round 2, with 2.40 the overall mean, by parental exposure at Round 1							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	2.34		2.42	2.46	0.06 (-0.03 to 0.15)	0.083* (0.01 to 0.16)	0.12 (0.00 to 0.24)
Specific	2.41	2.36	2.44		-0.01 (-0.07 to 0.05)	0.029 (-0.03 to 0.09)	0.03 (-0.06 to 0.12)

* Significant at $p < 0.05$.

Delayed-effects analyses show no statistically significant overall effects for the association of either exposure measure with talking cognitions (Table 6-S). No consistent pattern of effects was found across subgroups, for either general or specific exposure (see Detail Tables 6-69, 6-70). Results of delayed-effects analyses of both exposure measures and talking cognitions contrast with those reported for cross-sectional associations, which yielded a significant and favorable overall association (see Table 6-M).

Table 6-S. Delayed-effects analyses of exposure per month and talking cognitions reported by parents of 12- to 18-year-olds

Score on talking cognition index at Round 2 with 100.08 the overall mean, by parental exposure at Round 1							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	98.48		93.40	110.08	1.60 (-6.58 to 9.78)	0.046 (-0.00 to 0.09)	11.60* (0.10 to 23.10)
Specific	102.28	97.36	102.38		-2.19 (-10.39 to 6.01)	0.012 (-0.04 to 0.06)	0.11 (-12.52 to 12.73)

* Significant at $p < 0.05$.

6.4.3 Delayed-effects Association of General and Specific Exposure with Fun Activities

The previous report found a favorable overall delayed-effects association of specific exposure with parent reports of fun activities. In this report, for parents of 12- to 18-year-olds, favorable overall and maximum effects were found for general exposure to anti-drug advertising on parent reports of fun activities. That is, parents who at Round 1 reported a higher level of general exposure to anti-drug advertising were more likely to report high levels of fun activities at Round 2. For general exposure, there were six subgroups for which significant delayed-effects associations were found. However, for all subgroups the confidence intervals for the estimates of effects in subgroups overlapped with the confidence interval for the overall estimate (see Detail Table 6-75).

The delayed-effects associations of specific exposure and fun activity reports were not statistically significant, overall and for any subgroup (see Table 6-T and Detail Table 6-76).

Table 6-T. Delayed-effects analyses of exposure per month and fun activities reported by parents of 12- to 18-year-olds

Proportion of parents doing three or more activities per week at Round 2 with overall average at .61, by exposure at Round 1							
Exposure measure	<1 exposure	1-3 exposures	4-11 exposures	12+ exposures	Direct effect (CI)	Gamma (CI)	Maximum effect (CI)
General	.57		.58	.65	.04* (0.00 to 0.08)	0.098* (0.02 to 0.18)	.07* (0.01 to 0.13)
Specific	.60	.60	.63		0.02 (-0.03 to 0.06)	0.038 (-0.04 to 0.12)	0.03 (-0.03 to 0.09)

* Significant at $p < 0.05$.

6.5 Evidence of Association of Parent Exposure with Youth Outcomes

While parent cognitions and behaviors are conceived as intermediate variables meant to influence youth, it is worthwhile to ask whether there is a direct association of parent exposure and the youth cognitive and behavioral outcomes of main interest. These are marijuana use, intentions to use, attitudes/beliefs about marijuana, perception of social norms regarding marijuana, and self-efficacy to refuse marijuana offers. Examining this direct association is particularly advisable given the number of significant favorable associations of parent exposure with parent outcomes in cross-sectional analyses and the delayed-effects association of parent behaviors and cognitions with youth outcomes (see section 6-1). The following sections describe these cross-sectional and delayed-effects overall associations between parent exposure and youth outcomes.

6.5.1 Cross-sectional Association of Parent Exposure with Youth Outcomes

Table 6-U presents the results, with more extensive information provided in Detail Tables 6-77 through 6-86.

For all youth aged 12 to 18, there were no cross-sectional overall associations for either measure of parental exposure and youth past year marijuana use. There was one significant association by subgroup: for the general exposure measure there were unfavorable direct, overall, and maximum associations for Hispanic youth. This subgroup association was not found in the previous report. For the specific exposure measure, there were no significant associations. This subgroup result must therefore be interpreted with caution.

For all youth 12 to 18 years old, there were no significant overall associations between either measure of exposure and intentions to not use marijuana, anti-marijuana beliefs and attitudes, perceived anti-marijuana social norms, and self-efficacy to refuse marijuana.

There were 414 tests of significance undertaken for subgroup analyses (17 subgroups by 5 outcomes by 2 measures of exposure, each tested for the direct effect, the overall association (gamma) and the maximal effect). Of the 414, 15 were significant. Among these were 138 tests for overall association (gamma), out of which only 4 were significant. Overall, this pattern of rare significant results is

Table 6-U. Cross-sectional association between parental exposure youth outcomes among all youths 12 to 18

Youth outcomes across 5 waves		Parental exposure level				Gamma (CI)
		<1 exposure	1 – 3 exposures	4 – 11 exposures	12 + exposures	
Percent reporting marijuana initiation	General exposure	15.0%		15.4%	15.7%	0.018 (-0.05 to 0.08)
	Specific exposure	14.6%	15.2%	15.4%	17.6%	0.057 (-0.05 to 0.17)
Percent definitely not intending to use	General exposure	73.9%		72.7%	73.7%	-0.003 (-0.07 to 0.06)
	Specific exposure	76.1%	72.8%	72.6%	74.1%	-0.028 (-0.10 to 0.05)
Attitudes/Beliefs Index (Mean score)	General exposure	77.04		72.91	77.69	0.001 (-0.03 to 0.03)
	Specific exposure	79.4	75.86	72.51	81.96	0.002 (-0.03 to 0.04)
Social Norms Index (Mean score)	General exposure	73.75		69.77	72.60	-0.005 (-0.03 to 0.02)
	Specific exposure	77.18	73.31	69.22	70.44	-0.020 (-0.06 to 0.02)
Self-efficacy Index (Mean score)	General exposure	93.33		91.52	91.29	-0.016 (-0.04 to 0.01)
	Specific exposure	94.56	90.73	91.02	96.76	-0.005 (-0.04 to 0.03)

consistent with what might be expected by chance. However, there was one pattern of results justifying further consideration. Several significant subgroup associations were found, in an unfavorable direction, for parents of Hispanic youth (see Detail Tables 6-77 through 6-86). For parents of Hispanic youth, 6 of 30 tests were significant involving four of the five outcomes and always involving measures of general exposure. The interpretation of subgroup results is always subject to revision when a large number of tests are undertaken. Nonetheless, the repeated unfavorable pattern for the parents of Hispanic youth is worth some concern. However the essential conclusion from these analyses is that the cross-sectional associations of parent exposure and parent outcomes have not yet shown evidence of indirect positive effects of parent exposure on youth.

6.5.2 Delayed-effects Association of Parent Exposure with Youth Outcomes

The following delayed-effects analyses involve examining the association of parent exposure at Round 1 with youth cognitive and behavioral outcomes at Round 2 over and above the cross-sectional association between parent exposure and youth outcomes at Round 1. The analyses include only nonusing youth at Round 1 who were 12 to 18 years old at followup and their parents.

For all youth 12 to 18 years old, there were no significant delayed-effects associations between either measure of parent exposure and youth outcomes (Table 6-V).

Table 6-V. Parental exposure at Round 1 and youth outcomes at Round 2 among 12- to 18-year-olds who were nonusers of marijuana at Round 1

Round 2 Youth Outcome		Parental exposure at Round 1				Gamma (CI)
		<1 exposure	1 - 3 exposure	4 - 11 exposures	12 + exposures	
Percent reporting marijuana initiation	General exposure	13.6%		10.8%	13.4%	-0.019 (-0.12 to 0.08)
	Specific exposure	11.8%	12.1%	14.1%		0.018 (-0.09 to 0.12)
Percent definitely not intending to use	General exposure	78.3%		79.1%	76.6%	-0.010 (-0.10 to 0.08)
	Specific exposure	76.7%	78.6%	78.9%		0.049 (-0.05 to 0.15)
Attitudes/Beliefs Index (Mean score)	General exposure	89.49		95.25	86.85	-0.006 (-0.05 to 0.04)
	Specific exposure	91.95	90.62	88.40		-0.006 (-0.05 to 0.04)
Social Norms Index (Mean score)	General exposure	87.89		88.66	79.54	-0.026 (-0.07 to 0.02)
	Specific exposure	81.64	87.27	80.36		0.000 (-0.05 to 0.05)
Self-efficacy Index (Mean score)	General exposure	115.27		111.67	101.93	-0.059 (-0.12 to 0.00)
	Specific exposure	108.67	110.70	102.82		-0.012 (-0.07 to 0.05)

In the absence of overall effects, significant delayed-effects associations for subgroups are of particular interest. There were 22 significant subgroup associations out of 420 examined, suggesting only chance results. Only one subgroup showed a consistent pattern and only for one outcome (see Detail Tables 6-87 to 6-96). Hispanic youth, whose parents were more highly exposed to both general and specific anti-drug advertising at Round 1, perceived more strongly anti-marijuana social norms in their environment. This favorable result should be interpreted with caution: Parents of Hispanic youth showed unfavorable cross-sectional associations of general ad exposure with all the other youth outcomes. Perceived anti-marijuana social norms is the only outcome for which no cross-sectional associations were found for parents of Hispanic youth (see section 6.5.1). Also, given the number of tests of statistical significance performed for subgroup analyses, the delayed-effects associations found cannot be easily separated from what one would expect to find by chance.

6.6 Summary and Discussion

The inferential logic laid out at the start of this chapter suggests that support for Campaign effects would reflect three favorable results: a favorable trend on a target outcome, a favorable cross-sectional association between exposure to the Campaign and the outcome, and finally a favorable delayed-effects association between exposure and the subsequent outcome measure. Table 6-W summarizes the results for all of the outcomes on each of these criteria. Each row in that table indicates whether there was a full sample trend, whether there was a full sample cross-sectional association with the general or specific exposure measures, and whether there was a full sample delayed-effects association with the two exposure measures. The association criterion is whether or not the gamma estimate was significant at the $p < .05$ level. In addition, each row in the table indicates whether a subgroup of the

Table 6-W. Summary of all parent effects on parent and youth outcomes among all parents of 12- to 18-year olds

	All parents of 12 to 18 youth					If not significant for all parents of youth aged 12 to 18, for which subgroups?				
	Trend	Cross-sectional association		Lagged Association		Trend	Cross-sectional association		Lagged association	
		General	Specific	General	Specific		General	Specific	General	Specific
Parent Outcomes										
Talking behavior	Favorable	Favorable	Favorable	Favorable	No	--	--	--	--	No
Talking Cognitions	No	Favorable	Favorable	No	No	16-18 (F)	--	--	White (F)	No
Monitoring Behavior	Favorable	No	No	No	No	--	None	Fathers (F)	None	No
Monitoring Cognitions	Favorable	Favorable	No	No	No	--	--	Fathers (F)	No	No
Doing Fun Activities	No	Favorable	Favorable	Favorable	No	14-15 (U) Higher sensation-seekers (U)	--	--	--	No
Youth MJ Outcomes										
Past year use	No	No	No	No	No	African American(U)	Hispanic (U)	None	None	12-13 (U)
Intentions to use	No	No	No	No	No	14-18 (U) Lower Risk (U)	None	None	None	No
Attitudes & Beliefs	No	No	No	No	No	None	None	12-13 (U)	None	No
Social Norms	Unfavorable	No	No	No	No	--	None	Females (U)	14-18 (U) African Am. (U) Hispanic (F) High Risk (U)	Hispanic (F)
Self Efficacy	Favorable	No	No	No	No	--	Higher risk (U)	None	Low sensation-seekers (U)	W2 → 5 (U)

Favorable or (F): Significant result at $p < .05$ favorable to Campaign goals.

Unfavorable or (U): Significant result at $p < .05$ unfavorable to Campaign goals.

-- Subgroup tests not significantly different than result for full sample.

No - No significant effect overall.

None - No significant effect for any subgroup, when there was no overall effect.

population showed one of those effects, even if the full sample did not. (It also would have shown if a subgroup was significantly different from the full sample, even if there was a full sample effect, but that did not occur.)

This table suggests that a claim of Campaign effect on parents has some support, most notably for talking behavior. A claim that the Campaign effect on parents led to a youth effect has no support.

Each of the outcomes is reviewed in turn. The best results are for the talking behavior measure. Parents claim to have done more of it as the Campaign progressed. Both of the exposure measures are associated with parent claims of talk measured at the same time. The general exposure measure is also predictive of delayed-effects on the talk measure, reducing a concern that the cross-sectional association reflects a reverse causal effect. Only the delayed-effects analysis with the specific exposure failed to support an inference of Campaign effect. These results provide substantial support for the existence of Campaign effect on talking behavior. However there are two concerns about this claim. As has been shown, youth report a very different picture about parent talk with them about drug topics. Youth reports of talking are much lower than parent reports, and more notably youth report that drug talk with parents is declining over the course of the Campaign. This creates concern about the confidence to be placed in the upward trend reported by parents. Also, there is little evidence that the talk variable, as measured here, is related to youth drug use. Parent reports of talk do not predict any lowered likelihood of youth initiating marijuana use for nonusing youth. Thus any claim of a Campaign effect on parents is tempered by a concern that it is an effect on an outcome with an uncertain relation to youth behavior.

Talking cognitions offers similar but lesser support of a Campaign effect. Its trend is no longer significant overall, although it is still positive for the older youth who are the majority of the sample. As in previous reports, both the general and specific exposure measures have a significant cross-sectional association with talking cognitions. However, there are no delayed-effects associations overall for either exposure measure or for any subgroup, leaving somewhat reduced confidence in which variable is cause and which is effect. In addition, there is no evidence that talking cognitions are associated with youth marijuana intentions or behavior. Even if the Campaign is affecting talking cognitions, and such cognitions produce change in talk behavior, there is no strong basis for expecting an effect of such behavior on youth.

Monitoring behavior provides the least evidence for a Campaign effect. There is a significant upward trend, and there is a significant cross-sectional association between specific exposure and monitoring behavior for fathers. However no other subgroup shows such an association, and there is no cross-sectional association for the general exposure measure, nor any delayed-effects association with either exposure measure overall or for any subgroup. The evidence for a Campaign effect on this outcome has to be seen as weak. This is unfortunate since, in contrast to the talking outcomes, monitoring behavior is an important predictor of the initiation of marijuana use.

The monitoring cognitions scale shows a positive trend over time as well as a specific exposure cross-sectional association for fathers as does monitoring behavior. In addition, the scale shows a cross-sectional association for general exposure for the full sample. However, there is no evidence for a delayed-effects association overall or for any subgroup with either of the exposure measures. There is good reason to think that affecting parental monitoring cognitions would affect youth behavior. The monitoring cognition scale has a substantial association with monitoring behavior, and like monitoring behavior, is associated with youth marijuana use and intentions. However, the evidence for a Campaign effect on monitoring cognitions, while stronger than for monitoring behavior itself,

remains positive but not definitive. Without the evidence for a delayed effect, so that the causal order issue can be sorted out, it remains unclear whether parent ad exposure affects their beliefs about the value of monitoring, or their commitment to engaging with their children influences their monitoring beliefs and their attention and recall of the advertising.

The final direct parent outcome, doing fun things with their children also presents a mixed bag of evidence. There are significant favorable cross-sectional associations with both exposure measures as well as a significant delayed-effects association with general exposure. There is no significant positive trend, however, and for two groups (14- to 15-year-olds and higher sensation-seekers) the trend is downward. However, there are two interpretations of the lack of a trend that might still be consistent with a claim of effect for the Campaign. Trend data can reflect many influences in addition to the Campaign. There might have been external forces that were producing downward pressure on this behavior and the Campaign served to maintain the current level. Or, the lack of a positive trend might be attributable to the fact that this theme was only explicitly part of the Campaign during the first Wave. Then the level of “doing fun activities” was already reflecting the Campaign’s influence during 2000. However, this interpretation would suggest that the associations of fun activity with exposure ought to be highest for those exposed in Wave 1 or in 2000, and that is not the case. In sum, there is suggestive evidence of a Campaign effect on this behavior among parents, but it does not satisfy all three of the criteria set out a priori for making a strong claim of effect. It is worth noting that, like the monitoring measures, parent claims of doing fun activity are associated with lower intentions for using marijuana and reduced initiation of marijuana use among youth.

Table 6-W then shows mixed evidence for the effects of parent exposure on parent behavior, but at least some of the evidence supports such a Campaign effect. When the summary turns to effects of parent exposure on youth outcomes, however, there is no supportive evidence. There are no reported full sample youth outcome effects. Subgroup effects are rare and, when they appear, they are consistently in an unfavorable direction.

How is this pattern of supportive evidence for Campaign effects of parent exposure on parent behavior, but no positive effects of parent exposure on youth outcomes to be explained? Three explanations fit these data. The claim of Campaign effects on parent outcomes might be mistaken. None of the outcomes has evidence that satisfies all of the a priori criteria for strong claims of effect, and if there were no effect, in fact, then one would not expect an indirect effect on youth. Second, talking behavior, the outcome with the clearest evidence for effects for parents, is not related to youth marijuana use or intentions, so even if there had been a Campaign effect on such talking it would not have been expected to affect youth outcomes. Third, indirect effects are hard to detect. If there were a small effect of the Campaign on a behavior, and a small effect of that behavior on the youth outcome, the resulting indirect effect would be the product of those two effects. For example, if the effect of the Campaign on monitoring behavior were .10, and the effect of monitoring behavior on youth marijuana use were .20, the expected effect of the Campaign exposure on marijuana use would be the product of those two effects, or .02 (.10 x .20). An effect of .02 could not be detected. The Campaign’s indirect effects through parents could only be detected if there had been effects on several of the parent behaviors and each of those were related to the youth outcomes, and the sum of all the individual indirect paths had been large enough as a set to produce a detectable cumulative effect. All of these three explanations remain possible. Each of them may explain the current conclusion about the parent component of the Campaign: there is evidence consistent with an effect of the Campaign on some parent outcomes, but no evidence for indirect effects of parent exposure to the Campaign on youth outcomes.