

Executive Summary

The number one goal of *The National Drug Control Strategy* is to “Educate and enable America’s youth to reject illegal drugs as well as alcohol and tobacco.” One of the objectives in support of that goal includes, “Pursue a vigorous advertising and public communications program dealing with the dangers of drug use by youth.” Under the Treasury-Postal Appropriations Act of 1998, Congress approved funding (P.L. 105-61) for “a national media campaign to reduce and prevent drug use among young Americans.” Pursuant to this act, the Office of National Drug Control Policy (ONDCP) launched the National Youth Anti-Drug Media Campaign (the Campaign).

The Campaign has progressed through three phases of increasing complexity and intensity. Phases I and II are discussed only briefly in this report—the primary focus is on Phase III, which began in September 1999.¹ An evaluation of Phase III has been conducted under contract to the National Institute on Drug Abuse (NIDA) by Westat and its subcontractor, the Annenberg School for Communication at the University of Pennsylvania.² Funding of the Evaluation is provided by ONDCP from the appropriation for the Campaign itself. This is the seventh and final report of the Westat and Annenberg Evaluation of Phase III of the Campaign.

The primary tool for the Evaluation is the National Survey of Parents and Youth (NSPY). This survey has collected initial and followup data from nationally representative samples of youth between 9 and 18 years of age and parents of these youth. This final report presents analyses from the complete nine waves of NSPY, covering the period from September 1999 through June 2004.

This report provides six types of information about the campaign and its effects:

- A brief description of the Campaign’s activities through June 2004, including a description of the Marijuana and Early Intervention Initiatives.
- A review of the logic and approach of the Evaluation.
- Statistics on the level of exposure to messages achieved by the Campaign during Phase III.
- Estimates of change in the marijuana use behaviors of youth between 2000 and the first half of 2004.
- Estimates of Campaign effects on youth. These include estimates of trends among nonusing youth between 2000³ and the first half of 2004; changes between 2002 and 2004 in outcomes including attitudes, beliefs, and intentions; and estimates of association between exposure to the Campaign and both simultaneous and delayed measures of outcomes, with statistical controls for

¹ ONDCP has available other reports that evaluate Phases I and II.

² For prior reports, the Annenberg School for Communication at the University of Pennsylvania, Westat’s subcontractor, had the lead responsibility for the study’s design, data analysis, and report preparation. However, for the preparation of this final report, Westat took lead responsibility, with the Annenberg School in a consulting role.

³ Wave 1 data collection started in November 1999. Because only a relatively few interviews were completed in 1999, for discussion and presentation purposes these interviews are treated as having occurred in 2000.

confounders. The report also includes analyses of trends and of associations for various subgroups of the nonusing youth population. In addition, it addresses whether the Campaign has influenced marijuana users to quit or reduce use.

- Estimates of Campaign effects on parents. These include estimates of trends between 2000 and the first half of 2004 in the parent outcomes; estimates of association between exposure to the Campaign and parents talking about drugs with their children, parents monitoring their children's behavior, and parents engaging in fun activities with their children, as well as their attitudes and beliefs about talking and about monitoring; and estimates of association between parent exposure and youth's beliefs and drug use behavior. Both change and association data are reported for various subgroups of the population. As with youth exposure, the delayed-effects associations of earlier parent exposure to Campaign advertising with later parent and youth outcomes are presented.

Background on the Campaign

The Campaign has three goals:

- 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.

The Campaign originally targeted its advertising to youth aged 9 to 18, parents of youth in this age range, and other influential adults. Phase III advertising is being disseminated through a full range of media or "channels" following a *Communications Strategy* developed by and later revised by ONDCP. Phase III also includes components other than advertising. There are outreach programs to the media, entertainment, and sports industries, as well as partnerships with civic, professional, and community groups. These other components, which are being coordinated by a public relations firm, include encouraging entertainment programs with anti-drug themes, coverage of the Campaign in the news media, community activities, corporate co-sponsorship, and special interactive media programming on the Internet.

ONDCP performs overall management of the Campaign in collaboration with the following groups:

- The Partnership for a Drug-Free America (PDFA), which provides the creative advertising for the Campaign through its existing relationship with leading American advertising companies;
- A Behavioral Change Expert Panel (BCEP) of outside scientists who help to inform the content of the advertisements to reflect the latest research on behavior modification, prevention, and target audiences;
- Ogilvy (through September 2004), a national advertising agency with responsibility for media buying (as well as for carrying out some supportive research and assuring a coherent advertising strategy);
- Fleishman-Hillard, a public relations firm, which coordinates the nonadvertising components of the Campaign; and

- The Advertising Council, a coordinator of national public interest advertising campaigns, which supervises distribution of donated advertising time to other public service agencies under the “pro bono match” program (see below).

For Phase III, advertising space has been purchased on television, radio, newspapers, magazines, billboards, transit ads, bus shelters, movie theaters, video rentals, Internet sites, Channel One broadcasts in schools, and other venues as appropriate. The television buys include spot (local), network, and cable television. One of the requirements in the Campaign appropriations language is that each paid advertising slot must be accompanied by a donation of equal value for public service messages from the media, known as the pro bono match. The pro bono match involves one-to-one matching time for public service advertisements or in-kind programming. The pro bono spots may include both supplemental transmission of the Campaign’s anti-drug ads and ads addressing other themes including anti-alcohol, anti-tobacco, and mentoring. However, except for the anti-alcohol message, these other themes are not part of the Campaign’s advertising.

Earlier reports in this series (Hornik et al., 2002a; Hornik et al., 2002b) suggested that the Campaign was not achieving its major objective of affecting youth marijuana use, and even showed some evidence of an unfavorable delayed effect of the Campaign on youth. Partly in response to these results, in October 2002, the Campaign initiated a major redirection of the youth component of the Campaign, beginning with the Marijuana Initiative, followed by the Early Intervention Initiative. The Marijuana Initiative made several core changes:

- For youth, it focused all advertising effort on strong, Negative Consequences of marijuana use ads, rather than the mix of Negative Consequence, Positive Alternative/Normative Education, and Resistance Skills ads that had been featured over the previous waves.
- It shifted its primary target audience from 11- to 14-year-olds to 14- to 16-year-olds.
- It implemented more rigorous copy-test procedures, requiring each television advertisement to undergo pretesting before being aired to a national audience, with increased oversight by the ONDCP in guiding the development and production of advertisements.

In the most recent previous report (Hornik et al., 2003), there were some analyses of the effects of the Marijuana Initiative over the first 6 to 8 months of operation, along with continuing evaluation of the entire Campaign. That report also did not find evidence for Campaign success in affecting youth.

The Early Intervention Initiative was introduced in February 2004:

- The Early Intervention Initiative is targeted to both parents and teen friends, two of the most critical influencers in a youth’s decision to use drugs.
- The Campaign’s goal is to leverage the power of parental and peer pressure to halt drug or alcohol use among teens.
- For the first time in the Campaign, alcohol use is included in these messages; it was added to address the realistic patterns of this behavior in teens who also engage in drug use.

Methodology

This final report presents results from nine data collection waves of the National Survey of Parents and Youth (NSPY), an in-home survey designed to represent youth living in homes in the United States, and their parents. Each of the first three waves of NSPY enrolled nationally representative samples of youth aged 9 to 18 and their parents. The respondents at these waves represent the approximately 40 million youth and their parents who are the target audience for the Campaign. Wave 1 included 3,298 youth aged 9 to 18 years old and 2,284 of their parents, who were interviewed between November 1999 and May 2000; Wave 2 included 2,361 youth and 1,632 of their parents interviewed between July and December 2000; Wave 3 included 2,458 youth and 1,682 of their parents interviewed between January and June 2001.

Sampling of eligible youth in Waves 1, 2, and 3 was designed to produce approximately equal-sized samples within three age subgroups (9 to 11, 12 to 13, 14 to 18). One or two youth were randomly selected from each eligible sample household. One parent was randomly chosen from each eligible household. A second parent was selected in the rare event when two youths who were not siblings were sampled.

Wave 4 followup interviews were conducted with the youth who were sampled in Wave 1 and were still eligible, and with their parents. Wave 6 followed up with this same cohort. Similarly, Wave 5 included interviews with eligible youth and their parents first sampled in either Wave 2 or Wave 3, and Wave 7 followed up with this cohort. Finally, Waves 8 and 9 followed up on Waves 6 and 7, respectively. While the focus of the Campaign in the past has been on youth age 11 or older, the inclusion of 9- and 10-year-old children at Waves 1, 2, and 3 provided a sample of those who would age into the primary target audience at the times of the followup interviews. Wave 4 comprised followup interviews conducted between July and December 2001 with 2,478 youth and 1,752 parents of those sampled at Wave 1. Wave 5 included 4,040 youth and 2,882 parents, and the interviews were conducted between January and June 2002. Wave 6 (followup to Wave 4) included 2,267 youth and 1,640 parent interviews conducted between July and December 2002, and Wave 7 (followup to Wave 4) included 3,587 youth and 2,621 parent interviews conducted between January and June 2003. The new data included in this report come from Wave 8 (followup to Wave 6), which included 1,983 youth and 1,488 parent interviews conducted between July and December 2003, and Wave 9 (followup to Wave 7), which included 3,142 youth and 2,381 parent interviews conducted between January and June 2004.

NSPY achieved a response rate of 65 percent for youth and 63 percent for parents across Waves 1 through 3 of data collection (the recruitment waves), with little response rate variation by wave. In Waves 4 and 5, respectively, NSPY successfully reinterviewed 82 percent of youth first interviewed in Wave 1, and 89 percent of youth first interviewed in Waves 2 and 3 who were still eligible for the survey (primarily still under age 19). Similarly, 80 percent of Wave 1 parents and 88 percent of Wave 2 and 3 parents were successfully reinterviewed. Wave 6 obtained successful reinterviews with 93 percent of the Wave 4 eligible youth and 93 percent of the Wave 4 eligible parents. Wave 7 obtained successful reinterviews with 92 percent of the eligible youth and 91 percent of the eligible parents from the Wave 5 sample. Finally, Wave 8 included successful reinterviews with 92 percent of the Wave 6 eligible youth and 92 percent of the Wave 6 eligible parents. Wave 9 included 93 percent of the eligible youth and 92 percent of the eligible parents from the Wave 7 sample. In preparing the respondent data for analysis, adjustments were made at all nine waves to compensate for nonresponse and to make certain survey estimates conform to known population values. Confidence intervals for

survey estimates and significance tests are computed in a manner that takes account of the complex sample design.

NSPY questionnaires were administered in respondents' homes using touch-screen laptop computers. Because of the sensitive nature of the data to be collected during the interviews, a Certificate of Confidentiality was obtained for the survey from the Department of Health and Human Services, and confidentiality was promised to the respondents. All sensitive question and answer categories appeared on the laptop screen and were read aloud to the respondent over headphones by a recorded voice that could be heard only by the respondent. The responses were chosen by touching the laptop screen.

The NSPY questionnaire for youth included extensive measurement of their exposure to Campaign messages and other anti-drug messages. It also included questions about their beliefs, attitudes, intentions, and behaviors with regard to drugs and a wide variety of other factors either known to be related to drug use or likely to make youth more or less susceptible to Campaign messages.

The NSPY questionnaire for parents also included measures about exposure to Campaign messages and other anti-drug messages. In addition, it included questions about parents' beliefs, attitudes, intentions, and behaviors with regard to their interactions with their children. These included talking with their children about drugs, parental monitoring of children's lives, and involvement in activities with their children. The responses of a parent and his or her child are directly linked for some analyses, for example, those that look at the effects of parent exposure to the Campaign on youth attitudes and beliefs about marijuana.

Campaign-initiated ad exposure was measured in NSPY for both youth and parents by asking about recall of specific current or very recent TV and radio advertisements. The TV and radio advertisements were played for respondents on laptop computers in order to aid their recall. For the most part, youth were played youth-targeted ads and parents were played parent-targeted ads.⁴ In addition, both youth and parents were asked some general questions about their recall of ads seen or heard on TV and radio, and in other media such as newspapers, magazines, movie theaters, billboards, and the Internet.

Media Purchases and Evidence about Exposure

Media Purchases

Across its multiple media outlets, the Campaign reports that it purchased enough advertising time over the 58-month period covered by this report (September 1999 through June 2004) to achieve an average exposure of 2.5 youth-targeted ads per week for youth and an average of 2.2 parent-targeted ads per week for parents. These estimates include Campaign advertisements intended for either all youth or all parents; they do not include exposure by youth or parents to advertisements intended for other audiences, often called "spill," or separate advertising targeted to specific race- or ethnicity-defined audiences.

⁴ Beginning in Wave 4, one of the television ads shown during the interview was either a ringer ad (one that had never been broadcast) or a spill ad (one that had been broadcast, but was targeted at the other (parent or youth) audience.) This was done to assess the accuracy of the ad recall and the spill effects on the unintended audience.

Figures ES-1 and ES-2 present the weekly Gross Rating Point (GRP) totals for youth-targeted and parent-targeted ad exposures, respectively. Both the actual weekly GRPs achieved and a smoothed line averaging over 3-week periods are presented. Both graphs show that the GRPs achieved varied a good deal, both between and within the periods corresponding to the NSPY waves of data collection.

Figure ES-1. Weekly youth-targeted general market GRPs (September 1999 through June 2004)

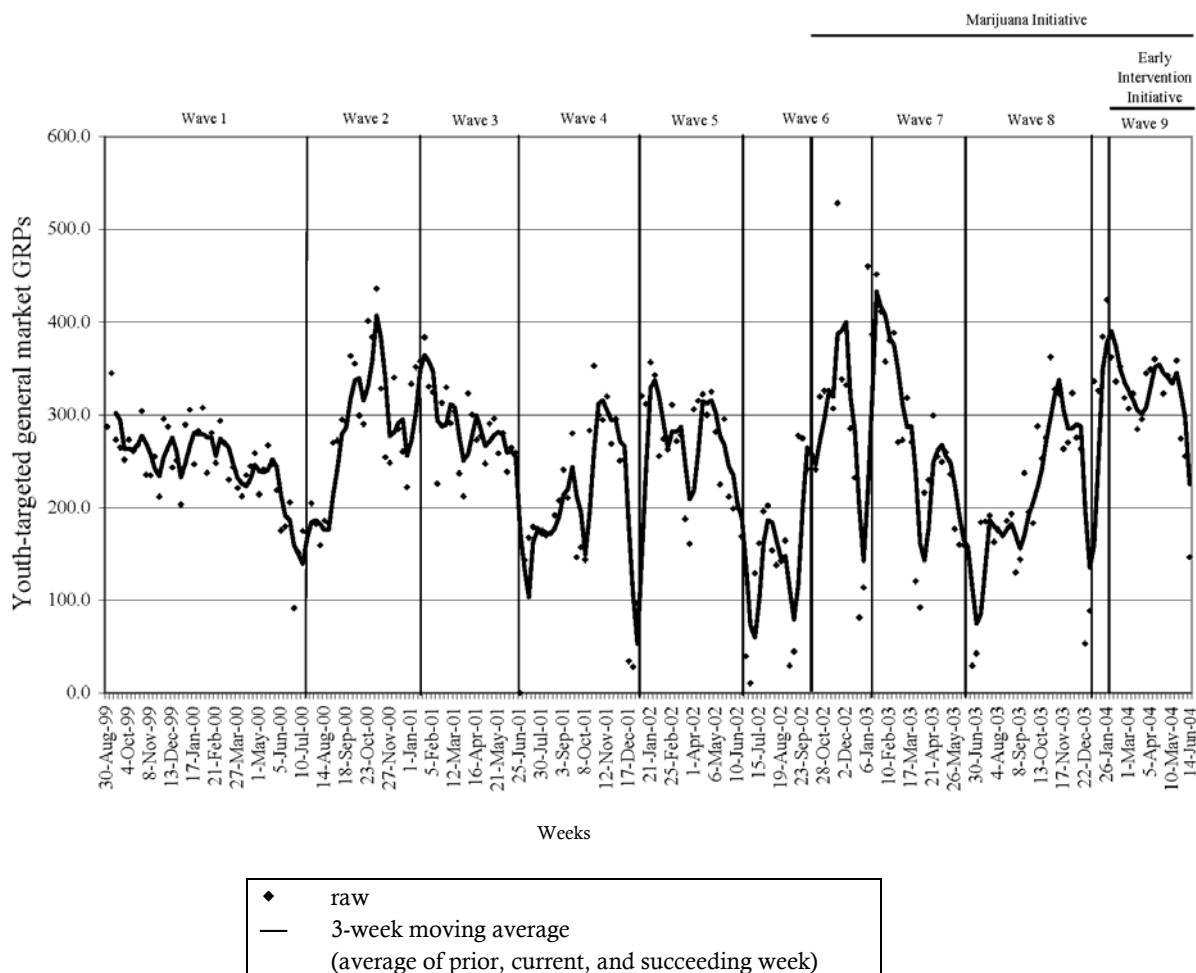


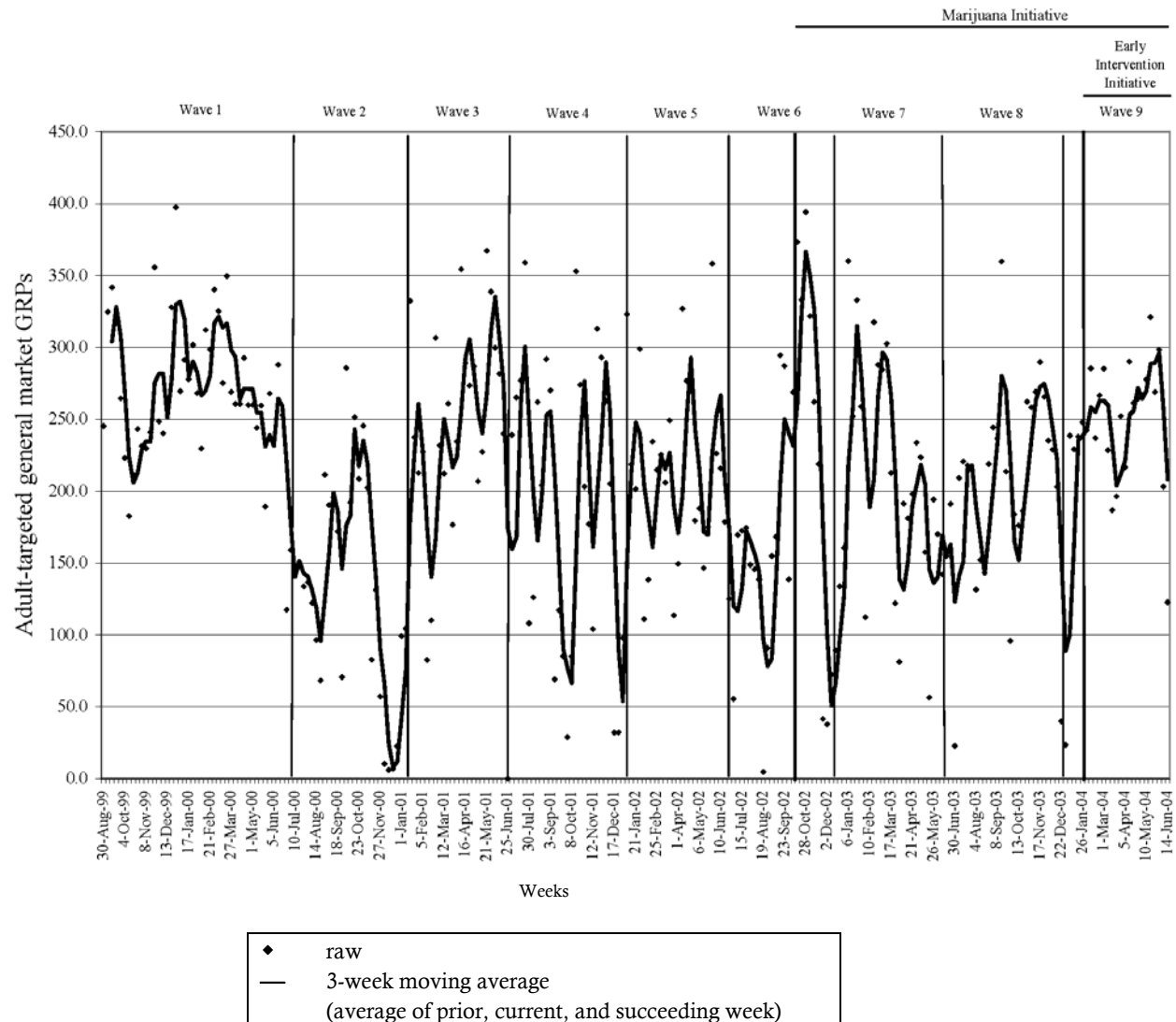
Figure ES-2. Weekly adult-targeted general market GRPs (September 1999 through June 2004)

Table ES-1 summarizes the variations across periods. The table shows that average exposures of 2.5 per week for youth in 2000 and 2001 were followed by a decline to 2.2 exposures per week during the first 9 months of 2002, and then rebounded during the period of the Marijuana Initiative to 2.6, roughly the same as the overall Campaign average. GRPs achieved in the first 10 weeks of the Marijuana Initiative were particularly high.

Table ES-1. Distribution of youth and adult average weekly GRPs across years

	Sept 99–Dec 00	Jan–Dec 01	Jan–Sep 02	Marijuana Initiative (Oct 02–Jan 04)	Early Intervention Initiative (Feb–Jun 04)
Youth	257	245	220	258	304
	Sept 99–Dec 00	Jan–Dec 01	Jan–Dec 02	Jan 03–Jan 04	Early Intervention Initiative (Feb–Jun 04)
Adults	221	212	195	205	281

Average ad exposure for both youth and parents were at their highest during the Early Intervention Initiative. During the period of the Early Intervention Initiative, from February through June 2004, enough time and space was purchased to achieve an average of 3.0 youth- and 2.8 parent-targeted exposures per week, roughly a 20 percent increase above the overall Campaign average for youth and a 30 percent increase for parents (though not all from ads in that Initiative).

- About 35 percent of youth GRPs were achieved on network (including cable) and “spot” (or local) television, with about another 30 percent achieved on network and “spot” radio. Thus, about 65 percent of total exposures came from media with the potential to reach a wide portion of youth. The rest of youth GRPs occurred on media that reach narrower audiences, including in-school television (16%), magazines (10%), and others such as basketball backboards, the Internet, nontraditional media, and arcades (all less than 5% each).
- For parents, averaged across the nine waves, almost two-thirds of the adult GRPs were achieved from potentially wider-reach media, that is, network radio (28%) and network television (36% of adult GRPs). Less than 40 percent of the parent GRPs were from narrower-reach media such as outdoor media (18%), magazines (10%), newspapers (4%), the Internet (4%), and nontraditional (0.1%).
- For both youth and parents, Campaign advertising was centered on a small number of platforms or themes. The focus on each platform varied across time, as displayed in Tables ES-2 and ES-3, which present the percentage of all television and radio GRPs in each wave dedicated to each platform. For youth, an early focus on the negative consequences of drug use had disappeared by Wave 3, but was revitalized in Waves 4 and 5 and was dominant in Waves 6 through 8—consistent with the exclusive focus of the Marijuana Initiative on the negative consequences of marijuana use. Negative Consequences ads highlight the adverse physical health, mental health, or schooling outcomes of drug use, as well as the relationship between drugs and terrorism. Overall, ads in the Negative Consequences platform received more than half of the general market youth television and radio GRPs in the period covered by the Evaluation.
- About a quarter of youth GRPs went to ads that emphasized the Normative Education/Positive Alternatives platform, which involved 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 a branding effort that stressed the number and variety of youth who do not use drugs (along with their favorite alternative behaviors).
- For parents, the Parenting Skills/Personal Efficacy/Monitoring platform—which includes monitoring and boosting personal efficacy to intervene with youth—dominated across the Campaign, receiving 71 percent of parent GRPs. The remaining GRPs were divided between ads on other behavioral platforms: Early Intervention (10%), Drugs and Terror (9%), Perceptions of Harm (6%), and Your Child Is at Risk (4%).

Table ES-2. Percent of GRPs from ads in specific youth platforms across waves (television and radio)

Platform	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004
	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 4 (%)	Wave 5 (%)	Wave 6 (%)	Wave 7 (%)	Wave 8 (%)	Wave 9 (Jan-Jun) (%)
Negative Consequences	30.9	16.4	0.0	60.2	63.2	99.3	99.9	100.0	45.8
Drugs and Terror	0.0	0.0	0.0	0.0	19.0	2.5	0.6	0.0	0.0
Marijuana Initiative	0.0	0.0	0.0	0.0	0.0	44.1	97.9	100.0	45.8
Other Negative Consequences	30.9	16.4	0.0	60.2	44.2	52.7	1.4	0.0	0.0
Normative Education/Positive Alternatives	50.2	70.3	46.0	35.6	36.7	0.0	0.0	0.0	0.0
Resistance Skills	41.3	3.0	51.5	3.0	0.0	0.0	0.0	0.0	0.0
Early Intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.2
Other	2.8	10.3	3.3	1.2	0.5	0.7	0.1	0.0	0.0

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.

Table ES-3. Percent of GRPs from ads in specific parent platforms across waves (television and radio)

Platform	Year 2000		Year 2001		Year 2002		Year 2003		Year 2004
	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 4 (%)	Wave 5 (%)	Wave 6 (%)	Wave 7 (%)	Wave 8 (%)	Wave 9 (Jan-Jun) (%)
Parenting Skills/Personal Efficacy/Monitoring	54.2	98.8	48.6	91.2	77.1	85.1	83.9	100.0	19.6
Your Child at Risk	31.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perceptions of Harm	13.6	<0.1	51.4	7.8	0.0	0.0	0.0	0.0	0.0
Early Intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.4
Other	1.2	<0.1	0.0	1.0	<0.1	0.0	0.0	0.0	0.0
Drugs and Terror Ads ¹	0.0	0.0	0.0	0.0	22.9	14.9	16.1	0.0	0.0

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

Recall of Exposure

NSPY used two measures of exposure; the first was based on general recall of anti-drug ads across all media, and the second was based on specific recall of currently broadcast ads on television and radio initiated by the Campaign. All of the following results relate only to youth aged 12½ to 18 and their parents (i.e., children younger than 12½ in NSPY are excluded).⁵ The most striking result in these reports is the rapidly increasing level of recall of specific television ads both for youth and for parents.

⁵ The youth population reported on in prior reports was 12- to 18-year-olds. In this final report it has been changed from 12- to 18-year-olds to 12½- to 18-year-olds. This change was necessary when, in 2003, ONDCP requested that a fourth round of data collection be completed (a change from the previous three-round design) because, by Round 4, the number of children in the sample less than 12½ years old was very small.

- General exposure recall to all anti-drug advertising, which may include exposure to advertising targeted to the other audience and to advertising placed by other institutions, was fairly stable for parents and for youth across the nine waves. There was no overall detectable change in reported general exposure over the course of the Campaign, suggesting that this general exposure measure was insensitive to the changes in the Campaign's targeted advertising. Across all waves, about 72 percent of all parents and 77 percent of all youth recalled weekly exposure to any anti-drug ads (Table ES-4). The median response was 9.5 exposures per month for parents and 12 exposures per month for youth across all waves. This was probably equivalent to between 2 to 3 exposures per week.

Table ES-4. Exposure to Campaign advertising by year

Population	Exposure measure: Percent seeing/hearing ads 1 or more times per week	Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	All Waves
		Waves 1 and 2 (%)	Waves 3 and 4 (%)	Waves 5 and 6 (%)	Waves 7 and 8 (%)	Wave 9 (Jan-Jun) (%)	
Parents of Youth 12½ to 18	General Exposure: Across all media	72	68	71	73	74	72
	Specific Exposure: Television ads	25	30	54	58	50	43
	Specific Exposure: Radio ads	10	17	11	14	16	13
Youth 12½ to 18	General Exposure: Across all media	78	76	77	75	75	77
	Specific Exposure: Television ads	37	52	52	63	74	54
	Specific Exposure: Radio ads	N/A ¹	8	7	10	7	8

¹ N/A: Radio exposure not measured for youth during Wave 1.

- Estimates of recall of specific Campaign ads among parents and youth provide an alternative view of exposure to the estimates generated from the general recall measures. Parents reported a median of 3.3 exposures per month and youth reported a median of 4.4 exposures per month to specific Campaign TV ads broadcast "in recent months." Similarly, parents reported a median of 0.4 exposures per month and youth reported a median of 0 exposures per month to specific Campaign radio ads broadcast "in recent months."
- For both parents and youth, there was a very sharp increase in recalled, specific exposure of television ads across the Campaign (with some up and down movement). For parents, weekly television ad exposure increased from 25 percent to 50 percent between 2000 and the first half of 2004, while youth recall on the same measure increased from 37 percent to 74 percent over the same period (Table ES-4).
- The large increases in television ad recall cannot be entirely attributed to increased television GRPs. It is possible that later media placements were better at reaching the desired target audiences, that the ads themselves were more memorable, that individual ads were on the air for a longer time making it more likely they were recognized, or some other explanation.
- The absolute level of recall of radio ads was much lower than for television ads in both groups across all waves. For youth, even though Waves 3 and 7 were the high points of radio exposure, 87 percent of youth reported less than weekly exposure during these two 6-month periods. For parents, the percentage who claimed at least weekly exposure varied from 10 percent to 17 percent across the Campaign.

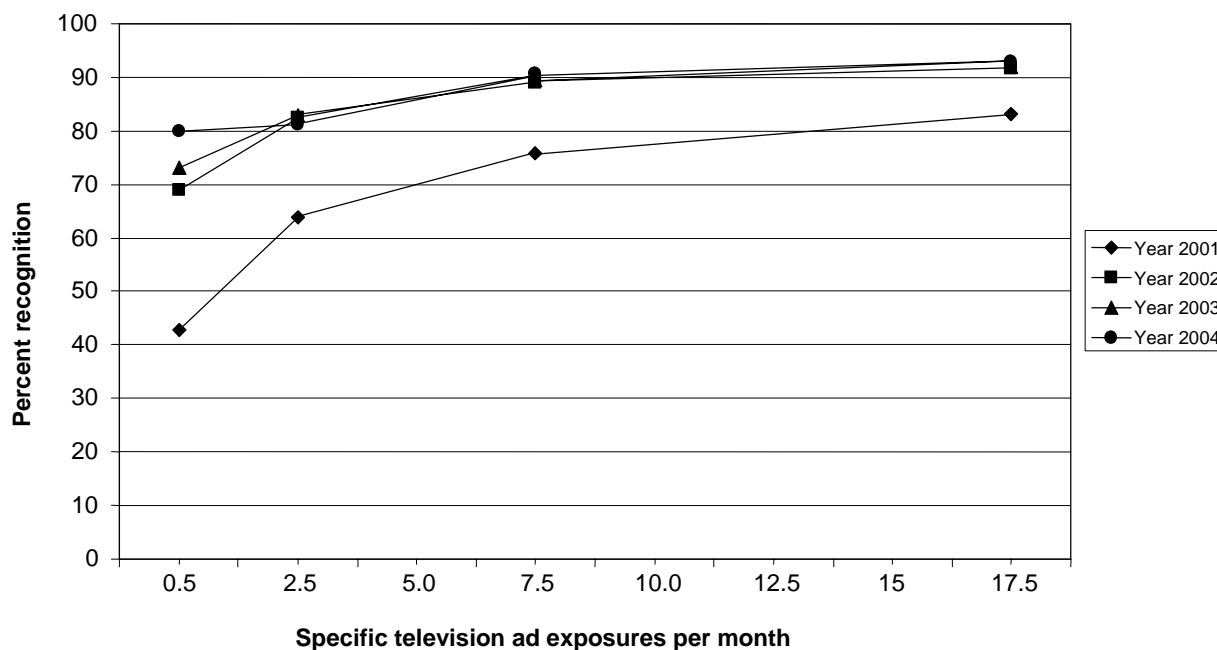
“Brand” Recall

One of the innovations of Phase III has been the inclusion of a Campaign “brand”—for example, “the Anti-Drug.” A brand is used in many advertising campaigns to provide a recognizable element to coordinate advertising, as well as nonadvertising components of the campaign. Insofar as the brand is recognized and positively regarded, its familiar presence may create some initial positive response to any new ad or increase the perception that each ad is part of a larger program. Such effects may, in turn, influence acceptance of the Campaign’s message.

The NSPY started measuring brand phrase recall in Wave 3, the first half of 2001. The data provide evidence for brand phrase recall, particularly among youth, with stronger evidence in 2002 through 2004:

- When this question was first asked of youth in the first half of 2001, 61 percent of the 12½- to 18-year-old respondents reported recall of the Campaign brand. By 2002, recall had increased to 84 percent, and in the first half of 2004, recall of the brand had increased to 89 percent. Because some of the claimed recall could have been due to false recollection, true brand recall cannot be precisely estimated; still, it clearly increased.
- There is good evidence that the more individuals were exposed to Campaign advertising, the more likely they were to recall the brand phrase, which supports the idea that the phrase was learned as the result of Campaign exposure. Figure ES-3 shows the relationships between recalled exposure of TV ads for youth and the level of brand recognition. The more that respondents recalled specific ads, the greater their likelihood of recognizing the brand. This relationship became less powerful across time; it appears that even those with low exposure had accumulated ample opportunity to learn about the brand by 2002.

Figure ES-3. Brand phrase recognition by exposure and year among youth



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 Campaign when they see or hear them.

Responses to three positively-phrased evaluative questions (whether the ad was attention getting, convincing, or said something important to the respondent) were combined to create a mean positive evaluation score for each ad and then averaged for each respondent across the ads that they recalled hearing or seeing. 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).

Both youth and parents reacted positively to the ads. Overall across all years, youth tended to favorably rate the Campaign's television ads that they were shown. The youth evaluations of the Campaign's later ads were higher than the evaluations of ads broadcast in the last quarter of 1999 and 2000. Parent ad evaluations increased between 2000 and 2004 and remained more enthusiastic than those provided by youth (Table ES-5).

**Table ES-5. Television ad evaluation scores among parents and youth
(November 1999 through June 2004)**

	Year 2000	Year 2001	Year 2002	Year 2003	Year 2004	
Group	Waves 1 and 2	Waves 3 and 4	Waves 5 and 6	Waves 7 and 8	Wave 9 (Jan-Jun)	All Waves
Mean evaluation score						
Parents	1.08 (1.03, 1.13)	1.27 (1.24, 1.30)	1.17 (1.14, 1.20)	1.20 (1.17, 1.23)	1.29 (1.26, 1.32)	1.20 (1.18, 1.22)
Youth 12½ to 18	0.73 (0.69, 0.78)	0.73 (0.70, 0.76)	0.79 (0.76, 0.82)	0.85 (0.82, 0.88)	0.83 (0.78, 0.87)	0.78 (0.76, 0.81)
Mean score for ad exaggerated the problem						
Parents	0.97 (0.91, 1.04)	1.19 (1.13, 1.24)	1.06 (1.01, 1.11)	1.07 (1.02, 1.12)	1.27 (1.23, 1.31)	1.11 (1.08, 1.13)
Youth 12½ to 18	0.73 (0.69, 0.78)	0.72 (0.68, 0.76)	0.75 (0.71, 0.80)	0.72 (0.68, 0.75)	0.77 (0.73, 0.82)	0.74 (0.71, 0.76)

Note: The evaluation scale runs from -2 to +2, with +2 being most positive. The exaggeration scale also runs from -2 to +2, with disagreement that an ad exaggerated getting a positive score, so that a higher score is more positive toward the ad.

Exposure to Other Drug Messages

Both youth and parents receive messages about drugs from other public sources besides Campaign advertising. Those other sources of messages are themselves the target of Campaign efforts. In addition to distributing messages directly, the Campaign hopes also to reach its audiences indirectly, through other institutions and routes. While there was a substantial level of exposure to anti-drug messages through many of these other informational sources, there is little evidence that exposure to such messages has increased 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 have focused on integrating drug prevention messages and strategies into existing organizations' educational programs and extra-curricular activities. In 2004, about 56 percent of the youth reported in-school drug education in the past year (Table ES-6). This was a statistically significant decrease from 66 percent in 2000. Youth attendance at out-of-school drug education in the past year was relatively rare at around 5 percent. This too, was significantly down from 7.5 percent in 2000. Parent attendance at drug abuse prevention classes and at parent effectiveness training programs in 2004 were each around 25 percent; both showed small declines since 2000.
- Both youth and parents were asked about exposure to drug and youth stories across a variety of mass media (Table ES-6). Youth reported a substantial decline in exposure to such stories; 54 percent reported that they saw or heard such stories weekly in at least one source in 2000, whereas only 42 percent did so in 2004. Parent reports of exposure to such stories remained about the same across the period from 2000 to 2004. An examination of marijuana-related newspaper coverage from 1994 to 2003 in the context of the Campaign (Jacobsohn, et al., 2004) supports these findings, with no increase seen in newspaper coverage of drugs and youth during the Campaign. The percentage of parents who reported hearing a lot about anti-drug programs in their community in the past year also declined steadily between 2000 and 2004, from 35 percent to 24 percent.
- Parents reported a good deal of drug-related conversation with their children, with a statistically significant increase from 79 percent in 2000 to 85 percent in the first half of 2004 in the percentage of youth whose parents reported two or more such conversations in the past 6 months (Table ES-7). Youth reported a substantial level of such conversations, although considerably less than their parents reported. However, in contrast to the parent reports of increases, youth overall reported a decrease of 5 percentage points in conversations with their parents from 2000 to the first half of 2004.

With the Marijuana and Early Intervention Initiatives, the Campaign was able to increase the level and focus of its advertising purchases and pro bono matches, to concentrate them over time, and then reach a sharp increase in recall, at least for specific television messages. That is a positive result, but it may have been accomplished in the midst of declining support from some of the other potential anti-drug message sources. There is little evidence that anti-drug messages from other institutions were increasing over the course of the Campaign, and in some cases there were declines, including for in-school and out-of-school drug education and in youth reports of talking with parents, although parents were reporting a positive trend in such conversations. Exposure to stories in the media concerning youth and drugs, and awareness of local anti-drug activity also showed small declines.

Table ES-6. Exposure to drug-related communication by year

Percentage of Youth					
	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Waves 7 and 8 Year 2003 (%)	Wave 9 (Jan – Jun) Year 2004 (%)
Past year in-school drug education	65.9 (63.2, 68.5)	64.9 (62.0, 67.7)	61.2 (59.2, 63.2)	60.8 (58.3, 63.3)	56.2 (53.2, 59.1)
Past year out-of-school drug education	7.5 (6.2, 9.0)	5.9 (4.9, 7.1)	7.0 (6.2, 8.0)	5.3 (4.6, 6.1)	5.2 (4.5, 6.1)
Percent recalling weekly exposure to stories in at least one medium with drugs and youth content	53.7 (51.4, 56.0)	50.6 (48.1, 53.1)	46.5 (44.4, 48.6)	41.0 (39.3, 42.7)	41.7 (39.6, 43.8)
Percentage of Parents					
	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Waves 7 and 8 Year 2003 (%)	Wave 9 (Jan–Jun) Year 2004 (%)
Percent recalling weekly exposure to stories in at least one medium with drugs and youth content	65.1 (62.9, 67.2)	64.7 (62.4, 66.9)	63.8 (61.8, 65.7)	61.6 (59.5, 63.7)	62.5 (59.9, 64.9)
Percent hearing a lot about anti-drug programs in community in the past year	35.2 (32.7, 37.7)	30.0 (27.7, 32.4)	29.6 (27.9, 31.4)	25.3 (23.6, 27.1)	24.2 (22.2, 26.4)

Estimates of Youth Drug Use

Following the goals of the Campaign given earlier, NSPY was designed to assess the influence of the Campaign on initial use (i.e., using at least once in a lifetime) and the shift from initial to regular use (i.e., using at least 10 or more times in a year) of marijuana and inhalants. However, because NSPY has data available only since 2000, and a relatively smaller sample than other national data collection efforts, it is important to compare its trends with those reported by those other sources, including the school-based Monitoring the Future survey (MTF), the Youth Risk Behavior Surveillance System (YRBSS), and the home based National Household Survey of Drug Abuse, now renamed the National Survey on Drug Use and Health (NSDUH).

Table ES-7. Change in drug-related conversations by youth across years

Percent with two or more conversations in the past 6 months	Age groups	Waves	Waves	Waves	Waves	Wave 9
		1 and 2 Year 2000 (%)	3 and 4 Year 2001 (%)	5 and 6 Year 2002 (%)	7 and 8 Year 2003 (%)	(Jan – Jun) Year 2004 (%)
With friends, reported by youth of ages:	12½ to 13	45.4 (42.3, 48.5)	43.7 (40.3, 47.2)	42.8 (39.6, 46.1)	42.2 (38.8, 45.6)	41.3 (37.6, 45.2)
	14 to 15	60.1 (56.1, 64.0)	64.6 (61.3, 67.9)	59.7 (56.9, 62.4)	60.2 (57.3, 63.0)	58.6 (55.2, 62.0)
	16 to 18	69.6 (66.5, 72.6)	71.1 (68.5, 73.5)	69.6 (66.9, 72.2)	66.9 (64.5, 69.1)	64.5 (61.0, 67.8)
	12½ to 18	60.7 (58.7, 62.6)	62.4 (60.4, 64.3)	60.0 (58.2, 61.8)	58.8 (57.1, 60.4)	57.2 (55.0, 59.4)
With parents, reported by youth of ages:	12½ to 13	56.4 (52.8, 60.0)	52.3 (49.0, 55.5)	49.9 (46.5, 53.2)	50.4 (46.6, 54.2)	50.4 (46.8, 53.9)
	14 to 15	55.2 (51.1, 59.2)	51.1 (47.7, 54.5)	48.6 (45.5, 51.7)	47.6 (44.7, 50.6)	47.7 (44.3, 51.1)
	16 to 18	50.6 (46.8, 54.4)	45.8 (42.2, 49.5)	47.6 (44.8, 50.3)	45.5 (42.5, 48.6)	48.4 (44.9, 51.8)
	12½ to 18	53.5 (51.0, 56.1)	49.2 (47.1, 51.2)	48.4 (46.6, 50.3)	47.4 (45.3, 49.5)	48.6 (46.6, 50.7)
By parents with children of ages:	12½ to 13	78.8 (75.4, 81.8)	82.3 (78.7, 85.4)	83.2 (80.7, 85.5)	84.4 (81.5, 86.9)	85.8 (82.3, 88.7)
	14 to 15	80.5 (75.7, 84.5)	83.6 (80.1, 86.6)	85.6 (83.2, 87.7)	83.6 (81.4, 85.5)	86.1 (83.3, 88.5)
	16 to 18	78.6 (75.2, 81.7)	82.5 (79.6, 85.1)	84.6 (82.2, 86.8)	81.7 (79.3, 83.9)	83.6 (79.9, 86.7)
	12½ to 18	79.3 (76.6, 81.8)	82.9 (80.8, 84.7)	84.6 (82.9, 86.2)	82.9 (81.3, 84.4)	84.9 (83.0, 86.7)

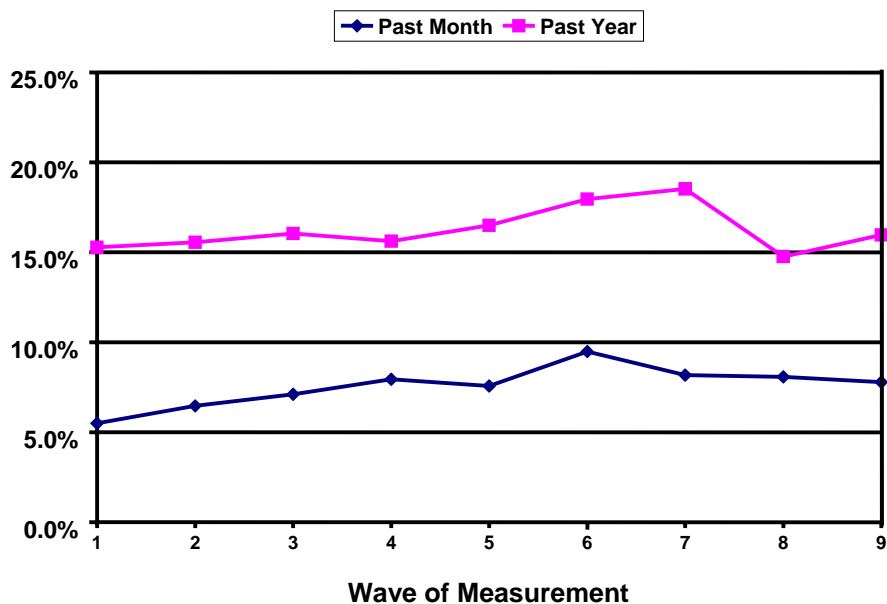
In this report, the “standard” trend analysis (comparable to that done in prior reports) compared the estimates of marijuana use for the latest year for which NSPY data are available—in this case the first half of 2004 (i.e., Wave 9)—with estimates for 2000 (at the start of the Campaign) and with estimates for 2002 (the closest prior year in which any effects of the redirected Campaign could not have had a noticeable impact on the survey responses).

- The standard analysis found no significant change between 2000 and Wave 9 (the first half of 2004) or between 2002 and Wave 9 in lifetime, past year, past month, or regular use of marijuana overall for youth aged 12½ to 18 (Table ES-8).
- Within the 14- to 16-year-old target age group for the redirected Campaign, there were also no significant changes between 2000 and Wave 9 or between 2002 and Wave 9 in lifetime, past year, past month, or regular use of marijuana.

While NSPY did not detect significant differences from 2000 to 2004, that test could well be masking significant changes *within* that period. Figure ES-4 displays estimates across time for both past year and past month marijuana use for 14- to 16-year-olds. The figure is organized by wave, with each wave encompassing about 6 months, either January to June or July to December, except for Wave 1 which represents November 1999 to June 2000. The figure shows generally upward trends through Wave 6 for past month use and through Wave 7 for past year use, followed thereafter by reversals of those trends in later waves.

Table ES-8. NSPY trends in marijuana use across measures by age group

Age groups	Percent reporting use					2000 to 2004 Change (95% CI)	2002 to 2004 Change (95% CI)
	Year 2000 (Average for Waves 1 & 2) (%)	Year 2001 (Average for Waves 3 & 4) (%)	Year 2002 (Average for Waves 5 & 6) (%)	Year 2003 (Average for Waves 7 & 8) (%)	Year 2004 (Jan-Jun) (Wave 9) (%)		
Lifetime							
12½ to 13	6.1	5.3	5.7	5.4	5.0	-1.1 (-3.8, 1.6)	-0.7 (-3.6, 2.2)
14 to 16	20.6	22.4	24.1	22.3	21.8	1.1 (-2.3, 4.6)	-2.3 (-5.1, 0.5)
14 to 18	29.1	30.9	31.8	29.4	29.3	0.2 (-3.3, 3.7)	-2.5 (-5.6, 0.6)
12½ to 18	23.6	24.8	25.5	23.7	23.5	-0.1 (-2.9, 2.8)	-2.0 (-4.5, 0.5)
Past year							
12½ to 13	3.9	3.5	3.9	4.2	3.2	-0.7 (-2.7, 1.2)	-0.7 (-2.8, 1.4)
14 to 16	15.4	15.8	17.2	16.6	16.0	0.5 (-2.6, 3.6)	-1.3 (-3.6, 1.0)
14 to 18	21.2	21.1	22.1	21.6	20.9	-0.3 (-3.2, 2.6)	-1.2 (-3.8, 1.5)
12½ to 18	17.1	16.9	17.7	17.4	16.7	-0.4 (-2.6, 1.9)	-1.0 (-3.1, 1.1)
Past month							
12½ to 13	1.7	1.6	1.1	1.3	1.2	-0.5 (-1.5, 0.5)	0.1 (-0.9, 1.0)
14 to 16	6.0	7.5	8.5	8.1	7.8	1.8 (-0.1, 3.7)	-0.8 (-2.7, 1.2)
14 to 18	9.7	10.8	12.3	10.8	10.4	0.7 (-1.6, 3.0)	-1.9 (-3.8, 0.1)
12½ to 18	7.8	8.6	9.6	8.5	8.2	0.4 (-1.4, 2.2)	-1.3 (-2.8, 0.1)
Regular							
12½ to 13	0.6	0.4	0.6	0.7	0.8	0.2 (-0.8, 1.2)	0.2 (-0.7, 1.1)
14 to 16	4.0	5.9	5.6	5.8	5.1	1.0 (-0.6, 2.7)	-0.5 (-2.1, 1.0)
14 to 18	7.9	8.8	9.0	8.2	7.9	-0.1 (-2.0, 1.9)	-1.2 (-2.9, 0.6)
12½ to 18	6.2	6.8	7.0	6.4	6.2	0.0 (-1.5, 1.5)	-0.8 (-2.1, 0.5)

Figure ES-4. Marijuana Use Among 14- to 16-year-olds

To better capture this, a second form of trend analysis was conducted, separated into two components. The first component compares marijuana use estimates for 2000 with those for 2002 to investigate any changes that may have occurred during the period before the redirection of the Campaign. The second component compares estimates for 2003 and the first half of 2004 combined (i.e., Waves 7, 8, and 9 combined, the period in which the redirected Campaign was in operation) with estimates for 2002. One advantage of this pooled analysis is that it provides change estimates that are closer in nature to the change estimates produced by the other national surveys. Another is that the sampling errors in the estimates are reduced because of the larger sample size obtained by pooling all the data for the Evaluation period of the redirected Campaign.

- The second analysis showed a statistically significant overall increase in past month marijuana use between 2000 and 2002. This increase was primarily driven by older youth aged 14 to 18 (Table ES-9). There also was a significant increase in lifetime use among 14- to 16-year-olds. No changes occurred for younger youth aged 12½ to 13.
- In contrast, the analyses of the changes from 2002 to 2003/2004 combined found statistically significant decreases overall in both lifetime and past month marijuana use, decreases that were concentrated among older youth.

How are the NSPY statistically significant increases from 2000 to 2002 and decreases from 2002 to 2003/2004 to be interpreted? The parallel results for three other major national surveys of drug use among adolescents provide relevant evidence. Examination of these other survey results leads to some uncertainty about the NSPY increase from 2000 to 2002, but supports the NSPY decrease from 2002 to 2003/2004.

- The data from the school-based surveys—the MTF and YRBSS—provide a possible justification for discounting the statistically significant increase in the pre-Marijuana Initiative period found in NSPY. MTF shows general decreases for 8th and 10th graders and no trend for 12th graders on all marijuana measures between 2000 and 2002, with statistically significant decreases for 10th graders in past year and past month use between 2001 and 2002. YRBSS shows general declines from 1999 to 2001, with statistically significant decreases for 14- to 18-year-olds for both lifetime and past month use. However, NSDUH—the other household survey—shows increases between 2000 and 2001 across all age groups and measures, many of which are statistically significant. Methodological changes in 2002 make the comparisons between 2001 and 2002 uninformative for the NSDUH. The NSDUH results showing an increase from 2000 to 2001 are consistent with the statistically significant NSPY increase from 2000 to 2002. The conflicting findings from the two school-based surveys with those from the two household-based surveys leave the nature of the change in marijuana use between 2000 and 2002 uncertain.
- In contrast to the 2000 to 2002 change, the evidence for a decrease between 2002 and 2003/2004 is more consistent across the four surveys. Each of the three other surveys shows decreases across all measures and all age groups for this period (for 2001 to 2003 for YRBSS and for 2002 to 2003 for NSDUH). However, the only statistically significant year-to-year decreases are those for past year use between 2002 and 2003, and past month use between 2003 and 2004 by MTF 8th graders, and for lifetime use between 2002 and 2003 by 12- to 17-year-olds in the NSDUH. While the results from the several surveys are not entirely consistent, combining the evidence from NSPY and these other surveys suggests it is likely that a small decline in marijuana use occurred since the start of the redirected Campaign.

Table ES-9. NSPY marijuana use in 2000, 2002, and 2003/2004 across measures by age group

Age groups	Percent reporting use				
	Year 2000 (Average for Waves 1 & 2)** (%)	Year 2002 (Average for Waves 5 & 6)** (%)	Years 2003/2004 (Average for Waves 7, 8 & 9) (%) (95% CI)	2000 to 2002 Change (95% CI)	2002 to 2003/2004 Change (95% CI)
Lifetime					
12½ to 13	6.1	5.7	5.3 (4.2, 6.7)	-0.4 (-2.4, 1.5)	-0.4 (-2.2, 1.5)
14 to 16	20.6	24.1	22.2 (20.6, 23.8)	3.4* (0.4, 6.4)	-1.9 (-4.0, 0.2)
14 to 18	29.1	31.8	29.4 (27.8, 31.0)	2.7 (-0.2, 5.6)	-2.4* (-4.5, -0.2)
12½ to 18	23.6	25.5	23.6 (22.4, 25.0)	1.9 (-0.3, 4.1)	-1.9* (-3.6, -0.2)
Past year					
12½ to 13	3.9	3.9	3.9 (2.9, 5.2)	0.0 (-1.5, 1.5)	0.0 (-1.6, 1.6)
14 to 16	15.4	17.2	16.4 (15.0, 17.9)	1.8 (-0.7, 4.3)	-0.8 (-2.7, 1.0)
14 to 18	21.2	22.1	21.3 (19.9, 22.9)	0.9 (-1.5, 3.3)	-0.7 (-2.6, 1.1)
12½ to 18	17.1	17.7	17.2 (16.0, 18.4)	0.6 (-1.2, 2.4)	-0.5 (-2.0, 1.0)
Past month					
12½ to 13	1.7	1.1	1.2 (0.7, 2.0)	-0.6 (-1.4, 0.3)	0.1 (-0.8, 1.1)
14 to 16	6.0	8.5	8.0 (7.1, 9.1)	2.6* (0.4, 4.7)	-0.5 (-2.0, 0.9)
14 to 18	9.7	12.3	10.7 (9.7, 11.8)	2.5* (0.4, 4.7)	-1.6* (-3.1, -0.1)
12½ to 18	7.8	9.6	8.4 (7.6, 9.3)	1.8* (0.1, 3.4)	-1.2* (-2.3, 0.0)
Regular					
12½ to 13	0.6	0.6	0.7 (0.4, 1.4)	0.0 (-0.6, 0.5)	0.1 (-0.5, 0.7)
14 to 16	4.0	5.6	5.5 (4.8, 6.5)	1.6 (-0.2, 3.3)	-0.1 (-1.1, 1.0)
14 to 18	7.9	9.0	8.1 (7.3, 9.0)	1.1 (-0.5, 2.8)	-0.9 (-2.2, 0.3)
12½ to 18	6.2	7.0	6.3 (5.7, 7.0)	0.8 (-0.5, 2.1)	-0.7 (-1.6, 0.3)

* Indicates a significant change at $p < 0.05$.

** Confidence intervals for the year 2000 and year 2002 estimates are given in the report.

If there was a decrease between 2002 and 2003/2004, can it be attributed to the Campaign? This is not a question that the trend analysis can answer. The existence of trends alone does not permit attribution of cause in a context when outside forces are likely to be affecting behavior. In this regard, it should be noted that:

- The declines observed in the MTF and the YRBSS started before 2002; indeed the declines in MTF started before Phase III of the Campaign; and
- If the significant NSPY change from 2000 to 2002 were due to an unduly high estimate for 2002, that would explain away both the increase from 2000 to 2002 *and* the decrease from 2002 to 2003/2004. The conclusion would then be that NSPY found no firm evidence of a change in marijuana use over the full period.

By examining whether initiation of marijuana use and the cognitive measures that are postulated to be precursors of drug use are related to Campaign exposure, the question of attribution of effects to the Campaign is addressed more directly. The results of the analyses addressing this question are presented below.

Campaign Effects

The remainder of this Executive Summary presents evidence obtained in NSPY regarding Campaign effects. The discussion first summarizes the logic adopted for claiming effects. It then presents the findings regarding Campaign effects on youth followed by the findings for Campaign effects on parents.

The Logic of Claiming Campaign Effects

Both the parent and youth outcomes analyses involve three components: (1) examining trends over time, (2) examining how the exposures to the Campaign that individuals report are associated with their outcomes measured at the same time, and (3) examining how individuals' reported exposures at one wave predict their outcomes at a later wave, among youth and parents who were measured at two points in time; i.e., for Round 1 (Waves 1, 2, and 3) to Round 2 (Waves 4 and 5), for Round 2 to Round 3 (Waves 6 and 7), and for Round 3 to Round 4 (Waves 8 and 9).

If the Campaign has been successful, it would be desirable to see favorable trends in the outcomes over time. However, change in outcomes over time (or a lack of change despite positive Campaign effects) may be due to influences other than the Campaign. Thus, if effects are to be definitively attributed to the Campaign, other supporting evidence is also needed.

Another form of evidence is an association between exposure and outcome, measured at the same time. However, evidence of the presence or absence of a simple association is inadequate for inferring that exposure has, or has not, had an effect on an outcome. The main threat to such an inference is that an association may be due to the influence of other variables (confounders) on both exposure and outcomes. This threat to inference can be substantially lessened by applying statistical controls for the confounders, as described below. However, even when controls have been applied for all known, measured confounders, there remains the possibility that unmeasured and perhaps unknown confounders are the cause of the adjusted association. Furthermore, even if controls were fully applied for all the confounders, there remains an alternative explanation for the adjusted association, namely that it is outcome that is the cause and (recall of) exposure that is the effect. Thus, an association between concurrent exposure and outcome, controlled for all known confounders, will not ordinarily definitively determine that the Campaign has had an effect on an outcome.

The ambiguity of causal direction that exists with a cross-sectional association can be overcome when longitudinal data are available. Then, if, after controlling for all confounders, *exposure* measured at time 1 is associated with *outcome* measured at time 2, the inference is that the causal direction is from *exposure* to *outcome* since an effect cannot precede its cause. With such longitudinal data, it is possible to establish time order between variables—that is, to examine whether a prior state of exposure affects a later outcome measure.

There is another constraint on the analysis of associations that needs to be considered. The analysis addresses only the direct effects of exposure. Associations between exposure and outcomes are expected only if individuals personally exposed to Campaign messages learn and accept those messages in the short term. This form of analysis does not reflect any indirect effects that might occur through other routes. Therefore, this report also includes analyses that assess one important route for indirect effects, that is, effects on youth that are mediated through parent exposure.

For youth, most analyses of Campaign effects are limited to 12½- to 18-year-olds who report never having tried marijuana (referred to as “nonusers” in this report) and concern their attitudes, beliefs, and intentions (“cognitions”) about possible initiation of marijuana use in the subsequent year. However, an additional analysis was conducted for this final report that examined any impact the Campaign may have had on the subsequent marijuana use of youth who had used marijuana in the year they were exposed.

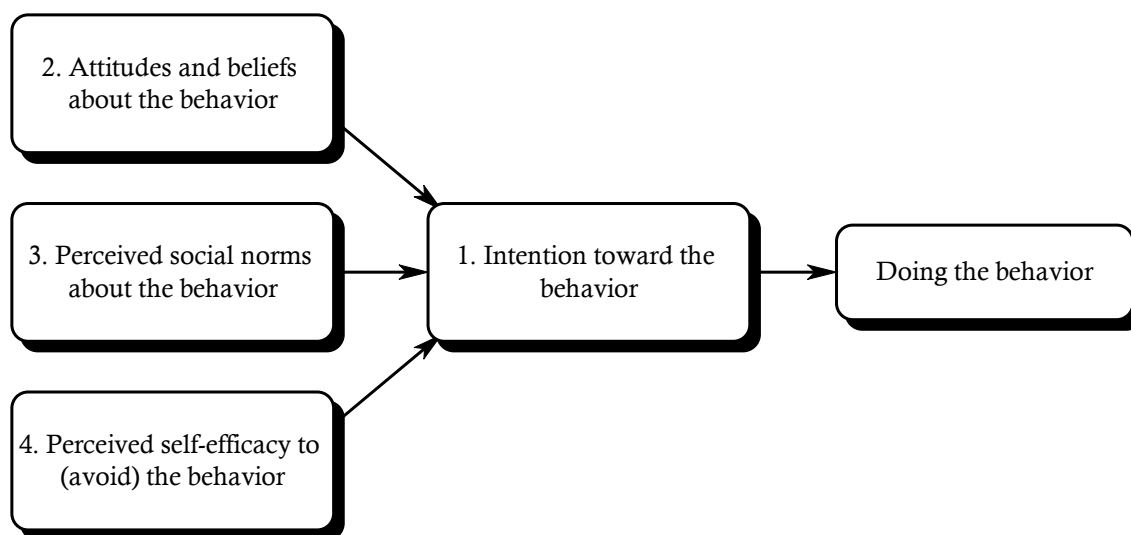
The parent analysis includes all parents of 12½- to 18-year-olds and focuses on the target parenting behaviors (and their supporting cognitions) including talk, monitoring, and engaging in fun projects or activities with their children in or out of the home. In addition, the analyses examine the association between parent exposure, and youth cognitions and behavior.

All analyses of associations between exposure to Campaign messages and outcomes use a method called “propensity scoring” to control for the possible influence of a very wide range of possible confounding variables. The analyses began with tests for any preexisting differences among the exposure groups on a large number of variables. The parent analyses were corrected, among other factors, for observed differences on race, ethnicity, gender, age of parent, income, marital status, strength of religious feelings, age of children, neighborhood characteristics, media consumption habits, language, and parental substance use (alcohol, tobacco, marijuana, and other illegal drugs). The analyses of youth associations were controlled for parent characteristics and further controlled for any preexisting differences among exposure groups on school attendance, grade level, academic performance, participation in extra-curricular activities, plans for the future, family functioning, personal antisocial behavior, association with antisocial peers, use of marijuana by close friends, personal tobacco and/or alcohol use of a long-standing nature, and sensation-seeking tendencies.

Campaign Effects on Youth

The basic theoretical model underpinning the Evaluation of Campaign effects on youth is shown in Figure ES-5. The model argues that if the Campaign were to be successful, it would affect behavior through one or more of the depicted paths.

As in prior reports, the analysis of marijuana cognitive outcomes focuses on the four measures that correspond to the expected four predictors of behavior. However, this report adds a fifth measure—the perception of other kids’ regular use of marijuana. The rationale was that the delayed effects analyses presented in the Fifth Semi-Annual Report found evidence of possible unfavorable effects of Campaign exposure on outcomes measured a year later. It was hypothesized that a possible mechanism for such effects is that the Campaign may be increasing youth perception that others use marijuana and that may adversely affect their behavior. Some supportive evidence for this hypothesis is that there are strong cross-sectional and prospective relationships between this perception and

Figure ES-5. The expected relationships among cognitive outcomes

marijuana use. To examine this hypothesis further, perception of other kids' use is being treated as an outcome parallel to the other youth cognitive outcomes in this report.⁶

The single item measure of intentions outcome focuses on the proportion of youth who said “definitely not” when asked about the likelihood of their using marijuana in the next year. This measure has proved to be highly predictive of subsequent use. Similarly, each of the three multi-item indices presented in Figure ES-5 are highly related to intentions to use marijuana. The Attitudes and Beliefs Index includes questions about eight specific consequences of marijuana use for the respondent, as well as general attitudes toward marijuana use. The Social Norms Index includes questions about what parents and friends would expect the respondent to do about marijuana use. Finally, the Self-Efficacy Index assesses the respondent's confidence that he or she could refuse marijuana in a variety of circumstances. The three indices are calibrated so all 12- to 18-year-old nonusers at Wave 1 had a mean score of 100 and a standard deviation of 100.⁷

Youth Trends

Table ES-10 presents a summary of the trend data for all nonusing youth. As shown, two of the cognitive outcomes yielded statistically significant trends in the overall sample, both in a direction favorable to the Campaign:

- The Attitudes/Beliefs Index registered a significant favorable change between 2000 and the first half of 2004, which was particularly strong for the 12½- to 13-year-old age group. Among the attitudes that changed, nonusers in 2004 were significantly more likely than in 2000 to disapprove of occasional marijuana use by others and to perceive that using marijuana would “Be acting against my moral beliefs.” However, there was no evidence that this favorable trend accelerated when the Campaign was redirected in late 2002, nor was there significant movement among the

⁶ This item had always been part of the general social norm index, but effects of this item by itself were not previously examined.

⁷ The indices were not recalibrated for the 12½- to 18-year-old sample used in the present report. However, this has no impact on significance tests of trends and associations.

new target population of 14- to 16-year-olds. When restricted to the 2002 to 2004 period, the trend results for the Attitudes/Beliefs Index showed no statistically significant changes overall or for any of the age subgroups.

- The one statistically significant favorable overall trend since the Campaign was redirected in 2002 was in intentions to not use marijuana. For the full sample of 12½- to 18-year-olds, the proportion of nonusing youth saying they would “definitely not” try marijuana over the next 12 months increased by 2.1 percentage points between 2002 and 2004. The resulting proportion—87.5 percent—was the highest since the NSPY began in November 1999. Among older nonusers—who are historically at greater risk—the 2002 to 2004 increase was statistically significant and somewhat larger (2.6 percentage points). Because of the strong relationship between intention to use and subsequent initiation, any change in intentions would have to be viewed as important.

Table ES-10. Trend evidence for youth aged 12½ to 18
Trends in intentions, beliefs, norms, and self-efficacy about marijuana use among nonusers

	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	Year 2004 (Jan to Jun) (Mean)	2000 to 2004 Change (95% CI)	2002 to 2004 Change (95% CI)
Percent definitely not intending to use marijuana	86.7	85.3	85.4	86.3	87.5	0.8 (-1.0, 2.6)	2.1* (0.5, 3.7)
Mean score on Attitudes/Beliefs Index	105.06	101.30	108.49	108.82	111.35	6.29* (0.36, 12.23)	2.86 (-2.36, 8.09)
Mean score on Social Norms Index	103.64	98.65	103.33	99.83	104.79	1.15 (-5.05, 7.34)	1.46 (-3.89, 6.81)
Mean score on Self- Efficacy Index	102.63	100.76	106.25	107.88	105.04	2.41 (-3.34, 8.16)	-1.21 (-7.17, 4.75)
Percent perceiving few other kids regularly use marijuana	57.8	59.7	56.9	56.7	57.2	-0.6 (-3.7, 2.5)	0.3 (-2.3, 2.9)

* Change between specified years significant at $p < 0.05$

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

Additional analyses of individual item responses provide insight into factors driving the change in intentions:

- Nonusers in 2004 were significantly more likely than in 2002 to disapprove of occasional marijuana use by others and to perceive others as risking harm by using marijuana occasionally.
- The 12½- to 13-year-old nonusers in 2004 were significantly more likely than in 2002 to cite “Damage my brain” and “Lose my ambition” as possible outcomes of regular marijuana use, while 14- to 18-year-old nonusers were more likely to cite “Mess up my life” and “Do worse in school.”
- In general, youth reported greater concern about the negative consequences of marijuana use than at any time since NSPY began.

Youth Cross-Sectional Associations

As noted above, trends alone, whether favorable or unfavorable to the Campaign, do not establish a Campaign effect. Cross-sectional results for youth outcomes are summarized in Table ES-11. The

exposure columns represent the level of exposure reported by these youth to Campaign television advertising. The rows present average scores on the five outcomes of interest within each category of exposure. The estimates in the cells are adjusted, through the propensity scoring methodology, for a wide variety of potential confounders, as well as being survey weighted to represent the U.S. population. The statistical significance tests take the complex sample design into account. The overall relationship of exposure and each outcome is summarized by the gamma statistic, which varies from -1 to +1, with 0 indicating no relationship. The results are presented for the overall sample, and broken out by the period preceding (Waves 1 through 6) and following (Waves 7 through 9) the October 2002 redirection of the Campaign.

Key results are as follows:

- The cross-sectional association analyses provide no evidence that the favorable trend in youth intentions not to use marijuana was influenced by Campaign exposure. This does not prove that the trend was not due to the Campaign; it is possible that the effect occurred after a minimum threshold of exposure was reached but was insensitive to additional exposure, in which case the associational analyses would not detect it. This is unlikely, however, for two reasons. First, a favorable trend alone cannot permit unambiguous attribution of effect to the Campaign, and claims of an effect are much more vulnerable to alternative explanations when uncorroborated by associational evidence. Second, the thesis that exposure quantities do not matter, i.e., that seeing ads 12 or more times per month is no different than seeing ads once per month, is inconsistent with both communication theory generally and the theory of impact articulated by Campaign planners specifically.
- None of the cognitive outcomes registered favorable cross-sectional association effects for the Campaign as a whole. One of them—the Attitudes/Beliefs Index—registered a favorable cross-sectional effect of general exposure for the Waves 7 to 9 period, which included the Marijuana and Early Intervention Initiatives and related redirections of the Campaign. This effect was particularly strong among older youth, boys, Hispanics, and lower risk youth. However, because the Marijuana and Early Intervention Initiatives were more likely to change associations with specific exposure, and no association with specific exposure was found, it is questionable whether an association only with general exposure reflects Campaign influence. Moreover, neither of the other two predictors of intentions (social norms and self-efficacy), nor intentions themselves, showed any association with exposure. The absence of such effects, both for the overall Campaign and specifically for the period of the Marijuana and Early Intervention Initiatives, contradicts a claim that youth exposure to Campaign advertising has affected these outcomes.

Table ES-11. Outcome measures by exposure per month among 12½- to 18-year-old nonusers of marijuana

Outcome		Exposure				Gamma		
		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Overall gamma (95% CI)	Waves 1-6 gamma (95% CI)	Waves 7-9 gamma (95% CI)
Percent definitely not intending to use marijuana	General exposure	86.9		85.1	86.2	-0.01 (-0.06, 0.05)	-0.02 (-0.09, 0.05)	0.03 (-0.03, 0.10)
	Specific exposure	87.5	86.3	85.0	87.4	-0.02 (-0.07, 0.03)	-0.02 (-0.09, 0.05)	-0.01 (-0.09, 0.06)
Mean score on Attitudes/Beliefs Index	General exposure	104.53		105.33	108.65	0.02 (-0.01, 0.04)	0.00 (-0.03, 0.03)	0.05* (0.02, 0.08)
	Specific exposure	109.94	105.13	103.26	112.12	0.00 (-0.02, 0.02)	0.00 (-0.03, 0.03)	0.01 (-0.02, 0.04)
Mean score on Social Norms Index	General exposure	100.60		100.42	102.34	0.00 (-0.03, 0.02)	-0.01 (-0.04, 0.02)	0.01 (-0.02, 0.05)
	Specific exposure	111.56	100.42	101.12	103.26	-0.02 (-0.04, 0.01)	-0.03 (-0.06, 0.01)	-0.01 (-0.04, 0.03)
Mean score on Self-Efficacy Index	General exposure	101.70		102.71	107.47	0.03 (-0.00, 0.07)	0.03 (-0.01, 0.07)	0.03 (-0.02, 0.09)
	Specific exposure	106.44	102.94	103.78	110.26	0.02 (-0.01, 0.05)	0.02 (-0.02, 0.07)	0.01 (-0.03, 0.06)
Percent perceiving few other kids regularly use marijuana	General exposure	61.1		57.1	56.5	-0.06* (-0.10, -0.02)	-0.05 (-0.10, 0.00)	-0.07* (-0.13, -0.01)
	Specific exposure	63.7	59.3	56.5	56.4	-0.07* (-0.12, -0.03)	-0.06* (-0.11, -0.00)	-0.10* (-0.17, -0.03)

*Gamma significant at $p < 0.05$.

- In contrast, the newly added outcome—perceptions of other kids' use of marijuana—showed a significant unfavorable association with both measures of exposure for the Campaign as a whole, as well as the redirected Campaign. That is, youth reporting higher exposure to anti-drug ads were more likely to believe that their peers used marijuana regularly. The relationship extends across most major subgroups of age, sex, race/ethnicity, and risk. It is notable that the unfavorable cross-sectional effects appear for this outcome, in that it was specifically included in the present report to test the theory that exposure to the Campaign increases youth perception that others use marijuana, which in turn may affect their own use behavior. As noted above, because of the vulnerability of cross-sectional associations to reverse causation, the cross-sectional effect alone on perceptions of other kids' use does not permit a strong claim that the Campaign caused the association. However, tests for delayed effects of exposure on perceptions of other kids' use of marijuana also were statistically significant, greatly reducing the vulnerability to reverse causation. Delayed effects are reviewed next.

Youth Delayed Effects

This section presents the results of analyses of the delayed effect of exposure at one round of data collection on outcomes at the following round. The outcomes are the five cognitive measures as well as actual initiation of marijuana use. Table ES-12 presents the overall average delayed effects combining all three of the one-round delayed effect analyses (so a youth who was interviewed at all four rounds would provide three cases for the analysis; Round 1 to Round 2, Round 2 to Round 3, and Round 3 to Round 4) as well as the delayed effects by round.

There is particular interest in examining whether there is evidence of a Waves 7 to 9 delayed effect, because Wave 7 was the first complete wave covering exposure to the Marijuana Initiative. The delayed effects for Round 3 to Round 4 are therefore divided into two components, Waves 6 to 8 and Waves 7 to 9, and these components are presented separately in the table.⁸

There were no significant delayed effects for the Attitudes/Beliefs Index or for the Self-Efficacy to Refuse Marijuana Index overall, or for any of the rounds or waves. There are significant delayed effects for the other three outcomes, all in an unfavorable direction.

- These include intentions to not use marijuana (general exposure: all rounds and Round 1 to Round 2), social norms (specific exposure: all rounds, Round 2 to Round 3, and Wave 7 to Wave 9), perceptions of other kids' use of marijuana (specific exposure: all rounds, Round 1 to Round 2, and Wave 7 to Wave 9), and initiation of use (specific exposure, Wave 7 to Wave 9).
- With respect to initiation in this sample of youth who had not previously reported marijuana use, there was no significant overall effect for general or specific exposure, but there was a significant unfavorable effect of specific exposure from the Wave 7 exposure period, which coincides with the Marijuana Initiative. This last finding is of particular concern, since it suggests that the Marijuana Initiative may have rekindled some of the unfavorable delayed effects that were first seen in the Round 1 to Round 2 analysis (Hornik et al., 2002a; 2002b), but were not seen in Round 2 to Round 3. Moreover, in Round 1 to Round 2, the unfavorable effects that reached statistical significance were limited to the cognitive outcomes, while in Wave 7 to Wave 9, they extend to initiation as well. Curiously, the unfavorable delayed effects of Wave 7 to Wave 9 are limited to specific exposure, that is, the unfavorable delayed effects of general exposure in Round 1 to Round 2 did not return.
- The unfavorable effects are counterintuitive, and therefore warrant special scrutiny. Section 5.5.4 of Chapter 5 presents a number of diagnostic analyses; each intended to investigate whether the unfavorable delayed effects could have resulted from a statistical artifact. While the possibility can never be categorically ruled out, examination of the most likely threats did not support overturning the basic finding of unfavorable delayed effects. However, concern remains over the unknown origin of the very low initiation rate in the lowest exposure category for Wave 7 to Wave 9 because this group contributed to the statistically significant unfavorable effect between specific exposure and initiation of marijuana use.

⁸ In view of the redirection of the Campaign between Waves 6 and 7, it is more appropriate to give the separate wave results than the combined results for Round 3 to Round 4. However, it should be noted that the Waves 6 to 8 analyses are based on a relatively small sample size and hence the estimates have relatively large sampling errors.

Table ES-12. Delayed effects of exposure on 12½- to 18-year-old nonusers of marijuana

Outcome		Exposure				Gamma ¹				
		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Overall gamma (95%CI)	Round 1 → Round 2	Round 2 → Round 3	Wave 6 → Wave 8	Wave 7 → Wave 9
Percent definitely not intending to use marijuana	General exposure	82.3		78.2	78.4	-0.07 * (-0.13, -0.01)	-0.16* (-0.27, -0.06)	0.01 (-0.07, 0.9)	0.03 (-0.10, 0.15)	-0.02 (-0.15, 0.10)
	Specific exposure	84.0	78.8	77.6	78.5	-0.02 (-0.07, 0.03)	-0.05 (-0.13, 0.03)	0.01 (-0.06, 0.09)	0.00 (-0.13, 0.13)	-0.01 (-0.12, 0.10)
Mean score on Attitudes/ Beliefs Index	General exposure	100.29		91.81	95.24	-0.01 (-0.04, 0.02)	-0.03 (-0.08, 0.02)	0.02 (-0.03, 0.07)	-0.02 (-0.09, 0.08)	0.01 (-0.05, 0.07)
	Specific exposure	105.57	94.75	91.29	90.40	-0.02 (-0.04, 0.00)	-0.01 (-0.05, 0.02)	0.00 (-0.04, 0.03)	-0.04 (-0.11, 0.03)	-0.03 (-0.08, 0.02)
Mean score on Social Norms Index	General exposure	95.33		87.02	87.68	-0.03 (-0.06, 0.00)	-0.06* (-0.12, -0.01)	0.02 (-0.03, 0.06)	-0.03 (-0.11, 0.05)	-0.02 (-0.07, 0.03)
	Specific exposure	107.06	91.30	83.30	76.86	-0.05* (-0.08, -0.02)	-0.04 (-0.08, 0.00)	-0.05* (-0.10, -0.00)	-0.04 (-0.11, 0.02)	-0.12* (-0.17, -0.06)
Mean score on Self-Efficacy Index	General exposure	97.99		95.49	98.21	-0.01 (-0.05, 0.03)	-0.05 (-0.10, 0.01)	0.02 (-0.04, 0.09)	-0.01 (-0.09, 0.07)	0.03 (-0.04, 0.10)
	Specific exposure	107.30	95.18	96.36	91.37	0.00 (-0.04, 0.03)	-0.03 (-0.08, 0.03)	0.01 (-0.06, 0.07)	0.09 (-0.01, 0.19)	107.30
Percent perceiving few other kids regularly use marijuana	General exposure	55.1		54.7	52.9	-0.03 (-0.08, 0.02)	-0.01 (-0.09, 0.08)	-0.05 (-0.11, 0.01)	-0.10 (-0.22, 0.01)	-0.01 (-0.10, 0.08)
	Specific exposure	63.2	54.6	51.1	50.4	-0.06* (-0.11, -0.02)	-0.08* (-0.15, -0.00)	-0.04 (-0.10, 0.01)	-0.03 (-0.14, 0.07)	-0.15* (-0.26, -0.04)
Percent initiating use of marijuana	General exposure	10.7		11.2	12.5	0.07 (-0.01, 0.15)	0.08 (-0.05, 0.20)	0.01 (-0.11, 0.13)	0.14 (-0.03, 0.32)	0.08 (-0.11, 0.28)
	Specific exposure	10.8	12.6	11.5	13.2	-0.02 (-0.13, 0.08)	0.02 (-0.09, 0.14)	0.00 (-0.12, 0.12)	0.03 (-0.16, 0.10)	0.20* (0.04, 0.35)

* Gamma significant at $p < 0.05$.¹ A positive gamma represents a favorable effect, except in the case of "percent initiating use of marijuana," where a positive gamma represents an unfavorable effect (higher exposure associated with higher initiation rate).

If the results from the delayed-effects analysis are real, why are they occurring?

- When unfavorable delayed effects were first detected, in the Fourth Semi-Annual Report of Findings on Wave 1 to Wave 4, they were reported only with extreme caution. First, they were completely unexpected; the theory underlying the Campaign and the Evaluation was all about the process of eliciting anti-drug cognitions and behavior. Second, they were based on a small sample. Third, the confounder controls protocols—in particular the tests of balance—were still under development. When unfavorable delayed effects were again detected in the Fifth Semi-Annual

Report of Findings on Waves 2, 3 to Wave 5 (or when combined with the earlier results, the Round 1 to Round 2), they were based on a 150 percent larger sample, and tested with more mature protocols.

- Some of the strongest results—then and now—relate to social norms. With specific exposure the unfavorable effects are pervasive. The overall delayed effect of specific exposure is statistically significant; all three exposure rounds show unfavorable gammas (though Round 2 is nonsignificant), and the negative delayed-effect gamma from the Round 3 exposure period is primarily driven by Wave 7, the first full wave of the Marijuana Initiative. Is it possible that the Campaign, while its explicit message is anti-drug, provides a second implicit message—that the use of drugs is widespread? The Campaign’s communication plan had proposed using messages that would say that most kids do not use drugs. But, in fact, there were very few messages broadcast during Waves 1 through 7 that put this idea forward. Contrarily, the messages that were broadcast—negative consequences, normative positive consequences, and resistance skills—all have as an implicit assumption that drug use is a problem. Is it possible that youth took from these messages a “meta-message” that drug use is widespread and therefore represents normative behavior?
- When the negative delayed effects were first observed (Round 1 to Round 2), it was speculated that this “meta-message” was a possible mechanism behind the observed unfavorable delayed effects, i.e., that the Campaign may be increasing youth perception that others use marijuana and that perception may, in turn, adversely affect their own behavior (Hornik et al., 2002b). Some supportive evidence for this mechanism came from the strong cross-sectional and prospective relationship between this perception and marijuana use. As described earlier, perception of other kids’ use was added to the other youth cognitive outcomes in this report, in part to examine this mechanism further. The finding of a strong, unfavorable cross-sectional relationship between exposure and this outcome is consistent with the mechanism. If the meta-message is that drug use is widespread, higher exposure to Campaign ads should cause an immediate effect on the perception that other kids regularly use marijuana (cross-sectional association between exposure and perceptions). This perception eventually leads to a more generalized pro-marijuana social norm (delayed-effect association between specific exposure and Social Norms Index) and greater likelihood of actual initiation (delayed-effect association between specific exposure and use). Since the hypothesized causal chain is exposure to perceptions to initiation, another relationship must be observed, namely, an association between perceptions in one round and use in the next round. This was examined. Across the pooled sample of nonusing youth, those who responded that “some,” “most,” or “all” of their peer group had used marijuana regularly were almost 2½ times as likely to report initiation of use a year later than those who responded “none” or “a few” (21% vs. 9%).

Why were the unfavorable delayed effects strongest for the Marijuana Initiative?

- At this point, any explanation is based on speculation, but one explanation consistent with the meta-message mechanism is as follows: The Marijuana Initiative has been characterized as one phase of a “redirected Campaign.” The youth ads themselves, however, continued the negative consequences message of the pre-Initiative Campaign, albeit with a sharper, harder hitting focus. If there is indeed a pro-drug meta-message that stems from ads that emphasize negative consequences, it would be reasonable to find that a more effective presentation of negative consequences strengthens the meta-message, which in turn weakens anti-drug norms, and ultimately paves the way for increased initiation.

Users Analysis

In addition to increasing the resistance of nonuser youth to initiating use of marijuana, the Campaign would also like to encourage quitting or reducing frequency of use among users. Users have not received much attention in previous reports due to sample size concerns; there have not been enough of them, particularly at younger ages, to provide very much statistical sensitivity to change. With the addition of data for Waves 8 and 9, however, there are 1,367 past year users, 71 percent more than in the Waves 1 to 7 sample. This sample size provides sufficient power to detect moderate effects of Campaign exposure on quitting or reducing marijuana use 1 year later, in the full sample of past year users, though not in subgroups. Consequently, effects on users are examined in this, the final report. The policy question asked was: Among adolescent users of marijuana, did higher exposure to the Campaign increase quit rates, reduce frequency of use or, at minimum, slow the increased frequency of use that naturally accompanies maturation. This question can be addressed by a delayed-effects analysis.

Two outcomes were examined: the dichotomous “quit rate,” which is commonly used in smoking cessation studies, and an ordinal indicator that takes into account frequency of use as well as use–nonuse. For youth who reported having used marijuana in the exposure year, their frequency of use in the followup year can 1) increase, 2) stay the same, 3) decrease but not to zero, or 4) decrease to zero (i.e., quit). Testing the ordinal as well as the dichotomous outcome is important for two reasons. First, the ordinal version has more statistical power. Second, while complete cessation is clearly the preferred outcome, reducing frequency or preventing increased frequency is also beneficial. If, for example, the Campaign does not significantly increase quit rates, but does slow the rate at which casual users become regular users, it is still an important finding. Casual users are more likely than regular users to age naturally out of drug use, and are less likely to subsequently require treatment for dependence or abuse.

Results from the delayed-effects analysis for the dichotomous and ordinal outcome measures are shown in Tables ES-13 and ES-14, respectively. Key results are as follows:

- The overall weighted quit rate was 24.8 percent; that is, among prior-year users, slightly less than one-quarter reported they were no longer using marijuana. However, as shown by the gammas in Table ES-13, there was no significant association between exposure and quitting for either measure of exposure.
- Across the sample, 34.1 percent used marijuana more frequently than in the prior year, 24.5 percent continued at the same rate, 16.1 percent reduced frequency (but did not quit), and 25.3 percent quit.⁹ As with the dichotomous outcome, however, there was no significant association between exposure and change in amount of use for either measure of exposure (see Table ES-14).

⁹ These estimates are weighted. The slight difference between the quit rate in the two outcome measures is due to a small number of missing values in the variables required to construct the ordinal measure.

Table ES-13. Exposure per month and quitting use of marijuana among 12½- to 18-year-old prior users

Percent quitting use					
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Gamma (CI)
General exposure	25.6		27.8	25.0	-0.03 (-0.18, 0.12)
Specific exposure	13.2	28.9	26.4	21.9	0.04 (-0.07, 0.15)

Table ES-14. Exposure per month and change in use of marijuana among 12½- to 18-year-old prior users

Percent in each outcome category						
	Outcome category	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	Gamma (CI)
General exposure	Increase	32.2		34.4	34.5	-0.01 (-0.12, 0.09)
	No change	29.5		19.9	23.3	
	Decrease	12.3		17.2	16.8	
	Quit	26.0		28.6	25.4	
Specific exposure	Increase	33.6	31.2	36.3	33.3	0.01 (-0.08, 0.09)
	No change	39.2	20.5	22.0	25.0	
	Decrease	14.1	18.9	14.4	(S)	
	Quit	13.2	29.5	27.2	22.0	

In sum, the users analysis did not show conclusive evidence that higher exposure to the Campaign has increased quit rates, reduced frequency of use, or slowed rates of increase.

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 brand, “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. To a lesser extent, the campaign also has encouraged talking between parents and children about drugs. Additionally, 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 parents’ reports of those three classes of outcomes: monitoring children’s behavior, talking with children about drugs, and engaging in fun activities with children. In addition, youth reports of parent monitoring, talking behavior, and fun activities serve as supplementary outcomes for analyses of parent Campaign effects. The format of the youth questions was virtually identical to the questions asked of the parents. The report compares youth and parent trends on these parallel measures, as well as analyses of association, both cross-sectional and delayed, between parent exposure and parenting outcome for both parent and child reports of outcome behaviors. Two further outcomes based on parent reports were also examined: an index of attitude and belief items concerning talk (talk cognitions) and an index concerning monitoring (monitoring cognitions). In addition, the parent analyses look for evidence that parent

exposure is associated with youth outcomes, including all of those considered in the youth effects analysis.

As with effects on youth, the analyses searched for three supportive findings as the basis for a claim for a Campaign effect: a favorable trend on a target outcome, a favorable cross-sectional association between exposure to the Campaign and the outcome, and evidence for a delayed effect association between exposure at one round and outcomes at the next round for the parents interviewed on both occasions. For both the cross-sectional and the delayed-effects analyses, the associations were controlled for confounders. Table ES-15 summarizes the results for all of the parent outcomes on each of these criteria. Each row in this table indicates whether there was a full sample trend, whether there was a full sample cross-sectional association with the general or specific exposure measure, and whether there was a full sample delayed-effects association with the two exposure measures. The three behavioral outcomes are represented by both parent and youth reports. The significance criterion is whether or not the 2000 to 2004 trend or the gamma estimate, respectively, was significant at the $p < 0.05$ level. If there was no overall statistically significant effect, but there was a statistically significant effect for subgroups of respondents, this is also indicated.

Key findings are as follows:

- The 2000 to 2004 trend in youth reports of monitoring behavior was favorable and statistically significant for the full sample. The corresponding trend in parent reports of monitoring behavior was favorable and significant among parents of all but the oldest youth (16- to 18-year-olds). There were no overall cross-sectional or delayed-effects associations of either exposure measure with youth-reported monitoring behavior, and no delayed-effects associations with parent-reported monitoring behavior. However, there was a significant favorable cross-sectional association between specific exposure and parent-reported monitoring behavior in the full sample. This effect was not detected in prior reports, and in fact was entirely driven by a strong association that first appeared in 2004 (Wave 9). While still tentative (e.g., it would be more persuasive if corroborated by an analogous effect on youth reports), this result represents the strongest evidence to date for a Campaign effect on the monitoring behavior of parents.
- The 2000 to 2004 trend for monitoring cognition (only available from parent reports) was favorable and statistically significant, and the 2004 estimate is the highest recorded to date for this index. In addition, there was evidence for cross-sectional associations for both general and specific exposure and monitoring cognitions for the full sample. Monitoring cognition has a substantial association with monitoring behavior, and like monitoring behavior, is associated with youth marijuana use and intentions. However, there was no evidence of a delayed-effects association overall and no favorable subgroup delayed effects associations with either of the exposure measures. Without evidence for a delayed effect that would establish the causal order, it remains unclear whether parent ad exposure affects their beliefs about the value of monitoring, or parents' monitoring beliefs affect their attention to and recall of the advertising. Despite this pattern of association with monitoring cognitions, there is no evidence consistent with Campaign effects on monitoring behavior, perhaps the essential outcome for the parent component of the Campaign.

Table ES-15. Summary of outcomes for parents of 12½- to 18-year-old youth

Parent outcomes	All parents of youth aged 12½ to 18									
	Trend		Cross-sectional association				Delayed-effects association			
			General		Specific		General		Specific	
	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports
Talking behavior	Favorable	Unfavorable	Favorable	None	Favorable	Favorable	Favorable	None	Favorable	Favorable
Talking cognitions	None	NA	Favorable	NA	Favorable	NA	Favorable	NA	No Overall, Whites (F) College (F),	NA
Monitoring behavior	No Overall, 14 to 16 (F), Lower Risk (F)	Favorable	No Overall, 12½ to 13 (U), 14 to 18 (F), No College (F)	No Overall, African-Americans (F)	Favorable	None	None	No Overall, Lower Risk (U)	No Overall, Lower Risk (F)	No Overall, 14 to 18 (F), Mothers (F)
Monitoring cognitions	Favorable	NA	Favorable	NA	Favorable	NA	No Overall, Higher Risk (U)	NA	None	NA
Doing fun activities ¹	Unfavorable	Unfavorable	Favorable	Favorable	Favorable	No Overall, African-Americans (F), Boys (F), Higher Risk (F)	Favorable	No Overall, R1 → R2 (F)	Favorable	None

¹ Youth reports for trends in fun activities report changes between 2001 and 2004; parent reports for trends in fun activities report changes between 2000 and 2004.

Favorable or (F): Significant result at $p < 0.05$ favorable to Campaign goals.

Unfavorable or (U): Significant result at $p < 0.05$ unfavorable to Campaign goals.

None: No overall significant effect and no significant subgroup effects at $p < 0.05$.

No Overall: No overall significant effect, but significant subgroup effect(s) at $p < 0.05$.

NA: No analysis undertaken.

- Consistent with previous reports, the fun activities association analyses offer support for a Campaign effect, as the pattern for both cross-sectional and delayed effects associations were favorable. All of the associations of both specific and general exposure and the parent reports of fun activities were significant and favorable, while support from youth reports was also favorable though less consistent. However, the trend data for fun activities showed a decline between 2000 and 2004 as well as between 2002 and 2004 in both parent and youth reports. It is possible that the Campaign was having a favorable effect on parent involvement with youth fun activities, but the positive trend that might be expected from that effect was obscured by external factors that were causing a decline. It should also be noted that the Campaign did not focus on this theme since the initial year of Phase III.
- The talking behavior results also provide support for favorable Campaign effects. For the 2000 to 2004 time period, the parent reports showed a positive trend as well as statistically significant and favorable overall associations for both measures of exposure and for both cross-sectional and delayed effects. The youth reports of talking behavior also showed statistically significant favorable overall cross-sectional and delayed effect associations with specific exposure (though not general exposure). On the other hand, trend data based on youth reports of talking behavior were unfavorable. While parents reported more talk about drugs with their children in 2004 than in 2000, youth reported a decrease in such conversations over the same time period. There is no clear explanation for this discrepancy.
- For talking cognitions (based on parent reports only), the association results were consistently supportive of Campaign effects. For three of the four tests of associations, there was a statistically significant and favorable overall association for the 2000 through 2004 period. The fourth—delayed effect, specific exposure—while not significant overall was significant and favorable for White parents and college educated parents. However, the trend data showed no statistically significant changes between 2000 and the first half of 2004, and there was a statistically significant decrease between 2002 and 2004, most notable for parents of 14- to 18-year-old youth. As with fun activities, this may have been caused by non-Campaign factors.

In sum, the analysis provides substantial evidence for a favorable Campaign effect on three of the five parent outcomes: talking cognitions, talking behavior, and fun activities. There was also some evidence for a favorable Campaign effect on the monitoring behavior and monitoring cognitions outcomes; however, the causal ordering is uncertain in these cases due to the absence of delayed effects. The evidence on monitoring cognitions is strong, based on trend data and the positive cross-sectional associations between both general and specific exposure and the monitoring cognition outcome measure, but does not carry over into the delayed effects associations.

In prior reports, the lack of evidence of favorable Campaign effects on monitoring behavior was described as a challenging result from the Campaign's perspective because parenting skills have been the prime focus of the parent advertising almost since the beginning of the Campaign. There is good evidence that in focusing on monitoring behavior, the Campaign chose correctly, in that monitoring behavior has been shown here and in other studies to be a protective factor against initiation of youth drug use. Engaging in fun activities does show this to a lesser extent, but talking behavior does not show it at all. Talking about drugs has not been an explicit platform of the Campaign in Phase III, although it can be seen as an implicit message of some of the parenting skills ads. The relatively recent Early Intervention Initiative can be perceived as an effort to influence both parental monitoring and parental talking cognitions and behaviors. Doing fun activities with children was only an explicit message of the Campaign in the first year. So the areas of apparent favorable effects of the Campaign have been sharpest on talking (both cognition and behavior) and fun activities, areas where the

Campaign has placed comparatively little focus. By contrast, effects have been generally weakest in the area of most focus, monitoring behavior. As noted above, this appears to have changed during the last wave of data collection (first half of 2004), where the cross-sectional association between specific exposure and parent-reported monitoring was favorable and significant for the first time, and strong enough to make the overall association for 2000-2004 significant. At the same time, the cross-sectional effect did not appear for youth reports, and it is not known whether the cross-sectional effect on parent reports will carry over into a delayed effect.

This pattern of results suggests that despite the evidence supporting Campaign effects on parent outcomes, the likelihood of those effects translating into effects on youth behavior may not be high. And that is the pattern that is seen when the evidence for effects of the parent Campaign on youth outcomes is examined (Table ES-16).

Table ES-16. Summary of the effects of parent exposure on youth outcomes for 12½- to 18-year-old nonusers

Youth Outcomes (marijuana)	All parents of nonusing youth aged 12½ to 18			
	Cross-sectional association		Delayed-effects association	
	General	Specific	General	Specific
Marijuana initiation	NA	NA	No Overall, African Americans (U)	None
Definitely not intending to use	No Overall, Higher Risk (F)	None	None	No Overall, Boys (F)
Attitudes/Beliefs Index	No Overall, Fathers (F), Higher Risk (F)	None	None	No Overall, Hispanics (F)
Social Norms Index	No Overall, Boys (F), Fathers (F)	No Overall, Boys (F), College (F)	No Overall, 14 to 16 (U), Girls (U)	No Overall, Hispanics (F),
Self Efficacy Index	No Overall, Mothers (U)	None	No Overall, R1→R2 (U)	None

Favorable or (F): Significant result at $p < 0.05$ favorable to Campaign goals.

Unfavorable or (U): Significant result at $p < 0.05$ unfavorable to Campaign goals.

None: No overall significant effect and no significant subgroup effects at $p < 0.05$.

No Overall: No overall significant effect, but significant subgroup effect(s) at $p < 0.05$.

NA: As with the youth exposure analyses, the cross-sectional and delayed effects analyses of parent exposure on youth outcomes is restricted to youth who were nonusers at the point of exposure. Therefore, there was no cross-sectional test of exposure on marijuana initiation.

As described earlier, the analysis of youth outcomes yielded a positive trend in youth anti-marijuana attitudes and beliefs over the full Campaign, and a positive trend in intentions to not use marijuana for the 2002 to 2004 time period. However, there is little evidence from Table ES-15 that parent Campaign exposure contributed to those trends, as there were no full sample cross-sectional or delayed-effects associations between either general or specific parent exposure and youth attitudes/beliefs or intention not to use marijuana. Further, there was no other reported full sample favorable youth outcome effect associated with parent exposure. Statistically significant subgroup effects were rare for the 2000 to 2004 time period, although more likely to be favorable to the

Campaign when they appeared. Similarly, the pattern for 2002 through the first half of 2004 provided no evidence for an indirect Campaign effect of parent exposure on youth outcomes during the period of the Marijuana Initiative.

How can one explain this pattern of supportive evidence for Campaign effects of parent exposure on parent behavior, but no clear positive effects of parent exposure on youth outcomes? Three explanations fit these data. First, the claim of Campaign effects on parent outcomes might be mistaken. None of the outcomes had evidence that satisfied all of the a priori criteria for strong claims of effect, and if there were no effect, in fact, one would not expect an indirect effect on youth. Second, talking behavior and talking cognitions, the outcomes with the clearest evidence for effects for parents, were not related to youth marijuana use. Thus, even if there had been a Campaign effect on parent talking cognitions and behavior, it would not have been expected to affect youth outcomes. Third, indirect effects are hard to detect. For instance, if there were a small favorable effect of the Campaign on a parent behavior accompanied by a small favorable 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 Campaign exposure on monitoring behavior were 0.10, and the effect of monitoring behavior on youth marijuana use were 0.20, the expected effect of the Campaign exposure on marijuana use would be the product of those two effects, or 0.02 (0.10×0.20). An effect of 0.02 could not be detected by the National Survey of Parents and Youth. The Campaign's indirect effects through parents could be detected only 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 some evidence consistent with a favorable effect of the National Youth Anti-Drug Media Campaign on parent outcomes, but little evidence that the effect on parents translates into improved outcomes for their children.

References

- Hornik, R., Maklan, D., Cadell, D., Barmada, C., Jacobsohn, L., Prado, A., Romantan, A., Orwin, R., Sridharan, S., Zanutto, E., Baskin, R., Chu, A., Morin, C., Taylor, K., and Steele D. (November 2002a). *Evaluation of the National Youth Anti-Drug Media Campaign: Fifth Semi-Annual Report of Findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.
- Hornik, R., Maklan, D., Cadell, D., Prado, A., Barmada, C., Jacobsohn, L., Orwin, R., Sridharan, S., Zador, P., Southwell, B., Zanutto, E., Baskin, R., Chu, A., Morin, C., Taylor, K., and Steele D. (May 2002b). *Evaluation of the National Youth Anti-Drug Media Campaign: Fourth Semi-Annual Report of Findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.
- Hornik, R., Maklan, D., Cadell, D., Barmada, C., Jacobsohn, L., Henderson, V., Romantan, A., Niederdeppe, J., Orwin, R., Sridharan, S., Chu, A., Morin, C., Taylor, K., and Steele, D. (December 2003). *Evaluation of the National Youth Anti-Drug Media Campaign: 2003 Report of Findings*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.
- Jacobsohn, L., Hornik, R., Kelly, B., Stryker, J. (2004). *Evaluation of the National Youth Anti-Drug Media Campaign: An examination of marijuana-related newspaper coverage from 1994 to 2003 in the Context of the National Youth Anti-Drug Media Campaign*. Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.