

# **Evaluation of the National Youth Anti-Drug Media Campaign: 2003 Report of Findings**

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# **Evaluation of the National Youth Anti-Drug Media Campaign: 2003 Report of Findings**

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# Table of Contents

<u>Chapter</u>	<u>Page</u>
Highlights of the Report.....	xi
Executive Summary .....	xiii
1 Introduction.....	1-1
1.1 Nature of the Media Campaign in Phase III .....	1-2
1.2 Paid and Donated Advertising.....	1-4
1.3 Public Communications Activities .....	1-9
1.4 Administrative Structure for the Evaluation .....	1-13
1.5 Structure of the Report .....	1-14
References .....	1-15
2 Summary of Evaluation Plan .....	2-1
2.1 Models for Media Campaign Action .....	2-1
2.1.1 Focus and Scope of the Evaluation.....	2-1
2.1.2 Model of Media Campaign Influence .....	2-2
2.1.3 Overview of the Figures.....	2-2
2.2 Sample Design and Data Collection Methodology.....	2-11
2.2.1 Sampling.....	2-12
2.2.2 Extended Interview Methods and Content.....	2-13
2.2.3 Weighting .....	2-17
2.2.4 Confidence Intervals and Data Suppression.....	2-18
2.2.5 Exposure Index and Imputation of Ad Recall .....	2-18
2.2.6 Future Waves of Data Collection .....	2-18
2.3 Sample Description .....	2-19
2.3.1 Youth .....	2-19
2.3.2 Race/Ethnicity.....	2-20
2.3.3 Sensation Seeking.....	2-20
2.3.4 Risk Score .....	2-21
2.3.5 Past Marijuana Use .....	2-22
2.3.6 Parents.....	2-22
2.3.7 Dyads .....	2-23
2.4 Potential Analysis Modes .....	2-23
2.4.1 Measuring Exposure to the Media Campaign .....	2-23
2.4.2 Measuring Changes in Attitudes and Behaviors .....	2-24
2.4.3 Attributing Observed Changes in Attitudes and Behavior to the Media Campaign .....	2-25
References .....	2-28

## Table of Contents (continued)

<u>Chapter</u>	<u>Page</u>
3 Exposure to Anti-Drug Messages .....	3-1
3.1 Media Buying Reports .....	3-2
3.1.1 Distribution of Exposure .....	3-5
3.1.2 Distribution of General Market Ad Platforms .....	3-8
3.1.3 GRPs Purchased for Minority Audiences .....	3-12
3.2 Recall of Exposure from NSPY Questionnaires .....	3-13
3.2.1 General Measures of Exposure .....	3-14
3.2.2 Television and Radio Specific Advertising Recall .....	3-17
3.2.3 Recall of the “Brand” .....	3-24
3.2.4 Television Ad Evaluation .....	3-27
3.2.5 Internet Use and Encounters with Drug Information On Line .....	3-28
3.3 Anti-Drug Related Education .....	3-31
3.3.1 Youth In-School and Out-of-School Anti-Drug Education .....	3-31
3.3.2 Changes in Youth Anti-Drug Education .....	3-31
3.3.3 Parenting Skills and Anti-Drug Education .....	3-32
3.4 Discussions about Drugs .....	3-32
3.4.1 Youth Discussions with Friends and Parents about Drugs .....	3-33
3.4.2 Discussions about Anti-Drug Ads .....	3-36
3.5 Perceptions of Media and Community Attention to Drug Use .....	3-37
3.5.1 Youth’s Perceived Media Coverage of Youth and Drugs .....	3-37
3.5.2 Parents’ Exposure to Non-Campaign Anti-Drug or Parenting Messages .....	3-38
3.6 Summary and Conclusions .....	3-40
References .....	3-44
4 Trends in Youth Marijuana Use .....	4-1
4.1 NSPY Trends in Marijuana Use After the Marijuana Initiative .....	4-1
4.2 MTF, NSDUH and YRBSS Trends in Marijuana Use .....	4-3
4.3 Marijuana Offers .....	4-8
4.4 Predictors of Marijuana Use and the Development of a Risk Model .....	4-10
Summary .....	4-13
References .....	4-14
5 Campaign Effects on Youth .....	5-1
5.1 The Logic of Inferences About Effects .....	5-1
5.2 Development of Overall Scales, Combining Trial and Regular Use, and Summarizing Multiple Related Items .....	5-4
5.3 Trends in Drug Attitudes and Beliefs, and Intentions about Use of Marijuana among Nonusing 12- to 18-Year-Olds .....	5-8
5.3.1 Intentions About Marijuana Trial Use by Age and by Wave .....	5-8
5.3.2 Attitudes/Beliefs by Age and by Wave .....	5-10
5.3.3 Perceived Social Norms about Marijuana Use by Age and by Wave .....	5-10

## Table of Contents (continued)

<u>Chapter</u>	<u>Page</u>
5.3.4	Perceived Self-efficacy about Marijuana Use by Age and by Wave ..... 5-11
5.3.5	Evidence for Diversity in Trends in Cognitions about Marijuana Use ..... 5-11
5.4	Cross-Sectional (Concurrent) Associations of Anti-Marijuana Advertising Exposure with Attitudes, Beliefs, and Intentions about Marijuana Use among 12- to 18-Year-Old Nonusers ..... 5-12
5.4.1	Overall Analyses of Four Cognitive Measures by Exposure ..... 5-14
5.4.2	Evidence of Diversity of Associations by Age of Youth, Risk Group, Gender, and Race/Ethnicity ..... 5-16
5.5	Summary and Discussion of Trend and Cross-sectional Results for Marijuana Cognitions ..... 5-17
5.6	Conclusion of Overall Youth Campaign Effects ..... 5-18
	References ..... 5-19
6	Campaign Effects on Parents ..... 6-1
6.1	The Logic of Inference and the Development of Parent Outcome Scales ..... 6-2
6.2	Trends in Outcomes ..... 6-9
6.2.1	Monitoring Behaviors ..... 6-9
6.2.2	Monitoring Cognitions ..... 6-10
6.2.3	Talking Behaviors ..... 6-11
6.2.4	Talking Cognitions ..... 6-12
6.2.5	Fun Activities ..... 6-13
6.2.6	Evidence for Diversity in Trends ..... 6-14
6.3	Cross-sectional Association of Advertising Exposure with Parent Outcomes ..... 6-17
6.3.1	Cross-sectional Association of Monitoring Behavior and Cognitions Scales with General and Specific Exposure ..... 6-18
6.3.2	Cross-sectional Association of Talking Behavior and Cognitions Scales with General and Specific Exposure ..... 6-19
6.3.3	Cross-sectional Association of Fun Activities with General and Specific Exposure ..... 6-20
6.3.4	Evidence for Diversity in Cross-sectional Associations ..... 6-21
6.4	Delayed-effects Analyses of Parent Outcomes ..... 6-22
6.4.1	Delayed-effects Association of General and Specific Exposure with Monitoring Behavior and Cognitions Scales ..... 6-23
6.4.2	Delayed-effects Association of General and Specific Exposure with Talking Behavior and Cognitions Scales ..... 6-25
6.4.3	Delayed-effects Association of General and Specific Exposure with Fun Activities ..... 6-26
6.5	Evidence of Association of Parent Exposure with Youth Outcomes ..... 6-27
6.5.1	Cross-sectional Association of Parent Exposure with Youth Outcomes ..... 6-27
6.5.2	Delayed-effects Association of Parent Exposure with Youth Outcomes ..... 6-28
6.6	Summary and Discussion ..... 6-29

## Table of Contents (continued)

	<u>Page</u>
<b>DETAIL TABLES</b> .....	DT-1

### List of Appendices

#### Appendix

A	Sample Design, Development of Weights, Confidence Intervals, and Data Suppression....	A-1
B	Data Collection Methodology and Response Rates .....	B-1
C	Methodology for Confounder Control.....	C-1
D	Waves 1 - 7 – NSPY Anti-Drug Advertisements Shown to Respondents .....	D-1
E	Construction of Exposure and Outcome Indices .....	E-1

### List of Tables

#### Table

1-A	Media Campaign phases.....	1-2
1-B	Historical media spending overview July 1998-July 2003 (in thousands) .....	1-4
2-A	Completed interviews by wave.....	2-12
2-B	Coverage rates by age .....	2-17
3-A	Targeted gross rating points (average per week and per medium).....	3-3
3-B	Distribution of youth and parent average weekly GRPs across years.....	3-3
3-C	Average Weekly Youth targeted GRPs purchased for Marijuana Initiative (TV and radio) .....	3-5
3-D	Percentage of youth-targeted GRPs for each medium overall, and for the Marijuana Initiative .....	3-6
3-E	GRPs per week purchased for youth and adults across waves, by reach of the media.....	3-8
3-F	Distribution of youth message platforms on general market TV and radio.....	3-9
3-G	Distribution of parent message platforms on general market TV and radio .....	3-10
3-H	Percent of GRPs per week purchased for specific youth platforms across waves (TV and radio) .....	3-11
3-I	Percent of GRPs per week purchased for specific parent platforms across waves (TV and radio) .....	3-12
3-J	Estimated additional 2003 GRPs generated exclusively to reach specific groups.....	3-12
3-K	Overall recalled general exposure to anti-drug ads across all media (November 1999 through June 2003).....	3-15
3-L	Recall of general anti-drug advertising by medium across all years for youth (November 1999 through June 2003).....	3-16
3-M	Recall of general anti-drug advertising by medium across all waves for parents (November 1999 through June 2003).....	3-17

## Table of Contents (continued)

### List of Tables (continued)

<u>Table</u>	<u>Page</u>
3-N Change in youth recall of television ads heard per month across waves (November 1999 through June 2003).....	3-19
3-O Change in youth recall of having seen specific television ads at least once per week.....	3-19
3-P Change in parent recall of specific television ads heard per month across waves (November 1999 through June 2003).....	3-21
3-Q Change in parent recall of having heard television ads at least once per week.....	3-21
3-R Change in youth recall of radio ads heard per month across waves.....	3-22
3-S Change in youth recall of having heard radio ads at least once per week.....	3-23
3-T Change in parent recall of specific radio ads heard per month across waves.....	3-23
3-U Change in parent recall of having heard radio ads at least once per week.....	3-23
3-V Television ad evaluation scores among parents and youth (November 1999 through June 2003).....	3-28
3-W Youth Internet use and encounters with drug information on line in past 6 months (November 1999 through June 2003).....	3-29
3-X Parent Internet use and encounters with drug information on line (November 1999 through June 2003).....	3-30
3-Y In-school and out-of-school drug education across waves (12- to 18-year-olds).....	3-32
3-Z Change in drug-related conversations by youth across waves.....	3-33
3-AA Youth topics of conversation with friends in 2003.....	3-36
3-AB Changes in youth conversations about anti-drug ads from 2000 to 2003.....	3-37
3-AC Youth's exposure to weekly media stories about drugs across waves.....	3-38
3-AD Parents' exposure to weekly media stories about drugs across waves.....	3-39
3-AE Change in parent exposure to drug-related communication across waves.....	3-40
3-AF Exposure to Campaign advertising by wave.....	3-41
4-A NSPY trends in marijuana use across measures by age group.....	4-3
4-B MTF lifetime, annual, and past-month marijuana use in 1999, 2000, 2001, and 2002.....	4-4
4-C NSDUH lifetime, annual, and past-month marijuana use in 1999, 2000, and 2001.....	4-6
4-D YRBSS lifetime and past-month marijuana use in 1997, 1999, and 2001.....	4-7
4-E NSPY trends in youth reports of marijuana offers.....	4-8
4-F Marijuana initiation at followup interview by marijuana offers received at first interview among nonusers at first interview by age group.....	4-9
4-G Youth and parent covariates for youth past year marijuana use.....	4-11
4-H Differences in percent of youth reporting marijuana use by age and risk subgroup across seven waves.....	4-12
4-I Marijuana initiation at followup round by child risk and age among nonusers at first measurement.....	4-12
5-A Trends in intentions to use marijuana once or twice for nonusers, by child age.....	5-9
5-B Trends in Attitudes/Beliefs Index about marijuana use among nonusers by child age.....	5-10
5-C Trends in Social Norms Index about marijuana use among nonusers by child age.....	5-10
5-D Trends in Self-Efficacy Index about marijuana use among nonusers by child age.....	5-11
5-E Exposure per month reported by 12- to 18-year-olds.....	5-12
5-F Exposure per month and intentions to use marijuana reported by nonuser 12- to 18-year-olds.....	5-14



## Table of Contents (continued)

### List of Tables (continued)

<u>Table</u>	<u>Page</u>
5-G Exposure per month and Attitudes/Beliefs Index among nonuser 12- to 18-year-olds.....	5-15
5-H Exposure per month and Social Norms Index among 12- to 18-year-olds.....	5-15
5-I Exposure per month and Self-Efficacy to Refuse Marijuana Index among 12- to 18-year-olds.....	5-15
6-A Parental monitoring behavior by child age (parent reports).....	6-9
6-B Parental monitoring behavior by child age (youth reports).....	6-10
6-C Parental monitoring cognitions by youth age.....	6-11
6-D Parent – child talk about drugs by youth age (parent reports).....	6-11
6-E Parent – child talk about drugs by youth age (youth reports).....	6-12
6-F Parent cognitions about talk about drugs by youth age.....	6-13
6-G Parents doing fun activities with their child by youth age (parent reports).....	6-13
6-H Parents doing fun activities with their child by youth age (youth reports).....	6-14
6-I Parent monitoring behaviors and cognitions by child age and risk.....	6-15
6-J Exposures per month reported by parents of 12- to 18-year-olds across seven waves.....	6-18
6-K Cross-sectional association of exposure per month and monitoring behavior reported by parents of 12- to 18-year-olds.....	6-19
6-L Cross-sectional association of exposure per month and monitoring behavior reports by 12- to 18-year-olds.....	6-19
6-M Cross-sectional association of exposure per month and monitoring cognitions reported by parents of 12- to 18-year-olds.....	6-19
6-N Cross-sectional association of exposure per month and talking behaviors reported by parents of 12- to 18-year-olds.....	6-20
6-O Cross-sectional association of exposure per month and talking behaviors reported by 12- to 18-year-olds.....	6-20
6-P Cross-sectional association of exposure per month and talking cognitions reported by parents of 12- to 18-year-olds.....	6-20
6-Q Cross-sectional association of exposure per month and fun activities reported by parents of 12- to 18-year-olds.....	6-21
6-R Cross-sectional association of exposure per month and fun activities reported by 12- to 18-year-olds.....	6-21
6-S Delayed-effects analyses of exposure per month and monitoring behavior reported by parents of 12- to 18-year-olds.....	6-24
6-T Delayed-effects analyses of parent exposure per month and youth reports of parent monitoring behavior for 12- to 18-year-olds.....	6-24
6-U Delayed-effects analyses of exposure per month and monitoring cognitions reported by parents of 12- to 18-year-olds.....	6-24
6-V Delayed-effects analyses of exposure per month and talking behavior reported by parents of 12- to 18-year-olds.....	6-25
6-W Delayed-effects analyses of parent exposure and youth reports of parent talking behavior for 12- to 18-year-olds.....	6-25
6-X Delayed-effects analyses of exposure per month and talking cognitions reported by parents of 12- to 18-year-olds.....	6-26

## Table of Contents (continued)

### List of Tables (continued)

<u>Table</u>		<u>Page</u>
6-Y	Delayed-effects analyses of exposure per month and fun activities reported by parents of 12- to 18-year-olds .....	6-27
6-Z	Delayed-effects analyses of parent exposure per month and youth reports of fun activities for 12- to 18-year-olds .....	6-27
6-AA	Cross-sectional association between parental exposure youth outcomes among all youths 12 to 18 .....	6-28
6-AB	Parental exposure at earlier round and youth outcomes at later round among 12- to 18-year-olds who were nouseers of marijuana at the earlier round.....	6-29
6-AC	Summary of all parent effects on parent and youth outcomes among all parents of 12- to 18-year-olds (parent outcomes) .....	6-30
6-AD	Summary of all parent effects on parent and youth outcomes among all parents of 12- to 18-year-olds (youth outcomes).....	6-31

### List of Figures

#### Figure

2-A	Overall model of Media Campaign influence.....	2-3
2-B	Model of influences on exposure to anti-drug messages.....	2-4
2-C	Model of influences of exposure to drug outcomes.....	2-5
2-D	Model A – Effects of parental monitoring.....	2-8
2-E	Model B – Effects on parent-child talk.....	2-10
3-A	Weekly youth-targeted general market GRPs (September 1999 through June 2003) .....	3-4
3-B	Weekly parent-targeted general market GRPs (September 1999 through June 2003).....	3-4
3-C	Targeted adult media placements by medium (September 1999 through June 2003) .....	3-7
3-D	Brand phrase recognition by exposure and year among youth .....	3-26
4-A	Marijuana Use Among 14- to 16-year-olds .....	4-2
4-B	Percentage of 8th, 10th, and 12th graders reporting annual marijuana use: MTF 1991-2002 .....	4-5
4-C	Estimated lifetime marijuana use among 12- to 17-year-olds from the 2002 NSDUH .....	4-6
4-D	Offers of marijuana by wave .....	4-9
5-A	The expected relationships among cognitive outcomes.....	5-5
5-B	Marijuana nonuse intention by Attitudes/Beliefs Index .....	5-6
5-C	Marijuana nonuse intention by Social Norms Index .....	5-7
5-D	Marijuana nonuse intention by Self-Efficacy Index .....	5-8
5-E	Use of Marijuana by Age.....	5-9
6-A	Beliefs and attitudes about monitoring.....	6-4
6-B	Youth marijuana initiation of later round by parent monitoring behavior at earlier round (parent and youth reports).....	6-6
6-C	Youth marijuana initiation at later round by parent monitoring cognitions at earlier round (parent reports).....	6-6
6-D	Youth marijuana initiation at later round by reported fun activities at earlier round (parent and youth reports).....	6-7

## Table of Contents (continued)

### List of Figures (continued)

<u>Figure</u>		<u>Page</u>
6-E	Youth marijuana initiation at later round by talking behavior at earlier round (parent and youth reports).....	6-8
6-F	Youth marijuana initiation at later round by parent talking cognitions at earlier round (parent reports).....	6-8

# Highlights of the Report

The National Youth Anti-Drug Media Campaign was funded by the Congress to reduce and prevent drug use among young people by addressing youth directly as well as indirectly, and by encouraging their parents and other adults to take actions known to affect youth drug use. The major intervention components include television, radio, and other advertising, complemented by public relations efforts including community outreach and institutional partnerships. This evaluation report covers the current phase (Phase III) of the project, from September 1999 through June 2003. For the youth component of the Campaign, it focuses on evidence concerning the possible effects of the Marijuana Initiative, which began in late fall 2002.

- Recall of Campaign Messages:

Most parents and youth recalled exposure to Campaign anti-drug messages. About 70 percent of parents and nearly 80 percent of youth report exposure to one or more messages through all media channels every week. Recall of television advertising has climbed across the 3.5 years of the Campaign. In 2000, 24 percent of parents and 37 percent of youth recalled weekly exposure to specific TV ads; in 2002 before the Marijuana Initiative, recall among parents reached 51 percent and among youth reached 52 percent; in 2003 after the launch of the Marijuana Initiative recall, rates had climbed to 58 percent and 76 percent respectively. Both parents and youth also reported substantial recognition of the Campaign's "anti-drug" brand phrases. The 2003 youth component of the campaign focused on strong marijuana Negative Consequences ads; they were evaluated positively by youth at a level comparable to most of the previous ads.

- Effects on Parents:

There continues to be evidence consistent with a favorable Campaign effect on parents. Overall, there is evidence of some favorable Campaign effects on four of five parent belief and behavior outcome measures including talking with children about drugs, doing fun activities with children, and beliefs about monitoring of children. The evidence for Campaign effects on parents' monitoring behavior was much weaker. The lack of influence on monitoring behavior is a concern because it has been the focus of the parent Campaign for much of Phase III and is the parent behavior most associated with youth nonuse of marijuana. In addition, there is no evidence for favorable indirect effects on youth behavior or beliefs as the result of parent exposure to the Campaign.

- Effects on Youth:

There is little evidence of direct favorable Campaign effects on youth, either for the Marijuana Initiative period or for the Campaign as whole. The trend data in marijuana use is not favorable, and for the primary target audience, 14- to 16-year-olds, past year use increased from 2000 through 2003, although this increase was already in place before the start of the Marijuana Initiative. However, an independent source of trend information, the Monitoring the Future Survey, showed a decline in use for some age groups. In any case, youth who were more exposed to Campaign messages are no more likely to hold favorable beliefs or intentions about marijuana than are youth less exposed to those messages, both during the Marijuana Initiative period and over the entire course of the Campaign.

Because the Marijuana Initiative began just before the final wave of data collection, it is not possible to supplement the same time comparisons of exposure and outcomes with delayed-effect comparisons of Marijuana Initiative exposure with later outcomes. These delayed-effect analyses will be examined in the next report.

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# Executive Summary

The number one goal of the revised *National Drug Control Strategy* is to stop drug use before it starts through education and community action. 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 Media Campaign). The Media Campaign is a key part of efforts by the Office of National Drug Control Policy (ONDCP) to stop drug use before it starts. The Media Campaign is the first fully comprehensive Federal Government communications campaign to focus on youth drug use. It combines paid commercial advertising, grassroots public outreach, and specialized supporting communications efforts. Other important Media Campaign goals are to convince youth who are occasional users of drugs to stop using them, to enhance adult perceptions of harm associated with the use of marijuana and other drugs, and to emphasize to parents and influential adults that their actions can make a vital difference in preventing youth drug use.

The Media Campaign has progressed through three phases of increasing complexity and intensity. Phases I and II are not discussed in this report. ONDCP has available other reports that evaluate those phases. This report focuses on Phase III, which began in September 1999 and is planned to run at least through spring 2004. An evaluation of Phase III is being 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. Funding of the evaluation is provided by ONDCP from the appropriation for the Media Campaign itself. This is the sixth report of the Westat and Annenberg evaluation of Phase III of the Media Campaign.

The primary tool for the evaluation is the National Survey of Parents and Youth (NSPY). This survey is collecting initial and followup data from nationally representative samples of youth between 9 and 18 years of age and parents of these youth. This sixth report presents analyses from the first seven waves of NSPY, covering the period from September 1999 through June 2003.

This executive summary focuses on evidence for Campaign effects on youth and parent outcomes. For the youth, it focuses almost exclusively on examining evidence concerning the Marijuana Initiative, a refocusing of the Campaign to emphasize marijuana use among youth.

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

- A brief update and description of the Media Campaign’s activities to date, including a description of the Marijuana Initiative.
- A review of the logic and approach of the evaluation.
- Statistics on the level of exposure to messages achieved by the Media Campaign during Phase III.
- Estimates of change in the drug use behaviors of youth between 2000 and the first half of 2003.

- Estimates of Campaign effects on youth. These include estimates of trends between 2000 and the first half of 2003, as well as changes between 2002 and 2003 in outcomes including use, attitudes, beliefs, and intentions, and estimates of association between exposure to the Campaign and simultaneously measured outcomes with statistical controls for confounders, both for youth measured after the Marijuana Initiative and in comparison to youth measured before the Marijuana Initiative. The report also includes analyses of trends and of associations for various subgroups of the population.
- Estimates of Campaign effects on parents. These include estimates of trends between 2000 and the first half of 2003 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 beliefs and attitudes about talking and about monitoring, and estimates of association between parents' exposure and youth's beliefs and drug use behavior. Both change and association data are reported for various subgroups of the population. In addition, the delayed-effects associations of early parent exposure to Campaign advertising with later parent and youth outcomes are presented.

## Background on the Media Campaign

The Media Campaign has three goals:

- Educate and enable America's youth to reject illegal drugs;
- Prevent youth from initiating use of drugs, especially marijuana; and
- Convince occasional users of these and other drugs to stop using drugs.

The Media Campaign originally targeted paid advertising to youth aged 9 to 18 (with a current focus on youth aged 14 to 16), parents of youth in these age ranges, 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 anti-drug campaign in the news media, community activities, corporate co-sponsorship, and special interactive media programming on the Internet.

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

- The Partnership for a Drug-Free America (PDFA), which provides the creative advertising for the Media 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, a national advertising agency, which has 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 Media Campaign; and
- The Ad 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 Media 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, but also ads addressing other themes including anti-alcohol, anti-tobacco, and mentoring, but such themes are not part of the paid advertising.

The previous two 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, the Campaign initiated a major revision of the youth component of the Campaign, entitled the Marijuana 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; and
- 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.

## Methodology

The report presents results from seven 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 43 million of their parents who are the target audience for the Media Campaign. Wave 1 included 3,299 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 2,362 youth and 1,632 of their parents interviewed between July and December 2000. Wave 3 included 2,458 youth and 1,680 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 conducted followup interviews 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 first sampled in both Wave 2 and Wave 3 and their parents, and Wave 7 followed up with this cohort. Later waves will follow up both of these samples for a fourth time. 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 will age into the primary target audience at the times of the followup interviews. Wave 4 comprised followup interviews with 2,477 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. The new data included in this report come from Wave 6, which included 2,267 youth and 1,640 parent interviews conducted between July and December 2002, and from Wave 7, which included 3,587 youth and 2,621 parent interviews conducted between January and June 2003.

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, respectively. Wave 6 included successful reinterviews with 93 percent of the Wave 4 eligible youth and 93 percent of the Wave 4 eligible parents. Wave 7 included 92 percent of the eligible youth and 91 percent of the eligible parents from the Wave 5 sample. The cumulative response rates for Waves 6 and 7 were necessarily lower than the rates for the prior waves due to the followup nature of the latter waves. In preparing the respondent data for analysis, adjustments were made at all seven 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 presented orally 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 Media 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 Media Campaign messages.

The NSPY questionnaire for parents also included measures about exposure to Media 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 analysis, for example those that look at the effects of parent exposure to the Campaign on youth attitudes and beliefs about marijuana.

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. Youth were shown or listened only to youth-targeted ads, and parents were shown or listened only to parent-targeted ads. 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 Media Campaign reports that it purchased enough advertising time over the 46-month period covered by this report (September 1999 through June 2003) to achieve an expected exposure to 2.5 youth-targeted ads per week for the average youth and to 2.1 parent-targeted ads per week for the average parent. 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. During the period of the Marijuana Initiative, from October 2002 through June 2003, enough time and space was purchased to produce an expected 2.7 youth-targeted exposures to ads per week, a small increase over the full Campaign average.

- Figures ES-1 and ES-2 present the weekly totals for expected youth-targeted and parent-targeted exposures, respectively, where 100 means that the average person in the audience would be exposed once per week. Both the actual weekly media purchases and a smoothed line averaging over 3-week periods are presented. Both graphs show that purchases varied a good deal, both between and within the periods corresponding to the NSPY waves of data collection.
- Table ES-1 summarizes the variations across broad 6-month periods. The table shows that expected weekly exposures of 2.5 per week in 2000 and 2001 were followed by a decline to 2.2 exposures per week in purchases during the first 9 months of 2002, and then rebounded during the period of the Marijuana Initiative to 2.7. The first 10 weeks of the Marijuana Initiative were particularly high. Purchases of ad time for parents were at their highest during Wave 1 (2.8) and have bounced around 2.0 expected exposures per week since that time.

Figure ES-1. Weekly youth-targeted general market GRPs (September 1999 through June 2003)

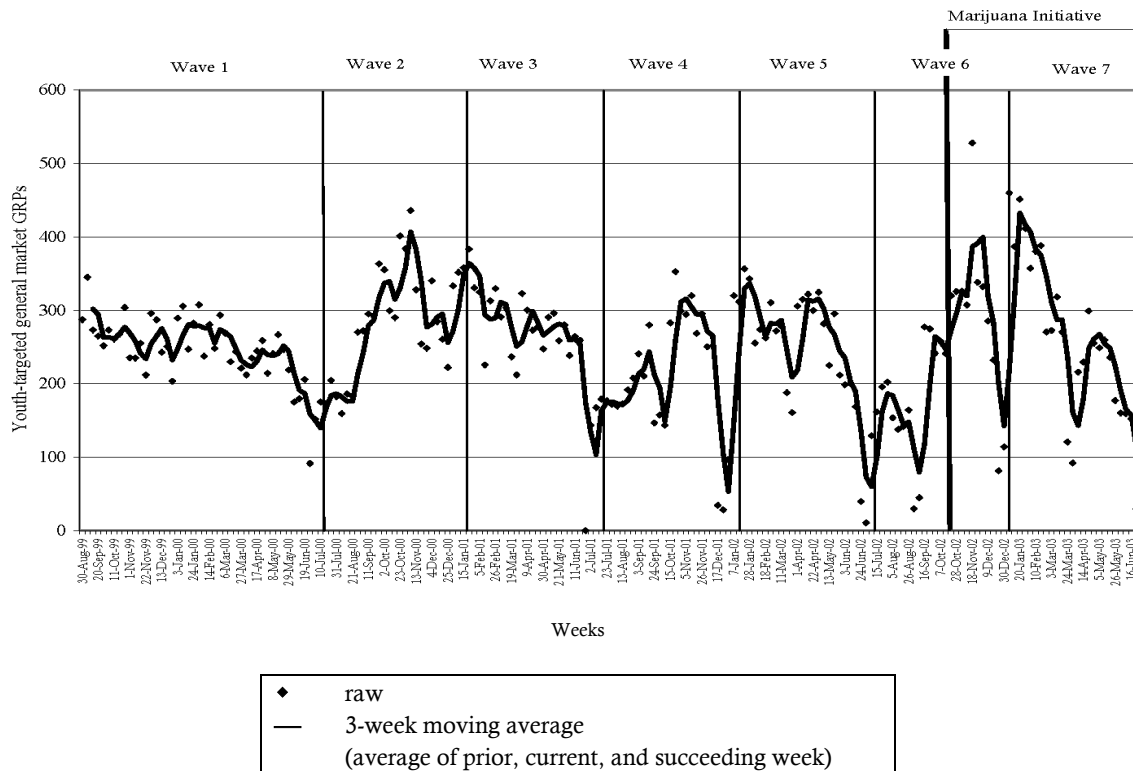
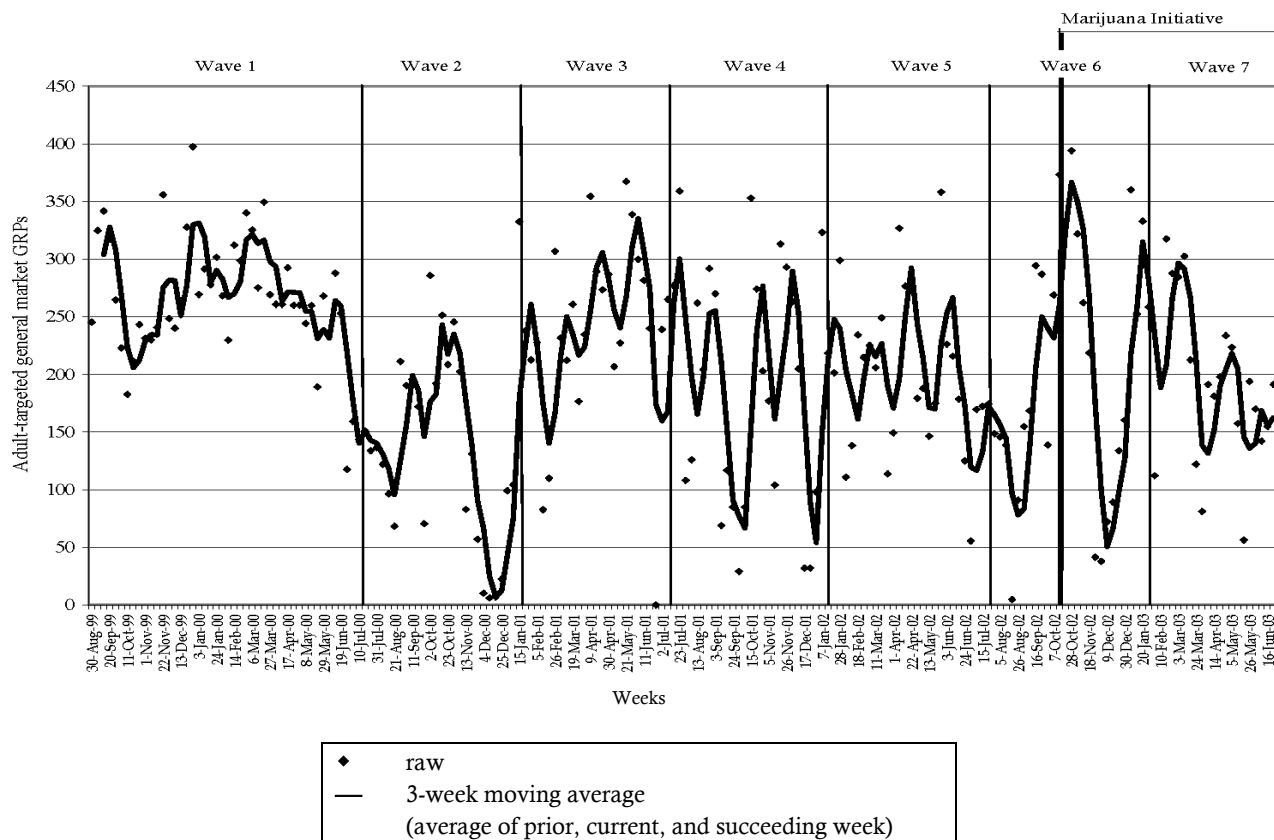


Figure ES-2. Weekly parent-targeted general market GRPs (September 1999 through June 2003)



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

	Waves 1 and 2 Year 2000	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002 (Jan-Sep)	Marijuana Initiative (Oct 02 to Jun 03)
<b>Youth</b>	257	245	220	271

	Waves 1 and 2 Year 2000	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002 (Jan-Dec)	Wave 7 (Jan 03 to Jun 03)
<b>Parents</b>	220	212	195	207

- About 33 percent of youth advertising time was purchased on network or “spot” television and about another 29 percent was purchased on network and “spot” radio. Thus, a little more than 61 percent of total exposures were on media with the potential to reach a wide portion of youth. The rest of the advertising time was purchased on channels that reach narrower audiences, including in-school television (18%), magazines (11%), and other media: basketball backboards; Internet; nontraditional; and arcades (all less than 5% apiece).
- For parents, averaged across the seven waves, more than 60 percent of the primary media buys were in potentially wider-reach media, that is, network radio (27% of all expected exposures) and network television (35%). Less than 40 percent of the primary media buys were in narrower-reach media, that is, outdoor media (22%), magazines (12%), newspapers (4%), the Internet (2%), and movie ads (0.2%).
- For both youth and parents, Campaign advertising buys were mostly directed to a small number of platforms or themes. The focus on each platform varied across time, as presented in Tables ES-2 and ES-3, which present the percentage of all television and radio ad buys in each wave dedicated to each platform. For youth, an early focus on “Negative Consequences” of drug use had disappeared by Wave 3, but was revitalized in Waves 4 and 5 and was dominant in Waves 6 and 7. A focus on “Normative Education/Positive Alternatives” was strong across the first five waves while Resistance Skills were emphasized in Waves 1 and 3 but not in Wave 2, or after Wave 3. About 20 percent of the ad time in Wave 5 was dedicated to a new series of “Drugs and Terror” ads, which were classified under the “Negative Consequences” platform. However, these ads were minimally used in Waves 6 and 7. For parents, the “Parenting Skills/Personal Efficacy/Monitoring” platform was maintained through all seven waves and was especially strong in Waves 2, and 4 through 7. On the other hand, “Your Child at Risk” received substantial weight only at Wave 1, and “Perceptions of Harm” was included only in Waves 1 and 3. Some of the “Your Child at Risk” platform advertising in Waves 3 and 4 focused on the risks of inhalants. As was the case for youth, Wave 5 marked the introduction of the “Drugs and Terror” ads for parents, which received a little more than 20 percent of the advertising time purchased in that wave, and around 15 percent in Waves 6 and 7.

**Table ES-2. GRPs per week purchased for specific youth platforms across waves (TV and radio)**

Platform	Wave 1 2000 (%)	Wave 2 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 2002 (%)	Wave 6 (Jun-Sep) 2002 (%)	Marijuana Initiative Oct 02-Jun 03 (%)
Negative Consequences	30.9	16.4	0.0	60.2	63.2	99.3	99.9
(Drugs and Terror)	0.0	0.0	0.0	0.0	19.0	2.5	0.6
(Marijuana Initiative)	0.0	0.0	0.0	0.0	0.0	44.1	97.9
(Other Negative Consequences)	30.9	16.4	0.0	60.2	44.2	52.7	1.4
Normative Education/Positive Alternatives	50.2	70.3	46.0	35.6	36.7	0.0	0.0
Resistance Skills	41.3	3.0	51.5	3.0	0.0	0.0	0.0
Other	2.8	10.3	3.3	1.2	0.5	0.7	0.1

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. GRPs per week purchased for specific parent platforms across waves (TV and radio)**

Platform	Wave 1 2000 (%)	Wave 2 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 2002 (%)	Wave 6 2002 (%)	Wave 7 (Jan - Jun) Year 2003 (%)
Parenting Skills/Personal Efficacy/Monitoring	54.2	98.8	48.6	91.2	77.1	85.1	83.9
Your Child at Risk	31.0	1.0	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
Other	1.2	<0.1	0.0	1.0	<0.1	0.0	0.0
Drugs and Terror Ads <sup>1</sup>	0.0	0.0	0.0	0.0	22.9	14.9	16.1

<sup>1</sup>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 is based on general recall of anti-drug ads through all media, and the second is based on specific recall of currently broadcast ads on television and radio. All of the following results relate only to youth aged 12 to 18 and their parents (i.e., children younger than 12 in NSPY and their parents are excluded). The most striking result in these reports is the rapidly increasing level of recall of specific television ads both for youth and for parents.

- 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 seven waves. This stability occurred despite the variation in purchases of targeted advertising by the Campaign. Across all waves, about 70 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 exposures per month for parents and 12.4 exposures per month for youth across all waves. This was probably equivalent to between 2 to 3 exposures per week. There was no overall detectable change in reported exposure from 2000 to Wave 7, or from 2002 to Wave 7, suggesting this general exposure measure was insensitive to the changes in media purchases.

**Table ES-4. Exposure to Campaign advertising by wave**

Population	Exposure measure: Percent seeing/hearing ads 1 or more times per week	Waves	Waves	Waves	Wave 7
		1 and 2 2000 (%)	3 and 4 2001 (%)	5 and 6 2002 (%)	(Jan - Jun) Year 2003 (%)
Parents	General Exposure: Across all media	71	67	70	73
	Specific Exposure: TV ads	24	29	51	58
	Specific Exposure: Radio ads	11	16	3	12
Youth 12 to 18	General Exposure: Across all media	78	74	76	80
	Specific Exposure: TV ads	37	52	52	76
	Specific Exposure: Radio ads	NA	8	1	13

NA: Radio use not measured for youth during Wave 1.

- Estimates of specific recall of 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 5.5 exposures and youth reported a median of 8.2 exposures to specific Campaign TV ads “in recent months.” This roughly translates into medians of 0.6 and 0.9 exposures per week for parents and youth, respectively. Radio recall was lower than TV recall: On average, over the 3.5-year period, about 10 percent of parents recalled exposure to specific Campaign radio ads in the past week, and over the final six waves of measurement, about 6 percent of youth recalled such exposure. About 59 percent of parents and 68 percent of youth recalled none of the specific radio ads played for them.
- Specific recall of televised Campaign ads increased significantly between 2000 and the first half of 2003 for youth, as shown in Table ES-4; the recall increased from 37 percent weekly recall to 76 percent weekly recall for the overall sample of 12- to 18-year-olds. While radio recall varied by year, in all cases, radio recall remained much lower than television ad recall.
- As was the case with youth, specific recall of television advertising by parents increased from 2000 to 2003. More than twice as many parents were reporting weekly recall of television ads in 2003 (58%) than in 2000 (24%). Parent recall of specific radio ads, while much lower than TV ad recall, particularly by 2003, showed substantial variation across the years.
- The large increases in television ad recall cannot be entirely attributed to increased television advertising purchases. It is possible that later purchases were more efficient at reaching the 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.

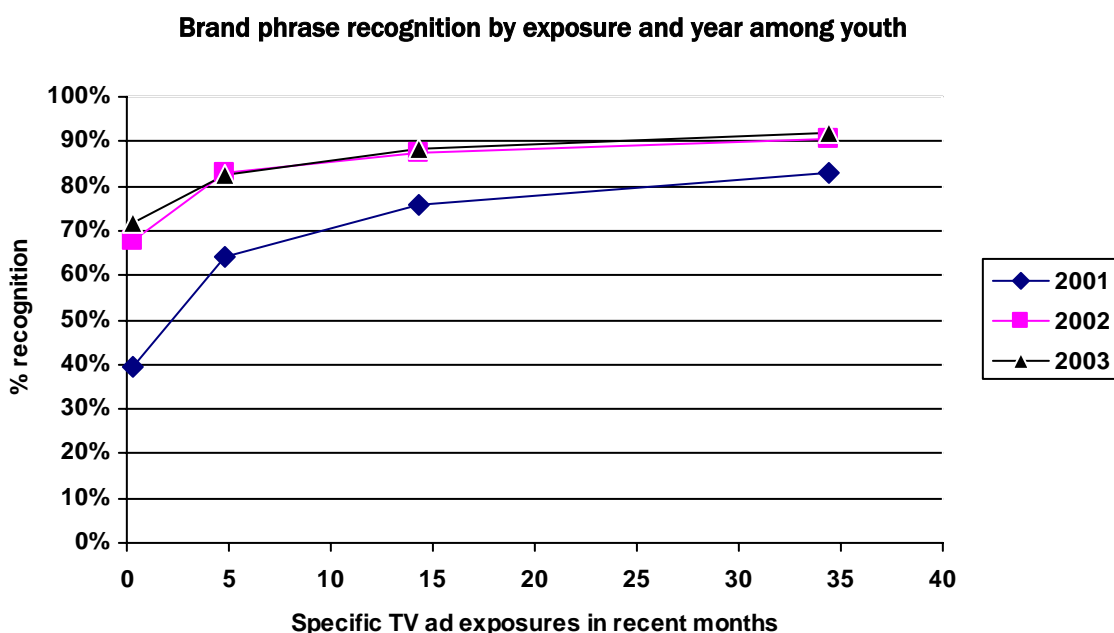
## “Brand” Recall

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 and 2003:

- In the first half of 2001, when this question was first asked, less than 60 percent of the 12- 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 2003, recall of the brand increased to 88 percent. Because some of the claimed recall could have been due to false recollection, true recall cannot be precisely estimated.
- 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. Recall of brand phrase by specific ad recall (%)



## Television Ad Evaluation

All respondents were asked to evaluate a subset of the television ads that they reported having seen in recent months. The goal was to assess how individuals interpret and evaluate ads from the Media Campaign when they see or hear them.

Three positively-phrased evaluative questions (whether the ad was attention getting, convincing, or said something important to the respondent) were summed to create a mean positive evaluation score for each ad and summed again for each respondent across a random subset of 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).

Overall, youth tended to rate favorably the television Campaign ads that they were shown across all years. The mean assessment for youth and parents did not significantly change from 2000 or 2001 to early 2003; this evidence suggests that youth and parents evaluated the Marijuana Initiative ads similarly to other Campaign ads (Table ES-5).

**Table ES-5. Television ad evaluation scores among parents and youth  
(November 1999 through June 2003)**

Group	Waves 1 and 2 Sep 99 – Dec 00	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan – Jun) Year 2003	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
<b>Mean Evaluation Score</b>						
Parents	1.07	1.27	1.17	1.19	0.12 (-0.02 to 0.26)	0.02 (-0.09 to 0.13)
Youth 12 to 18	0.76	0.75	0.81	0.85	0.09 (-0.05 to 0.23)	0.04 (-0.09 to 0.17)
<b>Disagree that the ad exaggerated the problem</b>						
Parents	0.99	1.22	1.10	1.06	0.07 (-0.16 to 0.30)	-0.04 (-0.24 to 0.16)
Youth 12 to 18	0.73	0.72	0.76	0.68	-0.05 (-0.23 to 0.14)	-0.08 (-0.26 to 0.10)

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

## Exposures to Other Drug Messages

Both youth and parents receive messages about drugs from other public sources besides Media Campaign paid advertising. Those other sources of messages are themselves the target of Campaign efforts, and they also create a context for receiving the Campaign's purchased anti-drug media messages. Exposure to messages through these other sources is high but, in some cases, was actually declining across the years of the Campaign (Table ES-6). Youth report small declines in exposure to in-school drug education, out-of-school drug education, and a more substantial decline in weekly exposure to media stories about drugs and youth. Parents report a small decline in exposure to media stories about drugs and youth, and a substantial decline in hearing a lot about community anti-drug programs. All of these suggest that there is no increase, and possibly a decrease, in institutional and public attention to anti-drug issues.

Drugs are not only a public topic; they are also a common topic for private conversation between parents and children, and among youth and their friends (Table ES-7):

- A slightly increasing proportion of parents reported conversations about drugs with their children across years; in 2000, around 80 percent and in 2003, around 83 percent of parents claimed to have had two or more conversations with their children about drugs in the previous 6 months. There were no important differences in reported conversation with children according to the age of the child.
- In contrast, youth reported a different pattern of conversation. The percentage of youth reporting such conversations with their parents was lower—about 54 percent reported two or more such conversations in the past 6 months in 2000. The percentage declined by 2003 to 49 percent.



**Table ES-6. Exposure to drug-related communication by wave**

<b>Percentage of Youth</b>						
	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan – Jun) Year 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Past year in-school drug education	66.2	65.0	61.5	62.3	<b>-3.8* (-7.5 to -0.1)</b>	0.8 (-2.4 to 4.0)
Past year out-of-school drug education	7.3	5.8	6.8	5.3	<b>-2.0* (-3.6 to -0.4)</b>	<b>-1.5* (-2.7 to -0.2)</b>
Percent recalling weekly exposure to stories in at least one medium with drugs and youth content	52.1	48.8	45.2	43.1	<b>-8.9* (-11.8 to -6.1)</b>	<b>-2.0* (-4.0 to -0.1)</b>
<b>Percentage of Parents</b>						
	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan – Jun) Year 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Percent recalling weekly exposure to stories in at least one medium with drugs and youth content	64.0	63.0	61.6	60.4	<b>-3.6* (-6.7 to -0.6)</b>	-1.2 (-3.7 to 1.4)
Percent hearing a lot about anti-drug programs in community in the past year	34.4	30.2	30.2	25.5	<b>-8.8* (-11.6 to -6.0)</b>	<b>-4.7* (-7.2 to -2.2)</b>
Percent attending drug prevention programs in the past year	30.3	29.9	28.3	27.5	-2.8 (-5.7 to 0.2)	-0.8 (-3.2 to 1.7)
Percent attending parent effectiveness programs in the past year	28.7	28.2	28.6	25.6	<b>-3.1* (-6.2 to -0.1)</b>	<b>-3.0* (-5.0 to -1.0)</b>

\* Between year change significant at p<0.05.

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

Percent with two or more conversations in the past 6 months	Age Groups	Waves	Waves	Waves	Wave 7	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
		1 and 2 Year 2000 (%)	3 and 4 Year 2001 (%)	5 and 6 Year 2002 (%)	(Jan – Jun) Year 2003 (%)		
With friends, reported by youth of ages:	12 to 13	44.2	39.2	39.5	41.1	-3.1(-7.5 to 1.3)	1.6 (-2.2 to 5.3)
	14 to 15	60.4	65.1	59.9	62.0	1.7 (-3.7 to 7.0)	2.1 (-1.5 to 5.7)
	16 to 18	69.5	70.7	69.4	67.5	-2.0 (-6.0 to 2.0)	-1.9 (-5.8 to 1.9)
	12 to 18	59.2	59.7	57.8	58.1	-1.2 (-3.8 to 1.4)	0.3 (-2.1 to 2.7)
With parents, reported by youth of ages:	12 to 13	57.8	52.0	49.3	50.1	<b>-7.7* (-12.2 to -3.2)</b>	0.8 (-3.4 to 5.0)
	14 to 15	55.2	51.7	49.0	50.2	<b>-5.1 (-10.0 to -0.1)</b>	1.1 (-2.7 to 5.0)
	16 to 18	50.0	46.4	47.5	46.1	-3.9 (-9.1 to 1.3)	-1.4 (-6.0 to 3.3)
	12 to 18	53.9	49.7	48.5	48.5	<b>-5.4* (-8.7 to -2.2)</b>	0.0 (-2.5 to 2.5)
By parents with children of ages:	12 to 13	79.2	81.2	82.8	83.4	<b>4.2* (1.0 to 7.3)</b>	0.6 (-2.3 to 3.8)
	14 to 15	80.5	84.1	85.1	85.5	5.0 (-0.3 to 10.3)	0.4 (-2.9 to 3.7)
	16 to 18	79.0	82.6	84.4	80.2	1.2 (-2.9 to 5.3)	<b>-4.2* (-8.1 to -0.2)</b>
	12 to 18	79.6	82.7	84.1	82.7	<b>3.2* (0.8 to 5.6)</b>	-1.4 (-3.6 to 0.8)

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

- The majority of youth say they have conversations about drugs with parents and/or friends, and many of them have such conversations frequently. The partners for such conversations shift sharply as youth mature. As they mature, youth are less likely to talk with their parents and more likely to talk with friends.
- Youth were asked if they talked about the anti-drug ads with parents, with friends, or others. In general, youth were more likely to report such conversations with friends (43%) in 2003 than with parents (28%). In general, the frequency of conversations did not vary significantly across waves, with the exception of conversations with friends between 2002 and 2003. Particularly among the oldest youth, 16- to 18-years-old, there was a sharp increase in such conversations with friends, with 40 percent reporting ad-related conversations in 2002 and earlier, but 47 percent reporting such conversations in 2003. It is reasonable to speculate that the strong content of the Marijuana Initiative ads led to increased discussion.

Overall, during the Marijuana Initiative, the Campaign was able to increase the level and focus of its ad purchases and concentrate them over time, and achieved a sharp increase in recall, at least for specific television messages. The brand is widely recognized and the ads were positively evaluated. That is a positive result, but it may have been achieved in the midst of declining support from other potential anti-drug message sources. There was little evidence that anti-drug messages from other institutions were increasing over the course of the Campaign, and in some cases there were declines.

## Estimates of Youth Drug Use

Following the goals of the Media Campaign given earlier, NSPY was designed to assess the influence of the Media 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 only data available since 2000, and a relatively smaller sample than other national data collection efforts, it is important to compare its trends to 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). However, the focus of this report is on the effects of the Marijuana Initiative. Only the MTF has provided any marijuana use data for the period after October 2002 subsequent to the initiation of the Marijuana Initiative.

The NSPY did not find significant reductions in marijuana use either leading up to or after the marijuana campaign for youth 12- to 18-years-old. Indeed there was evidence for an increase in past month and past year use between 2000 and 2003 among the target audience of 14- to 16-year-olds (Table ES-8).

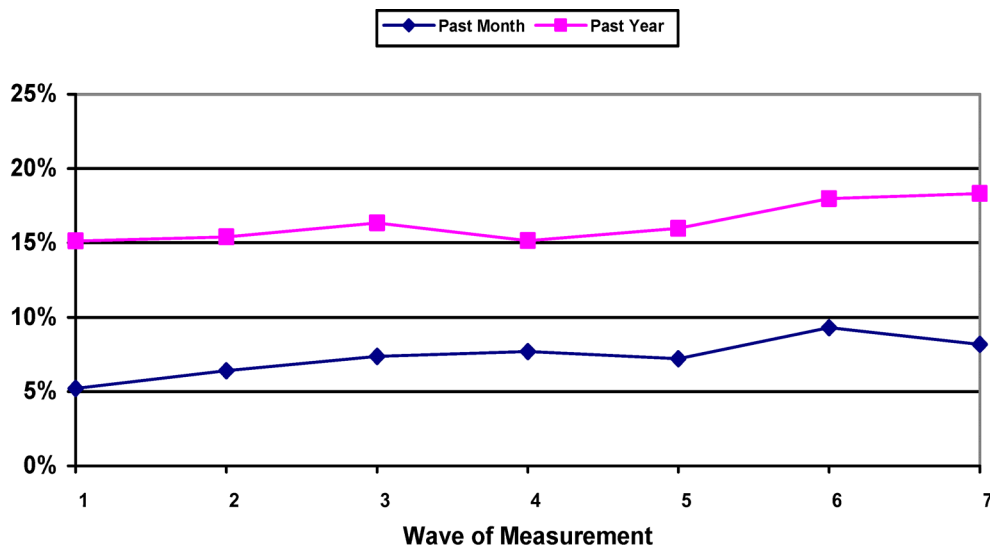
It appears that the increase was already in place in the last half of 2002, before the launch of the Marijuana Initiative. Figure ES-4 displays the results by half year (or wave) for both past year and past month use of marijuana among the 14- to 16-year-old primary target audience. The upward trend in marijuana use had already begun by the last half of 2002. The apparent decline in past month use between Waves 6 and 7 was not statistically significant, although it will be interesting to see in future data collection whether than trend continues.

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

		Percent reporting use					
Use measure	Age groups	Waves 1 and 2	Waves 3 and 4	Waves 5 and 6	Wave 7	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
		Year 2000 (%)	Year 2001 (%)	Year 2002 (%)	Year 2003 (%)		
Past year	12 to 13	3.3	2.6	3.3	4.0	0.7 (-0.9 to 2.3)	0.6 (-0.9 to 2.2)
	14 to 16	15.3	15.8	17.0	18.3	<b>3.1* (0.2 to 5.9)</b>	1.3 (-1.1 to 3.7)
	12 to 18	15.8	15.5	16.4	16.7	0.9 (-1.2 to 2.9)	0.3 (-1.5 to 2.0)
Past month	12 to 13	1.4	1.1	1.1	1.8	0.5 (-0.6 to 1.5)	0.7 (-0.5 to 1.8)
	14 to 16	5.8	7.5	8.3	8.2	<b>2.3* (0.0 to 4.7)</b>	-0.1 (-2.0 to 1.8)
	12 to 18	7.2	8.0	8.9	7.9	0.7 (-1.1 to 2.4)	-1.0 (-2.6 to 0.6)

\* Specified change significant at p<0.05.

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



The latest MTF data available were collected during the spring of 2003 between 5 and 8 months after the launch of the Marijuana Initiative. According to the 2003 MTF study, marijuana use showed some decline across all periods of use for all grades between 2002 and 2003, but statistically significant decreases in past year use only for 8th graders. These decreases in marijuana use for 8th graders appear to continue a pattern of decline that started before the start of the Campaign. The discrepancy between MTF and NSPY with respect to 14- to 16-year-olds could reflect methodological differences between the two surveys.

The four sources of use data provide mixed evidence about marijuana use trends prior to the launch of the Marijuana Initiative. NSPY did not find changes in marijuana use during this period. MTF reports indicate that marijuana use had been stable from 1998 through April 2001, but decreased among 10th graders for the past year and past month time periods between 2001 and 2002. YRBSS also found decreases in lifetime and 30-day use for their full sample of 12- to 17-year-olds between 1999 and 2001. In contrast, the NSDUH found an increase in marijuana use for 12- to-17-year-olds between 2000 and 2001, although retroactive estimates from the 2002 NSDUH suggest declines in lifetime use between 2001 and 2002. These changes in marijuana use reported by MTF, YRBSS, and NSDUH prior to the launch of the Marijuana Initiative provide mixed evidence, although given that they involve different periods of time, and different age groups, they do not necessarily contradict one another in most cases. Perhaps the central conclusion from them is that the major rise in use between 1992 and 1996 has been followed by a period of relative stability, with the possibility of increases or decreases since that time for particular age subgroups.

In sum, the analysis of the NSPY data does not support a claim that use among the target audience of 14- to 16-year-olds has declined with the initiation of the Marijuana Initiative. Contrarily, past year use increased from 2002 to 2003. However, the increase appears to have occurred before the start of the Marijuana Initiative and was only maintained during the first half of 2003. It will be worthwhile to track whether the statistically nonsignificant decline in past month use from the second half of 2002 through the first half of 2003 is the beginning of a true trend.

## Campaign Effects

The remainder of this Executive Summary presents evidence obtained to date 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

The analysis of Campaign effects in this report is different for the youth outcomes than for the parent outcomes. Both involve two components: (1) examining trends over time, and (2) examining how exposure to the Campaign that individuals report is associated with their outcomes measured at the same time. For the parent results, the report also involves (3) examining how individuals' reported exposure at one wave predicts 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) or for Round 2 to Round 3 (Waves 6 and 7).

If the Campaign has been successful, it would be desirable to see favorable trends in the outcomes over time. In the case of the youth outcomes and the Marijuana Initiative, the crucial trend comparison is the change between 2002 and the first half of 2003, while for the parents, change over the entire Campaign period is relevant. However, change in outcomes over time (or a lack of change despite positive Campaign effects) may be due to influences besides 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 a positive 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 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 in one of two ways. When longitudinal data are available, if, after controlling for all confounders, *exposure* measured at time 1 is associated with *outcome* measured at time 2, then 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. This is possible for the parent component of the Campaign where the essential focus has been maintained. However, for the youth component of the Campaign, where the Marijuana Initiative is meant to be a refocus in strategy, longitudinal analyses are not yet possible. However, in this case, if there were to be an association between exposure and outcome in the same time data for the period after the initiation of the Marijuana Initiative, it might be reasonable to make a claim of Campaign effect. This would be sensible because there was no such same time association for the prior period of data collection. If an association appeared only after the initiation of the Marijuana Initiative, it would not likely be the result of a sudden effect of the putative outcome, but would sensibly be attributable to the changed exposure variable, since that was the novel element.

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, those mediated through parents.

For youth, analyses of Campaign effects are limited to 12- to 18-year-olds who report never having tried marijuana (referred to as “nonusers” in this report) and concerns their attitudes, beliefs, and intentions (“cognitions”) about possible initiation of marijuana use in the subsequent year. There were not enough occasional users (i.e., those using marijuana 1 to 9 times in the past year) among the youth to examine Marijuana Initiative effects on their cognitions. The parent analysis includes all parents of 12- 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 difference 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. For the cross-sectional analyses, the propensity scores were based on measures of these characteristics taken concurrently with the measures of exposure and outcome. For the parent longitudinal analyses, these characteristics were measured at the early measurement round (Round 1 or 2), concurrently with the exposure measure at that round, but prior to the later measurement round (Round 2 or 3) outcome measures.

The fifth semiannual report (Hornik et al., 2002) using these procedures found evidence consistent with a Campaign effect on parents, including evidence of positive change in parent outcomes, and evidence for cross-sectional associations between exposure and most of those outcomes, and even some evidence for delayed effects on parent outcomes. In contrast, there was no evidence that parent exposures affected monitoring behavior, the central parent outcome, or that they affected youth outcomes. Also, the evidence was not consistent with a favorable Campaign effect directly on youth. There was little evidence for favorable changes in youth beliefs, attitudes, intentions, or behaviors, or for associations between Campaign exposure and outcomes. Of particular concern, the longitudinal analyses showed a delayed unfavorable effect of youth exposure on some youth outcomes for important subgroups. Based on a review of the findings to date and Campaign processes and procedures, a number of changes were made to the Campaign including focusing the youth component on the negative consequences of marijuana use (the Marijuana Initiative). The evidence for the effects of the full campaign on parents and of the Marijuana Initiative, in particular, on youth is the focus of this report.

## Campaign Effects on Youth

The analysis focuses on five outcomes for youth: initiation of marijuana use, intentions to avoid initiating marijuana use, and three cognitive indices—attitudes and beliefs about marijuana use, perceptions of social norms about marijuana use, and self-efficacy to avoid marijuana use if it is available. The 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. Intentions are a very strong predictor of future behavior. Among those who were nonusers at a prior round of measurement, 10 percent of those who said “definitely not” to any use of marijuana over the next year had initiated use by the followup Round (12 to 18

months later). Of those who said anything other than “definitely not,” the rate of initiation was 42 percent.

The attitude and belief index includes questions about eight specific consequences of marijuana use for the respondent, as well as general attitudes toward marijuana use; the perception of the social norms index includes questions about what parents and friends would expect the respondent to do about marijuana use, and the self-efficacy index assesses the respondent’s confidence that he or she could refuse marijuana in a variety of circumstances. Each of the three indices is substantially related to intentions to use marijuana. The intentions measure is presented as the percentage of youth who said “definitely” not. The other three indexes 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. All three of these indexes are highly predictive of intentions to use marijuana.

Table ES-9 presents a summary of the trend data for all nonusing youth. There were no significant changes between 2002 and the first half of 2003, representing the periods from before to after the start of the Marijuana Initiative. There are longer term trends between 2000 and 2003 that are statistically significant for two of the outcomes (social norms and self-efficacy) for the entire youth population, but in opposite directions, favorable to the Campaign for self-efficacy and unfavorable to the Campaign for social norms. In addition, there was a favorable longer term trend effect for intentions for 16- to 18-year-olds. However, trends alone, whether favorable or unfavorable to the Campaign, do not establish Campaign effect. Other forces may be affecting marijuana use and beliefs and attitudes in addition to the Campaign and influencing their upward or downward movement, regardless of Campaign effects.

**Table ES-9. Trend evidence for youth aged 12 to 18**  
**Trends in intentions, beliefs, norms and self-efficacy about marijuana use among nonusers**

	Score on Index				Change from Year 2000 to Year 2003 Change (95% CI)	Change from Year 2002 to Year 2003 Change (95% CI)
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)		
Percent definitely not intending to try marijuana	87.5	86.3	86.1	86.9	-0.6 (-2.7 to 1.5)	0.8 (-1.0 to 2.6)
Mean score on Belief/Attitude Index	108.55	103.49	107.45	106.55	-2.01 (-8.49 to 4.48)	-0.90 (-5.95 to 4.14)
Mean score on Social Norms Index	107.43	101.12	101.13	97.35	<b>-10.08* (-15.55 to -4.62)</b>	-3.78 (-9.25 to 1.69)
Mean score on Self-Efficacy Index	102.40	106.98	116.47	118.43	<b>16.03* (9.52 to 22.54)</b>	1.96 (-3.02 to 6.95)

\* Change between specified years significant at p<0.05

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

The next step of the analysis was to look at the cross-sectional associations between individual exposure to the Campaign and the several outcomes. This analysis focused entirely on nonusers of marijuana at the time of the interview. The current results largely confirm a pattern that was observed in the earlier reports. Scores on all of the cognitive outcomes did not vary systematically with levels of either the general or the specific exposure scale. No statistically significant cross-sectional associations were observed. None of the central analyses of effects supported a favorable Campaign effect and none supported an unfavorable effect on intentions, attitudes and beliefs, perceived social norms, or self-efficacy with regard to marijuana use, once the effects of potential confounders were removed.

This was true for the period of the Marijuana Initiative as it was for the combined period of the entire Campaign. Table ES-10 presents the results of these cross-sectional analyses. The exposure columns represent the level of exposure reported by these youth to Campaign television advertising. The rows represent average scores on the four 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, with the gamma for the Marijuana Initiative period in the final column.

**Table ES-10. Outcome measures by exposure per month overall and for the January-June 2003 period among 12- to 18-year-old nonusers of marijuana**

Outcome		Exposure				Overall Gamma (95%CI)	MI period Jan-Jun 03 gamma (CI)
		<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures		
Percent definitely not intending to use marijuana	General exposure	87.7		85.6	86.8	-0.03 (-0.09 to 0.04)	0.03 (-0.10 to 0.17)
	Specific exposure	89.3	86.8	85.2	88.9	-0.02 (-0.09 to 0.06)	-0.13 (-0.29 to 0.03)
Anti-marijuana Attitudes/Beliefs Index (Mean score)	General exposure	105.00		104.64	108.57	0.02 (-0.01 to 0.04)	0.04 (-0.01 to 0.10)
	Specific exposure	109.13	108.43	102.07	111.72	0.00 (-0.02 to 0.03)	0.04 (-0.04 to 0.11)
Anti-marijuana Social Norms Index (Mean score)	General exposure	101.54		100.55	102.97	0.00 (-0.03 to 0.02)	0.02 (-0.04 to 0.08)
	Specific exposure	109.57	104.45	99.81	103.39	0.03 (-0.06 to 0.01)	-0.02 (-0.09 to 0.05)
Self-Efficacy Index (Mean score)	General exposure	105.59		107.76	113.78	0.02 (-0.01 to 0.05)	0.06 (-0.03 to 0.15)
	Specific exposure	116.17	108.40	108.46	117.14	0.01 (-0.02 to 0.04)	-0.01 (-0.10 to 0.08)

These cross-sectional analyses were repeated for both exposure measures and for important subgroups defined by age, gender, race/ethnicity, and a composite measure of risk of marijuana use, which included sensation seeking (a personality characteristic defined by an interest in engaging in novel, intense, and risky experiences, including illegal drug use). These subgroups were not further subdivided by age. Of the 72 subgroup analyses undertaken for the Marijuana Initiative period (January to June 2003) sample, 5 were statistically significant, 2 favorable, and 3 unfavorable to the Campaign. These are most credibly interpreted as chance significant effects.

The Marijuana Initiative's focused analyses provide results largely consistent with no Campaign effects on youth. The appropriate inference from these results is one of no interpretable pattern of Campaign effects, favorable or unfavorable. The last two reports, in contrast, suggested that there was evidence consistent with an unfavorable effect of the Campaign on youth. However, the apparent inconsistency between those reports and the current one is not in fact an inconsistency. Using the same limited criteria used in this report, trends and cross-sectional associations, the previous report would have come to the same conclusion. It was only the inclusion in the prior reports of the delayed-



effects analyses that detected evidence for unfavorable effects on youth intentions and other outcomes. It will be possible to see whether those unfavorable Campaign effects are reversed or repeated once the next round of data collection is complete. At that time, similar delayed-effects analyses can be undertaken focusing on Marijuana Initiative exposure. Thus, the conclusion of this chapter is that the Campaign did not achieve its intended effect on youth to date, either in its previous period or thus far under the Marijuana Initiative. However, a fuller judgment about the Marijuana Initiative will only be possible once the next round of data collection is complete and the findings are published.

## Campaign Effects on Parents

A continuing theme of the parent Campaign, both before and after the launch of the Marijuana Initiative, 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 those three classes of outcomes: monitoring children’s behavior, talking with children about drugs, and engaging in fun activities with children. In addition, for the first time, there is full presentation of youth reports of parent monitoring and talking behavior, and fun activities as supplementary outcomes for analyses of parent Campaign effects. In the past, analysis of Campaign effects on parent outcomes have focused on parents’ reports about their behaviors (as well as their beliefs and attitudes) with regard to monitoring, talking, and doing fun activities. However, the children of these parents also were asked about the degree to which they were monitored, the amount of talk with their parents about drugs, and their engagement in fun activities. The format of the questions was virtually identical to the questions asked of the parents. As in the past, the report compares youth and parent trends on these parallel measures. For the first time, however, the analysis of association, both cross-sectional and delayed, between parent exposure and parenting outcomes is presented for both parent and child reports of outcome behaviors since, as will be shown, both are predictive of youth marijuana initiation.

There are five outcome indices that are the focus of analysis for the parent data in the report: (1) parent reports of talking with their children about drugs; (2) an index of attitude and belief items concerning talk (talk cognitions); (3) parent reports of monitoring their children; (4) an index concerning monitoring (monitoring cognitions); and (5) parent reports of engaging in fun activities with their children in and outside of the home. In addition, the parent analyses look for evidence that parent exposure was associated with youth outcomes, including all of those considered in the youth effects analysis.

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-effects association between exposure at a prior round and outcomes at a later round for the parents interviewed on both occasions (where the associations are controlled for confounders).

Table ES-11 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 measures, 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 measures. The association criterion is whether or not the 2000 to 2003 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 representing at least 30 percent of the population, this is also indicated.

This table provides evidence of Campaign effect on parents. Although the strongest support for Campaign effectiveness comes from using parent reports of behaviors, youth reports of the same behaviors provide some support for the parent findings. However, there is not consistent evidence that the variable that is the best predictor of initiation of marijuana use (monitoring behaviors) has been affected by the Campaign. Each of the outcomes is reviewed in turn.

Monitoring behavior (whether reported by parents or youth) is an important predictor of the initiation of marijuana use. However, it provides the least evidence for a Campaign effect. While there is a significant upward trend in monitoring behavior as reported by parents, that trend is not supported by youth reports. There is no overall cross-sectional or delayed-effects association of either exposure measure and youth- or parent-reported monitoring behavior.

The monitoring cognition scale (only available from parent reports) has a substantial association with monitoring behavior and, like monitoring behavior, is associated with youth marijuana use and intentions. There is good reason to think that affecting parental monitoring cognitions would affect youth behavior. Although the 2000 to 2003 trend in this outcome is not statistically significant, the change from 2000 to 2002 is significant. In addition, there is evidence for cross-sectional associations for both general and specific exposure and monitoring cognitions for the full sample. However, there is no evidence of a delayed-effects association overall or for any subgroup with either of the exposure measures. Without the evidence for a delayed effect, so that the causal order issue can be sorted out, it remains unclear whether parent ad exposure affects their beliefs about the value of monitoring or parents' commitment to engaging with their children influences their monitoring beliefs and their attention and recall of the advertising.

The fun activities analyses offer substantial support for Campaign effects. The pattern of both cross-sectional and delayed associations is supportive of a favorable effect of the Campaign. All of the associations of both specific and general exposure and the parent reports of fun activities are statistically significant and favorable. The youth reports of fun activities do not show an overall association with exposure; however, for two of the four tests, subgroups representing a substantial fraction of the whole population do show a significant favorable effect. Indeed, while the associational data is quite supportive of a favorable effect, the trend data for fun activities presents the only hold on the claim. Parent reports show no increase in fun activities and youth reports show a decline. One interpretation of those results is 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 other external forces that were causing a decline.

The talking behavior results are similarly quite supportive of favorable Campaign effects, although one aspect of the youth reports raises a concern. The parent reports show positive trends, and either overall or substantial subgroup associations for both measures of association and for both cross-sectional and delayed effects. The youth reports also show favorable associations for substantial

**Table ES-11. Summary of parent effects on parent and youth outcomes among all parents of 12- to 18-year-olds**

Parent Outcomes	All parents of youth 12 to 18 youth									
	Trend		Cross-sectional association				Delayed-effects Association			
			General Exposure		Specific Exposure		General Exposure		Specific Exposure	
	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports	Parent Reports	Youth Reports
Talking Behavior	<b>Favorable</b>	<b>Unfavorable</b>	<b>Favorable</b>	No	<b>Favorable</b>	No overall, subgroups (F)	<b>Favorable</b>	No Overall, subgroups (F)	No Overall, subgroups (F)	No
Talking Cognitions	No	--	<b>Favorable</b>	--	<b>Favorable</b>	--	No Overall, subgroups (F)	--	<b>Favorable</b>	--
Monitoring Behavior	<b>Favorable</b>	No Overall, subgroups (F)	No	No	No Overall, subgroups (F)	No	No Overall, subgroups (U)	No	No	No
Monitoring Cognitions	No	--	<b>Favorable</b>	--	<b>Favorable</b>	--	No	--	No	--
Doing Fun Activities <sup>1</sup>	No	<b>Unfavorable</b>	<b>Favorable</b>	No Overall, subgroups (F)	<b>Favorable</b>	No	<b>Favorable</b>	No	<b>Favorable</b>	No Overall, subgroup (F)

<sup>1</sup>Youth reports for trends in fun activities report changes between 2001 and 2003; parent reports for trends in fun activities report changes between 2000 and 2003.

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.

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

No: No overall significant result, or if subgroup significant at p<0.05 represented no more than 30% of cases.

No overall subgroups: No overall significant results, but subgroups representing more than 30% of cases were significant at p<0.05.

subgroups, in two of four cases. The one aspect that clearly does not support a claim of favorable Campaign effect is the youth trend data. While the parents are reporting more talking with their children, the youth are reporting less. There is no easy explanation for this discrepancy.

The talking cognitions analysis is based on parent reports only, and it supports a favorable interpretation. The trend data shows no significant changes but the association data is quite consistently supportive of campaign effects. For all of the four tests of associations, there is either an overall association or favorable results from substantial subgroups. While the claims for Campaign effect would be stronger if the trend results were to match the associational results, the support for a favorable Campaign effect on talking cognitions, as with talking behavior, is still substantial.

Thus there is substantial evidence for a favorable Campaign effect on four of five parent outcomes: monitoring cognitions, talking cognitions, behavior, and fun activities behavior. The evidence is stronger based on the positive associations between exposure and outcomes, whether cross-sectional or delayed, but less consistent if trend data is the focus. However, the one outcome for which the analysis does not provide substantial support for a Campaign effect is monitoring behavior.

The lack of evidence of favorable Campaign effects on monitoring behavior is a difficult result from the Campaign's perspective for two reasons. It is difficult first because parenting skills have been the prime focus of the parent advertising almost since the beginning of the Campaign. 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. 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 are sharpest on talking and fun activities, where the Campaign has not focused, and generally weakest in the area of most focus, monitoring behavior. The positive evidence for Campaign effects on monitoring cognitions does provide some balance, but without evidence that this is translated into Campaign effects on behavior, it is less likely to translate into effects on youth.

These results are also difficult for the Campaign because there is good evidence that in focusing on monitoring behavior, the Campaign chose correctly. Monitoring behavior has been shown here and in other studies to be substantially related to non-initiation of drug use. That is not true at all for talking behavior. Engaging in fun activities does show some protective relation with subsequent marijuana initiation. 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 is less than optimal. In fact, a claim that the Campaign effect on parents led to a change in youth marijuana use, intentions to use, social norms, self-efficacy, or cognitions receives little support from the NSPY. The youth outcome table (Table ES-12) addresses whether there was a trend in the youth outcome (duplicating the effects shown above in Table ES-9) and/or associations of the parent exposure measures with the youth outcome, both cross-sectionally and on a delayed basis.

Table ES-11 showed that at least some of the evidence supports such a Campaign effect on parent outcomes. When the summary turns to effects of parent exposure on youth outcomes, however, there is very limited supportive evidence. Although there is a positive trend in self-efficacy to refuse marijuana, this finding is not supported by either cross-sectional or longitudinal associations, and there are no other reported full sample youth outcome effects. Subgroup effects are rare and, when they appear, they are about as likely to be in a favorable direction as in an unfavorable direction.

**Table ES-12. Summary of all parent exposure effects on youth outcomes among all parents of 12- to 18-year-olds**

Youth Outcomes (marijuana)	All parents of youth 12 to 18				
	Trend	Cross-sectional association		Delayed-effects association	
		General	Specific	General	Specific
Past year use	No overall, subgroup (U)	No	No	No	No
Intentions to use	No	No	No	No	No overall, subgroup (F)
Attitudes & Beliefs	No	No	No	No	No
Social Norms	Unfavorable	No	No	No overall subgroup (U)	No
Self Efficacy	Favorable	No	No overall, subgroup (U)	No overall, subgroup (U)	No

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.

No: No significant effect overall.

No overall subgroup: No overall significant results, but subgroups representing more than 30% of cases were significant at  $p < 0.05$ .

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

# Reference

Hornik, R. et al. (2002a). *Evaluation of the National Youth Anti-Drug Media Campaign: Fourth Semiannual Report of Findings*, Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

Hornik, R. et al. (2002b). *Evaluation of the National Youth Anti-Drug Media Campaign: Fifth Semiannual Report of Findings*, Report prepared for the National Institute on Drug Abuse (Contract No. N01DA-8-5063), Washington DC: Westat.

# 1. Introduction

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

This sixth report is both descriptive and evaluative in content. It also reflects a change in scope from previous reports with regard to the youth-targeted Campaign effort, since it focuses largely on effects of the Marijuana Initiative, which launched in October 2002. Like previous reports, however, this report examines evidence about the effectiveness of parent-targeted Campaign activities over the longer term. Chapter 2 describes the evaluation design and analytic logic. Chapter 3 provides descriptions of message exposure achieved by the Campaign from September 1999 through June 2003, with particular attention to activities conducted between October 2002 and June 2003 (including the Marijuana Initiative). Chapter 4 presents evidence about trends in youth use of marijuana. Chapters 5 and 6 present evidence about effects of the Campaign. Chapter 5 focuses on youth attitudes and beliefs about marijuana use targeted by the Marijuana Initiative. Specifically, the chapter examines trends in attitudes and beliefs about marijuana and assesses whether youth frequently exposed to Campaign messages are more likely to hold negative cognitions about marijuana. Chapter 6 focuses on parent behavior, parental attitudes and beliefs about engagement with their children to prevent drug use, and the effects of parent exposure on youth outcomes. The chapter examines evidence about changes in the outcome indicators since the beginning of Phase III in late 1999 and considers evidence that exposure to the Campaign is related to these outcomes.

The first five reports in this series were published semi-annually. In contrast, this report follows the fifth report by 1 year. The delay responds to the modifications in the Campaign instituted in late fall 2002. The Office of National Drug Control Policy and the evaluators agreed that it would not be possible to evaluate the modified Campaign fairly with data collected only through December 2002, 3 months after the start of the Marijuana Initiative. It was decided to delay this report so that data collected for an additional 6 months, through June 2003, might be included. The ONDCP has submitted to Congress a separate report based on other data and that is available from the ONDCP web site [www.whitehousedrugpolicy.gov](http://www.whitehousedrugpolicy.gov).

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

## 1.1 Nature of the Media Campaign in Phase III

This report summarizes material from previous reports (Hornik et al., 2000; Hornik et al., April 2001; Hornik et al., October 2001; Hornik et al., May 2002; Hornik et al., November 2002) and updates that information with descriptions of activities undertaken between July 2002 and June 2003, the period covered by this report. The Media Campaign is now in Phase III. Phase I involved pilot testing the intervention in 12 metropolitan areas, using then existing Partnership for a Drug-Free America (PDFA) advertisements. During Phase I of the Media Campaign, ads were placed on television and radio, in newspapers, and on billboards. In Phase II, these advertisements appeared nationwide, in addition to the test areas. Some new advertisements were added to the Media Campaign. The advertisements appeared not only on television, radio, billboards, and in newspapers and magazines, but also on cable television, Channel One (educational television within schools), in movie theaters, on the Internet, on schoolbook covers, and on basketball backboards. Table 1-A shows the Media Campaign phases.

**Table 1-A. Media Campaign phases**

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

Phase III marks the full implementation of the Media Campaign. As in the past, an extensive range of media is used to disseminate Media Campaign messages to a national audience of youth and parents. In addition, Phase III features a significant interactive media component, involving content-based web sites and Internet advertising. Most of the ads used in Phase III are new, although some existing ads that were considered effective in the past also have been used. New ads are developed and disseminated according to the National Youth Anti-Drug Media Campaign Communication Strategy Statement, which was developed over the course of a year with the help of hundreds of individuals and organizations with expertise in teen marketing, advertising and communication, behavior change, and drug prevention, as well as to the National Youth Anti-Drug Media Campaign Communication Strategy Statement Supplement, which documents changes to the original statement as of August 2001 and reflects refinements of the Campaign. Additional changes to the process of ad development came as part of the Marijuana Initiative. They are discussed below.



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

Ogilvy has organized the participation (as subcontractors) of five agencies that specialize in communicating with minority audiences. Working with the specialized agencies, Ogilvy formulates, designs, and manages the implementation of multicultural initiatives. Special attention has focused on sufficiently exposing Media Campaign messages to African Americans, Asian Americans, Pacific Islanders, Hispanic Americans, American Indians, and Alaska Natives. More than \$38 million in paid and negotiated pro bono advertising messages and outreach programs aimed at youth aged 11 to 17, parents, and other youth influencers are directed toward ethnic audiences each year. African Americans and Hispanics receive the dominant share of multicultural advertising exposure—more than 75 percent of the ethnic paid and pro bono investments (National Youth Anti-Drug Media Campaign Fact Sheet, “Multicultural Outreach,” July 2001). Ogilvy also has supervised a substantial research effort to provide ongoing support to the Media Campaign decisionmaking. Ogilvy has reported that these include regular focus groups with target audiences for strategic development and concept evaluation purposes, continuous mall-based tracking surveys for youth and telephone surveys for parents, and quantitative copy testing conducted across the country with both parents and youth. Ogilvy and its subcontractors prepare recommendations on advertising content and buying strategies. ONDCP then reviews and provides final approval for all major Campaign decisions and for all advertising content.

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

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

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

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

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

## 1.2 Paid and Donated Advertising

### Overview

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

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

Time period	Jul 1998 to Jun 1999	Jul 1999 to Jun 2000	Jul 2000 to Jun 2001	Jul 2001 to Jun 2002	Jul 2002 to Jun 2003
Net dollars (000)	Phase II (000)	Phase III Year One (000)	Phase III Year Two (000)	Phase III Year Three (000)	Phase III Year Four (000)
Original paid budget	\$149,500	\$144,000	\$130,000	\$135,300	\$130,000
Final paid budget <sup>1</sup>	\$157,501	\$142,962	\$143,235	\$140,514	\$134,091
Special Match <sup>2</sup>	\$0	\$0	\$0	\$21,594	\$44,361
Print, Channel One, Out of Home Match <sup>3</sup>	\$32,460	\$37,622	\$32,188	\$33,158	\$34,567
Interactive match budget	\$3,312	\$4,943	\$3,214	\$4,494	\$3,367
<b>Total value of paid and match Campaign ads</b>	<b>\$193,273</b>	<b>\$185,527</b>	<b>\$178,637</b>	<b>\$201,641</b>	<b>\$216,386</b>

<sup>1</sup> Paid budget does not reflect final actualized spending for all years.

<sup>2</sup> Special Match: The term refers to pro bono match value fulfilled by TV and Radio networks by airing the same paid ad in fulfillment of the pro bono match.

<sup>3</sup> Print, Channel One, and Out of Home Match: This roll up of the match refers to ads for which 100 percent of the pro bono match is reflected in additional ad space for the same ads.

Congress mandated that media organizations accepting Media Campaign advertising must match Media Campaign purchases with in-kind advertising time or space, or with other public service of equal value. The match component of the Campaign, coordinated by The Advertising Council, includes public service advertising that promotes support to parents, youth, and organizations that foster positive development for children and youth, and thereby contributes to some of the overall goals of the Campaign.<sup>1</sup>

Chapter 3 presents the Phase III media-buying strategies for youth and parents in detail, including how much paid advertising was directed through each channel. The Campaign has delivered specific anti-drug messages nationally through television networks ABC, CBS, NBC, FOX, UPN, and the WB; through cable networks; and through national radio networks. On-line advertising was placed on approximately 40 web sites and on America Online. Media Campaign messages are also disseminated in newspapers and magazines, on home videos, and in movie theaters. Parents are further addressed through billboards, bus shelter placards, and other outdoor advertising.

The Media Campaign originally targeted youth aged 9 to 18, with a focus on 11- to 13-year-olds, also known as “tweens”; parents of youth in these age ranges; and other influential adults. The paid advertising plan, more specifically, targeted 9- to 17-year-olds. In August 2001, the Campaign shifted their creative focus to 11- to 14-year-olds to allow the Campaign to more effectively reach youth at the time they are most at risk for drug trial (National Youth Anti-Drug Media Campaign Communication Strategy Statement Supplement, August 2001).

In spring 2002, ONDCP initiated another series of changes to the National Youth Anti-Drug Media Campaign. The previous report in this series had shown no evidence of Campaign success with youth through June 2002 (Hornik, et al. 2002). The Campaign altered strategies to primarily target 14- to 16-year-olds who have much higher rates of marijuana initiation than do younger children. More focused advertising was created to attack marijuana use, the most frequently abused drug in this age group (Executive Office of the President, ONCDP official announcement, May 23, 2002). A new series of ads focusing explicitly on the negative consequences of marijuana use, termed the Marijuana Initiative, launched in October 2002 and aired through the end of the period examined by this report, June 2003. Despite this narrowing of the creative target, the media buy is still expected to reach the full youth audience. The paid advertising component of the Media Campaign was expected to reach 90 percent of America’s youth at least four times per week during the course of the Media Campaign (ONDCP Fact Sheet, “Summary of Campaign Accomplishments,” March 2000), although this included both advertising directed toward youth as well as advertising targeted to parents, which may also be seen by youth. Other changes initiated in spring 2002 include the implementation of more rigorous copy-test procedures, requiring each television advertisement to undergo pretesting before being aired to a national audience, and increased oversight by the ONDCP in guiding the development and production of advertisements. Subsequently, there was also a shift away from advertising the Drugs and Terror ad platform that had been featured in some of the youth and adult advertising beginning in January 2002.

The Media Campaign has from the start designed advertising to be attractive to sensation-seeking youth who have been shown in research as more at risk for drug use (Palmgreen et al., 2001). Sensation seeking is a biologically based trait “based on the idea that persons differ reliably in their

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<sup>1</sup> Much of the material in this section comes from information supplied to the evaluators by the Campaign, particularly Ogilvy.

preferences for, or aversions to, stimuli or experiences with high-arousal potential” (Zuckerman, 1988, p. 174). Individuals who are high in their need for sensation desire complex and stimulating experiences, and are willing to take risks to obtain them. Several studies show that the variation in sensation seeking predicts behavioral differences, especially illicit drug use. Some results reinforcing this claim are presented in Chapter 4 of this report.

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

## Youth

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

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

Starting with Phase III, the Media Campaign incorporated branding to unify its advertising. This began with the parent campaign, which focused on the idea of “The Anti-Drug” (e.g., Love: The Anti-Drug; Communication: The Anti-Drug). In the fall of 2000, the branding initiative was extended to the youth campaign. The Campaign launched “My Anti-Drug,” a multimedia initiative aimed at youth aged 11 to 17 years. Youth were asked to answer the question, “What’s Your Anti-Drug?” with the goal of engaging them in defining their anti-drug. Youth were encouraged to submit ideas to ONDCP by postcard or by the Web.<sup>2</sup> These ideas, which were incorporated into advertising for 2001 and 2002, suggest activities that might serve as “anti-drugs” and allowed audience members to fill in their own (e.g., Soccer: My Anti-Drug). As reported by ONDCP, the “My Anti-Drug” Campaign’s

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<sup>2</sup> To facilitate on-line submissions, the on-line media unit allowed youth to submit their anti-drug ideas as a vote and upload a creative expression articulating their anti-drug in the form of a story or picture file.

overall goal is “to present positive messages and cause youth to think about the things in their own lives that stand between themselves and drugs.”

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

Celebrities, however, were only one part of the advertising effort. Paid ads played or scheduled to be played between September 1999 and June 2003 included radio and television; general market; African American-, American Indian and Alaskan Native-, Asian-American and Pacific Islander-, and Hispanic-specific ads; and ads for parents as well as youth. A series of ads focusing on American Indian audiences was developed as part of ONDCP’s \$5 million effort to reach American Indian audiences since the beginning of the Campaign. A complete set of television and radio ad descriptions for the ads directed to the general, Hispanic, and African American markets for parents and youth appears in Appendix D of this report. Many of the most recent ads can be viewed or played by visitors to ONDCP’s web site: <http://www.whitehousedrugpolicy.gov>.

In the aftermath of the September 11th terrorist attacks, a new theme, Drugs and Terror, was targeted to older teens and young adults. The Drugs and Terror ads followed a similar theme of unintended negative consequences: buying drugs may contribute to funding terrorist activities. In contrast with the traditional approach of communicating personal consequences of drug use, these ads were meant to appeal to the current mood of patriotism, thus providing the youth audience with a reason not to use drugs that is “bigger than themselves.” Between January and June 2002, about 19 percent of youth advertising time was dedicated to specific Drugs and Terror ads. However, the Drugs and Terror theme was largely de-emphasized with the start of the Marijuana Initiative, and its emphasis on negative consequences of marijuana use.

## The Marijuana Initiative – Youth

As mentioned above, substantial changes to the Campaign were announced following a review in spring 2002. The Campaign decided that the initiative’s youth-targeted messages would shift focus to target marijuana use with hard-hitting advertisements portraying the negative consequences of marijuana use. While marijuana is the most widely used illicit drug among America’s youth, ONDCP argues that many teens and their parents continue to underestimate the effects of marijuana use. The Marijuana Initiative seeks to highlight the health, social, academic, economic, and legal consequences of marijuana use. Older teens, aged 14 to 16 years, were identified as the primary audience while younger teens (aged 11 to 13 years) were viewed as a secondary target. The new Campaign focus was termed the Marijuana Initiative.

Between October 2002 and June 2003, more than 99 percent of youth-targeted television and radio advertisements focused exclusively on the negative consequences of marijuana use (see Chapter 3 and Appendix D for a more detailed description of specific advertisements). The Marijuana Initiative was implemented in two phases. The first phase, designed by ad agency Leo Burnett, aired from October 2002 through January 2003. The second phase, designed by ad agency McCann Ericksen, launched with new advertisements in February 2003 and continued through mid-June 2003. The advertisements frequently featured various scenarios involving two or more teens interacting with implied smoking of

marijuana, and highlighted immediate repercussions of their actions (e.g., harming an innocent victim while driving under the influence of marijuana, accidentally firing a gun while playing with it, acting dazed and confused).

To reach the new, primary older teen audience, the Campaign increased activity on television programs with older teen audiences, placed advertisements in magazines with a large proportion of 14- to 16-year-olds, and targeted websites with features thought to appeal to high sensation-seeking older teens. In addition, the Campaign targeted multicultural anti-marijuana advertisements specifically to Hispanic and African American older teen audiences through the use of Spanish language television (Univision, Telemundo and the Hispanic cable network MUN2) and African American teen magazines with a high composition of older teens (e.g., Hype Hair, Honey, and Vibe).

Cinema advertisements and interactive media also were used to supplement the television advertisements created for the Marijuana Initiative. Negative consequences advertisements were shown in cinemas prior to films rated PG-13 in December 2003. Interactive media will be discussed in the next section of this chapter. In addition, the Marijuana Initiative employed nontraditional advertising to reach the older teen audience, including messages broadcast through Channel One in schools and school-targeted publications such as Scholastic Teen Network and Weekly Reader.

## Parents

For parents, Campaign themes have included the following:

- **Your Child at Risk.** This platform sends the message to parents, “Every child is at risk for drug use, even yours.”
- **Parenting Skills, Personal Efficacy, and Monitoring.** This theme tells parents that they can learn simple skills to help their child avoid drugs, including communication and family management. Parents should know where their children are, whom they are with, and when they will be back. For much of Phase III of the Campaign, there has been a predominant and sometimes exclusive emphasis on this platform (see Chapter 3).
- **Perceptions of Harm.** This platform stresses that parents need to be aware of the harmful effects of inhalants and marijuana on their child’s life and future.

In early 2002, following the September 11th terrorist attacks, the Campaign launched a new message theme, Drugs and Terror, meant to stimulate discussion between parents and youth, and among youth, about the relationships between terrorist activities and drug money. The Drugs and Terror ads are intended to raise awareness about the possible connection between drug money and terrorist activities and to engage youth and influential adults in drug prevention.

In fall 2002 and spring 2003, new Drugs and Terror ads aired on television in two phases: September 2002 to November 2002, and December 2002 to May 2003. Both waves of the new Drugs and Terror messages were targeted to parents and other adults with strong influences on youth. The second wave included two advertisements that were first introduced during the 2003 Super Bowl broadcast. The television campaigns were supported by a limited national newspaper effort.

## The Marijuana Initiative – Parents

Recent campaign messages targeting parents messages have focused primarily on one main platform for mass communication: Parenting Skills, Personal Efficacy, and Monitoring. Between June 2002 and June 2003, nearly 85 percent of parent-targeted advertisements focused on this theme, with the vast majority targeting skills and efficacy (discussed in detail in Chapter 3). This focus continued the dominant platform from the previous periods of the parent campaign. Still an effort was made to add a marijuana-specific component to the parent campaign. Media channels for parent-targeted advertising include television, radio, magazines, newspapers, and banner ads online. Print ads were meant to debunk common myths about marijuana and are tagged with local organizations. Nontraditional advertising included a partnership with the National Football League, which hosted “Drug Awareness Weeks” to support the Marijuana Initiative. The effort included the airing of marijuana prevention ads in NFL stadiums and print ads in game-day programs.

The Marijuana Initiative also targeted parents with a Marijuana Awareness Kit, guides, and fact sheets on marijuana for both parents and youth, and a video focused on debunking myths about marijuana use. Each of these resources is available on the Internet at [www.mediacampaign.org](http://www.mediacampaign.org). According to the Campaign, specific multicultural materials targeted specifically to African American, Hispanic, Asian American, American Indian, Alaskan Native, American Samoan, Puerto Rican, and U.S. Virgin Island parents were implemented throughout 2002 and 2003.

### 1.3 Public Communications Activities

Although advertising is the cornerstone of the Media Campaign, nonadvertising activities are also considered important to Media Campaign success. With an annual budget for nonadvertising of approximately \$9.6 million, public relations contractor Fleishman-Hillard develops and coordinates such nonadvertising activities related to the Media Campaign. The Media Campaign is a comprehensive social marketing campaign that seeks to reach the audience directly and indirectly, through both traditional and nontraditional channels. It is designed to strengthen existing anti-drug efforts in communities, to generate talk among youth and parents about drug use, to give youth and parents the tools they need to pursue drug-free strategies such as resistance skills and parenting strategies, and to increase the salience of drugs as an issue generally. In short, nonadvertising Media Campaign activities are designed to foster or enhance an environment in which drug use is noticed, recognized as a problem, and discussed. In such an environment, advertising can be expected to have a greater and more lasting impact.<sup>3</sup>

#### Internet and Other Media Outreach

The Campaign’s public communication activities engaged in targeted media outreach efforts to encourage widespread coverage of the negative consequences of youth marijuana use throughout the Marijuana Initiative. The Campaign’s youth website, [www.freevibe.com](http://www.freevibe.com), was completely redesigned and relaunched in the spring of 2002. The site allows youth and other viewers to view information on a variety of drugs, access news on these drugs, and encourages youth to get involved by sharing their Anti-Drug. In addition, the website has recruited many popular movie stars and other celebrities to provide anti-drug testimonials, including Mandy Moore, Kate Hudson, Paul Walker, Anna Paquin,

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<sup>3</sup> Much of the material in this section was based on information given to the evaluators by the Campaign, particularly Fleishman-Hillard.

Amanday Bynes, Heather Graham, James Van Der Beek, Jessica Biel, Reese Witherspoon, Jennifer Love Hewitt, Heath Ledger, Beyonce Knowles, David Arquette, Matt Damon, Ashley Judd, Denise Richards, Lucy Liu, and more.

Marijuana Initiative Internet outreach efforts targeting youth have included interactive banner ads and online promotions to sites frequently visited by youth. According to Fleishman-Hillard, these efforts directed approximately 900,000 visitors per month to [www.freevibe.com](http://www.freevibe.com). Consistent with the Campaign's shift in focus toward older teens, [www.freevibe.com](http://www.freevibe.com) was modified to resonate with teens aged 14 to 16. Fleishman-Hillard reported that teens spent approximately 10 minutes per session on [freevibe.com](http://www.freevibe.com), while marijuana-focused content was the most popular area of [www.freevibe.com](http://www.freevibe.com).

Parent and other adult outreach also increased with the launch of the Marijuana Initiative. The parent web site ([www.theantidrug.com](http://www.theantidrug.com)) now includes more information specifically on marijuana. The Campaign's web site ([www.mediacampaign.org](http://www.mediacampaign.org)) targets community coalitions, youth serving organizations, and others by providing the "Marijuana Awareness Kit," which includes key research and facts about the risks of marijuana use. In addition, the web site features links and information about ordering marijuana resources, including a new marijuana-specific parent pamphlet, "Wake-up to the Risks of Marijuana: A Guide for Parents," as well as suggestions for local outreach and activities, news releases, op-ed pieces, fact sheets, feature stories, PSA scripts, and downloadable media ads. For summer 2003, the Campaign held a press conference and conducted special parent outreach drawing attention to summer as a high risk time for teens to initiate marijuana use. The initiative included new content on the [www.theantidrug.com](http://www.theantidrug.com) web site, outreach to print and broadcast media, and mass emails sent to both subscribers to the Campaign's parenting tips list and to other organizations. The Campaign also relaunched the Spanish-language web site, [www.laantidroga.com](http://www.laantidroga.com), in September 2002 with extensive drug and substance abuse prevention information and bi-monthly email parenting tips.

The Campaign has taken an initiative in preventing marijuana use by youth through the cable television channel Court TV. The Campaign, in conjunction with Court TV with support from Media Campaign partner Cox Communications, held a teen summit in Oklahoma City to hear what teens had to say on marijuana and its effects. More than 140 youth and local experts participated in the summit. The event was moderated by Court TV anchor James Curtis and taped as part of Court TV's national Choice and Consequences public affairs initiative. Highlights of the summit aired nationally on Court TV. At the summit, the participants discussed a wide range of marijuana-related topics. These included teens' current perceptions about marijuana use, how popular the drug is among teens today, and the consequences of smoking the drug. Some teens also shared personal experiences about being exposed to the drug and not preferring to smoke marijuana.

To generate press coverage of the Marijuana Initiative, the Campaign continued to implement a media outreach effort. Activities conducted between summer 2002 and June 2003 included 2 press events with government and non-governmental organization leaders; 18 briefings with regional reporters about the consequences of youth drug use; 6 radio interviews with experts on youth drug use; 3 special media briefings for multicultural media outlets; 3 video news releases on the risks of marijuana use; and 7 anti-drug articles that were distributed to 10,000 community newspapers that serve rural and minority communities. Fleishman-Hillard reported that media outreach efforts resulted in placement of youth and marijuana-related topics in major national print media and large-market daily newspapers, television coverage in the largest media markets, articles in smaller and mid-size market community papers, and features in multicultural publications and broadcast media. They



have reported that 230 newspapers-in-education programs with a total circulation of 6.1 million have published Campaign-developed materials.

## Community Outreach

Previous semiannual reports have noted that the Media Campaign had formed partnerships with an extensive list of national and local organizations already involved with drug prevention: Community Anti-Drug Coalitions of America (CADCA), National Association of State Alcohol and Drug Abuse Directors, Prevention through Service Alliance, National Drug Prevention League, Youth Service America, ASPIRA, United Indian Tribal Youth Corporation, National Middle School Association, Drug Abuse Resistance Education (D.A.R.E.), National Association for Children of Alcoholics, Child Welfare League of America, National Institute on Alcohol Abuse and Alcoholism, Center for Substance Abuse Treatment, National Association of Student Assistant Professionals, National Inhalants Prevention Coalition, the National Guard Bureau, the Centers for Disease Control and Prevention (CDC), and the National Association of Student Assistance Professionals. The Campaign also has collaborated with a variety of community groups, such as the National Education Association (NEA), Boy Scouts of America, and Girl Scouts of America, and multicultural organizations (e.g., the Boys and Girls Clubs of America, PowerUP, and 100 Black Men). Partnerships with these types of organizations are intended to increase the amount of drug-related information in communities, including information about the negative consequences of drug use and how to resist drugs.

Working with faith-based institutions, the Campaign has developed materials to help youth leaders incorporate substance-abuse messages and up-to-date information on drug prevention into existing programs. A substance abuse prevention guide, titled “Pathways to Prevention,” was developed for faith communities. The Campaign provided the Congress of National Black Churches with parenting and Campaign materials to distribute at their substance abuse prevention conference. Also, 8,200 parenting brochures were forwarded to United Church of Christ. Fleishman-Hillard reported that a total of 1 million brochures have been distributed.

The Campaign continued to work closely with community organizations in the second half of 2002 and the first half of 2003. The Campaign partnered with the Community Anti-Drug Coalitions of America (CADCA) to create a brief video and resource guide on marijuana risks for use by community coalitions to support the Marijuana Initiative. The Campaign also cultivated relationships with major organizations, including the National PTA, the American Academy of Pediatrics, the American Medical Association, the American Automobile Association, the American Lung Association, the American Psychiatric Association, the YMCA, and many multicultural and faith-based organizations, to promote and distribute a new brochure for parents on strategies to talk with children specifically about marijuana. In addition, the Campaign partnered with youth-member organizations SADD and PRIDE throughout the Marijuana Initiative to issue a “wake-up” call to parents in seven cities and conducted teen summits with local teens and drug experts in Atlanta and Oklahoma City in conjunction with Court TV. Community briefings were held in 10 cities to brief and engage local leaders in the Marijuana Initiative.

A mission for the Campaign, launched in April 2003, involved linking interested individuals and community groups to local anti-drug coalitions. The ONDCP and the Ad Council attained this goal through PSAs, which referred individuals to a web site and a toll-free number. Eligible anti-drug coalitions can register on the site ([www.helpyourcommunity.org](http://www.helpyourcommunity.org)) at no cost, while individuals can use

the site to search for coalitions in their local area. The toll-free number for the initiative is 1-877-KIDS-313.

## Entertainment Industry and Corporate Outreach

The Campaign continued to foster its relationship with the entertainment industry in the summer of 2002 to support the Marijuana Initiative. The Campaign initiated two major outreach programs for entertainment industry leaders and writers to encourage accurate and convincing portrayals of the consequences of drug use. The Campaign convened six roundtable discussions between July 2002 and June 2003 with more than 150 representatives from the entertainment industry, including panels co-hosted by representatives from FOX, ABC, and HBO. Expert briefings for industry executives and writers were also scheduled bi-monthly in New York and Los Angeles on issues surrounding youth substance abuse.

Launched in December 2001, [www.drugstory.org](http://www.drugstory.org), the Campaign's web site for television and screenwriters, is a research and knowledge source to obtain facts on drugs and their effects, expert contact information, as well as access to first-person accounts and feature stories. The Campaign collaborated with the National Institute on Drug Abuse (NIDA), the Drug Enforcement Administration, the Writers Guild Foundation, medical consultants, treatment and legal experts, and journalists to develop this resource. According to Fleishman-Hillard, more than 500,000 visitors visited the site during the course of the year.

The Corporate Partnership Initiative, launched in 2001, was designed to enhance the Media Campaign by engaging the financial and communications resources of America's businesses. The initiative focused on recruiting businesses and employers to include anti-drug information in their own advertising, outreach, and internal communications. This strategy attempts to associate drug prevention messages with high visibility brands that have loyalty among Campaign audiences and increase the overall visibility of anti-drug information. As of June 2003, according to Fleishman-Hillard, more than 40 companies have committed to carrying out drug prevention messages through their own corporate advertising and in the work place. For example, several airlines, including US Airways, Northwest Airlines, and United Airlines, include Campaign advertisements in video programming that airs during flights. Retail outlets, including Safeway and TJ Maxx, have included information on youth drug use prevention in their own advertising and in-store communications. Westfield Corporation Inc., one of the nation's largest owners and operators of regional shopping centers, produced and distributed cards with parenting tips for parents in its malls during the 2002 holiday season. The Campaign partnered with DKNY Jeans to produce one million copies of an anti-drug calendar for distribution through the popular magazine CosmoGIRL.

The Campaign's @Work program, a collaboration with the Society for Human Resource Management, was designed to take advantage of the workplace as an avenue for reaching parents and other adult influencers with youth drug prevention information. The program provides Campaign resources and materials to employers for distribution to their employees. The @Work web site offers employee newsletter articles, email parenting tips, and posters and brochures on drug prevention formatted for easy adaptation and customization by employers. According to Fleishman-Hillard, more than 50 companies, associations, Federal agencies, nonprofit organizations, and union/labor organizations have participated in the @Work program, including Monster.com, Blue Cross/Blue Shield, Compaq, the U.S. Department of the Interior, the American Federation of Government

Employees, the American Federation of State, County and Municipal Employees, and the National Council of La Raza.

In addition, as part of the @Work program, employers can call 1-800-788-2800 to obtain and distribute free materials such as “Keeping Your Kids Drug-Free: A How-To Guide for Parents and Caregivers,” a parenting brochure developed with the American Academy of Pediatrics (AAP), and the National PTA. This brochure was originally distributed by AAP in the summer of 2001 to its 55,000 members, and the PTA sent sample copies to their 3,000 leaders nationwide encouraging them to order additional copies. Other partners in this program include the National Families in Action, the National Family Partnership, the National Fatherhood Initiative, Parenting Coalition International, and the National Asian Pacific American Families against Substance Abuse. The brochure continues to be available to employers as well as parents through the websites [www.mediacampaign.org](http://www.mediacampaign.org) and [www.theantidrug.com](http://www.theantidrug.com).

## 1.4 Administrative Structure for the Evaluation

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

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

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

Westat and the Annenberg School for Communication are conducting the evaluation under contract to NIDA. The funding for the evaluation is provided by ONDCP from the appropriation for the Media Campaign. NIDA prepared a tentative research design based on a meeting with experts in the field, and then contracted with Westat and its subcontractors to fully develop the design and carry out the study. Westat has general responsibility for all aspects of the project and, in particular, for supervising all aspects of sample design, data collection, and data preparation. The Annenberg School for Communication at the University of Pennsylvania, the subcontractor, has lead responsibility for study design, data analysis, and report preparation. A second subcontractor for the first 2 years of the project, the National Development and Research Institute, provided expertise in the development of

the drug usage questions and assisted in the preparation of the first special report on historical trends in drug use.

## 1.5 Structure of the Report

The report is organized in six chapters and five appendices, along with an extensive set of detail tables. A version of the NSPY can be found on the NIDA web site at <http://www.nida.nih.gov/DESPR/Westat/index.html> and on the Campaign web site at <http://www.mediacampaign.org>.

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

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

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

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## 2. Summary of Evaluation Plan

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

### 2.1 Models for Media Campaign Action

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

#### 2.1.1 Focus and Scope of the Evaluation

Although there are literally hundreds of questions that the evaluation can and will answer, four overarching questions form the central focus of the evaluation: (1) Is the Media Campaign getting its messages to the target populations? (2) Are the desired outcomes going in the right direction? (3) Is the Media Campaign influencing changes in the outcomes? (4) What is learned from the overall evaluation that can support ongoing decisionmaking for the Media Campaign? This set of questions is applied to the evaluation of the youth-directed campaign, which in this report is largely restricted to the Marijuana Initiative, and to the evaluation of the parent-focused campaign, which continues to consider the full Phase III campaign.

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

- To measure changes in drug-related knowledge, attitudes, beliefs, and behavior in youth and their parents;
- To assess the relationship between changes in drug-related knowledge, attitudes, beliefs, and behavior and self-reported measures of media exposure, including the salience of messages;
- To assess the association between parents' drug-related knowledge, attitudes, beliefs, and behavior and those of their children;
- To assess changes in the association between parents' drug-related knowledge, attitudes, beliefs, and behavior and those of their children that may be related to the Media Campaign; and

- To compare groups of people with high exposure to other groups with low exposure.

The circumstances of the Media Campaign present a serious challenge to evaluation. Because the Media Campaign goal is to reach out to youth all across America to help them avoid illicit drug exposure, it was not possible to use experimentation to evaluate the Media Campaign.

Experimentation would require conducting the Media Campaign in some media markets but not in others. Instead, the Media Campaign is evaluated by studying natural variation in exposure to the Media Campaign and how this variation appears to correlate with outcomes predicted by the theoretical model for the Media Campaign. This means comparing groups of people with high exposure to other groups with low exposure. The evaluation has been designed to make it very sensitive to variation in Campaign exposure. The primary tool for the evaluation is a household survey, the National Survey of Parents and Youth (NSPY).

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

## 2.1.2 Model of Media Campaign Influence

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

## 2.1.3 Overview of the Figures

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



Figure 2-A. Overall model of Media Campaign influence

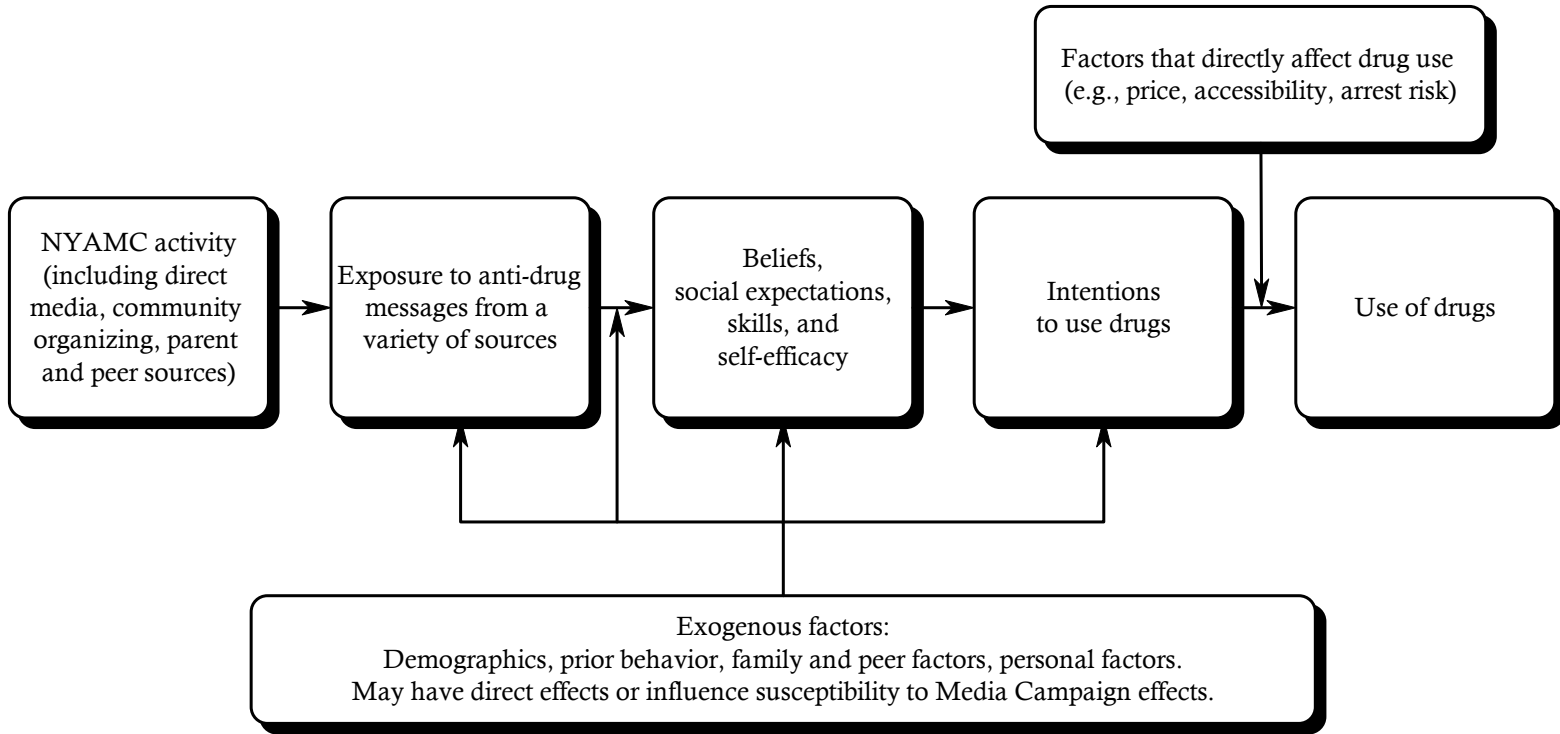
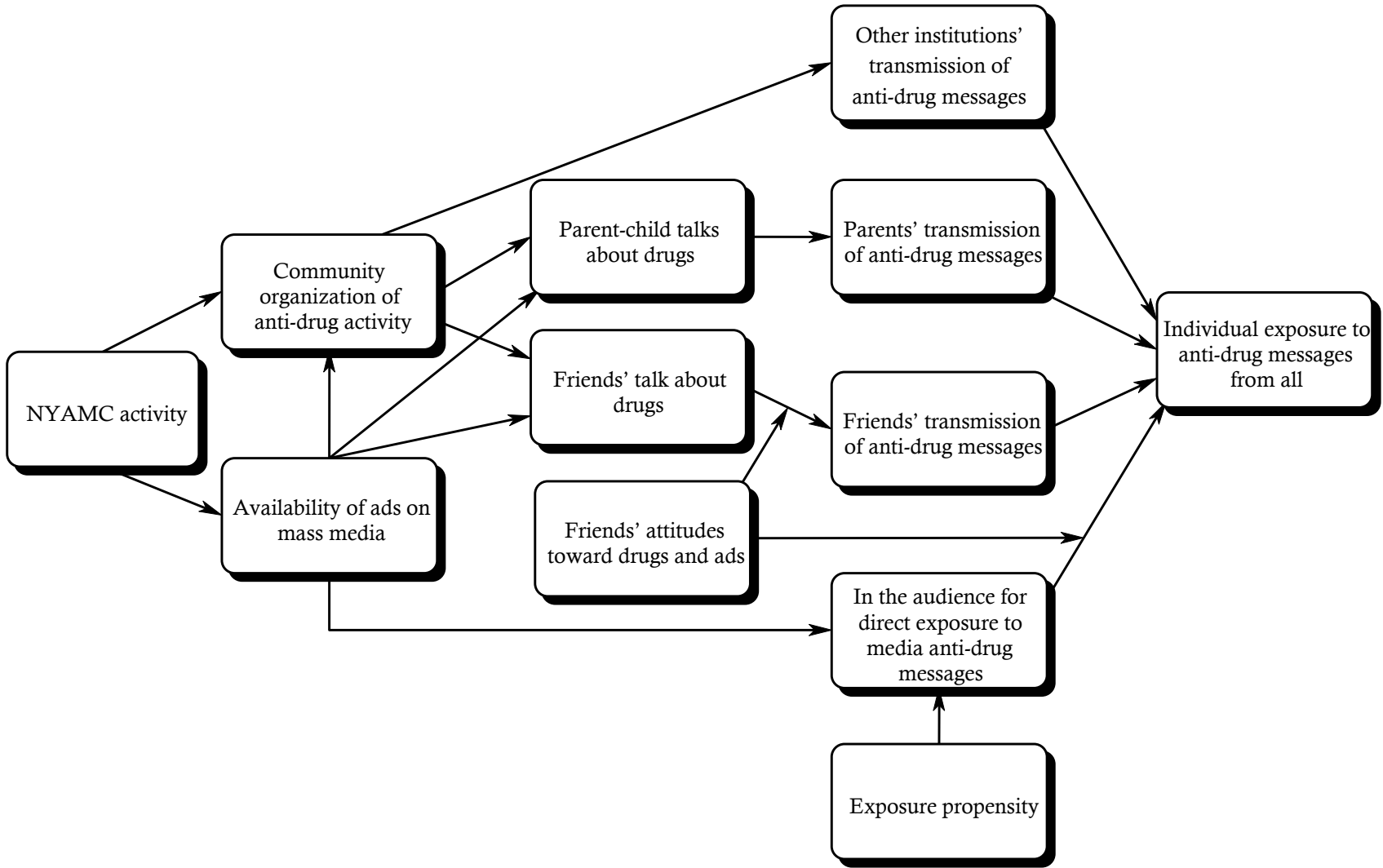
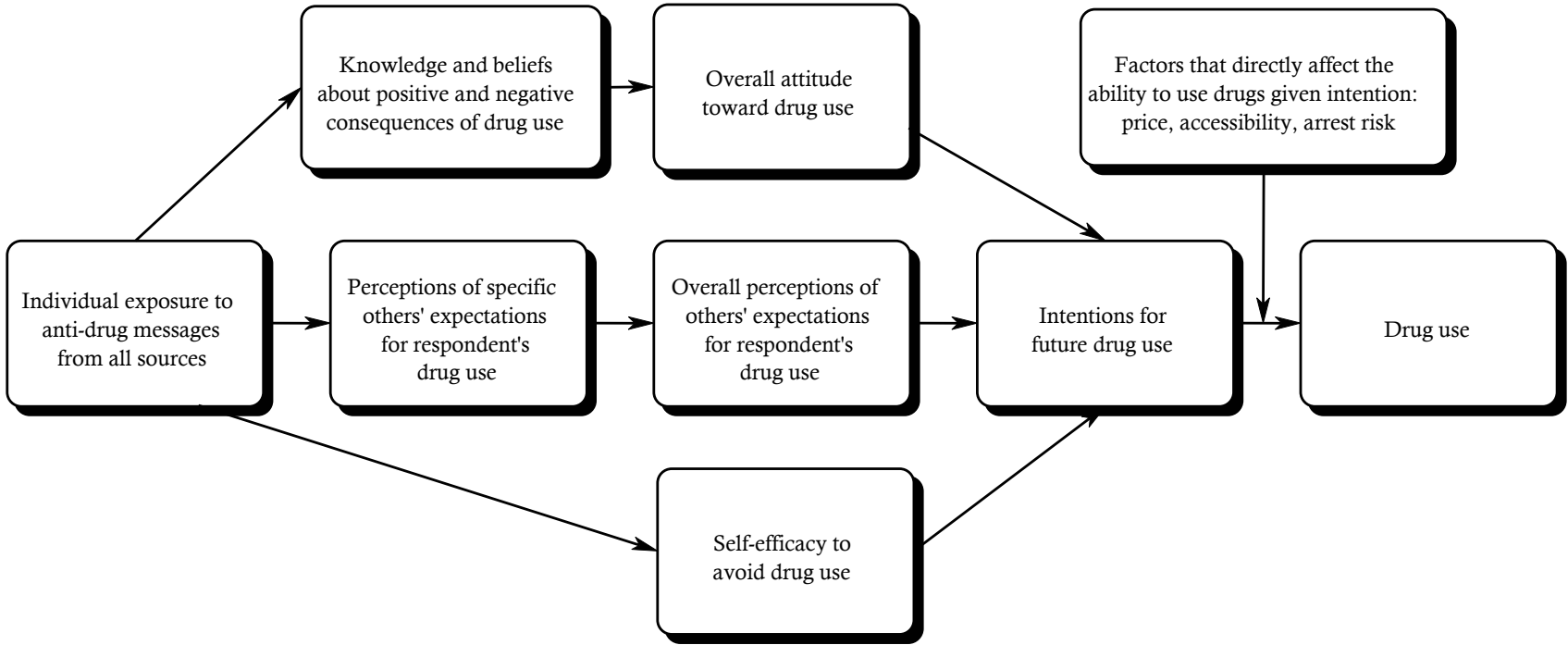


Figure 2-B. Model of influences on exposure to anti-drug messages



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

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



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

## Audience Exposure

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

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

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

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

## Influence of Exposure on Behavior

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

Although Figure 2-C specifies drug use as its outcome, use of that general term should be understood as shorthand. The four distinct behaviors on which the Media Campaign originally planned to focus were: (1) trial use of marijuana, (2) trial use of inhalants, (3) transition from trial to occasional or regular use of marijuana, and (4) transition from trial to occasional or regular use of inhalants. In 2001, the Campaign focused almost exclusively on marijuana behaviors, however. Each of these behaviors may be influenced by different factors. For example, fear of parental disapproval may be a particularly important determinant of the trial use of marijuana, whereas a more important determinant of regular marijuana use may be concern about becoming dependent on the drug. For this reason, each behavior and its determinants are measured distinctly.

## External Factors

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

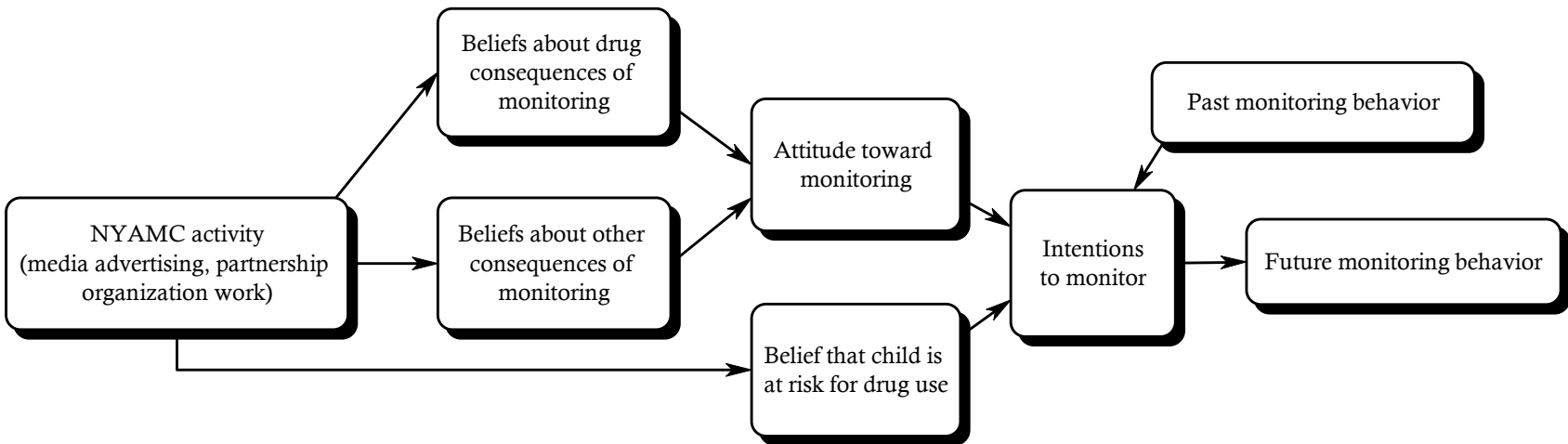
External factors that will be considered in the evaluation are parental monitoring, family functioning, friends' attitudes and behaviors, academic success, ambition, religious involvement, and prior drug involvement. Because it is argued that sensation seeking (Section 2.3.4) is an important determinant,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

## Parent Component of the Media Campaign

The Media Campaign seeks to address three distinct parent behaviors, each of which is modeled separately in Figure 2-D. The original parent objectives related to three parent behaviors: (1) parent-child talk about drugs, (2) parental monitoring of youth behavior, and (3) support for community anti-drug activity. In addition, during the early period of Phase III, the Campaign encouraged parents to increase their engagement with their children's lives by encouraging the parents to do more fun activities with their children. Through June 2003, the largest emphasis of the Campaign has been on parent monitoring, including the idea that parents are able to intervene. Given their relative importance in the Media Campaign, the models for the first two behaviors, talk and monitoring, are presented in greater detail. In all models, a box simply labeled "NYAMC activity" represents the Media Campaign, much as it is described in Figure 2-B.

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

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



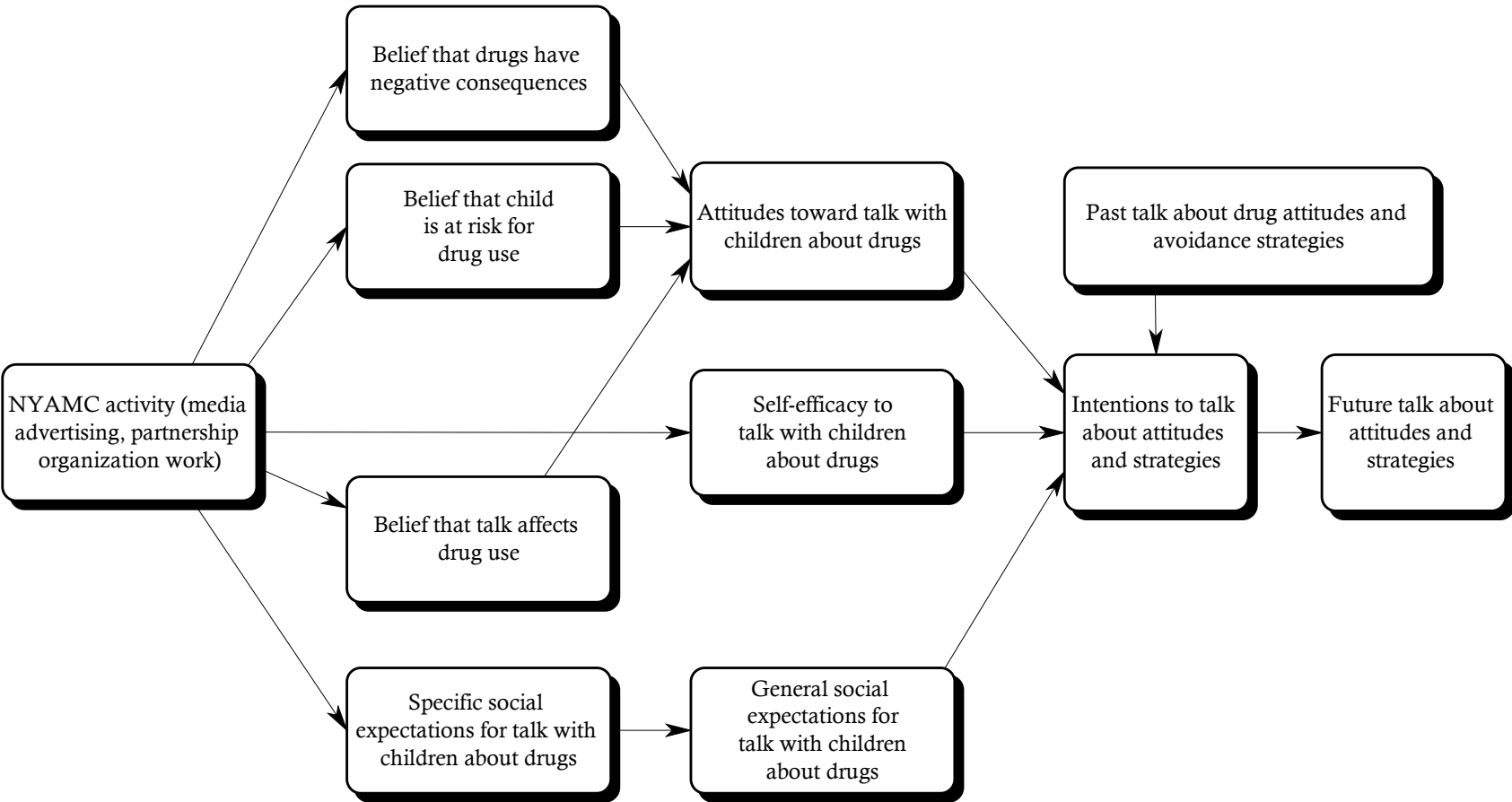
A decision to increase monitoring may be seen by a parent as having both positive and negative consequences. Media Campaign activities are presumed to affect both beliefs in the positive consequences of monitoring and the self-efficacy of parents to engage in monitoring behavior. Model B in Figure 2-E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

### Routes of Influence

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

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

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





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

## 2.2 Sample Design and Data Collection Methodology

The data in this report are based on the initial data collection (Waves 1, 2, and 3) of NSPY as well as longitudinal data collection (Waves 4 through 7) of data from eligible sample members in the initial waves. Waves 1, 2, and 3 are referred to collectively as the initial recruitment phase (Round 1). Waves 4 and 5 are referred to as the first followup phase (Round 2), while Waves 6 and 7 are referred to as the second followup phase (Round 3). The data collection period for the waves were November 1999 through May 2000 for Wave 1; July 2000 through December 2000 for Wave 2; January 2001 through June 2001 for Wave 3; July 2001 through December 2001 for Wave 4; January 2002 through June 2002 for Wave 5; July 2002 through December 2002 for Wave 6; and January 2003 through June 2003 for Wave 7. The number of completed interviews for youth aged 9 to 18, parents, and youth-parent dyads are given for each wave in Table 2-A. (See Detail Tables 2-1, 2-2, and 2-3.)

**Table 2-A. Completed interviews by wave**

Age group	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7
Youth aged 9-18	3,299	2,362	2,458	2,477	4,040	2,267	3,587
Parents	2,284	1,632	1,680	1,752	2,882	1,640	2,621
Youth-Parent Dyads	3,108	2,210	2,305	2,354	3,876	2,157	3,422

## 2.2.1 Sampling

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

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

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

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

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

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

For Wave 6, participants were located and eligibility was determined for approximately 97 percent of the parents and 97 percent of the youth who completed an interview in Wave 4. Among those youth who were still eligible in the second followup round, the longitudinal interview response rate was about 93 percent. Among those parents who were still eligible in the second followup round, the longitudinal interview response rate was 93 percent.

Finally, for Wave 7, participants were located and eligibility was determined for approximately 96 percent of the parents and youth who completed an interview in Wave 5. Among those youth who were still eligible in the second followup round, the longitudinal interview response rate was about 92 percent. Among those parents who were still eligible in the second followup round, the longitudinal interview response rate was 91 percent.

The overall reduction in the number of completed youth interviews between Round 1 (Waves 1, 2, and 3) and Round 2 (Waves 4 and 5) was roughly 20 percent (see Detail Table 2-1). However, the corresponding reduction for the 12- to 18-year-old age group was negligible as 10- to 11-year-olds in the baseline samples moved in to replace youth who aged out of their respective waves in Round 2. Moreover, as a result of the generally higher followup response rates in Round 3, the number of completed interviews with youth 12-18 years of age actually increased between Round 2 and Round 3. Thus, for cross-sectional comparisons of the 12- to 18-year-old age groups (where age is determined as of the time of the respective followup interview), there was relatively little loss in statistical precision due to sample attrition. For longitudinal comparisons, however, which require completed interviews for eligible youth at two points in time, the overall reduction in sample size was about 16 percent between Rounds 1 and 2 (not including youth who were expected to age out prior to the first followup) and another 13 percent between Rounds 2 and 3. The reduced sample size for longitudinal comparisons between Rounds 1 and 2, for example, corresponds roughly to an increase of about 9 percent in detectable differences. In other words, a difference that would be detectable with 80 percent power if there were no sample losses would now have to be larger by a factor of 1.09 to be deemed statistically significant. A similar increase in detectable differences also can be expected before Rounds 2 and 3.

## 2.2.2 Extended Interview Methods and Content

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

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

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

The computer played back a prerecorded reading of the questions rather than just having the respondent read the screen in order to facilitate the involvement of slow readers and cognitively-impaired youth. Youth and parents who did not wish to hear the questions read aloud could remove the headphones and complete the interview by simply reading and answering the questions on the screen. A touch-sensitive screen was used so that no typing skills were required. To help the respondent understand multiple choice questions, the computer highlighted the response alternatives while it recited them. The interview could take place in either English or Spanish. This approach was highly successful. In Wave 1, just 0.4 percent of sample youth and parents were willing but unable to complete the questionnaire for reasons of physical or mental disability or because they could speak neither English nor Spanish; in Wave 2, the percentage was 0.7 percent of the parents and 0.4 percent of the youth; in Wave 3, the percentage was 0.6 percent of the parents and 0.3 percent of the youth; in Wave 4, the percentage was 0.6 for parents and 0.0 for youth; in Wave 5, the percentage was 0.0 for both parents and youth; and in Waves 6 and 7, the percentage was 0.4 for parents and 0.0 for youth.

The youth questionnaire included sections on basic demographics; school and religion; media consumption; extra-curricular activities; personal usage of cigarettes, alcohol, marijuana, and inhalants; expectations for future use of marijuana; feelings of self-efficacy to resist future offers of marijuana use; knowledge of friends' and classmates' use of marijuana; receipt of marijuana offers; family functioning; anti-social behavior of self and friends; approval/disapproval and perceived risk of marijuana and inhalants; perceived ease of parental discussion on drugs and perceived parental reactions to personal drug use; past discussions about drugs with parents, friends, and others; awareness of drug-related media stories and advertising; recollection and assessment of specific Media Campaign-sponsored anti-drug advertisements on TV and radio; Internet usage; and participation in drug education classes and programs. In Wave 3, questions were added to the teen questionnaire concerning Ecstasy trial and use, recollection of the "branding" statement in specific advertisements, and doing fun things with parents. In Wave 4, additional Ecstasy questions were added to the teen interview concerning the intentions to use, perceived expectations of use by peers, and attitudes of use, including approval/disapproval of use and perceived harm of use. In Wave 5, a question about Campaign banner ads on the Internet was added to the teen instrument and the two ringer brand phrases were replaced in the teen branding question. In Wave 6, the questionnaires for youth were essentially the same as during Wave 5, except for the questions pertaining to the evaluation of the television ads. Prior to Wave 6, respondents were asked only followup evaluative questions about the first three television ads that they were shown and recalled having seen or heard in the past. In Wave 6, the youth questionnaires were changed and respondents were asked to evaluate the first three

television ads they were shown, regardless of whether they recalled having seen the ads in the past. In Wave 7, no changes were made to the youth questionnaires.

The parent questionnaire included sections on media consumption; communication with child; monitoring of child; family functioning; knowledge about child's use of cigarettes, alcohol, marijuana, and inhalants; personal participation in community drug prevention activities; awareness of drug-related media stories and advertising; recollection and assessment of specific Media Campaign-sponsored anti-drug advertisements on TV and radio; personal usage of cigarettes, alcohol, marijuana, and inhalants; basic demographics; and education, income, and religion. When parents were being asked about their children, each such question was targeted to a specific sampled child and repeated for every sampled child in the household. Other questions that were not about their children were, of course, asked only once. In Wave 3, questions were added to the parent questionnaire about recollection of the "branding" statement in specific advertisements, and the parent's perception of the efficacy of talking to children about drugs. In Wave 4, there were no changes to the parent instrument. In Wave 5, the branding question was rephrased to ask about the correct parent brand and one of two "ringer" brands, mirroring the format of the teen branding question. Other additions to the parent instrument included a question about Campaign banner ads on the Internet; a question that asked about the presence and number of youth in the household in the age categories of interest; a question on parental perceptions of harm from use of marijuana, inhalants, and Ecstasy; and a question on the likelihood of youth use of inhalants and Ecstasy. In Waves 6 and 7, no changes were made to the parent questionnaire.

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

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

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

In Wave 3, a total of 22 TV ads and 27 radio ads were aired during this wave and shown to respondents. The TV ads included 10 (7 in English and 3 in Spanish) aimed at parents and 12 (9 in English and 3 in Spanish) aimed at youth. The radio ads included 16 (12 in English and 4 in Spanish)

aimed at parents and 11 (8 in English and 3 in Spanish) aimed at youth. In Wave 3, six parent radio ads were played that were audio duplicates of a television ad. No youth radio ad was a duplicate of a television ad.

In Wave 4, a total of 16 TV ads and 19 radio ads were aired during the wave and shown to respondents. The TV ads included seven (3 in English and 4 in Spanish) aimed at parents and nine (6 in English and 3 in Spanish) aimed at youth. The radio ads included 9 (4 in English and 5 in Spanish) aimed at parents and 10 (8 in English and 2 in Spanish) aimed at youth. In Wave 4, seven parent radio ads and one youth radio ad were played that were audio duplicates of television ads.

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

In Wave 6, a total of 23 TV ads and 11 radio ads were aired during the wave and shown to respondents. Four TV ads were targeted at both parents and youth and were shown to both groups. The TV ads included 11 (9 in English and 2 in Spanish) aimed at parents and 16 (15 in English and 1 in Spanish) aimed at youth. The radio ads included five (4 in English and 1 in Spanish) aimed at parents and six (5 in English and 1 in Spanish) aimed at youth. In Wave 6, four parent radio ads and two youth radio ads were played that were audio duplicates of television ads.

In Wave 7, a total of 29 TV ads and 13 radio ads were aired during the wave and shown to respondents. Two TV ads were targeted at both parents and youth, and were shown to both groups. The TV ads included 18 (16 in English and 2 in Spanish) aimed at parents and 13 (11 in English and 2 in Spanish) aimed at youth. The radio ads included six (5 in English and 1 in Spanish) aimed at parents and seven (7 in English and 0 in Spanish) aimed at youth. In Wave 7, five parent radio ads and one youth radio ad were played that were audio duplicates of television ads.

Appendix D contains a short description of each ad by wave. A random sample of the ads that were scheduled to air in the two calendar months preceding the month of interview were selected for each respondent.<sup>1</sup> As it turned out, air dates sometimes changed between the time that the sampling software was initiated and the date of interview. For analysis purposes, exposure to ads were counted only when the ad aired during the 60 days immediately preceding the date of interview. The interview also contained a ringer TV ad—an ad that had not actually been shown, or a spill TV ad—an ad that had been shown but was targeted at the other (parent or youth) audience. Youth were shown parent TV ads to assess their spill effects and vice versa. This was done to allow study of the accuracy of ad recall. Some analyses of the ringer ad results were presented in Appendix C of the Second Semiannual report, which presented strong evidence for the validity of the NSPY approach to measuring ad recall.

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

### 2.2.3 Weighting

Weights were developed for analysis to reflect differential probabilities of selection, differential response rates, and differential coverage. In Waves 2 and 3, youth in the age range of 12 to 13 and youth in the age range of 9 to 11 had the same probability of selection whereas youth in the age range 14 to 18 had a smaller probability of selection. In Wave 1, youth in the 12 to 13 age range had the largest probability of selection since they were oversampled. Youth in the 9 to 11 age range had somewhat smaller probabilities of selection, and youth in the 14 to 18 age range had the smallest probability of selection. Youth in the 14 to 18 and 9 to 11 age ranges with siblings in the 12 to 13 age range had higher probabilities of selection than those with no such siblings. Youth with siblings in the same age range had smaller probabilities of selection since just one youth was selected per age range. Parents with spouses had smaller probabilities than single parents since generally only one parent was selected per household. For Waves 4 through 7, no new youth were selected. However, a new parent could be selected if the original sampled parent was no longer eligible for interview.

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

In this report, coverage is defined to be the NSPY sample-based estimate of the number of persons in the target population prior to poststratification to the corresponding estimate based on Census/CPS data. Coverage rates varied geographically and by age. Table 2-B shows coverage rates by age for the three initial recruitment waves. Overall, coverage was slightly less than 70 percent for all three waves with somewhat higher coverage rates for the 12 to 13 age group, and lower coverage rates for the 14 to 18 age group. It would appear, based on Census Bureau estimates, that screener respondents with children in the desired age range chose not to reveal the presence of their children. Perhaps this was an easy way to refuse participation in the survey without being impolite. To compensate for this as best as possible, the weights were adjusted so that estimates of sample youth were consistent with those from U.S. Census Bureau estimates by gender, age group, and race/ethnicity. The U.S. Census Bureau population estimates were derived using data from the Current Population Survey (CPS) and the

**Table 2-B. Coverage rates by age**

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

Decennial Census. The January 2000 CPS data were used to adjust Wave 1 and October 2000 data was used to adjust Wave 2. However, for Wave 3, the average of March 2001 and April 2001 CPS data was used for adjustment. Similarly in Wave 4, the average of September 2001 and October 2001 CPS data was used. For Waves 5, 6, and 7, respectively, the average of March 2002 and April 2002 CPS data, September 2002 and October 2002 CPS data, and March 2003 and April 2003 CPS data was used in the adjustment.

The ordinary CPS totals could not be used in the adjustment described above because the CPS counts youth in dormitories as residing at their parents' homes whereas NSPY excludes such youth.

Therefore, the CPS totals were adjusted to remove estimated counts of youth living in dormitories. The required counts were obtained from a special tabulation of the 1990 Decennial Census PUMS (Public Use Microdata Samples), which includes counts of youth living in dormitories in April 1990. It should also be noted that the CPS is itself adjusted for undercoverage and also for undercoverage in the Decennial Census. For example, in October 1994, the CPS coverage rate for youth aged 15 was estimated to be 89.5 percent (Montaquila, et al., 1996).

## 2.2.4 Confidence Intervals and Data Suppression

Confidence intervals have been provided for every statistic in the Detail Tables. These intervals indicate the margin for error due to the fact that a sample was used to derive the survey-based estimates rather than a census. If the same general sampling procedures were repeated independently a large number of times, and a statistic of interest and its confidence interval were recalculated for each of those independent samples, the “true” value of the statistic would be contained within 95 percent of the calculated confidence intervals.

The confidence intervals reflect the effects of sampling and of the adjustments that were made to the weights. They do not generally reflect measurement variance in the questionnaires. The intervals were calculated using variance estimates derived by replication techniques. In brief, subsamples of the full sample (referred to as “replicates”) were identified and put through the same estimation procedures that were applied to the full sample. The variation among the replicate estimates provides an estimate of the variance of the full-sample estimate. The estimated variances were then used to construct the required confidence intervals. Details on how the confidence intervals were derived may be found in Appendix A.

Some estimates in the Detail Tables are suppressed. This was done when the reliability of a statistic was poor. Reliability was measured in terms of the sample size and the width of the confidence interval. Estimated proportions near 0 percent and 100 percent were more likely to be suppressed than other estimates. The exact criteria for this suppression are given in Appendix A.

## 2.2.5 Exposure Index and Imputation of Ad Recall

Because there were more ads being aired than could be reasonably shown to every survey respondent, a sample of ads was drawn. As noted in Section 2.2.2, the sample was not a simple random sample of ads. Additional ads were selected and shown to African American respondents and bilingual respondents. In order to create a measure of ad recall that was consistent across race and language groups, the decision was made to impute recall for all ads that could have been shown to the respondent but were not. The imputation was based on drawing respondents from similar pools and transferring values in what is known as a hot-deck imputation. The donor pools were defined in terms of general recall of anti-drug advertisements (measured prior to showing any specific ads), cable subscription (yes/no), and the length of time the ad had been on the air prior to the interview. If the ad had not been aired at all within the 60 days preceding the interview, it was not included in the calculations. The imputation procedures are fully presented in Appendix E, Section E.3.3.

## 2.2.6 Future Waves of Data Collection

The NSPY is a two-phase design. During the first phase, the recruitment phase, eligible youth and parents were enrolled in the study and interviews were conducted. The recruitment phase (Waves 1 through 3) consisted of three national cross-sectional surveys lasting about 6 months each. During the



second phase—the followup phase, Waves 4 through 9—parents and youth who participated in the recruitment phase are followed and, if determined eligible, are interviewed three additional times during the followup period. Wave 1 participants were reinterviewed for the first and second time in Waves 4 and 6 and will be reinterviewed again in Wave 8. Wave 2 and Wave 3 participants were reinterviewed during Wave 5 and Wave 7 and will be reinterviewed again in Wave 9. Followup intervals can range from 6 to 24 months, depending on the participant’s situation. In total, participants can be interviewed up to four times over the study period. Combining the initial data collection and followup phases, there will be nine 6-month waves from which national estimates are prepared. This report contains data from Waves 1 through 7.

## 2.3 Sample Description

This section presents the youth and parent sample sizes for Waves 1 through 7 and describes the characteristics (i.e., race/ethnicity, sensation seeking, risk score, and past marijuana usage) used to define various subsets of the sample.

### 2.3.1 Youth

Detail Table 2-1 shows the sample size in Waves 1 through 7 for youth by age and other characteristics. The total Wave 1 sample size of 3,299 youth is nearly evenly split among the three targeted age groups (i.e., 9-11, 12-13, and 14- to 18-year-old age groups). The Wave 2 sample size of 2,362 is larger in both the 14 to 18 age group and the 9 to 11 age group. The sample size was designed to be larger for the youth aged 14 to 18 because larger design effects were anticipated for this age domain. The Wave 3 sample size of 2,458 is larger in the 9 to 11 age group than for the remaining two age groups. For Waves 4 through 7, the age distributions are different from that in the corresponding recruitment waves because of the aging of the sample. In Waves 1 through 3, the 14- to 18-year-olds had accounted for slightly over 50 percent of the sample whereas in Wave 4, 1,391 of the 2,477 youth (i.e., about 56%) were in the 14 to 18 age range. In Wave 5, about 46 percent of the 4,040 responding youth were in the 14- to 18-year-old age group. By Waves 6 (the second followup of Wave 1) and 7 (the second followup of Waves 2/3), the percentages of responding youth in the 14- to 18-year-old age group were 67 percent and 58 percent, respectively.

Many of the tables also show estimates for youth aged 14 to 15 and for youth aged 16 to 18. Such estimates are less reliable than those for broader age groups because of the smaller sizes. For example, the sample sizes for the 14- to 15-year-old and 16- to 18-year-old age groups are only 551 and 609 for Wave 1, 394 and 387 for Wave 2, and 376 and 380 for Wave 3. However, as the sample ages, the numbers in these age groups increase considerably: 806 and 585 for Wave 4, 1,009 and 854 for Wave 5, 791 and 730 for Wave 6, and 1,142 and 938 for Wave 7. Thus, when the sample is broken down by additional demographic variables such as gender or race, separate detail for the finer age breaks is not always possible.

The estimated number of eligible 12- to 18-year-old youth in the nation was 26.9 million in Wave 1 and increased to 28.6 million by Wave 7. As mentioned above, this excludes youth in institutions, group homes, dormitories, and other types of group housing. Detail Table 2-1 also shows breakdowns of the sample and the corresponding population estimates by gender, race/ethnicity, risk score, sensation seeking, and use of marijuana. Some elaboration of the methods used to define these breakdowns are given in Sections 2.3.2 through 2.3.5.

## 2.3.2 Race/Ethnicity

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

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

For those who chose more than one category, there was a followup question to pick just one. For those who could not pick just one, interviewer observation was used. Separate detail is not shown in any of the tables for the last three categories because of the low reliability associated with small sample sizes. The total number of interviewed youth who are Asian, Native Hawaiian, other Pacific Islander, American Indian, or Alaska Native was just 114 for Wave 1, with about 38 per age range. For Wave 2 the total was 89 youth and for Wave 3 the total was 115. Within age ranges there were about 30 for each age range for Wave 2 and from 30 to 44 in the age ranges for Wave 3. In Wave 4, the total dropped to 82 out of the 114 present in Wave 1 because 32 of these aged out of the sample. In Wave 5, the total of 204 from Wave 2 and Wave 3 dropped to 170. By Waves 6 and 7, the numbers dropped to 79 and 154, respectively. However, there are some respondents in every age group, and their responses are used in the overall estimates.

## 2.3.3 Sensation Seeking

Sensation seeking is a biologically based trait “based on the idea that persons differ reliably in their preferences for or aversions to stimuli or experiences with high-arousal potential” (Zuckerman, 1988, p. 174). Individuals who are high in the need for sensation desire complex and stimulating experiences and are willing to take risks to obtain them. This drive for novel, complex, and intense sensations and experiences is satisfied by a willingness to take more social risks (e.g., impulsive behaviors, sexual promiscuity), physical risks (e.g., skydiving, bungee jumping, driving fast), legal risks (e.g., getting arrested and put in jail), and financial risks (e.g., paying fines, impulsive purchases) (Zuckerman, 1979, 1994).

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

Sensation seeking among middle and high school students is generally measured using a 20-item scale developed specifically for adolescents (Stephenson, 1999; Zuckerman, 1979, 1994). More recent evidence suggests that an 8-item scale from the original 20 items has levels of reliability and validity sufficient to replace the 20-item scale (Hoyle, Stephenson, Palmgreen, Lorch, and Donohew, 2000). In a personal communication, Dr. Philip Palmgreen reports a comparison between the eight-item scale and a reduced four-item scale on a sample of 6,529 seventh through twelfth graders surveyed by the Partnership for a Drug Free America in 1999. The eight-item scale had an internal reliability of 0.85, while the four-item scale was reduced only slightly to 0.81. The two correlated at 0.94. Although the evidence of these two studies is unpublished, it suggests that the four-item sensation-seeking scale is both a valid and reliable predictor of drug use and intention in middle and high school years. In the current national sample of 9- to 18-year-olds, the internal reliability estimate for the four item scale is .78.

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

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

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

### 2.3.4 Risk Score

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

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

- **Youth covariates**
  - Age (12-18)
  - Sensation seeking (high versus low)

- Started smoking 12+ months ago
- Started drinking 12+ months ago
- Urbanicity 1 (urban versus rural)
- Urbanicity 2 (suburban versus rural)

■ **Parent covariates**

- Marijuana use in past 5 years
- Cigarette use in past month
- Had no drink in past month
- Attendance at religious services
- Rating of importance of religion
- Shares parenting with other adult in household

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

### **2.3.5 Past Marijuana Use**

Youth were divided into three categories of marijuana usage, only two of which are shown in most tables. The nonusers include youth who have never tried marijuana. The recent users are youth who have used marijuana in the past 12 months. Youth who have tried marijuana but not smoked it in the last 12 months are called former users. There were too few former users for this category to be used as a separate subgroup for analysis in tables.

### **2.3.6 Parents**

Detail Table 2-2 shows sample sizes and corresponding weighted population estimates for parents. Using NSPY definitions and procedures, there were an estimated 32.2 million parents of youth aged 12 to 18 in the United States during Wave 1. This increased to about 37.4 million parents by Wave 7. As mentioned above, the NSPY definition of parent excludes noncustodial parents but does include stepparents, foster parents, and even nonparental caregivers if no parent lived with sample youth. The NSPY definition also excludes parents whose children live in group facilities and dormitories. All of the population estimates given in Detail Table 2-2 are subject to modest but non-negligible sampling errors.

In addition to the breakdown of race/ethnicity used in the youth tables, there are breakdowns by parent gender and parent education. In the NSPY definition, about 38 percent of interviewed parents were male for Wave 1, about 44 percent of interviewed parents were male for Wave 2, and about 40 percent of interviewed parents were male for Wave 3. For Wave 4, which was the first followup of Wave 1, 37 percent of the interviewed parents were male. For Wave 5, which was the first followup of Wave 2 and Wave 3, 35 percent of the interviewed parents were male. For Wave 6 (the second followup of Wave 1) and Wave 7 (the second followup of Wave 2/3), 33 percent and 25 percent, respectively, of the interviewed parents were male.

## 2.3.7 Dyads

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

## 2.4 Potential Analysis Modes

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

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

Section 2.4.1 explains some of the approaches that are used to answer each of those questions.

### 2.4.1 Measuring Exposure to the Media Campaign

The Media Campaign has and will continue to publish information about how much media time it has purchased. More specifically, for each audience of youth or parents, information is available on the proportion that would have been in the audience for each ad and all ads. These data are summarized as gross ratings points (GRPs), which are the customary unit for measuring exposure to ads within the advertising industry. A fuller explanation for GRP is presented on page 3-1 of Chapter 3. The evaluation team's task with regard to exposure is to measure the extent to which placement of the ads and other Media Campaign communication efforts broke through into the minds of the audience—that is, are audiences aware of the Media Campaign and is awareness increasing over time? Can target audiences recall the ONDCP-sponsored ads and other messages that were shown? Audience awareness is being assessed in two ways:

- A set of general questions is asked about advertising recall for each medium: radio and television, print, movie theaters, outdoor advertising, and Internet. Each respondent is asked whether and how often he or she recalls seeing anti-drug messages from each source.<sup>2</sup> These measures may be reasonably interpreted as providing a general sense of level of exposure, rather than a precise measure of recent exposure. They ask respondents to summarize a lot of viewing or listening or reading experience and express it in a single number. They are based on a question used consistently in the Monitoring the Future study.
- To improve the precision of the exposure measurement, a second major approach to exposure measurement, the recall of specific Campaign ads, is used. Thus far, radio and television advertising represent the largest part of the advertising effort. Focus is on those channels for this

<sup>2</sup> See, for example, question D10 in the teen questionnaire. All the NSPY questionnaires can be found on the NIDA web site.

next type of measure. Through the use of Westat's Audio Computer-Assisted Self-Interview (ACASI) format, each respondent is shown Media Campaign television and radio ads at full length on a laptop computer brought to the respondent's home by a member of Westat's field interviewing workforce. (See Section 2.2 for a description of the NSPY.) The ads shown are all ads that have been broadcast nationally in the previous 2 months, according to the Media Campaign. For each respondent, a subsample of the Media Campaign's recent and ongoing ads (four television and two radio) is shown. Parent-targeted ads are played for parents and youth-targeted ads for youth. Ad samples for African American and bilingual (English/Spanish) respondents are also selected to permit separate evaluations of ads targeted toward these special populations. Each respondent is asked to tell whether they have ever seen the ad, how often they had seen the ad recently, and their assessment of the ad.<sup>3</sup>

It is possible that respondents might report that they have seen an ad even though they had not, because they forgot or because they want to be agreeable. If so, and all claims were taken at face value, exposure might be overestimated. Therefore, most respondents have been asked whether he or she has seen a television ad that has, in fact, never been broadcast. This provided an opportunity to assess the degree to which respondents overclaim exposure (Southwell, et al., 2002.).

In addition, the evaluation team recognizes that while the Media Campaign is spending much of its budget buying media time, it also seeks to enhance the extent to which anti-drug communication is on the air, more generally. The Media Campaign is working with national and local organizations; it is working with corporate partners; it is making efforts to disseminate information through mass media outreach and other public relations efforts. To try and capture the extent to which target audiences are aware of these efforts, a series of measures that can detect change in these more general aspects of the public communication environment were developed. Questions asked include the frequency of exposure to drug-related stories in a variety of media channels; the extent to which respondents have heard public discussion of several drug issues; and the amount of talk within families and among friends about drug issues. For all of these measures the evaluation team will examine whether the intensity of Media Campaign efforts are translating into changes in the perceived public communication environment about drugs. The evaluation design will likely not permit separate attribution of effects on parent and youth outcomes to the operation of these components of the Campaign. However, it will be possible to examine whether these efforts are associated with increases in the "buzz" about drug-related issues.

## 2.4.2 Measuring Changes in Attitudes and Behaviors

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

- **Behavior:** Trial and regular use of marijuana and of inhalants, primarily, with some additional measurement of alcohol and tobacco use; behaviors of parents—particularly parent-child discussions about drug use and parent monitoring of and engagement with their children's lives; and past behavior and intentions to engage in these behaviors in the near future. In this report,

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<sup>3</sup> See, for example, question D17 of the teen questionnaire.

youth reports of parents talking, monitoring, and engaging in fun activities are used to provide complementary information to parent reports of those behaviors (see Chapter 6.)

- **Attitudes and beliefs:** Beliefs and attitudes that research has shown to be closely related to these behaviors. For example, with regard to youth drug use, beliefs about the health consequences, the mental functioning consequences, and the performance consequences of drug use are measured.
- **Social pressures:** Perceived social pressures to engage in these behaviors, for example, to use or not use drugs—what peers are doing, what confidence respondents have in their ability to resist drug use, what parents and friends would say about drug use.

In the first semiannual report (Hornik, et al., 2000), the evaluation team provided estimates of the simultaneous association of cognitions and behavior, while controlling statistically for the effects of confounding variables. In the second semiannual report, the team presented estimates of change in cognitions and behaviors between the first and second halves of 2000 and provided estimates of the association of Campaign exposure with these outcomes. In the third semiannual report, the change analysis was extended through the three initial waves of data collection, focusing on the difference between data collected largely during the first half of 2000 and data collected during the first half of 2001. Analysis of association between exposure and outcomes was done for youth and parents interviewed in all three waves. The fourth semi-annual report was the first permitting examination of longitudinal effects using the Wave 1 sample followed up at 18 months. The fifth semiannual report repeated the analyses of the fourth report, but made use of the followup interviews of youth and parents first interviewed in Waves 2 and 3 along with those first interviewed at Wave 1.

The current report takes a divided approach. Partly in response to the lack of favorable results on youth in the prior reports, the Campaign shifted the focus of its efforts for this audience. As described in Chapter 1, major features of this shift included a sharp change in the focus of the ads, with an emphasis on strong anti-marijuana negative consequences messages, and a refocusing of the primary target audience from 12- to 14-year-olds to 14- to 16-year-olds. The youth sections of this report address the effects of this Marijuana Initiative, which started in late fall of 2002, and are limited to examination of trends and of cross-sectional associations between exposure and outcomes. In contrast, the parent-focused part of the Campaign has maintained its central focus on monitoring of youth, so this report includes 3.5 years of trend data, cross-sectional associations of exposure and outcomes, and analysis of delayed-effects of parent Campaign exposure on cognitive and behavioral parent and youth outcomes. Since all youth and parents have now been interviewed three times, it is possible to examine both the delayed effects between Round 1 (Waves 1, 2 and 3) and Round 2 (Waves 4 and 5), and between Round 2 and Round 3 (Waves 6 and 7).

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

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

In this report, the combined data from all waves are used to measure the association of exposure with outcomes. For example, are youth who report heavy exposure to Campaign messages more likely to have desirable beliefs about the negative physical consequences of marijuana than do youth who report less exposure? A sophisticated statistical technique called “propensity scoring” is used to reduce

the risk that observed differences are the result of the influence of confounding variables rather than the result of the effects of exposure on outcomes. Findings from these analyses are given in Chapter 5 for youth and Chapter 6 for parents. For youth, the cross-sectional analyses focus on whether the Wave 7 (post-Marijuana Initiative) exposure–outcome associations are favorable to the Campaign, particularly in comparison to the associations that were detected in the previous Waves. For parents, cross-sectional analyses include the entire sample, although differences among years of the Campaign are also examined.

The present report includes examination of evidence for effects among important subgroups of the population. In addition to examining association by year of the Campaign, the report examines evidence for dependence of effects on the child’s risk of taking up marijuana and on other characteristics of the youth or his/her parents including age, gender, race/ethnicity, and level of sensation seeking. Evidence for diversity in effects is presented along with the overall results in Chapters 5 and 6, for youth and parents respectively.

The cross-sectional causal analyses for parents are supplemented with longitudinal causal analyses. The same national sample of youth and their parents is being followed for 2 or 3 years. This permits the examination of whether a young person or parent who reported high versus low exposure when first interviewed progressed at a different rate on drug-related beliefs and practices in subsequent waves. Compared to the relatively more simple cross-sectional analysis, this longitudinal analysis capability improves the ability to reject threats to causal claims related to omitted confounding variables. In addition, it will permit response to concerns about ambiguity of causal direction (i.e., that the cross-sectional association between exposure and beliefs is the result of beliefs affecting recall of exposure rather than exposure affecting beliefs). This delayed-effect analysis will be undertaken for examining effects of the Campaign among parents only, in this report. Because the Campaign has indicated that it believes that the new youth Campaign is very different from the previous Campaign, it has asked that the youth evaluation focus on effects of the new Marijuana Initiative. Since the first wave of exposure to this new Campaign is Wave 7, data gathered during the first half of 2003, it will not be possible to undertake delayed-effects analysis for youth for this new type of Campaign exposure until the next report. At that time, a followup year of data will be available for the youth first interviewed at Wave 7.

- In the initial three Semi-Annual Reports (Hornik 2000; Hornik, May 2001; Hornik, October 2001), examination of exposure effects was confined to direct pathways (i.e., youth exposure on youth outcomes and parent exposure on parent outcomes). As illustrated in Figure 2D, alternate pathways are also feasible. In the Fourth and Fifth Semi-Annual Reports of Findings (Hornik, 2002a and Hornik 2002b), one of these alternative pathways was examined, specifically, the effects of parent exposure on youth behavior. The Fifth report specifically examined the effects of parent exposure on youth beliefs and attitudes. As with direct effects, both cross-sectional and longitudinal relationships were analyzed. In this, the 2003 Report of Findings, the examination is repeated for both delayed round sets, Round 1 to Round 2 and Round 2 to Round 3.
- While the inference about the effects of the Marijuana Initiative is hampered by the lack of delayed-effect analyses, the team believes that this is not an overwhelming obstacle. The major threat that delayed-effects analyses resolve is concerns about causal direction between exposure and outcome. Since prior reports showed no evidence of significant associations between exposure and outcome cross-sectionally, there is no a priori reason to expect that there will be an association in Wave 7 if there were not effects of the new Marijuana Initiative. It would not be sensible that the outcome measures (intentions and beliefs) affect reports of exposure at Wave 7, since they did not do so in prior waves. Thus, given the context of no prior favorable associations,



if the Wave 7 cross-sectional analysis were to show an association, this would provide strong support for claims of Marijuana Initiative success.

- The delayed-effects analyses were conducted for direct effects on parents and indirect effects on youth through parent exposure. As with the cross-sectional analyses, two measures of exposure were examined: general and recall-aided specific.
- In the parent-only delayed-effects analysis, as in the cross-sectional analyses, to make sure that any observed delayed-effects associations are not due to the influence of other variables, potential confounding variables are statistically controlled through the use of the propensity score procedure. These controlled confounders include the scores on the outcome variables for each respondent at time of first measurement (either Round 1 or Round 2). Because the followup measurement of outcomes is later than the prior measures of exposure, it is possible to claim that any causal relationship between these two measures reflects the influence of exposure on the outcome and not vice-versa. This is not a claim that can be made as confidently from the cross-sectional analyses when both exposure and outcome are measured simultaneously. This delayed-effects association will capture both the delayed-effects of exposure at the prior measurement round on outcome if that effect did not emerge until after that time, as well as the effects of exposure at the prior measurement round that flow through exposure at the followup round to outcome at the followup round.

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## 3. Exposure to Anti-Drug Messages

This chapter discusses exposure to Media Campaign efforts and exposure to non-Campaign anti-drug efforts during the period from September 1999 to June 2003, with a focus on youth respondents during the period from October 2002 to June 2003, following the launch of the Marijuana Initiative. First, the chapter discusses general advertising placement activities of the Media Campaign. The second section presents statistics regarding the level of ad recall among youth and parents, with some focus on respondent's recognition of specific television and radio ads from the Campaign. The section provides assessments of the TV advertisements shown to youth and parents, which offers one way of gauging the population's judgment of prominent Media Campaign content. The section also includes a discussion of encounters with drug information on the Internet. The third section discusses youth and parent exposure to other drug information, including drug education classes and discussions about drugs. The fourth section reports on discussions about anti-drug ads, and the fifth section reports on the perception of media and community attention to drug use. The last section presents a summary and conclusions.

In late 2002, a set of youth advertisements were introduced that are part of what is called the Marijuana Initiative. During 2003, only these anti-marijuana themed ads were aired. This chapter focuses on these ads, with several specific discussions (Section 3.2.3 and Section 3.2.4) that provide evidence about the frequency that youth and parents could be expected to see the ads, as well as their recalled exposure to the ads. In the individual tables where purchased media time is described, the presentation is broken out so that the purchase patterns associated with the youth Marijuana Initiative can be clearly seen.

### **What are Gross Rating Points (GRPs)?**

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

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

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

## 3.1 Media Buying Reports

Based on Media Campaign reports of purchased time and space, it is estimated that the average youth was expected to be exposed to 2.5 youth-targeted ads per week and that the average parent was to be exposed to 2.1 parent-targeted ads per week, during the period from September 1999 through June 2003. (These estimates include Media Campaign advertisements intended for either general market youth or general market adults; they do not include exposure by youth or parents to advertisements intended for other audiences, often called “spill.” They also do not include supplementary targeting efforts intended for special audiences; e.g., Spanish-speaking Hispanics, which are described later.) During the period of the Marijuana Initiative, from October 2002 through June 2003, enough time and space was purchased to achieve 2.7 youth targeted exposures per week, a small increase over the full Campaign average.

Estimates of expected Campaign exposure for this report are derived from reports of media time purchased by Ogilvy on behalf of the Media Campaign for the 46-month period from September 1999 through June 2003. These estimates show that Ogilvy obtained a total of approximately 49,812 gross rating points (GRPs) for advertisements intended for general market youth and approximately 41,985 GRPs for advertisements intended for general market parents.<sup>1</sup> These totals translate into an average of 249 targeted GRPs for general market youth per week and 209 targeted GRPs for general market parents per week. In turn, such estimates are equivalent to 2.5 targeted ad exposures for general market youth and 2.1 targeted ad exposures per week for general market parents.

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

Table 3-A provides more detail about these estimates. The distribution of GRPs across various media reveals the predominance of particular media as sources of GRPs for each of the two audiences. Television and radio account for 81 percent of GRPs for youth and 61 percent of GRPs for parents over the entire Campaign. For youth, this was virtually unchanged during the Marijuana Initiative, where 78 percent of GRPs were on television and radio.

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<sup>1</sup> Ogilvy has provided the Evaluation team with detailed information about the media purchases made, organized by medium, by week, and for many media by the name of ad. The GRP data presented in this report are derived from that information, supplied as of July 2003. It should be recognized that these are not definitive buying information. Some of the information is based on postbroadcast confirmed buys, some of it on prebroadcast scheduled buys, and some on estimated buys. Also, there are survey errors of unreported magnitudes in the audience surveys, which serve as the basis for estimates of audience size, which in turn underpin GRP estimates.

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

	Youth GRPs	Percent of Youth GRPs	Parent GRPs	Percent of Parents GRPs	Period of MI Initiative (Oct 02 – Jun 03)	
					Period of MI Initiative (Oct 02 – Jun 03)	Percent of Youth GRPs
All media for 200 weeks (Sep 99 – Jun 03)	49,812		41,985		10,330	
Television per week	132	54	73	35	140	53
Radio per week	68	27	55	26	72	27
Print per week	28	11	32	15	38	14
Outdoor (billboards) per week	--	--	45	22	7	--
Other per week	21	8	4	2	15	6
All media per week	249	100	209	100	271	100

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

- **The GRPs for both youth and parents increased during the period of the Marijuana Initiative (October 2002 through June 2003) from the immediately previous Campaign period, although more for youth than for parents.** This increase may need to be understood, however, in the context of previous variations in Campaign purchase of GRPs. The number of GRPs to which youth and parents were exposed has varied over the 46 months of Phase III of the Campaign. The Marijuana Initiative was a period of increased media purchases. However, it is in the same range of increase as some earlier periods of higher purchases. As depicted in Table 3-B and Figures 3-A and 3-B, youth and parent GRP exposure has shown upward and downward trends during the almost 4 years of measurement (from September 1999 through June 2003), both between and within waves (6-month periods). For both youth and parents, the Campaign has reported that these variations are consistent with planned media weight levels.

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

	Sep 99 – Dec 00	Jan – Dec 01	Jan – Sep 02	Marijuana Initiative (Oct 02 – Jun 03)
Youth	257	245	220	271
Parents	220	212	195	207

Figure 3-A. Weekly youth-targeted general market GRPs (September 1999 through June 2003)

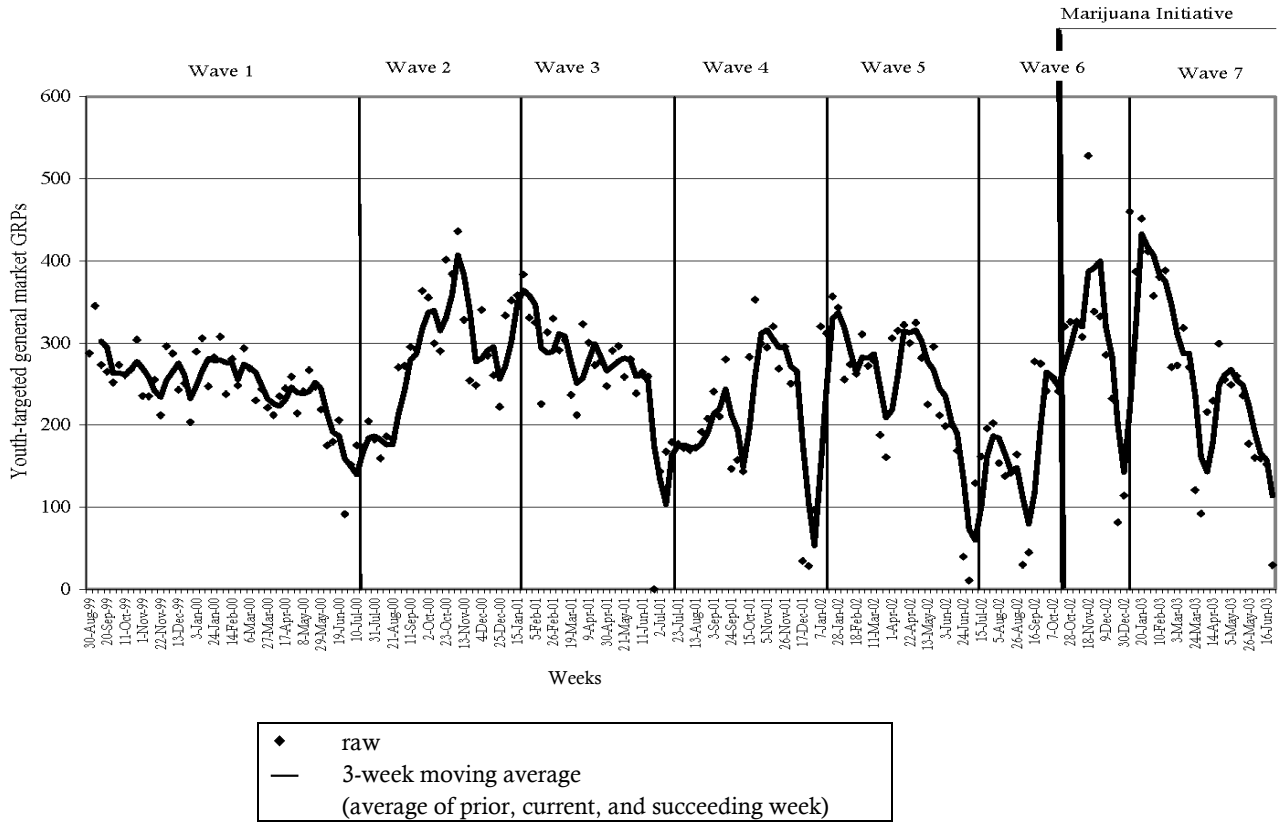
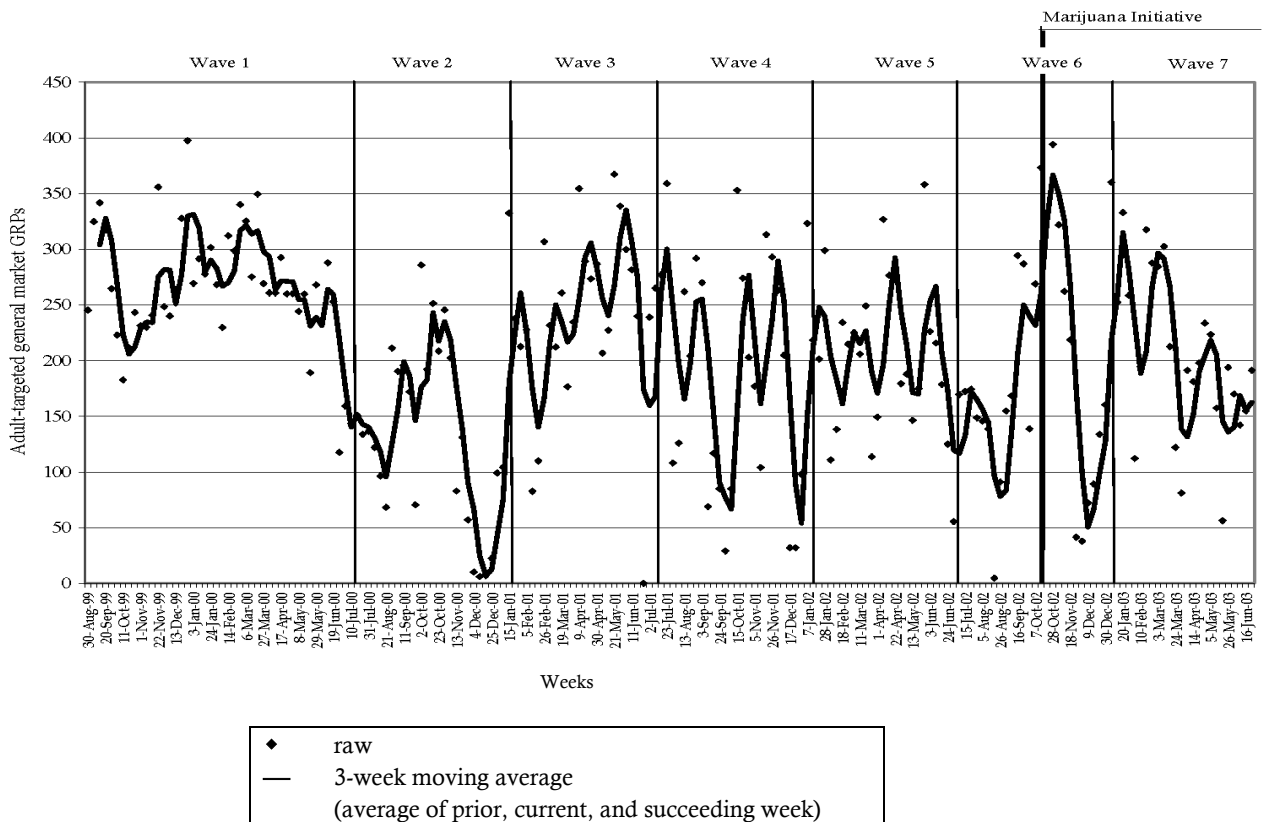


Figure 3-B. Weekly parent-targeted general market GRPs (September 1999 through June 2003)



Additionally, although total GRPs increased in 2003, as can be seen in Table 3-C and Figure 3-A, much of this increase occurred during the first few months of 2003, and then GRPs declined.

**Table 3-C. Average weekly youth targeted GRPs purchased for Marijuana Initiative (TV and radio)**

	Oct - Dec 2002	Jan - Mar 2003	Apr - Jun 2003
<b>Marijuana Initiative*</b>			
Television	142.1	197.5	92.1
Radio	84.6	84.3	64.8
<b>Other GRPs</b>			
Television	13.3	0.0	0.0
Radio	0.0	0.0	0.0
<b>Total</b>	<b>240.0</b>	<b>281.8</b>	<b>156.9</b>

\* The ads Hello, Water, and Train, later identified as Marijuana Initiative ads, received GRPs in late Wave 5 and early Wave 6. They are not included in any calculation as Marijuana Initiative GRPs, because the initiative did not fully launch until October 2002.

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

Insofar as youth saw or heard an anti-drug advertisement intended for parents or vice versa, one could argue that the advertisement garnered exposure not only among its target audience but also that there was “spill” exposure generated among a secondary audience. Estimates of the potential amount of such spill are substantial. For the period of January to June 2003, youth GRP estimates would increase by approximately 32 percent,<sup>2</sup> if spill exposure to parent advertisements were added to the youth total for 2003. This is worth noting from the standpoint of general awareness of the Media Campaign’s efforts. However, the Campaign has distinguished between youth and parent audiences and has developed explicit and distinct objectives and advertising efforts for each group. In doing so, they have assumed that the exposure to *particular* targeted messages, rather than to *any* anti-drug messages in general, is crucial. Therefore, much of this report focuses on expected and reported exposure to communication efforts specifically intended for, or targeted toward, each group.

### 3.1.1 Distribution of Exposure

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

<sup>2</sup> According to a July 2003 Ogilvy estimate, for January through July 2003, there were approximately 9,895 youth GRPs with spill exposure accounting for 3,181 GRPs.



NSPY provides direct estimates of the reach and frequency of ad viewing and hearing.<sup>3</sup> Before presenting those estimates, it is useful to look at the general viewership levels of each of the media in which advertising was bought. By doing so, GRPs can be classified as having been bought either on media with wide reach or on media with relatively less wide reach. One pattern that stands out across both groups is the predominance of television and radio GRPs, particularly for youth.

- **Television and radio GRPs composed the vast majority (almost 80%) of total youth-targeted GRPs. This was true also for the Marijuana Initiative.**
  - While advertisements intended for youth were placed in a variety of media, most GRPs for youth-targeted ads were generated through television and radio media. Twenty-five percent of youth GRPs resulted from combined network and cable television placement, nearly 18 percent resulted from in-school television (largely through the Channel One program), and another 8 percent came from “spot” TV in about 100 metropolitan areas around the country. Approximately 29 percent of youth GRPs came from network and spot radio. These proportions were largely the same during the Marijuana Initiative, except that a greater proportion of television purchases were made in Network and cable versus spot TV (see Table 3-D).
  - Throughout the Campaign about 61 percent of targeted youth GRPs were obtained in media with the potential for wide reach (network, cable and spot TV, and network and spot radio) and about 39 percent in media with less wide reach. During the Marijuana Initiative, the comparable proportions were virtually unchanged, 62 percent versus 38 percent.

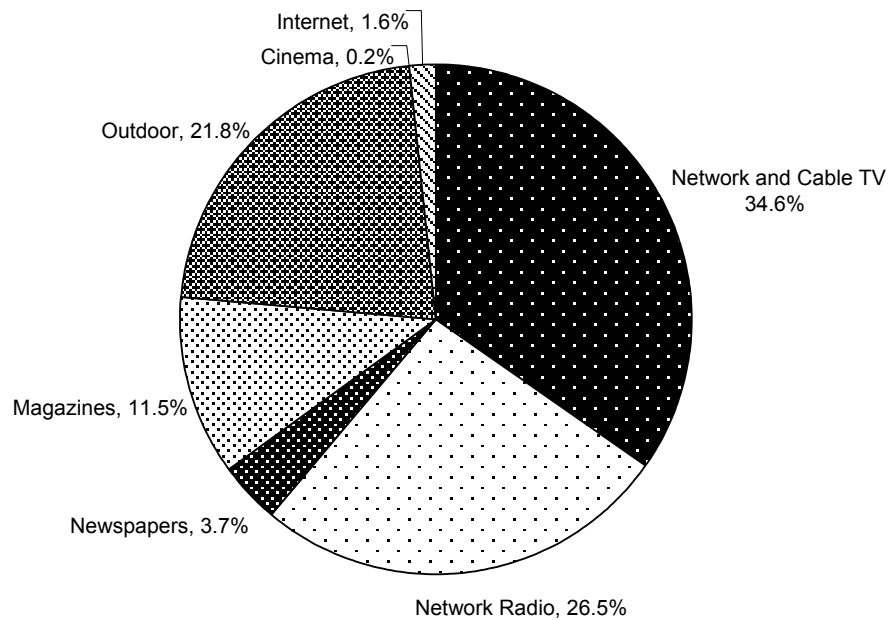
**Table 3-D. Percentage of youth-targeted GRPs for each medium overall, and for the Marijuana Initiative**

Medium	Campaign from Sep 99 – Jun 03 (%)	Marijuana Initiative Oct 02 – Jun 03 (%)
Network and cable TV	25.1	30.8
Spot TV	7.8	4.5
In-school TV	17.8	17.7
Network Radio	22.1	23.1
Spot Radio	6.5	4.5
Internet	3.3	3.1
B-ball Backboards	2.4	0.0
Arcades and Malls	1.1	2.5
Magazines	11.2	14.4
Other	2.7	0.2

<sup>3</sup> The Media Campaign provided data in a variety of formats. Most of the information used in this report exploits the information about weekly purchases of media time for specific ads and/or on specific media. In addition, the Campaign has in the past supplied estimates for overall reach and frequency for an advertising platform across all media cumulatively for the weeks the platform was on the air. These estimates depend on complex assumptions about the probability of an individual who is exposed to a message on one medium being exposed to the message on a second medium. They are not presented in this report. The survey-based estimates reported in the remainder of this chapter present parallel information and describe the distribution of recalled exposure. Evidence for the validity of these measures was provided in previous reports (Hornik et al., 2001a, Appendix C).

- **Television and radio represented the great majority of GRPs for parents, though this was less the case for GRPs purchased for parents than for youth.**
- While the Media Campaign purchased 132 targeted GRPs per week for youth on television, for example, it purchased only 73 such GRPs per week for adults on television. As can be seen in Figure 3-C, many of the general market adult GRPs came from media other than television, radio, or even print. In fact, 22 percent of all of the GRPs came from outdoor media (billboards, bus shelter placards, etc.). The Campaign purchased outdoor advertising intended for general market adults in 10 major media markets,<sup>4</sup> which collectively contain roughly a third of the U.S. population.

**Figure 3-C. Targeted adult media placements by medium (September 1999 through June 2003)**



- For adults, the overall balance across waves between wide-reach media and other media is somewhat similar to that of youth (Table 3-D). Sixty percent of the GRPs came from wide-reaching network and cable TV (35% of GRPs) and network radio (26% of GRPs), with the remaining GRPs coming from media with less reach, including newspapers (4% of GRPs), magazines (12% of GRPs), outdoor (22% of GRPs), cinema (0.2% of GRPs), and Internet (2% of GRPs).
- **The proportion of wide-reach and narrow-reach media used by the Campaign varied somewhat across years, more so for parents than for youth.** Table 3-E presents the proportion of GRPs purchased across waves according to whether they were purchased on wide- or narrow-reach media. For youth, wide-reach media made up around 61 percent of the purchased GRPs across all years of the Media Campaign. The cross-wave pattern for parents is different. In 2000, about 53 percent of all adult GRPs were on wide-reach media; this increased to 64 percent for 2001 and 68 percent for 2002, but then decreased slightly in the first half of 2003 to 66 percent.

<sup>4</sup> According to Ogilvy, those markets included New York, Chicago, Los Angeles, Philadelphia, San Francisco, Dallas/Ft. Worth, Atlanta, Boston, Detroit, and Washington, DC.

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

Reach		Sep 99 – Dec 00	Jan – Dec 01	Jan – Sep 02	Marijuana Initiative Oct 02 – Jun 03	All Waves
Youth	Wider reach media (Network, Cable, and Spot TV; Network and Spot Radio)	157 (61%)	150 (61%)	133 (60%)	168 (62%)	152 (61%)
	Narrower reach media (Magazines, Arcades, Internet, In-school TV, etc.)	100 (39%)	95 (39%)	87 (40%)	103 (38%)	96 (39%)
	<b>Total per week</b>	<b>257</b>	<b>245</b>	<b>220</b>	<b>271</b>	<b>248</b>
		Sep 99 – Dec 00	Jan – Dec 01	Jan – Dec 02	Jan – Jun 03	All Waves
Adults	Wider reach media (Network and Cable TV, Network Radio)	116 (53%)	136 (64%)	133 (68%)	136 (66%)	131 (63%)
	Narrower reach media (Newspapers, Magazines, Outdoor Media, Internet, Cinema)	105 (47%)	76 (36%)	62 (32%)	71 (34%)	78 (37%)
	<b>Total per week</b>	<b>221</b>	<b>212</b>	<b>195</b>	<b>207</b>	<b>209</b>

### 3.1.2 Distribution of General Market Ad Platforms

The Media Campaign strategy for both youth and adults has been to focus on a limited number of themes, or broad messages, called message platforms. Furthermore, the Campaign planned to focus much of the advertising during any particular period on one specific platform so that the message of that period received maximum exposure. The Marijuana Initiative advertising, with its focus on the negative consequences of using marijuana, is classified as within the Negative Consequences platform.

Tables 3-F and 3-G outline the major platforms for both general market audiences. Each ad that was broadcast was associated with a particular platform (or platforms) on the basis of the concepts it addressed. Tables 3-F and 3-G also list the names of television and radio Campaign ads airing during the period from September 1999 through June 2003, according to their respective platforms. Descriptions of the ads are provided in Appendix D. (It is worth noting that ads could represent more than one platform and a small number did so.)

For youth, for example, almost 37 percent of the general market television exposures (GRPs) emphasized Normative Education/Positive Alternatives, which involve the idea that most youth do not use drugs and/or that others expect the youth not to use drugs. This emphasis at least partially reflects the introduction (in late 2000 and early 2001) of a series of “What’s Your Anti-Drug?” spots, as part of the launch of the branding effort, that stressed the number and variety of youth who do not use drugs (along with their favorite alternative behaviors). From the standpoint of the Campaign, all of these ads fit into the Normative Education/Positive Alternatives platform. Discussion of Resistance Skills (e.g., how to refuse drug offers) received approximately 16 percent of the GRPs, while Negative

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

Advertising platform	Percentage of television GRPs <sup>1</sup>	Ads in this platform during NSPY 2000-2003 Waves 1-7	Percentage of radio GRPs <sup>1</sup>	Ads in this platform during NSPY 2000-2003 Waves 1-7
Negative Consequences (including:)	50.0		42.9	
(Drugs and Terror)	3.8	Stacey, Dan, I Helped (Excuses), Sophie, Timmy	0.0	
(Marijuana Initiative ads played during the October 2002-June 2003 period.)	18.9	Drive Thru, Den, Couple, Concert, <sup>3</sup> Hello, <sup>3</sup> Water, Dummies, Memorial, Pregnancy Test, 4 Cigarettes	26.2	Hello, <sup>3</sup> Train, Concert, <sup>3</sup> Drive, Babysitter, Panic, Chemicals
(Other Negative Consequences ads)	27.3	Two Brothers, <sup>3</sup> Hockey, Mother/Daughter, No Skill, Vision Warrior, Brain, Hello <sup>3</sup> Water, <sup>4</sup> Flash Forward, Coroner	16.7	Two Brothers, <sup>3</sup> Make You Think, Stressed, Brother Jeff, If Pot Were a Person, Money, The First Time, The Rant, Hello, <sup>3</sup> Train
Normative Education/ Positive Alternatives	36.7	Mary J. Blige, <sup>3</sup> Drugs Kill Dreams (Williams Sisters), <sup>3</sup> Andy MacDonald, Scatman, <sup>3</sup> Dixie Chicks, DJ, Family, Football, Friends, Icon, Love, Most Teens, Swimming, Tara Lipinski, U.S. Women's Soccer Team, Dance, Music, Famous, Drawing, Music-Mix Tapes, Being Myself/My Future, Tiki Barber, <sup>3</sup> Derrick Brooks, Allan Houston, Apolo, <sup>3</sup> Boxing, Chad, <sup>3</sup> Rosey <sup>3</sup>	33.2	Mary J. Blige, <sup>3</sup> Drugs Kill Dreams, <sup>3</sup> Scatman, <sup>3</sup> What's Yours, What's Yours- Urban, Margot, Alberto, Basketball, Cross-Country, Limericks, Rosey, <sup>3</sup> Chad, <sup>3</sup> Apolo, <sup>3</sup> Tiki Barber <sup>3</sup>
Resistance Skills	16.4	Drugs Kill Dreams, <sup>3</sup> How to Say No, No Thanks, Michael Johnson, It's OK to Pass, What I Need	16.4	Drugs Kill Dreams, <sup>3</sup> Excuses, Orientation, What to Say-Boy, What to Say-Girl, Moment of Truth
Other	2.4	Ads not associated with the major platforms include Lauryn Hill, Layla, I'm Free, Miss America, and others	7.5	Ads not associated with major platforms

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

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

<sup>3</sup> On both television and radio.

**Table 3-G. Distribution of parent message platforms on general market TV and radio**

Advertising platform	Proportion of television GRPs	Ads that were in this platform during NSPY 2000-2003 <sup>1</sup> Waves 1-7	Proportion of radio GRPs	Ads that were in this platform during NSPY 2000-2003 <sup>1</sup> Waves 1-7
Parenting Skills/Personal Efficacy/Monitoring	74.1	Clinic, Phone, Office, E-mail, TV, Instructions ads (Stay Involved and Praise and Reward), Smoke, My Hero, <sup>2</sup> My Hero-African American, Thanks <sup>2</sup> O'Connor, Anyway You Can, Kitchen, Ananda, Gene, Kid, <sup>2</sup> Party, <sup>2</sup> Loss, Baby, Don't Get Off My Case <sup>2</sup>	79.6	Tree Fort, Cooking Dinner, Basketball, Keep Trying, Desperate, My Hero, <sup>2</sup> Thanks, <sup>2</sup> I Know My Kid, Party, <sup>2</sup> Kid, <sup>2</sup> Don't Get Off My Case <sup>2</sup>
Your Child at Risk	5.4	Pipe <sup>2</sup> , Roach, Weed, Drugs, Clip <sup>2</sup> , Pot, Bag <sup>2</sup>	7.9	Pipe <sup>2</sup> , Clip <sup>2</sup> , Grass, Bag
Perceptions of Harm	7.8	Symptoms, Under Your Nose, Funeral, Deal, Clinic, Needle/Spray Can <sup>2</sup>	12.0	Happy Birthday Steven, Kathy Abel, Symptoms, Needle/Spray Can <sup>2</sup> , Sooner/Later-David, Sooner/Later-Megan
Other	<1	Ads not associated with the major platforms: Car, Derrick Brooks	<1	Ads unidentified in GRP reports
Drugs and Terror Ads <sup>3</sup>	12.5	AK-47, I Helped (excuses), Sophie, Timmy, Dan, Stacey, Okay, Ploy, Moral Loophole, Not that Complicated, Ghost: Office, Ghost: Subway, Legalize it, Environment	0.0	

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

<sup>2</sup> On both television and radio.

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

Consequences received approximately 50 percent. Negative Consequences ads focus on physical or mental health, schooling outcomes of drug use, and the relationship between drugs and terrorism. Beginning in late 2002, this platform began to exclusively focus on the negative outcomes of marijuana use. The pattern of youth radio ad distribution was similar to that of television ads.

For parents, the major emphases have been on Parenting Skills, including Monitoring, and on boosting Personal Efficacy to intervene (74%), with secondary emphases on the idea that Your Child Is at Risk of drug use (6%) and on the Perceptions of Harm resulting from drug use (8%). In addition, the Drugs and Terror messages received 13 percent of the total parent GRPs. As with youth, a similar pattern was seen regarding radio platforms.

- **The Campaign emphasis on different platforms varied sharply across waves<sup>5</sup> for both youth and parents.** Tables 3-H and 3-I present the proportion of television and radio GRPs that were dedicated to each of the major platforms across the seven waves for youth and parents, respectively.
  - For youth, the Wave 1 distribution across three platforms gave way to a focus on Normative Education/Positive Alternatives for Wave 2. In Wave 3, there was a division of ads between Normative Education/Positive Alternatives and Resistance Skills, and Negative Consequences messages had largely disappeared. However, in Waves 4 and 5, Negative Consequences were the focus of the majority of the ads. Normative Education/Positive Alternatives were also highlighted during these waves, but there was little attention to Resistance Skills (Table 3-H). Waves 6 and 7 concentrated almost exclusively on Negative Consequences.

The Marijuana Initiative was formally launched in late fall 2002. However, in Table 3-H there are also GRPs assigned to the Marijuana Initiative in the prior period from July-September 2002. This reflects the classification of three youth ads, Hello, Water, and Train, as Marijuana Initiative ads, although they were already on the air before the launch of the Marijuana Initiative. Both of those ads explicitly carried the same message as those broadcast under the Marijuana Initiative.

- For parents, there was also substantial variation in platform emphasis across waves (Table 3-I). Ads stressing the Perceptions of Harm platform were seen only in Waves 1, 3, and 4. The Your Child at Risk ad platform took a substantial portion of the GRPs only in Wave 1. The Parenting Skills/Personal Efficacy/Monitoring platform has been strongly present across all seven waves, and accounted for almost all of the GRPs during Waves 2 and 4. During Waves 5, 6, and 7, Parenting Skills/Personal Efficacy/Monitoring ads continued to receive a majority of the GRPs, with Drugs and Terror Ads accounting for the remaining GRPs.

**Table 3-H. Percent of GRPs per week purchased for specific youth platforms across waves (TV and radio)**

Platform	Wave 1 2000 (%)	Wave 2 2000 (%)	Wave 3 2001 (%)	Wave 4 2001 (%)	Wave 5 2002 (%)	Wave 6 (Jul - Sep) 2002 (%)	Marijuana Initiative Oct 02 - Jun 03 (%)
Negative Consequences	30.9	16.4	0.0	60.2	63.2	99.3	99.9
(Drugs and Terror)	0.0	0.0	0.0	0.0	19.0	2.5	0.6
(Marijuana Initiative)	0.0	0.0	0.0	0.0	0.0	44.1	97.9
(Other Negative Consequences)	30.9	16.4	0.0	60.2	44.2	52.7	1.4
Normative Education/Positive Alternatives	50.2	70.3	46.0	35.6	36.7	0.0	0.0
Resistance Skills	41.3	3.0	51.5	3.0	0.0	0.0	0.0
Other	2.8	10.3	3.3	1.2	0.5	0.7	0.1

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.

<sup>5</sup> The discussion of platforms deals in waves, not years, to capture the change in platforms more effectively.

**Table 3-I. Percent of GRPs per week purchased for specific parent platforms across waves (TV and radio)**

Platform	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7
	2000 (%)	2000 (%)	2001 (%)	2001 (%)	2002 (%)	2002 (%)	Jan – Jun 2003 (%)
Parenting Skills/Personal Efficacy/Monitoring	54.2	98.8	48.6	91.2	77.1	85.1	83.9
Your Child at Risk	31.0	1.0	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
Other	1.2	<0.1	0.0	1.0	<0.1	0.0	0.0
Drugs and Terror Ads <sup>1</sup>	0.0	0.0	0.0	0.0	22.9	14.9	16.1

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

### 3.1.3 GRPs Purchased for Minority Audiences

The Media Campaign also reported additional efforts to reach specific populations with advertisements developed and intended specifically for those groups, such as Spanish-language ads for Hispanics consuming Spanish media programming. Table 3-J describes each of these efforts for 2003, Wave 7. There are two ways these advertising efforts can affect exposure. They can add to the overall exposure for the general population and they can add to the specific exposure among the target populations. These are considered separately. These extra GRPs do not add a great deal to the overall level of GRP exposure. Table 3-J illustrates the relatively small contribution to overall general market GRPs that these efforts would contribute if they were combined. The first row reflects the average weekly GRPs reported exclusively for each group. One hundred GRPs for Hispanics, for example, could reflect a one-time reach of all U.S. Hispanics. Those totals then can be viewed in terms of their potential contribution to the general population’s Campaign experience.

**Table 3-J. Estimated additional 2003 GRPs generated exclusively to reach specific groups**

	African American youth	African American adults	Hispanic youth	Hispanic adults	Residents of Puerto Rico (youth)	Residents of Puerto Rico (adults)
Weekly within-group GRPs for targeted efforts	21.5	35.7	3.1	85.2	136.8	34.4
Percentage of U.S. population for age group	16% <sup>1</sup>	13% <sup>1</sup>	15% <sup>1</sup>	14% <sup>1</sup>	1% <sup>2</sup>	1% <sup>2</sup>
Additional general population GRPs per week for 2003	3.4	4.6	0.47	11.5	1.4	0.34
Percentage additional weekly general population 2003 GRPs	1%	2%	<1%	5%	<1%	<1%

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

<sup>2</sup> From U.S. Census ([www.census.gov](http://www.census.gov), accessed February 9, 2001). Same percentage used for youth and adults.

The numbers presented in Table 3-J reflect the approximate number of additional age group-specific GRPs that the general population could have been exposed to as a result of the special targeting efforts during 2003. For African American youth, for example, roughly 22 GRPs were obtained for targeted efforts among that population in an average week. Given that African American youth constitute approximately 16 percent of the U.S. population of 9- to 18-year-olds, these targeted efforts would

contribute an additional estimated 3.4 GRPs (i.e.,  $21.5 \times 0.16$ ) to the average U.S. youth's campaign communication experience. This addition reflects only a 1-percentage point increase over and above the general market GRPs obtained for youth, obviously not altering the larger picture of GRP distribution substantially. These numbers can be compared to similar percentages reported in the previous report for Wave 5. The weekly within-group GRPs for African American and Hispanic adults are roughly similar. However, the add-on numbers for African American and Hispanic youth are much lower than in 2002. For African American youth, the Wave 5 number was nearly 83 GRPs per week, and for Hispanic youth it was 17 GRPs per week. Both numbers are about four times as large as the Wave 7 estimates. This testifies to a very substantial cut back in targeted African American and Hispanic youth GRPs in 2003.

Data to assess the add-on effect of these extra GRPs for the specific target population are not available to the evaluators. If the respective audiences had received a full dose of the general market advertising and then received this focused advertising as an add-on, this would be a major addition. However, this is an unlikely result for primary Spanish language speakers. The Spanish language advertising is designed, presumably, to make up for the fact that English language advertising is inaccessible to primary Spanish language speakers. It might be that the GRPs for the Hispanic audience represent a large portion of the Campaign GRPs for primary Spanish speakers, including many Puerto Rican residents, rather than being an add-on. (The evaluation does not address effects of the Campaign in Puerto Rico.)

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

## 3.2 Recall of Exposure from NSPY Questionnaires

To assess exposure to the Campaign, NSPY included two complementary measurement approaches. First, all respondents were asked for an estimate of how often they had seen or heard anti-drug advertisements in each of the major media in which the Media Campaign purchased time (including television and radio, newspapers and magazines, outdoor venues, or movies). These questions were modeled after a measure used in the Monitoring the Future (MTF) study so as to maximize comparability across surveys. These measures are intended to provide a general impression of the intensity of recent exposure and will be particularly helpful in comparisons over time and across media.<sup>6</sup> They are likely to capture both exposure to advertising from a variety of sources directed to

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



the particular group of respondents (youth or parents) and also the aforementioned “spill” exposure to advertising directed toward the other audience, as well as some pro bono advertising.<sup>7</sup>

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

In the previous section of this chapter, the comparisons involving the Marijuana Initiative focused on the period from October 2002 through June 2003. For reports on purchased advertising time this was appropriate. However in the current section, which turns from purchase data to respondent recall data, the relevant time frame changes. Respondents were asked to recall exposures in recent months for both types of exposure questions, and for the specific exposure questions, respondents were shown ads that were broadcast in the previous two calendar months. Respondents in the late fall of 2002 may have been recalling exposures of Marijuana Initiative ads but they also may have been recalling exposures of ads broadcast before the Marijuana Initiative. For that reason, the examination of Marijuana Initiative associated recall of exposure focuses on the respondents interviewed in Wave 7 only, that is, from mid-January to mid-June, 2003. Also, by including only respondents from a particular wave and all respondents in a particular wave, the sample is nationally representative, and can be compared to samples from previous and subsequent waves that are nationally representative. That would not be feasible if the Wave 7 respondents were combined with respondents from only the last 1 or 2 months of the Wave 6 sample.

### 3.2.1 General Measures of Exposure

The great majority of youth and parents recalled some exposure to anti-drug advertising, which can include paid, pro bono, and spill (Table 3-K).<sup>8</sup> The four general recall questions were transformed into quantitative measures of exposure and summed to provide rough estimates of total recalled exposure.<sup>9</sup> Using these measures, over the entire Campaign, about 93 percent of youth and parents recalled seeing or hearing some form of anti-drug advertising at least once per month, while the median recall for parents was 9 exposures per month and for youth was 12 exposures per month. Moreover, this

<sup>7</sup> During Waves 1 to 3 there was a single question that asked about the combination of radio and television exposure, following the MTF model exactly. In Wave 4, in order to separate these two media, half of the sample was given either two questions that addressed each medium separately or the single question that had been used in the previous waves. Since assignment to the two- or one-question sequence was done randomly, it was possible to calibrate the responses to maintain the previous scale. This permits over time comparisons. In Wave 5 and forward, all respondents were given separate radio and television questions, which were then combined into a single radio and television estimate for the over time comparisons, based on the Wave 4 calibration calculations. In Waves 6 and 7, the questionnaire returned to the single question format from Waves 1 to 3.

<sup>8</sup> In all tables throughout this section of Chapter 3, only youth aged 12 to 18 at any wave are included.

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

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

degree of reported general high exposure was maintained across years. The Wave 7 recall for youth, corresponding to the Marijuana Initiative, was very similar to the overall recall levels.

**Table 3-K. Overall recalled general exposure to anti-drug ads across all media (November 1999 through June 2003)**

Percentage of Youth								
Exposures per month	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 2002	Wave 6 2002	Wave 7 2003 (Jan – Jun)	All Waves
Less than 1	6.9	5.7	5.9	8.6	7.3	5.2	5.7	6.4
1 to less than 4	17.0	15.1	17.5	19.3	17.1	18.4	14.4	16.9
4 or more	76.1	79.2	76.6	72.1	75.6	76.4	79.9	76.6
Median exposures	11.24	15.15	12.05	11.23	15.96	11.01	13.03	12.38

Percentage of Parents								
Exposures per month	Wave 1 2000	Wave 2 2000	Wave 3 2001	Wave 4 2001	Wave 5 2002	Wave 6 2002	Wave 7 2003 (Jan – Jun)	All Waves
Less than 1	7.4	6.6	7.4	7.9	8.3	5.6	4.2	6.7
1 to less than 4	20.8	23.4	22.9	26.8	23.7	23.0	22.8	23.3
4 or more	71.8	70.0	69.6	65.2	68.0	71.5	73.0	70.0
Median exposures	9.88	9.02	8.79	7.94	8.27	8.80	10.12	8.98

## Youth Recall of General Anti-Drug Messages

- In the first half of 2003, about 80 percent of youth reported weekly exposure from the combination of sources (Table 3-K).** Thus, the purchase of approximately 2.7 targeted general market exposures per week among youth during the Marijuana Initiative, according to the GRP data in Table 3-E, produced recall of at least one ad per week among 80 percent of the youth population but less than that among 20 percent of the population. The median number of recalled ad exposures by youth was 13.01 per month, across all sources. (The median number of ads recalled is the number of exposures such that half the audience saw the ads as many or more times and half the audience saw them as many or fewer times.) These numbers can be compared, though only roughly and with caution, with the estimates of potential exposure generated from the aforementioned GRP data. The median recall of 13.01 ads per month for youth translated into around 3.0 exposures per week; GRP estimates would suggest a similar 2.7 for targeted GRPs alone. Estimates of general recall were largely consistent with the focus of GRP purchases, with almost 80 percent of youth-targeted GRPs having been purchased on television or the radio.
- Gender and race-ethnicity affected recall of exposure to specific media in early 2003.** Females were significantly more likely than males to report having seen or heard TV or radio ads at least weekly. White youth were significantly less likely than African American or Hispanic youth to report having seen ads in newspapers or magazines, arcades, or video rentals, and on billboards (Detail Tables 3-28 through 3-31). These associations are similar to the overall associations seen throughout the Campaign.
- Recalled exposure varied across different media.** Table 3-L displays reports of weekly exposure to each of the various media employed by the Campaign across the years of the Campaign. While

60 percent of youth recalled seeing radio or television ads weekly, only around one-quarter recalled such frequent exposure to print or outdoor advertising, and fewer than one-tenth recalled weekly exposure to arcade or video messages. These proportions are essentially the same for the Marijuana Initiative period as for previous periods.

- **There is no suggestion that youths’ recall of general anti-drug messages changed from 2000 or 2002 to early 2003** (Table 3-L and Detail Tables 3-27 through 3-31). As can be seen in Table 3-L, no significant differences were seen in 2003 in combined weekly exposure or exposure to each individual media source. There were also only two significant subgroup changes from 2000 or 2002 to early 2003. In 2000, 56 percent of females reported having seen or heard TV or radio ads at least weekly; in 2003, 64 percent reported weekly exposure to such ads. An increase in exposure to arcade or video rental ads was reported by low risk youth; 6 percent reported exposure to arcade ads in 2000 and 9 percent in 2003.

**Table 3-L. Recall of general anti-drug advertising by medium across all years for youth (November 1999 through June 2003)**  
**Percent of youth who recall seeing or hearing ads at least weekly**

	Waves 1 and 2 Year 2000	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan - Jun) Year 2003	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
TV or Radio Ads	56.9	56.2	58.7	59.7	2.8 (-0.6 to 6.2)	1.0 (-1.7 to 3.7)
Newspaper or Magazine Ads	27.7	24.4	24.2	25.6	-2.1 (-4.1 to 0.6)	1.4 (-0.9 to 3.8)
Movie or Video Rental Ads	7.4	6.8	9.1	8.6	1.2 (-0.3 to 2.7)	-0.5 (-1.9 to 0.9)
Billboard or Other Public Posting Ads	27.0	26.6	27.3	26.8	-0.2 (-3.0 to 2.6)	-0.5 (-3.2 to 2.2)

### Parent Recall of General Anti-Drug Messages

- **Slightly fewer parents (70%) than youth (77%) reported weekly exposure from the combination of the sources over the course of the Campaign (Table 3-K).** The Media Campaign purchased roughly 2.1 targeted general market exposures per week for parents, somewhat less than the level achieved for youth. As with the youth estimate, this number can be roughly compared with the estimates of potential exposure generated from the GRP data. For parents, the median recall of 9.0 ads per month translated into around 2.2 exposures per week, which was similar to the targeted GRP level.
- **Recalled exposure varied across different media.** Table 3-M displays reports of weekly exposure to each of the various media employed by the Campaign. While more than half of parents recalled seeing radio or television ads weekly, only about one-quarter recalled such frequent exposure to print or outdoor advertising, and fewer than 4 percent recalled weekly exposure to movie or video messages. As with youth, estimates of general recall were largely consistent with the focus of GRP purchases, with 60 percent of parent-targeted GRPs estimated for radio and television.
- **Race-ethnicity and education are associated with recall of exposure to specific media.** College graduates are significantly less likely than parents with less than a high school education to report having seen or heard TV or radio ads, movie ads, and newspaper or magazine ads at least weekly.

White parents are significantly less likely than African American or Hispanic parents to report having seen ads on newspaper or magazines, movie theater or video rentals, and billboards; white parents are also significantly less likely than Hispanic parents to report weekly exposure to TV or radio ads (Detail Tables 3-32 through 3-36).

- **As with youth, among parents, there is no suggestion that recall of general anti-drug messages changed from 2000 or 2002 to early 2003** (Table 3-M and Detail Tables 3-32 through 3-36). As can be seen in Table 3-M, no significant differences were seen in 2003 in combined weekly exposure or exposure to each individual media source. Only two significant subgroup changes in parents' reports of having seen newspaper or magazine ads, movie theater or video rental ads, or billboards at least weekly were reported. Male parents reported a 2 percentage point significant increase in having seen movie theater or video rental ads at least weekly from 2000 to the first half of 2003, and parents with less than a high school education reported an 11 percentage point increase in having seen newspaper or magazine ads at least weekly from 2000 to early 2003.

**Table 3-M. Recall of general anti-drug advertising by medium across all waves for parents (November 1999 through June 2003)**

	Percent of parents who recall seeing or hearing ads at least weekly					
	Waves 1 and 2 Year 2000	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan – Jun) Year 2003	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
TV or Radio Ads	49.6	48.6	51.1	52.9	3.3 (-0.2 to 6.7)	1.8 (-1.4 to 5.0)
Newspaper or Magazine Ads	21.6	19.8	21.6	22.1	-0.4 (-2.7 to 1.9)	-0.4 (-2.4 to 1.7)
Movie or Video Rental Ads	2.8	3.9	4.0	3.4	0.6 (-0.45 to 1.7)	-0.6 (-2.0 to 0.7)
Billboard or Other Public Posting Ads	23.6	23.0	24.2	25.2	1.6 (-1.5 to 4.7)	1.0 (-2.1 to 4.1)

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

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

### 3.2.2 Television and Radio Specific Advertising Recall

Respondents were shown a sample of specific Campaign television ads and played a sample of Campaign radio ads at full length on their laptop computers. Each respondent was presented ads that were broadcast nationally in the 2 calendar months prior to the interview and asked whether they had ever seen or heard the ad, how often they had seen or heard the ad in recent months, and how they

evaluated the ad. The validity of recall data was a concern in that respondents who did not want to admit to forgetfulness or simply wanted to be agreeable might claim to have seen an ad even if they had not. To assess this tendency in the first three waves, respondents were asked whether they had seen one of three ads (otherwise known as “ringer ads”) that had never been broadcast.

Previous Campaign evaluation reports (Hornik et al., 2000; Hornik et al., 2001a, Southwell et al., 2002) provided strong evidence for the validity of the measures. Broadcast ads were much more often recalled than ringers. Also, the specific television ad recall measures tracked the GRP data closely, ad by ad for youth, and to a lesser extent for parents.

In discussing youth recall of television and radio specific ads, both years and waves will be used to better capture short-term and long-term changes.

### Television Ad Recall during the Marijuana Initiative

This section focuses on recalled exposure during the first half of 2003, Wave 7, the first full Wave in which all respondents were under the Marijuana Initiative. During the period of the Marijuana Initiative, approximately 51 percent of the total youth-targeted GRPs were obtained through television (including network, cable, spot, in-school, and in arcades). Each week, the Media Campaign purchased about 139 general market youth-targeted television GRPs, on average, indicating that the average youth respondent should have been exposed to 1.4 television ads per week. For parents, general market television efforts were less substantial, enough to produce an average of 97 GRPs per week, or about 1 weekly TV exposure for the average adult. How do those numbers compare with evidence about youth and parental recall of the specific ads that they were shown?

The following analyses rely on strict segmentation of ads by the parent–youth dimension and by language. In other words, youth-targeted ads are not considered in analyses for parents and vice versa. This means that youth–parent “spill” is not reflected in these specific ad recognition results. Spill is the phenomenon of ads targeted to one group being watched by members of another group. Similarly, a person who speaks only English or only Spanish was never shown an ad in the opposite language. Bilingual English–Spanish speakers were shown both sets of ads, and special efforts were taken to be sure that African American respondents had targeted ads played for them.

Each respondent was shown a sample of the ads that had been broadcast during the previous 2 calendar months and asked about how many times he or she had seen each ad in “recent months.” Imputation was used to fill in reasonable projections for any remaining ads that were not sampled and shown to each respondent. The results were then recoded and summed across ads.<sup>10</sup>

<sup>10</sup>

**Recoding of NSPY ad recall data**

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

## Youth Recall of Television Specific Advertising

More than 95 percent of youth recalled seeing at least one of the ads that had been broadcast in the previous 60 days in Wave 7. The median number of recalled viewings of youth-targeted TV ads by youth was 16.4 times over recent months or about 2.0 times per week. The mean was somewhat higher at 20.4 times or about 2.5 exposures per week.

- **Youth recall increased drastically from 2000 and 2002 to early 2003, both overall and among every subgroup.** Despite the fact that youth GRPs were only moderately higher during October 2002 to June 2003 (the eligible ad period for youth to be asked about) compared to earlier time periods, large and significant increases in recall of Campaign TV ads were reported (Table 3-N and Detail Table 3-2).
  - Dramatic increases in the average number of times youth recalled seeing Campaign ads a month were also seen. As can be seen in Table 3-N, in 2000 the median youth recalled seeing Campaign ads about 5 times a month and in 2003 youth recalled seeing Campaign ads about 16 times a month.
  - In 2000, 37 percent of youth recalled having seen an ad at least weekly, in 2002 around 52 percent, and in 2003, 76 percent of youth recalled seeing a television ad weekly (Table 3-O).

**Table 3-N. Change in youth recall of specific television ads heard per month across waves (November 1999 through June 2003)**

Number of ads heard in recent months	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	All Waves %
	2000 (%)	2000 (%)	2001 (%)	2001 (%)	2002 (%)	2002 (%)	(Jan - Jun) 2003 (%)	
0 times	17.5	12.7	13.2	11.9	11.9	8.0	3.2	11.1
0.01 - 0.99	7.9	7.7	4.8	4.5	6.4	5.0	2.5	5.5
1 - 3.99	39.7	41.2	33.7	28.7	35.3	30.4	18.8	32.4
4 - 11.99	29.3	31.4	38.1	41.3	35.5	41.3	40.7	36.9
12 or more	5.5	7.1	10.2	13.6	11.0	15.3	34.9	14.1
Median	5.17	5.36	7.41	9.29	7.25	9.65	16.36	8.15

**Table 3-O. Change in youth recall of having seen specific television ads at least once per week**

Having seen TV ads at least weekly	Waves 1 and 2	Waves 3 and 4	Waves 5 and 6	Wave 7	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
	Sep 99 - Dec 00	Year 2001	Year 2002	(Jan - Jun) 2003		
Overall (%)	37.0	51.6	51.8	75.6	<b>38.6* (35.3 to 41.9)</b>	<b>21.7* (17.7 to 25.7)</b>
TV GRPs per week	133.4	137.7	122.1	133.8**		

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

\*\*During the first 10 weeks of the Marijuana Initiative, TV GRPs were 213 per week; for the entire Marijuana Initiative period October 2002 to June 2003 there were 139 TV GRPs per week.

- **What is driving this considerable change in recall?** No single explanation is apparent. It is likely that several factors may have contributed to such an increase.
  - One possible explanation is the amount and purchase pattern of GRPs given when the bulk of interviewing was done during Wave 7. The Campaign bought television GRPs unusually heavily during the first 3 months of 2003. Youth television GRPs reached an average of 212

per week between January and mid-March, compared to the average throughout the campaign of 132 GRPs per week. At the same time, about two-thirds of the Wave 7 sample was interviewed in February, March, or April of 2003. They would have been asked about recall of ads that were broadcast in the 2 calendar months prior to the interview: February interviews would have been asked about December and January ads, March interviewees about January and February, and April interviewees about February and March ads. Thus the bulk of Wave 7 youth interviewees would have been asked for their recall of ads that were much more heavily played than is typical. Thus some of the higher recall may have reflected the simple increase in ad buys during the period most relevant to the interviewees' recall.

- There also may have been more efficient ad purchases during this period. The particular slots and media purchases may have produced higher effective recall than suggested by the GRP purchase per se. There is no direct evidence concerning this speculation available to the evaluators.
- The theme and content of the ads offer another possible reason to explain the increase in television ad recall. The Marijuana Initiative is the first time in the Media Campaign history where every television and radio ad shared a single theme or message throughout a wave. Additionally, for youth, it is the first time a similar theme and message has run for a prolonged period of time. As a result of these factors, it is possible that youth mistakenly reported recalling an ad that was similar to one they actually saw. Or they may have tended to overestimate the frequency with which they saw it. Additionally, there may have been reinforcement of recall in two other ways. First, because the anti-marijuana television ads' messages were similar, youth could have had the impression that they were "seeing the ads everywhere." Second, as will be discussed below, the Campaign TV ads were also sometimes used in soundtrack versions on radio. The high level of recall of TV ads may reflect confusion about the medium on which an ad was heard or seen.
- Finally, the ads that are part of the Marijuana Initiative may have been more memorable than earlier ads. However, as will be seen below, these ads were not more positively evaluated than other ads,<sup>11</sup> nor were youth much more likely to have recalled discussing drug ads with others during this period (Detail Tables 3-55 and 3-56). Both of these might have been expected if they were more memorable. Still the stronger content of these ads may have led to a perception of frequent exposure, without necessarily leading to higher evaluations or more discussion with others.

### Parent Recall of Television Specific Advertising

Across all waves, about 79 percent of parents recalled seeing at least one of the ads that had been playing in the previous 60 days, with the median number of ads recalled at less than 6 or about 1.5 per week (Table 3-P). This overall score hides a sharp trend in recall of television ads. In 2000, about 62 percent recalled seeing at least one ad; by 2002 this had grown to nearly 90 percent, and in the first half of 2003 nearly 95 percent recalled seeing at least one ad. The median number of viewings of parent-targeted TV ads in recent months accelerated similarly, from a median of less than 3 in 2000 to more than 10 in 2003.

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<sup>11</sup> One of the ad evaluation questions asks: "Did this ad get your attention?"

**Table 3-P. Change in parent recall of specific television ads heard per month across waves (November 1999 through June 2003)**

Number of ads heard in recent months	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	All Waves
	2000 (%)	2000 (%)	2001 (%)	2001 (%)	2002 (%)	2002 (%)	(Jan - Jun) 2003 (%)	
0 times	33.9	41.8	33.1	20.0	10.8	13.2	6.4	21.9
0.01 - 0.99	7.9	7.0	9.3	4.7	4.3	4.8	3.7	5.8
1 - 3.99	32.8	28.5	37.8	36.8	34.4	30.3	32.2	33.2
4 - 11.99	19.8	17.8	16.4	31.7	39.6	39.5	47.8	31.2
12 or more	5.7	4.8	3.4	6.7	11.0	12.1	9.9	7.9
Median	2.47	2.00	2.37	5.88	8.01	8.40	10.03	5.45

How is this pattern of increasing recall of television ads best explained? Table 3-Q compares the percentage of parents who recalled seeing at least one ad per week with the number of television-specific GRPs that the Campaign purchased in each year. These both track reasonably closely over time, suggesting at least part of the increase in recall can be attributed to the increasing purchase of television GRPs for parents. In addition, several of the same explanations relevant to youth are relevant to parents as well. There may have been a reinforcement of recall because radio and television broadcast very similar ads. Thus for instance, the high level of recall of TV ads may reflect confusion about the media on which an ad was heard or seen. There also may have been more efficient ad purchases during Wave 5 and forward so that the particular slots and media produced higher effective recall than suggested by the GRP purchase per se (Figure 3-C). Or perhaps, the ads simply became more memorable in Waves 5, 6, and 7.

**Table 3-Q. Change in parent recall of having heard television ads at least once per week**

Having seen TV ads at least weekly	Waves 1 and 2	Waves 3 and 4	Waves 5 and 6	Wave 7	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
	Sep 99 - Dec 00	Year 2001	Year 2002	(Jan - Jun) 2003		
Overall (%)	24.1	29.3	51.1	57.7	<b>33.6* (30.4 to 36.8)</b>	<b>6.6* (3.6 to 9.5)</b>
Television GRPs	48.0	76.0	90.0	97.0	—	—

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

Another possible explanation is that recall is steadily increasing simply as a result of the Campaign having existed for a longer period of time. Although youth and parents are asked only about ads seen in the past 2 months, they may be summing all of their perceived cumulative exposure. However, if this were the case, we would also expect to see such an increase in reports to general campaign exposure and, as was discussed in the previous section, such an increase was not seen.

## Radio Recall

The Media Campaign complemented its purchases of television time with purchases of radio time. For youth in 2003, that included an average of 74 weekly targeted GRPs and approximately 50 weekly targeted GRPs for parents. As previously noted, a sample of radio ads was played for each parent and youth between 12 and 18 years of age. Respondents were asked whether they had ever heard each radio ad, and how often, following the question format of the television ads.



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

Beginning in Wave 2, however, all radio ads were played for both youth and parent respondents, regardless of whether they were audio duplicates of TV ads. Such media source issues did not compromise Wave 2 data as no network radio ads for youth were audio duplicates of a television ad. However, for parents beginning in Wave 3 (early 2001) and for youth beginning in Wave 4 (late 2004), radio ads that were essentially television ad soundtracks received a considerable number of both television and radio GRPs. Parent radio recall estimates for Waves 3 through 7 (2001-2003) and youth radio recall estimates for Waves 4 through 7 (late 2001-2003) may be biased upward compared to previous wave estimates, given the heavy overlap in ads on both media.

### Youth Recall of Radio Specific Advertising During the Marijuana Initiative

Overall in the first half of 2003, youth campaign radio ads were recognized by 56 percent of 12- to-18-year-olds. This left 44 percent who reported no recognition of the youth campaign radio ads presented. The mean number of targeted radio ad encounters in recent months among this age group was 3.34, although the median was 0.57 (Table 3-R and Detail Table 3-17).

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

Number of ads heard in recent months	Wave 2*	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	All Waves
	2000 (%)	2001 (%)	2001 (%)	2002 (%)	2002 (%)	(Jan - Jun) 2003 (%)	
0 times	65.2	42.7	69.5	86.2	95.8	43.5	67.5
0.01 - 0.99	10.9	17.2	10.5	5.3	1.5	11.3	9.1
1 - 3.99	20.3	27.8	16.9	7.1	2.5	31.9	17.3
4 - 11.99	3.4	10.9	2.7	1.4	0.1	12.2	5.5
12 or more	0.2	1.3	0.4	0.0	0.0	1.0	0.6
Median	0.00	0.42	0.00	0.00	0.00	0.57	0.00

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

- **Wave 7 was only the second Wave where more than half of the youth recalled hearing any of the radio ads. The Wave 7 results were an increase over the 2002 radio recall and a return to the levels of the first half of 2001 (Wave 3)** (Detail Tables 3-16 and 3-17). A similar pattern is suggested by Table 3-S, which shows the percent of youth who recalled having heard a radio ad at least once a week.

These patterns do not strongly coincide with changes in per week youth radio GRP purchases: in 2001, 65 GRPs were purchased; in 2002, 62; and in 2003, 74. Table 3-S compares those annual GRP estimates with the percentage of youth who recalled having heard ads at least once per week. While the radio GRP purchases in 2002 were slightly lower than in the surrounding years, the difference seems insufficient to account for the difference in levels of recall.

**Table 3-S. Change in youth recall of having heard radio ads at least once per week**

	Waves 1 and 2 Sep 99 – Dec 00	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan – Jun) 2003	2001 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Having heard radio ads at least weekly	N/A	7.7	0.8	13.2	5.5 (0.0 to 10.6)	<b>12.4* (8.3 to 16.5)</b>
Radio GRPs	N/A	65	62	74	—	—

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

The basis for the fluctuation across Waves in radio recall is not clear. However, the more important conclusion remains. The overall level of recall of radio ads is quite low, on average, with the great majority of youth not recalling hearing one ad weekly, and half or more not recalling any of the specific radio ads.

### Parent Recall of Radio Specific Advertising

Overall, parent campaign radio ads were recognized by 42 percent of parents, although that grew to nearly 65 percent during early 2003. This left 58 percent, overall, and 35 percent in Wave 7 who reported no recognition of the parent campaign radio ads presented. The overall median number of targeted radio ad encounters among parents in recent months was 0, but grew to slightly more than 2 in 2003 (Table 3-T and Detail Table 3-22).

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

Number of ads heard in recent months	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Waves 6	Wave 7	All Waves
	2000 (%)	2000 (%)	2001 (%)	2001 (%)	2002 (%)	2002 (%)	(Jan – Jun) 2003 (%)	
0 times	51.5	53.8	41.7	49.0	91.9	81.4	35.4	58.5
0.01 to 0.99	9.2	5.7	11.8	4.4	0.7	3.4	9.9	6.3
1 to 3.99	29.3	29.6	29.5	31.8	4.4	12.0	42.8	25.3
4 to 11.99	8.2	10.5	15.2	12.7	2.2	2.9	11.1	8.8
12 or more times	1.7	0.4	1.9	2.1	0.8	0.3	0.8	1.1
Mean	0.0	0.0	0.71	0.24	0.00	0.00	2.05	0.0

- **Parent recall of Campaign radio ads increased significantly in 2003 from 2002.** Table 3-U shows that in 2002, only 3.1 percent of parents recalled having heard radio ads at least once per week, but in 2003 this jumped to 11.9 percent. Importantly, however, this 11.9 percent is not statistically different from the 10.5 percent of parents that recalled weekly radio exposure in 2000.

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

	Waves 1 and 2 Sep 99 – Dec 00	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan – Jun) 2003	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Having heard radio ads at least weekly	10.5	15.9	3.1	11.9	1.4 (-4.4 to 7.2)	<b>8.8* (3.7 to 13.9)</b>
Radio GRPs	68	60	43	40	—	—

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

- **As with youth radio recall, the reason behind this increase is unclear.** Increases of recall of radio ads do not track with GRP purchases. In 2000, 68 parent radio GRPs were purchased; in

2001, 60; in 2002, 43; and in 2003, 40. It is possible, for both youth and parents, that the increasing integration of television and radio messages produced higher reports of recall of both.

However, as with youth radio, the fluctuation across waves in average recall does not affect the basic conclusion—that the great majority of parents do not recall hearing ads even once per week, and many do not recall hearing any radio ads at all.

### 3.2.3 Recall of the “Brand”

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

It is clear that the Campaign’s brand has diffused into the populations of both parents and youth with early 2003 showing evidence for that even more strongly than previous waves. The Campaign introduced the parent brand first, which involved a series of phrases that included a set-up word, such as “Communication,” and ended with a colon and the phrase: “the Anti-Drug,” for example, “Communication: The Anti-Drug.” The youth brand, introduced at the end of 2000, used a similar approach. In the first series of ads, youth were asked to name what their anti-drug was—meaning what it is that keeps them from using drugs. In a typical ad, a series of blanks would precede the phrase: |\_| |\_| |\_| |\_| |\_|: My Anti-Drug. In some ads, the blanks would have a possible response filled in, e.g.: “*MUSIC*: My Anti-Drug” as if it were written in by the respondent. Many of the Marijuana Initiative youth advertisements included a variant of the brand phrase, e.g., “Facts: the anti-drug” which reflects the change in focus introduced with the Marijuana Initiative. However, the phrase is similar enough to the original to expect that recognition of the phrase would continue to grow.

To evaluate the extent to which youth and parents recognize the brand, from 2001 to the first half of 2003, NSPY included a section focusing on brand recall. This section was presented to respondents before presenting the Campaign ads for recall since the ads often included the brand.

Youth were asked:

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

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

Parents, in 2001, parents were asked:

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

In 2002 and 2003, parents were asked:

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

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

- **Recall of the brand is increasing.** In the first half of 2001, when this question was first asked, less than 60 percent of the 12- 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 2003, recall of the brand increased to 88 percent.

Approximately 46 percent of the parents responded positively to the Campaign brand in Wave 3. In Wave 4, Campaign brand recall among parents increased to 63 percent. In Wave 5, approximately 62 percent of parents responded positively to the newly worded campaign brand question. This continued to increase to 71 percent in Wave 6 and 82 percent in Wave 7.

These increases in reported brand recall are possibly the result of the brand having been on the air for a longer period of time, thus more youth and parents were exposed to it. These were substantial recognition rates, but there is a concern. It is possible that some of the youth and parents may have said “yes” because they wanted to appear knowledgeable, or because the phrase sounded familiar enough that they thought they might have heard it, even if they had not. While the increasing recognition of the brand phrase establishes that it is being learned, the trend data do not provide any baseline for what claimed recognition would have been without the Campaign.

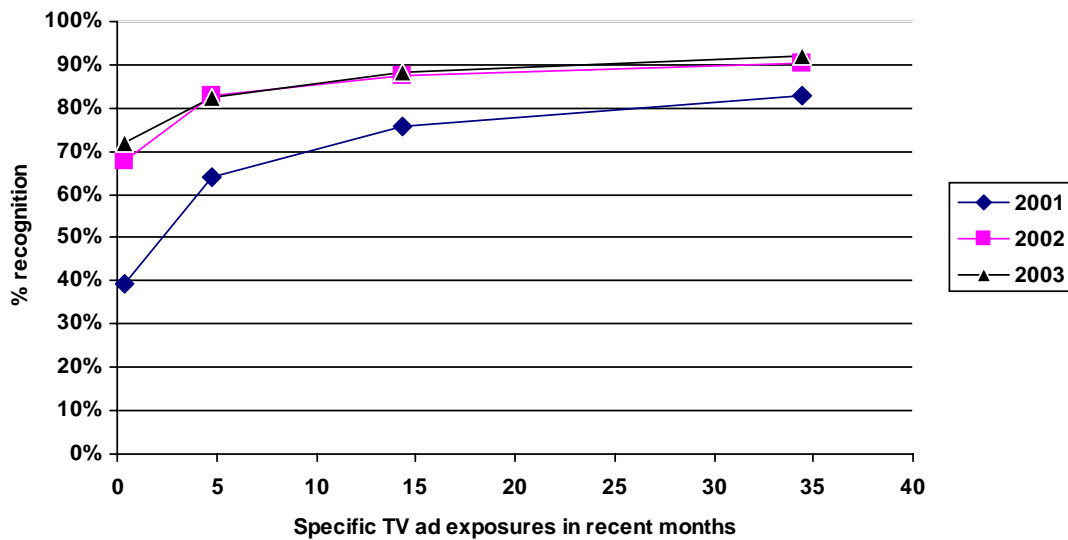
It was not possible with the NSPY to obtain an estimate of recall before the brand was introduced, which would have been the strongest way to estimate a baseline level. Therefore, two other approaches were used in the evaluation instead.

In one approach, the brand recall rates were compared across levels of the specific ad exposure measure used above. If the brand recall claims were reliable, they should be substantially related to the specific Campaign ad recall claims since the ads often included the brand. Those with more exposure to such ads would have had many more opportunities to see or hear the brand. (Evidence for the

validity of the specific recall measures was strong,<sup>12</sup> so if the brand recall was associated with it, there would be reason to accept the brand recall as credible as well.)

Figure 3-D presents the association of exposure and brand phrase recognition for each year starting in 2001. In 2001 the association is very strong, with the group least exposed reporting less than 40 percent recognition, while the group most exposed reports more than 80 percent recognition. In the following 2 years the association is weaker, but largely because the group with the least exposure is much more likely to recognize the brand. The more people were exposed to the Campaign, the more they recalled the brand, just as would be expected.

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



The second approach was to ask about recall of phrases that sounded like they might have been used but had not been. The two false brands that were played to youth respondents in 2001 were “I’m drug free and I’m doing just fine” and “Drugs—I don’t need them.”<sup>13</sup> From 2001 through 2003, recall rates for these false brands was around 56 percent. This was a surprising result, especially because of the evidence of increasing brand learning on the basis of the association of ad recall and true brand recognition as described above. Importantly, while recall of the brand increased each year, recall of the false brands remained relatively consistent. For parents, where the overall recognition during Waves 6 and 7 of the true parent phrase was 77 percent, the recognition of the false phrases was around 49 percent.

Prompted by the idea that the high recall rates of the false brands were in part a result of the false brands sounding like reasonable brands and were easily thought of as legitimate, a “new” false brand for youth was introduced in late 2002 “Drugs: one word—dead.” It was designed to sound less conventional. Evidence was found in support of this idea. While around 56 percent of youth respondents in Wave 5 reported having seen or heard the false brand phrase “I’m drug free and I’m doing just fine,” only 38 percent reported having seen or heard the new false brand phrase “Drugs, one word—dead.” Given that the Campaign brand phrase is also unusual sounding and looking, like this “dead” phrase it may be reasonable to assume that the true baseline would have been close to the

<sup>12</sup>Hornik et al. (2001). Appendix C, pages C-1-C-5. Southwell et al, 2002.

<sup>13</sup>“Drugs—I don’t need them” was replaced in Wave 5 as discussed in the following paragraph.

38 percent false recognition for this phrase, rather than the 56 percent achieved by the “better” sounding false brands.

As additional support for the claim of true brand learning, there is less evidence of an association for youth between the measures of television ad recall and recall of the false brand. Approximately the same proportions of youth claim to recall the false brands, regardless of their levels of television ad recall.

In sum, although it is not possible to calibrate the degree of brand phrase learning, it is clearly substantial. If it is assumed that either the recognition reported by those with the lowest level of exposure in 2001 (39%) or the proportion who incorrectly recognized the false “dead” phrase (38%) as estimates of prelaunch baselines, and compare that to the average recognition level achieved in 2003 (83%), it is clear that the phrase was learned by no less than 40 percent of the youth population.

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

### 3.2.4 Television Ad Evaluation

All respondents were asked to evaluate a subset of the television ads that they reported having seen in recent months. The goal was to assess how individuals interpret and evaluate ads from the Media Campaign when they see or hear them.

Three positively phrased evaluative questions (whether the ad was attention getting, convincing, or said something important to the respondent) were summed to create a mean positive evaluation score for each ad and summed again for each respondent across a random subset of 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).

- **The mean ad assessment for youth and parents did not significantly change from 2000 or 2001 to early 2003; there is no evidence that youth or parents evaluated the Marijuana Initiative ads significantly differently than other ads** (Table 3-V and Detail Tables 3-12 through 3-15).
- **Overall, youth tended to favorably rate the television Campaign ads that they were shown across all years** (Table 3-V and Detail Tables 3-12 and 3-13).
  - On a five-point scale ranging from -2 to +2 (positive values reflecting more favorable ad evaluations), mean responses from the three age groups of youth interviewed (12- to 13-year-olds, 14- to 15-year-olds, and 16- to 18-year-olds) ranged from 0.54 to 1.05 across all years. Responses to the “exaggerated the problem” evaluative question were also favorable to the campaign, with a tendency for youth respondents to somewhat disagree with the notion that an ad “exaggerated the problem.” The responses across all years ranged from 0.84 to 0.54.
  - There are several other subgroup differences in evaluations of the ads worth noting. In addition to older youth, white youth and males tended to be more skeptical in their ad evaluations. High sensation-seekers and high-risk youth were also more skeptical (Detail Table 3-12).

**Table 3-V. Television ad evaluation scores among parents and youth  
(November 1999 through June 2003)**

Group	Waves 1 and 2 Sep 99 – Dec 00	Waves 3 and 4 Year 2001	Waves 5 and 6 Year 2002	Wave 7 (Jan – Jun) 2003	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
<b>Mean Evaluation Score</b>						
Parents	1.07	1.27	1.17	1.19	0.12 (-0.02 to 0.26)	0.02 (-0.09 to 0.13)
Youth 12 to 18	0.76	0.75	0.81	0.85	0.09 (-0.05 to 0.23)	0.04 (-0.09 to 0.17)
<b>Disagree that the ad exaggerated the problem</b>						
Parents	0.99	1.22	1.10	1.06	0.07 (-0.16 to 0.30)	-0.04 (-0.24 to 0.16)
Youth 12 to 18	0.73	0.72	0.76	0.68	-0.05 (-0.23 to 0.14)	-0.08 (-0.26 to 0.10)

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

- Similar subgroup differences were seen regarding the belief that the TV ads “exaggerated the problem.” Older youth, males, high sensation-seekers, and high-risk youth were more likely to agree that the ads “exaggerated the problem” (Detail Table 3-13).
- **Parents evaluated the ads more highly than youth evaluated the ads.**
  - On a five-point scale ranging from -2 to +2, mean parent evaluative responses were 1.18 overall and 1.19 in 2003. The mean parent response to the “exaggerated the problem” question was 1.11 overall and 1.06 in 2003. The difference is not statistically significant (Detail Tables 3-14 and 3-15).
  - Most demographic subgroups of parents offered largely similar overall assessments of the Campaign TV ads, although some differences did appear. Mothers rated the ads more favorably than did fathers. African American parents were somewhat more favorable in their response to the TV ads than were white parents (Detail Table 3-14).
- **Parents’ evaluations of the ads exhibited a more complex pattern than did youths’ evaluations.**
  - Parents’ evaluations of the ads increased significantly from 2000 to 2001. This trend reversed in 2002 and stayed at a similar lower level through early 2003 (Table 3-V and Detail Table 3-14).
  - A similar pattern was seen on the “exaggerate the problem” measure as for mean ad evaluation. Parents were less likely to see the TV ads as exaggerations in 2001 than in 2000. However, in 2002 and 2003, part of the improvement was reversed with a small increase in perceived exaggeration (Detail Table 3-15).

### 3.2.5 Internet Use and Encounters with Drug Information On Line

#### Youth Internet Use

The vast majority of youth have some contact with the Internet, as can be seen in Table 3-W (and Detail Table 3-37). In 2003, approximately 90 percent of youth report using the Internet in the past 6

**Table 3-W. Youth Internet use and encounters with drug information on line in past 6 months  
(November 1999 through June 2003)**

	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan - Jun) Year 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Percent using the Internet at least a few times	84.9	88.4	88.6	89.8	<b>4.9* (2.8 to 7.0)</b>	1.2 (-0.2 to 2.6)
Percent visiting anti-drug Internet site among all youth	9.5	10.0	8.4	9.0	-0.6 (-2.3 to 1.1)	0.6 (-0.6 to 1.8)
Percent visiting pro-drug Internet site among all youth	5.0	5.5	4.6	4.8	-0.2 (-1.5 to 1.0)	0.2 (-1.0 to 1.3)

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

months. Internet use among 12- to 18-year-olds significantly increased from 2000 to 2001 about 4 percentage points, but remained about the same in 2002 and 2003. Overall, there was no change in youth reporting visiting pro-drug or anti-drug sites across years. Only one subgroup (14- to 16-year-olds) significantly changed between 2000 and 2003 in terms of visiting pro-drug-related sites. No subgroup changes were observed for visiting either anti-drug or pro-drug-related sites between 2002 and 2003.

- **There was no significant change between 2002 and 2003 in the proportion of youths who reported using the Internet to visit pro-drug or anti-drug sites.** Fewer than 10 percent of all youths claimed to have visited an anti-drug site, and fewer than 5 percent claimed to have visited a pro-drug site; those proportions were close to what they were in 2000 and in 2002 (Table 3-W, Detail Tables 3-41 and 3-42).
- **High sensation-seeking youth and high-risk youth were more likely to visit pro-drug Internet sites.** Approximately 9 percent of high risk youth reportedly visited pro-drug sites in the past 6 months, whereas only roughly 3 percent of their low risk counterparts did so. Likewise, 7 percent of high sensation-seeking youth reported visiting pro-drug Internet sites, while only 2 percent of low sensation-seeking youth reported visiting such sites (Detail Table 3-39).
- **Race and sensation seeking were associated with Internet use.** White youth reported higher rates of Internet use than either African American or Hispanic youth. The disparity seen in 2000 with high sensation-seeking youth reporting more contact with the Internet than low sensation-seeking youth is no longer significant by 2003 (Detail Table 3-37).
- **Overall, the rate of Internet use for accessing drug-related information has not changed over time, and only two significant subgroup changes were found.** A 1.7 percentage point decrease in visiting pro-drug Internet sites from 2000 to 2003 was reported by 14- to 16-year-olds. A 2.5 percentage point increase in visiting anti-drug Internet sites was reported by 16- to 18-year-olds from 2002 to 2003; however, this appears to largely be an artifact of the decrease in such visits in 2002 compared to other years (Detail Tables 3-38 and 3-39).

## Parent Internet Use

Parents remained less engaged with the Internet than were youth. In 2003, only 77 percent of parents reported any use in the previous 6 months compared with approximately 90 percent of youth. Parent



Internet use has increased however. In fact, each year witnessed a significant increase in parent Internet use. The number of parents reporting visiting anti-drug and parenting skill Internet sites has also significantly increased since 2000 (Table 3-X).

**Table 3-X. Parent Internet use and encounters with drug information on line (November 1999 through June 2003)**

	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan – Jun) 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
Percent using the Internet at least a few times	64.3	69.8	74.8	77.4	<b>13.1* (10.0 to 16.3)</b>	2.6 (0.0 to 5.3)
Percent visiting anti-drug Internet sites	6.7	8.6	8.4	9.8	<b>3.0* (1.3 to 4.8)</b>	1.4 (-0.2 to 3.0)
Percent visiting parenting skill Internet sites	7.7	9.4	9.4	11.2	<b>3.4* (1.4 to 5.4)</b>	1.7 (0.0 to 3.5)

\* Between year change significant at p<0.05.

- **The percent of parents using the Internet at least a few times increased significantly from 2000 to the first half of 2003.**
  - Among parents, wide disparities in Internet use by education and race-ethnicity persist. Across all waves, around 90 percent of parents who are college graduates reported use of the Internet in the past 6 months, whereas only 32 percent of those parents with less than a high school diploma claimed such recent use. In addition, African American and Hispanic parents reported a substantially lower likelihood of some contact with the Internet than did white parents (Detail Table 3-40).
  - Patterns among parents are similar to patterns among youth in terms of accessing information about drugs on-line. Neither group did a lot of it. In 2003, 10 percent of parents reported visiting an Internet site with anti-drug information in the past 6 months and 11 percent reported visiting an Internet site that included information about parenting skills during the previous 6 months (Table 3-X and Detail Tables 3-41 and 3-42).
  - Parental education is a telling variable in regard to visiting anti-drug sites and parenting skill Internet sites. A higher percentage of parents with at least some college education visited anti-drug Internet sites than did parents with less education, and more of them visited parenting skill Internet sites (Detail Table 3-41). This is in proportion to their overall heavier use of the Internet.
- **Visits to anti-drug sites and parenting skill sites increased significantly among parents from 2000 to the first half of 2003.** There was a 3 percentage point increase in reports of visiting anti-drug sites and a 3.5 percentage point increase in reports of visiting parenting skill sites from 2000 to the first half of 2003 (Table 3-X and Detail Tables 3-41 and 3-42). This upward trend was significant for the change from 2002 to 2003, as well for both overall internet use and for visits to parenting skill sites, but both of these appear to be only continuations of continuing trends. These increases from 2000 to 2003 are partly a reflection of the overall increase in Internet use. However, they appear to be increasing at even a faster rate than overall use. While Internet use was up 20 percent between 2000 and 2003, parents visiting anti-drug and skills sites was up nearly 46 percent.

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

### 3.3 Anti-Drug Related Education

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

#### 3.3.1 Youth In-School and Out-of-School Anti-Drug Education

The majority of youth reported receiving anti-drug education in school during the past year and in previous years. On average across the 4 years, approximately 75 percent of 12- to 18-year-olds responded that they had ever attended a drug education class or program in school and 64 percent reported attending such an event within the past year. Out-of-school drug education class or program attendance was much lower; on average, 11 percent reported attending in past years and only 6 percent reported attending in the previous 12 months (Table 3-Y and Detail Tables 3-43 through 3-46). Both forms of anti-drug education showed declines during the period of the Campaign.

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

#### 3.3.2 Changes in Youth Anti-Drug Education

Youth reports of in-school anti-drug education suggest that it is decreasing. There was a significant decrease in the percentage of youth that reported ever attending drug education classes or programs in

school from 2000 to 2003. The same decline was seen in attending an in-school drug class in the past 12 months. Out-of-school drug education, both past year and lifetime, has fluctuated from year to year. Out-of-school drug education decreased from 2000 to 2001, increased slightly in 2002, and decreased again in 2003 to its lowest level over the entire period (Table 3-Y and Detail Tables 3-43 through 3-46).

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

	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan – Jun) Year 2003 (%)	2000 to 2003 (95% CI)	2002 to 2003 (95% CI)
In-school drug education in previous years	79.3	75.4	71.6	72.9	<b>-6.4* (-9.0 to -3.9)</b>	1.3 (-1.2 to 3.7)
Past year in-school drug education	66.2	65.0	61.5	62.3	<b>-3.8* (-7.5 to -0.1)</b>	0.8 (-2.4 to 4.0)
Out-of-school drug education in previous years	11.7	10.3	11.5	10.6	-1.1 (-3.1 to 0.9)	-0.9 (-2.5 to 0.6)
Past year out-of-school drug education	7.3	5.8	6.8	5.3	<b>-2.0* (-0.3.6 to -0.4)</b>	<b>-1.5* (-2.7 to -0.2)</b>

\* Between year change significant at p<0.05.

### 3.3.3 Parenting Skills and Anti-Drug Education

Less than a third of parents report having attended drug prevention or parent effectiveness programs. On average across all of the waves, 29 percent reported attendance at a drug abuse prevention activity in the previous 12 months and 28 percent said they attended a parent effectiveness program in the previous year (Detail Tables 3-76 and 3-77). For both of the programs, 2003 marked a period of small declines in attendance. For general drug abuse prevention programs, two major subgroups, whites and parents of 14- to 16-year-olds, indicated a significant decline in attendance between 2000 and 2003, from 30 percent to 27 percent for whites and 31 percent to 27 percent for parents of 14- to 16-year-olds. Parent attendance at parent effectiveness training courses declined over the same period for all parents, with almost all of the decline occurring between 2002 and 2003 (29% versus 26%).

In previous years, African American parents reported significantly higher attendance than either white or Hispanic parents. Although African American parents still report more, in early 2003, the difference was no longer significant. (Detail Tables 3-76 and 3-77).

## 3.4 Discussions about Drugs

In this section, evidence is presented about discussions among youth and parents, and youth and friends concerning drug use, and about the drug advertisements. There is some discussion about the content of talk about drugs and some focus on changes in conversations across time. Differences between youth and parent reports of their conversations are striking. This section begins with an analysis of whether there have been changes in the amount or content of drug talk since the start of the Marijuana Initiative, and then frames that discussion in the longer term context of changes since the start of the Campaign.

### 3.4.1 Youth Discussions with Friends and Parents about Drugs

Most youth have conversations about drugs, and many of them have such conversations frequently. They talk with their parents and with their friends. With their friends they talk about both positive and negative aspects of drug use.

#### Changes in Drug Conversations Associated with the Marijuana Initiative

Over the entire 2000 to 2003 period, there was evidence of change in both parent and youth reports of two or more conversations about drugs in the past 6 months. However, these reported changes had gone in opposite directions, with parents claiming they talked about drugs more with their children and youths claiming they talked less with their parents. The 2002 to 2003 period, corresponding with the Marijuana Initiative, offered only small changes in that pattern. There were no statistically significant changes in the amount of youth-reported conversation with any friends or parents between 2000 or 2002 and 2003. Parents reported only one change between 2002 and 2003, a decrease in conversations with their 16- to 18-year-olds, but no significant changes in their conversations with their younger children. There is evidence for one change in the content of conversations between youth and their friends between 2002 and 2003, with youth reporting slightly fewer conversations with a pro-drug theme (Table 3-Z).

- Overall, the percentage of 12- to 18-year-old youth reporting two or more drug conversations with parents significantly declined by 5 percentage points from 2000 to early 2003.** Significant decreases were seen also among males, whites, both lower and higher risk youth, and high sensation seekers (Detail Table 3-53 and Table 3-Z).

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

Percent with two or more conversations in the past 6 months	Age Groups	Waves	Waves	Waves	Wave 7	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
		1 and 2 Year 2000 (%)	3 and 4 Year 2001 (%)	5 and 6 Year 2002 (%)	(Jan - Jun) Year 2003 (%)		
With friends, reported by youth of ages:	12 to 13	44.2	39.2	39.5	41.1	-3.1 (-7.5 to 1.3)	1.6 (-2.2 to 5.3)
	14 to 15	60.4	65.1	59.9	62.0	1.7 (-3.7 to 7.0)	2.1 (-1.5 to 5.7)
	16 to 18	69.5	70.7	69.4	67.5	-2.0 (-6.0 to 2.0)	-1.9 (-5.8 to 1.9)
	12 to 18	59.2	59.7	57.8	58.1	-1.2 (-3.8 to 1.4)	0.3 (-2.1 to 2.7)
With parents, reported by youth of ages:	12 to 13	57.8	52.0	49.3	50.1	<b>-7.7* (-12.2 to -3.2)</b>	0.8 (-3.4 to 5.0)
	14 to 15	55.2	51.7	49.0	50.2	<b>-5.1* (-10.0 to -0.1)</b>	1.1 (-2.7 to 5.0)
	16 to 18	50.0	46.4	47.5	46.1	-3.9 (-9.1 to 1.3)	-1.4 (-6.0 to 3.3)
	12 to 18	53.9	49.7	48.5	48.5	<b>-5.4* (-8.7 to -2.2)</b>	0.0 (-2.5 to 2.5)
By parents with children of ages:	12 to 13	79.2	81.2	82.8	83.4	<b>4.2* (1.0 to 7.3)</b>	0.6 (-2.3 to 3.8)
	14 to 15	80.5	84.1	85.1	85.5	5.0 (-0.3 to 10.3)	0.4 (-2.9 to 3.7)
	16 to 18	79.0	82.6	84.4	80.2	1.2 (-2.9 to 5.3)	<b>-4.2* (-8.1 to -0.2)</b>
	12 to 18	79.6	82.7	84.1	82.7	<b>3.2* (0.8 to 5.6)</b>	-1.4 (-3.6 to 0.8)

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

- Parents reported much higher levels of conversation with their children at all ages than youth report.** Parent reports of two or more drug-related conversations significantly increased 3 percentage points from 2000 to early 2003 (Table 3-Z). The inconsistency between parent and youth reports is addressed further in Chapter 6, where the effects of the Campaign on parent-child talking are discussed.

In 2003, about 70 percent of youth aged 12 to 18 reported having had at least one conversation about drugs with friends and at least one conversation with parents about drugs in the previous 6 months; and 44 percent reported having had four or more conversations with parents or friends about drugs in the past 6 months (Detail Tables 3-47 and 3-48, 3-52 through 3-54). The analyses that follow present evidence about the association of respondent characteristics and year of interview with both youth and parent reports of discussions about drugs. They use the percentage of youth or parents who report two or more conversations in the previous 6 months as the criterion measure. Overall, 58 percent of youth report this number of conversations with friends and 49 percent with parents in early 2003. In contrast, over 80 percent of parents reported two or more conversations with their children (Detail Table 6-10). These differences will be explored further in Chapter 6.

- **Age, gender, and ethnicity played a role in conversations with friends about drugs.** Older youth aged 16 to 18 were more likely to report having had two or more such conversations with friends than younger youth; the difference between the percentage points for 12- to 13-year-olds and 16- to 18-year-olds reporting two or more such conversations was over 25 percentage points (Detail Table 3-48). Additionally, females were more likely than males to report discussions about drugs. White youth were significantly more likely than African American youth to have had two or more conversations about drugs with friends (Detail Tables 3-48).
- **Sensation-seeking and risk score were also associated with conversations with friends about drug use.** High sensation-seeking youth and high-risk youth reported markedly higher levels of drug conversations than their respective low sensation-seeking and lower risk counterparts. For instance, 73 percent of high-risk youth reported having had two or more conversations with friends about drugs in the past 6 months, compared to only 48 percent of low-risk youth. Similarly, 69 percent of high sensation-seeking youth reported having had two or more conversations with friends about drugs in the past 6 months, while only 46 percent of low sensation-seeking youth reported having had two or more such conversations (Detail Table 3-48). These associations are, in part, an artifact given that older youth have higher sensation-seeking and risk levels and also report a higher rate of conversations.
- **In contrast, youth reports of two or more conversations with parents did not significantly vary by age or ethnicity, but did significantly vary by gender, and sensation-seeking tendency of the child.** Female youth were significantly more likely than male youth to have had two or more conversations with their parents about drugs and low sensation-seeking youth were more likely to have had two or more conversations about drugs with parents than high sensation-seeking youth.

## Changes in Content of Drug Conversations

Table 3-Z, above shows that the proportion of youth reporting two or more conversations about drugs with their friends did not decline significantly between 2000 and 2003, or between 2002 and 2003. However, this result understates two types of changes that appeared to have been occurring. While the proportion of youth who had two conversations with friends over the previous 6 months was stable, the proportion who had at least one conversation was declining. In 2000, 74 percent of all youth reported at least one conversation; this was essentially stable through 2002 but declined between 2002 and 2003 to 71 percent. This change cannot be described as a favorable or unfavorable change vis-a-vis the Campaign since the content of conversation with friends can be pro- or anti-drug. The content of conversations in fact showed a mixed pattern, as described next (Detail Tables 3-49 to 3-51). This set of declines perhaps testifies to some small loss in interest in discussing drugs, overall, rather than a substantial change in how they are being discussed.

In the course of conversations about drug use, youth of all ages discussed the negative consequences that happen because of drugs, but some also spoke positively about drugs. In 2003, around 48 percent of young people aged 12 to 18 reported talking with their friends about “bad things that happen if you use drugs” within the past 6 months. More than 25 percent said they talked about “specific things I could do to stay away from drugs,” and more than 20 percent had conversations about how “marijuana use isn’t so bad” (Detail Tables 3-49 to 3-51).

- **From 2000 to early 2003 there was a significant unfavorable decline of 4 percentage points in the proportion of all youth who reported conversations about “specific things I could do to stay away from drugs”** (Detail Table 3-50). In 2000, 30 percent of the overall sample of youth reported such conversations; a slight decline each year resulted in only 26 percent of youth in 2003 reporting having had conversations about “specific things I could do to stay away from drugs.”
- **Overall, there was an unfavorable decline of 3 percentage points from 2000 to early 2003** in the percent of youth having conversations about negative consequences of drug use. In 2000, 51 percent of youth reported such conversations. This percentage slowly declined to 48 percent in early 2003 (Detail Table 3-51).
- **A 2 percentage point favorable decrease was reported from 2002 to early 2003 in youth having had conversations about marijuana use “not being so bad.”** In 2000 through 2002, approximately 22.4 percent of youth reported conversations about marijuana “not being so bad.” This decreased to 20.5 percent in 2003 (Detail Table 3-49).
- **Several subgroups showed significant changes in the type of conversations they had about drugs.** Sixteen- to 18-year-olds showed a favorable change with a 5 percentage point decrease from 2002 to early 2003 in conversations about “marijuana use isn’t that bad.” Among 12- to 13-year-olds there was a statistically significant 6 percentage point decrease in conversations about the “specific things that I could do to stay away from drugs” from 2000 to early 2003 and a significant decrease of 5 percentage points in discussions about “bad things that happen if you use drugs.” Also worth noting is that high sensation seekers reported a 5 percentage point decrease in conversations about “specific things I could do to stay away from drugs” and “bad things that happen if you use drugs” from 2000 to 2003 (Detail Tables 3-49 through 3-51).

The topics of drug conversations with friends are substantially related to other characteristics of youths.

- **Saying positive things about drugs appears to be largely a function of age.** While few 12- to 13-year-olds reported engaging in conversation about how “marijuana use isn’t so bad,” 19 percent of 14- to 15-year-olds and 30 percent of 16- to 18-year-olds have been involved in such conversations. Age had a smaller effect on the other two discussion types. Older youth, those 16 to 18 years old, had fewer conversations about “specific things I could do to stay away from drugs” than younger teens, but had more conversations about the “bad things that happen if you use drugs” than younger teens (Table 3-AA).

**Table 3-AA. Youth topics of conversation with friends in 2003**

Age groups	Specific things I could do to stay away from drugs (%)	Bad things that happen if you use drugs (%)	Marijuana use isn't so bad (%)
12 to 13	26.8	41.9	8.8
14 to 15	26.1	48.7	18.9
16 to 18	25.6	52.1	30.2

- **Sensation seeking and risk score are strongly associated with a youth's likelihood of having conversations about how "marijuana use isn't so bad."** While 30 percent of high sensation-seeking youth had such conversations in the past 6 months, only 9 percent of low sensation-seeking youth had them. And compared to the relatively small 9 percent of low-risk youth who had conversations about how "marijuana use isn't so bad," 38 percent of high-risk youth had similar talks with friends. Sensation seeking and risk also appear to be associated with other types of drug conversations. Fewer high sensation-seeking youth and high-risk youth had conversations in the past 6 months about "specific things they could do to stay away from drugs" than their low sensation-seeking and low-risk counterparts (Detail Tables 3-49 through 3-51).
- **Ethnicity was also associated with the types of conversations that youth had about drugs.** White youth were significantly less likely than youth of other ethnicities to have had conversations with friends about "specific things they could do to stay away from drugs" and Hispanic youth were more likely to discuss negative consequences of drug use than other ethnicities (Detail Tables 3-49 through 3-51).

### 3.4.2 Discussions about Anti-Drug Ads

Youth reported having conversations about the Campaign's anti-drug ads (Table 3-AB). In early 2003, 28 percent of 12- to 18-year-olds reported having a conversation about the anti-drug ads with their parents and 43 percent recalled having such a conversation with friends or others in the previous 6 months (Table 3-AB and Detail Table 3-55 and 3-56). From 2002 to 2003 there was a statistically significant overall increase in the percentage of youth who reported talking with friends or others about anti-drug ads, although there was no change in the proportion of youth who recalled ad-related conversations with their parents. This increase on conversation with friends or others was particularly striking among 16- to 18-year-olds, whose pre-2003 level of around 40 percent jumped to more than 47 percent in 2003. The timing of this change is consistent with a substantial Marijuana Initiative effect.

- **Age, ethnicity, sensation seeking, and risk score were related to conversations with parents about the anti-drug ads.** A statistically significant higher percent of younger youth aged 12 to 13 reported conversations with their parents about anti-drug ads than did older youth. Similarly, a greater proportion of low sensation-seeking and low-risk youth reported anti-drug ad conversations with their parents than did high sensation-seeking and high-risk youth. Also, African American youth had significantly more such conversations with parents compared to white youth (Detail Table 3-55).
- **Gender and risk propensity were strongly associated with anti-drug ad conversations with friends and adults other than parents.** Females were significantly more likely than males to have talked with friends or other adults about the anti-drug ads. High risk youth were more likely to talk about the anti-drug ads than low risk youth (Detail Table 3-56).

**Table 3-AB. Changes in youth conversations about anti-drug ads from 2000 to 2003**

Age group and discussion partner	Percent with at least one conversation about anti-drug ads in past 6 months				2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan - Jun) Year 2003 (%)		
<b>Discussions with parents:</b>						
Youth aged 12 to 13	38.7	36.0	35.1	36.9	-1.8 (-5.9 to .2.2)	1.8 (-2.2 to 5.9)
Youth aged 14 to 15	30.4	28.0	27.2	27.1	-3.4 (-7.9 to 1.2)	-0.1 (-3.9 to 3.6)
Youth aged 16 to 18	18.8	21.2	22.3	21.4	2.6 (-1.8 to 6.9)	-0.9 (-4.2 to 2.4)
Youth aged 12 to 18	28.3	27.7	27.5	27.6	-0.6 (-2.8 to 1.5)	0.1 (-1.9 to 2.1)
<b>Discussions with others (friends, other adults):</b>						
Youth aged 12 to 13	42.2	38.3	36.9	40.2	-2.1 (-6.1 to 1.9)	3.3 (-0.3 to 6.8)
Youth aged 14 to 15	42.4	41.8	41.4	40.6	-1.8 (-7.1 to 3.5)	-0.8 (-4.7 to 3.1)
Youth aged 16 to 18	40.1	37.8	39.8	47.3	<b>7.1* (2.3 to 11.9)</b>	<b>7.5* (2.8 to 12.1)</b>
Youth aged 12 to 18	41.5	39.2	39.5	43.2	1.7 (-1.0 to 4.4)	<b>3.7* (1.5 to 6.0)</b>

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

## 3.5 Perceptions of Media and Community Attention to Drug Use

Both youth and parents reported about perceived media coverage of drugs and youth. Parents were also asked about how much attention was being paid to drug issues in their communities. These questions are used to understand more clearly the context in which the Campaign operates.

### 3.5.1 Youth's Perceived Media Coverage of Youth and Drugs

Youth see and hear a good deal about drug use among young people in the mass media. More than 95 percent of all youth reported at least monthly exposure to media stories about young people and drug use.<sup>14</sup> The media sources that respondents were asked about included television and radio news; television movies, sitcoms, and dramas; television talk shows; rental and theater movies; and magazines. However, there was a statistically significant decrease in the reported overall exposure to drug-related coverage from 2000 to the first half of 2003, as well as significant decreases in exposure to all individual media sources except movies. There were also significant declines in such exposure between 2002 and 2003, but they seemed to be part of the continuing pattern of decline rather than a break with the previous trends (see Table 3-AC).

- **In 2003, 43 percent of youth noticed media coverage about drug use among young people at least once a week on at least one of these media.** Nearly 30 percent noticed such stories weekly on television or radio news, and over 20 percent recalled such stories appearing weekly in television movies, sitcoms, or dramas. Fewer young people noticed such stories appearing weekly in movies, television talk shows, or in magazines (Table 3-AC and Detail Tables 3-57 through 3-61).

<sup>14</sup>See question D9 in the Teen questionnaire.



**Table 3-AC. Youth’s exposure to weekly media stories about drugs across waves**

	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan – Jun) 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
TV or radio news	32.2	28.9	25.7	27.6	<b>-4.6* (-7.2 to -2.0)</b>	1.9 (-0.2 to 4.0)
TV dramas, sitcoms, movies	23.3	22.6	21.8	21.3	-2.0 (3.9 to -0.1)	-0.6 (-2.6 to 1.5)
TV talk, magazine shows	21.8	20.4	17.8	15.4	<b>-6.5* (-8.7 to -4.3)</b>	<b>-2.5* (-4.3 to -0.6)</b>
Radio (not news)	13.2	14.6	16.6	17.8	<b>4.6* (2.0 to 7.2)</b>	1.2 (-1.2 to 3.6)
Movies	18.0	18.1	17.4	16.8	-1.2 (-3.3 to 0.8)	-0.6 (-2.2 to 1.0)
Magazines	12.0	9.9	11.0	9.3	<b>-2.7* (-4.3 to -1.1)</b>	<b>-1.7* (-3.1 to -0.2)</b>
At least one source	52.1	48.8	45.2	43.1	<b>-8.9* (-11.8 to -6.1)</b>	<b>-2.0* (-4.0 to -0.1)</b>

\* Between year change significant at p<0.05.

Recall of drug stories on various media is related to ethnicity. African American youth were more likely than white and Hispanic youth to recall stories about youth and drugs in all media, and were significantly more likely to recall such stories than whites in all media but movies (Detail Tables 3-57 through 3-61).

- **From 2000 to early 2003 there was an overall statistically significant decrease of 9 percentage points in youth recalling stories about drug use in at least one medium in recent months.** While in 2000 over 52 percent of youth recalled stories with drug themes, in 2003, only 43 percent of youth recalled such stores. From 2000 to the first half of 2003, unfavorable decreases were significant for all types of TV content, radio news, and magazines (Table 3-AC and Detail Tables 3-57, 3-59, and 3-62). Radio programming (not news) was the only exception to the pattern of unfavorable declines. Exposure to weekly media stories about drugs on this medium increased from 13.2 percent in 2000 to 17.8 percent in 2003. Overall, however, youth are clearly seeing fewer discussions of the issue of drug use among young people in the mass media, either because coverage has been reduced or the youth are reducing their exposure to the medium asked about.

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

Parents report often seeing drug themes presented in the media. However, these exposures have declined a small but significant amount between 2000 and 2003. The 2002 to 2003 period showed no additional significant changes, although the overall downward trend appeared to continue (Table 3-AD).

- **From 2000 to 2003, there was a 4 percentage point decrease in parents reporting they heard a weekly story about youth and drug use in at least one medium in the past year, from 64 percent in 2000 to about 60 percent in 2003.** However, the overall small decline occurred in the context of some small increases and decreases in specific media exposures (Table 3-AD).
- **Significantly fewer parents reported noticing stories about youth and drug use in at least one source while significantly more reported noticing stories in two specific media sources.** Parents’ reports of having noticed such stories in TV or radio news programs decreased significantly by 5 percentage points from 2000 to the first half of 2003. Parents’ reports of noticing

stories about young people and drug use on non-news radio programs increased significantly 5 percentage points from 2000 to early 2003, and parents' recall of having noticed such stories in TV movies, sitcoms, or dramas at least weekly increased 5 percentage points as well from 2000 to the first half of 2003 (Table 3-AD and Detail Tables 3-64 to 3-68).

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

	Waves 1 and 2 Year 2000 (%)	Waves 3 and 4 Year 2001 (%)	Waves 5 and 6 Year 2002 (%)	Wave 7 (Jan - Jun) Year 2003 (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
TV or radio news	50.4	47.5	46.4	45.2	<b>-5.2* (-8.4 to -1.9)</b>	-1.2 (-4.0 to 1.7)
Newspapers	32.8	31.3	30.4	29.5	-3.3 (-6.6 to 0.0)	-0.9 (-3.6 to 1.9)
TV dramas, sitcoms, movies	28.6	32.5	33.7	33.9	<b>5.2* (2.3 to 8.1)</b>	0.2 (-2.6 to 3.0)
TV talk, magazine shows	22.8	21.4	22.6	23.3	0.6 (-2.0 to 3.2)	0.8 (-1.4 to 2.9)
Radio (not news)	13.2	14.6	16.6	17.8	<b>4.6* (2.0 to 7.2)</b>	1.2 (-1.2 to 3.6)
Movies	9.4	9.5	11.2	10.8	1.4 (-0.5 to 3.2)	-0.4 (-2.4 to 1.6)
Magazines	8.2	7.6	9.6	9.1	0.8 (-1.1 to 2.8)	-0.5 (-2.6 to 1.6)
At least one source	64.0	63.0	61.6	60.4	<b>-3.6* (-6.7 to -0.6)</b>	-1.2 (-3.7 to 1.4)

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

By 2003, 45 percent of all parents reported having seen or heard stories about drug use on television or radio news programs at least weekly in recent months. Around 30 percent of parents noticed such stories appearing weekly in newspapers and in television entertainment programs; and more than 20 percent saw drug-related stories on television talk shows or television news magazines. Fewer parents reported weekly exposure to drug stories from non-news radio, movies, and magazines (Table 3-AD and Detail Tables 3-63 through 3-69).

- **Ethnicity and education were associated with recall of exposure to stories about youth and drugs in the media.** White parents were less likely than both African American and Hispanic parents to report having noticed stories dealing with drug use among young people in all media except newspapers. College graduates were less likely to report having noticed stories on all media except magazine and newspaper articles and news programs (Detail Tables 3-63 through 3-69).

## Parent Reports of Local Anti-Drug Activity

Most parents reported some awareness of anti-drug activity in their localities in the first half of 2003. For most types of local anti-drug activity this was not significantly changed from 2000 or from 2002. However, for the specific area of awareness of anti-drug activities in the community, there has been a continuing decline. The 26 percent awareness in 2003 was down from 34 percent in 2000.

Awareness was stable for most types of awareness of local activities. The 2003 awareness levels for having heard a lot about police crackdowns on drug use or drug sales in their community within the past year (47%) were not significantly different from the 2000 or 2002 levels. Parents reported lower levels of awareness of other local activity, including hearing a lot about drug-related laws proposed by state or local governments within the past year (16%), hearing public officials speak about drugs (12%), and hearing a lot about drug-related propositions or referenda on the ballot for public voting (8%). However these levels of awareness were all basically unchanged from 2000 or from 2002 (Table 3-AE and Detail Tables 3-71 through 3-75).

**Table 3-AE. Change in parent exposure to drug-related communication across waves<sup>1</sup>**

Measure	Waves 1 and 2	Waves 3 and 4	Waves 5 and 6	Wave 7 (Jan – Jun)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
	Year 2000 (%)	Year 2001 (%)	Year 2002 (%)	Year 2003 (%)		
Percentage hearing a lot about anti-drug programs in community in past year	34.3	30.2	30.2	25.5	<b>-8.8* (-11.6 to -6.0)</b>	<b>-4.7* (-7.2 to -2.2)</b>
Percentage hearing a lot about speeches about drugs by public officials in past year	15.2	13.4	13.0	12.3	<b>-2.9* (-5.2 to -0.6)</b>	-0.8 (-2.5 to 0.9)
Percentage hearing a lot about anti-drug laws in past year	17.8	16.4	16.7	16.2	-1.6 (-3.9 to 0.6)	-0.5 (-2.3 to 1.3)
Percentage hearing a lot about drug-related referenda in past year	7.9	8.0	8.8	7.9	0.1 (-1.9 to 2.0)	-0.8 (-2.8 to 1.1)
Percentage hearing a lot about police crackdowns on drug use or sales in past year	45.6	43.8	46.7	46.5	0.8 (-3.0 to 4.7)	-0.2 (-3.2 to 2.8)

<sup>1</sup> For parents with children aged 12 to 18.

\* Between year change significant at <0.05.

There were two statistically significant changes from 2000 to the first half of 2003 in parents’ awareness of drug activities; a 9 percentage point decrease (5 percentage point decrease from 2002 to 2003) in parents saying they had heard a lot about anti-drug programs in schools or community centers and a 3 percentage point decrease in parents saying they had heard a lot about speeches about drugs by public officials in the past year (Table 3-AE).

- **Ethnicity and education are associated with knowledge of various types of drug-related activities.** White parents were less likely than Hispanic and African American parents to have heard about all five drug activities/controversies; African American parents were generally the most likely to have heard a lot about these activities (Detail Tables 3-71 through 3-75). Parents with less than a high school education were more likely than all other parents to have heard a lot about each drug activity/controversy (Detail Table 3-72 and 3-75).

### 3.6 Summary and Conclusions

The data provided to the evaluators by the Media Campaign describes what media time and space have been purchased over the 46-month period from September 1999 to June 2003. On average, the Campaign purchased enough media time to expect the average youth to be exposed to 2.5 directly targeted messages per week, and the average parent to be exposed to about 2.1 messages per week. During the period of the Marijuana Initiative, from October 2002 through June 2003, enough time and space was purchased to achieve 2.7 youth targeted exposures per week, a small increase over the full Campaign average. There was a particularly heavy dose of television advertising during the first 2.5 months of 2003. While, on average, the Campaign obtained enough GRPs to obtain about 1.3 television exposures per week during this period, the expected dose was more than 2.1 exposures.

The Campaign also varied the emphasis on the behavioral ad platforms in each wave. The available data allowed classification of the Campaign TV and radio ads, which made up 80 percent of all GRPs for youth, although only about 60 percent of all GRPs for parents. For youth, an early focus on

Negative Consequences of drug use had almost disappeared by Wave 3, but was revitalized in Wave 4, remained strong in Wave 5, and became the exclusive focus in Waves 6 and 7. The Marijuana Initiative ads fell under the Negative Consequences platform. A focus on Normative Education/Positive Alternatives was strong through the first five waves only, while Resistance Skills were emphasized in Waves 1 and 3, but not included in Wave 2, or Waves 4 through 7. For parents, the Parenting Skills/Personal Efficacy/Monitoring platform was maintained through all seven waves, falling below 70 percent only in Waves 1 and 3. But the Your Child at Risk platform received only some weight at Wave 1, while the Perceptions of Harm platform was included only at Wave 3. For parents, the Drugs and Terror messages received approximately a fifth of the GRPs in Wave 5 and decreased from that level in Waves 6 and 7.

The Evaluation used two types of measures of exposure to Campaign messages. The first, a general exposure measure, combined recall of exposure to anti-drug messages on four media (TV and radio, print, outdoor media, and movies/videotapes). Both parents and youth reported high exposure on those measures. The median response was 9 exposures per month for parents and 12.4 exposures per month for youth across all waves. This was probably equivalent to between 2 to 3 exposures per week. There was no overall detectable change in reported exposure from 2000 to Wave 7, or from 2002 to Wave 7, suggesting this general exposure measure was insensitive to the changes in media purchases.

The estimates of exposure across all media and for specific television and radio advertisements are shown in Table 3-AF.

**Table 3-AF. Exposure to Campaign advertising by wave**

Population	Exposure measure: Percent seeing/hearing ads 1 or more times per week	Waves	Waves	Waves	Wave 7
		1 and 2 2000 (%)	3 and 4 2001 (%)	5 and 6 2002 (%)	2003 (%)
Parents	General Exposure: Across all media	71	67	70	73
	Specific Exposure: TV ads	24	29	51	58
	Specific Exposure: Radio ads	11	16	3	12
Youth 12 to 18	General Exposure: Across all media	78	74	76	80
	Specific Exposure: TV ads	37	52	52	76
	Specific Exposure: Radio ads	NA	8	1	13

NA: Radio use not measured for youth during Wave 1.

The second exposure measure asked for recalled frequency of viewing specific ads on television and radio that were on the air in the 60 days prior to the interview. These produced lower estimates of exposure to the Campaign, with parents reporting a median of 5.6 exposures and youth reporting a median of 8.2 exposures to the TV ads “in recent months” across all waves. This was probably equivalent to 0.6 to 0.9 exposures per week respectively. For both youth and parents, there was a very sharp increase in recalled specific exposure across the seven waves (with some up and down movement). For parents, recall of weekly television ad exposure was up 34 percentage points (from 24% to 58%) between 2000 and the first half of 2003, while youth recall on the same measure increased slightly less than 40 percentage points (from 37% to 76%) over the same period. The increase between 2002 and the first half of 2003 in recall of television ads for youth was particularly large, from 52 percent to 76 percent claiming to see weekly ads; it may have been the result, in part, of the strong television advertising buys in the first 2.5 months of 2003.

Recall of specific radio ads was assessed for youth during Waves 2 through 7, and for parents across all seven waves. The absolute level of recall of radio ads remained much lower than for television ads

in both groups. For youth, Wave 7 was the high point of radio exposure and still only 13 percent of youth reported weekly exposure. For parents, the percentage who claimed at least weekly recall of one ad varied from 3 percent to 16 percent across the years.

Both youth and parent brand phrases continued to gain increasing recognition across the years, reaching 88 percent and 82 percent respectively by the first half of 2003.

All youth and parents were asked to provide their assessments of the television ads they had been shown. Both groups remained generally positive. The evaluations of the Marijuana Initiative ads in 2003 were roughly similar to the evaluations of ads broadcast in 2002 and in 2000. Parent evaluations remained more enthusiastic than those provided by youth.

Overall use of the Internet was sustained at 90 percent in 2003 for youth while it continued to grow to 77 percent in 2003 for parents. However, the level of visits to anti- (or pro-) drug sites was below 10 percent and unchanging for youth. Parent claims that they had visited either anti-drug sites or parenting skills sites both grew from 2000 to Wave 7, although their absolute levels remained relatively low at around 10 percent.

In addition to distributing messages directly, the Campaign hopes also to reach its audiences indirectly, through other institutions and routes. While for many of these other informational sources there was a substantial level of exposure to anti-drug messages, there was little evidence that exposure to such messages was increasing over the course of the Campaign. Thus it is difficult to claim these complementary exposures as indirect exposures produced by the Campaign. Rather they are best understood as an ongoing context for the Campaign.

The Campaign's efforts with respect to youth organizations has focused on integrating drug prevention messages and strategies into existing organizations' educational programs and extra-curricular activities. A little less than two-thirds of the youth reported recent in-school drug education overall, but that had declined slightly but significantly between 2000 and the first half of 2003, from 66 percent to 62 percent. Potential Campaign influence through out-of-school activities was also examined. Youth reported that these activities were relatively rare; attendance at such activities had also decreased from 2000 to 2003, including a significant decline between 2002 and 2003. Parent attendance at drug abuse prevention classes and at parent effectiveness training programs also showed small declines in 2003.

Parents reported lots of drug-related discussions with their children, with a statistically significant increase of 3 percentage points between 2000 to the first half of 2003. Youth reported a substantial level of such conversations, although less than their parents claimed. However, in contrast to the parent reports of increases, from 2000 to the first half of 2003, youth reported a decrease of 5 percentage points in conversations with their parents. Neither group showed increases or decreases between 2002 and 2003. Youth reported that discussion with the parents about drug ads was unchanged in 2003 compared with 2000 or 2002. However, discussion about drug ads with friends, particularly for the 16- to 18-year-olds, did increase. In that group, around 40 percent recalled such conversations in 2002 and more than 47 percent recalled such a conversation over the previous 6 months in 2003.

Both youth and parents were asked about exposure to drug and youth stories across a variety of mass media. Youth showed a substantial decline in seeing such stories, from 52 percent in 2000 to 43 percent in 2003 saying they saw or heard such stories weekly in at least once source. Parents

showed smaller but still significant decline from 64 percent to 60 percent. Parents also were asked about their awareness of any local anti-drug activity. While there were reasonably high levels of recall of local anti-drug activities, there was no change for most of them across waves.

Overall, during the Marijuana Initiative, the Campaign was able to increase the level and focus of its ad purchases and concentrate them over time, and achieved a sharp increase in recall, at least for specific television messages. That is a positive result, but it may have been achieved in the midst of declining support from other potential anti-drug message sources. There was little evidence that anti-drug messages from other institutions were increasing over the course of the Campaign, and in some cases there were declines, including for in-school and out-of school drug education and in children's reports of talking with parents, although parents were reporting a positive trend in such conversations. Stories in the media concerning youth and drugs, and awareness of local anti-drug activity also showed small declines.

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## 4. Trends in Youth Marijuana Use

This chapter focuses on trends in youth marijuana use as reported by the Media Campaign's evaluation survey—National Survey of Parents and Youth (NSPY)—and also includes trend data from three other national surveys, Monitoring the Future (MTF), the Youth Risk Behavior Surveillance System (YRBSS), and the National Survey on Drug Use and Health (NSDUH). (This survey was called the National Household Survey on Drug Abuse (NHSDA) until the beginning of 2002 when the name was changed to NSDUH.) In addition, data are presented regarding trends in youth reports of marijuana offers. The chapter compares outcomes for the most recent Wave 7 data with outcomes from previous waves to determine whether there is evidence for a change in outcomes following the launch of the new Marijuana Initiative in October 2002. Evidence will be considered favorable to the Marijuana Initiative if (a) there is a significant decline in a marijuana use measure comparing Wave 7 with the previous year (2002) and (b) the change from 2002 does not appear to be only a continuation of a trend that began earlier. Evidence of a downward trend in marijuana use is supportive of a positive Campaign effect. At the same time, it cannot be considered definitive evidence for or against Campaign effects, recognizing that there may well be other external forces operating. Those external forces might be causing positive or negative secular trends in marijuana use regardless of the operation of the Campaign and the Marijuana Initiative.

The marijuana use analysis focuses on recent use (past month, and to some extent, past year) rather than lifetime use, since it is only recent use outcomes that might be sensitive to any effects of the Marijuana Initiative. The Marijuana Initiative began in late fall, 2002. Wave 7 interviews began in January and ended in June 2003. Thus the Marijuana Initiative started between 2 and 8 months before the Wave 7 interviews were undertaken, and could have affected only previous month or previous year use. The following analyses also give a special focus on youth 14 to 16 years old because the Campaign has shifted its primary target audience to this age group. The chapter compares NSPY use trends with the trend data from the other national surveys, with some attention to the results from the MTF study, which is the only other currently published source of 2003 data.

### 4.1 NSPY Trends in Marijuana Use After the Marijuana Initiative

The current report finds no significant changes between Wave 7 (the first half of 2003) and 2000 or between Wave 7 and 2002 in past year, past month, lifetime, or regular use of marijuana for all youth aged 12 to 18 (see Table 4-A). This is essentially parallel to the flat trend line results from the previous report, which focused on changes between year 2000 and Wave 5 (the first half of 2002) and year 2001 and Wave 5.

When the current analyses focus on changes within the 14- to 16-year-old age target group, there are some significant changes; however, these changes do not support a claim of a decline in recent use among the target 14- to 16-year-olds associated with the Marijuana Initiative. On the contrary, they suggest an increase in marijuana use that began before the Marijuana Initiative started. Figure 4-A presents information about both past year and past month marijuana use for the 14- to 16-year-olds. The figure is organized by waves (with each wave encompassing about 6 months, starting with Wave



1 representing the first half of 2000) and shows a general increasing pattern in both measures of recent use for this subpopulation. Table 4-A shows that for both measures there was a significant increase from the first year of data collection through Wave 7. The graph makes it clear that the increase began before Wave 7, and is independent of the Marijuana Initiative. Waves 6 and 7 are both different from the previous waves.

Although Figure 4-A appears to show a small decline in past month use between Waves 6 and 7, this change is not statistically significant. The decline is -1.1 percentage points (from 9.3% in Wave 6 to 8.2% in Wave 7), with a confidence interval of -3.4 to 1.2. As the direction of the trend is consistent with an effort of the Marijuana Initiative, it will be worthwhile to examine whether this trend continues in subsequent waves of data collection. However, it cannot now be claimed as a reliable change.

There were also several subgroup differences that showed contrasting patterns of change in the two recent use measures. Detail Table 4.3 shows that there was a decrease in past month use in Wave 7 compared to Year 2002 for both white 14- to 18-year-olds and for Higher Risk 14- to 18-year-olds. In both subgroups, the decline represented something of a return to the level of 2000, after apparent increases in the previous 2 years. Detail Table 4.2 shows an increase in past year use among Lower Risk 14- to 18-year-olds between Wave 7 and 2000; in this case the trend is continuously increasing over time, with Wave 7 level (7.1%) nearly double the Year 2000 level (3.4%). We are careful about claiming too much for these isolated subgroup results: there were 72 tests conducted (two marijuana use measures by 18 subgroups by two change scores) and finding three significant changes out of all of those subgroup tests may be explained as a chance result.

Given the focus for this report on the Marijuana Initiative, evidence about trends in lifetime use does not add information over and above the results concerning the recent use outcomes. However, Table 4-A does show one additional result worth noting. While the 14- to 16-year-olds (and particularly the 14- to 15-year-olds) were showing increases in recent marijuana use, the 16- to 18-year-olds were showing a decline in reports of lifetime use comparing Wave 7 with the previous year's report.

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

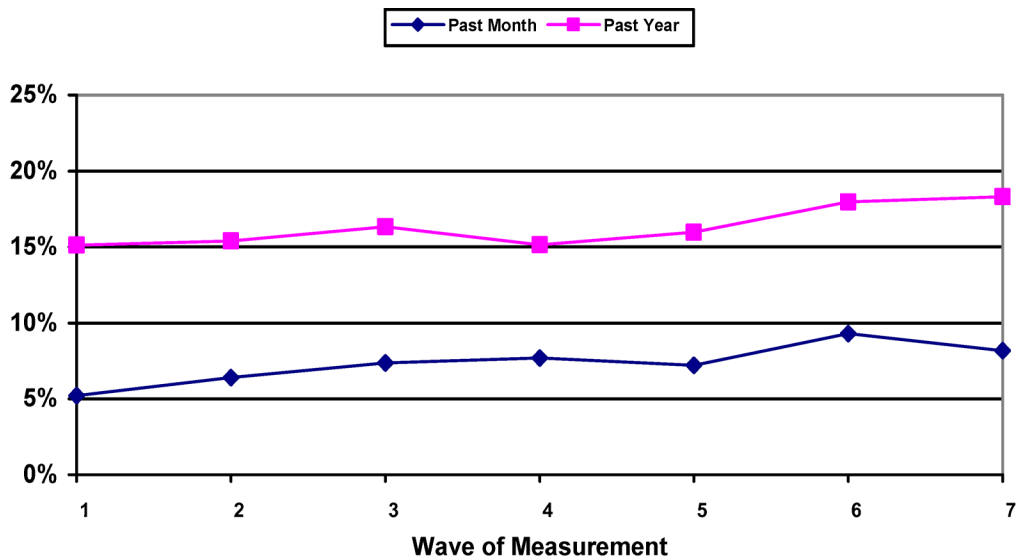


Table 4-A. NSPY trends in marijuana use across measures by age group

Use measure	Age groups	Percent reporting use					
		Year 2000 (Average for Waves 1 & 2) (%)	Year 2001 (Average for Waves 3 & 4) (%)	Year 2002 (Average for Waves 5 & 6) (%)	Year 2003 (Wave 7 only) (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
<b>Lifetime</b>							
	12 to 13	4.9	4.1	4.9	4.6	-0.3 (-2.1 to 1.5)	-0.3 (-2.0 to 1.5)
	14 to 15	15.1	18.9	18.2	19.8	<b>4.7* (0.4 to 9.0)</b>	1.6 (-1.8 to 4.9)
	16 to 18	40.3	39.9	41.4	37.5	-2.8 (-8.1 to 2.4)	<b>-4.0* (-7.8 to -0.1)</b>
	14 to 16	20.4	22.0	23.7	23.9	<b>3.5* (0.5 to 6.5)</b>	0.2 (-2.7 to 3.1)
	14 to 18	28.8	30.4	31.7	29.9	1.1 (-2.0 to 4.2)	-1.9 (-4.5 to 0.8)
	12 to 18	21.8	22.6	23.7	22.4	0.6 (-1.8 to 2.9)	-1.3 (-3.4 to 0.7)
<b>Past year</b>							
	12 to 13	3.3	2.6	3.3	4.0	0.7 (-0.9 to 2.3)	0.6 (-0.9 to 2.2)
	14 to 15	11.3	13.8	12.5	15.3	<b>4.0* (0.4 to 7.6)</b>	<b>2.8* (0.1 to 5.5)</b>
	16 to 18	29.1	26.8	28.7	27.0	-2.1 (-6.8 to 2.7)	-1.7 (-5.3 to 1.9)
	14 to 16	15.3	15.8	17.0	18.3	<b>3.1* (0.2 to 5.9)</b>	1.3 (-1.1 to 3.7)
	14 to 18	21.0	20.9	22.0	22.0	1.0 (-1.9 to 3.9)	0.0 (-2.4 to 2.4)
	12 to 18	15.8	15.5	16.4	16.7	0.9 (-1.2 to 2.9)	0.3 (-1.5 to 2.0)
<b>Past month</b>							
	12 to 13	1.4	1.1	1.1	1.8	0.5 (-0.6 to 1.5)	0.7 (-0.5 to 1.8)
	14 to 15	3.6	7.2	6.3	6.1	<b>2.5* (0.2 to 4.7)</b>	-0.2 (-2.3 to 1.8)
	16 to 18	14.7	14.0	16.4	13.7	-0.9 (-4.4 to 2.5)	-2.7 (-5.8 to 0.4)
	14 to 16	5.8	7.5	8.3	8.2	<b>2.3* (0.0 to 4.7)</b>	-0.1 (-2.0 to 1.8)
	14 to 18	9.6	10.9	12.2	10.4	0.8 (-1.5 to 3.2)	-1.8 (-3.9 to 0.4)
	12 to 18	7.2	8.0	8.9	7.9	0.7 (-1.1 to 2.4)	-1.0 (-2.6 to 0.6)
<b>Regular</b>							
	12 to 13	0.5	0.3	0.8	0.6	0.0 (-0.5 to 0.6)	-0.2 (-0.7 to 0.3)
	14 to 15	2.2	5.4	4.4	3.5	1.3 (-0.1 to 2.7)	-0.9 (-2.4 to 0.6)
	16 to 18	12.4	11.7	12.3	11.7	-0.8 (-4.1 to 2.5)	-0.6 (-3.6 to 2.3)
	14 to 16	3.9	5.9	5.4	5.3	1.4 (-0.7 to 3.6)	-0.1 (-1.7 to 1.4)
	14 to 18	7.7	8.8	9.0	8.1	0.4 (-1.6 to 2.4)	-0.9 (-2.7 to 1.0)
	12 to 18	5.6	6.3	6.5	5.9	0.2 (-1.2 to 1.7)	-0.6 (-1.9 to 0.7)

\* Indicates a significant change at  $p < 0.05$  from the previous year.

## 4.2 MTF, NSDUH, and YRBSS Trends in Marijuana Use

The trend data presented above reflect the findings of NSPY for periods both before and after the launch of the Marijuana Initiative. Only one of the major complementary sources of drug use data supported by the Government, the MTF survey, has published results from the post-Marijuana Initiative period. This section presents the 2003 MTF results. It also presents trend data on adolescent drug use from other national surveys in order to provide a context for interpreting both the NSPY and

MTF 2003 results. Data from other surveys may help to determine whether changes in marijuana use were already occurring prior to the Marijuana Initiative. Trend results from three national surveys will be discussed: the Monitoring the Future (MTF) study, sponsored by NIDA; the National Survey on Drug Use and Health (NSDUH), sponsored by Substance Abuse and Mental Health Services Administration; and the Youth Risk Behavior Surveillance System (YRBSS), sponsored by the Centers for Disease Control and Prevention. In previous reports (cf. Hornik et al., 2002) there has been extensive discussion of the differences in methodology and in absolute levels of marijuana use estimates among these surveys. In this report, only issues related to comparative trends in marijuana use are presented. Consistently, the two in-school surveys (MTF and YRBSS) have tended to provide estimates of marijuana use that are higher than those from the in-home surveys (NSDUH and NSPY). There are a range of possible explanations for those differences that have been explored in the earlier reports.

The MTF study is conducted every spring using nationally representative samples of 8th, 10th, and 12th graders in their classrooms. Students in both public and private schools are represented. Data collection is via a self-administered paper-and-pencil questionnaire. The number of schools sampled has been about 420 in recent years, and the number of responding students approximately 50,000. From 1991 to 2003, the MTF has maintained a student response rate of between 82 and 91 percent in participating schools, varying by grade level. In 2003, in contrast to previous years, participating schools were paid a monetary incentive for their cooperation in the study. This led to a small increase in the school participating rate from 49 percent to 53 percent. Individual student respondents were probably unaware of the payment of the incentive and so it was not likely that this affected their personal responses. The study uses a standard set of three questions to determine usage levels for the various drugs. For instance, the questions about marijuana use are as follows: “On how many occasions (if any), have you used marijuana... (a) in your lifetime? (b) during the past 12 months? (c) during the last 30 days?” Each of the three questions is answered on the same scale: 0 occasions, 1-2 occasions, 3-5, 6-9, 10-19, 20-39, and 40 or more occasions.

The latest MTF data available were collected during the spring of 2003 between 5 and 8 months after the launch of the Marijuana Initiative. According to the 2003 MTF study, marijuana use showed some decline across all periods of use for all grades between 2002 and 2003, but the only statistically significant decrease was in past year use for 8th graders. This decrease in marijuana use for 8th graders appears to follow the study pattern of declines over the previous 4 years (Table 4-B).

**Table 4-B. MTF lifetime, annual, and past-month marijuana use in 1999, 2000, 2001, and 2002**

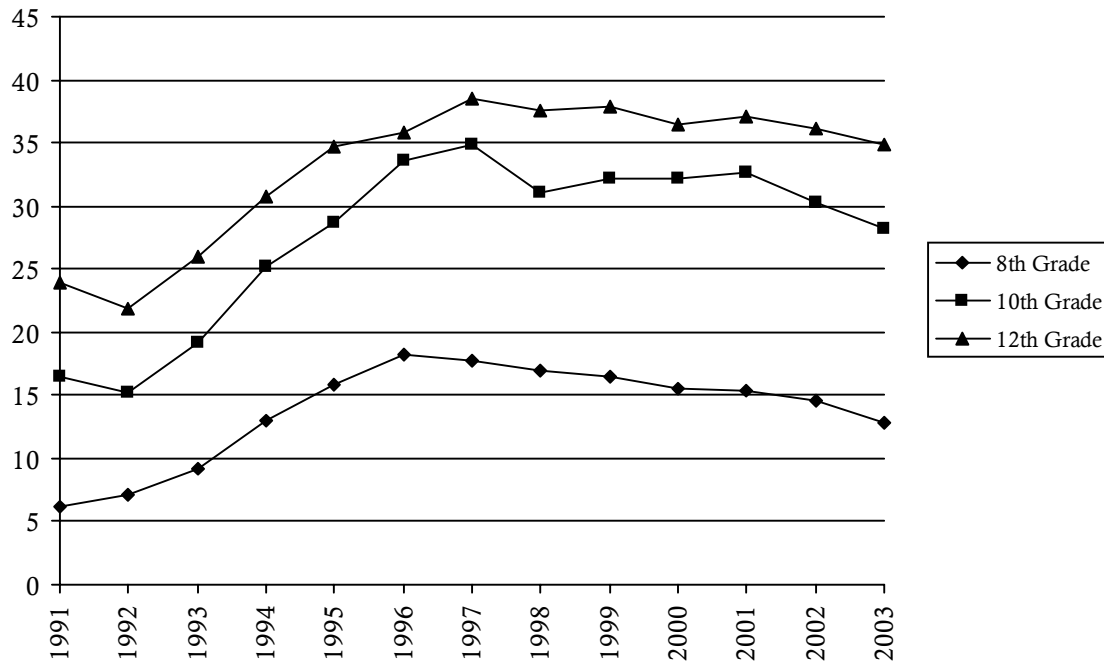
	Marijuana Use														
	Ever (%)					Past year (%)					Past month (%)				
Grade	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
8th	22.0	20.3	20.4	19.2	17.5	16.5	15.6	15.4	14.6	<b>12.8*</b>	9.7	9.1	9.2	8.3	7.5
10th	40.9	40.3	40.1	38.7	36.4	32.1	32.2	32.7	<b>30.3*</b>	28.2	19.4	19.7	19.8	<b>17.8*</b>	17.0
12th	49.7	48.8	49.0	47.8	46.1	37.8	36.5	37.0	36.2	34.9	23.1	21.6	22.4	21.5	21.2

\* Indicates a significant change at p<0.05 from the previous year.

After reaching a peak in 1996 among 8th graders and in 1997 among 10th and 12th graders, the MTF study shows that annual marijuana use has declined for the 8th and 10th graders overall, and possibly for the 12th graders. For the 8th graders, the reported decline from 1996 to 2003 is about 61 percent of the climb from 1991 to 1996 (in 1991 annual use was 6.2%, rose to 18.3% in 1996, and fell to 12.8% in

2003); for the 10th graders the decline from 1997 to 2003 is about 36 percent of the climb from 1992 to 1997, while for the 12th graders the 1997 to 2003 decline is about 20 percent of the 1992 to 1997 climb. These longer-term trends are displayed in Figure 4-B. The 13-year trends for lifetime and past month use are similar, with sharp increases in the early 1990s followed by stabilization and some declines starting in 1996.

**Figure 4-B. Percentage of 8th, 10th, and 12th graders reporting annual marijuana use: MTF 1991-2003**



The MTF results for 2002 to 2003, both the significant decline for 8th graders and the more general pattern of declines, appear to be inconsistent with the general pattern of NSPY results. The NSPY results suggest overall stability since 2000 and, in the case of 14- to 16-year-olds, the results show a significant increase in annual and past month marijuana use between 2002 and 2003, a finding that is in direct contrast to the MTF results. This apparent inconsistency requires additional discussion, but that discussion will be helped by first reviewing the results from the other major surveys in years before 2003.

NSDUH is an annual survey that provides information on the use of illicit drugs, alcohol, and tobacco by the civilian, noninstitutionalized population of the United States aged 12 years old and older. Until 1999, the survey collected data by self-administered questionnaires given to a representative sample of the population in face-to-face interviews at their place of residence. Since 1999, the NSDUH interview has been carried out using a computer-assisted interviewing methodology. Because of the major redesign of the sample and data collection method in 1999, estimates for 1999 to 2001 are generally not comparable with estimates from 1998 and earlier. NSDUH estimates for 1999 to 2001 are particularly relevant for comparison with NSPY, since both surveys were conducted in households, unlike the MTF and YRBSS surveys, which were conducted in schools. The NSDUH interviewed approximately 70,000 people, including samples in every state, over each 12-month period.

Table 4-C presents NSDUH patterns of marijuana use among 12- to 17-year-olds for 1999, 2000, and 2001. No significant changes are reported for any of the three measures of marijuana use between 1999 and 2000. However, between 2000 and 2001, significant increases in lifetime, past year, and past

month marijuana use were found for 12- to 17-year-olds. For lifetime and past year marijuana use, similar increases were found for the older youth (16 to 17 and 14 to 15) but not for the younger ones (12 to 13). The NSDUH provides significance tests only for changes between adjacent years. The NSDUH estimates of marijuana use did not increase or decrease continually from 1999 to 2001. In the absence of the appropriate tests of significance between nonadjacent years, it is unclear whether changes in marijuana use between 1999 and 2001 are significant.

**Table 4-C. NSDUH lifetime, annual, and past-month marijuana use in 1999, 2000, and 2001**

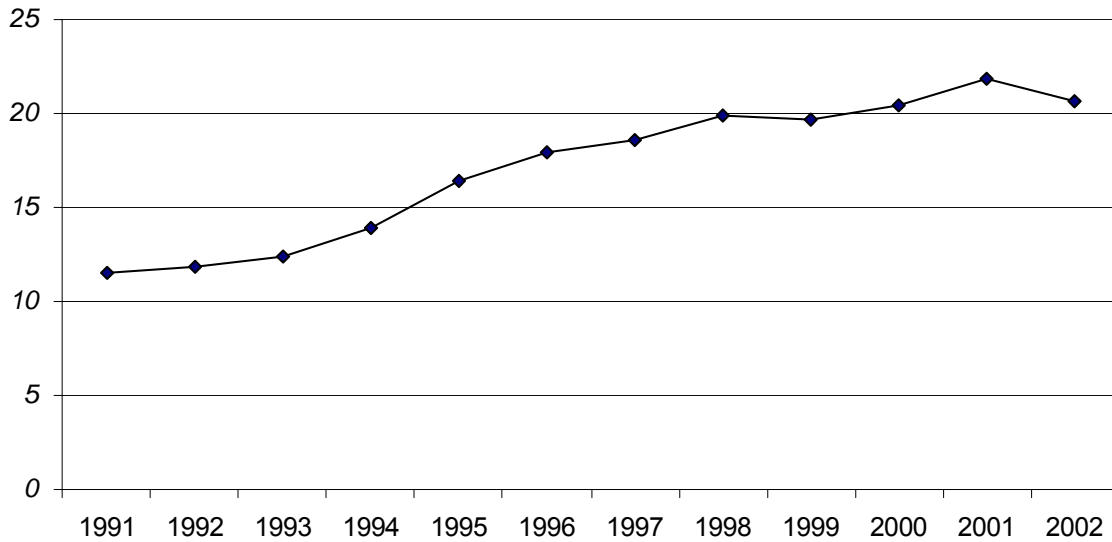
Age groups	Marijuana use								
	Lifetime (%)			Past year (%)			Past month (%)		
	1999	2000	2001	1999	2000	2001	1999	2000	2001
12 to 13	4.0	4.0	3.9	3.2	2.7	3.1	1.5	1.1	1.5
14 to 15	17.6	17.5	18.8	13.5	13.3	<b>14.8*</b>	6.9	6.9	7.6
16 to 17	34.3	34.0	<b>36.4*</b>	25.5	24.5	<b>27.6*</b>	13.2	13.7	14.9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

\* Indicates a significant change at  $p < 0.05$  from the previous year.

Additional changes in the NSDUH methodology, including the payment of incentives to respondents and additional intensive training of interviewers, were made for the 2002 data collection. For these reasons, the comparability of the 2002 data with previously collected data is also uncertain. However, the 2002 data was used to provide estimates of lifetime use among 12- to 17-year-olds based on retroactively reported use between 1991 and 2002. Figure 4-C presents recently published evidence from the 2002 NSDUH National Highlights Report in which estimated lifetime marijuana use was based on 2002 survey questions about the age of first marijuana use and the respondents' date of birth. Consistent with MTF data, retroactive NSDUH estimates show a steady increase in lifetime marijuana use in the early 1990s. Lifetime marijuana use estimates continue upward through 2001, peaking at 21.9 percent, followed by a slight decline to 20.6 percent in 2002. The increase between 2000 and 2001 is consistent with trends observed in the 2000 and 2001 NSDUH, while slight declines in lifetime use between 2001 and 2002 mirror trends suggested by MTF.

Calculated estimates of lifetime marijuana use from the 2002 NSDUH are considerably lower than those observed in the 1999-2001 NSDUH. Measures that require respondents to recall the year in which they first tried marijuana may be subject to several sources of bias, including memory errors and underreporting due to concerns about social acceptability. As a result, these results should be interpreted with extreme caution and examined in the context of more direct lifetime marijuana use measures from other national surveys.

YRBSS is designed to determine the prevalence of health risk behaviors among American youth. It includes national, state, and local school-based surveys of representative samples of 9th through 12th grade students. Since 1991, the surveys have been conducted every 2 years, usually during the spring semester, and provide data representative of students in public and private high schools in the United States. The 2001 national YRBSS survey had more than 13,000 respondents. The data for the 2003 YRBSS have been collected, but the results have not been published. They are expected in the summer of 2004.

**Figure 4-C. Estimated lifetime marijuana use among 12- to 17-year-olds from the 2002 NSDUH**

In contrast to the NSDUH, the biennial YRBSS study found a decrease in lifetime and past month marijuana use between 1999 and 2001 among all students in 9th to 12th grades, but stable use between 1997 and 1999 (YRBSS does not ask about past year use). Data from the past 3 waves of the study are presented in Table 4-D below. For ease of comparison, data are presented by reported youth age, rather than by grade level. The data include some youth who were in relevant grades but older than 18. All students who were 18 or older were classified as a single group, and therefore the 16 to 18 and 14 to 18 age categories below may in fact include some individuals who are older than 18.

**Table 4-D. YRBSS lifetime and past-month marijuana use in 1997, 1999, and 2001**

Age groups	Marijuana use								
	Lifetime (%)			Past year (%)			Past month (%)		
	1997	1999	2001	1997	1999	2001	1997	1999	2001
14 to 15	38.5	34.4	32.3	N/A	N/A	N/A	21.9	21.2	18.6
16 to 18	51.2	53.9	48.2	N/A	N/A	N/A	28.2	29.6	26.9
14 to 16	42.7	41.8	37.3	N/A	N/A	N/A	24.3	24.5	21.7
14 to 18	47.1	47.2	<b>42.4*</b>	N/A	N/A	N/A	26.2	26.7	<b>23.9*</b>

\* Indicates a significant change at  $p < 0.05$  from the previous year.

Thus the comparison of the four data sources provide inconsistent evidence about trends. Focusing on past month use, which all four data sources address: YRBSS shows a decline in use between 1999 and 2001 for its sample of 14- to 18-year-olds. MTF does not show a decline in use between 1999 and 2001 for any of its samples, but does show one for 10th graders between 2001 and 2002. It shows no significant changes on this measure between 2002 and 2003. NSDUH shows an increase in use between 2000 and 2001 for its sample of 12- to 17-year-olds, while retroactive estimates from the 2002 NSDUH suggest a slight decline in lifetime use between 2001 and 2002. NSPY shows stability in use between 2000 and the first half of 2002, but then shows increasing use for the subgroup of 14- to 16-year-olds apparently beginning before the start of the Marijuana Initiative in the fall of 2002 and continuing through the first half of 2003.

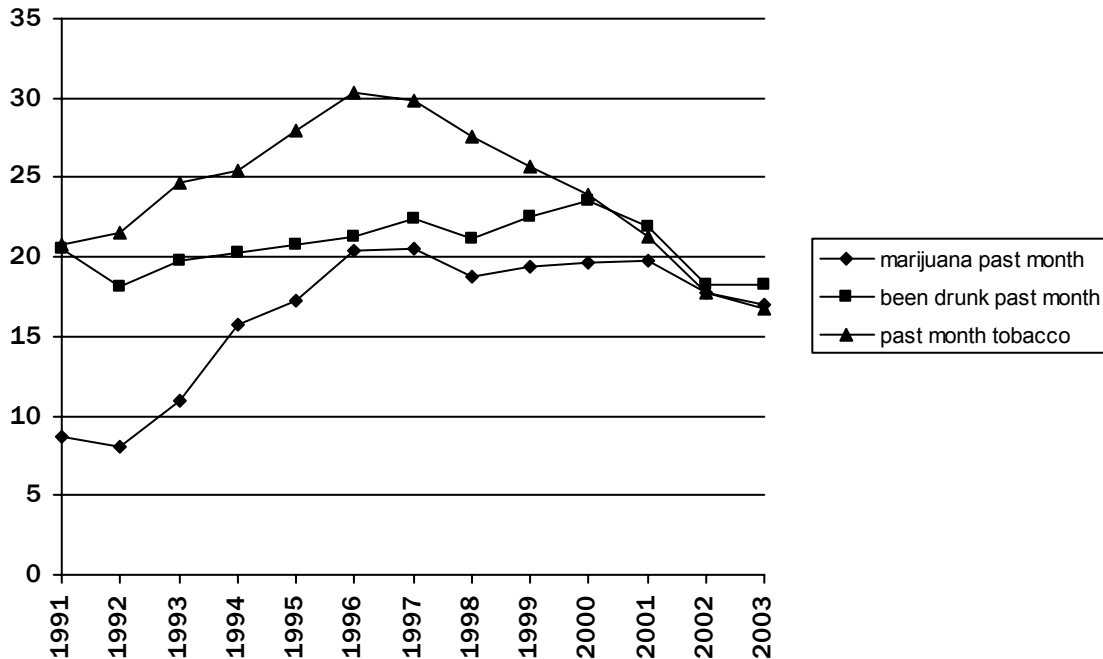
How is this inconsistency among sources to be explained? Some of the differences between surveys, particularly in years when one study finds a significant effect but the others find no trend, may be attributed to their relative sensitivity to changes—NSDUH has a quite large sample and was, for example, able to reliably detect an increase of 0.7 percent in past month use, which was beyond the power of any of the other studies. The confidence limits around change estimates may often include the changes reported by the other studies. Not including the 2003 results, the only real contradictory finding in this set is the YRBSS claim of a decline between 1999 to 2001, while over that same period NSDUH claims an increase in use, and in this case the age groupings are not exactly comparable. The MTF claim of a decline among 10th graders between 2001 and 2002, while not replicated by NSPY, is within the statistical confidence limits of NSPY (neither YRBSS nor NSDUH have published comparative data for the 2001 to 2002 period). Perhaps the correct conclusion from these comparative analyses is that the set of surveys has not yet established evidence for a consistent trend for the 1999 to 2002 period. The lack of replication, the tendency to find significant changes for only some age subgroups, and the small magnitude of these changes, suggests that there has not been a definitive drop in marijuana use during the Campaign period overall. The 2003 MTF results, although they provide only a single significant decline between 2002 and 2003 (in past year use for 8th graders), do appear to change this view. The longer term patterns of decline presented in Figure 4-B, particularly for the 8th and 10th graders, provide credible evidence of something more happening over the entire 1996/1997 to 2003 period. They raise two questions: taking the MTF reported declines at face value, are they adequate evidence to claim a Campaign effect since the start of Phase III or after the Marijuana Initiative in 2003? Why is it that the MTF results and the 14- to 16-year-old results from NSPY seem contradictory? Each of those issues is addressed in turn.

While the various sources provide inconsistent evidence for this period, there is good reason to begin this discussion by assessing the implications for the presence of Campaign effects if the MTF results are correct. They are the most favorable results, but MTF also has the longest unbroken time line with a largely stable methodology. If the MTF results are taken at face value, what would they allow one to say about the effects of the Campaign? Figure 4-B displays a decline in use between 1996/1997 and 2003 for 8th graders and between 2001 and 2003 for 10th graders. Even accepting that these declines accurately represent usage trends, they still do not provide sufficient evidence to claim an effect of the Campaign. The observed declines could alternatively reflect influences independent of the Campaign. Figure 4-B makes it clear that for the 8th graders, the decline began in 1996 and the rate of change does not appear to have accelerated after 1999 and the initiation of the Campaign. The 12th grade respondents show a smaller overall decline than do the 8th grade respondents, but whatever decline is present appears to be, on average, steady starting in 1997, without a clear shift with the onset of the Campaign or with the start of the Marijuana Initiative. This makes attribution of either of these declines to the Campaign tenuous.

The MTF 10th grade data show a stable level until 2001 and a decline between 2001 and 2003. This corresponds with the time frame of the Campaign, although not specifically the Marijuana Initiative. However, even that trend might be a reflection of external influences. The Campaign focused its messages on illicit drugs, generally and, during the Marijuana Initiative, on marijuana. It did not address either tobacco or alcohol specifically. However, the declines in marijuana use presented in Figure 4-B parallel the declines seen in tobacco use during this period, and in some measures of alcohol use, including binge drinking (Johnston et al. 2004). Figure 4-D, which focuses on 10th grade past month use because that measure is available for all three forms of substance use, shows that all of them are declining. The past month declines in marijuana use between 2001 and 2003 for 10th graders match the declines in past month use of tobacco and alcohol. Since the Campaign addressed

only drug use, the parallel declines on all three forms of substance use undermines a specific attribution of effects to the Campaign. These results suggest that some external influence may have been operating to affect all forms of substance use.

**Figure 4-D. Percentage past month substance use among 10th graders MTF: 1991-2003**



In general, declines in trends alone, while certainly desirable and consistent with Campaign goals, are an inadequate basis for making a claim that the Campaign was the cause of such declines. The logic of inference for this evaluation requires the presence of three types of evidence to support a claim of Campaign effects: favorable trends, evidence that those most exposed to the Campaign hold the strongest anti-drug views, and evidence that those most exposed to the Campaign are least likely to initiate marijuana use or accede to pro-drug beliefs subsequently. Favorable trends are the least persuasive of these three types of evidence.

Finally, how can the apparent contradiction between NSPY increases between 2000-2003 for the 14- to 16-year-olds and the MTF declines over the same period for the 8th and 10th graders be reconciled? First, it is important not to overstate the differences. Overall NSPY trends for the entire 12- to 18-year-old sample are stable; given that the NSPY samples are smaller than the MTF samples, the stable claims of NSPY are within the confidence intervals of MTF's reported declines. The major concern is therefore the MTF declines and the NSPY increases for 14- to 16-year-olds. Two explanations are worth consideration:

- The age ranges are not exactly comparable. Eighth graders are typically 13 and 14, 9th graders are 14 and 15, and 10th graders are 15 and 16. The results in Table 4-A indicate that the NSPY increase is entirely among the 14- to 15-year-olds, not the 16-year-olds, and thus the NSPY increase seems sharpest among those who would be in 9th grade, a grade not studied in the MTF.
- The methods of data collection are different. The MTF is a school-based study and the NSPY is a home-based study. The absolute level of usage reported across the two approaches is different; for example, past year use for NSPY 8th graders in 2003 was 7.7 percent, whereas for MTF 8th



graders it was 12.8 percent. For 10th graders, the comparable numbers are 21.8 percent for NSPY and 28.2 percent for MTF. It is possible that the differences in methods that produced a different absolute rate of reported use also have produced a small difference in trends in use.

### 4.3 Marijuana Offers

This section reviews the evidence about trends in youth reports of receiving offers of marijuana. This is an important behavioral outcome, both because the Campaign has aired some messages that encourage resistance to offers of marijuana and because offers are closely related to marijuana use. The association between offers and use is also discussed.

In the previous report, no age group showed a statistically significant change in receiving offers at all or in the past 30 days. The present report found a significant increase among all youth aged 12 to 18 in never receiving offers, both from 2000 to 2003 and from 2002 to 2003. Table 4-E presents the proportion of youth within each age group that reported never receiving offers and receiving offers in the previous 30 days. The table also shows the strong age gradient of offers, with offers increasing in the higher age categories.

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

Use measure	Age groups	Year 2000 (%)	Year 2001 (%)	Year 2002 (%)	Year 2003 (Jan to Jun) (%)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
<b>Never received offers</b>							
	12 to 13	81.7	82.9	82.4	82.1	0.3 (-2.9 to 3.6)	-0.4 (-3.0 to 2.3)
	14 to 15	53.8	54.9	55.1	57.1	3.3 (-1.7 to 8.4)	2.1 (-2.2 to 6.3)
	16 to 18	29.4	29.6	30.1	34.3	<b>4.9* (0.5 to 9.3)</b>	<b>4.3* (0.6 to 7.9)</b>
	14 to 16	48.5	49.4	49.7	49.9	1.3 (-2.8 to 5.4)	0.2 (-3.3 to 3.6)
	14 to 18	40.5	41.0	40.5	44.1	<b>3.6* (0.0 to 7.2)</b>	<b>3.6* (1.1 to 6.1)</b>
	12 to 18	52.5	53.4	53.0	55.4	<b>2.9* (0.2 to 5.6)</b>	<b>2.4* (0.3 to 4.5)</b>
<b>Received offers in the past month</b>							
	12 to 13	9.9	9.0	9.5	9.9	0.1 (-2.1 to 2.2)	0.5 (-1.7 to 2.7)
	14 to 15	26.6	27.8	27.5	27.2	0.6 (-4.3 to 5.6)	-0.3 (-4.2 to 3.5)
	16 to 18	46.6	46.6	45.7	43.9	-2.7 (-7.7 to 2.4)	-1.8 (-6.3 to 2.7)
	14 to 16	30.7	31.9	30.3	31.7	1.1 (-2.6 to 4.7)	1.4 (-1.9 to 4.8)
	14 to 18	37.5	38.1	38.1	36.7	-0.8 (-4.2 to 2.7)	-1.4 (-4.3 to 1.5)
	12 to 18	29.4	29.6	29.6	28.8	-0.6 (-3.1 to 1.8)	-0.8 (-3.0 to 1.3)

\* Indicates a significant change at p<0.05 from the previous year.

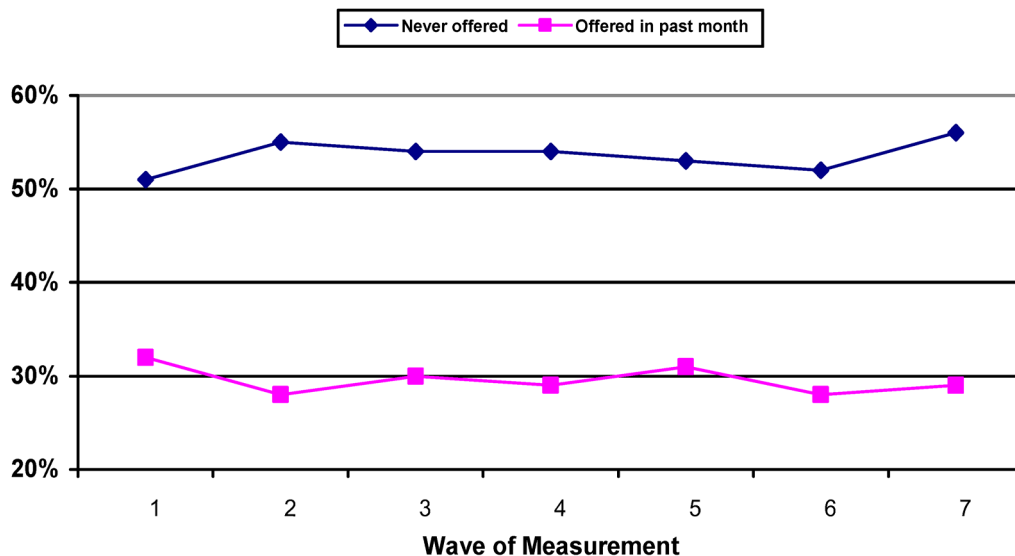
In addition, as shown in Detail Table 4-7, there are no subpopulations that show consistent significant changes in recent offers between the average estimates for 2000 and 2002, and Wave 7.

In contrast, all of the subgroups among the 14- to 18-year-olds show increases in never having received offers consistent with the overall significant effect (Detail Table 4-6). The increase in reports of never having received offers seems to have occurred between 2002 and the first half of 2003, during the period of launch of the Marijuana Initiative. Figure 4-E shows the percentage never offered marijuana and percentage offered in the past month by wave of measurement. It shows the clear increase in never having received an offer in the change between the sixth wave and the seventh. It is a

little surprising not to see a parallel decrease in the proportion who claim to have received an offer in the past month over the same period.

However, this increase in the proportion of youth who claim never to have been offered marijuana is a positive trend. It is clear that youth who are never offered marijuana are substantially less likely to initiate use than are youth who do receive offers. This relationship is presented in the next subsection.

**Figure 4-E. Offers of marijuana by wave**



### The Relationship of Offers and Use of Marijuana

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

This pattern is confirmed with the full followup sample; Table 4-F presents this information. The analysis includes only youth who indicated that they had not used marijuana at one measurement round and were 12 to 18 years old at the followup measurement round. Within each age group, initiation of marijuana use by the followup round is compared for those who had indicated at the prior round that they had received an offer with those who said they had not received an offer.

**Table 4-F. Marijuana initiation at followup interview by marijuana offers received at first interview among nonusers at first interview by age group**

	Age group at Follow up Interview					
	12 to 13		14 to 15		16 to 18	
	Ever received offer at prior interview (%)		Ever received offer at prior interview (%)		Ever received offer at prior interview (%)	
Initiated marijuana use by followup	No	Yes	No	Yes	No	Yes
	2.6	24.7	12.3	34.4	14.6	30.7

Across age groups, nonusers who reported having received marijuana offers at the prior round were much more likely to have subsequently initiated marijuana use than were nonusers who reported never having received an offer. As can be seen in Table 4-H, among 14- to 15-year-olds who had never used marijuana at baseline, more than 34 percent of those who reported having received offer(s) had used marijuana by followup, while only 12 percent of those who reported never having received an offer had used marijuana by followup. Among the youngest group, the comparable percentages are 25 and 3 percent. It is important to note, however, that while receiving offers is closely related to use, most of those who received offers did not report use. Nearly 70 percent of the oldest nonusers who reported ever receiving marijuana offers at prior measurement had still not initiated marijuana use by followup 12 to 18 months later.

## 4.4 Predictors of Marijuana Use and the Development of a Risk Model

The evaluation makes use of a variable that describes a youth's risk of using marijuana in many of the analyses. This reflected the expectations of Campaign implementers who argued from the start of the Campaign that their target audience was those youth at risk of marijuana use. Previously, risk had been represented by sensation-seeking; however, beginning with the fourth report, the idea of risk has been extended to include other characteristics that put a child at risk of marijuana use. This section briefly describes the development of the risk model, the measures used, and its effectiveness in predicting marijuana use. For most subsequent analyses, youth were stratified into lower and higher risk subgroups based on an underlying continuous measure.

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

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

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

The strength of parental factors included in the model was, overall, of lower magnitude, and some variables did not achieve statistical significance at the conventional level ( $p < 0.05$ ) in the final model. Children from households in which parenting is shared have only 0.64 times the odds of using marijuana in the past year as children living in single parent households. Children whose parent reported tobacco use in the past month had 1.5 times greater odds of using marijuana in the past year than children whose parent had not smoked cigarettes in the preceding month. Likewise, parental marijuana use was associated with a 40 percent increase in the odds of child past-year marijuana use.<sup>2</sup>

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

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

<sup>1</sup> Likelihood of a youth using marijuana in the past year.

<sup>1</sup> With regard to the analytical procedure, the data set was split into 10 random groups; one of these was randomly dropped, and a logistic regression model was fitted to the remaining 9 groups. The fitted model was then used to assign the risk scores of persons in the omitted group. The logistic regression model was run so that each of the 10 groups was dropped in turn, resulting in a cross-predicted risk score for every person in the sample. In a second step, all 10 models were rerun using only variables that had been found to be significant in any of the previous analyses. Coefficients were averaged across these latter 10 models, and they were the basis for the cross-predicted probability.

<sup>2</sup> Covariates that did not make it into the risk measure are wave, youth gender, youth race/ethnicity, parent binge drinking in past 30 days, age of parent, parental education, and annual household income.

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

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

**Table 4-H. Differences in percent of youth reporting marijuana use by age and risk subgroup across seven waves**

Youth Characteristics		Marijuana Use Measure			
Age groups	Risk group	Lifetime (%)	Past Year (%)	Past Month (%)	Regular (%)
<b>12 to 13</b>					
	Higher	30.0	22.2	8.9	4.6
	Lower	2.0	1.3	0.6	0.1
<b>14 to 18</b>					
	Higher	50.3	36.2	18.9	14.8
	Lower	7.1	5.0	1.9	1.2

Marijuana use reported by children at higher risk is on average several times larger than that reported by children at lower risk, and this is true across all measures and age groups. For example, among 12- to 13-year-olds, 0.6 percent of children at lower risk and 8.9 percent of children at higher risk reported past month marijuana use during this period. Among the older group, 2 percent of children at lower risk and 19 percent of children at higher risk reported past month use in the same period.

Stronger validation of the usefulness of these risk estimates comes from prospective analyses. The previous report found considerable differences in marijuana initiation at Waves 4 and 5 by child risk among youth who had never used marijuana at the time of first interview. This pattern is replicated when the evidence from Round 1 to Round 2 can be replicated by evidence from Round 2 to Round 3. Excluding those who reported use at the first time point, children at higher risk do progress into use at greater rates than children at lower risk, even after controlling for age, as can be seen in Table 4-I.

**Table 4-I. Marijuana initiation at followup round by child risk and age among nonusers at first measurement**

	Age group at followup Round					
	12 to 13		14 to 15		16 to 18	
	Risk group at prior round (%)		Risk group at prior round (%)		Risk group at prior round (%)	
Initiated marijuana use by followup	Higher	Lower	Higher	Lower	Higher	Lower
		22.0	2.6	34.2	8.3	25.9

## Summary

The NSPY did not find significant reductions in marijuana use either leading up to or after the Marijuana campaign for youth 12 to 18 years old between 2002 and 2003. Indeed there was evidence for an increase in past month and past year use among the target audience of 14- to 16-year-olds, although it appears that the increase was already in place in the last half of 2002, before the launch of the Marijuana Initiative. It will be worthwhile to track whether the nonsignificant decline from the second half of 2002 through the first half of 2003 is the beginning of a true trend. There was a significant decrease in lifetime marijuana use among youth 16 to 18 years of age from 2002 to 2003; however, since this significant decrease was not replicated in either the directly relevant past year or past month time periods, it is difficult to ascribe the change to the campaign. In contrast, MTF did find evidence for a decline in marijuana use among 8th graders between 2002 and 2003, although it appears that this was a continuation of a longer term decline.

The four sources of use data provide mixed evidence about marijuana use trends prior to the launch of the Marijuana Initiative. NSPY did not find changes in marijuana use during this period. MTF reports indicate that marijuana use had been stable from 1998 through April 2001, but decreased among 10th graders for the past year and past month time periods between 2001 and 2002, a decline which continued through 2003. YRBSS also found decreases in lifetime and 30-day use for their full sample of 12- to 17-year-olds between 1999 and 2001. In contrast, the NSDUH found an increase in marijuana use for 12- to-17-year-olds between 2000 and 2001, although retroactive estimates from the 2002 NSDUH suggest declines in lifetime use between 2001 and 2002. These changes in marijuana use reported by MTF, YRBSS, and NSDUH prior to the launch of the Marijuana Initiative provide mixed evidence, although given that they involve different periods of time, and different age groups, they do not necessarily contradict one another in most cases.

The previous report found stable youth reports of receiving offers of marijuana. In contrast, the current report found increases between Waves 6 and 7 in youth reporting never having received offers of marijuana, particularly among older youth. Surprisingly, this increase in never having received offers was not matched by a decrease in the number of youth who had received offers in the past 30 days. This is a result of some interest, since offers are highly related to subsequent use, but it will be appropriate to see if the shift in never receiving offers is maintained through the next round of data collection and also shows up in the numbers of youth receiving recent offers.

In sum, the analysis of the NSPY data does not support a claim that use among the target audience of 14- to 16-year-olds has declined with the initiation of the Marijuana Initiative. Contrarily, it appears to have increased in the past year compared to prior measurement, although the increase appears to have occurred before the start of the Marijuana Initiative and was only maintained during the first half of 2003. The MTF data does show declines, particularly for 8th and 10th graders. However, these declines cannot be confidently attributed to the operation of the Campaign.

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- 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. (2002). *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).
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## 5. Campaign Effects on Youth

The primary audience for the Campaign is young people, with a focus on those youth seen as particularly vulnerable to initiation of drug use. The objectives of the Campaign include reducing the number of young people who try marijuana at all, and reducing the number of trial users who go on to regular use. Current regular users are not a primary target audience for the Campaign.

In part, the Campaign has aimed to affect youth drug use through influencing the behavior of parents and other adults important in youths' lives. Increased adult engagement in youths' lives is considered an important intervention in preventing drug use. The success of the Campaign in reaching and affecting adults is discussed in Chapter 6.

The Campaign also expects to influence youth directly through its heavy promotion of anti-drug messages with advertising and other efforts. This chapter focuses on the assessment of this direct path of effect. Whereas Chapter 4 presented relevant data on changes in drug use during Phase III of the Campaign, this chapter focuses back one step in the process of change, to the cognitive precursors of behavior outlined in the Campaign model laid out in Chapter 2. Results presented in Chapter 4 did not support a claim of overall change in marijuana use, although there was some NSPY evidence of significantly increased use among 14- to 16-year-olds that began prior to the Marijuana Initiative, and MTF evidence for declines in use for 8th and 10th graders which also appeared to have predated the Marijuana Initiative. Now, in Chapter, 5, the question is posed: Is there evidence that the Campaign is influencing intentions to use marijuana, beliefs and attitudes about the outcomes of marijuana use, perceived social norms about marijuana use, or self-efficacy to turn down marijuana?

Although the Campaign has at times focused on a variety of drugs (methamphetamines, club drugs like Ecstasy, inhalants, and others), the major focus has been on drugs overall and marijuana specifically. Aside from alcohol and nicotine, marijuana is the illicit drug by far the most likely to be used by youth. In the past reports, there was no evidence to support a positive effect of the Campaign on youth behavior and cognitions toward marijuana use. Rather, the data provided some consistent support for an unfavorable effect such that higher exposure to Campaign messages was associated, after a delay, with more pro-drug outcomes. In light of these results and other factors, ONDCP made a decision to shift the focus of the youth campaign exclusively to marijuana, and to stronger negative consequence ads as described in Chapters 1 and 3. The Campaign, recognizing the lack of a favorable effect, has concentrated its recent efforts on what it called the Marijuana Initiative in hopes that this initiative will have significantly different, and improved, effects. This chapter serves almost exclusively to evaluate the Marijuana Initiative since its introduction in late 2002. It does not address effects of previous Campaign efforts, except insofar as previous results provide a comparative base for understanding Marijuana Initiative effects. It does address whether the Campaign's efforts to focus on marijuana has a significant effect on youths' cognitions, and whether this effect is significantly different from the pattern evident in the preceding years of the campaign.



## 5.1 The Logic of Inferences About Effects

It would be desirable to show that target outcomes, including improved cognitions about marijuana use, are trending in a direction consistent with Campaign objectives. However, any observed positive trend may reflect only external forces other than the Campaign. There are many forces in society that potentially affect adolescent drug use (e.g., drug prices, drug availability, content of popular media), and a trend alone won't permit unambiguous attribution to the Campaign. An observed lack of a favorable trend might also miss real Campaign effects. The Campaign might be successfully keeping the level of drug use and its cognitive precursors from getting worse as the result of other negative forces, or it might be that this study lacked the statistical sensitivity to detect a small change. Still, despite these ambiguities, it will be easier to accept Campaign effects in the context of "good" trends than to have to explain why the lack of "good" trends is still consistent with a Campaign effect. Given that the bad trend between 1992 and 1998 toward increased drug use justified the Campaign, finding a reversal of that trend is desirable.

The trend evidence immediately relevant to claims about the Marijuana Initiative is evidence for a change between 2002 and 2003. However, a favorable change over that 1-year period, while desirable, may not reflect a distinct effect of the Marijuana Initiative. To provide support for the distinct effect of the past year's Marijuana Initiative, we will look for trends that show not only significant changes in the anti-drug direction between 2002 and 2003, but also evidence that this change is different from the trend over the whole period of the Campaign, years 2000 to 2003. That is to say, to ascribe a detected trend in the year 2003 to the Marijuana Initiative, in part, we should be able to identify such a pattern as distinct from an overall trend that has been occurring over the entire duration of the Campaign. As laid out above, the absence of such trend data does not preclude the possibility of a significant effect of the Marijuana Initiative, and the presence of such trend data does not equate to Campaign effects, but overall such evidence is certainly desirable.

For a favorable trend, in the anti-drug direction, to be more credibly linked to the Campaign, the presence of a second class of evidence is required: that youth who were more exposed to the Campaign do "better" on the desired outcomes (i.e., that youth who reported seeing Campaign ads two or three times a week are more likely to believe, for instance, that there are negative outcomes of marijuana use than those who reported ad exposure less than once a week). However, even if such associations were to be found, the results would be subject to three concerns. First, there is the risk that the observed association between exposure and outcomes is the result of other variables that affect them both; for example, youth who do less well in school are more likely to turn to drugs and also may spend more time watching television and thus seeing ads. The threat to an inference of Campaign effects from these other variables is addressed directly through the implementation of statistical controls for potential confounding variables. The procedure used for that purpose, propensity scoring, is described in detail in Appendix C.

Second, the absence of an association between exposure and outcome does not permit definitive rejection of all Campaign effects. Chapter 2 recognized the possibility of effects not detectable through comparisons between more and less well-exposed individuals. To the extent that effects are shared in social networks, or diffused through changes in institutional practices, they are sometimes not completely detectable through individual level comparisons.

The third concern in making inferences from cross-sectional associations is that the association might be the result of the influence of outcomes on exposure rather than exposure on outcomes. For

example, is it possible that youth with a negative view of drugs are more likely to remember anti-drug advertising? This could explain the association just as well as the idea that exposure to that advertising affected their view of drugs. This concern, called the threat of reverse causation, cannot be eliminated under most circumstances with cross-sectional data. In past reports, to bolster the explanatory power of significant associational results, data that provides evidence of causal order has been necessary. For this task, longitudinal analysis, primarily delayed-effects analysis, has been critical.

However, the analysis for the current report is different from those in the past because the focus of this evaluation is exclusively on the Marijuana Initiative. Only respondents interviewed during the last wave of data collection, in the first half of 2003, were exposed to the Marijuana Initiative advertising. It is then not feasible to do a delayed-effect analysis of that exposure in the report. From the perspective of the concern about the risk of reverse causation, this is not so great a handicap. Previous reports have shown that there was no association between Campaign exposure and simultaneously measured youth outcomes. If such a cross-sectional association were found in this report, given the prior evidence of no association, it would be unlikely that any new association was the result of beliefs or other intended outcomes being the cause of recalled exposure. If there was such a reverse causal association, it would already have shown up in the previous reports. Thus, for this report the crucial evidence to support a claim of effect of the initiative specifically is first, significant cross-sectional results and second, a showing that the new association is significantly different from the (non-) associations found in the preceding years of the campaign. Because the Marijuana Initiative spans only the past year, finding the latter type of cross-sectional evidence will mitigate concerns about reverse causation as the explanatory factor. In other words, if there are significant cross-sectional results for the time period of the Marijuana Initiative that were not present for the earlier years of the Campaign, then any observed association between exposure and outcome is likely not the result of the outcome affecting exposure but rather that the Campaign's past year activities are responsible for such associations.

This approach provides reasonable assurance that an observed cross-sectional association, once it is controlled for possible extraneous influences, is the result of Campaign influences on outcomes. However, in this report no delayed effects of exposure on outcomes are examined. It was only in the examination of delayed effects where the apparent unfavorable influences were seen earlier; it will not be possible to see if such delayed unfavorable (or favorable) effects are present until after the next year of data collection is complete and the final evaluation report is written.

In sum, the best trend data consistent with a Marijuana Initiative effect will show 1) evidence of a favorable trend in the outcome and 2) evidence that such favorable trends in the outcome were not present over the entire course of the Campaign. The argument that there was a Campaign effect is strengthened if these trends are accompanied by cross-sectional associations of reported exposure to the Campaign, with the target outcomes statistically controlled for likely confounders. Finally, evidence that such cross-sectional associations found in the past year are significantly different from those of preceding Campaign years provides even greater confidence in attributing such results to the effect of exposure to the Campaign's Marijuana Initiative.

The overall analysis focuses on effects among current nonusers of marijuana who are 12 to 18 years old. Baseline current users do not receive a great deal of attention in the presentation. The Campaign would like to increase the resistance of these youth to use of marijuana. However, there are not enough of them in the Wave 7 sample alone, particularly at younger ages, to provide very much statistical sensitivity to their changes. Although in Wave 7, 38 percent of 16- to 18-year-olds report

prior use, fewer 12- to 13-year-olds (less than 5%) and 14- to 15-year-olds (less than 20%) report use (Detail Table 4-1). There were a total of 463 past year users in the Wave 7 sample, and only 250 in the 14- to 16-year-old bracket.

In addition to the overall analysis, this chapter presents trend and cross-sectional associational results for subgroups of youth. The subgroup analyses are used for two purposes. If there is an overall effect for all 12- to 18-year-olds, there is a search for evidence that the trends or the association is significantly larger or smaller for particular groups. If there is no overall effect, the subgroups are examined to see if there is evidence of effect for only a subpopulation. As with the previous report, this chapter will include subgroup analyses by youth's risk for marijuana use with youth classified as "higher" or "lower" risk. These subgroups are described later in this chapter and in further detail in Chapter 4. Subgroups' differences are noted when they show a consistent pattern. All trend and cross-sectional analyses are fully presented in the Detail Tables and summarized in the text.

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

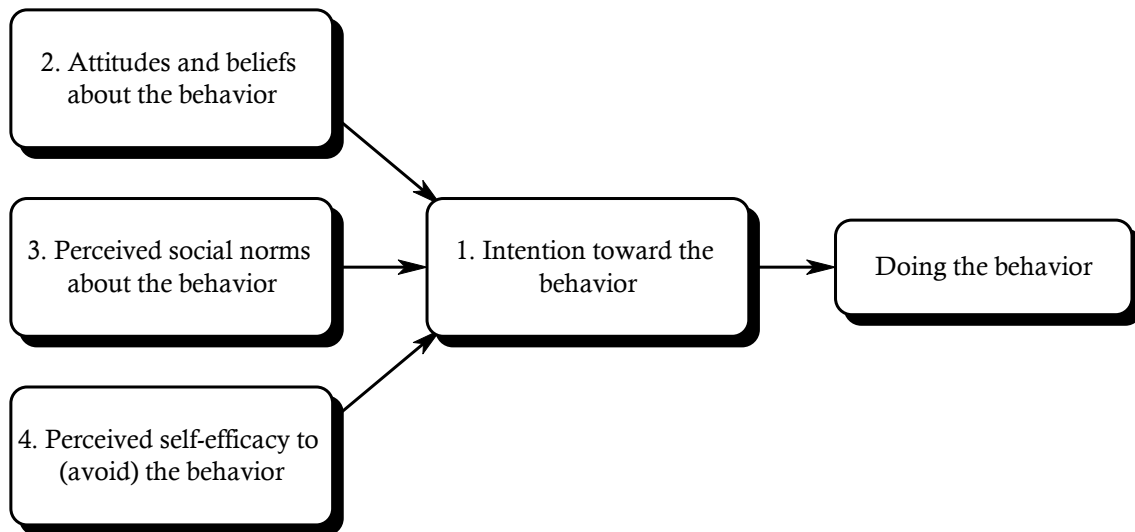
## 5.2 Development of Overall Scales, Combining Trial and Regular Use, and Summarizing Multiple Related Items

The Detail Tables provide information about trends in a total of 34 cognitive outcomes related to use of marijuana. In order to present that information efficiently, and to maximize the power of the analyses, this chapter presents that information largely through the use of a small number of summed indices. The indices reflect the expected theoretical model of Campaign effects. The use of these scales provides several advantages:

- Summed indices are, in general, more reliable than single measures, thus allowing easier detection of meaningful trends and associations;
- Using a small number of indices reduces the risk of chance findings of statistical significance when a very large number of tests are examined—a risk compounded when subgroups are to be examined for possible differential effects;
- Given the particular structure of the youth questionnaire, in which not all respondents are asked identical sets of questions, the use of summed indices permits a sharp increase in the numbers of respondents eligible for particular analyses, again increasing sensitivity to any true effects; and
- A theory-driven analysis featuring a small number of indices allows for a focused presentation of results.

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

**Figure 5-A. The expected relationships among cognitive outcomes**



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

- **Intentions to use marijuana at all in the next year.** The question asked how likely it was that the respondent would use marijuana even once or twice in the next year, and permitted answers of definitely not, probably not, probably yes, and definitely yes. A substantial majority, approximately 87 percent, of current nonusers aged 12 to 18 said, “definitely not.” In the analyses below, this group is compared to the 13 percent of nonusers who were not definite in their intended rejection of use. Intentions are a very strong predictor of future behavior. Among those who were nonusers at a prior round of measurement, 10 percent of those who said “definitely not” to any use of marijuana over the next year had initiated use by the followup Round (12 to 18 months later). Of those who said anything other than “definitely not” the rate of initiation was 42 percent.
- **Attitudes and beliefs about marijuana.** All youth respondents were asked questions about how likely it was that a series of specific consequences would result if “you” use marijuana, either regularly (every month or almost every month) or once or twice over the next year. The eight consequences asked about for “once or twice” use included “Upset my parents,” “Get in trouble with the law,” “Lose control of myself,” “Start using stronger drugs,” “Be more relaxed,” “Have a good time with friends,” “Feel better,” and “Be like the coolest kids.” The eight consequences asked about for regular use included “Damage my brain,” “Mess up my life,” “Do worse in school,” “Be acting against my moral beliefs,” “Lose my ambition,” “Lose my friends’ respect,” “Have a good time with friends,” and “Be more creative and imaginative.” Each nonusing respondent was randomly asked about one of the two eight-belief sequences. They were also each asked two questions that assessed overall attitude toward either “once or twice” use or regular use. All of the youth with prior use experience were asked about the consequences of and attitudes toward regular use.

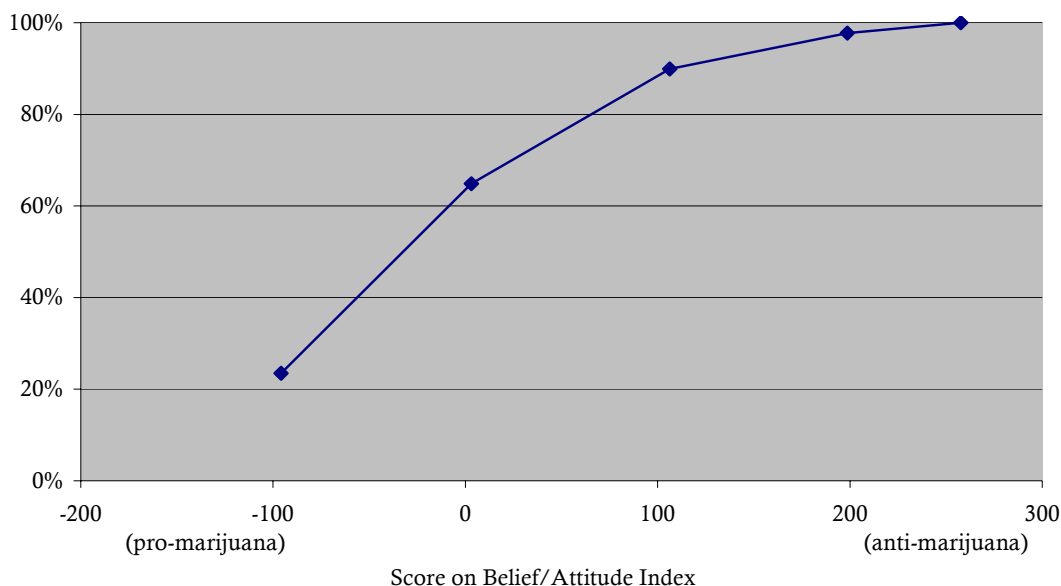
It is useful to look at the attitudes and beliefs about the two behaviors—using once or twice, and using regularly—as distinct. In the earlier reports, analysis focused on distinguishing between the

two sets of outcomes. However, beginning with the Third Semi-Annual Report, it was decided to sacrifice the distinctions to allow the creation of a single index to capture beliefs and attitudes about marijuana. Since youth who have never used marijuana, referred to in this report as “nonusers,” were randomly assigned to answer questions about “once or twice” or regular use, it was possible to equilibrate the two sets of responses on a single scale. This permitted the maximization of the number of youth who could be studied in a particular analysis and thus the power to detect an effect if any were present.

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

The summed Attitudes/Beliefs Index, as expected, was substantially associated with the intention to use marijuana in the next year. Figure 5-B presents that relationship graphically. Almost 25 percent of those with the lowest scores on that index said “definitely not” to marijuana use in the next year, while 100 percent of those who were at the highest levels rejected such use.

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



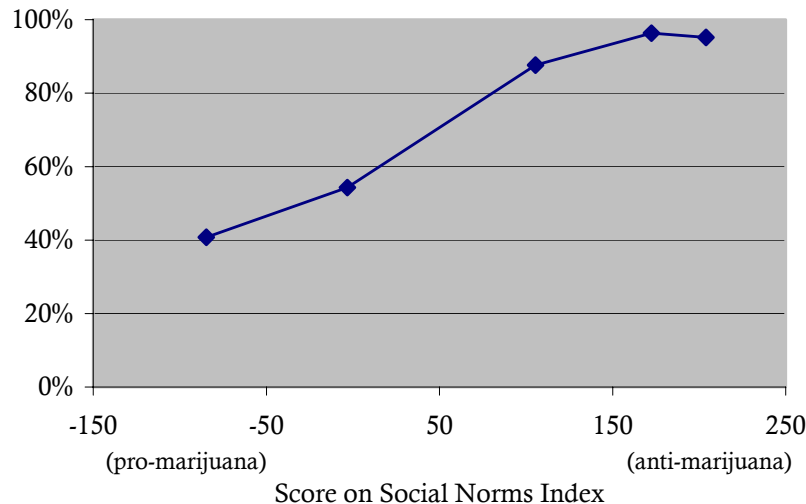
- **Perceived social norms.** The perceived Social Norms Index was formed in a parallel way to the Attitudes/Beliefs Index. There were five parallel questions that assessed social normative pressure with regard to each of “once or twice” and regular use of marijuana. They asked about the perception of friends’ use of marijuana, other peers’ use of marijuana, parents’ disapproval of “your” marijuana use, friends disapproval of “your” marijuana use, and disapproval of “your”

marijuana use by most people important to you, in each case in the context of “once or twice” use or regular use over the next year. Using a regression model, the questions were then weighted according to their ability to predict the intention to use marijuana once or twice in the next year. The indices for nonusing youth randomly assigned to answer the “once or twice” or regular use questions were both set to a mean of 100 and a standard deviation of 100 for 12- to 18-year-old nonusers at Wave 1. The youth who had previously used marijuana and who had been asked the social norm questions about regular use were assigned index scores using the weights developed for the nonusers. Once again, all respondents were then assigned their score on the overall index based on their scores on the separate indices.

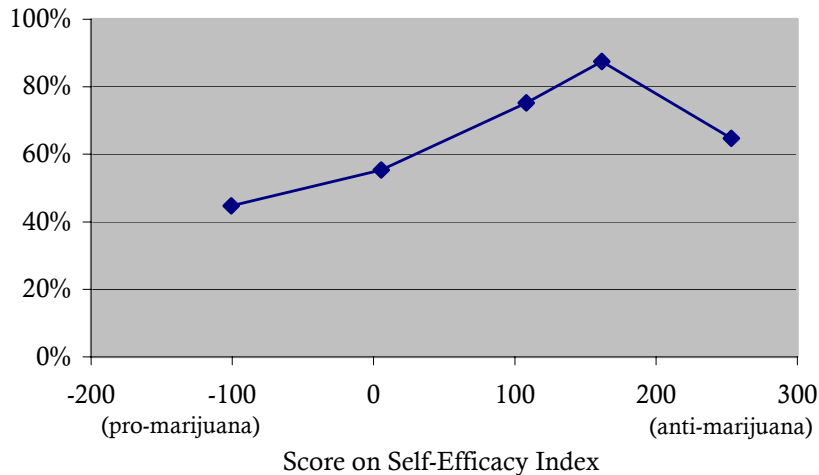
The perceived Social Norms Index was substantially correlated with intentions, although the relationship was not quite as strong as that between the Attitudes/Beliefs Index and intention (Figure 5-C).

- Self-efficacy to refuse marijuana.** All respondents were asked the same five questions about their confidence that they could turn down the use of marijuana under various circumstances. (“How sure are you that you can say no to marijuana, if you really wanted to, if: You are at a party where most people are using it; A very close friend suggests you use it; You are home alone and feeling sad or bored; You are on school property and someone offers it; You are hanging out at a friend’s house whose parents aren’t home.”) Using a regression model, the five questions were used to predict the intention to use marijuana once or twice in the next year. Each question was then weighted in the overall index reflecting the coefficient of the item in the predictive equation. Once again, to ease interpretation, responses were standardized to a mean of 100 and a standard deviation of 100 for Wave 1 12- to 18-year-old nonusers. The new index predicted intentions, but less powerfully than the other two indices (Figure 5-D).

**Figure 5-C. Marijuana nonuse intention by Social Norms Index**



**Figure 5-D. Marijuana nonuse intention by Self-Efficacy Index**



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

This section covers trends in intentions about trial use, attitudes and beliefs, perceived social norms, and self-efficacy about use across NSPY waves. The trends are broken out by age. It also discusses the evidence for diversity in trends across various subgroups.

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

#### 5.3.1 Intentions About Marijuana Trial Use by Age and by Wave

Over the entire 2000 to 2003 period there is no statistically significant change for the full 12- to 18-year-old sample, nor for any of the age groups, in intentions to use marijuana once or twice among prior nonusers. Similarly, there is no statistically significant difference for the full 12- to 18-year-old sample in intentions to use marijuana once or twice among prior nonusers between 2002, the period of the campaign prior to the Marijuana Initiative, and 2003 after the 6 months of the initiative. Of the age subgroups, there is one significant trend on marijuana intentions, favorable to the Campaign, among 16- to 18-year-old nonusers. However, the percentage for this age group was unusually low in 2002, so the change may be a statistical artifact. (See Table 5-A and Detail Table 5-1.)

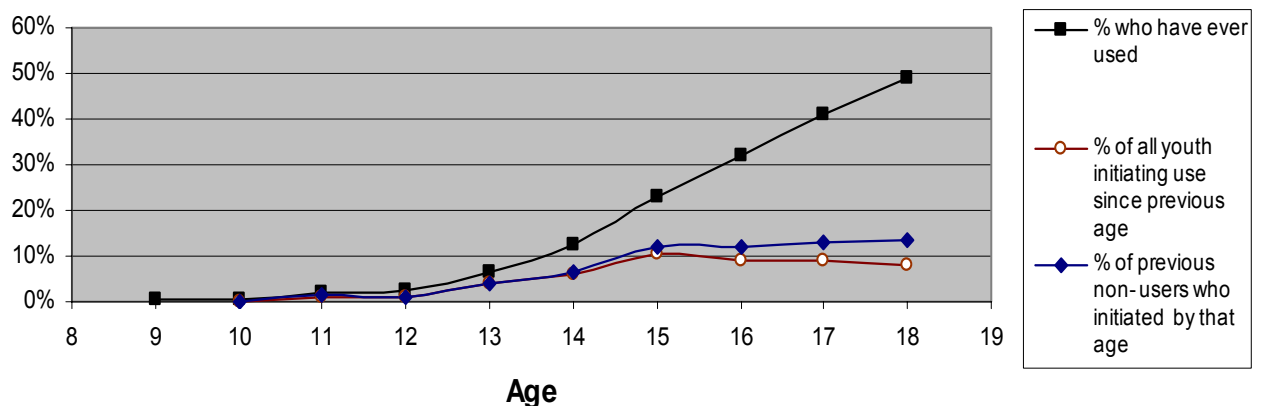
**Table 5-A. Trends in intentions to use marijuana once or twice for nonusers, by child age**

Age groups	Percent of nonusers saying “definitely not”				Change from Year 2000 to Year 2003 Change (95% CI)	Change from Year 2002 to Year 2003 Change (95% CI)
	Year 2000 (%)	Year 2001 (%)	Year 2002 (%)	Year 2003 (%)		
12 to 13	92.3	90.9	91.5	90.5	-1.8 (-4.1 to 0.6)	-0.9 (-3.6 to 1.7)
14 to 15	85.1	83.8	83.8	83.3	-1.8 (-5.5 to 1.9)	-0.5 (-3.8 to 2.9)
16 to 18	84.6	83.5	82.1	86.4	1.7 (-2.2 to 5.6)	<b>4.3* (0.2 to 8.3)</b>
14 to 16	84.8	83.1	83.6	84.0	-0.8 (-3.8 to 2.3)	0.4 (-2.8 to 3.6)
14 to 18	84.9	83.7	83.0	84.9	0.0 (-2.8 to 2.7)	1.9 (-0.6 to 4.4)
12 to 18	87.5	86.3	86.1	86.9	-0.6 (-2.7 to 1.5)	0.8 (-1.0 to 2.6)

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

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

The table provides two other pieces of information. Most nonusing youth, regardless of age, do not intend to use marijuana even once or twice in the next year. These reported intentions are consistent with the reported behavior of the population. It is possible to compare the levels of lifetime use reported by each age level, and from that information estimate what the annual rate of initiation is among nonusers. The trend in lifetime use and the proportion of prior nonusers who become users each year appears in Figure 5-E. For 12- to 13-year-olds, the annual rate of marijuana initiation over the subsequent year is about 5 percent; for 14- to 15-year-olds it is 8 percent; and for 16- to 18-year-olds it is 9 percent. Each of these numbers is about half of the numbers of youth who do not indicate they will “definitely not” initiate marijuana use in the next year.

**Figure 5-E. Use of Marijuana by Age**

Also, there is some age association in these responses, with 14- to 18-year-olds less likely to say “definitely not” than 12- to 13-year-olds, but not a consistent decline when comparing 12- to 13-year-olds with 14- to 15-year-olds and 16- to 18-year-olds. However, the age effects are understated in this table, because the table presents only the responses of nonusers. Since 38 percent of 16- to 18-year-olds in Wave 7 were prior users, the numbers presented here are not reflective of the intentions of all youth in the age group. In Wave 7, among nonusers, 91 percent of all 12- to 13-year-olds, 83 percent of all 14- to 15-year-olds, and 86 percent of all 16- to 18-year-olds said “definitely not” to this question. Among both prior and nonusers in Wave 7, 88 percent of all 12- to 13-year-olds, 73 percent of all 14-



to 15-year-olds, and 62 percent of all 16- to 18-year-olds say “definitely not” to this question. Age clearly affects intention.

### 5.3.2 Attitudes/Beliefs by Age and by Wave

The results for the Attitudes/Beliefs Index show no overall trends and no significant trends for any of the age subgroups, from 2000 to 2003 or from 2002 to 2003. Table 5-B presents the results for each age subgroup and the entire sample of 12- to 18-year-olds. (See also Detail Table 5-2.) Table 5-B shows no statistically significant difference for the full sample comparing Year 2002 with Year 2003.

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

Age groups	Score on Index				Change from Year 2000 to Year 2003 Change (95% CI)	Change from Year 2002 to Year 2003 Change (95% CI)
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)		
12 to 13	129.20	121.40	128.36	124.40	-4.80 (-12.19 to 2.59)	-3.96 (-11.46 to 3.54)
14 to 15	102.29	100.85	100.08	99.32	-2.97 (-14.75 to 8.80)	-0.77 (-9.85 to 8.31)
16 to 18	91.31	85.13	90.81	94.08	2.77 (-10.44 to 15.98)	3.27 (-7.54 to 14.08)
14 to 16	98.94	95.32	98.68	97.20	-1.74 (-11.34 to 7.86)	-1.48 (-9.71 to 6.76)
14 to 18	97.28	93.42	95.45	96.61	-0.67 (-9.37 to 8.03)	1.16 (-5.51 to 7.83)
12 to 18	108.55	103.49	107.45	106.55	-2.01 (-8.49 to 4.48)	-0.90 (-5.95 to 4.14)

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

Table 5-B does show a clear age gradient, despite the omission of marijuana users from the analysis, with older nonusers expressing weaker anti-marijuana sentiments than younger nonusers. In Wave 7, 12- to 13-year-olds had an index score of 124, while 16- to 18-year-olds had an index score of 94 (Detail Table 5-2).

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

Social norms against marijuana use show a significant decline from 2000 to 2003 for the full sample, as well as for 12- to 13-year-olds, 14- to 16-year-olds, and 14- to 18-year-olds. This trend was not mitigated during the Marijuana Initiative period; indeed the only significant change in the 2002 to 2003 period, for the 12- to 13-year-olds, is also in the pro-drug direction. Table 5-C presents the essential results with additional detail presented in Detail Table 5-3.

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

Age groups	Score on Index				Change from Year 2000 to Year 2003 Change (95% CI)	Change from Year 2002 to Year 2003 Change (95% CI)
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)		
12 to 13	136.87	129.47	132.21	122.44	<b>-14.43* (-20.82 to -8.03)</b>	<b>-9.77* (-17.47 to -2.07)</b>
14 to 15	97.63	98.22	90.35	92.85	-4.78 (-15.37 to 5.82)	2.50 (-5.57 to 10.56)
16 to 18	83.91	70.65	76.21	74.52	-9.38 (-21.81 to 3.04)	-1.69 (-12.98 to 9.61)
14 to 16	93.89	87.72	88.22	85.10	<b>-8.79* (-17.55 to -0.03)</b>	-3.12 (-10.68 to 4.44)
14 to 18	91.37	85.19	83.29	83.39	<b>-7.98* (-15.63 to -0.33)</b>	0.10 (-6.93 to 7.13)
12 to 18	107.43	101.12	101.13	97.35	<b>-10.08* (-15.55 to -4.62)</b>	-3.78 (-9.25 to 1.69)

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

Once again, the age gradient is clear, with older nonusers exhibiting more pro-drug norms than younger nonusers. The 16- to 18-year-olds scored an average of 75 in Wave 7; the 12- to 13-year-olds scored 48 points higher, even though marijuana users are excluded from the table.

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

The self-efficacy results suggest a 3-year trend favorable to the Campaign, but not a distinct change associated with the Marijuana Initiative. The final index was the summed scale of five questions that dealt with the youths' confidence that they could turn down marijuana in a variety of circumstances. The overall results for the 12- to 18-year-olds as a group and for every subgroup show significant favorable changes between 2000 and 2003. One group, the 16- to 18-year-olds, also shows a significant favorable effect from 2002 to 2003. However, for the other two age subgroups, the favorable 2000 to 2002 trends were not enhanced between 2002 and 2003. For the 16- to 18-year-olds, the trend for 2002 and 2003 is consistent with the earlier trend since it closely matches the change between 2001 and 2002 (Table 5-D and Detail Table 5-4).

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

Age groups	Score on Index				Change from Year 2000 to Year 2003 Change (95% CI)	Change from Year 2002 to Year 2003 Change (95% CI)
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)		
12 to 13	101.14	100.85	116.83	112.19	<b>11.05* (3.23 to 18.86)</b>	-4.63 (-11.85 to 2.58)
14 to 15	96.62	111.95	112.85	112.51	<b>15.89* (2.77 to 29.01)</b>	-0.34 (-10.07 to 9.40)
16 to 18	110.79	108.73	119.68	130.70	<b>19.91* (8.91 to 30.91)</b>	<b>11.02* (2.19 to 19.85)</b>
14 to 16	99.34	108.68	115.30	118.71	<b>19.37* (8.60 to 30.14)</b>	3.42 (-4.90 to 11.73)
14 to 18	103.09	110.43	116.26	121.90	<b>18.82* (10.16 to 27.47)</b>	5.64 (-1.23 to 12.51)
12 to 18	102.40	106.98	116.47	118.43	<b>16.03* (9.52 to 22.54)</b>	1.96 (-3.02 to 6.95)

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

The pro-drug age gradient seen in the prior measures is not seen in self-efficacy. In fact, older nonusers, 16- to 18-year-olds, rate their self-efficacy higher than younger nonusers (12- to 15-year-olds).

### 5.3.5 Evidence for Diversity in Trends in Cognitions about Marijuana Use

The diversity effects analyses address two complementary questions. When there was not evidence of a significant overall trend, was there evidence of such a trend for a subgroup, in addition to the age subgroup effects described above? Alternately, when there was overall evidence of trend, did any subgroup show a significantly different trend? Altogether, there are seven subgroups of three grouping variables (two sexes; three race/ethnicity groups; two risk groups<sup>1</sup>). These groups are examined across four measures, making a total of 28 trend comparisons.

For two of the outcomes (social norms and efficacy), there was an overall trend from 2000 to 2003, but not for the discrete period of the Marijuana Initiative from 2002 to 2003. Females, whites, Hispanics, and high- and low-risk subgroups all showed statistically significant trends consistent with the overall trend effects of social norms for the period from 2000 to 2003. For self-efficacy index

<sup>1</sup> The Detail Tables present trend information for high and low risk groups and sensation-seeking groups. The risk group variable incorporates the sensation-seeking variable as well as other predictors of drug use. To avoid substantial redundancy of reporting, the text includes consideration of only the risk subgroups.

scores, all of the subgroups' trends were significant and statistically consistent with the overall trend effects, with the exception of the high risk group (which was consistent but nonsignificant) over the 2000 to 2003 period.

With the other two outcomes, intentions and the Attitudes/Belief Index, the overall trend was not significant and there were no significant trends among any of the focus subgroups. The second form of evidence—cross-sectional data—is considered next.

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

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

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

Table 5-E presents the exposure levels for the 12- to 18-year-old nonuser population (i.e., across Waves 1 through 7) who are the focus of the analyses reported below. The very similar distribution of exposure for the full population can be found in Detail Tables 3-2 and 3-27. The distribution of exposures among nonusers, who are the focus of the analyses reported below, are very close to these overall estimates.

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

	<1 exposure (%)	1 - 3 exposures (%)	4 - 11 exposures (%)	12+ exposures (%)
<b>General exposure</b>		<b>22.8</b>	<b>24.3</b>	<b>52.9</b>
<b>Specific exposure</b>	<b>16.6</b>	<b>32.4</b>	<b>36.8</b>	<b>14.2</b>

The general exposure measures display substantially higher levels than do the specific exposure levels. For example, 53 percent of youth reported general exposure 12 or more times per month, but 14 percent reported specific exposure at that level. There are three factors that may contribute to that difference: the general exposure measure included more sources than the specific exposure measure; the general exposure measure allows recall of advertising that was directed to other audiences, while

the specific exposure measure focuses only on television<sup>2</sup> ads directed to the youth; and finally, the general exposure measure may be less demanding since it does not require the respondent to claim that he or she has seen a specific ad. One might speculate, therefore, that it is at greater risk of inflated reporting. Since the two measures may capture different aspects of exposure, the evidence of association is presented for both of them, with the interpretation strengthened when both show the same pattern of effects.

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

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

All cross-sectional analyses of exposure include data from all seven waves, but are restricted to 12- to 18-year-olds who reported never using marijuana.<sup>3</sup> Each of the detail tables that present these associational results (Detailed Tables 5-33 through 5-40) also provides estimates for subgroups of that population defined by youth characteristics (age, gender, race/ethnicity, risk of marijuana use, and sensation-seeking).

Each table presents three different measures of potential Campaign effect. The first, called All Cases, reports if there is a statistically significant association between the exposure of all respondents (the entire sample from Waves 1 through 7) to Campaign messages and the score on the specified outcome (e.g., intention to use marijuana even once or twice in the next year) for the entire sample. An estimate of the magnitude of association for this measure, as well as the following two, is presented using the gamma coefficient. Like the Pearson correlation coefficient, gamma varies from  $-1$  to  $+1$ ,

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<sup>2</sup> The measures of specific exposure include only reports of exposure to television advertising. During Wave 1, the measure of exposure to radio advertising excluded ads that were only audio versions of television ads, which were the great majority of the ads. It was not meaningful to include specific radio exposure with the television exposure in the specific exposure index for that wave. Although all radio ads were asked about in Waves 2 through 7, and the exposure to them is reported in Chapter 3, they were not included in the exposure index for the analyses reported in this chapter so that comparability across waves could be maintained. However, recall of television advertising was, in any case, much greater than recall of radio ads, so it is unlikely that this exclusion is substantially affecting the associations reported here (Detail Tables 3-2 and 3-17).

<sup>3</sup> These analyses treat all interviews as independent, although Waves 6 and 7 are followup to Waves 4 and 5, and the Waves 4 and 5 interviews were done with youth first interviewed in Waves 1 through 3. This would violate the assumption of independence of observations ordinarily required for the calculation of standard errors from a sample. However, the estimation procedures used in these analyses, making use of the WESVAR program, adjust for any nonindependence.

with 0 being no relationship.<sup>4</sup> The “All Cases” column then reports whether the campaign, through its duration, shows significant cross-sectional results. Such results are marked in bold. The second measure, as indicated by its column header, looks at all the youth from Waves 1 to 6, but not Wave 7. The third measure is its counterpart and reports only on results from Wave 7. The comparison of these two groups allows for effective assessment of the impact of the Marijuana Initiative. As described earlier in this chapter’s introduction, evidence that would support an effect of the Marijuana Initiative specifically would entail significant cross-sectional results in Wave 7 (determined by an examination of the third measure in the tables) that were not present over the preceding years of the campaign (determined by a comparison between the second, Waves 1 to 6, and third, Wave 7, measures in the tables). The interviews in which respondents were asked to recall exposure to Marijuana Initiative advertising were essentially only undertaken in the first half of the 2003 year. If these respondents (those included in the Wave 7 estimates) showed a different association than respondents from Waves 1 to 6, a claim of Marijuana Initiative effects would be supported. The cross-sectional analyses below then are the focus of any claims about youth Campaign effects.

### 5.4.1 Overall Analyses of Four Cognitive Measures by Exposure

After controlling for confounders by propensity scoring, there is no significant cross-sectional association between either exposure measure and intentions to use marijuana for the entire Wave 1 through Wave 7 population of 12- to 18-year-old youth, nor for the separate Waves 1 to 6 and Wave 7 time periods (Table 5-F and Detail Tables 5-33 and 5-34). A positive gamma would be a favorable result for the Campaign; it would signal that youth with higher exposure were more likely to say “definitely not” when asked whether they were likely to use marijuana in the next year. Table 5-F presents the specific percentages responding “definitely not” for each of the exposure subgroups for the entire sample, and the matching overall gamma. It also presents the Waves 1 to 6 and Wave 7 gammas, but without the parallel percentage information. The corresponding Detail Tables do present the parallel percentages of those saying “definitely not” by exposure subgroups for the Waves 1 to 6 and Wave 7 samples as well.

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

Percent saying “definitely not” to likelihood of using marijuana even once or twice - overall average= 86.7%							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	All cases Gamma (CI)	Wave 1-6 Gamma (CI)	Wave7 Gamma (CI)
General exposure	87.7		85.6	86.8	-0.03 (-0.09 to 0.04)	-0.04 (-0.10 to 0.03)	0.03 (-0.10 to 0.17)
Specific exposure	89.3	86.8	85.2	88.9	-0.02 (-0.09 to 0.06)	0.00 (-0.08 to 0.09)	-0.13 (-0.29 to 0.03)

<sup>4</sup> Unlike the Pearson correlation, gamma does not assume that both exposure and the outcome are measured as interval level variables. It is appropriately used to estimate associations between ordered variables. In reports previous to the Fifth Semi-Annual Report, this association was estimated with the Spearman rho coefficient for magnitude and the Jonkheere-Terpstra test for significance. Starting with the last report, staff statisticians have developed a procedure for estimating both the magnitude and the statistical significance for a single commonly reported coefficient, Goodman and Kruskal’s gamma, in the context of the complex sample design. Using a single coefficient and statistical test provides a clearer presentation approach. Moreover, they found that gamma produces virtually identical inferences about the nature of the observed associations as were produced by the previous two-part procedure.

There is also no statistically significant cross-sectional association between general exposure and the Attitudes/Beliefs Index, nor is there one between specific exposure and the Attitudes/Belief Index as shown by the nonsignificant gammas in Table 5-G, over the entire course of the campaign, the previous waves, or the current wave. (See also Detail Tables 5-35 and 5-36.)

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

Mean score on attitudes/belief index: average for the sample= 106.8							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	All cases Gamma (CI)	Wave 1-6 Gamma (CI)	Wave7 Gamma (CI)
General exposure	105.00		104.64	108.57	0.02 (-0.01 to 0.04)	0.01 (-0.02 to 0.04)	0.04 (-0.01 to 0.10)
Specific exposure	109.13	108.43	102.07	111.72	0.00 (-0.02 to 0.03)	0.00 (-0.03 to 0.03)	0.04 (-0.04 to 0.11)

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

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

Mean score on Social Norms Index: average for the sample=102.5							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	All cases Gamma (CI)	Wave 1-6 Gamma (CI)	Wave7 Gamma (CI)
General exposure	101.54		100.55	102.97	0.00 (-0.03 to 0.02)	-0.01 (-0.03 to 0.02)	0.02 (-0.04 to 0.08)
Specific exposure	109.57	104.45	99.81	103.39	-0.03 (-0.06 to 0.00)	-0.03 (-0.06 to 0.01)	-0.02 (-0.09 to 0.05)

The cross-sectional results for the self-efficacy scale are essentially consistent with the Social Norms and Attitudes/Beliefs Index. There is no statistically significant cross-sectional association of general exposure and the Self-Efficacy to Refuse Index, nor of specific exposure and Self-Efficacy over the entirety of the Campaign, nor from Waves 1 to 6, nor only in Wave 7 (Table 5-I and Detail Tables 5-39 and 5-40).

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

Mean score on Self-Efficacy Index: average for the sample=110.5							
	<1 exposure	1 to 3 exposures	4 to 11 exposures	12+ exposures	All cases Gamma (CI)	Wave 1-6 Gamma (CI)	Wave7 Gamma (CI)
General exposure	105.59		107.76	113.78	0.02 (-0.01 to 0.05)	0.02 (-0.02 to 0.05)	0.06 (-0.03 to 0.15)
Specific exposure	116.17	108.40	108.46	117.14	0.01 (-0.02 to 0.04)	0.01 (-0.03 to 0.05)	-0.01 (-0.10 to 0.08)

In conclusion then, these tables provide no supportive evidence that concurrent campaign exposure is associated either favorably or unfavorably with any of the four cognitive outcomes for the full sample

of 12- to 18-year-olds. The absence of such effects suggests that both for the overall Campaign, and specifically for the Marijuana Initiative, youth exposure to advertising has not had a statistically significant impact on the four marijuana-related outcomes for 12- to 18-year-olds as a whole. The next sections present whether, in the absence of overall effects, there is any evidence of association for subgroups of the population.

## 5.4.2 Evidence of Diversity of Associations by Age of Youth, Risk Group, Gender, and Race/Ethnicity

The search for evidence that subgroups are different from the overall population in the association of exposure and outcome focuses first on the associations for the Wave 7 samples. If they are significant at other than a chance level, there will be a reason to compare them to the associations shown for the earlier Campaign period.

Through the earlier period covered by this report, the Campaign had been particularly focused on younger teens as its primary audience. Thus, there had been a particular interest in showing that there are effects among that group, represented here by the youth aged 12 to 13. During the Marijuana Initiative period, the primary target audience has shifted to 14- to 16-year-olds. The younger group, in general, is not at high immediate risk of drug use; 95 percent of them report having never used marijuana, and more than 90 percent of the current nonusers say they definitely won't use marijuana in the next year. In contrast, the 14- to 16-year-old group appears to be at higher risk, with around 76 percent who had never used marijuana in 2003 and only 84 percent of the remaining nonusers saying they definitely would not use marijuana (see also Figure 5E above).

Detail Tables 5-33 through 5-40 present data for several age subgroups: including youth aged 12 to 13 and youth aged 14 to 16, as well as a broader group of older teens 14 to 18. Given the focus of the prior period of the Campaign on the 12- to 13-year-olds and of the Marijuana Initiative on the 14- to 16-year-olds, the search for age subgroup effects focus on those two age groups. There are a total of 16 analyses presented for the Wave 7 (2003) samples: the two focus age groups by two exposure measures by four cognitive measures. In that entire set, there is only one significant result. There is a significant association between specific exposure to the Campaign and intentions for 12- to 13-year-olds in Wave 7. This association is in a direction unfavorable to the Campaign, though this result may well be due to statistical chance, particularly given that neither the other outcomes nor the other exposure measure shows a comparable significant result for this age subgroup.

The Campaign also has had a special interest in reaching higher risk individuals. Accordingly, the Campaign has been designed with a recognition that youth vary in their risk of drug use and tries to reach the subgroup category of high risk youth. For the high risk subgroup, there is one significant association out of eight tested in Wave 7. It is in a favorable direction between specific exposure to Campaign messages and beliefs and attitudes about marijuana (see Detail Table 5-36). For the eight tests examined in the low risk group, there were two significant associations, one favorable and one unfavorable. Once again the lack of a consistent direction and the lack of replication across exposure measures and across outcomes reduces confidence that these are other than chance results (Detail Tables 5-34 and 5-35). Once again the lack of replication for the other exposure measure or for any of the other outcomes reduces confidence that this is other than a chance result.

In addition to the subgroup analyses by age and risk, for which the Campaign had clear expectations of subgroup effects, separate analyses also were performed for subgroups defined by gender and

race/ethnicity. There were a total of 40 such subgroup analyses examined: five groups (defined by two genders and three race/ethnicities), by four outcomes, by two exposure measures. Since there were no a priori hypotheses about which of these groups were more or less likely to show effects, the possibility of chance effects needs particular attention. With 40 tests, it might be expected that a few tests would be significant at the conventional level by chance. In fact, there were two significant results for race/ethnicity subgroups, one favorable and one unfavorable to the Campaign. Hispanics in Wave 7 showed a negative association between specific exposure to ads and perceived anti-marijuana social norms, while whites showed a positive association between general exposure and those same norms (Detail Tables 5-37 and 5-38). Again, these are likely to be chance results.

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

In this chapter, a number of results were presented pertinent to direct Campaign effects on youth.<sup>5</sup> For each of the four cognitive indices, plus reported use of marijuana, this report examined:

1) trends/changes from 2000 and from 2002 to the first half of 2003, and 2) cross-sectional associations with both general and specific exposure for Wave 7 and in comparison to prior Waves. As noted above, the most desirable result for a claim of Campaign effects from these data would be a favorable trend between 2002 and 2003 on a target outcome that is significant and different from a trend existing prior to Wave 7, coupled with a favorable association between exposure to the Campaign and the outcome for Wave 7.

Chapter 4 presented the trends for marijuana use. There was no trend in marijuana use from the NSPY data between 2000 or 2002 and the first half of 2003 overall for the full sample of 12- to 18-year-olds. However, the case is different for the age subgroups. There was a significant increase in marijuana use from the first year of data collection through Wave 7 among 14- to 16-year-olds (Chapter 4, Table 4-A). In Chapter 4, it was noted that there were differing trends in use reported by MTF through the spring of 2003, and by NSDUH and YRBSS through 2001. In particular, MTF reported evidence of declines for 8th graders and 10th graders.

This chapter presents the trends for cognitive outcomes to complement the use data from Chapter 4. The trends are significant for two of the outcomes (social norms and self-efficacy) for the whole population, but only for the entire campaign period from 2000 to 2003 and not for the Marijuana Initiative period, 2002 to 2003. Moreover, they are in opposite directions, favorable to the Campaign for self-efficacy and unfavorable to the Campaign for social norms. There were similar favorable trends of self-efficacy for other age subgroups, and similar unfavorable trends of social norms for multiple age groups. There is one significant trend, favorable to the Campaign, that occurred only in the 2002 to 2003 period, on marijuana intentions among 16- to 18-year-old nonusers. This was parallel to one trend for this group in their report of marijuana use, as well. The 16- to 18-year-olds were the only age subgroup to show a decline in reported lifetime use between 2002 and 2003.

Despite the nature of the results above, trends alone, whether favorable or unfavorable to the Campaign, could not establish Campaign effect. Other forces may be affecting marijuana use in addition to the Campaign and influencing its upward or downward movement.

<sup>5</sup> Indirect effects mediated through parent exposure are presented in Chapter 6.



The second step of analysis was to look at the cross-sectional associations between individual exposure to the Campaign and the several outcomes, as the critical strategy for sorting out Campaign effects. This analysis focused entirely on nonusers of marijuana at the time of the interview. The Wave 7 results largely confirm a pattern that was observed in the earlier report examining Waves 1 to 5 (Hornik et al., 2002). None of the cognitive outcome scores varied systematically with levels of either the general or the specific exposure scale. There was no evidence for statistically significant cross-sectional associations, either for the overall sample or for Wave 7 (2003) alone. None of the central analyses of effects supported a favorable Campaign effect and none supported an unfavorable effect on intentions, attitudes and beliefs, perceived social norms, or self-efficacy with regard to marijuana use, having controlled for the effects of potential confounders.

The elaboration of these analyses for the subgroups within Wave 7 showed little more than what may be a chance level of association. There was only one significant result among the age subgroups for 12- to 13-year-olds—an association between specific exposure and anti-marijuana intentions, and this was in an unfavorable direction. For the low risk subgroup, there were two significant results; one favorable (for general exposure and personal anti-marijuana beliefs and attitudes) and one unfavorable (for specific exposure and intentions to not use marijuana). For the high risk subgroup, there was one favorable and significant result, for specific exposure and personal anti-marijuana beliefs and attitudes. For the demographic subgroups, there were two significant results; one favorable (for the white race/ethnic group between general exposure and perceived anti-marijuana social norms) and one unfavorable (for the Hispanic race/ethnic group between specific exposure and perceived anti-marijuana social norms). However, given that 72 subgroup analyses were examined, the finding of six significant associations, going in both directions, does not support any claim of effects.

In sum, when examined together, the trend and cross-sectional data do not appear to support strong claims of Marijuana Initiative effects in either direction. Thus, the analyses do not substantiate an inference of Campaign effects, overall or for the Marijuana Initiative.

## 5.6 Conclusion of Overall Youth Campaign Effects

The Marijuana Initiative's focused analysis provides results largely consistent with no Campaign effects on youth. The appropriate inference from these results is one of no interpretable pattern of Campaign effects, favorable or unfavorable. The last two reports, in contrast, suggested that there was evidence consistent with an unfavorable effect of the Campaign on youth. However, the apparent inconsistency between those reports and the current one is not in fact an inconsistency. Using the same limited criteria used in this report, trends, and cross-sectional associations, the previous report would have come to the same conclusion. It was only the inclusion in the prior reports of the delayed-effects analyses that detected evidence for unfavorable effects on youth intentions and other outcomes. It will be possible to see whether those unfavorable Campaign effects are reversed or repeated once the next round of data collection is complete. At that time, similar delayed-effects analyses can be undertaken focusing on Marijuana Initiative exposure. Thus, the conclusion of this chapter is that the Campaign did not achieve its intended effect on youth to date, either in its previous period or thus far under the Marijuana Initiative. However, a fuller judgment about the Marijuana Initiative will only be possible once the next round of data collection is complete and the findings are published.

# References

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## 6. Campaign Effects on Parents

The previous chapter focused only on the effects of the Marijuana Initiative on marijuana outcomes among youth. The parent campaign, in contrast, was not substantially changed under the Marijuana Initiative; the Campaign continues to focus on encouraging parents' positive monitoring attitudes, beliefs, and behavior and building self-efficacy. Given this consistency in campaign messages over time, this chapter will retain the same format as previous reports, examining trends over time, cross-sectional associations of exposure and outcomes, as well as delayed effects of exposure to the Campaign on outcomes at a later round.

A continuing theme of the parent Campaign, both before and after the launch of the Marijuana Initiative, 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 those three classes of outcomes: monitoring children's behavior, talking with children about drugs, and engaging in fun activities with children. In addition, for the first time, this report will analyze youth reports of parent monitoring and talking behavior, and fun activities as supplementary outcomes for analyses of parent Campaign effects. In the past, analysis of Campaign effects on parent outcomes have focused on parents' reports about their behaviors (as well as their beliefs and attitudes) with regard to monitoring, talking, and doing fun activities. However, the children of these parents also were asked about the degree to which they were monitored, the amount of talk with their parents about drugs, and their engagement in fun activities. The format of the questions was virtually identical to the questions asked of the parents. As in the past, the report compares youth and parent trends on these parallel measures. For the first time, however, the analysis of association, both cross-sectional and delayed, between parent exposure and parenting outcomes is presented for both parent and child reports of outcome behaviors since, as will be shown, both are predictive of youth marijuana initiation.

In the previous reports, based on both favorable trends over time and cross-sectional associations, there was evidence supportive of Campaign effects on talking with children; on beliefs and attitudes regarding monitoring of children; and, in the case of the cross-sectional associations, on doing fun activities with them. These results still hold when Wave 7 parent reports are added, although youth reports of monitoring and talking behaviors are not consistent with parent reports and thus call into question the favorable changes in behavior that may be associated with the Campaign. Both the current and the two previous reports benefited from the availability of longitudinal samples of parents that address concerns about causal direction. The previous report examined followup data with parents interviewed at Round 1 (including Waves 1, 2, and 3) and reinterviewed at Round 2 (Waves 4

and 5). The current report adds to this data from parents who were interviewed at Round 2 and reinterviewed at Round 3 (Waves 6 and 7).

This chapter first discusses the logic supporting claims of Campaign effects and presents the primary outcome variables. In Section 6.2, it turns to evidence for change in those outcome variables over the seven waves of data collection. Sections 6.3 and 6.4 present the evidence for cross-sectional and delayed-effects associations of exposure to Campaign advertising with the major outcome variables. Section 6.5 reviews results from cross-sectional and delayed-effects analyses of parent exposure on youth outcomes. Finally, Section 6.6 brings together the trend, associational, and delayed-effects analyses and discusses conclusions about Campaign effects.

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

It would be desirable to show that target outcomes are trending in a direction favorable<sup>1</sup> to Campaign objectives: more monitoring, more talking, and more fun activities. This would be desirable even though trend data, by itself, is not definitive with regard to inferences about Campaign effects, recognizing that forces external to the Campaign may be influencing trends either for better or for worse.

Second, it would be desirable to show that parents who were more exposed to the Campaign displayed more of the desired outcomes than parents who were less exposed. For example, were parents who reported seeing Campaign ads two or three times a week more likely to have talked with their children about drugs than were parents who reported ad exposure less than once a week? These observed associations are controlled for a large number of confounder variables that might have influenced both exposure and outcome and, therefore, might have been the true cause of the observed association. (See Appendix C for the propensity score methodology that was used for this report.)

Using cross-sectional data, several previous reports presented a favorable association of reported exposure to the Campaign with the target outcomes statistically controlled for likely confounders as the best evidence consistent with a Campaign effect. If this was accompanied by evidence of a favorable trend in the outcome, the argument that there was a Campaign effect was strengthened. However, the threat of reverse causation, a major concern with cross-sectional analyses, is that the association might be the result of the influence of outcomes on exposure rather than exposure on outcomes. This report continues to explore delayed-effects analyses that allow a clearer understanding of the causal order between exposure and outcomes and presents data on exposure in Rounds 1 or 2 matched with outcomes measured at Rounds 2 or 3. As explained in Chapter 2, delayed-effects analyses involve examining the association between exposure measured at an earlier round and outcome measured at a later round, statistically controlling for values of the outcomes at the earlier round, as well as confounders. Two types of analyses are reported. First, overall delayed effects are assessed for the sample of pooled cases in which exposure was measured at Rounds 1 or 2 and outcomes were measured at Rounds 2 or 3. This analysis looks for overall delayed effects capitalizing on the maximum sample size available. Second, delayed-effect associations are reported by pairs of rounds separately: the effects of Round 1 exposure on Round 2 parent outcomes, and of Round 2

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

exposure on Round 3 outcomes. This analysis examines whether delayed effects found between Round 1 and Round 2 are replicated in the analysis of delayed effects between Round 2 and Round 3.

The overall analysis focuses on effects among all parents of 12- to 18-year-olds. The age range is restricted to match the age range of the youth at risk of drug use and the primary focus of the previous chapter. In addition to the overall analysis, the chapter presents both trend, associational, and longitudinal data for subgroups of parents, defined by age of child as well as children's gender, race/ethnicity, and risk for marijuana use, as well as the parent's gender and educational level. The cross-sectional results are also presented according to year of current interview, while the delayed-effects association results are presented according to previous interview round. Subgroup analyses are used for two purposes. If there is an overall effect for all parents, there is a search for evidence that the trends or the association is significantly larger or smaller for particular groups. If there is no overall effect, the subgroups are examined to see if there is evidence of effect for only a subpopulation.

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

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

The two cognitive indices were constructed on a different basis, and parallel to the way the indices in Chapter 5 were created. These belief and attitude variables, presented in Figure 6-A, were summed with weights reflecting their independent prediction of the behavioral scales just described. Thus the eight items that addressed beliefs and attitudes about monitoring were entered into a multinomial logistic regression equation predicting the parent score on the behavioral scale. Similarly, the seven items that addressed self-efficacy about and general attitudes toward talking with children were used

to predict the parent-child talk behavior scale. Appendix E describes the procedures for developing these indices in detail.

The substantive logic for this approach reflects the underlying models of the campaign presented in Chapter 2. The beliefs and attitudes are important not for their own sake, but only insofar as they account for behavior. By weighting them according to their predictive strength, they make up an index of cognitions maximized for its ability to account for behavior. This strategy of weighting beliefs and attitudes permits an argument that if the Campaign affects these cognitive outcomes, it also forecasts effects on behavior. These weighted summed scores had no natural metric. To ease their interpretation, the two scales were standardized so that the entire population of parents had a mean of 100 and a standard deviation of 100 at Wave 1. This provides a natural metric for comparing the magnitude of change over time and between groups.

**Figure 6-A. Beliefs and attitudes about monitoring**

**Monitoring Cognitions:**

1. Closely monitoring {CHILD NAME}'s daily activities is:

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

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

2. Closely monitoring {CHILD NAME}'s daily activities will:

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

**Talking Cognitions:**

Discussing drug use in the *next 12 months* with {CHILD NAME}, would be:

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

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

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

The previous report illustrated the cross-sectional association between the cognitive indices and their respective behavioral outcomes, which the addition of Wave 7 data only confirms. The association between monitoring cognitions and behavior is particularly strong, with parents at the low end of the monitoring cognition scale doing 0.8 of the three monitoring behaviors while those at the high end

undertake 2.2 of the three behaviors. The association between talking cognitions and behavior is also substantial, with parents at the low end of the talking cognitions scale reporting 1.2 of the three talking behaviors while those at the high end report 2.6 of the three behaviors.

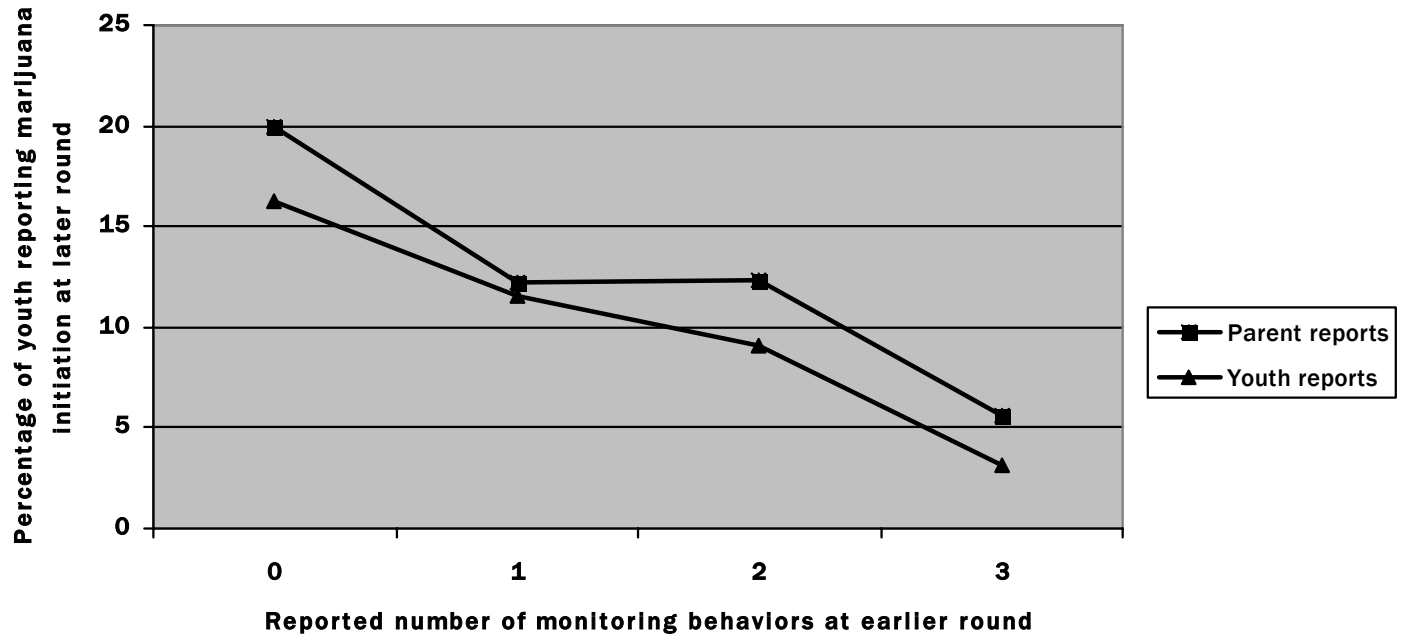
These outcome measures are used because they are seen as fair indicators of the success of the Campaign for parents. In particular, the Campaign has focused on encouraging parents' monitoring behavior; the behavioral and belief measures focused on that outcome are central to this presentation. However, for the Campaign, each of these outcomes is important not for its own sake, but because it is thought to be an important influence on youth behavior. The analyses that follow show that in the case of monitoring and engaging in fun activities, there is strong support for this assumption, but the evidence does not support the claim that talking with children about drugs reduces the risk of drug use. In addition, this evidence shows that both youth and parent reports of parenting behaviors predict subsequent youth marijuana initiation in parallel ways. Therefore, all of the subsequent sections use both of those indicators of parent behavior.

The analyses that establish the predictive power of parent and youth reports of parenting behavior focus on parent-youth dyads where the youth reported no use of marijuana at first measurement. Then parents who had higher and lower scores on a particular parenting outcome (e.g., monitoring behavior) at the time of first measurement are compared with regard to the likelihood of their children's initiation of marijuana use by the second measurement time 12 to 18 months later. The figures presented below demonstrate the basic associations. In addition, a multivariate analysis was conducted to make sure that the observed association of the parenting outcome and youth marijuana initiation was not an artifact of some confounder. Those analyses controlled for age and other characteristics of youth that put them at risk of marijuana initiation.

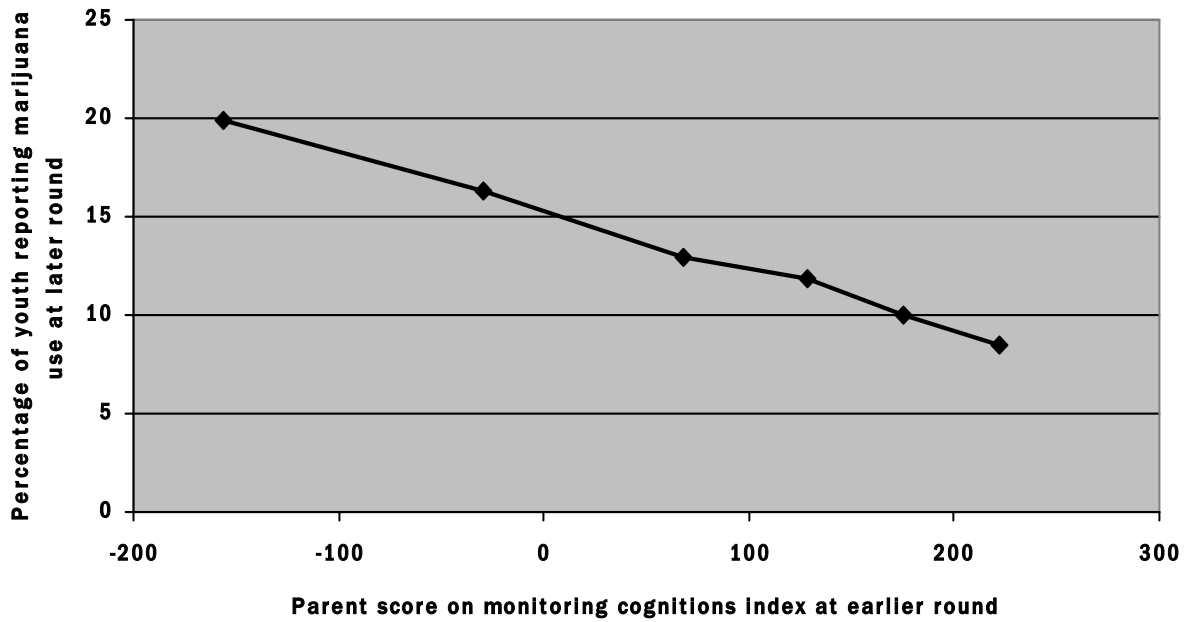
Figure 6-B presents the association between youth and parental reports of monitoring behavior at the earlier rounds of data collection and youth reports of marijuana initiation at later rounds. For both parent and youth reports there is a significant and strong favorable relationship between monitoring behavior and youth marijuana (non-)use, which holds up even after controlling for youth age (not shown). Using parent reports, only 6 percent of children whose parents reported performing the three monitoring behaviors at the earlier rounds had initiated marijuana use by the later rounds, while 20 percent of children whose parents reported no monitoring behaviors at the earlier rounds had initiated marijuana use by the later rounds. Similarly, 3 percent of children who reported that their parents performed the three monitoring behaviors at earlier rounds had initiated marijuana use by later rounds, as compared to 16 percent of those who reported that their parents did not engage in any of the three monitoring behaviors.

Figure 6-C presents the association between parental reports of monitoring behavior and cognitions. As with reports of monitoring behavior, only 8 percent of children whose parents scored on the high end of the monitoring cognitions index at earlier rounds reported marijuana initiation at Round 2 versus 20 percent of children whose parents scored on the low end at earlier rounds.

**Figure 6-B. Youth marijuana initiation at later round by parent monitoring behavior at earlier round  
(parent and youth reports)**



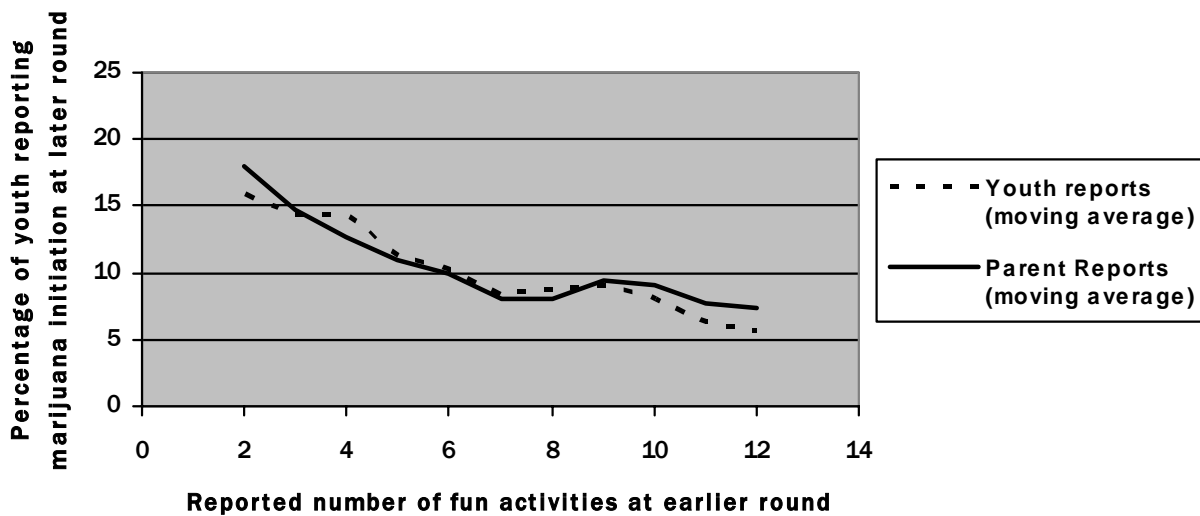
**Figure 6-C. Youth marijuana initiation at later round by parent monitoring cognitions at earlier round  
(parent reports)**





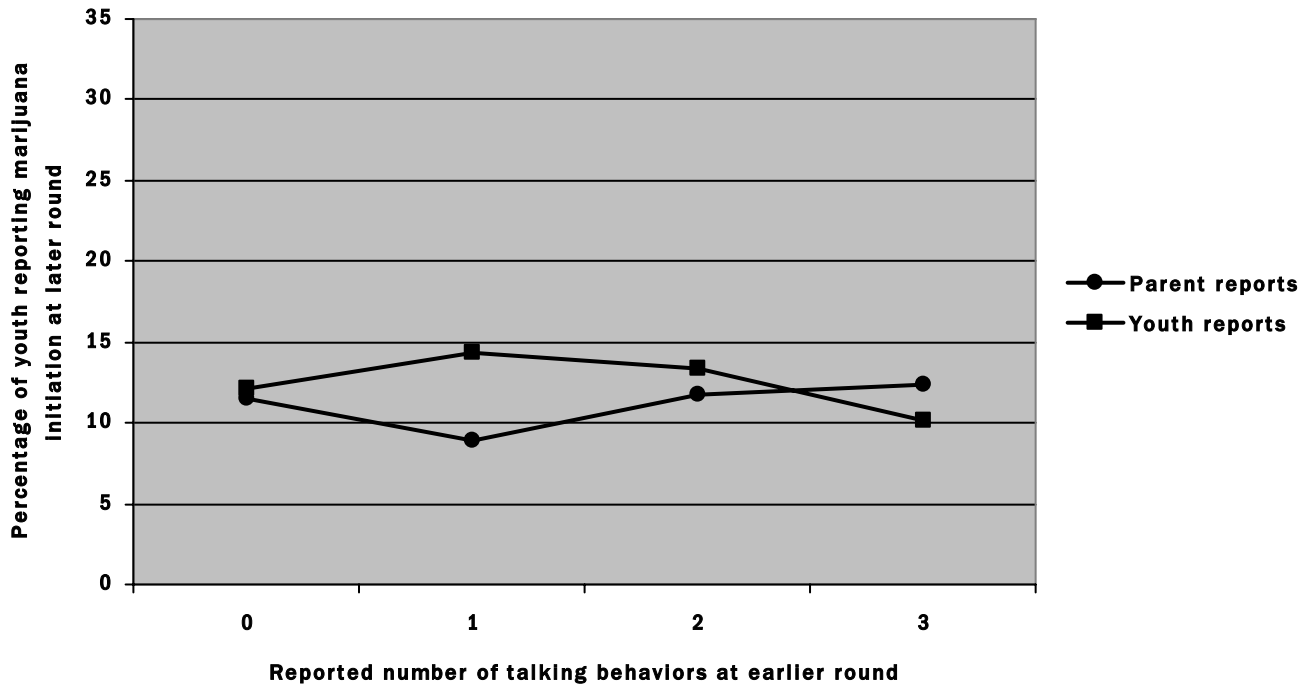
The delayed-effects association between parent-reported involvement in fun activities at earlier rounds and youth marijuana initiation at later rounds is also substantial and statistically significant, whether parent reports or youth reports are used (Figure 6-D). Using parent reports as the independent variable, 20 percent of children whose parents reported no fun activities in the preceding week at Round 1 reported marijuana initiation at the later round, as compared to only 11 percent of children whose parents reported having engaged in many fun activities at the earlier round. Similarly, 18 percent of children who report no engagement in fun activities with their parents reported later marijuana use as compared to 9 percent of children who reported in the most number of fun activities with their parents.

**Figure 6-D. Youth marijuana initiation at later round by reported fun activities at earlier round (parent and youth reports)**

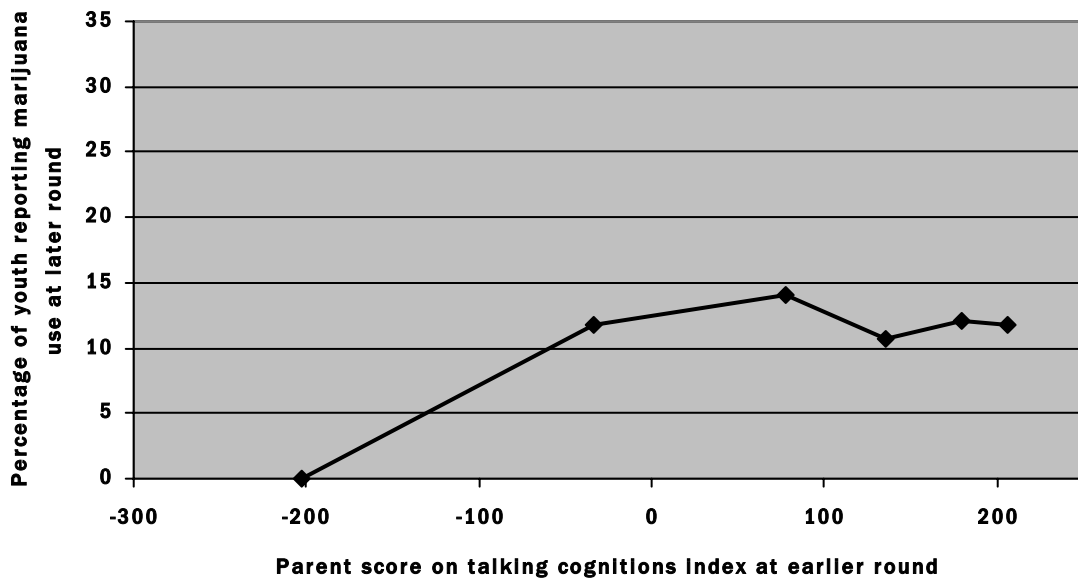


By contrast, there is no delayed-effects association between reports of talking behaviors and youth marijuana initiation (Figure 6-E). Using youth reports of parent talking, marijuana initiation was at 12 percent for children who reported their parents engaged in no household conversation about drugs and 10 percent for children who reported that their parents engaged in all three talking behaviors. Parent reports of talking show similar results; marijuana initiation was 12 percent both for children of parents who reported no talk about drugs and for children who reported all three talking behaviors. In addition, there is no significant association between parent talking cognitions and youth marijuana initiation; children whose parents had earlier reported unfavorable talking cognitions were as likely to initiate marijuana use later as were children whose parents scored high on talking cognitions (Figure 6-F).

**Figure 6-E. Youth marijuana initiation at later round by talking behavior at earlier round  
(parent and youth reports)**



**Figure 6-F. Youth marijuana initiation at later round by parent talking cognitions at earlier round  
(parent reports)**



The parent and youth reports of behaviors show similar patterns in predicting future marijuana use. For both populations, early reports of monitoring behavior show significant association with later marijuana use, while early reports of talking behavior are not associated with later marijuana use. Further, there are strong associations between parent reports of engaging in fun activities with their children and marijuana intentions and behaviors. These delayed-effects results are consistent with the cross-sectional results reported in the fifth semi-annual report (Hornik et al., 2002).

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

## 6.2 Trends in Outcomes

This section covers monitoring behaviors and cognitions, talking behaviors and cognitions, engagement in fun activities, and evidence for diversity in observed trends. Trend analyses will focus on changes between year 2000 and Wave 7 (January to June 2003). Changes between year 2002 and Wave 7 are typically in the same direction but, for the most part, are not statistically significant (Detail Tables 6-1 to 6-54).

### 6.2.1 Monitoring Behaviors

Table 6-A presents evidence of changes in monitoring behavior over the study period and the test for statistical significance of the difference between estimates for 2000 (Waves 1 and 2) and the first half of 2003. There are no statistically significant changes between 2002 and 2003. Three conclusions can be drawn from this table (also Detail Table 6-3).

First, focusing on the entire population of parents of 12- to 18-year-olds, there is a statistically significant trend toward a favorable change from 2000 to 2003. This overall trend is driven by a statistically significant change for parents of 12- to 13-year-olds; there are no statistically significant changes in monitoring for the other age groups. Thus the overall conclusion is that in the first half of 2003, parents are reporting they monitor their children, particularly their younger children, more than in 2000.

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

Age groups	Number of Monitoring Behaviors					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	1.65	1.80	1.80	1.87	<b>0.22* (0.13 to 0.32)</b>	0.08 (-0.01 to 0.16)
14 to 15	1.47	1.46	1.56	1.54	0.07 (-0.04 to 0.17)	-0.03 (-0.12 to 0.06)
16 to 18	1.17	1.21	1.16	1.20	0.03 (-0.09 to 0.15)	0.04 (-0.06 to 0.14)
14 to 16	1.42	1.43	1.45	1.46	0.05 (-0.04 to 0.13)	0.01 (-0.06 to 0.09)
14 to 18	1.31	1.32	1.33	1.34	0.03 (-0.05 to 0.12)	0.01 (-0.06 to 0.09)
12 to 18	1.41	1.46	1.47	1.50	<b>0.09* (0.02 to 0.16)</b>	0.03 (-0.04 to 0.10)

\* Change significant at  $p < 0.05$ .

Second, parents monitor children of different ages to different degrees. Older children are much less monitored than younger children. Detail Tables 6-11 through 6-13 present the data for each of the three behaviors that make up the scale. On average, 73 percent of 12- to 13-year-olds' parents, but only 53 percent of 16- to 18-year-olds' parents, say they always or almost always know where their children are when they are away from home. Likewise, 73 percent of 12- to 13-year-olds' parents

versus 49 percent of 16- to 18-year-olds' parents always or almost always know their child's plans for the coming day. Finally, 39 percent of 12- to 13-year-olds' parents versus 18 percent of 16- to 18-year-olds' parents claim that their child never spends time with other children without adult supervision.

Third, youth report that their parents engage in these behaviors less frequently than parents report, at every age. As examples, while 62 percent of parents of 12- to 18-year-olds claimed they always or almost always knew where their children were when they were away from home, only 50 percent of youth agreed; 60 percent of parents but only 32 percent of youth claimed that parents always or almost always knew the child's plans for the coming day. Finally, 27 percent of parents, but only 10 percent of youth, said they never spent time alone with other children without adult supervision. Thus it is clear that youth report a lower level of monitoring than do parents. However, for the evaluation of the Campaign, the more important question is whether trends in monitoring reported by youth parallel those reported by parents. While the full sample of parents showed a favorable trend, the full sample of youth do not show such a trend. This apparent inconsistency may be misleading, however. Using parent reports, the overall positive change in monitoring behaviors was driven by parents of 12- to 13-year-olds. As table 6-B shows, youth of that age were consistent with their parents and showed a parallel favorable and statistically significant trend. Thus, there is evidence that the youth trend data is consistent with the parent trend data.

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

Age groups	Number of Monitoring Behaviors					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	1.03	1.08	1.14	1.17	<b>0.15* (0.06 to 0.23)</b>	0.03 (-0.05 to 0.11)
14 to 15	0.87	0.88	0.92	0.94	0.07 (-0.01 to 0.15)	0.01 (-0.05 to 0.08)
16 to 18	0.75	0.70	0.75	0.72	-0.03 (-0.12 to 0.07)	-0.03 (-0.10 to 0.05)
14 to 16	0.83	0.85	0.90	0.88	0.05 (-0.03 to 0.12)	-0.02 (-0.08 to 0.04)
14 to 18	0.80	0.78	0.82	0.81	0.01 (-0.06 to 0.08)	-0.01 (-0.06 to 0.04)
12 to 18	0.87	0.87	0.92	0.92	0.05 (-0.00 to 0.11)	0.00 (-0.04 to 0.05)

## 6.2.2 Monitoring Cognitions

While parents reported significant increases in monitoring behaviors, this was not reflected in significant changes in monitoring cognitions. Table 6-C presents the data for each youth age subgroup (also Detail Table 6-1). There was no change in monitoring cognitions from 2000 to 2003 or from 2002 to 2003 for parents of all youth aged 12 to 18. Additionally, there were no significant changes in any of the age subgroups. All of the change on this measure had apparently taken place between 2000 and 2002, which represented a significant increase. While the 2003 level is not much below the 2002 level, it is just low enough so that the cumulative change is no longer statistically significant.

**Table 6-C. Parental monitoring cognitions by youth age**

Age groups	Score on the index with 100 as the average <sup>1</sup>					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	114.69	122.75	119.94	120.40	5.70 (-3.10 to 14.50)	0.45 (-7.24 to 8.14)
14 to 15	91.55	94.47	100.12	97.31	5.76 (-4.88 to 16.41)	-2.82 (-11.73 to 6.09)
16 to 18	62.07	67.43	70.03	70.61	8.54 (-2.70 to 19.78)	0.59 (-8.72 to 9.90)
14 to 16	89.96	90.69	94.52	91.50	4.54 (-3.77 to 12.84)	-3.02 (-11.50 to 5.25)
14 to 18	75.67	79.96	82.76	81.86	6.19 (-2.67 to 15.05)	-0.91 (-8.57 to 6.75)
12 to 18	87.14	92.59	93.92	93.34	6.20 (-0.69 to 13.10)	-0.58 (-6.95 to 5.78)

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

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

### 6.2.3 Talking Behaviors

Table 6-D summarizes the information about parent reports of parent–child conversations about drugs (also Detail Table 6-4). Parents could earn up to three points if they reported talking about drugs at least twice in the past 6 months, family rules about drugs, and specific things a child could do to avoid drugs.

The table shows a pattern of increasing talk from 2000 through 2002, and a significant difference from 2000 to 2003; however, there was no change in talk between 2002 and 2003. Therefore, although the Campaign is associated with a favorable trend in parent reports of talk for all parents of 12- to 18-year-olds through 2002, that trend appears to have flattened during the latest round of data collection.

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

Age groups	Number of Talking Behaviors (0 to 3)					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	2.29	2.38	2.42	2.43	<b>0.14* (0.06 to 0.22)</b>	0.01 (-0.08 to 0.09)
14 to 15	2.28	2.39	2.46	2.45	<b>0.17* (0.04 to 0.30)</b>	-0.01 (-0.09 to 0.08)
16 to 18	2.21	2.33	2.36	2.27	0.06 (-0.06 to 0.17)	-0.09 (-0.20 to 0.02)
14 to 16	2.30	2.41	2.45	2.43	<b>0.13* (0.02 to 0.23)</b>	-0.02 (-0.10 to 0.07)
14 to 18	2.24	2.36	2.40	2.35	<b>0.10* (0.02 to 0.19)</b>	-0.06 (-0.13 to 0.02)
12 to 18	2.26	2.36	2.41	2.37	<b>0.11* (0.05 to 0.18)</b>	-0.04 (-0.10 to 0.03)

\* Change significant at  $p < 0.05$ .

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

The previous report found that the parallel data from youth about the same talk questions is less favorable than are parent reports. The current findings repeat that trend (Table 6-E and Detail Table 6-4), with youth reporting much lower absolute levels of reported talk. While parents report undertaking 2.4 out of 3 talking behaviors, their children report approximately 1.4 of those behaviors. While parents showed a favorable change from 2000 to 2003 overall and for four of five age subgroups, the

youth reports show a statistically significant but unfavorable change overall, as does every age group of children, except for the 16- to 18-year-olds. As will be discussed below, there is evidence that the favorable parent-reported trends among parents of all youth aged 12 to 18 complement a strong cross-sectional association between exposure and talking behavior. However, the lack of support in child reports of talking behavior brings into question an otherwise strong inference about Campaign effects on parent and youth talk about drugs.

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

Age groups	Number of Talking Behaviors (0 to 3)					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	1.74	1.58	1.52	1.46	<b>-0.27* (-0.40 to -0.15)</b>	-0.06 (-0.17 to 0.05)
14 to 15	1.56	1.42	1.39	1.42	<b>-0.14* (-0.25 to -0.03)</b>	0.03 (-0.06 to 0.12)
16 to 18	1.32	1.27	1.26	1.20	-0.11 (-0.24 to 0.02)	-0.05 (-0.18 to 0.07)
14 to 16	1.51	1.39	1.35	1.36	<b>0.16* (-0.25 to -0.06)</b>	0.01 (-0.07 to 0.08)
14 to 18	1.43	1.34	1.31	1.30	<b>-0.13* (-0.23 to -0.04)</b>	-0.02 (-0.09 to 0.05)
12 to 18	1.52	1.41	1.37	1.34	<b>-0.17* (-0.25 to -0.09)</b>	-0.03 (-0.09 to 0.03)

\* Change significant at p < 0.05.

In addition to questions about general talk with youth about drugs, all parents and youth were asked whether they had ever talked specifically about the anti-drug ads with the other group. Fifty-five percent of parents of 12- to 18-year-olds but only 28 percent of youth reported such conversations. There is evidence that the rate of conversations about the anti-drug ads reported by parents increased from 2000 to the first half of 2003. Youth reports, however, show no significant change over this same period (see also Detail Table 6-24).

## 6.2.4 Talking Cognitions

Table 6-F presents the data about the summed scale for parent attitudes and beliefs about talking with their children about drugs (also Detail Table 6-2). There is no statistically significant change for parents of all youth aged 12 to 18 between 2000 and 2003, although the previous report noted a positive trend between 2000 and 2002 for the 14- to 18-year-olds. In contrast, this analysis shows evidence for a decrease in talking cognitions between 2002 and 2003 both overall and for parents of 14- to 16- and 14- to 18-year-olds.

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

Age groups	Score on summed scale with average = 100 at Wave 1					
	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	109.19	111.91	106.65	106.65	-2.53 (-11.01 to 5.95)	0.01 (-8.35 to 8.37)
14 to 15	103.15	108.63	107.62	98.82	-4.33 (-14.15 to 5.49)	-8.80 (-17.66 to 0.06)
16 to 18	81.63	90.74	90.71	80.81	-0.82 (-14.18 to 12.54)	-9.90 (-19.93 to 0.13)
14 to 16	101.89	107.97	105.75	93.15	<b>-8.74* (-16.92 to -0.56)</b>	<b>-12.60* (-19.91 to -5.30)</b>
14 to 18	91.56	99.03	97.87	88.40	-3.16 (-11.25 to 4.93)	<b>-9.47* (-16.64 to -2.30)</b>
12 to 18	96.74	102.83	100.50	93.84	-2.90 (-9.37 to 3.57)	<b>-6.67* (-12.32 to -1.02)</b>

\* Change significant at p < 0.05.

## 6.2.5 Fun Activities

During the first period of Phase III, corresponding to the Wave 1 data collection period, the Campaign encouraged parents to engage in fun activities with their children. However, this theme has not been emphasized in later advertising. The variable presented in Table 6-G indicates the proportion of parents who claimed to do at least three or more activities with their child each week, either at home or out-of-home (also Detail Tables 6-5, 6-16, and 6-17). The evidence does not support a claim of increasing levels of activity for parents of 12- to 18-year olds or any subgroups. This theme was emphasized only during Wave 1 of the Campaign; if there had been any effects, they were likely to have already been present when respondents were first interviewed. The lack of upward trend after that wave may reflect the subsequent change in Campaign focus.

**Table 6-G. Parents doing fun activities with their child by youth age (parent reports)**

Percent saying they did three or more activities per week						
Age groups	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2000 to 2003 Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	74.8	74.6	75.3	71.3	-3.5 (-7.5 to 0.6)	-3.9 (-8.4 to 0.5)
14 to 15	67.8	64.3	66.9	64.0	-3.8 (-9.2 to 1.6)	-2.9 (-7.2 to 1.4)
16 to 18	51.1	51.9	51.5	52.1	1.0 (-4.7 to 6.7)	0.6 (-4.4 to 5.5)
14 to 16	64.7	63.4	63.3	61.1	-3.6 (-8.2 to 1.0)	-2.2 (-6.1 to 1.6)
14 to 18	58.8	57.7	58.0	57.1	-1.7 (-5.9 to 2.5)	-0.9 (-4.6 to 2.7)
12 to 18	63.5	62.7	63.2	61.3	-2.2 (-5.6 to 1.3)	-1.9 (-5.0 to 1.3)

The fun activities questions were asked of youth starting in 2001. Initially, the proportion of youth claiming to do three or more activities were very close to parents' reports. However, unlike previous years, parent and youth reports appear to diverge in 2003. Although there were no significant changes in youth reports of fun activities between 2001 and 2002, there were significant declines from 2002 to 2003 for youth overall, 14- to 15-year-olds, 14- to 16-year-olds, and 14- to 18-year-olds. These declines produce significant changes for the 2001 to 2003 period and for the 2002 to 2003 period. Both parent and child reports of fun activities are sharply associated with the age of the child. About 70 percent of both parents and youth aged 12 to 13 report such activities, while only about half of parents and youth aged 16 to 18 do so (Table 6-H and Detail Table 6-5).

**Table 6-H. Parents doing fun activities with their child by youth age (youth reports)**

Percent saying they did three or more activities per week						
Age groups	Year 2000 (Mean)	Year 2001 (Mean)	Year 2002 (Mean)	Year 2003 (Mean)	2001 to 2003 <sup>†</sup> Change (95% CI)	2002 to 2003 Change (95% CI)
12 to 13	N/A	73.3	73.0	69.8	-3.5 (-8.0 to 1.0)	-3.1 (-7.6 to 1.3)
14 to 15	N/A	66.6	65.0	60.3	<b>-6.3* (-11.5 to -1.1)</b>	<b>-4.7* (-9.3 to -0.1)</b>
16 to 18	N/A	52.3	53.9	48.5	-3.8 (-10.2 to 2.6)	-5.4 (-10.9 to 0.1)
14 to 16	N/A	63.7	63.3	56.9	<b>-6.8* (-11.6 to -2.0)</b>	<b>-6.4* (-10.3 to -2.5)</b>
14 to 18	N/A	58.8	58.6	53.6	<b>-5.2* (-9.3 to -1.1)</b>	<b>-5.0* (-8.3 to -1.7)</b>
12 to 18	N/A	63.3	62.9	58.5	<b>-4.8* (-8.1 to -1.5)</b>	<b>-4.4* (-7.1 to -1.8)</b>

<sup>†</sup> This column presents the 2001-2003 change rather than the 2000-2003 change because responses to these questions were not collected for youth in 2000.

\* Change significant at  $p < 0.05$ .

## 6.2.6 Evidence for Diversity in Trends

Is it possible that the overall patterns presented above might vary for subgroups of parents? There are two circumstances of interest: when there is no overall significant trend but a particular subgroup does show a significant trend, and when subgroups show different trends. The overall presentation outlined the diversity of trends among parents with children of different ages. This section focuses on diversity among parents based on their children's gender, race/ethnicity, and risk for marijuana use, as well as the parent's gender and educational level<sup>2</sup>. If a parent had two children in the 12- to 18-year-old sample (one 12 to 13 and one 14 to 18), the parent was asked separate questions about each child's behavior and cognitions referring to each one. Both sets of answers are included in the overall results.

### Diversity of Trends for Monitoring Behavior and Cognitions

Tables 6-A and 6-C presented the overall subgroup results for parents' monitoring behavior and cognitions by age of child. There was a statistically significant favorable overall change for parent reports of monitoring behavior between 2000 and 2003, so the question is whether trends were different for different subgroups. At first glance, Detail Table 6-3 suggests that the observed absolute change from year 2000 to 2003 was larger for some groups than others—only 5 of the 13 subgroups examined<sup>3</sup> showed a statistically significant change in parent-reported monitoring behavior. However, all of the subgroup confidence intervals for yearly change overlap with the confidence interval for the overall change estimate. The appropriate conclusion is that the evidence does not permit a claim for differential trends in parent-reported monitoring behaviors. There were no significant changes for monitoring cognitions across the entire sample, and no subgroup changes were significantly different from the overall finding.

For youth-reported monitoring behavior, Table 6-B showed no significant change from 2000 to 2003 or from 2002 to 2003 among the entire sample of 12- to 18-year-olds, but a significant positive change for youth aged 12 to 13 from 2000 to 2003. This result was also found among 2 of 11 subgroups<sup>4</sup> (female and lower-risk youth).

While the differences in trends were generally not statistically significant across subgroups, it is worth noting that the actual behaviors, averaged across the seven waves, are different by subgroups. For both parent and youth reports, there are significant, consistent differences with regard to monitoring behavior by child gender, race, and risk score. Averaging across the seven waves, parents report that they are more likely to monitor girls (1.56 on the 0 to 3 scale) than they are boys (1.36). Parents of Whites and Hispanics also report higher monitoring than do parents of African Americans (1.48 and 1.49 versus 1.34). Perhaps most noteworthy, however, are the differences between the different measures of monitoring beliefs and attitudes by risk group, which held up even after controlling for child age.

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<sup>2</sup> Although results are also stratified by sensation seeking in the Detail Tables, the measure has considerable overlap with the risk score measure; as a result, this and subsequent sections only discuss observed differences by risk score.

<sup>3</sup> Throughout Section 6.2.6, trends in parent reports of behavior (monitoring, talking, and fun activities) and cognitions (monitoring and talking) are compared by child gender, race/ethnicity, risk, parent gender, and parent education.

<sup>4</sup> Throughout Section 6.2.6, trends in youth reports of parent behavior (monitoring, talking, and fun activities) are compared by child gender, race/ethnicity, risk, and parent education.



Table 6-I presents the seven-wave averages of parent reports of monitoring behaviors, monitoring cognitions, and intentions to monitor by risk group. Only parents of youth aged 12 to 18 who had never used marijuana are used for these analyses of differences by risk so as to avoid making inferences where reverse causation might be a greater concern.

All of the comparisons yielded statistically significant differences when controlling for child age. Parents of children at higher risk across all age groups report fewer monitoring behaviors and hold less favorable views regarding monitoring.

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

Youth characteristics		Parent reports averaged across seven waves of:	
Age groups	Risk	Monitoring behavior mean (CI)	Monitoring cognitions mean (CI)
12 to 13	Higher	<b>1.32* (1.18 to 1.47)</b>	<b>87.12* (73.52 to 100.72)</b>
	Lower	<b>1.83* (1.79 to 1.87)</b>	<b>124.19* (121.24 to 127.13)</b>
14 to 15	Higher	<b>1.38* (1.28 to 1.48)</b>	<b>74.99* (64.35 to 85.63)</b>
	Lower	<b>1.67* (1.62 to 1.72)</b>	<b>111.90* (107.22 to 116.59)</b>
16 to 18	Higher	<b>1.21* (1.13 to 1.30)</b>	<b>75.12* (66.42 to 83.83)</b>
	Lower	<b>1.53* (1.45 to 1.60)</b>	<b>97.63* (89.48 to 105.78)</b>

\* Significant at  $p < 0.05$ .

## Diversity of Trends for Talking Behavior and Cognitions

Table 6-D presented the evidence of parent reports of trends in talking behavior, establishing a statistically significant trend for all parents of 12- to 18-year-olds. The majority of subgroups (10 of 13) also showed significant increases, but the confidence intervals around their rates of change overlapped with the overall change estimate (Detail Table 6-4). Again, the appropriate conclusion is that the observed change in parent reports of talking behavior between years was widely shared.

Table 6-E showed an opposite pattern of trends in child reports of talking behavior among all parents of 12- to 18-year-olds—child reports of talking behavior declined between 2000 and 2003. The majority of subgroups (7 of 11) also showed a significant decline in child reports of talking behavior (Detail Table 6-4). Although subgroups appeared to vary in their rate of change between years, no subgroup was significantly different from the overall trend.

Talking cognitions, as presented in Table 6-F, showed no significant change from 2000 to the first half of 2003 for the full population of parents of youth aged 12 to 18, but unfavorable trends from 2002 to 2003 for the overall parent population (Detail Table 6-2). There were no significant subgroup deviations from this overall trend.

There were, however, a few significant subgroup differences in absolute levels of talking behavior and cognitions averaged across the seven waves. Mothers were more likely to report household talk than were fathers (2.42 vs. 2.22); mothers also reported significantly more favorable talking cognitions than did fathers (107 vs. 84). Parents of African American and Hispanic children reported more household talk than parents of white children (2.44 and 2.51 vs. 2.31); they also reported significantly more favorable talking cognitions than did parents of white children (each 124 vs. 89). Finally, parents with a high school education or less reported significantly more favorable talking cognitions than parents with a high school education or some college education (117 vs. 101 and 103).

Although parents of high risk children reported significantly lower talking cognitions than did parents of low risk children (87 vs. 108), the current report found that parents of children at higher and lower risk report similar levels of talking behavior (each 2.35 on 3-point scale).

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

Looking at the risk model more closely (see Chapter 4, section 4-6), the strongest predictors of marijuana use are child cigarette use, sensation-seeking, age, and alcohol use. Parental factors that are incorporated into the risk measure and have significant effects are parental cigarette use and family structure. Perhaps parents who have negative attitudes and beliefs about monitoring their children have children who use cigarettes, have higher sensation-seeking tendencies, are older, and use alcohol, and this is also reflected in the parents' monitoring behavior.

### **Diversity of Trends for Reports of Fun Activities**

No trend was found in parent reports of fun activities for the total population of parents of 12- to 18-year-olds (Table 6-G). When the data for subgroups were examined, differences between the average estimates for year 2000 and the first half of 2003 were not statistically significant, but the majority were also in an unfavorable direction. Youth reports of fun activities showed an unfavorable decrease (Table 6-H). Although subgroups appeared to differ in the extent of the change in youth reports between 2002 and 2003 (only 5 of 11 subgroups showed significant declines; Detail Table 6-5), no subgroups were significantly different from the overall trend.

### **Summary of Trend Data**

In summary, the trend data provides evidence of favorable change for monitoring behavior and talking as reported by parents, but a less definitive change in monitoring behaviors and a decrease in talking behavior as reported by youth. Parents report no change in talking cognitions or monitoring cognitions. Youth report a decrease in fun activities while parents report no change in fun activities.

In general, there are no patterns of consistent trend differences for particular subgroups, though child risk for marijuana use yields differences in absolute levels of parental and child reports of monitoring. This chapter next turns to the complementary evidence about the association of Campaign exposure and these outcomes.

## **6.3 Cross-sectional Association of Advertising Exposure with Parent Outcomes**

Chapter 3 described the two types of exposure measures available for analysis. One, called general exposure, represents the sum of recalled exposure in recent months to advertising in four different types of sources (television and radio; movies and videos; print media, including newspapers and magazines; and outdoor media). The specific exposure measure sums the recalled exposure to the individual radio and television ads that had been on the air in the 60 days before the interview. The

general exposure measures display substantially higher levels than do the specific exposure levels. For example, around 40 percent of parents reported general exposure 12 or more times per month, but only 14 percent reported specific exposure at that level. There are three factors that may contribute to that difference: the general exposure measure includes more sources than the specific exposure measure; the general exposure measure allows recall of advertising that was directed to other audiences including youth, while the specific exposure measure focuses only on ads directed to the parent; and finally, the general exposure measure may be less demanding since it does not require the respondent to claim that he or she has seen a specific ad. One might speculate, therefore, that general exposure is at greater risk of inflated reporting. At the same time, specific exposure measures may underestimate viewing if respondents do not recall the ad at the time of the interview, but in fact saw and attended to the ad when it aired. Because the two measures may capture different aspects of exposure, the evidence of association is presented for both of them, with claims about effects strengthened when both show the same pattern of effects.

The general exposure association tables compare parents who reported exposure fewer than 4 times per month, 4 to 11 times per month, and 12 or more times per month. There were very few parents who reported no exposure, so they could not be considered separately. The specific exposure tables include four categories, since it was feasible to break out the lowest exposure group into those who recalled exposure less than 1 time per month and those who recalled ad exposure 1 to 3 times per month. However, the highest exposure group for the specific exposure measure is small, so in many of the tables the estimates for outcomes for this group have a wide confidence interval. Table 6-J presents the distributions for both general and specific exposure for all parents of 12- to 18-year-olds (also Detail Tables 6-55 and 6-56).

**Table 6-J. Exposures per month reported by parents of 12- to 18-year-olds across seven waves**

	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures
General exposure		32.5%	27.6%	39.9%
Specific exposure	19.2%	30.3%	36.9%	13.6%

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

All analyses are restricted to parents of 12- to 18-year-olds. Gamma is used to estimate the magnitude of association that indicates whether there is an overall pattern for those who have higher exposure to be higher on the outcome variable. In contrast to earlier reports, gamma is the only measure used here since it best summarizes whether exposure to the Campaign is associated with outcomes. Gamma varies from  $-1$  to  $+1$ , with estimates closer to either end showing stronger associations, and gammas of zero showing no association. Where the confidence interval for gamma does not include 0, the association between exposure and outcome is statistically significant at the  $p < 0.05$  level.

In addition, for the first time, youth reports of parent monitoring and talking behavior will be used as supplementary outcomes for parent Campaign effects analyses. Previous reports only described associations of parent exposure with parent reports of monitoring behavior and of talking with their children; however, these reports presented evidence that youth reports of talking and monitoring are different than their parent's reports—usually they report less of both behaviors, as shown above. Also, in the case of talking, a positive trend was reported by parents while a negative trend was reported by

youth. Also shown above, both parents and youth reports of monitoring and talking predict youth initiation of marijuana use in similar ways and thus both measures deserve attention. Therefore, both cross-sectional and delayed-effects associational analyses of parent exposure and outcomes will use the youth as well as the parent reports of parent-child interactions.

The detail tables also provide estimates for subgroups of that population defined by youth characteristics (age, gender, race/ethnicity) and parent characteristics (gender, education), and by year.

### 6.3.1 Cross-sectional Association of Monitoring Behavior and Cognitions Scales with General and Specific Exposure

Neither the general nor the specific exposure measure is associated with either parent or youth reports of monitoring behavior. This is true for all the parents of 12- to 18-year-olds, and for all of the subgroups. Table 6-K presents the summary data for both exposure measures using parent reports, with the full version in Detail Tables 6-61 and 6-62. In addition, Table 6-L shows the summary data for the exposure measures using youth reports, with additional detail in Detail Tables 6-97 and 6-98. Consistent with the trend data, across parent exposure levels youth report significantly lower levels of monitoring than do parents.

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

Score on the monitoring behavior index, with 1.46 the overall mean across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	1.43		1.46	1.47	0.02 (-0.02 to 0.05)
Specific exposure	1.43	1.42	1.45	1.52	0.04 (-0.01 to 0.08)

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

Score on the monitoring behavior index, with 0.9 the overall mean across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	0.92		0.90	0.90	-0.01 (-0.04 to 0.02)
Specific exposure	0.93	0.92	0.88	0.92	-0.01 (-0.05 to 0.04)

Parent reports of cognitions about monitoring do show statistically significant associations with general and specific exposure. These data are presented in Table 6-M, which summarizes the information that is fully presented in Detail Tables 6-57 and 6-58.

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

Score on monitoring cognition index with 91.78 the overall mean across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	84.80		88.04	95.02	<b>0.04* (0.01 to 0.06)</b>
Specific exposure	87.66	86.39	89.17	103.30	<b>0.04* (0.02 to 0.07)</b>

\* Significant at p < 0.05.

### 6.3.2 Cross-sectional Association of Talking Behavior and Cognitions Scales with General and Specific Exposure

Parent reports of talking behavior and talking cognitions consistently support an inference of a Campaign effect; that is, parents of 12- to 18-year-olds who report more exposure to the Campaign's messages are more likely to report talking to their children as well. Table 6-N presents the evidence for the association with talking behaviors, with the complete results in Detail Tables 6-63 and 6-64. A significant association between parental exposure and talking behaviors is also found when youth reports of talking are used (Table 6-O and Detail Tables 6-99 and 6-100), though the size of the effect is smaller and only seen in specific exposure.

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

Score on the 0 to 3 point scale, with overall average at 2.35 across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	2.19		2.34	2.48	<b>0.17* (0.13 to 0.21)</b>
Specific exposure	2.29	2.27	2.39	2.46	<b>0.11* (0.06 to 0.16)</b>

\* Significant at  $p < 0.05$ .

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

Score on the 0 to 3 point scale, with overall average at 1.43 across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	1.42		1.46	1.46	0.01 (-0.02 to 0.05)
Specific exposure	1.42	1.43	1.44	1.58	<b>0.05* (0.00 to 0.10)</b>

\*Significant at  $p < 0.05$ .

Table 6-P provides closely parallel parent information for cognitions about talking. Against both measures of exposure, those parents who report seeing many ads are substantially more likely to report that they value talking with their children about drugs. Gamma estimates for the association between both talking behavior and cognitions with general and specific exposure are larger than for their association with monitoring behavior and cognition (Detail Tables 6-59 and 6-60).

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

Score on the talking cognitions index with 91.58 the overall average across seven waves					
	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General exposure	86.29		93.14	114.08	<b>0.09* (0.07 to 0.12)</b>
Specific exposure	91.63	91.56	104.72	117.47	<b>0.08* (0.04 to 0.11)</b>

\* Significant at  $p < 0.05$ .

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

Table 6-Q presents a strong picture of association between reported exposure to both general and specific advertising and the proportion of parents who report doing three or more activities per week with their children (Detail Tables 6-65 and 6-66). The same pattern of association is present among respondents at each wave, and is a somewhat surprising result, given the reduced emphasis on the fun activities objective after the first few months of data collection. However, youth reports of fun activities show no significant association with parental exposure (Table 6-R and Detail Tables 6-101 and 6-102), but for both forms of exposure the association of parent exposure and youth reported fun activity is in a favorable direction, providing some corroboration for the parent reported data.

**Table 6-Q. Cross-sectional association of exposure per month and fun activities reported by parents of 12- to 18-year-olds**

Percent of parents doing three or more activities per week, with overall average at 63 percent across seven waves					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General	57		63	66	<b>0.13* (0.09 to 0.17)</b>
Specific	57	62	63	70	<b>0.14* (0.09 to 0.20)</b>

\* Significant at  $p < 0.05$ .

**Table 6-R. Cross-sectional association of exposure per month and fun activities reported by 12- to 18-year-olds**

Percent of parents doing three or more activities per week, with overall average at 62 percent across seven waves					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	12+ exposures	Gamma (CI)
General	60		64	64	0.06 (-0.00 to 0.12)
Specific	62	60	63	64	0.03 (-0.04 to 0.10)

### 6.3.4 Evidence for Diversity in Cross-sectional Associations

There are two ways to examine questions of diverse effects among subgroups. First, in situations where there was no overall evidence of an association, is there evidence that there were effects on some important subgroups? Second, in the presence of overall associations, is there evidence that these are significantly different among subgroups? This section addresses these two questions for each of the parent and youth reports of outcomes. In general, there is no evidence of differential associations in Detail Tables 6-57 through 6-66 across subgroups.

For parents' reports of outcomes, 8 of the 10 overall association analyses were significant: the associations of general and specific exposure with the talking cognitions and behavior, with reports of fun activities, and with monitoring cognitions. Generally, most of the subgroup analyses in each of those analyses were also significant, or at least their gammas were not significantly different from the gammas for the other subgroups in the population. For parent reports, there were only two exceptions: talking behaviors were more closely associated with general exposure in 2002 (gamma=0.25) than they were in 2001 (gamma=0.12), and specific exposure and talking cognitions were more strongly associated for fathers (gamma=0.12) than for mothers (gamma=0.08).

Also for parent reports, there were two analyses where the overall associations were not statistically significant: both general and specific exposure measures with monitoring behavior. Although there were some subgroup associations for this outcome, they are difficult to interpret. The subgroup analysis involved a total of 30 comparisons.<sup>5</sup> Two of the 30 showed a statistically significant association as measured by gamma: fathers and parents of male youth showed significant associations of specific exposure and monitoring behavior, but neither they nor any other subgroups showed associations of general exposure and monitoring behavior. It is difficult to interpret these two results; given the number of tests undertaken, this number would be expected to be significant by chance. Further, their confidence intervals overlap with the overall association. On the other hand, fathers did show a particularly strong relationship between exposure and talking behavior, as well as significant relations with 8 of the 10 exposure-outcome pairs (general exposure with monitoring behavior and with monitoring cognitions were the exceptions) so a claim that parent effects are stronger among fathers seems justified.

In contrast, only one of the six overall associations of exposure and youth reports of parent behaviors was statistically significant: youth reports of parent talking behavior. Seventy-eight subgroup analyses<sup>6</sup> were conducted for youth reports of behavioral outcomes; of these, six showed a statistically significant association. Again, given the number of comparisons, some would be expected to be significant by chance. However, two groups showed significant results in more than one outcome. First, high risk youth showed a significant, positive association in three of these six cases: for talking behaviors and specific exposure, and for fun activities and both general and specific exposure. Second, females showed a significant, positive association between both specific exposure and talking, and between general exposure and fun activities.

In summary, where there were overall associations, most subgroups showed statistically significant associations as well. There is some limited evidence to show consistent effects among high risk youth and females but not among any other subgroup.

## 6.4 Delayed-effects Analyses of Parent Outcomes

This report incorporates evidence from three rounds of data collection: Round 1 (Waves 1, 2, and 3), Round 2 (Waves 4 and 5), and Round 3 (Waves 6 and 7). Delayed-effects analyses involve examining the association between exposure measured at an earlier round and outcome measured at a later round, statistically controlling for values of the outcomes at an earlier round, as well as confounders. Two types of analyses are reported. First, overall delayed effects are assessed for the sample of pooled cases (for which exposure was measured at Round 1 or 2 and outcomes were measured at Round 2 or 3). This analysis examines if there are overall delayed effects capitalizing on the maximum sample

<sup>5</sup> Subgroup comparisons for the relationship between campaign exposure and parent reports of behaviors (monitoring, talking, fun activities) and cognitions (monitoring, talking) were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), parent gender (2 groups), parent education (2 groups), and year (4 groups) totaling 15 subgroups for each outcome, by 2 measures of exposure ( $15 \times 2 = 30$ ). Since several of the age categories presented in the Detail Tables overlap, comparisons were only made between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

<sup>6</sup> Subgroup comparisons for the relationship between campaign exposure and child reports of behaviors (monitoring, talking, fun activities) were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), child risk (2 groups) and year (4 groups) totaling 13 subgroups for each outcome, by 3 outcomes and 2 measures of exposure ( $13 \times 3 \times 2 = 78$ ). Since several of the age categories presented in the Detail Tables overlap, comparisons were made only between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

size available. Second, delayed-effect associations are reported by pairs of rounds separately: the effects of Round 1 exposure on Round 2 parent outcomes, and of Round 2 exposure on Round 3 outcomes. This permits examination of whether delayed effects found between Round 1 and Round 2 are replicated in the analysis of delayed effects between Round 2 and Round 3.

The focus of delayed-effects analyses presented here is parents of youth who were 12 to 18 years old at Round 2 or 3, when they were reinterviewed. The detail tables also contain information about each round pair-up (Round 1 with Round 2, and Round 2 with Round 3). Subgroup and subsample differences are also noted.

Delayed-effects analyses use the same two exposure measures presented in the preceding section, general and specific exposure, reported for Rounds 1 and 2 pooled, and separately for Round 1 and Round 2. As with cross-sectional results, parents reported general exposure at substantially higher levels than specific exposure, across rounds and years of interview. For example, 39.9 percent of parents reported general exposure 12 or more times per month, but only 13.6 percent reported specific exposure across rounds at that level. Similarly, the percentage of parents reporting 12 or more general exposures is higher than the corresponding percentage of parents reporting 12 or more specific exposures in each year of interview (Detail Tables 6-55 and 6-56). For delayed-effects analyses involving the specific exposure measure, only three categories of exposure are used: parents who reported exposure less than 1 time per month, 1 to 3 times per month, and 4 or more times per month. As it was explained previously, because the two measures may capture different aspects of exposure, the evidence of delayed-effects association is presented for both, with the interpretation strengthened when both show the same pattern of effects. In all exposure analyses, the effects are corrected for the influence of outcomes measured at an earlier round and confounder variables using the propensity scoring procedures described in Appendix C. They are the estimates of what people at each level of exposure would have been like had they all been similar on measured variables that were associated with exposure. Tables present gamma as the estimator of Campaign effects.

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

The previous report found that neither the general nor the specific exposure measures at Round 1 were associated with longitudinal parent reports of monitoring behavior at Round 2. This remains true for all the parents of 12- to 18-year-olds, overall and by pairs of rounds, in this report as well. Table 6-S presents the summary data for both exposure measures. These results parallel those for the cross-sectional analyses, with neither general nor specific exposure significantly associated with parent reports of monitoring behavior measured at the same time.

Across general and specific exposure, there were three significant delayed-effect associations across subgroups. The relationship between specific exposure and parent reports of monitoring behavior was significant and favorable among parents of African American children. However, the relationship between general exposure and parent reports of monitoring behavior was significant and in an unfavorable direction among fathers and parents with at least some college education. Considering the



26 tests of statistical significance performed<sup>7</sup> and the lack of significant overall subgroup associations, it is plausible that these results reflect mere chance associations (Detail Tables 6-71 and 6-72).

Table 6-T presents the summary data for both measures of parent exposure and youth reports of parent monitoring behavior, with additional detail in Detail Tables 6-103 and 6-104. The results parallel those for parent reports of behavior. Neither measure of parent exposure was significantly associated with subsequent youth reports of parent monitoring behavior. No statistically significant subgroup associations were found.<sup>8</sup>

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

Score on the monitoring behavior index at later round (Round 2 or 3) by exposure at earlier round (Round 1 or 2), with 1.47 the overall mean					
Exposure measure	<1 exposure	1 – 3 exposures	4 – 11 exposures	> 12 exposures	Gamma (CI)
General	1.50		1.45	1.46	-0.02 (-0.06 to 0.02)
Specific	1.47	1.43	1.48		0.00 (-0.03 to 0.04)

**Table 6-T. Delayed-effects analyses of parent exposure per month and youth reports of parent monitoring behavior for 12- to 18-year-olds**

Score on the youth reports of parent monitoring behavior at later round (Round 2 or 3) by parent reports of exposure at earlier round (Round 1 or 2), with .92 the overall mean					
Exposure measure	<1 exposure	1 – 3 exposures	4 – 11 exposures	> 12 exposures	Gamma (CI)
General	.92		.90	.91	0.00 (-0.04 to 0.03)
Specific	.88	.92	.92		0.03 (-0.01 to 0.07)

Delayed-effects analyses of the association between general and specific exposure with monitoring cognitions do not find any overall significant effect either (Table 6-U). There are no significant delayed-effect associations between Round 1 and Round 2 or between Round 2 and Round 3 (Detail Tables 6-67 and 6-68). There also is no evidence of significant subgroup effects of either general or specific exposure on monitoring cognitions (Detail Tables 6-67 and 6-68).

<sup>7</sup> Subgroup comparisons for the relationship between campaign exposure and delayed-effects parent reports of behaviors (monitoring, talking, fun activities) and cognitions (monitoring, talking) were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), parent gender (2 groups), parent education (2 groups), and round (2 groups) totaling 13 subgroups for each outcome, by two measures of exposure (13 x 2 = 26). Since several of the age categories presented in the Detail Tables overlap, comparisons were made only between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

<sup>8</sup> Subgroup comparisons for the relationship between campaign exposure and delayed-effects youth reports of behaviors (monitoring, talking, fun activities) were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), risk (2 groups), and round (2 groups) totaling 11 subgroups for each outcome, by two measures of exposure (11 x 2 = 22). Since several of the age categories presented in the Detail Tables overlap, comparisons were made only between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

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

Score on monitoring cognition index at later round (Round 2 or 3), by parental exposure at earlier round (Round 1 or 2) with 91.52 the overall mean					
Exposure measure	<1 exposure	1 – 3 exposures	4 – 11 exposures	> 12 exposures	Gamma (CI)
General	92.54		92.15	91.90	0.00 (-0.03 to 0.02)
Specific	92.11	88.58	93.39		0.00 (-0.04 to 0.04)

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

The previous report found a small but favorable monotonic association between parent reports of general exposure at Round 1 and reports of talking behavior at Round 2. The present report found this result repeated with the pooled samples: parents who reported more general exposure at an earlier round reported significantly more household talk at a subsequent round (Table 6-V). Evidence of a favorable delayed association was found within pairs of rounds also; the favorable delayed effect observed between Round 1 and Round 2 was replicated in the Round 2 to Round 3 data (Detail Table 6-73). The association was monotonic. Subgroup analyses show that these effects were also widely shared across most subgroups (e.g., age of child, child characteristics, and parent characteristics) (Detail Table 6-73).

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

Score on the 0 to 3 point talking behavior scale at later round (Round 2 or 3) by parental exposure at earlier round (Round 1 or 2), with 2.39 the overall mean					
Exposure measure	<1 exposure	1 – 3 exposures	4 – 11 exposures	>12 exposures	Gamma (CI)
General	2.32		2.41	2.46	<b>0.09* (0.04 to 0.14)</b>
Specific	2.38	2.34	2.45		0.04 (-0.01 to 0.10)

\* Significant at  $p < 0.05$ .

In contrast to these results with the general exposure measure, there is no evidence of significant delayed-effects associations of specific exposure and talking behavior for the whole sample. However, the gamma for the specific exposure measure is in the same favorable direction as the gamma for the general exposure measure. There also are no consistent patterns of delayed effects by pairs of rounds or subgroups, but significant associations were observed among mothers and among parents with at least some college education (Detail Table 6-74).

When youth reports of parent talking behavior were substituted for parent reports of talking with their youth, the overall delayed-effects associations with both measures of parent exposure were weaker and did not reach statistical significance (Table 6-W and Detail Tables 6-105 and 6-106). Reports of talking behavior by youth also were lower across categories of parent exposure than parent reports. However, for parent general exposure, there were several subgroups for which significant delayed-effects were found (12- to 13-year-olds, white youth, female youth, and lower risk youth). These

subgroup associations were in a favorable direction for the Campaign. In addition, significant delayed effects were found for 12- to 13-year-old youth among parents with specific exposure.

**Table 6-W. Delayed-effects analyses of parent exposure and youth reports of parent talking behavior for 12- to 18-year-olds**

Score on the 0 to 3 point youth reports of parent talking behavior scale at later round (Round 2 or 3) by parental exposure at earlier round (Round 1 or 2), with 1.38 the overall mean					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	>12 exposures	Gamma (CI)
General	1.31		1.38	1.40	0.04 (-0.01 to 0.08)
Specific	1.39	1.37	1.40		0.00 (-0.04 to 0.05)

Delayed-effects analyses show no statistically significant overall effects for the association of general exposure with talking cognitions (Table 6-X). However, there was evidence of a favorable overall association for mothers, and for parents of white and of female youth. (Detail Table 6-69).

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

Score on talking cognition index at later round (Round 2 or 3) by parental exposure at earlier round (Round 1 or 2), with 99.15 the overall mean					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	>12 exposures	Gamma (CI)
General	97.10		95.32	104.76	0.03 (-0.00 to 0.06)
Specific	93.75	95.11	105.40		<b>0.05* (0.01 to 0.08)</b>

\* Significant at  $p < 0.05$ .

The present report also found a favorable overall association between parent reports of specific exposure at Round 1 or 2 and reported cognitions about talking to one's child at Round 2 or 3 (Table 6-X). That is, parents who reported more specific exposure at earlier rounds reported significantly higher levels of talking cognitions at a subsequent round. The association was monotonic. Favorable associations of similar size were also present in both pairs of rounds (Detail Tables 6-70). Furthermore, there were several subgroups for which significant delayed effects were found (age of child, white youth, male youth, mothers, and parents with some college education). The confidence intervals for the estimates of effects in these subgroups overlapped with the confidence interval for the overall estimate; these subgroup associations were in a favorable direction for the Campaign also (Detail Table 6-70).

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

In this report, for parents of 12- to 18-year-olds, favorable effects were found for both general and specific exposure to anti-drug advertising on parent reports of fun activities (Table 6-Y). That is, parents who at an earlier round (Round 1 or 2) reported a higher level of general or specific exposure to anti-drug advertising were more likely to subsequently report high levels of fun activities (at Round 2 or 3). In both cases the association was monotonic. The overall effects were replicated between Round 1 and Round 2, and between Round 2 and Round 3.

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

Proportion of parents doing three or more activities per week at later round (Round 2 or 3) by exposure at earlier round (Round 1 or 2), with overall average at 62%					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	>12 exposures	Gamma (CI)
General	59%		61%	64%	<b>0.07* (0.01 to 0.13)</b>
Specific	59%	61%	63%		<b>0.06* (0.01 to 0.12)</b>

\* Significant at p < 0.05.

For general exposure, there were several subgroups for which significant delayed-effects associations were also found (age of child, daughters, mothers, and parents with less than college education). The confidence intervals for the estimates of effects in these subgroups overlapped with the confidence interval for the overall estimate, but the associations were in the same favorable direction (Detail Table 6-75). For specific exposure, the overall effect was favorable and the subgroup associations were not significantly different in magnitude from the overall delayed effect.

Table 6-Z and Detail Tables 6-107 and 6-108 present the summary data for both measures of parent exposure and youth reports of fun activities. It should be noted that since youth were not asked about fun activities in 2000, caution must be used in comparing parent and youth reports. Youth reported similar numbers of fun activities as did their parents. Although the associations between the parent exposure measures and subsequent youth reports did not reach statistical significance, they were comparable in magnitude with the associations between parent exposure and parent reports of fun activities. Furthermore, for parent general exposure, favorable subgroup associations were found for Hispanic and for higher risk youth. For parent specific exposure, a significant association was found for Round1 to Round 2.

**Table 6-Z. Delayed-effects analyses of parent exposure per month and youth reports of fun activities, for 12- to 18-year-olds**

Youth reports of the proportion of parents doing three or more activities per week at later round (Round 2 or 3) by parent exposure at earlier round (Round 1 or 2), with overall average at 61%					
Exposure measure	<1 exposure	1 - 3 exposures	4 - 11 exposures	>12 exposures	Gamma (CI)
General	59%		59%	63%	<b>0.06* (-0.01 to 0.13)</b>
Specific	60%	62%	62%		0.04 (-0.03 to 0.10)

\* Significant at p < 0.05.

## 6.5 Evidence of Association of Parent Exposure with Youth Outcomes

Parent cognitions and behaviors are conceived as intermediate variables; they are meant to be affected by the Campaign and in turn they are meant to influence youth. It is worthwhile to ask whether there is, as a result of the measured variables, or as the result of any unmeasured process, a direct association of parent exposure and the youth cognitive and behavioral outcomes of main interest: Marijuana use, intentions to use, attitudes/beliefs about marijuana, perception of social norms regarding marijuana, and self-efficacy to refuse marijuana offers. Examining this direct association is

particularly advisable given the number of significant favorable associations of parent exposure with parent-reported outcomes in cross-sectional analyses and the delayed-effects association of parent behaviors and cognitions with youth outcomes (see Section 6-1). The following sections describe these cross-sectional and delayed-effects overall associations between parent exposure and youth outcomes.

## 6.5.1 Cross-sectional Association of Parent Exposure with Youth Outcomes

Table 6-AA presents the results, with more extensive information provided in Detail Tables 6-77 through 6-86. For all youth aged 12 to 18, there were no cross-sectional overall associations for either general or specific parental exposure and youth past year marijuana use. Additionally, there were no significant overall associations between either measure of exposure and intentions to not use marijuana, anti-marijuana beliefs and attitudes, perceived anti-marijuana social norms, and self-efficacy to refuse marijuana. These results replicate the findings of the previous report.

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

Youth outcomes across 7 waves		Parental exposure level				Gamma (CI)
		<1 exposure	1 - 3 exposures	4 - 11 exposures	12 + exposures	
Percent reporting marijuana initiation	General exposure	16.3%		15.9%	16.0%	-0.01 (-0.06 to 0.05)
	Specific exposure	14.8%	16.7%	16.0%	16.6%	0.03 (-0.06 to 0.12)
Percent definitely not intending to use	General exposure	87.0%		85.2%	86.9%	0.00 (-0.07 to 0.06)
	Specific exposure	87.3%	86.2%	85.2%	87.8%	0.00 (-0.09 to 0.09)
Attitudes/Beliefs Index (Mean score)	General exposure	109.41		105.01	109.12	-0.01 (-0.03 to 0.02)
	Specific exposure	107.17	106.90	106.21	112.57	0.02 (-0.02 to 0.06)
Social Norms Index (Mean score)	General exposure	104.18		99.87	101.39	-0.01 (-0.04 to 0.02)
	Specific exposure	97.73	102.55	98.70	102.84	0.02 (-0.02 to 0.05)
Self-efficacy Index (Mean score)	General exposure	110.96		110.43	109.57	0.00 (-0.03 to 0.03)
	Specific exposure	113.17	106.10	111.52	115.12	-0.02 (-0.05 to 0.02)

There were a total of 130 tests of significance undertaken for cross-sectional subgroup analyses.<sup>9</sup> Of the 130, only 2 were significant. There was one significant, favorable association between past year youth marijuana use and the specific parental exposure for Hispanic youth (gamma=-0.25). This finding was not replicated for the general exposure measure. This subgroup association was not found

<sup>9</sup> Subgroup comparisons for the cross-sectional relationship between campaign exposure and youth outcomes were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), risk (2 groups), and year (4 groups) totaling 13 subgroups by 5 outcomes and 2 measures of exposure and by (13 x 5 x 2 = 130). Since several of the age categories presented in the Detail Tables overlap, comparisons were made only between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

in the previous report; indeed, the previous report also found a significant, unfavorable association between general parent exposure and Hispanic youths' past year marijuana association. In addition, there was a significant, unfavorable association between specific parental exposure and girls' self-efficacy to refuse marijuana. This pattern of rare significant results is consistent with what might be expected by chance.

## 6.5.2 Delayed-effects Association of Parent Exposure with Youth Outcomes

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

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

**Table 6-AB. Parental exposure at earlier round and youth outcomes at later round among 12- to 18-year-olds who were nonusers of marijuana at the earlier round**

Youth outcome at later round		Parental exposure at earlier round				Gamma (CI)
		<1 exposure	1 - 3 exposure	4 - 11 exposures	12 + exposures	
Percent reporting marijuana initiation	General exposure	12%		11.8%	12.6%	0.02 (-0.08 to 0.12)
	Specific exposure	11.6%	11.2%	13.5%		0.04 (-0.04 to 0.12)
Percent definitely not intending to use	General exposure	79.1%		78.8%	77.9%	-0.02 (-0.09 to 0.05)
	Specific exposure	76.8%	79.5%	79.3%		0.05 (-0.01 to 0.12)
Attitudes/Beliefs Index (Mean score)	General exposure	92.43		94.85	90.79	0.00 (-0.03 to 0.03)
	Specific exposure	90.62	94.40	92.14		0.01 (-0.02 to 0.04)
Social Norms Index (Mean score)	General exposure	85.51		86.50	82.07	-0.02 (-0.05 to 0.01)
	Specific exposure	82.11	88.40	80.69		-0.01 (-0.03 to 0.02)
Self-efficacy Index (Mean score)	General exposure	110.51		111.48	105.78	-0.03 (-0.08 to 0.02)
	Specific exposure	107.71	110.27	107.92		0.00 (-0.05 to 0.05)

In the absence of overall effects, significant delayed-effects associations for subgroups are of particular interest. Given 110 tests of statistical significance performed for subgroup analyses,<sup>10</sup> the seven delayed-effects associations are consistent with what one would expect to find by chance (Detail Tables 6-87 to 6-96).

## 6.6 Summary and Discussion

The inferential logic laid out at the start of this chapter suggests that support for Campaign effects would reflect three favorable results: a favorable trend on a target outcome, a favorable cross-sectional association between exposure to the Campaign and the outcome, and finally a favorable delayed-effects association between exposure and the subsequent outcome measure. Tables 6-AC and 6-AD summarize the results for all of the outcomes on each of these criteria. Each row in the tables indicates whether there was a full sample trend, whether there was a full sample cross-sectional association with the general or specific exposure measures, and whether there was a full sample delayed-effects association with the two exposure measures. The association criterion is whether or not the gamma estimate was significant at the  $p < .05$  level. In addition, each row in the tables indicate whether a subgroup of the population showed one of those effects, even if the full sample did not. The present report capitalizes on a larger sample than the previous report and replicates the Round 1 to Round 2 analyses with the Round 2 to Round 3, to increase confidence in the presence of effects, over and above the idiosyncrasies of pairs of rounds. Further, youth reports were fully incorporated for the first time, which enables more systematic comparison with parent reports.

These tables suggest that there is some evidence of Campaign effect on parents. Although the strongest support for Campaign effectiveness comes from using parent reports of behaviors, youth reports of the same behaviors provide some support for the parent findings. However, there is not consistent evidence that the variables that are the best predictors of initiation of marijuana use (monitoring behaviors and cognitions) have been affected by the Campaign. Finally, a claim that the Campaign effect on parents led to a change in youth marijuana use, intentions to use, social norms, self-efficacy, or cognitions has no support. Each of the outcomes is reviewed in turn.

As shown in Table 6-B, monitoring behavior (whether reported by parents or youth) is an important predictor of the initiation of marijuana use. However, it provides the least evidence for a Campaign effect. While there is a significant upward trend in monitoring behavior as reported by parents, that trend is not supported by youth reports. There is no overall cross-sectional or delayed-effects association of either exposure measure and youth- or parent-reported monitoring behavior. There are a few significant subgroup results, but none of them satisfy the three criteria for Campaign effects. For instance, there is a significant, favorable cross-sectional association between specific exposure and monitoring behavior for fathers and for male youth, but no corresponding delayed-effects associations. There is a significant unfavorable delayed effects association for fathers and parents with some college education for general exposure and parent reports of monitoring behavior, although this is not replicated with the specific exposure measure. Conversely, there is a significant favorable delayed effects association for parents of African Americans for specific exposure and parent reports of

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<sup>10</sup> Subgroup comparisons for the delayed-effects relationship between campaign exposure and youth outcomes were conducted by child age (2 groups), child gender (2 groups), child race/ethnicity (3 groups), risk (2 groups), and round (2 groups) totaling 11 subgroups by 5 outcomes and 2 measures of exposure and by  $(11 \times 5 \times 2 = 110)$ . Since several of the age categories presented in the Detail Tables overlap, comparisons were made only between two, mutually exclusive age groups: 12 to 13 and 14 to 18.

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

Parent Outcomes	All parents of youth aged 12 to 18 youth									
	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	No	Favorable	No Overall, 12 to 18 (F), Girls (F), High Risk (F), High Sensation Seeking (F)	Favorable	No Overall, 12 to 13 (F), Whites (F), Girls (F), Lower Risk (F)	No Overall, Mothers (F), College (F)	No Overall, 12 to 13 (F)
Talking Cognitions	No	--	Favorable	--	Favorable	--	No Overall, Girls (F), Whites(F), Mothers (F)	--	Favorable	--
Monitoring Behavior	Favorable	No Overall, 12 to 13 (F), Girls (F), Low Risk (F)	No	No Overall, AF AM (F)	No Overall, Fathers (F), Boys (F)	No	No Overall, Fathers (U), College (U)	No	No Overall, African-Americans (F)	No
Monitoring Cognitions	No	--	Favorable	--	Favorable	--	No	--	No	--
Doing Fun Activities <sup>1</sup>	No	Unfavorable	Favorable	No Overall, High Risk (F), Girls (F)	Favorable	No Overall, High Risk (F)	Favorable	No Overall, Hispanic (F), Higher Risk (F)	Favorable	No Overall, R1 → R2 (F)

<sup>1</sup> Youth reports for trends in fun activities report changes between 2001 and 2003; parent reports for trends in fun activities report changes between 2000 and 2003.

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.

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

No: No overall significant result, or if subgroup significant at p<0.05 represented no more than 30% of cases.

No overall subgroups: No overall significant results, but subgroups representing more than 30% of cases were significant at p<0.05.



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

Youth Outcomes (marijuana)	All parents of youth aged 12 to 18					If not significant for all parents of youth aged 12 to 18, for which subgroups?				
	Trend	Cross-sectional association		Delayed-effects association		Trend	Cross-sectional association		Delayed-effects association	
		General	Specific	General	Specific		General	Specific	General	Specific
Past year use	No	No	No	No	No	<b>Lower Risk (U)</b>	None	<b>Hispanic (F)</b>	<b>African American (F)</b>	None
Intentions to use	No	No	No	No	No	None	None	None	None	<b>Males (F), Higher Risk (F)</b>
Attitudes & Beliefs	No	No	No	No	No	None	None	None	None	None
Social Norms	<b>Unfavorable</b>	No	No	No	No	None	None	None	<b>14-to-18 (U)</b> <b>Girls (U)</b> <b>Hispanics (F)</b>	None
Self Efficacy	<b>Favorable</b>	No	No	No	No	<b>African American (F)</b>	None	<b>Girls (U)</b>	<b>R1→R2 (U)</b>	None

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

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

**No:** No significant effect overall.

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

monitoring behavior, but this result is not found for general exposure. Thus, the evidence for a Campaign effect on this outcome is mixed and does not permit a claim of a favorable Campaign effect.

The monitoring cognition scale (only available from parent reports) has a substantial association with monitoring behavior, and like monitoring behavior, is associated with youth marijuana use and intentions. There is good reason to think that affecting parental monitoring cognitions would affect youth behavior. Although the 2000 to 2003 trend in this outcome is not statistically significant, the change from 2000 to 2002 is significant. The 2003 estimate is based on a smaller sample than the 2002 estimate, and thus has a wider confidence interval. Thus despite the lack of a significant 2000 to 2003 trend, it makes sense to credit a positive trend in monitoring cognitions over time. In addition, there is evidence for cross-sectional associations for both general and specific exposure and monitoring cognitions for the full sample. Thus, on these two criteria, there would be reason to claim a favorable Campaign effect. However, there is no evidence of a delayed-effects association overall or for any subgroup with either of the exposure measures. Without the evidence for a delayed effect, so that the causal order issue can be sorted out, it remains unclear whether parent ad exposure affects their beliefs about the value of monitoring, or parents' commitment to engaging with their children influences their monitoring beliefs and their attention and recall of the advertising.

The fun activities analyses offer solid support for Campaign effects. The pattern of both cross-sectional and delayed associations is supportive of a favorable effect of the Campaign. All of the associations of both specific and general exposure and the parent reports of fun activities are significant and favorable. The youth reports of fun activities do not show an overall association with exposure; however, at least one subgroup, and often a large subgroup, representing a substantial fraction of the whole population, does show a significant favorable effect for every category of association. Indeed, while the associational data is quite supportive of a favorable effect, the trend data for fun activities presents the only hold on the claim. Parent reports show no increase in fun activities and youth reports show a decline. One interpretation of those results is 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 other external forces that were causing a decline.

The talking behavior results are similarly quite supportive of favorable Campaign effects, although one aspect of the youth reports raises a concern. The parent reports show positive trends, and either overall or substantial subgroup associations for both measures of association and for both cross-sectional and delayed effects. The youth reports also show favorable associations, either overall or for substantial subgroups, in three of four cases. The one aspect that clearly does not support a claim of favorable Campaign effect is the youth trend data. While the parents are reporting more talking with their children, the youth are reporting less. There is no easy explanation for this discrepancy.

The talking cognitions analysis is based on parent reports only, and it supports a favorable interpretation. The trend data shows no significant changes but the association data is quite consistently supportive of campaign effects. For all of the four tests of associations, there is either an overall association (3 tests) or favorable results from substantial subgroups (1 test). While the claims for Campaign effect would be stronger if the trend results were to match the associational results, the support for a favorable Campaign effect on talking cognitions, as with talking behavior, is still substantial.

Table 6-AC provides substantial evidence for a favorable Campaign effect on four of five parent outcomes: monitoring cognitions, talking cognitions, behavior, and fun activities behavior. The evidence is stronger based on the positive associations between exposure and outcomes, whether cross-sectional or delayed, but less consistent if trend data is the focus. However, the one outcome for which the analysis does not provide substantial support for a Campaign effect is monitoring behavior.

The lack of evidence of favorable Campaign effects on monitoring behavior is a difficult result from the Campaign's perspective for two reasons. It is difficult first because parenting skills have been the prime focus of the parent advertising almost since the beginning of the Campaign. 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. 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 are sharpest on talking and fun activities, where the Campaign has not focused, and generally weakest in the area of most focus, monitoring behavior. The positive evidence for Campaign effects on monitoring cognitions does provide some balance, but without evidence that this is translated into Campaign effects on behavior, this may not be enough.

These results are also difficult for the Campaign because there is good evidence that in focusing on monitoring behavior, the Campaign chose correctly. Monitoring behavior has been shown here and in other studies to be substantially related to noninitiation of drug use. That is not true at all for talking behavior. Engaging in fun activities does show some protective relation with subsequent marijuana initiation. 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 is less than optimal. And that is the pattern that is seen when the analysis turns from evidence for effects of the parent Campaign on parenting outcomes to the effect of the parent Campaign on youth outcomes.

Table 6-AD provides a summary of the evidence for such effects. Although there is a positive trend in self-efficacy to refuse marijuana, this finding is not supported by either cross-sectional or longitudinal associations, and there are no other reported full sample favorable youth outcome effects. Subgroup effects are rare and, when they appear, they are equally likely to be in an unfavorable direction as in a favorable direction.

How can one explain this pattern of supportive evidence for Campaign effects of parent exposure on parent behavior, but no positive effects of parent exposure on youth outcomes? Three explanations fit these data. The claim of Campaign effects on parent outcomes might be mistaken. None of the outcomes has evidence that satisfies all of the a priori criteria for strong claims of effect, and if there were no effect, in fact, then one would not expect an indirect effect on youth. Second, talking behavior, the outcome with the clearest evidence for effects for parents, is not related to youth marijuana use or intentions, so even if there had been a Campaign effect on such talking it would not have been expected to affect youth outcomes. Third, indirect effects are hard to detect. If there were a small effect of the Campaign on a behavior, and a small effect of that behavior on the youth outcome, the resulting indirect effect would be the product of those two effects. For example, if the effect of the Campaign on monitoring behavior were .10, and the effect of monitoring behavior on youth marijuana use were .20, the expected effect of the Campaign exposure on marijuana use would be the product of those two effects, or .02 (.10 x .20). An effect of .02 could not be detected. The Campaign's indirect effects through parents could 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 an effect of the Campaign on some parent outcomes, but no evidence for indirect effects of parent exposure to the Campaign on youth outcomes.