monitoring the future occasional paper series

Paper 82

THE MONITORING THE FUTURE PROJECT AFTER FOUR DECADES: DESIGN AND PROCEDURES

Jerald G. Bachman
Lloyd D. Johnston
Patrick M. O'Malley
John E. Schulenberg
Richard A. Miech

Institute for Social Research
The University of Michigan
Ann Arbor, Michigan

2015

THE MONITORING THE FUTURE PROJECT AFTER FOUR DECADES: DESIGN AND PROCEDURES

Monitoring the Future Occasional Paper No. 82

Jerald G. Bachman
Lloyd D. Johnston
Patrick M. O'Malley
John E. Schulenberg
Richard A. Miech

Institute for Social Research
The University of Michigan
Ann Arbor, Michigan

2015

Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth

As its title suggests, this study is intended to assess the changing lifestyles, values, and preferences of American youth on a continuing basis. Each year since 1975, at least 13,000 seniors have participated in the annual survey, which is conducted in some 120 to 140 high schools nationwide. Since 1991, the study's annual surveys also have included surveys of similar nationally representative samples of eighth- and tenth- grade students. In addition, subsamples of seniors from previously participating classes receive follow-up questionnaires by mail each year.

This Occasional Paper Series is intended to disseminate a variety of products from the study, including pre-publication (and somewhat more detailed) versions of journal articles, other substantive articles, and methodological papers.

A full listing of occasional papers and other study reports is available on the study's website, www.monitoringthefuture.org. The website contains a complete listing of all publications from the study, the abstracts or full text of many of these publications, and recent press releases.

The mailing address of Monitoring the Future is Institute for Social Research, The University of Michigan, P.O. Box 1248, Ann Arbor, MI 48106.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

We greatly appreciate the contributions of Marcy Breslow, Carola Carlier, Ariel Bronson, Tanya Hart, Kathryn Johnson, and Patti Meyer in manuscript review, text management, and editing.

The Monitoring the Future project continues to be supported through a series of investigator-initiated, competitive research grants from the National Institute on Drug Abuse (R01 DA001411 and R01 DA016575).

INTRODUCTION AND OVERVIEW

This occasional paper updates and extends earlier papers in this series (Bachman & Johnston, 1978; Bachman, Johnston, & O'Malley, 1991a, 1996, 2001; Bachman, Johnston, O'Malley, & Schulenberg, 2006; 2011). Our purpose in this paper, as in the earlier ones, is to provide a detailed description of the Monitoring the Future research design, including sampling design, data collection procedures, measurement content, and questionnaire format. Here, as before, we have included information for others who wish to evaluate our results, to replicate aspects of the study, or to analyze data.

The project findings have revealed many important changes since the project was launched in 1974. Most notably, there have been dramatic changes in the attitudes and behaviors that the project was designed to monitor, particularly those involving the use of drugs. There also have been substantial additions to the study design and procedures, as we outline below and detail in subsequent sections. But perhaps more important than any of these changes in the project is the fact that the basic study design described in our 1978 paper has remained constant in its fundamental characteristics; we view this consistency in survey methods across the years as a key condition for measuring change successfully. There is thus also a high degree of consistency over the years in our description of study design and procedures.

Basic Design Surveying High School Seniors and Young Adults

From its outset, the Monitoring the Future project was designed with two interrelated components: (1) annual nationwide surveys of high school seniors using group-administered questionnaires, and (2) periodic follow-up questionnaires mailed to randomly selected subsamples of each senior class cohort. This design permits us to examine at least four kinds of trends or changes:

1. Changes common to all cohorts in a given historical period, i.e., secular trends or period effects;
2. Developmental changes or age effects that appear consistently in the longitudinal data from all graduating classes;
3. Changes from one graduating class cohort to another, i.e., enduring cohort differences; and
4. Longitudinal changes reflecting the differential impacts of various important post-high school environments (college, military service, various types of employment, homemaking, unemployment), major role transitions (marriage, pregnancy, parenthood, divorce, remarriage), and individual developmental characteristics.

We acknowledge, of course, that these several types of trends or changes, while easily distinguished in the abstract, are often intertwined in the real world, so that the analysis problems of separating one pattern from another are formidable. Nevertheless, this cohort-sequential design (Schaie, 1965; Labouvie, 1976) is uniquely powerful for addressing this complex set of questions; it creates analysis possibilities that would not exist in either a longitudinal study that followed a single panel of respondents for a number of years, or a series of once-only cross-sections (e.g., surveys of each high school class without any longitudinal follow-up).

Several analyses examining age, period, and cohort effects related to drug use (O'Malley, Bachman, & Johnston, 1984, 1988; Keyes et al., 2011, 2012) provide concrete illustrations of how this design has permitted us to distinguish among the first three types of change listed above. Other analyses provide examples of the fourth type of change (e.g., Bachman, O'Malley, & Johnston, 1984; Bachman, Johnston, & O'Malley, 1991b; Bachman, O'Malley, Johnston, Rodgers, & Schulenberg, 1992; Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Bachman et al., 2002, 2008; Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Jackson, Sher, & Schulenberg, 2008; Jager, Schulenberg, O'Malley, & Bachman, 2013; McCabe et al., 2005; McCabe et al., 2014; Merline, O'Malley, Schulenberg, Bachman, & Johnston, 2004; Patrick et al., 2013; Patrick, Schulenberg, O'Malley, Johnston, & Bachman., 2011; Schulenberg, Bryant, & O'Malley, 2004; Schulenberg, Merline, et al., 2005; Schulenberg, O'Malley, Bachman, & Johnston, 2005; Staff, Schulenberg, Maslowsky, et al., 2010). A series of annual monographs (e.g., Johnston, O'Malley, Bachman, & Schulenberg, 2011) also has assessed change, particularly of the first and third types, as well as documenting the emergence of important cohort differences in the 1990s.

Annual surveys of high school seniors

Each spring, beginning with the class of 1975, the project has surveyed at least 13,000 seniors, located in 120 to 140 public and private high schools and selected to provide a representative cross-section of high school seniors throughout the coterminous United States. Confidential questionnaires, usually administered during regularly scheduled class periods, cover background and demographic characteristics, use of drugs, and a wide variety of other topics. Respondents are asked to provide their names and mailing addresses on forms that are then separated from the questionnaires (and linkable only by randomly matched pairs of code numbers accessible to very few research staff). These address forms provide an opportunity for mailing one or more newsletters reporting project results; more importantly, they provide the opportunity to conduct follow-up surveys by mail which can then be linked to senior-year data.

Follow-up surveys of young adults

The Monitoring the Future design includes longitudinal follow-ups of graduates from the class of 1976 and each subsequent class, as shown in Figure 1. The initial design called for large-scale subsamples from each graduating class to be followed each year for the first five years after high school. In order to improve the follow-up response rates that we were experiencing, we modified this design after the first two years so that each follow-up participant was asked to complete a survey only every other year. In addition, an "honorarium" check was included with the questionnaire, and prompts by mail and eventually by phone were used as necessary to encourage the return of the questionnaires. And because of the additional costs of these procedures, we substantially reduced the target numbers of follow-up cases from each class (since then, the target numbers of follow-up cases were about 2,400 per cohort, and more recently 2,450). Given the generally encouraging rates of follow-up returns, especially in the early years of the study, as well as the importance of tracking drug use and its correlates further into young adulthood, we extended this schedule of biennial follow-ups so that it now reaches to 11 or 12 years beyond high school, when most respondents have reached age 29 or 30. Beginning at 17 years beyond high school (i.e. at modal age 35), we survey all respondents every 5 years until modal age 55.

Figure 1. OVERVIEW OF MONITORING THE FUTURE COHORT-SEQUENTIAL DESIGN, 1976–2017

Year of Graduation	Modal Age at Data Collection																			
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	35	40	45	50	55
1976	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1993	1998	2003	2008	2013
1977	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1994	1999	2004	2009	2014
1978	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1995	2000	2005	2010	2015
1979	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1996	2001	2006	2011	2016
1980	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1997	2002	2007	2012	2017
1981	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1998	2003	2008	2013	
1982	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1999	2004	2009	2014	
1983	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	2000	2005	2010	2015	
1984	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	2001	2006	2011	2016	
1985	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2002	2007	2012	2017	
1986	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2003	2008	2013		
1987	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2004	2009	2014		
1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2005	2010	2015		
1989	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002		2006	2011	2016		
1990	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002			2007	2012	2017		
1991	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003			2008	2013			
1992	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004			2009	2014			
1993	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005			2010	2015			
1994	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006			2011	2016			
1995	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007			2012	2017			
1996	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008			2013				
1997	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009			2014				
1998	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010			2015				
1999	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011			2016				
2000	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012			2017				
2001	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013							
2002	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014							
2003	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015							
2004	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016							
2005	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017							
2006	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017								
2007	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017									
2008	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017										
2009	2009	2010	2011	2012	2013	2014	2015	2016	2017											
2010	2010	2011	2012	2013	2014	2015	2016	2017												
2011	2011	2012	2013	2014	2015	2016	2017													
2012	2012	2013	2014	2015	2016	2017														
2013	2013	2014	2015	2016	2017															
2014	2014	2015	2016	2017																
2015	2015	2016	2017																	
2016	2016	2017																		
2017	2017																			

NOTE: Entries indicate year at data collection.

Half of the sample of about 2,400 cases is followed on even years after high school during this time, and the other half on odd-numbered years. In that way, we still have each class cohort represented each year between modal ages of 19 to 30, but the half-panels representing each cohort alternate.

Follow-up surveys into middle adulthood

These follow-up panels became increasingly valuable as the biennial series of surveys of drug use and other experiences extended to cover all of young adulthood. However, the pace of change tends to diminish by the late twenties; also, some of the issues asked about in the questionnaires of young adults become less salient. Accordingly, after the sixth scheduled follow-up for each graduating class (11 or 12 years after graduation), we modified the follow-up strategy in two important ways: First, the next follow-up does not occur until 17 years after graduation (average age of 35), with future follow-ups occurring at five-year intervals (see Figure 1). As of 2013, the oldest three cohorts have reached or surpassed modal age 55. This schedule of less frequent data collections (i.e., every five years) is intended to reduce respondent burden as well as research costs. Second, the questionnaire content was revised to eliminate less-central items and include more extensive measurement of key events occurring between high school graduation and the respondents' mid-thirties and later. Also, the two half-panels from each cohort are "reunited" and surveyed together at each of these five-year points. In sum, this five-year cycle of follow-ups after age 30 is a reduced-burden and reduced-cost strategy for reaping further research dividends regarding the epidemiology and etiology of substance use from the young adult panels as they go through middle adulthood.

Expanded Design Including Eighth- and Tenth-Grade Students

We outline later in this paper a number of factors that led to our choice of the high school senior year as an optimal starting point for monitoring the attitudes, experiences, and behaviors of young adults. In general, our experiences during the past 40 years have confirmed that initial judgment. However, from the outset, we acknowledged that one key shortcoming was omitting those youth who left high school before the end of their senior year. A further limitation, of course, is that beginning with the senior year constrained our measurement of earlier events, particularly earlier use of drugs and related risk factors. In order to deal with these limitations, the Monitoring the Future project was expanded in 1991 to include nationwide surveys of students in the 8^{th} and 10^{th} grades.

Each spring, beginning in 1991, the project surveys about 13,000–18,000 eighth-grade students located in about 140–160 schools and about 14,000–18,000 tenth-grade students located in about 120–140 schools using questionnaires and procedures patterned after those used for the surveys of seniors. Separate samples of schools and students are drawn at each grade level.

SCOPE, PURPOSES, AND RATIONALE

The issues addressed in the Monitoring the Future project are broad in scope and of fundamental importance to the nation: views about personal lifestyles; confidence in social institutions; intergroup and interpersonal attitudes; concerns about conservation and ecology; behaviors and attitudes related to drug use; and other social and ethical issues. A major emphasis is placed on drug use and attitudes about drugs, both because use of drugs is itself a particularly serious problem among young people, and also because it is a symptom of other and often deeper problems and discontents. The fact that this study covers a broad range of issues, rather than just one or two, makes it more relevant to students, parents, and principals, all of whom are involved in deciding whether to participate in the study.

Rationale for Annual Nationwide Sampling of High School Seniors

The study employs large-scale, nationally representative samples of high school seniors, obtained on a recurring annual cycle. Each of these aspects of the sample will be discussed in this section. First, however, we should note that for purposes of studying drug use, our choice of a "normal" population, rather than relying on institutional samples or records, reflects our interest in all types and stages of drug use. Our own findings and those of many others make it abundantly clear that the use of psychoactive drugs is widespread in the population. Studies of the general population are certainly no substitute for special in-depth examinations of drug addicts, drug overdose data, and the like; but it is equally true that such specialized information sources do not provide a complete picture of drug use or drug users, since for most users no institutional contact is involved.

Nationally representative samples

The use of nationally representative samples (of the 48 contiguous states) rather than local, state, or regional ones reflects the fact that we are dealing with national (indeed, international) issues. It had been necessary in the past to make guesses about national drug trends based on local data, because only local data were available. Given that there are some substantial regional differences both in levels and trends of drug use (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015; Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014), and because much of the policy in the field is set at the federal level, it continues to be desirable to select our respondents such that they represent the nation as a whole (and also provide data for large regional subgroups). Another advantage of nationally representative samples is that they can provide comparisons for data from sub-national studies, for example, state or local studies (Kann et al., 2014).

Senior year as starting point

The choice of the senior year of high school as the point of our initial sampling and the starting point for our longitudinal data collections has several advantages. First, the completion of high school represents the end of an important developmental stage in this society, because it demarcates both the end of universal public education and, for many, the end of living in the parental home. In addition, it is a time when future hopes and plans are about to meet new reality tests, making it a very important stage to understand when examining the transition to adulthood. Therefore, it is a logical point at which to take stock of the cumulated influences of school and family contexts, as well as the plans

and expectations, of American young people.

Second, the completion of high school represents the jumping-off point from which young people diverge into widely differing social environments. Environments such as college, civilian employment, and military service are generally thought to have new and important socializing effects. Measurements taken near the end of 12th grade represent the state of each graduating class before entering these environments, as well as others, including homemaking and unemployment. By comparing these "before" measures with the follow-up or "after" measures taken over the years following graduation, we can assess many of the impacts of these different post-high school experiences.

Entering new environments is not the only important change that coincides with the end of high school. Most young men and women now reach the formal age of majority shortly before or after graduation. More important, the years following high school mark the assumption of adult roles, including supporting oneself financially, living away from parents, marrying, and/or becoming a parent. Findings from the project have shown that a number of these role experiences have substantial impacts upon various forms of drug use (Bachman et al., 1984, 1991b, 1992, 1997, 2002; Schulenberg, Merline, et al., 2005; Schulenberg, O'Malley, Bachman, & Johnston, 2000, 2005; Siennick et al., 2014; Staff, Schulenberg, Maslowsky, et al., 2010). We will continue to examine these phenomena as this transition to assumption of adulthood roles takes longer and longer with more recent cohorts (Arnett, 2004; Schulenberg & Patrick, 2012; Schulenberg & Zarrett, 2006).

Finally, there are some important practical advantages to building a system of data collections around samples of high school seniors. The last year of high school constitutes the final point at which a reasonably good national sample of an age-specific cohort can be drawn and studied with this degree of economy. Reliable estimates of change require systematically repeated, large-scale samples, and this in turn requires considerable stress on efficiency and feasibility. The present design meets those requirements.

Omission of dropouts from senior samples

One limitation of the samples of high school seniors is that they do not include in the target population those young men and women who drop out of high school before the last few months of senior year. This excludes relatively small proportions of each age cohort—approximately 8–15% of each age cohort nationally, according to U.S. Census statistics. The dropout rate has been declining in recent years; 8% is the most recent estimate (U.S. Census Bureau, various years); yet this segment is important because we know that cigarette use and illicit drug use tend to be higher than average in this group (Bachman, O'Malley, & Johnston, 1978; Bachman et al., 2008; Johnston, 1973; Mensch & Kandel, 1988; National Institute on Drug Abuse [NIDA], 1991a; Substance Abuse and Mental Health Services Administration [SAMHSA], 2013).

For the purposes of estimating characteristics of the entire age group, the omission of high school dropouts does introduce certain biases; however, the low proportion of dropouts sets outer limits on the bias (Johnston & O'Malley, 1985; Miech et al., 2015).

The effects of missing dropouts are discussed at greater length by Johnston and O'Malley (1985) in "Issues of Validity and Population Coverage in Student Surveys of Drug Use" from *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57) and are estimated in our annual reports on trends in drug use; the summary and conclusions about dropouts from the recent Monitoring the Future monograph (Miech et al., 2015, Appendix A) bear repeating here:

> While we believe that the prevalence of drug use for the entire age cohort is somewhat underestimated in the MTF results, due to the omission of dropouts from the universe of the study, the degree of underestimation appears rather limited for most drugs; more importantly, trend estimates seem rather little affected. Short of having good trend data gathered directly from dropouts, who, fortunately, appear to constitute a shrinking proportion of the total age group, we cannot close the case definitively. Nevertheless, the available evidence argues strongly against alternative hypotheses—a conclusion also reached by the members of the 1982 NIDA technical review on this subject and reflected in the abstract of the review[1]: "The analyses provided in this report show that failure to include these two groups (absentees and dropouts) does not substantially affect the estimates of the incidence and prevalence of drug use."

Some may use the high school data to draw conclusions about changes in drug use for the entire age group. While we do not encourage such extrapolation, we suspect that the conclusions reached would be valid on the whole, because 80 to 85% of the age group is in the surveyed segment of the population, and we expect that changes among those not in school very likely parallel changes among those who are in school. Nevertheless, we recognize the value of periodically checking the results of the present monitoring system against those emerging from other data collection systems using different methods, such as household interviews. It is encouraging to note that when trend data from this study have been compared with trend data from other studies, estimating levels of drug use for the same age groups, the findings have shown a high degree of similarity (Harrison, 2001; SAMHSA, 2012).

We should note here that although the samples of high school seniors do not include dropouts, the samples of 10th graders and especially 8th graders omit relatively few of those who eventually drop out. Thus, these additions to the Monitoring the Future project provide data on those who will become dropouts, as we discuss below.

Large-scale samples

The use of relatively large-scale samples for our base-year data collections from each graduating high school class has several advantages. Most important, many aspects of drug use constitute fairly rare events; in order to have sufficiently large numbers for analysis of such events, the initial sample must be quite substantial. Similarly, the accurate assessment of relatively small changes over time requires large-scale samples. A related advantage is that the smaller numbers of seniors sampled for inclusion in the follow-up surveys can be selected so as to overrepresent heavy drug users. The relationship between base-year and follow-up samples is spelled out later; for present purposes it is

[1] Clayton, R. R., & Voss, H. L. (1982). *Technical review on drug abuse and dropouts.* Rockville, MD: National Institute on Drug Abuse.

sufficient to note that since the cost per respondent is a great deal higher in the follow-up data collections than in the base-year ones, the use of large samples in the base year in order to select smaller and more efficient follow-up samples is quite cost-effective.

Another advantage of the large-scale samples is that they permit the use of several different but overlapping questionnaire forms, thereby substantially increasing the content that can be covered by the study and also reducing the tedium for respondents that would occur if all drug questions were included in a single form. Because a common core of drug use items appears in all questionnaire forms (along with a common core of demographic items), such core dimensions can be related to any of the other questionnaire items irrespective of form. Furthermore, it is actually easier in most schools to obtain large numbers of seniors than to select a small but representative subsample. Given that our base-year data collection procedures are highly cost-effective (in-school, group-administered questionnaires scored electronically), the decision to use large samples of seniors has not substantially increased the overall cost of the study.

Annual data collection

The choice of an annual cycle of data collection—surveying each new senior class rather than every second or third class, for example—has a number of administrative advantages in terms of stability in project staffing and success in maintaining school participation. More important, though, are the scientific and policy formulation benefits that derive from the fact that the annual cycle adds greatly to the sensitivity of the indicators. Clearly, a series of annual data collections provides a faster feedback system than a biennial or less frequent arrangement. We have found that we can reliably detect emerging trends from rather small changes; thus we do not need to wait for large shifts to detect them reliably. It provides further assurance, however, to be able to determine that a shift—even a statistically significant one—is confirmed by at least one measurement subsequent to the two that initially established its existence; an annual system provides such confirmation much faster than a biennial one (i.e., in two years versus four). The detailed data provided by annual measurement also permit fine-grained comparisons among trends. For example, we were able to observe that the rise in concern about the health consequences of regular marijuana use began at least a year earlier than the decline in actual marijuana use (Bachman, Johnston, O'Malley, & Humphrey, 1986; Johnston, 1985). We also were able to detect and report the beginning of the critical upturn in youth smoking that occurred in the early 1990s, even though it was observable only among 8th graders in the initial year.

Finally, the annual cycle permits a more rapid measurement response when a troubling new drug problem emerges. The advent of "crack" is an excellent case in point: we entered it into the spring 1986 measurement, soon after concern about it rose. Because neither the 1985 NIDA Household Survey of Drug Use nor the 1985 Monitoring the Future survey contained questions on crack, the country would have had to wait until late 1987 to get reliable national data on the spread of this serious problem, had we been in a biennial cycle.

Rationale for Annual Nationwide Eighth- and Tenth-Grade Samples

As noted earlier, the Monitoring the Future project was expanded in 1991 to include nationwide surveys of students in the 8th and 10th grades. We stated that an important

limitation of the Monitoring the Future surveys of high school seniors was that they omit dropouts from the sample universe. That omission is surely an excellent reason for extending the study to lower grades, but definitely not the only one. In this section we discuss a number of the reasons for the surveys of lower grades.

First, however, we note that the surveys of 8th and 10th graders, like the ongoing surveys of high school seniors, are large-scale, nationally representative, and repeated on an annual basis. We spelled out in the previous section the rationale for these characteristics in the senior survey, and the arguments apply equally well to the surveys in lower grades:

1. Large-scale samples permit the measurement of rare events, the accurate assessment of relatively small changes, and the possibility of oversampling important subgroups for follow-up analyses.

2. The problems we are studying occur nationwide, and the assessment of trends in these problem areas can best be managed with nationally representative samples.

3. An annual cycle of data collection provides a prompt feedback system; moreover, the use of the same schedule for 8th- and 10th-grade surveys as for seniors permits a broadened range of comparisons in annual reports of drug trends.

More complete representation of age cohorts.

School-based surveys of 8th-grade students miss very few of those who are ages 13–14. Almost no dropping out of school occurs before the end of 8th grade, and thus it is safe to say that an 8th-grade survey of the type employed by Monitoring the Future includes virtually all early (or middle) adolescents in its sampling universe. The very small proportion of adolescents who have serious reading disabilities are not covered by a survey that employs self-completed questionnaires, of course, but otherwise the 8th-grade samples provide good coverage of practically the whole age cohort—in contrast to the senior surveys, which miss those who drop out.

The surveys of 10th-grade students sample adolescents two years later. These surveys fail to include those who drop out early, of course. Such losses are only moderate from a numerical standpoint because most dropping out occurs in 11th and 12th grade after individuals have reached age 16. However, those who drop out earliest are arguably the most seriously troubled adolescents and thus do represent important limitations to the 10th-grade samples. In sum, the 10th-grade samples provide distinctly more complete representation of the age cohort than do the senior-year samples, but not quite as complete as the 8th-grade samples.

Sampling of earlier stages in developmental sequences

The 8th-grade samples, focusing on students four years younger than high school seniors, tap into a distinctly different point in adolescent development. As examples, problems such as daily cigarette smoking, which generally are well developed by the senior year, may only be getting underway in 8th grade; use of marijuana tends to emerge somewhat later; and cocaine use, if it occurs at all, emerges still later (Bachman et al., 2008; Miech et al., 2015). Thus the 8th-grade samples provide a cross-section of younger adolescents who are at the threshold of engaging in all sorts of new behaviors, including

problem behaviors.

The 10th-grade surveys sample students after an important additional two years of growth and development, involving experimentation with a variety of adult-like roles and activities including drug use. Tenth grade is also the time when many young people begin to drive, thus increasing independence from parents, time with peers, and other independent activities (such as dating, part-time work). Thus in several respects, the 10th-grade samples provide a useful "middle ground" between the 8th- and 12th-grade samples—a way of tapping into a middle point in terms of developmental sequences.

Finally, having reliable trend data on three grades allows us to see whether the different age groups are moving in parallel or not. When they are found *not* to be (and when no methodological issues appear to account for the lack of parallel trends), we search for theoretical interpretations. As it turns out, we have found that the younger teens are often the first to show a turnaround in use, which we have interpreted as reflecting their greater sensitivity to changing social forces influencing drug use (Miech et al., 2015).

MEASURES

In this section we present in some detail the measures used in the Monitoring the Future surveys of high school seniors and young adults, and we note the additional measurement areas included in the special surveys of adults at modal ages 35, 40, 45, 50, and 55. Finally, we summarize the content and format of the questionnaires used to survey 8th and 10th graders, beginning in 1991; this can be done rather briefly, because we chose to derive these new questionnaires largely from the senior-year surveys.

Overview and Conceptual Framework: High School Seniors and Young Adults

Our measures include a wide range of behaviors, attitudes, values, experiences, plans, concerns, and general lifestyle orientations. The base-year surveys of high school seniors are kept largely unchanged from year to year, thus permitting us to compare different graduating classes in their responses to the same questions. Similarly, much of the follow-up questionnaire content is kept identical to the base-year content to permit an assessment of longitudinal change on many variables.

For certain descriptive purposes it is useful to distinguish four broad areas of the measurement content:

1. "Monitored" attitudes and behaviors (repeated in base-year and follow-up data collections)
2. Background and demographic characteristics (measured in base year only)
3. High school experiences, role behaviors, and satisfactions (measured in base year only)
4. Post-high school experiences, role behaviors and satisfactions (measured in follow-up only)

Figure 2 presents a schematic representation of these four areas of measurement. Note that the lower boxes on both the left and right sides of the figure are identical in content, representing the fact that the monitored variables are included in both base-year and follow-up questionnaires.

The arrows shown in Figure 2 represent, at a very general level, some of the causal connections that can be explored using the data collected from a single class or cohort. We assume that background and demographic variables will have an impact on the monitored variables measured in both the base-year and follow-up data collections (as shown by Arrows A and B), and also upon post-high school experiences (Arrow C). We expect that some of the attitudes and behaviors measured in the senior year of high school will predict (and perhaps be causes of) post-high school experiences (Arrow D), and they also surely will be strong predictors of later responses to the same questions (Arrow E). Arrow F denotes the important impact we expect post-high school experiences to have on some of the attitudes and behaviors we monitor, but we also acknowledge (with Arrow G) that in some instances causation may be largely in the opposite direction.

This conceptual framework is not a recipe for relational analyses; it simply indicates some of the major classes of relationships that can be examined within the longitudinal panels created for each senior class. Not shown in Figure 2 are (a) cross-cohort analyses and

(b) relational analyses that can be conducted using some monitored variables to explain other monitored variables (e.g., relating attitudes and beliefs about drugs to various patterns of drug use). Many of these and other analysis possibilities are discussed in an earlier publication; Johnston, O'Malley, Bachman, & Schulenberg (2006) includes a more extensive presentation of the conceptual framework that has guided the Monitoring the Future project and which pays particular attention to drug-related matters as outcome behaviors. We reproduce here an updated Figure 3 from that document, which covers essentially the same material as Figure 2, but with a special emphasis on substance use as focal behaviors.

Our earlier publication acknowledged that we have taken ". . . a somewhat eclectic (though certainly not arbitrary) approach to the development of our measurement and reporting" (Johnston, O'Malley, Schulenberg, & Bachman, 2006, p. 9). In that connection, we quoted the following observations made more than four decades ago by Otis Dudley Duncan, and which continue to be applicable:

> . . . It is a rare body of theory in the social sciences (and perhaps even in the natural sciences) that is sufficiently complete and detailed to specify exactly how to accomplish the relevant measurement. On the contrary, many quantities now considered to be well-measured became so only as a result of a long process of trial and error, leading to an evolution of the measurement technique, and ultimately a standardization of it . . .
>
> It can hardly be the case that any serious effort at measurement is undertaken on the basis of a theoretical tabula rasa . . . A fortiori, a social scientist steeped in the conceptual framework of his discipline could not, even if he wanted to, undertake a job of measurement without its being affected by some set of ideas . . . of how the quantity to be measured relates to other variables of interest . . .
>
> . . . But to the degree that one sees a body of understanding as a crescive structure with ragged edges in the neighborhood of recent increments, one should expect the . . . "theoretical" quality of a collection of measurements to emerge pari passu with the growth of the measurements themselves. (Duncan, 1969, pp. 8–9)

Outline of Questionnaire Content: High School Seniors and Young Adults

It is beyond the scope and purposes of this occasional paper to present a detailed listing of questionnaire content that appropriately would be classified into each category in Figure 2. Instead, we present in Table 1 a more detailed outline of the major content areas shown in Figure 2. The table is organized according to the several broad areas of measurement content introduced earlier. Some general comments about each of these areas follow.

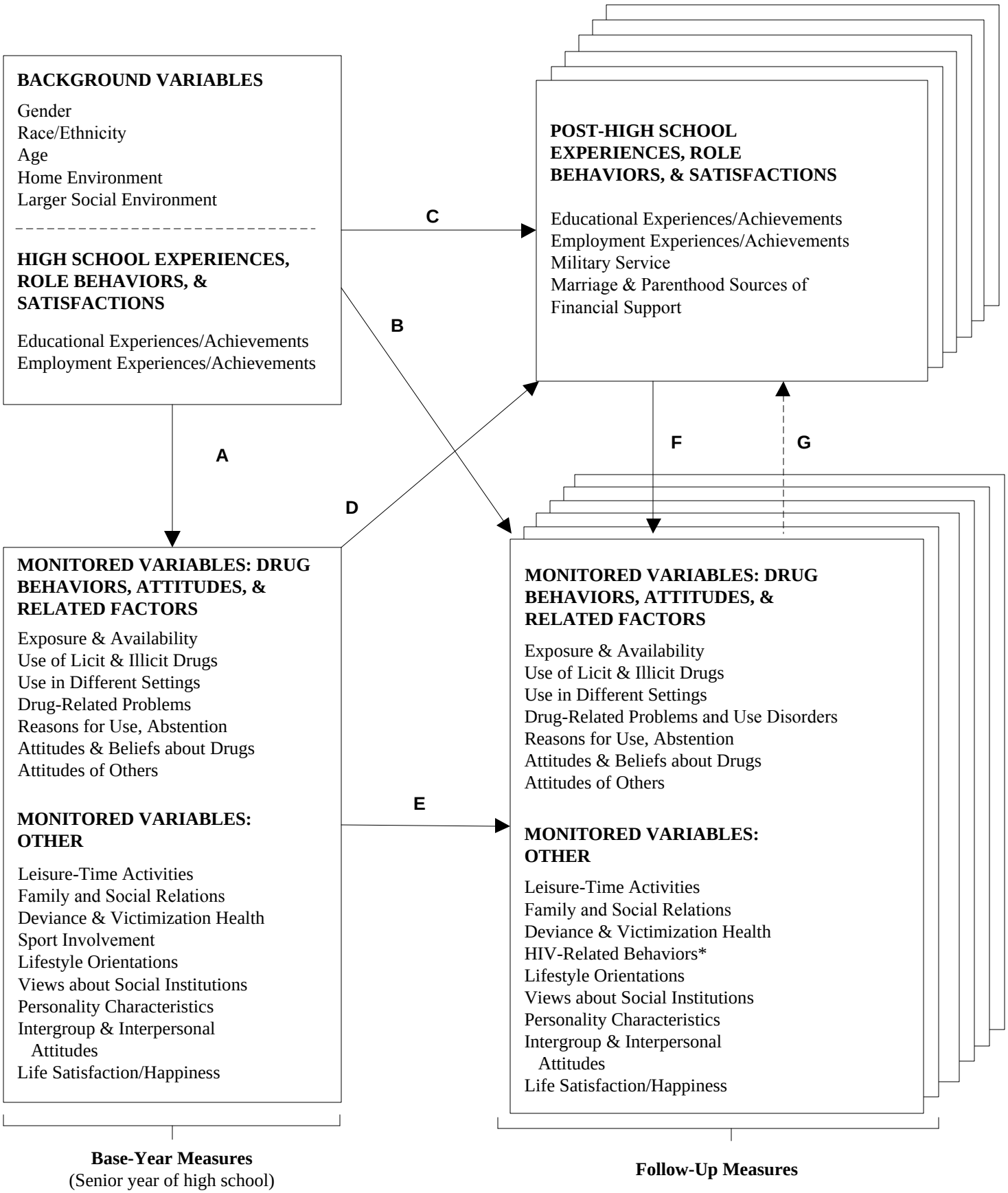
Monitored variables: Drug behaviors, attitudes, and related factors

The measures of drug use and drug-specific attitudes and beliefs lie at the center of this system of monitoring. (They represent about half of the total space available in each of the most recent senior-year and post-high school follow-up questionnaires.) As Table 1 indicates, the questionnaires include extensive usage measures for licit and illicit

substances, plus measures for attitudes about their use, beliefs about their harmfulness, and many other factors relevant to each. (Table 2 shows the full list of the 60 to 100 classes and subclasses of substances on which the study currently reports. The number of drugs covered has grown over the years as new alternatives have been added to the smorgasbord available to young Americans, and most likely it will continue to grow in future years.)

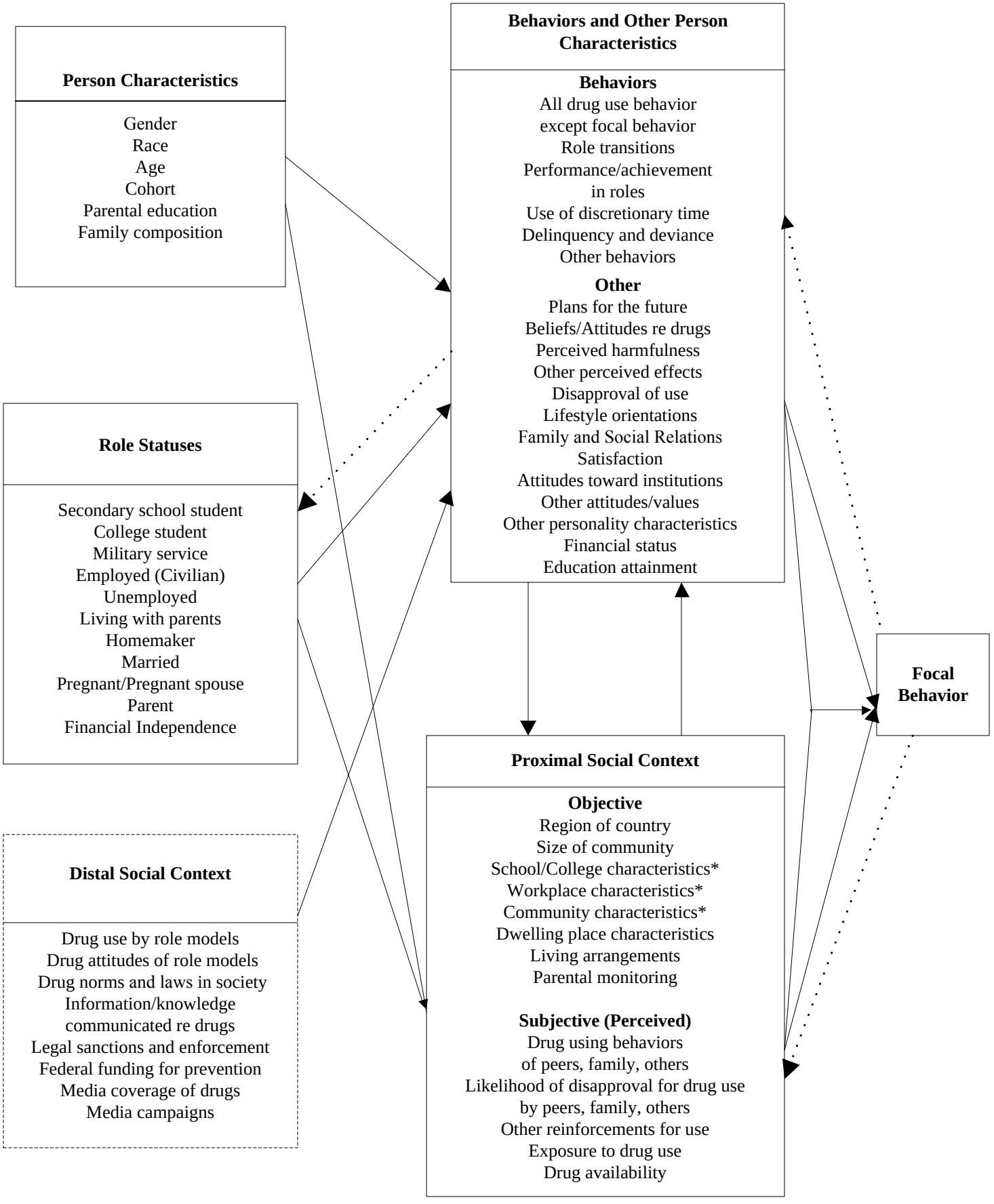
It should be noted that this series of surveys encompasses more classes of drugs than any other recent or ongoing, large-scale, epidemiological investigation. Furthermore, this series provides much more detailed information about most drugs than any other study. These results are made possible by the large numbers of surveyed cases using six questionnaire forms, and which in turn permit us to divide a very large amount of substantive drug-related content into the different questionnaire forms. (As discussed later, the high school senior surveys used five questionnaire forms until 1989, when a sixth was added and the forms were revised. Many of these changes were undertaken in order to include key drug measures in more than one form; only a modest amount of new content material was introduced.)

Figure 2.
CATEGORIES OF BASE-YEAR AND FOLLOW-UP MEASUREMENT



Note: See Table 1 for an expanded listing of variables under each broad category.
* HIV-related questions appear only on follow-up surveys for those at modal ages 21–40.

Figure 3.
FURTHER SPECIFICATION OF THE ELEMENTS IN THE THEORETICAL FRAMEWORK



*Including drug prevention programs and policies.

Table 1. MEASUREMENT CONTENT

MONITORED VARIABLES: DRUG BEHAVIORS, ATTITUDES, & RELATED FACTORS

EXPOSURE AND AVAILABILITY
(various drugs)

- Exposure to people who were using
- Exposure at parties, specifically
- Proportion of friends using*
- Perceived availability*

USE OF LICIT AND ILLICIT DRUGS
(See Table 2 for list of specific classes)

- Lifetime prevalence and frequency of use*
- Annual prevalence and frequency of use*
- Monthly prevalence and frequency of use*
- Daily or near daily prevalence of use
- Quantity consumed (selected drugs)*
- Indirect measures of quantity used per occasion (i.e., degree & duration of highs)
- Mode of administration (selected drugs)
- Injection of any drug for nonmedical use*
- Patterns of multiple drug use: concurrent
- Patterns of multiple drug use: not concurrent
- Age at first use*
- Duration of daily use (marijuana only)
- Attempts to quit*
- Felt need to quit or cut back
- Expected future use*
- Prescribed use of psychotherapeutic drugs
- Use of over-the-counter psychoactives
- Alcohol and substance use disorders (middle adulthood)

ATTITUDES OF SIGNIFICANT OTHERS
(various drugs)

- Parental awareness of use
- Perceived friends' disapproval of use Perceived status attached to use in the school Perceived social connotations of use by respondents' acquaintances
- Perceived pressure to use

EXPOSURE TO DRUG EDUCATION

- Types*
- Rated helpfulness*
- Effect on use*

FREQUENCY OF USE IN DIFFERENT SETTINGS
(various drugs)

- While alone
- With a few friends
- At parties*
- With spouse/date
- With adults
- At home*
- At school*
- In a car*
- During the daytime

SOURCE OF SUBSTANCE

- Where cigarettes were bought
- How drugs used without a doctor's orders were acquired
- Own medical marijuana prescription
- Others' medical marijuana prescriptions

DRUG-RELATED PROBLEMS (various drugs)

- Checklist of 15 problems
- Having "bad trips"
- Auto accidents and violations under the influence
- Driving after drinking, marijuana, other drug use

REASONS FOR USE, ABSTENTION,
AND TERMINATION OF USE (various drugs)*

ATTITUDES AND BELIEFS REGARDING THE USE OF VARIOUS DRUGS

- Perceived harmfulness*
- Personal disapproval*
- Social connotations attached to use*
- Preferred legal status (various drugs)
- Preferences re marijuana decriminalization

EXPOSURE TO DRUG TREATMENT

- Inpatient
- Outpatient

EXPOSURE TO DRUG TESTING

- Pre-Employment
- Post-Employment

EXPOSURE TO ANTIDRUG AND ANTISMOKING ADS*

- Level of recalled exposure
- Credibility of ads*
- Judged impact of ads

Table 1 Cont. MEASUREMENT CONTENT

MONITORED VARIABLES: OTHER

LEISURE-TIME ACTIVITIES
(patterns and frequency of activities)*

PARTICIPATION IN ORGANIZED ACTIVITIES, INCLUDING SPORTS

- In school
- Out of school

DELINQUENT AND OTHER DEVIANT BEHAVIOR

- Theft and vandalism*
- Interpersonal aggression*
- Driving violations and accidents
- Drunk driving and exposure to drunk driving*
- Violations and accidents under the influence of various drugs
- Carrying weapons to school

VICTIMIZATION

- Theft and vandalism*
- Interpersonal aggression*

VIEWS ABOUT ALIENATION FROM SOCIAL INSTITUTIONS

- Educational system and its opportunities
- Economic system and its opportunities
- Government and political leadership
- Military system
- Other social institutions

INTERGROUP AND INTERPERSONAL RELATIONSHIPS AND ATTITUDES

- Intergenerational relations
- Race relations
- Sex discrimination
- Radius of concern for other people

HEALTH: HABITS, SYMPTOMS, AND VALUES

- Health and fitness orientation
- Dietary habits and physical activity
- Amount of sleep
- Health concerns/difficulties
- HIV-related behaviors**
- Medical care contact*
- Height and weight

LIFESTYLE VALUES, ATTITUDES, BEHAVIORS

- Educational values, preferences, expectations, and experiences*
- Vocational values, occupational aspirations, and experiences*
- Material lifestyle, aspirations, and expectations*
- Family structure, marriage, and sex role preferences and experiences*
- Religious affiliations, practices, and views*
- Political affiliations, participation, and views
- Views on family planning and population
- Views on conservation and pollution control
- Distributive equity: Concepts of equity and sharing of resources
- Concern with social problems facing the nation
- Values, attitudes, and expectations about social change*
- Deviance proneness

LIFE SATISFACTION/HAPPINESS

- Global satisfaction*
- Specific satisfactions (13 domains)

ADDITIONAL PERSONALITY CHARACTERISTICS AND AFFECTIVE STATES

- Self-esteem*
- Internal control (locus of control)
- Proneness for risk-taking*
- Loneliness*
- Depression
- Optimism
- Trust in others*
- Life goals

BACKGROUND VARIABLES (base-year data collection only)

PERSON CHARACTERISTICS

- Gender*
- Race/Ethnicity*
- Age*

LARGER SOCIAL ENVIRONMENT

- Region*
- Urbanicity (senior year)*
- Urbanicity while growing up

HOME ENVIRONMENT

- Parental education*
- Household composition*
- Size of family of origin
- Birth order
- Mother working*

Table 1 Cont. MEASUREMENT CONTENT

SCHOOL EXPERIENCES, ROLE BEHAVIORS, AND SATISFACTIONS

(Base-year data collection only)

EDUCATIONAL EXPERIENCES
- Grades in school*
- Self-concept of intelligence and school ability
- Curriculum*
- Satisfaction with school experiences*
- Absenteeism and cutting classes*
- Perceptions of school characteristics and valued student characteristics
- Selected school characteristics (derived from aggregated data)*
- Victimization in school*
- History of being held back*
- Liking school, problems at school
- School sports
- Feeling safe at school

EMPLOYMENT EXPERIENCES
- Pay*
- Hours worked*
- Nature of job held*

POST-HIGH SCHOOL EXPERIENCES, ROLE BEHAVIORS, AND SATISFACTIONS

(follow-up data collection only)

HOME AND LARGER ENVIRONMENT
- Region
- Urbanicity
- Household composition
- Type of dwelling

EDUCATIONAL EXPERIENCES
- College attendance
- 2- or 4-year institution
- Size of school
- Academic performance (grades)
- Field of study (academic major)
- Satisfaction with educational attainment/experience
- Fraternity/sorority memberships

EMPLOYMENT EXPERIENCES
- Pay
- Type and status of job
- Organizational setting
  - Type
  - Size
- Unemployment experiences
- Job satisfaction

MILITARY SERVICE
- Pay
- Rank

MARRIAGE AND PARENTHOOD
- Marital/engagement status
- Cohabitation
- Pregnancy
- Number of children
- Satisfaction with relationships

* These items appear on the 8th- and 10th-grade questionnaires, in addition to the 12th grade.
** HIV-related questions appear only on follow-up surveys for those at modal age 21 or older.

The variables in this large category of monitored drug behaviors and attitudes might be thought of in terms of the following subcategories:

1. Descriptors of the patterns of drug-using behavior, including frequency, quantity, recency, multiple concurrent use, multiple nonconcurrent use, and grade at first use.

2. Descriptors of the social and physical setting in which drug use takes place, as well as the time of day. (These variables are of interest descriptively, and they could also prove useful in developing a more complex typology of drug users when used in combination with variables in Category 1.)

3. Self-reported reasons for use, abstention, and termination.

4. Self-reported consequences (or problems) resulting from drug use, including effects on automobile accidents, other impaired driving, various interpersonal relationships, cognitive functioning, emotional stability, energy level, physical health, school performance, work performance, marital stability, and trouble with the police. Starting in middle adulthood at age 35, this includes measures of alcohol, marijuana, and other illicit substance use disorders that cover both abuse and dependence.

5. Aspects of the immediate social environment likely to contribute to respondents' use (and attitudes about use) of various drugs, including extent of exposure to use, friends' use, availability, parental awareness of use, perceived attitudes of friends and parents, perceived norms among the high school student body regarding drug use, perceived social connotations (or labeling) of drug use by friends, exposure to drinking and drug use at parties, exposure to drug education in the school curriculum, and exposure to advertisements about and depictions of substance use in the media.

6. Various attitudes and beliefs regarding drugs and drug-control policies, including the perceived harmfulness of various drugs, personal disapproval of their use, the connotations associated by the respondent with being a user of different types of drugs (including cigarettes), and preferences regarding legal status for different drugs.

Table 2. CLASSES OF ABUSABLE SUBSTANCES INCLUDED IN THE STUDY[1]

Any illicit drug[*]
Any illicit drug other than marijuana[*]
Any illicit drug, including inhalants[*]
Cannabis[*], plus
- Marijuana, specifically
- Hashish, specifically

Hallucinogens[*], including
- LSD[*], specifically
- Hallucinogens other than LSD[*†]
- PCP, specifically
- MDMA[*] ("Ecstasy", "Molly")

Sedatives[†], including
- Barbiturates[*], specifically
- Methaqualone, specifically
- Rohypnol[*], specifically

Tranquilizers[*†]
Amphetamines[*†], plus
- Methamphetamine[*]
- Crystal Methamphetamine ("Ice"), specifically
- Ritalin[*],
- Adderall[*]
- Stimulant-type and nonstimulant prescribed medication for ADHD[*]
- Synthetic stimulants ("Bath salts")
- Energy drinks

Cocaine[*], plus
- Crack[*], specifically
- Powder cocaine[*], specifically

Heroin[*]
- Heroin with a needle[*]
- Heroin without a needle[*]

Narcotics other than Heroin[*†], including
- OxyContin[*]
- Vicodin[*]

GHB[*]
Ketamine[*]
Inhalants[*]
Alcohol[*], plus
- Beer[*], specifically
- Wine, specifically
- Wine Coolers[*], specifically
- Hard Liquor, specifically
- Flavored Alcohol Beverages[*],

Cigarettes[*AA]
E-cigarettes
Tobacco using a hookah
Small and large cigars
Kreteks[*a]
Smokeless Tobacco[*], dissolvable tobacco, snus
Anabolic Steroids[*]
Androstenedione[*]
Creatine[*‡]
Over-the-Counter Psychoactive Substances, including
- Diet Aids
- Stay-Awake Stimulants
- "Look-Alike" Stimulants

Non-prescription Cough or Cold Medicines[*]
Any drug by injection
Salvia[*]
Provigil
Synthetic marijuana

[1]All classes have been included in the 12th-grade base-year and the 12th-grade follow-up questionnaires except for a few that are not included in the follow-up questionnaires—Methaqualone, the nitrite inhalants, GHB, Ketamine, Ritalin, bidis, kreteks, androstenedione, creatine, and smokeless tobacco.
[*] Included in 8th- and 10th-grade questionnaires.
[†] A more detailed listing of specific drugs in this class is asked of 12th graders, and the results are reported annually in Appendix E of *Volume I* (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015).
[‡] Not a psychoactive substance.
[a]These substances were dropped from the 8th- and 10th-grade questionnaires in 2006.

Monitored variables: Other relevant social values, attitudes, and behaviors

The other monitored variables include views about personal lifestyles, confidence in social institutions, intergroup and interpersonal relations and attitudes, and additional social and ethical issues. Taken together, these variables comprise roughly another 30% of total questionnaire space. Many of these dimensions are related to the changing life experiences of young adults in America, and many have been shown to relate—directly or indirectly—to changing patterns of drug use.

We monitor some lifestyle measures known to be connected to the use of certain drugs and others that we hypothesize to be related. Many of the repeatedly measured variables are not hypothesized to fall into the lifestyle measures category but nevertheless are considered important as predictors and/or consequences of use. Their label, *monitored*, reflects the periodicity of their measurement rather than their position in any causal scheme. A number of the monitored variables are known or hypothesized predictors of use (e.g., self-esteem, employment) while others are hypothesized consequences of use (e.g., somatic symptoms, other health symptoms, accidents, importance placed on various life goals).

It is not possible, nor would it be appropriate, to devote the same level of data collection effort to each of these areas as we devote to drug use and attitudes. Our strategy has been to make use of multiple questionnaire forms in which basic drug use measures are included for all respondents, but the other monitored topics (including attitudes, beliefs, and perceptions about drugs) are now spread out among six different subsamples (with some sets of drug-related items appearing on more than one of the six questionnaire forms). This strategy permits a much more extensive measurement of both the drug variables and the nondrug variables than would otherwise be feasible.

Background variables

A number of background dimensions are measured in the initial data collection, including gender, race/ethnicity, age, parental education (an indicator of socioeconomic level), region, and urbanicity. The importance of these factors to various types of drug use has been carefully documented throughout the life of the study including, for example, for periods extending from 1975 through 1979 (Bachman, O'Malley, & Johnston, 1980; Bachman, Johnston, & O'Malley, 1981); 1986 (Bachman, O'Malley, & Johnston, 1986); 1989 (Bachman, Johnston, & O'Malley, 1990; Wallace & Bachman, 1991); 1997 (Brown, Schulenberg, Bachman, O'Malley, & Johnston, 2001); 2000 (Johnston, O'Malley, & Bachman, 2001); and 2005 (Johnston, O'Malley, et al., 2006). Their importance as control and conditioning variables in most multivariate analyses is self-evident.

Experiences, role behaviors, and satisfaction in high school

We include in this category a number of measures of school performance and adjustment, because their connection with illegal drug use and other delinquent behavior has been demonstrated by our own earlier research in the Youth in Transition study (Bachman, 1970; Bachman, Green, & Wirtanen, 1971; Johnston, 1973; Bachman & Johnston, 1978; Johnston, O'Malley, & Eveland, 1978) and confirmed by later analyses with Monitoring the Future data (Bachman et al., 1980; Bachman, O'Malley, & Johnston, 1981; Bachman, O'Malley, & Johnston, 1986; Bachman, Schulenberg, O'Malley, & Johnston, 1990; Bachman et al., 2008; Brown et al., 2001; Bryant et al., 2003; Patrick,

Schulenberg & O'Malley, 2013; Schulenberg, Bachman, O'Malley, & Johnston, 1994; Staff, Schulenberg, & Bachman, 2010). This category also includes measures of the school social environment (peer norms, bases of peer status, student-teacher relations, counselor contact), student composition (in terms of gender, race, socioeconomic level, etc.), structural features of the school (size, curricular composition, drug use prevention courses), curriculum of the student, behavior of other students (delinquency, victimization, absenteeism, drug use), and so on.

While still in high school, a substantial proportion of American young people hold paying jobs, (Bachman, Bare, & Frankie, 1986; Bachman, Johnston, et al., 1981; Bachman & Schulenberg, 1991, 1993; Cole, 1980; Staff, Messersmith, & Schulenberg, 2009; Staff, Johnson, Patrick, & Schulenberg, 2014). Further, while educators earlier presumed that such work constructively influences young people (Coleman & the Panel on Youth, 1974), more recent work by ourselves and others has brought this assumption very much into question by showing that students working longer hours (and thus earning more) were also more likely to use drugs (Bachman, 1983; Bachman, Johnston, et al., 1981; Bachman, Safron, Sy, & Schulenberg, 2003; Bachman & Schulenberg, 1991, 1993; Bachman, Staff, O'Malley, Schulenberg, & Freedman-Doan, 2011; Cole, 1980; Greenberger & Steinberg, 1979, 1986; Safron, Schulenberg, & Bachman, 2001; Staff, Osgood, Schulenberg, et al., 2010; Staff, Schulenberg, & Bachman, 2010). Thus the measures of hours worked and income earned during senior year, which also are contained in the present study, can act not only as dependent variables in relation to drug use (following the anomie and impaired social performance hypotheses), but also as independent variables predictive of drug use. MTF also measures total income from all sources.

Included in the base-year questionnaires are certain measures of interpersonal relationships, particularly with parents. Perceived consistency between parents' and students' attitudes is measured in a number of domains. Additional measures include serious fights with parents and satisfaction with relationships with parents. There is also a measure of adult contact (proportion of time spent with adults over 30).

Post-high school experiences, role behaviors, and satisfactions

Social environments such as college, military service, civilian employment, and living arrangements, as well as the role responsibilities involved in marriage and parenthood, are all known to be linked to patterns of drug use and attitudes (Bachman, O'Malley, et al., 1978; Bachman et al., 1984, 1997, 2002; Johnston, 1973; O'Donnell, Voss, Clayton, Slatin, & Room, 1976; Schulenberg et al., 2000, 2005; Siennick et al., 2014; Staff, Schulenberg, Maslowsky, et al., 2010). It is probable that such areas of post-high school experiences will continue to influence and be influenced by drug use and attitudes—though there is reason to believe that the patterns of that relationship will change as the experience of the transition to adulthood continues to change (IOM/NRC, 2014). Thus, for each of the areas noted above, we measure key experiences during the years following high school.

Our follow-up questionnaires include measures of adjustment and attainment in these environments (pay, grades in college, college completion, satisfaction, employment status), both as potential consequences of drug use and as potential causes. For similar

reasons, we also measure the quality of interpersonal relationships with key others in the respondent's life (spouse, children, parents, older adults, friends). Finally, we measure some detailed features of the respondents' major social environments, such as size and type of school attended, major field of study, size and type of employing organization, educational and employment status of spouse, number and age of children, and type of dwelling in which each respondent resides. All of these measures provide opportunities for examining important subgroups separately in terms of drug use and other behaviors.

Relative emphasis assigned to different content areas

We noted parenthetically that about half of the total space in each senior-year and each post-high school questionnaire is devoted to items that deal explicitly with drugs (including behaviors, perceptions, attitudes, and beliefs). About 20% of the total space is devoted to background variables in the case of base-year questionnaires, and to post-high school experiences in the case of follow-up questionnaires. The remaining space is devoted to questions monitoring other relevant social values, attitudes, and behaviors.

It may be useful at this point to spell out why this study monitors many variables that do not deal explicitly with drugs. The rationale has both a substantive side and a practical side.

From a substantive standpoint, many of the monitored variables are presumed or known to be correlates of drug behaviors (e.g., social and political alienation, delinquency, religiosity), and their inclusion permits us to examine changes over time in the absolute and relative importance of their correlations with drug use. Other monitored variables are also likely to show important associations with drug use, even though some such associations have not been demonstrated (or even hypothesized) in prior studies of the correlates of drug use. Monitoring these several factors in the dynamics of drug use can provide a better understanding of them not only in a cross-sectional sense, but also in terms of their importance across a particular part of the life cycle and across a particular historical period (e.g., Johnston & O'Malley, 1978). Further, we expect that various lifestyle orientations and social and political attachments (or detachments) will show shifting relationships with drug use. Thus, in addition to providing a better understanding of things as they are, the monitoring of these variables gives us accurate snapshots of the past and may provide leading indicators of things to come.

There are also important practical advantages to including some questionnaire content that extends beyond drug use and closely related topics. Our experience clearly indicates that in surveying a "normal" or representative cross section of youth, the best way to gather substantial amounts of information about drug use and explicitly drug-related factors is to embed those topics into a broader set of issues of concern to youth. Entrance into schools, cooperation by teachers and parents, and both initial and follow-up participation by students are all greatly enhanced by being able to present a study that is a genuinely broad exploration of the lifestyles and values of youth, rather than simply a study of youth and drugs. Even with the breadth of coverage provided in our questionnaires, we still find a few respondents and school officials who object to the extent of drug emphasis; however, such reactions are infrequent. Much more frequent are positive responses about the range of interesting and important topics that are covered.

Questionnaire Organization and Format: High School Seniors and Graduates

Six questionnaire forms

The base-year surveys of high school seniors presently use six questionnaire forms; follow-up surveys of graduates use a matched set of forms (five forms were used prior to 1989). The use of multiple forms is made possible by the large number of high school seniors we survey in each base-year data collection; it is made desirable by our wish to monitor many more variables than can be covered in a single questionnaire requiring only one class period to complete. Keeping the survey administration within a single class period minimizes the disruption of the school's schedule and encourages a higher proportion of schools to participate. In addition, a 45- to 50-minute-long questionnaire has a better chance of maintaining respondent involvement than a longer one, particularly during the follow-up phase.

We will not review here the differences in questionnaire content from one form to another; the complete content of the senior surveys is included in an annual series reporting univariate and selected bivariate response distributions for all 12th-grade questionnaires (e.g., Bachman, Johnston, & O'Malley, 2014). It is sufficient for present purposes to note that Form 1 deals in greater detail with drug use and reasons for drug use than do any of the remaining forms. Because these detailed questions about drug use require more space than most other questions, Form 1 requires more pages (but generally does not take longer to complete due to branching around inapplicable questions). Forms 2 through 6, both base-year and follow-up, are 12 pages long; Form 1 is 20 pages long in the base-year version and 16 pages long in the follow-up.

Matching base-year and follow-up forms

All respondents selected for longitudinal study receive follow-up questionnaires that match their base-year forms. Thus, in effect, for each of the classes of 1976 through 1988 there are five parallel longitudinal panels, corresponding to Forms 1 through 5; for the classes of 1989 onward there are six.

Advantages and limitations of multiple forms

The major advantage of the use of multiple forms is that it enables much greater measurement coverage. A corollary advantage is that the many questions about drug use, drug attitudes, drug availability, and so on are spread across several forms. This dispersion avoids the serious problems of respondent fatigue and boredom that are endemic to drug research generally and that would be extreme in the case of this study, which has so much instrumentation about drugs.

The use of multiple forms adds a complexity at the analysis stage. Because not all variables in the study are measured on the same set of respondents, not all can be included in the same multivariate analyses except through "planned missingness" analytic strategies (see, for example, Graham, Taylor, and Cumsille's [2001] chapter on planned missing data designs in *New Methods for the Analysis of Change*). However, we believe this problem is limited. First, we made extensive efforts during the initial questionnaire design to minimize this problem by: (a) including the major dependent variables dealing with drug use in all questionnaires, (b) including the most obvious control or moderating variables in all questionnaire forms (these include measures of demographic and family

background characteristics, plus certain measures of school and work status), and (c) including in the same questionnaire factors that we felt a priori should be examined together. Second, in 1989 we built a new questionnaire, Form 6, primarily by selecting key drug-related items from other questionnaire forms in order to have them appear together for purposes of correlational analyses. (In addition, this method increased the numbers of cases for these questions, now asked on two out of six forms rather than just one out of five). Third, we made additional revisions in 1990 so that four of the six questionnaire forms now include measures of (a) perceived risk; (b) disapproval; (c) friends' use of cigarettes, alcohol, marijuana, and cocaine; and (d) perceived availability of the illicit drugs marijuana and cocaine. Thus we have substantially expanded the potential for correlational analyses involving drug-related perceptions and attitudes (see, for example, Bachman et al., 2002).

Questionnaires for follow-ups at modal ages 35, 40, 45, 50, and 55

We noted earlier that we end the biennial sequence of follow-ups after the sixth such survey (which occurs 11 or 12 years after senior year at modal ages of 29 or 30). At 17 years after graduation (modal age 35), we then survey the full retained follow-up samples. Similar instruments are used to survey these respondents five years later at modal age 40, and at succeeding five-year intervals: modal ages 45, 50, and 55. The single forms used in these follow-ups are all 16 pages long.

The surveys at ages 35, 40, 45, 50, and 55 contain both continuing content and new content particularly suited to those in their mid-30s and older. Because we use only one questionnaire form for each of these ages rather than multiple forms, much of the material spread across the six forms used for the age 19–30 follow-ups is not included. We continue to include the core measures of drug use that currently appear in all questionnaire forms, thereby ensuring the ability to extend the analysis of age-related trends and patterns in drug use. These questionnaires also include key drug perception and attitude items from the base-year and follow-up questionnaire forms.

The new (i.e., age 35+) questionnaire content involves substance abuse and dependence and some retrospective data to fill gaps in the cumulated panel data record (e.g., fairly rapid shifts in marital status that may not have been detected by follow-up "snapshots" every two or every five years). It also includes information about spouses and children, and fairly extensive information about current employment. Each of these new content areas is available for analysis in conjunction with the drug use histories accumulated from the senior-year survey and the post-high school surveys.

The new content material was adapted successfully to the optically scanned questionnaire format used throughout the Monitoring the Future study—a format very familiar to panel respondents who have completed prior questionnaires. Project staff must do special coding of a few open-ended items before machine scanning; however, the methods (mailed, optically scanned questionnaires with continued guarantees of confidentiality) are generally quite similar to the first six (age 19–30) post-high school surveys.

Content and Format of Eighth- and Tenth-Grade Questionnaires

Before initiating the 8th- and 10th-grade surveys in 1991, we needed to make several broad decisions concerning questionnaires. First, could we use the senior-year questionnaires, with virtually no changes, in surveys of lower grades? We decided against using the same full questionnaires for a number of reasons, including our judgment that the questionnaires for lower grades should be somewhat shorter and less complex than those administered to seniors.

Second, should the questionnaires for 8th and 10th graders differ from each other? We believed that any differences would not be worth the additional costs and complexities; in effect, we decided that questionnaires designed for 8th graders would also serve quite well for 10th graders.

Next, to what extent would the new 8th- and 10th-grade questionnaires parallel the senior-year questionnaires in format and content? Our general decision was to use items identical to those in the senior surveys whenever possible but not attempt the same breadth of coverage. The several factors that weighed in behind this decision are discussed below.

Questionnaire length and difficulty

The senior-year questionnaires were developed and refined so as to occupy a full class period. Our goal for the 8th- and 10th-grade questionnaires was to do the same, but we recognized that some students in 8th grade (and, to a lesser extent, 10th grade) would be more limited than seniors in their reading skills, and thus would require questionnaires a bit shorter and with lower difficulty levels. We aimed for 10–20% less questionnaire material (i.e., 10–20% fewer items) in the 8th- and 10th-grade questionnaires than in the senior questionnaires. (The new questionnaires still cover 12 pages, but less densely than do the senior surveys.) We also decided that some items in the senior surveys that asked relatively complex questions would be above the difficulty level of some 8th- and 10th-grade readers, and thus did not consider those questions for inclusion.

Number of questionnaire forms

We discussed in a previous section the advantages and limitations of multiple forms as related to the questionnaires for high school seniors and young adults. Although the same basic issues were relevant to our decision concerning the 8th- and 10th-grade questionnaires, several considerations led us to a distinctly different outcome. Specifically, the 8th- and 10th-grade questionnaires initially involved only two forms, and the majority of the material (the first two thirds) was identical across those two forms.

The primary consideration leading to fewer forms was the large amount of material judged essential for inclusion in all forms, leaving rather little space for "form- specific" items. Our decision to reduce the overall number of questionnaire items, coupled with the need to cover all of our basic measures of drug use and demographic material, left us with less space available for other material. Moreover, the importance of being able to conduct correlational analyses among drug-related measures, a consideration that prompted the revisions of the senior and follow-up forms in 1989 and 1990, argued for including many drug-related measures on a single form, leaving still less room for other

material.

The two forms served us well from 1991 to 1996. In 1997 we decided that it was important to increase coverage of tobacco-related behaviors, in light of the major changes occurring in the nation regarding youth and tobacco. Accordingly, because the two existing forms were already too long for added material, we created two new forms. The strategy was to add the new tobacco-related material (questions about ease of access to cigarettes, brand smoked, etc.) to each of the new forms, retaining most but not all of the original material from each of the original forms. Each of the two original (unchanged) forms was administered to a random one third of respondents from 1997 on, while each of the two new forms was administered to one sixth. Thus, the new material related to tobacco was available from one third (one sixth times two) of the sample, while original material was available from the entire sample (in the case of material that was retained in all forms), or from one third (in the case of material that was retained in one of the original forms, but not included in the new forms).

Content covered

Nearly all of the items used in the original 8th- and 10th-grade questionnaire forms were selected (usually unchanged) from among the much larger set of items in the senior-year forms. The conceptual framework and content of the senior questionnaires are described in detail above. We have also noted in Tables 1 and 2 those variables that appear also in the 8th- and 10th-grade forms. In general, most of the monitored variables having to do with drugs (own use, friends' use, perceived risks, disapproval, etc.) are included (representing a bit more than half of the total questionnaire space), along with most of the background variables and measures of educational and employment experiences. Coverage of the "other" monitored variables, for reasons discussed earlier, is considerably more limited in the 8th- and 10th-grade forms.

Pretesting of 8th- and 10th-grade questionnaires

Although the questionnaire content and survey procedures used for 8th- and 10th-grade students were closely adapted from the high school senior surveys, we still considered it necessary to carry out some pretesting of the forms and procedures. Draft questionnaires were administered in several classrooms of 8th-grade students, plus a small group of 10th-grade students. (The greater emphasis on 8th graders was based on our assumption that whatever worked for 8th graders would also prove acceptable for 10th graders.) The completed questionnaires and subsequent discussions led to a small number of revisions in items. Additionally, the discovery that most respondents finished early and considered the questionnaires too heavily focused on drugs led us to add some nondrug material at the end of the questionnaire forms.

SAMPLING AND DATA COLLECTION PROCEDURES

In this section we detail the sampling and data collection procedures for the annual surveys of high school seniors, the follow-ups of high school graduates, and the surveys of 8th and 10th graders. The measurement instruments employed in each of these surveys are self-completed questionnaires using closed-ended items and designed for optical scanning. (The preceding "Measures" section contains information about questionnaire content and format.)

Base-Year Data Collections from High School Seniors

The design involves data collections from high school seniors during the spring of each year, beginning with the class of 1975. As indicated in Figure 1, each new senior-year data collection represents the start of a panel study of that high school class. Thus we refer to each senior class survey as a base-year data collection. (Figure 1 begins with the class of 1976, because we did not include the class of 1975 in follow-up surveys after 1977.)

Samples of seniors

The base-year data collection each year takes place in approximately 110–120 public high schools and 15–20 private high schools, selected to provide an accurate cross-section of high school seniors throughout the 48 coterminous states. The stratified random sampling procedure is multistage (Kish, 1965), as follows: Stage 1 is the selection of particular geographic areas, Stage 2 is the selection of one or more high schools in each area, and Stage 3 is the selection of seniors within each high school.

Stage 1: Geographic areas

The geographic areas used in this study are the primary sampling units developed for use in the Survey Research Center's nationwide surveys. In addition to the 28 largest metropolitan areas containing about one third of the nation's population, there are 136 other primary areas.

Stage 2: Schools

In the major metropolitan areas, two or more high schools often are included in the sampling design; in most other sampling areas, a single high school is sampled. In all cases, the selections of high schools are made with probability proportionate to the size of the senior class. The larger the senior class (according to recent records), the higher the selection probability assigned to the high school. (For a discussion of this procedure and its advantages, see Kish, 1965, pp. 220f.) For practical reasons, schools with senior classes smaller than 25 are usually excluded from the sample; this has the effect of omitting only about 3% of all seniors from the sampling frame. If a sampled school is unwilling to participate, a replacement school is selected from the same geographic area, as discussed in the later section, "Representativeness and Validity."

Stage 3: Students

Within each selected school, up to about 350 seniors may be included in the data collection. In schools with fewer than 350 seniors, the usual procedure is to include all of them in the data collection when feasible. Otherwise, and in larger schools, a subset of seniors is selected either by randomly sampling classrooms or by some other random method that is convenient for the school and judged to be unbiased. All respondents in a school are assigned a sample

weight that takes into account variations in the sizes of samples from one school to another, as well as the (smaller) variations occurring at the earlier stages of sampling.

The result of this three-stage sampling procedure each year is a nationally representative cross-section of about 13,000 to 18,000 young men and women in the senior classes of about 120 to 140 high schools throughout the United States. Because many of the schools are located in or near the primary sampling units used by the Survey Research Center for personal interview studies, we are able to use local SRC field representatives to administer the questionnaires in the schools. The questionnaire administration methods are described later; what is important to note here is that the particular area sampling procedure used in Stage 1 makes possible this effective and highly cost-efficient field procedure.

We should note that each survey of seniors now employs six questionnaire forms, as discussed earlier in the "Measures" section. For the key drug use and demographic measures that appear in all forms, the full sample of seniors provides data each year. For other measures, the minimum sample size averages around 2,300 or more seniors each year—more if the measure appears in multiple forms.

Two-year participation by sampled schools

One other important feature of the base-year sampling procedure is that each school (except for half of those in the initial 1975 sample) is asked to participate in two data collections, thereby permitting us to replace half of the total sample of schools each year. This means, for example, that the 1991 sample consisted of two distinct half-samples: roughly 65 schools that had already participated in the 1990 data collection before participating in 1991, plus another 65 schools that participated for the first time in 1991 and would participate again in 1992.

Very few schools take part for one year and then decline to participate in the second. One advantage of having schools participate for two years is administrative efficiency; it is a costly and time-consuming procedure to recruit a school, and a two-year period of participation cuts down that recruiting effort substantially. Another advantage is that whenever we notice a shift in scores from one year to the next, we can check to be sure that the shift is not attributable to some differences in the newly sampled schools. Indeed, we make such checks routinely.

School recruiting procedures

Early during the fall semester, a letter inviting participation is sent to the principal of each recruited school by MTF's principal investigator. The letter and accompanying materials describe the study (copies of these materials are included in the appendices below). The letter also explains what participation would mean for the school, and it indicates that we will be calling within a few days to answer questions and determine their intention. A staff member follows up with a telephone call, deals with any questions or problems (as is often necessary), and makes arrangements to contact and seek permission from any other school officials that the district requires.

Securing the cooperation of selected schools is often a long and arduous process. No school is an isolated unit; each is part of a larger local school district or system. Frequently, approval for a school's participation in the survey is required from a school or district official

in addition to the principal of the selected school. In some cases this is the superintendent or, particularly in the larger systems, an official (or review committee) whose approval is required for all research conducted in the system. Further complicating the process is the considerable variation in local rules governing research conducted in schools. School boards, teacher associations, and parent associations all may have a voice in whether a school participates.

The standard procedure for recruiting a school involves an initial telephone contact with the principal after he or she has received a letter of invitation. If a school refuses, the refusal often occurs at this point. The reasons most commonly given are objections to using student time for surveys, over-participation in surveys that year, or some temporary crisis or disruption in the system that year (mandatory testing, a teacher strike, budgetary difficulties, a disruptive event). Other less commonly given reasons include disapproval due to survey content, and concerns about adverse parental reaction to a survey dealing with social issues. If refusals occur at higher levels, the reasons given tend to be the same as those listed above.

Once the project staff member obtains the school's agreement to participate, he or she makes arrangements by phone or email for selecting a random sample of seniors (when the school is large) and for administering the questionnaires. A local Survey Research Center representative is assigned to carry out the administration, and a specific date for the survey is mutually agreed upon.

Pre-administration arrangements

The local SRC representative visits the participating school about two weeks before the actual administration date to meet the teachers whose classes will be affected. The representative provides a brochure describing the study, a brief set of guidelines about the questionnaire administration, and a supply of flyers to be distributed to the students a week to 10 days before the questionnaire administration. The guidelines to the teachers provide a suggested announcement to students when distributing the flyers. (Samples of these advance materials are included in the appendices.)

The students' first acquaintance with the study usually comes via parents, because two weeks prior to the administration date, a first-class letter is sent to the parents of each sampled student, along with an informational flyer about the study. These materials make clear that participation in the study is voluntary. (The project provides all necessary materials for this mailing, including postage, but the schools provide parents' names and addresses, usually on labels that are applied at the school.) Those parents choosing not to have their child participate in the study are asked to sign a form included at the bottom of the letter, and return it to a specified person at the school (a procedure termed "active parental *dissent*"). Some schools require that parental consent be obtained in writing before students can participate ("active parental *consent*"). In all cases, the project follows the school's requirements.

Later, when teachers announce the study in the classroom, they distribute additional copies of the informational flyer to the students. The teachers are asked to stress that the questionnaires used in the survey are not tests and that there are no right or wrong answers. The flyer tells students that they will be invited to participate in the study, points out that their participation is strictly voluntary, and stresses confidentiality (including a reference to the fact that the Monitoring the Future project's special government grant of

confidentiality allows us to protect their answers). The flyer also presents positive reasons for participation (e.g., the topics are interesting, the data will be important, and results will be widely distributed).

Questionnaire administration

The local representatives of the SRC and their assistants conduct the questionnaire administration in each school, following standardized procedures detailed in a project instruction manual. The questionnaire administrations take place in classrooms during normal class periods whenever possible; however, circumstances in some schools require the use of larger group administrations. Teachers are asked only to introduce the SRC staff members, provide enrollment and attendance information, and remain present in order to help guarantee an orderly atmosphere for the survey. Teachers are urged to avoid walking around the room, lest students feel that their answers might be observed.

The actual process of completing the questionnaires is quite straightforward. Respondents receive sharpened pencils because the questionnaires are designed for automatic scanning. Most respondents can finish within a 45-minute class period; for those who cannot, an effort is made to provide a few minutes of additional time.

Procedures for assuring voluntary participation and protection of confidentiality

Any study that relies on voluntary reporting of drug use must have procedures to guarantee the confidentiality of such reports. Respondents should adequately understand these procedures so that they are comfortable providing honest answers and so that the voluntary nature of their participation is clear.

We noted that the first information that students receive about the survey consists of a descriptive flyer stressing confidentiality and voluntary participation. These themes are also noted in the oral instructions at the start of the actual questionnaire administration. Each participating student is instructed to read the message on the cover of the questionnaire, which stresses the importance and value of the study, notes that answers will be kept strictly confidential, and makes this further statement about voluntary participation: "This study is completely voluntary. If there is any question you or your parents would find objectionable for any reason, just leave it blank." The instructions to seniors then point out that in a few months all participants will receive a mailed summary of nationwide results, and that after a year some students will get a follow-up questionnaire.

The cover message explains that these are the reasons for asking that name and address be written on a special form that students will remove from the questionnaire and hand in separately. The message also relates that the information on the questionnaire and on the tear-out form cannot be matched by anyone except by use of a special computer file at the University of Michigan. The questionnaires have an ordered sequence of code numbers, but the computer-printed numbers on the address forms are random numbers. The match between questionnaire and address is never made. Follow-up questionnaires with new numbers are matched to base-year questionnaires without ever directly associating respondents' names with either questionnaire.

Near the end of the administration period, the SRC staff member asks students to separate the address form, fill it out, and pass it in separately. The completed questionnaires and the address forms then remain in the possession of the SRC representative until they are put in the mail. When mailed, the address forms go to SRC, while the questionnaires

go directly to the company that scores them using optical scanning procedures.

All of the above procedures are designed to protect the rights of the research subjects fully. These procedures are carefully reviewed each year and approved by the relevant University of Michigan Institutional Review Board.

Follow-Up Data Collections from High School Graduates

As shown in Figure 1, the design of the Monitoring the Future study includes longitudinal follow-ups of each graduating class.[2] The procedures, discussed in detail here, involve mailed questionnaires, a modest payment of $25 for each participation, and (when needed) additional prompts by mail and eventually by phone.[3] As noted earlier, the "standard" follow-up surveys continue through the sixth wave for each class around age 30 (11 or 12 years after graduation), followed by surveys at ages 35, 40, 45, 50, and 55.

Follow-up design and strategy

Given the cost and staff effort involved in conducting follow-up surveys, we decided to select only subsamples of each original class sample for inclusion in the follow-up panel. Each such target sample is then split randomly into two equal halves (cutting across all base-year schools as well as and weighted appropriately). From each senior class, two separate groups are selected using stratified random sampling procedures; each group numbers about 1,200. Members of one group are invited to participate in the first year after graduation and every two years after that; those in the other group are invited to participate in the second year after graduation and every two years after that. The result of this approach is that individual participants are surveyed on a two-year cycle, beginning either one or two years after graduation, but every class is represented every year in the follow-up surveys. This strategy, illustrated in Figure 3, permits us (within the same budget) to have twice as many respondents from a given class as we could if we returned to the same individuals every year. However, the primary motivation for requesting biennial rather than annual participation is to reduce the burden on individual respondents and thus maintain a higher level of continuing participation while still having enough information on each respondent to permit quite detailed longitudinal analyses. Because half the follow-up respondents from any graduating class are surveyed one year and the other half the next, we still retain the capability of doing detailed cohort trend analyses on annual bases.

The follow-up samples are drawn so as to be largely self-weighting; however, because the primary focus of the study is drug use, recent users of illicit drugs are oversampled for follow-ups by a factor of three to one. All analyses use weights to adjust for the differential selection probabilities. The rationale for oversampling drug users is that the proportions of the age group using illicit drugs are sufficiently low that oversampling is needed to produce enough cases for detailed longitudinal analysis.

[2] The follow-up design and procedures were modified extensively after the 1977 data collection. This section describes the new approach. In 1976 and 1977 follow-ups, larger numbers of individuals were invited to participate and no payment was used; but the response rates were about 65% in the first year of follow-up and still lower in the second year. The investigators judged these rates to be inadequate and developed more intensive procedures for use on smaller samples.

[3] Beginning with the class of 1992, the payment was increased from five to ten dollars, to compensate for inflation over the life of the study, after an experiment indicated that higher payment was justified based on increased follow-up response rates. The payment was increased again to twenty dollars in 2004, and again to twenty-five dollars beginning with half of the class of 2006.

Selecting subsamples for follow-up data collections

The process of subsampling to select follow-up respondents uses a stratified random procedure in which the probability of any individual being selected for follow-up is proportional to his or her base-year sampling weight. (The procedure is carried out separately for those in the "recent drug use" stratum noted earlier, and for those in the residual stratum consisting of all other base-year respondents.) As explained earlier, the base-year sampling procedure necessitates sampling weights. In particular, because our base-year data collection may include as many as 350 seniors per high school, some schools are represented by 350 students, whereas other smaller schools may be represented by only 100 or fewer. The result is that students from small schools are likely to have higher base-year weights (i.e., be counted more heavily) than students from larger schools. This variation in sampling weights arises from administrative needs in the base- year data collection; however, for the follow-up data collections, it is much more efficient to have essentially equal weights. Accordingly, we chose target follow-up samples with probability of selection proportional to base-year sampling weight with the result that follow-up weights are equal for virtually all respondents within each of the two strata. Then, to adjust for the oversampling of follow-up respondents in the "recent drug use" stratum, at the analysis stage we assign this group weights one third the size of the weights of those assigned to the other stratum.

Figure 4. TARGET SAMPLES FOR A GIVEN CLASS

Approximate Age	"Grade Level"	Approximate Number Targeted	Subsample Group	Number Targeted for Longitudinal Analysis *
18	Senior Year	18,000	A and B	2,400
19	1 yr. past H.S.	1,200	A	
20	2 yrs. past H.S.	1,200	B	2,400
21	3 yrs. past H.S.	1,200	A	
22	4 yrs. past H.S.	1,200	B	2,400
23	5 yrs. past H.S.	1,200	A	
24	6 yrs. past H.S.	1,200	B	2,400
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

Example: High School Class of 1978 Follow-Up Schedule

Base Year		Follow-Up Years					
1978	Subsampling process	1979	1980	1981	1982	1983	1984
18,000 → 2,400	1,200 (A) →	1,200	→ 1,200	→ 1,200	→ 1,200	. .	
	1,200 (B) →		1,200	→ 1,200	→ 1,200	→ 1,200 . .	

*In recent years the targets have been increased from 2,400 to 2,450.

Follow-up procedures

The follow-up procedures consist largely of a series of mailings carried out by the project staff at the University of Michigan in Ann Arbor. The first item is a letter explaining that the respondent has been chosen for follow-up study and expressing hope that he or she will participate. The next item is a newsletter mailed in December, which describes some of the project findings for that year and announces a follow-up data collection within a few months.[4] Included with the newsletter is a card asking the respondent to indicate any change of address or (in the case of respondents who marry) change of name. This mailing thus serves three distinct purposes: (a) it gives all respondents some feedback from the earlier data collection; (b) it announces the forthcoming data collection to potential participants; and (c) it provides an occasion for updating the file of names and addresses.

For subjects age 19-30, the next mailing is a first-class letter notifying them that they will receive a questionnaire in about a week.

The following mailing consists of the questionnaire used in the follow-up study, which is sent out in April. Attached to the front of each questionnaire is a check made out to the respondent (currently in the amount of $25). (Enclosure of payment in advance of participation has been shown to be more cost-effective and to produce a higher response rate than payment after participation [Church, 1993].) A return postage-paid mailing envelope and pencil are provided, and an address correction form is attached to the back of the questionnaire. The mailing label containing the respondent's name and address is affixed to the form; respondents are asked to detach the form when mailing back the survey, leaving only a code number to identify the questionnaire.

Respondents are asked to correct any errors in the mailing label, provide information on any change in their names or addresses, and then mail the card back separately. This procedure of having a name and address card that is separated from the questionnaire is closely parallel to the procedure used in the base-year data collection, and is designed to provide the same high degree of confidentiality.

Within a week after the initial mailing of questionnaires, we send postcards to all target respondents. The message contains a word of thanks to those who already have completed their questionnaires and reminds those who have not that the questionnaires are very important to us and that we hope for an early response.

The next steps in the process are contingent upon receipt or non-receipt of a completed questionnaire. About four weeks after the initial questionnaire mailing, we send a letter to all those who have not yet responded, indicating that we have not received their questionnaires and urging them to complete and return them as soon as possible. Starting about a week later, we attempt to contact by telephone all those who still have not responded in order to prompt their response. An additional questionnaire is sent when requested. In August after telephoning is complete, second questionnaires are sent to members of the age 19-30 sample not successfully contacted by telephone and who are either new to follow-up or who did return questionnaires in previous follow-up surveys. The overall effectiveness of this follow-up sequence is indicated by response rates that are reasonably high for mailed questionnaires,

[4] Actually two different newsletters are written each year: one for seniors who will not be followed longitudinally or are being followed for the first time, and one for those being followed on subsequent occasions. We judge these newsletters to be important for continued participation in the study by respondents, but are always mindful of the possibility of contaminating future measurements. The content, therefore, is carefully selected to minimize any such effects.

particularly for ones that take a fairly long time (roughly 40 minutes) to complete.

Data Collection from Students in Eighth and Tenth Grades

The sampling design and procedures used for the surveys of 8th- and 10th-grade students were patterned very closely after those used for the surveys of high school seniors, which are outlined in detail above. (This includes the invitation to the school to participate in two sequential years.) Therefore we provide here only a brief review of the design and procedures as applied to the 8th- and 10th-grade surveys.

Samples of 10th-grade students

The data collection each year (beginning in 1991) takes place in approximately 120–140 public and private schools, selected to provide an accurate cross-section of 10th-grade students throughout the 48 coterminous states. The procedures are virtually identical to those used in the data collections from high school seniors, as described above. The sample is multistage: Stage 1 is the selection of geographic areas; Stage 2, the selection of one or more schools in each area;[5] and Stage 3, the selection of 10th-grade students in each school. As with seniors, up to about 350 tenth-grade students per school may be included in the data collection, with random sampling of classrooms used to sample students in schools with more than 350 tenth graders. Also as with seniors, schools with fewer than 25 tenth graders are usually excluded from the sample, which has the effect of omitting less than 3% of all 10th graders. The resulting samples number about 14,000–17,000 tenth graders each year.

Samples of 8th-grade students

The procedures for sampling 8th graders are identical to those for 10th graders, except that approximately 140–160 public and private schools (mostly junior high schools and middle schools) are sampled, and 16,000–19,000 students are surveyed each year. Because schools serving 8th-grade students tend to be smaller than those serving 10th- or 12th-grade students, there are fewer instances in which it is necessary to subsample from among a large number of 8th graders; in most instances all 8th-grade students in the school are included in the sample. The number of 8th-grade schools is larger than the number of 10th- or 12th-grade schools because of the tendency for middle schools or junior high schools to have fewer students in each grade than their senior high school counterparts. Schools with fewer than 20 eighth graders are usually excluded from the sample, which omits less than 3% of all 8th graders.

Administrative procedures

For the surveys of 8th- and 10th-grade students, the school-recruiting procedures, pre-administration arrangements, questionnaire administration procedures, and procedures for ensuring voluntary participation are essentially identical to those for the 12th-grade students, as described earlier. As noted above, this includes the use of an active parental dissent procedure for all students, unless a school requires an active consent procedure.

Of particular relevance is the fact that the surveys in the lower grades are now anonymous. From 1991 to 1997, procedures for protecting student confidentiality for 8th and 10th graders were identical to those for 12th graders, and names and addresses were obtained. For a variety of reasons, which are outlined in the next paragraph, it was

[5] Here, as in the surveys of seniors, schools are asked to participate for two years.

later decided that there would be no further longitudinal panel follow-up surveys of 8th and 10th graders, making it unnecessary to obtain names and addresses. Accordingly, in 1998 we chose to switch from a confidential to an anonymous procedure. However, we wished to ascertain the effect of the different procedures on estimates of substance use and related variables. Thus, in 1998 half of the 8th- and half of the 10th-grade schools were surveyed under the usual "confidential" procedures; in the remaining schools, no names and addresses were obtained, and the questionnaires were administered anonymously. An analysis of the data collected under the two procedures indicated that differences in drug use and related measures were extremely small, possibly zero, in the 8th grade and essentially zero in the 10th grade (O'Malley, Johnston, Bachman, & Schulenberg, 2000). Beginning in 1999, all 8th- and 10th-grade schools have been surveyed using anonymous procedures.

Follow-ups of selected respondents from 8th grade

Beginning with the initial (1991) survey of 8th-grade students, we also undertook follow-up surveys of selected subsets using a modification of the 8th- and 10th-grade survey instrument and employing mail follow-up procedures quite similar to those used in our follow-ups of high school graduates. We had multiple purposes for this effort, most notably an attempt to gather drug-related data from nationally representative samples of high school dropouts (which could then be combined with our same-aged samples of high school seniors in order to provide a more complete representation of the total U.S. population of young people at modal age 18). Given that objective, the selection of 8th- grade respondents targeted for follow-up included an oversampling of individuals whose responses (especially on educational attainments and aspirations) indicated a high likelihood of dropping out of high school (i.e., those in the highest risk stratum). The follow-ups took place at two-year intervals. After several years, it became clear that, in spite of vigorous follow-up efforts, panel attrition was excessive among respondents judged most likely to drop out of school; we therefore concluded that the continued addition of new follow-up cohorts was not justified, so we discontinued the collection of follow-up data from new classes and returned the associated funds to the sponsor.

Another purpose of the follow-ups was to examine the etiology of adolescent substance use, including its complex interrelationships with educational attainment (or failure). We judged that we could meet this purpose of the survey to a reasonable degree by continuing the two-year cycle of follow-ups of the three initial panels surveyed as 8th graders in 1991–1993. We desired to continue surveying these individuals because we had already accumulated substantial panel data with reasonably high overall response rates (e.g., 70% retention in the second follow-up). A number of analyses have been published based on these panel data from the 1991–1993 eighth graders (Bryant, Schulenberg, Bachman, O'Malley, & Johnston, 2000, 2003; Tauras, O'Malley, & Johnston, 2001), and, in particular, we used the data extensively in a book that examined the connections between educational success and adolescent substance use (Bachman et al., 2008).

REPRESENTATIVENESS AND VALIDITY

Two major sources of bias in survey results are non-representativeness in the sample and invalidity in the measures. Another source of inaccuracy (but not bias) in survey results is sampling error. We address the adequacy of the study along each of these critical dimensions.

Representativeness of Samples (Lack of Bias)

The base-year samples for this study are intended to provide an unbiased representation of secondary school students throughout the coterminous United States. In this section we consider the extent to which the obtained samples of schools and students are likely to be representative of *all* students (i.e., unbiased), and in the next section we discuss the degree to which the data obtained are likely to be valid.

We can distinguish at least four ways in which the survey data collected in the Monitoring the Future project might fall short of being fully accurate:

1. Some sampled schools refuse to participate, which could introduce some bias.
2. The failure to obtain questionnaire data from 100% of the students sampled in participating schools could also introduce bias.
3. The answers provided by participating students are open to both conscious and unconscious distortions, which could reduce validity.
4. Limitations in sample size and/or design place limits on the accuracy of estimates.

The effects of this last factor are appropriately termed random sampling errors; these can be estimated statistically, and several illustrations are provided later. The possible effects of the other three factors, however, are nonrandom biases and are not amenable to precise quantification; instead, we must rely on informed judgment. In the following sections we discuss and offer our judgments on each, elaborating on the facts that underlie our inferences.

School participation

As we noted earlier, each school is asked to participate for two years; therefore, a new half-sample (about 60–80 schools, depending on the grade) is recruited each year. When a school is unwilling or unable to participate, a substitute school matching the originally sampled school in geographic composition and size is selected to participate. It is reasonable to ask whether nonparticipation of some of the originally sampled schools is likely to have a significant effect on the findings. Insofar as population estimates are concerned, the answer depends on two factors: the rate of participation for initially sampled schools, and the similarity of the substitute schools to the original schools they are replacing. With respect to the first factor, past experience suggests that 45–70% of initially sampled schools will participate during any given year. With respect to the second factor, the substitutes are chosen carefully to be as similar as possible to the original school.

There is no particular reason to expect that the students in schools that refuse are greatly different from those in schools that agree to participate, especially when geographic composition and school size are accounted for across the samples. The reasons for school nonparticipation are based primarily on general policy issues and/or on somewhat happenstance events that are not likely to relate systematically to student

drug use. Moreover, in general, schools do not vary in terms of drug use as much as some might believe. For the interval from 2003 to 2014, for schools with 8th-, 10th-, or 12th-grade students, about 2% to 8% of the variance in smoking cigarettes or drinking alcohol in the past 30 days was between schools. Among the illicit drugs, marijuana showed the largest amount of between-school variation, averaging between slightly less than 4% up to 5% for annual use, and 3% to 4% for 30-day use. Annual prevalence of cocaine use averaged between less than 1% and 1.5%, while prevalence of annual heroin use averaged less than 0.5% (see also O'Malley, Johnston, Bachman, Schulenberg, & Kumar, 2006 for earlier estimates).

These low percentages of variance between schools mean that the great majority of variation is within schools. Thus, substitute schools are likely to be quite similar to the refusal schools in terms of drug use and related variables.

There is one additional point to be considered. Insofar as *monitoring changes* is concerned, the effects of school nonparticipation should be minimal. Any systematic biases that might emerge should be largely replicated from year to year; thus the trend data should accurately reflect any major changes occurring. A partial check on the adequacy of the sample for estimating trends can be conducted by following this step: compare trend data based on the total samples with trend data based only on the half-samples that remain constant across adjacent years. Since these half-samples consist of the same schools, their trends cannot be affected by fluctuations in the school composition of the sample, as might be true for the entire samples. In fact, early in the course of the study we examined drug use trend estimates for 1975 and 1976, comparing the data from all schools with the data from only the constant half-sample. These estimates were extremely similar, suggesting that any errors due to sampling of schools are largely constant. That exercise has been repeated for the 1976–77 schools, the 1977–78 schools, the 1978–79 schools, and so on up to the present, each time with the same basic outcome—a confirmation of the trend data found for the total samples. (We should note that although the trend estimates are fairly accurate, the absolute prevalence estimates are somewhat less stable, as would be expected from subsamples only half the size of the full samples.)

Student participation

Recent surveys have obtained usable questionnaires from about 80 to 84% of the seniors in our target samples (a figure, incidentally, which compares quite favorably with most national household surveys). Very few (2% or less) explicitly refuse to complete the questionnaires, and another 1% have parents who refuse (although about 18% of parents fail to respond in the case of explicit consent schools); however, most nonrespondents simply are absent from school on the day of the administration. Absentee rates tend to be higher than average in the last third of senior year due to several factors, particularly a higher frequency of extracurricular activities. Eighth and 10th graders yield higher response rates (about 86–91%). Because only one survey administration is conducted in each school (except in cases where the participation rate is less than 70% and a recoup administration is feasible), students absent from class on that day are excluded. Students with higher absentee rates tend to have higher-than-average rates of drug use (Kandel, 1975; Bachman, Johnston, et al., 1981), so missing them is likely to have the effect of reducing drug use estimates. Explicit refusal rates for 8th- and 10th-grade students have consistently been lower than 1%.

It is possible to adjust drug use estimates to correct for absenteeism. The questionnaires include items asking respondents how often (and why) they have been absent recently. Responses to these questions can be used to reweight the data to *estimate* total sample findings (i.e., the findings that would have emerged if absentees could have been included). While such an approach has some appeal, we have thus far elected not to incorporate the correction into most of our data analyses. There are several reasons for this decision. First, after we made such adjustments to the drug usage rates using the data on absenteeism (Johnston & O'Malley, 1985; Johnston, O'Malley, et al., 2006), we found that the adjusted figures were only slightly higher than the unadjusted ones. (For example, overall prevalence figures were usually increased by only one half to two percentage points for the various drugs.) The complexity of computing adjusted data did not seem to be justified by such slight changes. Second, the fairly disparate sampling weights created by this adjustment substantially increase the sampling variance (Kish, 1965, p. 560); this results in much larger ranges of uncertainty around only slightly less biased estimates. Finally, as has been pointed out earlier, this study focuses heavily on trends, and any systematic, consistent errors are not likely to affect trend data. Thus, we have concluded that the effects of student nonparticipation on prevalence and trend estimates are minimal and not worth the cost and difficulty of correction in most of our reports. This decision was supported by Guttmacher, Weitzman, Kapadia, and Weinberg (2002), who concluded that intensive efforts to capture absentees was not warranted, because the efforts resulted in only very marginally improved estimates.

Omission of dropouts

We estimate that the omission of dropouts from the sample of high school seniors has a somewhat greater impact on drug use prevalence rates than does the omission of absentees. Again, *trends* should not be affected substantially, because overall dropout rates have changed rather little in recent years. Specifically, ". . . the percentage of students who leave high school before graduating has gradually declined, and differences between dropout rates for blacks and whites have also narrowed, although most of these changes occurred before the mid-1980s" (NCES, 1996, p. vi). Plausible estimates of drug prevalence rates among dropouts, based on data from a few studies that have included dropouts (Johnston, 1973; Abelson, Fishburne, & Cisin, 1977; Bachman et al., 2008; Fishburne, Abelson, & Cisin, 1980; NIDA, 1991a), can be used to determine an estimate for the overall age cohort. The resulting biases are not dramatic, largely because the dropouts represent only a small portion of the population. We estimated some time ago (Johnston & O'Malley, 1985) that lifetime prevalence for marijuana, amphetamines, and cocaine are underestimated by about 6%, 5%, and 4%, respectively. Lifetime prevalence for other illicit drugs are underestimated by 3% or less. Annual prevalence rates for marijuana, amphetamines, and cocaine are underestimated by about 6%, 5%, and 3%, respectively; annual prevalence rates for other illicit drugs are underestimated by 2% or less. Lifetime and annual prevalence of use for alcohol is underestimated to a lesser degree—1% and 2%, respectively. For further discussion of the dropout issue, see Miech, Johnston, O'Malley, Bachman, and Schulenberg (2015), Appendix A, in *Volume I*.

Follow-up participation

All large-scale longitudinal surveys inevitably suffer from some panel attrition, and the follow-up data collections in this research are no exception. In the period 2010–2014, the first follow-up after high school yielded about 48% participation rates among those

initially targeted. Retention rates have declined with increased age, as would be expected. Additionally, retention rates for recent cohorts have not been as high as those for earlier cohorts; this is consistent with the very general finding of declining survey response rates in recent decades (Groves, Dillman, Eltinge, & Little, 2002). Nevertheless, for the second through sixth follow-ups (corresponding to 3–12 years past high school) recent response rates have averaged 45% of the initial target sample. Among the 35-year-old respondents surveyed in 2010–2014, the average response rate was 43%. Among the 40-year-old respondents surveyed in 2010–2014, the average response rate was 42%, while among the 45-year-olds surveyed in 2010–2014, the average response rate was 46%. Among the 50-year-old respondents surveyed in 2010–2014, the average response rate was 53%. These retention rates are respectable compared to most panel studies (particularly considering the low-cost nature of the data collection method), and they are acceptable for analysis purposes. The higher retention rates in the older cohorts point to a cohort effect in research participation.

An important subset of the 12th-grade follow-up respondents consists of those who go on to college. Response rates for this group can be estimated reasonably well by focusing on those 12th graders who expected to complete college (which is highly predictive of actual attendance). An examination of response rates for this group showed distinctly higher response rates in those who expected to go to college than for the total follow-up sample of seniors. Specifically, follow-up rates were 61% in the first follow-up at one to two years past high school (based on the classes of 2007–2009), 58% in the second follow-up at three to four years past high school (based on the classes of 2005–2007), and 57% in the third follow-up at five to six years past high school (based on the classes of 2003–2005). These participation rates compare quite favorably with another major national survey of substance use among college students, the Harvard College Alcohol Study, which had cross-sectional response rates of 59% in 1997 and 1999 and 52% in 2001 (Wechsler et al., 2002).

Of course, those who participate are on average somewhat different from those who do not participate, and the likely effect is to underestimate behaviors such as drug use. In previous analyses of Monitoring the Future follow-up data, we have reweighted the data to obtain estimated overall drug use prevalence rates which are adjusted for nonparticipation, so as to eliminate most of the bias. Briefly, the procedure used is to reweight participating follow-up respondents so that each follow-up panel has (when reweighted) the same base-year prevalence as the total base-year sample for that class year.[6]

In each follow-up panel, we followed this procedure for all prevalence measures of several licit and illicit substances. As one would expect, the adjusted follow-up prevalence measures are higher than the unadjusted figures, though not dramatically so.

[6] For example, suppose 50% of the entire base-year sample reported using marijuana in senior year, but among those participating in a given follow-up panel from that class, only 40% had (as seniors) reported such use. The follow-up respondents who had been users in base year would be weighted 5/4, and follow-up respondents who had been nonusers would be weighted 5/6, thus creating a 50% base-year usage rate for the reconstructed follow-up panel. The follow-up prevalence rates would then be derived by applying these weights to follow-up data. Alternative procedures have been investigated in other analyses of the follow-up data. One procedure involved an extensive search for important predictors of participation (using base-year variables other than use of a specific substance). Because even the best variables had little power to predict nonparticipation, the procedure described above provides what we believe to be the best adjustments.

Validity of Self-Report Data

A basic question in all survey work is the extent to which respondents' answers should be taken at face value. In this study, what respondents say about their use of drugs is of special concern. While the study includes no direct, objective validation of the self-report measures of drug use, a good deal of inferential evidence exists to support their validity:

1. A considerable proportion of all respondents admit to some lifetime use of illicit drugs; this reached to two thirds of all respondents in peak years (Miech et al., 2015). These proportions have ranged up to 86% by the time respondents reach their 40s.

2. Data from Monitoring the Future (and earlier, the Youth in Transition study) have shown some substantial and predictable relationships between self-reported drug use and other items dealing with attitudes about drug use, and with behaviors such as academic performance, delinquency, and the self-reported use of licit drugs (Bachman et al., 1978, 1980, 1997, 2002; Bachman, Johnston, et al., 1981, 1990; Bachman, Johnston, O'Malley, & Humphrey, 1988; Bachman, Schulenberg, et al., 1990; Johnston, 1973; Johnston et al., 1978; Johnston, O'Malley, et al., 2006; Osgood, Johnston, O'Malley, & Bachman, 1988; Patrick & Schulenberg, 2010; Patrick, Schulenberg, & O'Malley, 2013; Pilgrim, Schulenberg, O'Malley, Bachman, & Johnston, 2006; Schulenberg et al., 1994; Siennick et al., 2014; Staff, Schulenberg, & Bachman, 2010).

   Panel analyses employing several waves of the follow-up data have shown a high degree of stability in these self-reports of drug use (Bachman, O'Malley, et al., 1981; Bachman et al., 1984, 1997, 2002, 2008; Bachman, Schulenberg et al., 1990; Jackson et al., 2008; Merline, Jager, & Schulenberg, 2008; O'Malley et al., 1983; Osgood et al., 1988; Patrick et al., 2011; Schulenberg et al., 1994; Schulenberg & Patrick, 2012; Staff, Schulenberg, Maslowsky, et al., 2010). We view these various findings as providing considerable empirical evidence of construct validity.

3. Very few respondents decline to answer the drug use items, even though they are specifically instructed to leave blank any questions they feel they cannot answer honestly. The missing data rates for the self-reported use questions are only slightly higher than for the preceding nonsensitive questions. These data suggest there is very little underreporting by intentional skipping of questions.

4. Although the longitudinal design of the MTF study does not provide anonymity to 12th-grade respondents and did not provide anonymity to 8th- and 10th-grade students from 1991 to 1997, the available evidence suggests that anonymity makes little difference in student self-reports of substance use. Most investigators who have compared groups differing in degree of anonymity have found little or no difference in self-reports (Bjarnason & Adalbjarnardottir, 2000; Brown, 1975; Haberman, Josephson, Zanes, & Elinson, 1972; King, 1970; Leutgert & Armstrong, 1973). Of particular relevance to the MTF study is that an analysis of surveys conducted in 1998 found very few differences in reporting between anonymous versus confidential procedures in 8th- and 10th-grade schools. As stated in O'Malley et al. (2000, p. 51):

> These findings are quite reassuring for school-based surveys that use anonymous conditions. Equally or more important, the findings are quite reassuring for surveys of high school students across both survey conditions examined here. At least with the confidential procedures used in the present study, 10th-grade students were just as willing to report their drug-using behaviors as were those surveyed using anonymous procedures. And even for surveys of pre-high school students, the results show at most only a very modest mode of administration effect and quite possibly no effect at all.

5. A number of methodological studies (e.g., Petzel, Johnson, & McKillip, 1973; Single, Kandel, & Johnson, 1975) have included fictitious drugs in survey questionnaires. These fictitious drugs have shown very low levels of reported use, indicating that intentional over-reporting is likely to be minimal. (And, in fact, this over-reporting may not have been intentional; some respondents, particularly those who tend to be indiscriminate in their drug use, may have erroneously believed that they had actually used the fictitious drugs.)

6. Studies employing other data collection methods have shown roughly similar prevalence rates of drug use for the same age group (Abelson & Atkinson, 1976; Abelson & Fishburne, 1976; Abelson et al., 1977; Fishburne et al., 1980; Miller et al., 1983; NIDA, 1991b; O'Donnell et al., 1976; and special comparisons using unpublished National Youth Survey data, Delbert Elliott, 1986 personal communication). For example, in 2013 the 30-day marijuana prevalence for 12th graders in MTF was 22.74%, which compares to a prevalence of 19.17% for those who are high school seniors in the household-based National Household Survey of Drug Use (NSDUH). Among respondents age 19-28 marijuana prevalence levels are 19.05% in MTF and 17.38% in NSDUH. These results are part of a general pattern in which somewhat higher drug prevalence is found in the in-school and mail surveys used in the Monitoring the Future study as compared to household interview surveys. Rootman and Smart (1985) note a similar finding of more use of tobacco, alcohol, and marijuana in a school survey compared to a household survey. They suggest that two explanations may account for the differences in estimated rates: (a) respondents may be more likely to give socially desirable answers to questions asked in the home than at school; and (b) drug users may be more likely to be missed in household surveys than in school surveys, because the former tend to have lower response rates.

7. Methodological studies have utilized various methods to determine the validity of self-report data on illicit drug use and other illegal behaviors, including urinalysis for drug use; polygraph verification; official police, court, medical, and treatment agency documents; and reports by peers, parents, and teachers. Generally, the findings from these studies have been encouraging (Amsel, Mandell, Matthias, Mason, & Hocherman, 1976; Bale, 1979; Bale, Van Stone, Engelsing, & Zarcone, 1981; Bauman, Koch, & Bryan, 1982; Bonito, Nurco, & Schaffer, 1976; Cisin & Parry, 1979; Hansen, Marlotte, & Fielding, 1985; Robins, 1974; Smart, 1974; Smart & Jarvis, 1981; Stacy, Widaman, Hays, & DiMatteo, 1985; Whitehead & Smart, 1972). Gold (1977) reviewed the literature on self-reported delinquent behavior of adolescents and concluded that "the best single measure of delinquent

behavior available is self-report of delinquency," and that "it is accurate enough for use in rigorous research designs and with sophisticated statistics." Similarly, methodological studies have investigated the comparability of self-report data and public records for legal drugs. In particular, with respect to cigarettes and alcohol, aggregate sales data have been correlated with self-report data, and the results are very supportive of the general validity of self-reports (under proper survey conditions). Hatziandreu et al. (1989) compared national estimates of cigarette use based on self-reports from surveys with national estimates based on tax records and concluded that surveys were a reliable surveillance tool for monitoring changes in smoking behavior. Smith, Remington, Williamson, and Anda (1990) compared self-reported alcohol use data with state-level data on sales and concluded that "per capita sales of alcohol generally parallel self-reported consumption. . ." (p. 312).

8. Another line of research on validity has investigated the question whether "objective" or "bogus pipeline" methods are needed. It is reassuring that several investigators have shown that confidential questionnaires are as likely to be valid (that is, they did not produce lower estimates) as questionnaires administered under conditions of objective validation or bogus pipeline procedures. Akers, Massey, Clark, and Lauer (1983) showed that neither a biochemical measure nor a bogus pipeline procedure produced higher estimates of smoking in adolescents (grades 7–12) compared to a confidential questionnaire. Similarly, Campanelli, Dielman, and Shope (1987) reported that self-reports of alcohol use by adolescents (grades 7–9) were not affected by a bogus pipeline procedure.

9. The aggregate-level trends in reported friends' use tend to parallel very closely the trends in self-reported own use. In addition to their own use, we also ask respondents about the proportions of their friends who use various substances. If there were a tendency for concealment of reporting one's own behaviors, presumably there would be less of a tendency to underreport friends' behaviors. The fact that trends in friends' use parallel own use suggests a high degree of validity in self-reports of use (Miech et al., 2015).

10. Different substances show different trajectories over time. Marijuana use declined earlier than cocaine; use of other substances (alcohol, for example) did not decline at the same time.

11. One sort of bias that does seem to exist in these self-report measures is a tendency for respondents to underestimate the number of times they have used a drug when recalling an interval as long as one year. Early in the study we examined and reported this problem in some detail (Bachman & O'Malley, 1981) and noted that this underestimation may occur for a wide variety of self-reports of behaviors when the reporting interval grows long. We take this possible source of bias into account when reporting drug use findings. In particular, our reports of annual use either (a) focus on the distinction between no use and any use, or (b) treat reports of the amount of annual usage in relative rather than absolute terms.

The evidence is supportive of the validity of the self-reported data in part because the survey is administered under proper conditions (in school and in groups) with

reassurance of absolute confidentiality, and because the respondents know that there are no substantial negative consequences that could ever result from honest reporting. The evidence is far less convincing, in particular, when adverse consequences may ensue from honest reporting, or when respondents are not convinced of confidentiality, self-reports must be considered questionable. Surveys of pregnant women (Cohen, Green, & Crombleholme, 1991), arrested individuals (Fendrich & Xu, 1994; Harrison, 1992), juveniles interviewed at home under varying degrees of privacy (Gfroerer, 1985), and employees questioned at their work site (Lehman & Simpson, 1992) are examples of situations wherein validity may well be diminished. These conditions, wherein admission of use could have substantial negative consequences for the individual, are very different from the conditions of the Monitoring the Future in-school group-administered surveys conducted by administrators from outside the school.[7]

In sum, while there is almost certainly some degree of underreporting of illicit drug use on self-report surveys, we believe that it is far less than most people intuitively assume. Further, for purposes of monitoring trends across time, a fairly constant degree of underreporting should have almost no effect on trend estimates.

Sampling Precision in the Annual School Surveys

The errors possible in an estimate based on a sample survey can be classified into two categories—sampling and non-sampling. Having just discussed several possible sources of non-sampling errors, we now focus on sampling error. Sampling error occurs because observations are made on only a sample rather than the entire population under study. For example, during most years of this study, there have been roughly three million seniors located in more than 20,000 high schools throughout the coterminous United States. Our samples of about 13,000–18,000 seniors clustered in about 120 to 140 schools can provide close, but less than perfect, estimates of the responses that would be obtained if all seniors in all schools were asked to participate.

One cannot know for any particular statistic exactly how much error has resulted from sampling; however, one can make reasonably good estimates of confidence intervals, or ranges within which the value would be likely to fall if all schools and all seniors were invited to participate, rather than using only samples of seniors in samples of schools. In a comprehensive report of drug use in the classes of 1975 through 1983 (Johnston, O'Malley, & Bachman, 1984, Appendix B), we provided detailed tables of confidence intervals for percentages based on the total samples and various subgroups, taking into account that sampling errors differ depending on the drug involved (since clustering by schools differs from one drug to another), the size of the percentage, and whether comparisons among groups or trends across time are involved. Further data on confidence intervals for the full range of Monitoring the Future measures are provided in the annual reports of questionnaire responses from the nation's secondary school students (e.g., Bachman, Johnston, & O'Malley, et al., 2011).

For present purposes, it is sufficient to note that from the 1976 senior sample onward, *no* 95% confidence intervals for the total sample, or one-year trends, exceed a

[7] In follow-up mail surveys, however, we have found that the degree of recanting of earlier drug use (that is, denying ever having used a substance after reporting such use in an earlier survey) varies by occupational status. Specifically, respondents in the military and those in police agencies are more likely to recant having used illicit substances (Johnston & O'Malley, 1996). These individuals may feel greater likelihood of negative consequences of revealing past use of illicit drugs.

value of ± 2.5 percentage points. The majority of confidence intervals are ± 1.0% or smaller. Here are several examples of these levels of accuracy: a one-year decline in monthly prevalence of cocaine use from 2.8% for the class of 1989 to 1.9% for the class of 1990 was statistically significant ($p < .001$). Between the class of 1994 and the class of 1995, statistically significant *increases* included (but were not limited to) 4.0% for annual marijuana use ($p < .01$), 2.2% for 30-day marijuana use ($p < .05$), 2.2% for daily cigarette use ($p < .05$), and 0.6% for daily alcohol use ($p < .01$). Between the class of 1999 and the class of 2000, 30-day cigarette use declined by 3.2% ($p < .01$), daily smoking declined by 2.5% ($p < .05$), and half-pack-or-more-per-day smoking declined by 1.9% ($p < .01$). Among young adults between 2003 and 2004, MDMA (Ecstasy) annual use declined by 1.0% ($p < .05$). Among 8th-grade students between 2003 and 2004, annual use of steroids declined 0.3% (from 1.4 to 1.1; $p < .05$). On the whole, the Monitoring the Future samples provide a high level of accuracy, thus permitting the reliable detection of fairly small shifts from one year to the next. Incidentally, they also permit a high level of confidence when shifts do not occur.

Summary Evaluation: Consistency and the Measurement of Trends

We have noted at several points that a primary purpose of the Monitoring the Future project is to measure changes over time. Accordingly, the measures and procedures have been standardized and applied consistently across each data collection. We have argued that to the extent that any biases remain because of limits in school and/or student participation, and to the extent that there are distortions (lack of validity) in the responses of some students, it seems very likely that such problems will exist in much the same way from one year to the next. In other words, biases in the survey estimates should tend to be consistent from one year to another, leaving the measurement of trends relatively unaffected by such biases. This argument, which is plausible in the abstract, is much more compelling when examined in the light of actual data spanning about four decades, as shown in our most recent annual monographs (Johnston et al., 2014; Miech et al., 2015). Even when usage patterns are shifting appreciably from year to year, there is still a regularity and consistency in the findings which provide a great deal of reassurance that the data have high reliability, and that even fairly small trends are genuine. There is, in other words, an orderliness from one year to the next that suggests a high level of precision and sensitivity to trends.

REFERENCES

Abelson, H. I., & Atkinson, R. B. (1976). *Public experience with psychoactive substances: 1975*. Princeton, NJ: Response Analysis.

Abelson, H. I., & Fishburne, P. M. (1976). *Nonmedical use of psychoactive substances: A nationwide study among youth and adults (Part 1)*. Princeton, NJ: Response Analysis.

Abelson, H. I., Fishburne, P. M., & Cisin, I. (1977). *National survey on drug abuse, 1977: Vol. 1: Main findings*. Princeton, NJ: Response Analysis.

Akers, R. L., Massey, J., Clark, W., & Lauer, R. M. (1983). Are self-reports of adolescent deviance valid? Biochemical measures, randomized response, and the bogus pipline in smoking behavior. *Social Forces, 62,* 375–379.

Amsel, Z., Mandell, W., Matthias, L., Mason, C., & Hocherman, I. (1976). Reliability and validity of self-reported illegal activities and drug use collected from narcotic addicts. *The International Journal of the Addictions, 11*, 325–336.

Arnett, J. J. (2004). Emerging adulthood: *The winding road from the late teens through the twenties*. New York: Oxford University Press.

Bachman, J. G. (1970). *Youth in transition: Vol. 2. The impact of family background and intelligence on tenth-grade boys.* Ann Arbor, MI: Institute for Social Research.

Bachman, J. G. (1983). Premature affluence: Do high school students earn too much? *Economic Outlook U.S.A., 10*(3), 64–67.

Bachman, J. G., Bare, D. E., & Frankie, E. I. (1986). *Correlates of employment among high school seniors* (Occasional Paper No. 20). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Green, S., & Wirtanen, I. D. (1971). *Youth in transition: Vol 3. Dropping out—problem or symptom?* Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., & Johnston, L. D. (1978). *The Monitoring the Future project: Design and procedures* (Occasional Paper No. 1). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1981). Smoking, drinking, and drug use among American high school students: Correlates and trends, 1975-1979. *American Journal of Public Health, 71*, 59–69.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use. *Journal of Health and Social Behavior, 31,* 173–184.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1991a). *The Monitoring the Future project after seventeen years: Design and procedures* (Occasional Paper No. 33). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1991b). How changes in drug use are linked to perceived risks and disapproval: Evidence from national studies that youth and young adults respond to information about the consequences of drug use. In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 133-156). Hillsdale, NJ: Lawrence Erlbaum Associates.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1996). *The Monitoring the Future project after twenty-two years: Design and procedures.* (Monitoring the Future Occasional Paper No. 38.) Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (2001). *The Monitoring the Future project after twenty-seven years: Design and procedures.* (Monitoring the Future Occasional Paper No. 54.) Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (2014). *Monitoring the Future: Questionnaire responses from the nation's high school seniors, 2012*. Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., O'Malley, P. M., & Humphrey, R. H. (1986). *Changes in marijuana use linked to changes in perceived risks and disapproval* (Occasional Paper No. 19). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., O'Malley, P. M., & Humphrey, R. H. (1988). Explaining the recent decline in marijuana use: Differentiating the effects of perceived risks, disapproval, and general lifestyle factors. *Journal of Health and Social Behavior, 29*, 92–112.

Bachman, J. G., Johnston, L. D., O'Malley, P. M. & Schulenberg, J. E. (2006). *The Monitoring the Future project after thirty-two years: Design and procedures* (Monitoring the Future Occasional Paper No. 64). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., Johnston, L. D., O'Malley, P. M. & Schulenberg, J. E. (2011). *The Monitoring the Future project after thirty-seven years: Design and procedures* (Monitoring the Future Occasional Paper No. 76). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., & O'Malley, P. M. (1981). When four months equal a year: Inconsistencies in students' reports of drug use. *Public Opinion Quarterly, 45*, 536–548.

Bachman, J. G., O'Malley, P. M., & Johnston, J. (1978). *Youth in transition: Vol. 6. Adolescence to adulthood—A study of change and stability in the lives of young men.* Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1980). *Correlates of drug use, Part 1: Selected measures of background, recent experiences, and lifestyle orientations* (Occasional Paper No. 8). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1981). *Changes in drug use after high school as a function of role status and social environment* (Occasional Paper No. 11). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1984). Drug use among young adults: The impacts of role status and social environments. *Journal of Personality and Social Psychology, 47,* 629–645.

Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1986). *Change and consistency in the correlates of drug use among high school seniors: 1976-1986* (Occasional Paper No. 21). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., O'Malley, P. M., Johnston, L. D., Rodgers, W. L., & Schulenberg, J. (1992). *Changes in drug use during the post-high school years.* (Occasional Paper No. 35). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Bryant, A. L., & Merline, A. C. (2002). *The decline of substance use in young adulthood: Changes in social activities, roles, and beliefs.* Mahwah, NJ: Lawrence Erlbaum Associates.

Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education-drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency.* Mahwah, NJ: Lawrence Erlbaum Associates.

Bachman, J. G., Safron, D. J., Sy, S. R., & Schulenberg, J. E. (2003). Wishing to work: New perspectives on how adolescents' part-time work intensity is linked to educational disengagement, substance use, and other problem behaviors. *International Journal of Behavioral Development, 27*(4), 301–315.

Bachman, J. G., & Schulenberg, J. E. (1991). *Part-time work by high school seniors: Sorting out correlates and possible consequences* (Occasional Paper No. 32). Ann Arbor, MI: Institute for Social Research.

Bachman, J. G., & Schulenberg, J. (1993). How part-time work intensity relates to drug use, problem behavior, time use, and satisfaction among high school seniors: Are these consequences, or merely correlates? *Developmental Psychology, 29,* 220– 235.

Bachman, J. G., Schulenberg, J. E., O'Malley, P. M., & Johnston, L. D. (1990, 25 March). Short-term and longer-term effects of educational commitment and success on the use of cigarettes, alcohol, and illicit drugs. Paper presented at the 3rd biennial meeting of the Society for Research on Adolescence, Atlanta, GA

Bachman, J.G., Staff, J., O'Malley, P.M., Schulenberg, J.E., & Freedman-Doan, P. (2011). Twelfth-grade student work intensity linked to later educational attainment and substance use: New longitudinal evidence. *Developmental Psychology, 47*(2), 344-363.

Bachman, J. G., Wadsworth, K., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. (1997). *Smoking, drinking, and drug use in young adulthood: The impact of new freedoms and new responsibilities.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Bale, R. N. (1979). The validity and reliability of self- reported data from heroin addicts: Mailed questionnaires compared with face-to-face interviews. *The International Journal of the Addictions, 14,* 993–1000.

Bale, R. N., Van Stone, W. W., Engelsing, T. M. J., & Zarcone, V. P. (1981). The validity of self-reported heroin use. *The International Journal of the Addictions, 16,* 1387–1398.

Bauman, K. E., Koch, G. G., & Bryan, E. S. (1982). Validity of self-reports of adolescent cigarette smoking. *The International Journal of the Addictions, 17,* 1131–1136.

Bjarnason, T., & Adalbjarnardottir, S. (2000). Anonymity and confidentiality in school surveys on alcohol, tobacco, and cannabis use. *Journal of Drug Issues, 30,* 335– 344.

Bonito, A. J., Nurco, D. N., & Schaffer, J. W. (1976). The veridicality of addicts' self- reports in social research. *The International Journal of the Addictions, 11,* 719– 724.

Brown, G. H. (1975). *Randomizing inquiry vs. conventional questionnaire method in estimating drug usage rates through mail surveys.* Human Resources Research Organization Technical Report No. 75-14.

Brown, T. N., Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (2001). Are risk and protective factors for substance use consistent across historical time?: National data from the high school classes of 1976 through 1997. *Prevention Science 2*(1), 29–43.

Bryant, A. L., Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (2000). Understanding the links among school misbehavior, academic achievement, and cigarette use: A national panel study of adolescents. *Prevention Science, 1,* 71–87.

Bryant, A., Schulenberg, J., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2003). How academic achievement, attitudes, and behaviors relate to the course of substance use during adolescence: A six-year multi-wave national longitudinal study. *Journal of Research on Adolescence, 13*, 361–397.

Campanelli, P., Dielman, T. E., & Shope, J. T. (1987). Validity of adolescents' self- reports of alcohol use and misuse using a bogus pipeline procedure. *Adolescence, 22,* 7–22.

Church, A. H. (1993). Estimating the effects of incentives on mail response rates: A meta-analysis. *Public Opinion Quarterly, 57,* 62–79.

Cisin, I. H., & Parry, H. J. (1979). Sensitivity of survey techniques in measuring illicit drug use. In J. Rittenhouse (Ed.), *Developmental papers: Attempts to improve the measurement of heroin use in the national survey.* Rockville, MD: National Institute on Drug Abuse.

Clayton, R. R., & Voss, H. L. (1982). *Technical review on drug abuse and dropouts.* Rockville, MD: National Institute on Drug Abuse.

Cohen, H. R., Green, J. R., & Crombleholme, W. R. (1991). Peripartum cocaine use: Estimating risk of adverse pregnancy outcome. *International Journal of Gynaecology & Obstetrics, 35*, 51–54.

Cole, S. (1980). Send our children to work? *Psychology Today, 14*(2), 44f.

Coleman, J. S., & the Panel on Youth (1974). *Youth: Transition to adulthood.* Chicago: University of Chicago Press.

Duncan, O.D. (1969). *Toward social reporting: Next steps.* New York: Russell Sage Foundation.

Fendrich, M. & Xu, Y. (1994). The validity of drug use reports from juvenile arrestees. *International Journal of the Addictions, 29,* 971–985.

Fishburne, P. M., Abelson, H. I., & Cisin, I. H. (1980). *National survey on drug abuse.* Rockville, MD: National Institute on Drug Abuse.

Gfroerer, J. (1985). Influence of privacy on self-reported drug use by youths. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57). Rockville, MD: National Institute on Drug Abuse.

Gold, M. (1977). *The validity of self-reports of delinquent behavior.* Unpublished manuscript, Institute for Social Research.

Graham, J. W., Taylor, B. J., & Cumsille, P. E. (2001). Planned missing data designs in analysis of change. In L. Collins & A. Sayer (Eds.), New methods for the analysis of change, (pp. 335–353). Washington, DC: American Psychological Association.

Greenberger, E., & Steinberg, L. D. (1979). *Part-time employment of in-school youth: A preliminary assessment of costs and benefits.* Unpublished manuscript, University of California at Irvine.

Greenberger, E., & Steinberg, L. D. (1986). *When teenagers work: The psychological and social costs of adolescent employment.* New York: Basic Books.

Groves, R. M., Dillman, D. A., Eltinge, J. L., & Little, R. J. A. (Eds.) (2002). *Survey nonresponse*. New York; John Wiley & Sons.

Guttmacher, S., Weitzman, B. C., Kapadia, F., & Weinberg, S. L. (2002). Classroom- based surveys of adolescent risk-taking behaviors: Reducing the bias of absenteeism. *American Journal of Public Health, 92*(2), 235–237.

Haberman, P. W., Josephson, E., Zanes, H., & Elinson, J. (1972). High school drug behavior: A methodological report on pilot studies. In S. Einstein & S. Allen (Eds.), *Student drug surveys.* Farmingdale, NY: Baywood.

Hansen, W. B., Marlotte, C. K., & Fielding, J. E. (1985). The bogus pipeline revisited: The use of the threat of detection as a means of increasing self-reports of tobacco use. *Journal of Applied Psychology, 70,* 789–792.

Harrison, L. D. (1992). Trends in illicit drug use in the United States: Conflicting results from national surveys. *International Journal of the Addictions, 27,* 817–847.

Harrison, L.D. (2001). Understanding the differences in youth drug prevalence rates produced by the MTF, NHSDA, and YRBS studies. *Journal of Drug Issues, 31(3),* 665-694.

Hatziandreu, E. J., Pierce, J. P., Fiore, M. C., Grise, V., Novotny, T. E., & Davis, R. M. (1989). The reliability of self-reported cigarette consumption in the United States. *American Journal of Public Health, 79,* 1020–1023.

IOM/NRC. (2014). *Investing in the health and well-being of young adults*. With members of the Committee on Improving the Health, Safety and Well-Being of Young Adults (Richard Bonnie, Chair) of the Institute of Medicine and the National Research Council. Washington, DC: The National Academies Press. Available at http://iom.edu/Reports/2014/Investing-in-the-Health-and-Well-Being-of-Young-Adults.aspx

Jackson, K. M., Sher, K. J., & Schulenberg, J. E. (2008). Conjoint developmental trajectories of young adult substance use. *Alcoholism: Clinical and Experimental Research, 32,* 1-15.

Jager, J., Schulenberg, J. E., O'Malley, P. M., & Bachman, J. G. (2013). Historical variation in drug use trajectories across the transition to adulthood: The trend toward lower intercepts and steeper, ascending slopes. Development and Psychopathology, 25(2), 527-543.

Johnston, L. D. (1973). *Drugs and American youth.* Ann Arbor, MI: Institute for Social Research.

Johnston, L. D. (1985). The etiology and prevention of substance use: What can be learned from recent historical changes? In C. L. Jones & R. J. Battjes (Eds.), *The etiology of drug abuse: Implications for prevention* (NIDA Research Monograph No. 56). Washington, DC: U.S. Government Printing Office (pp. 155–177).

Johnston, L. D., & O'Malley, P. M. (1978, August). *A cross-cohort comparison of the drugs-delinquency connection.* Paper presented at the symposium on cohort studies sponsored by the International Sociological Association, the American Society of Criminology, and the Scandinavian Research Council for Criminology, Stockholm, Sweden.

Johnston, L. D., & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57). Rockville, MD: National Institute on Drug Abuse.

Johnston, L. D., & O'Malley, P. M. (1996). The recanting of earlier reported drug use by young adults (pp. 55–76). In L. Harrison & A. Hughes (Eds.), *Validity of self- reported drug use: Improving the accuracy of drug use survey estimates* (NIDA Research Monograph No. 167). Washington, DC: U.S. Government Printing Office.

Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1984). *Drugs and American high school students 1975–1983.* (DHHS Publication No. [ADM] 85-1374). Rockville, MD: National Institute on Drug Abuse.

Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2001). *Demographic subgroup trends for various licit and illicit drugs, 1975–2000.* (Monitoring the Future Occasional Paper No. 53). Ann Arbor, MI: Institute for Social Research.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. (2006). *Monitoring the Future national survey results on drug use, 1975–2005, Volume I: Secondary school students* (NIH Publication No. 06-5883) and *Volume II: College students and adults* ages 19–45 (NIH Publication No. 06-5884). Bethesda, MD: National Institute on Drug Abuse.

Johnston, L. D., O'Malley, P. M., Bachman J. G., Schulenberg, J. E., & Miech, R. A. (2014). *Monitoring the Future national survey results on drug use, 1975-2013: Volume II, college students and adults ages 19-55*. Ann Arbor: Institute for Social Research, The University of Michigan.

Johnston, L. D., O'Malley, P. M., & Eveland, L. K. (1978). Drugs and delinquency: A search for causal connections. In D. G. Kandel (Ed.), *Longitudinal research on drug use: Empirical findings and methodological issues.* Washington, DC: Hemisphere Publishing.

Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., & Bachman, J. G. (2006). *The aims and objectives of the Monitoring the Future study and progress toward fulfilling them as of 2006* (Monitoring the Future Occasional Paper No. 65). Ann Arbor, MI: Institute for Social Research.

Kandel, D. B. (1975). Reaching the hard-to-reach: Illicit drug use among high school absentees. *Addictive Diseases, 1,* 465–480.

Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Hawkins, J., Harris, W. A., . . . Zaza, S. (2014). Youth risk behavior surveillance—United States, 2013. *Morbidity and Mortality Weekly Report, 63*(4), 1-168. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6304a1.htm

Keyes, K. M., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., Bachman, J. G., Li, G., & Hasin, D. (2011). The social norms of birth cohorts and adolescent marijuana use in the United States, 1976-2007. *Addiction, 10,* 1790-1800.

Keyes, K. M., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., Bachman, J. G., Li, G., & Hasin, D. (2012). Birth cohort effects on adolescent alcohol use: The influence of social norms from 1976 to 2007. *JAMA Psychiatry* (*Archives of General Psychiatry*), *69*(12), 1304-1313

King, F. W. (1970). Anonymous versus identifiable questionnaires in drug usage surveys. *American Psychologist, 25,* 982–985.

Kish, L. (1965). *Survey sampling.* New York: John Wiley & Sons.

Labouvie, E. W. (1976). Longitudinal designs. In P. M. Bentler, D. J. Lettieri, & G. A. Austin (Eds.), *Data analysis strategies and designs for substance abuse research* (NIDA Research Issues No. 13). Washington, DC: U.S. Government Printing Office.

Lehman, W. E. K., & Simpson, D. D. (1992). Employee substance use and on-the-job behaviors. *Journal of Applied Psychology, 77,* 309–321.

Leutgert, M. J., & Armstrong, A. H. (1973). Methodological issues in drug usage surveys: Anonymity, recency, and frequency. *International Journal of the Addictions, 8,* 683–689.

McCabe, S. E., Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Kloska, D. D. (2005). Selection and socialization effects of fraternities and sororities on U.S. college student substance use: A multi-cohort national longitudinal study. *Addiction, 100,* 512–524.

McCabe, S. E., Schulenberg, J. E., O'Malley, P. M., Patrick, M. E., & Kloska, D. D. (2014). Nonmedical use of prescription opioids during the transition to adulthood: A multi-cohort national longitudinal study. *Addiction, 109*(1), 102–110.

Mensch, B., & Kandel, D. B. (1988). Dropping out of high school and drug involvement. *Sociology of Education, 61,* 95–113.

Merline, A., Jager, J., & Schulenberg, J.E. (2008). Adolescent risk factors for adult alcohol use and abuse: Stability and change of predictive value across early and middle adulthood. *Addiction, 103,* 84-99.

Merline, A. C., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., & Johnston, L. D. (2004). Substance use among adults 35 years of age: Prevalence, adulthood predictors, and impact of adolescent substance use. *American Journal of Public Health, 94,* 96–102.

Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E. (2015). *Monitoring the Future national survey results on drug use, 1975-2013: Volume I: Secondary school students.* Ann Arbor: Institute for Social Research, The University of Michigan, 599 pp.

Miller, J. D., Cisin, I. H., Gardner-Keaton, H., Harrell, A. V., Wirtz, P. W., Abelson, H. I., & Fishburne, P. M. (1983). *National survey on drug abuse: Main findings, 1982.* Washington, DC: National Institute on Drug Abuse.

National Center for Education Statistics (1996). *The condition of education, 1996* (NCES No. 96-304[6/96]). Washington, DC: U.S. Department of Education.

National Center for Education Statistics (2005). Projections of education statistics to 2014. Retrieved October 11, 2006 from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005074

National Institute on Drug Abuse (1991a). *Drug use among youth: Findings from the 1988 National Household Survey on Drug Abuse* (DHHS Publication No. [ADM] 91-1765). Rockville, MD: ADAMHA.

National Institute on Drug Abuse (1991b). *National household survey on drug abuse: Main findings 1990* (DHHS Publication No. [ADM] 91-1788). Rockville, MD: ADAMHA.

O'Donnell, J. A., Voss, H. L., Clayton, R. R., Slatin, G., & Room, R. G. W. (1976). *Young men and drugs—A nationwide survey* (NIDA Research Monograph No. 5). Washington, DC: U.S. Government Printing Office.

O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1983). Reliability and consistency of self-reports of drug use. *International Journal of the Addictions, 18,* 805–824.

O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1984). Period, age, and cohort effects on substance use among American youth. *American Journal of Public Health, 74,* 682–688.

O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1988). Period, age, and cohort effects on substance use among young Americans: A decade of change, 1976–1986. *American Journal of Public Health, 78,* 1315–1321.

O'Malley, P. M., Johnston, L. D., Bachman, J. G., & Schulenberg, J. (2000). A comparison of confidential versus anonymous survey procedures: Effects on reporting of drug use and related attitudes and beliefs in a national study of students. *Journal of Drug Issues, 30,* 35–54.

O'Malley, P. M., Johnston, L. D., Bachman, J. G., Schulenberg, J. E., & Kumar, R. (2006). How substance use differs among American secondary schools. Prevention Science, 7, 409-420.

Osgood, D. W., Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1988). The generality of deviance in late adolescence and early adulthood. *American Sociological Review, 53,* 81–93.

Patrick, M. E., & Schulenberg, J. E. (2010). Alcohol use and heavy episodic drinking prevalence and predictors among national samples of American 8th and 10th grade students. *Journal of Studies on Alcohol and Drugs, 71,* 41-45.

Patrick, M. E., Schulenberg, J. E., & O'Malley, P. M. (2013). High school substance use as a predictor of college attendance, completion, and dropout: A national multi-cohort longitudinal study. *Youth & Society*. Advance online publication. NIHMSID528548.

Patrick, M.E., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (2011). Adolescents' reported reasons for alcohol and marijuana use as predictors of substance use and problems in adulthood. *Journal of Studies on Alcohol and Drugs, 72*(1), 106-116.

Petzel, T. P., Johnson, J. E., & McKillip, J. (1973). Response bias in drug surveys. *Journal of Consulting and Clinical Psychology, 40,* 437–439.

Pilgrim, C.C., Schulenberg, J.E., O'Malley, P.M., Bachman, J.G., & Johnston, L.D. (2006). Mediators and moderators of parental involvement on substance use: A national study of adolescents. *Prevention Science, 10,* 1–15.

Robins, L. N. (1974). *The Vietnam drug user returns* (Special Action Office Monograph, Series A, No. 2). Washington, DC: Executive Office of the President (Special Action Office for Drug Abuse Prevention).

Rootman, I., & Smart, R. G. (1985). A comparison of alcohol, tobacco and drug use as determined from household and school surveys. *Drug and Alcohol Dependence, 16,* 89–94.

Safron, D. J., Schulenberg, J. E., & Bachman, J. G. (2001). Part-time work and hurried adolescence: The links among work intensity, social activities, health behaviors, and substance use. *Journal of Health and Social Behavior, 42,* 425–449.

Schaie, K. W. (1965). A general model for the study of developmental problems. *Psychological Bulletin, 64*, 92–107.

Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1994). High school educational success and subsequent substance use: A panel analysis following adolescents into young adulthood. *Journal of Health and Social Behavior, 35*, 45– 62.

Schulenberg, J. E., Bryant, A. L., & O'Malley, P. M. (2004). Taking hold of some kind of life: How developmental tasks relate to trajectories of well-being during the transition to adulthood. *Development and Psychopathology, 16,* 1119–1140.

Schulenberg, J. E., Merline, A. C., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Laetz, V. B. (2005). Trajectories of marijuana use during the transition to adulthood: The big picture based on national panel data. *Journal of Drug Issues, 35*, 255–279.

Schulenberg, J., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2000). "Spread your wings and fly": The course of health and well-being during the transition to young adulthood. In L. Crockett & R. Silbereisen (Eds.), *Negotiating adolescence in times of social change* (pp. 224–255). New York: Cambridge University Press.

Schulenberg, J., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2005). Early adult transitions and their relation to well-being and substance use. In R. A. Settersten, Jr., F. F. Furstenberg, Jr., & R. G. Rumbaut (Eds.), *On the frontier of adulthood: Theory, research, and public policy* (MacArthur network edited volume, pp. 417– 453). University of Chicago Press.

Schulenberg, J.E., & Patrick, M.E. (2012). Historical and developmental patterns of alcohol and drug use among college students: Framing the problem. In H.R. White & D. Rabiner (Eds.), *College student drinking and drug use: Multiple perspectives on a complex problem.* (pp 13-35). New York: Guildford.

Schulenberg, J. E., & Zarrett, N. R. (2006). Mental health during emerging adulthood: Continuity and discontinuity in courses, causes, and functions. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 135–172). Washington DC: American Psychological Association.

Siennick, S. E., Staff, J., Osgood, D. W., Schulenberg, J. E., Bachman, J. G., & VanEseltine, M. (2014). Partnership transitions and antisocial behavior in young adulthood: A within-person, multi-cohort analysis. *Journal of Research in Crime and Delinquency*, *51*(6), 735-758. doi: 10.1177/0022427814529977. PMC4254826

Single, E., Kandel, D., & Johnson, B. D. (1975). The reliability and validity of drug use responses in a large-scale longitudinal survey. *Journal of Drug Issues, 5,* 426– 443.

Smith, P. F., Remington, P. L., Williamson, D. F., & Anda, R. F. (1990). A comparison of alcohol sales data with survey data on self-reported alcohol use in 21 states. *American Journal of Public Health, 80,* 309–312.

Smart, R. G. (1974). Addiction, dependency, abuse, or use: Which are we studying with epidemiology? In E. Josephson & E. E. Carroll (Eds.), *Drug use: Epidemiological and sociological approaches.* Washington: Hemisphere Pub. Corp.

Smart, R. G., & Jarvis, G. K. (1981). Do self-report studies of drug use really give dependable results? *Canadian Journal of Criminology, 23,* 83–92.

Stacy, A. W., Widaman, K. F., Hays, R., & DiMatteo, M. R. (1985). Validity of self- reports of alcohol and other drug use. *Journal of Personality and Social Psychology, 49,* 219–232.

Staff, J., Johnson, M. K., Patrick, M. E., & Schulenberg, J. E. (2014). The Great Recession and recent employment trends among secondary students in the United States. *Longitudinal and Life Course Studies, 5*(2), 173-188. doi: 10.14301/llcs.v5i2.275

Staff, J., Messersmith, E.E., & Schulenberg, J.E. (2009). Adolescents and the world of work. In R.M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., pp. 270–313). Hoboken, NJ: John Wiley & Sons, Inc.

Staff, J., Osgood, D.W., Schulenberg, J.E., Bachman, J.G., O'Malley, P.M., & Messersmith, E.E. (2010). Explaining the relationship between employment and juvenile delinquency. *Criminology, 48*, 1101-1131.

Staff, J., Schulenberg, J.E., & Bachman, J.G. (2010). Adolescent work intensity, school performance, and academic engagement. *Sociology of Education, 83*, 183-200.

Staff, J., Schulenberg, J. E., Maslowsky, J., Bachman, J. G., O'Malley, P. M., Maggs, J. L., & Johnston, L. D. (2010). Substance use changes and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Development and Psychopathology, 22 (*Special issue: Developmental cascades: Part 2), 917-932.

Substance Abuse and Mental Health Services Administration. (2012). *Comparing and evaluating youth substance use estimates from the National Survey on Drug Use and Health and other surveys*. HHS Publication No. SMA 12-4727, Methodology Series M-9. Rockville, MD.

Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (February 12, 2013). *The NSDUH Report: Substance Use among 12th Grade Aged Youths by Dropout Status.* Rockville, MD.

Tauras, J., O'Malley, P. M., & Johnston, L. D. (2001). *Effects of price and access laws on teenage smoking initiation: A national longitudinal analysis.* (ImpacTeen/Youth, Education, and Society Research Paper No. 2). Chicago, IL: University of Illinois at Chicago and Ann Arbor, MI: Institute for Social Research.

U.S. Census Bureau (various years). *Current population reports, Series P-20,* various numbers. Washington, DC: U.S. Government Printing Office.

Wallace, J. M., Jr., & Bachman, J. G. (1991). Explaining racial/ethnic differences in adolescent drug use: The impact of background and lifestyle. *Social Problems, 38*(3), 333–357.

Wechsler, H., Lee, J. E., Kuo, M., Sebring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health College Alcohol Study Surveys: 1993– 2001. *Journal of American College Health, 50,* 203–217.

Whitehead, P., & Smart, R. G. (1972). Validity and reliability of self-reported drug use. *Canadian Journal of Criminology and Corrections, 14*, 1-7.

APPENDIX A: Cover of 12th-Grade Base-Year Questionnaire

This questionnaire is part of a nationwide study of high school seniors, conducted each year by the University of Michigan's Institute for Social Research. The questions ask your opinions about a number of things—the way things are now and the way you think they ought to be in the future. In a sense, many of your answers on this questionnaire will count as "votes" on a wide range of important issues.

If this study is to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. All your answers will be kept strictly confidential, and will never be seen by anyone who knows you. A special grant of confidentiality from the U.S. government guarantees our ability to keep all data completely confidential.

This study is completely voluntary. If there is any question that you or your parents would find objectionable for any reason, just leave it blank.

In a few months, we would like to mail each of you a summary of the nationwide results from this study. Also, in about a year we would like to mail another questionnaire to some of you, asking about how your plans have worked out and what's happening in your lives.

In order to include you in these mailings, we ask for your name and address on a special form at the end of this questionnaire. This form is to be torn out and handed in separately. Once the address form and the questionnaire have been separated, there is no way they can be matched again, except by using a special computer file at the University of Michigan. The only purpose for that file is to match a follow-up questionnaire with this one.

Other seniors have said that these questionnaires are very interesting and that they enjoy filling them out. We hope you will too. Be sure to read the instructions on the other side of this cover page before you begin to answer. Thank you very much for being an important part of this project.

2015-12
INSTITUTE FOR SOCIAL RESEARCH/THE UNIVERSITY OF MICHIGAN/ANN ARBOR, MICHIGAN

INSTRUCTIONS

1. **This is not a test, so there are no right or wrong answers; we would like you to work fairly quickly, so that you can finish.**
2. **All of the questions should be answered by marking one of the answer spaces. If you don't always find an answer that fits exactly, use the one that comes closest. If any question does not apply to you, or you are not sure of what it means, just leave it blank.**
3. **Your answers will be read automatically by a machine called an optical mark reader. Please follow these instructions carefully:**

- **Use only the black lead pencil you have been given.**
- **Make heavy black marks inside the circles.**
- **Erase cleanly any answer you wish to change.**
- **Make no other markings or comments on the answer pages, since they interfere with the automatic reading. (If you want to add a comment about any question, please use the space provided below.)**

These kinds of markings will work:

These kinds of markings will NOT work:

(THIS SPACE FOR WRITTEN COMMENTS)

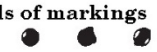
APPENDIX B: Cover of Follow-Up Questionnaire

INSTRUCTIONS

1. **All of the questions should be answered by marking one of the answer spaces. If you don't always find an answer that fits exactly, use the one that comes closest. If any question does not apply to you, or if you are not sure what it means, just leave it blank.**

2. **Your answers will be read automatically by a machine called an optical mark reader. Please follow these instructions carefully:**

   - **Use only the black lead pencil mailed to you (or any no. 2 black lead pencil).**
   - **Make heavy black marks inside the circles.**
   - **Erase cleanly any answer you wish to change.**
   - **Make no other markings or comments on the answer pages, since they interfere with the automatic reading. (If you want to add a comment about the study or any question, please use the space provided below.)**

These kinds of markings will work: 

These kinds of markings will NOT work: 

(THIS SPACE FOR WRITTEN COMMENTS)

APPENDIX C: Core of 12th-Grade Measures

(Part B of Form 3, Base Year and Follow-Up)

PART B

The following questions are about cigarette smoking.

1. Have you ever smoked cigarettes?

① Never—**GO TO QUESTION 3**
② Once or twice
③ Occasionally but not regularly
④ Regularly in the past
⑤ Regularly now

2. How frequently have you smoked cigarettes during the past 30 days?

① Not at all
② Less than one cigarette per day
③ One to five cigarettes per day
④ About one-half pack per day
⑤ About one pack per day
⑥ About one and one-half packs per day
⑦ Two packs or more per day

3. Next we want to ask you about drinking alcoholic beverages, including beer, wine, liquor, and any other beverage that contains alcohol.
Have you ever had any alcoholic beverage to drink – more than just a few sips?

① No—**GO TO TOP OF NEXT COLUMN**
② Yes

4. On how many occasions have you had alcoholic beverages to drink–more than just a few sips...
(Mark one circle for each line.)

	0 Occasions	1-2 Occasions	3-5 Occasions	6-9 Occasions	10-19 Occasions	20-39 Occasions	40 or More
a. ...in your lifetime?	①	②	③	④	⑤	⑥	⑦
b. ...during the last 12 months?	①	②	③	④	⑤	⑥	⑦
c. ...during the last 30 days?	①	②	③	④	⑤	⑥	⑦

5. On the occasions that you drink alcoholic beverages, how often do you drink enough to feel pretty drunk or high?

① On none of the occasions
② On few of the occasions
③ On about half of the occasions
④ On most of the occasions
⑤ On nearly all of the occasions

6. Think back over the LAST TWO WEEKS. How many times have you had five or more drinks in a row? (A "drink" is a glass of wine, a bottle of beer, a shot glass of liquor, a mixed drink, etc.)

① None
② Once
③ Twice
④ Three to five times
⑤ Six to nine times
⑥ Ten or more times

The next major section of this questionnaire deals with various other drugs. There is a lot of talk about this subject, but not enough accurate information. Therefore, we still have a lot to learn about the actual experiences and attitudes of people your age.

We hope that you can answer all of the questions, but if you find one that you feel you cannot answer honestly, just leave it blank. Remember that your answers will be kept strictly confidential; they are never connected with your name or your class.

7. On how many occasions (if any) have you used marijuana (weed, pot) or hashish (hash, hash oil)...
(Mark one circle for each line.)

	0 Occasions	1-2 Occasions	3-5 Occasions	6-9 Occasions	10-19 Occasions	20-39 Occasions	40 or More
a. ...in your lifetime?	①	②	③	④	⑤	⑥	⑦
b. ...during the last 12 months?	①	②	③	④	⑤	⑥	⑦
c. ...during the last 30 days?	①	②	③	④	⑤	⑥	⑦

8. On how many occasions (if any) have you used LSD ("acid")...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	①	②	③	④	⑤	⑥	⑦
b. ...during the last 12 months?	①	②	③	④	⑤	⑥	⑦
c. ...during the last 30 days?	①	②	③	④	⑤	⑥	⑦

9. On how many occasions (if any) have you used hallucinogens other than LSD (like mescaline, peyote, "shrooms" or psilocybin, PCP)...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	①	②	③	④	⑤	⑥	⑦
b. ...during the last 12 months?	①	②	③	④	⑤	⑥	⑦
c. ...during the last 30 days?	①	②	③	④	⑤	⑥	⑦

10. Amphetamines and other stimulant drugs are sometimes prescribed by doctors for people who have trouble paying attention, are hyperactive, have ADHD, or have trouble staying awake. They are sometimes called uppers, ups, pep pills, and include drugs like Adderall and Ritalin. Drugstores are not supposed to sell them without a prescription from a doctor. They do NOT include any nonprescription drugs such as over-the-counter diet pills or stay-awake pills.
On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs on your own–that is, without a doctor telling you to take them...

	0 Occasions	1-2 Occasions	3-5 Occasions	6-9 Occasions	10-19 Occasions	20-39 Occasions	40 or More
a. ...in your lifetime?	①	②	③	④	⑤	⑥	⑦
b. ...during the last 12 months?	①	②	③	④	⑤	⑥	⑦
c. ...during the last 30 days?	①	②	③	④	⑤	⑥	⑦

(2015 Base Year: Form 3 - Part B)

11. On how many occasions (if any) have you used "crack" (cocaine in chunk or rock form)...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

12. On how many occasions (if any) have you used cocaine in any other form...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

13. Sedatives, including barbiturates, are sometimes prescribed by doctors to help people relax or get to sleep. They are sometimes called downs or downers, and include phenobarbital, Ambien, Lunesta, and Sonata. On how many occasions (if any) have you taken sedatives on your own – that is, without a doctor telling you to take them...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

14. Tranquilizers are sometimes prescribed by doctors to calm people down, quiet their nerves, or relax their muscles. Librium, Valium, and Xanax are all tranquilizers. On how many occasions (if any) have you taken tranquilizers on your own–that is, without a doctor telling you to take them...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

15. On how many occasions (if any) have you used heroin...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

16. There are a number of narcotics other than heroin, such as methadone, opium, morphine, codeine, Demerol, Vicodin, OxyContin, and Percocet. These are sometimes prescribed by doctors.

On how many occasions (if any) have you taken narcotics other than heroin on your own–that is, without a doctor telling you to take them...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

17. On how many occasions (if any) have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any other gases or sprays in order to get high...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

18. On how many occasions (if any) have you used MDMA ("Molly," "ecstasy")...

	0	1-2	3-5	6-9	10-19	20-39	40 +
a. ...in your lifetime?	1	2	3	4	5	6	7
b. ...during the last 12 months?	1	2	3	4	5	6	7
c. ...during the last 30 days?	1	2	3	4	5	6	7

APPENDIX D: 12th-Grade Background Measures

(Part C of All Base-Year Forms)

PART C

These next questions ask for some background information about yourself.

1. In what year were you born?

① Before '94 ② 1994 ③ 1995 ④ 1996 ⑤ 1997 ⑥ 1998 ⑦ 1999 ⑧ After 1999

2. In what month were you born?

① January ② February ③ March ④ April ⑤ May ⑥ June ⑦ July ⑧ August ⑨ September ⑩ October ⑪ November ⑫ December

3. What is your sex? ① Male ② Female

4. How do you describe yourself? (Select one or more responses.)

- ○ Black or African American
- ○ Mexican American or Chicano
- ○ Cuban American
- ○ Puerto Rican
- ○ Other Hispanic or Latino
- ○ Asian American
- ○ White (Caucasian)
- ○ American Indian or Alaska Native
- ○ Native Hawaiian or Other Pacific Islander

—6—

5. Where did you grow up mostly?

① On a farm
② In the country, not on a farm
③ In a small city or town (under 50,000 people)
④ In a medium-sized city (50,000 - 100,000)
⑤ In a suburb of a medium-sized city
⑥ In a large city (100,000 - 500,000)
⑦ In a suburb of a large city
⑧ In a very large city (over 500,000)
⑨ In a suburb of a very large city
⓪ Can't say; mixed

6. What is your present marital status?

① Married
② Engaged
③ Separated/divorced
④ Single

7. How many brothers and sisters do you have? (Include stepbrothers and sisters and halfbrothers and sisters.)

	None	One	Two	Three	Four	Five	6 or more
a. Older brothers and sisters	⓪	①	②	③	④	⑤	⑥
b. Younger brothers and sisters . . .	⓪	①	②	③	④	⑤	⑥

7c. Which of the following people live in the same household with you? (Mark all that apply.)

○ I live alone
○ Father (or male guardian)
○ Mother (or female guardian)
○ Brother(s) and/or sister(s)
○ Grandparent(s)
○ My husband/wife
○ My child(ren)
○ Other relative(s)
○ Non-relative(s)

The next three questions ask about your parents. If you were raised mostly by foster parents, stepparents, or others, answer for them. For example, if you have both a stepfather and a natural father, answer for the one that was the most important in raising you.

8. What is the highest level of schooling your father completed?

○ Completed grade school or less
○ Some high school
○ Completed high school
○ Some college
○ Completed college
○ Graduate or professional school after college
○ Don't know, or does not apply

9. What is the highest level of schooling your mother completed?

○ Completed grade school or less
○ Some high school
○ Completed high school
○ Some college
○ Completed college
○ Graduate or professional school after college
○ Don't know, or does not apply

10. Did your mother have a paid job (half-time or more) during the time you were growing up?

① No
② Yes, some of the time when I was growing up
③ Yes, most of the time
④ Yes, all or nearly all of the time

11. How would you describe your political preference? (Mark only one circle.)

① Strongly Republican
② Mildly Republican
③ Mildly Democrat
④ Strongly Democrat

⑤ Independent
⑥ No preference
⑦ Other
⑧ Don't know, haven't decided

12. How would you describe your political beliefs? (Mark only one circle.)

① Very conservative
② Conservative
③ Moderate
④ Liberal
⑤ Very liberal
⑥ Radical

⑧ None of the above, or don't know

13. The next three questions are about religion.

a. What is your religious preference?

○ Baptist
○ Methodist
○ Lutheran
○ Presbyterian
○ Episcopal
○ United Church of Christ
○ Churches of Christ
○ Disciples of Christ
○ Catholic
○ Eastern Orthodox
○ Latter-day Saints
○ Other Christian
○ Unitarian Universalist
○ Jewish
○ Muslim
○ Buddhist
○ Other Religion
○ None

b. How often do you attend religious services?

① Never
② Rarely
③ Once or twice a month
④ About once a week or more

c. How important is religion in your life?

① Not important
② A little important
③ Pretty important
④ Very important

14. When are you most likely to graduate from high school?

1. By this June
2. July to January
3. After next January

6. Don't expect to graduate

15. Which of the following best describes your present high school program?

1. Academic or college prep
2. General
3. Vocational, technical, or commercial
4. Other, or don't know

16. Compared with others your age throughout the country, how do you rate yourself on school ability?

17. How intelligent do you think you are compared with others your age?

	Far Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Far Above Average
16. Compared with others your age throughout the country, how do you rate yourself on school ability?	1	2	3	4	5	6	7
17. How intelligent do you think you are compared with others your age?	1	2	3	4	5	6	7

18. During the LAST FOUR WEEKS, how many whole days of school have you missed...

	None	1 Day	2 Days	3 Days	4 to 5 Days	6 to 10 Days	11 or More
a. Because of illness	1	2	3	4	5	6	7
b. Because you skipped or "cut"	1	2	3	4	5	6	7
c. For other reasons	1	2	3	4	5	6	7

19. During the last four weeks, how often have you gone to school, but skipped a class when you weren't supposed to?

1. Not at all
2. 1 or 2 times
3. 3-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

20. Which of the following best describes your average grade so far in high school?

9. A (93-100)
8. A- (90-92)
7. B+ (87-89)
6. B (83-86)
5. B- (80-82)
4. C+ (77-79)
3. C (73-76)
2. C- (70-72)
1. D (69 or below)

21. How likely is it that you will do each of the following things after high school? (Mark one for each line.)

	Definitely Won't	Probably Won't	Probably Will	Definitely Will
a. Attend a technical or vocational school	1	2	3	4
b. Serve in the armed forces	1	2	3	4
c. Graduate from a two-year college program	1	2	3	4
d. Graduate from college (four-year program)	1	2	3	4
e. Attend graduate or professional school after college	1	2	3	4

22. Suppose you could do just what you'd like and nothing stood in your way. How many of the following things would you WANT to do? (Mark ALL that apply.)

- a. Attend a technical or vocational school
- b. Serve in the armed forces
- c. Graduate from a two-year college program
- d. Graduate from college (four-year program)
- e. Attend graduate or professional school after college
- f. None of the above

23. On the average over the school year, how many hours per week do you work in a paid or unpaid job?

1. None
2. 5 or less hours
3. 6 to 10 hours
4. 11 to 15 hours
5. 16 to 20 hours
6. 21 to 25 hours
7. 26 to 30 hours
8. More than 30 hours

24. During an average week, how much money do you get from. . .

	None	$1 - 5	$6 - 10	$11 - 20	$21 - 35	$36 - 50	$51 - 75	$76 - 125	$126 - 175	$176+
a. A job or other work	01	02	03	04	05	06	07	08	09	10
b. Other sources (allowances, etc.)	01	02	03	04	05	06	07	08	09	10

25. During a typical week, on how many evenings do you go out for fun and recreation?

- Less than one
- One
- Two
- Three
- Four or five
- Six or seven

26. On the average, how often do you go out with a date (or your spouse/partner)?

① Never
② Once a month or less
③ 2 or 3 times a month
④ Once a week
⑤ 2 or 3 times a week
⑥ Over 3 times a week

27. During an average week, how much do you usually drive a car, truck, or motorcycle?

① Not at all
② 1 to 10 miles
③ 11 to 50 miles
④ 51 to 100 miles
⑤ 100 to 200 miles
⑥ More than 200 miles

28. Within the LAST 12 MONTHS how many times, if any, have you received a ticket (OR been stopped and warned) for moving violations, such as speeding, running a stop light, or improper passing?

⓪ None–**GO TO QUESTION 30**
① Once
② Twice
③ Three times
④ Four or more times

29. How many of these tickets or warnings occurred after you were. . .

	None	One	Two	Three	Four+
a. Drinking alcoholic beverages?	⓪	①	②	③	④
b. Smoking marijuana or hashish?	⓪	①	②	③	④
c. Using other illegal drugs?	⓪	①	②	③	④

30. We are interested in any accidents which occurred while you were driving a car, truck, or motorcycle. ("Accidents" means a collision involving property damage or personal injury–not bumps or scratches in parking lots.)

During the LAST 12 MONTHS, how many accidents have you had while you were driving (whether or not you were responsible)?

⓪ None–**GO TO TOP OF NEXT COLUMN**
① One
② Two
③ Three
④ Four or more

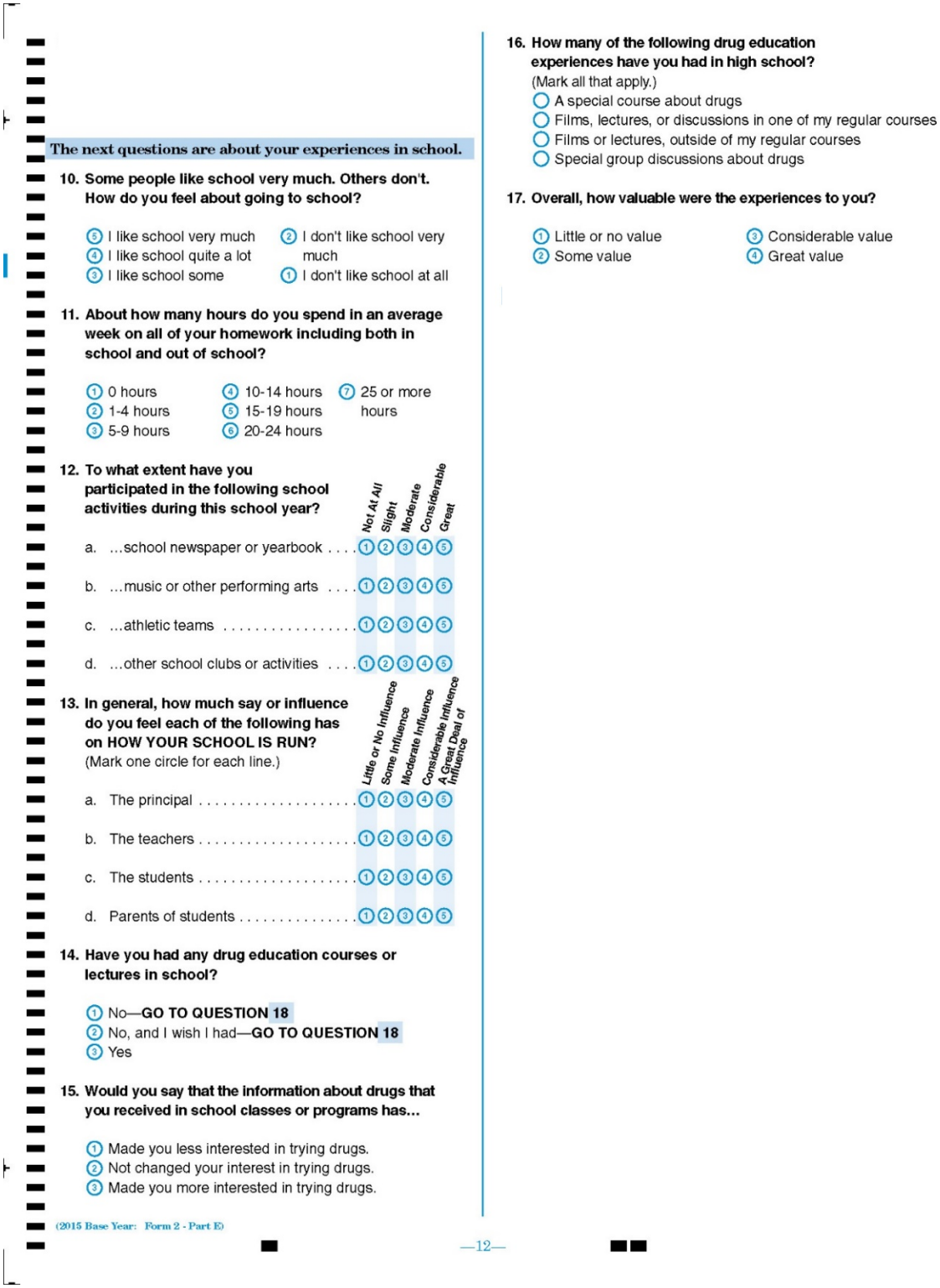
31. How many of these accidents occurred after you were. . .

	None	One	Two	Three	Four+
a. Drinking alcoholic beverages?	⓪	①	②	③	④
b. Smoking marijuana or hashish?	⓪	①	②	③	④
c. Using other illegal drugs?	⓪	①	②	③	④

D)

APPENDIX E: High School Experiences*

(Part E, Questions 10-17 of Base-Year Form 2)



The next questions are about your experiences in school.

10. Some people like school very much. Others don't. How do you feel about going to school?

- (5) I like school very much
- (4) I like school quite a lot
- (3) I like school some
- (2) I don't like school very much
- (1) I don't like school at all

11. About how many hours do you spend in an average week on all of your homework including both in school and out of school?

- (1) 0 hours
- (2) 1-4 hours
- (3) 5-9 hours
- (4) 10-14 hours
- (5) 15-19 hours
- (6) 20-24 hours
- (7) 25 or more hours

12. To what extent have you participated in the following school activities during this school year?

	Not At All	Slight	Moderate	Considerable	Great
a. ...school newspaper or yearbook	1	2	3	4	5
b. ...music or other performing arts	1	2	3	4	5
c. ...athletic teams	1	2	3	4	5
d. ...other school clubs or activities	1	2	3	4	5

13. In general, how much say or influence do you feel each of the following has on HOW YOUR SCHOOL IS RUN?
(Mark one circle for each line.)

	Little or No Influence	Some Influence	Moderate Influence	Considerable Influence	A Great Deal of Influence
a. The principal	1	2	3	4	5
b. The teachers	1	2	3	4	5
c. The students	1	2	3	4	5
d. Parents of students	1	2	3	4	5

14. Have you had any drug education courses or lectures in school?

- (1) No—**GO TO QUESTION 18**
- (2) No, and I wish I had—**GO TO QUESTION 18**
- (3) Yes

15. Would you say that the information about drugs that you received in school classes or programs has...

- (1) Made you less interested in trying drugs.
- (2) Not changed your interest in trying drugs.
- (3) Made you more interested in trying drugs.

16. How many of the following drug education experiences have you had in high school?
(Mark all that apply.)

- ◯ A special course about drugs
- ◯ Films, lectures, or discussions in one of my regular courses
- ◯ Films or lectures, outside of my regular courses
- ◯ Special group discussions about drugs

17. Overall, how valuable were the experiences to you?

- (1) Little or no value
- (2) Some value
- (3) Considerable value
- (4) Great value

(2015 Base Year: Form 2 - Part E)

—12—

*Note: There are additional questions about high school experiences in other questionnaire forms.

APPENDIX F: Post High School Experiences

(Part C of All Follow-Up Forms)

PART C

These next questions ask for some background information.

1. What is your present marital status? (Mark one circle.)

- ○ Married
- ○ Engaged
- ○ Separated/ Divorced
- ○ Widowed
- ○ Single

2a. How many children do you have (biological, adopted or stepchildren)?

- ⓪ None
- ① One
- ② Two
- ③ Three or more

2b. How many times in the past 24 months (including now) have you (or your spouse or partner) been pregnant?

- ⓪ None
- ① One
- ② Two
- ③ Three or more

2c. Are you (or is your spouse or partner) currently pregnant?

- ③ Yes, definitely
- ② Probably
- ① No

3. During most of March this year, where did you live?

- ○ House
- ○ Condominium
- ○ Apartment
- ○ Rented room
- ○ Mobile home
- ○ Military base
- ○ Dormitory
- ○ Fraternity or Sorority
- ○ Jail/prison/correctional facility
- ○ Other

4. During March, which of the following people lived in the same household with you? (Mark ALL that apply.)

- ○ My husband/wife
- ○ My partner of the opposite sex
- ○ My partner of the same sex
- ○ My child(ren)
- ○ My parent(s)
- ○ Spouse's parent(s)
- ○ Others
- ○ I live alone

(2015 Follow-up: Form 2 - Parts B & C)

—6—

5. Now we'd like to know about some things you are doing now, or have done, or plan to do. Please look at each activity listed below, and mark the circle which shows how likely you are to do EACH.
(Mark one for each line.)

	I'm doing this now	I have done this	Definitely won't	Probably won't	Probably will	Definitely will
a. Attend technical or vocational school (after high school)	5	6	1	2	3	4
b. Serve on active duty in the armed forces	5	6	1	2	3	4
c. Attend a two-year college	5	6	1	2	3	4
d. Graduate from a two-year college program	5	6	1	2	3	4
e. Attend a four-year college	5	6	1	2	3	4
f. Graduate from a four-year college program	5	6	1	2	3	4
g. Attend graduate or professional school after college	5	6	1	2	3	4

6. What is the last year of school that you COMPLETED?

1. 11th grade
2. 12th grade
3. One year of college
4. Two years of college
5. Three years of college
6. Four years of college
7. Five or more years of college

7. What is the HIGHEST degree you have earned?

1. Less than a high school diploma
2. High school diploma or equivalency
3. Associate's degree
4. Bachelor's degree
5. Master's degree
6. Doctoral degree or equivalent

8. During March of this year, were you taking courses at any school or college? (Mark only one circle.)

1. No—**GO TO QUESTION 12**
2. Yes, less than half-time
3. Yes, about half-time or more
4. Yes, as a full-time student

9. About how many students are enrolled at that school?

1. 1-99
2. 100-499
3. 500-999
4. 1,000-2,999
5. 3,000-9,999
6. 10,000-19,999
7. Over 20,000

10a. Were you an active member of a fraternity or sorority (exclude honorary ones)?

2. Yes
1. No

10b. Which of the following best describes your average grade this year (since last September)?

9. A (93-100)
8. A- (90-92)
7. B+ (87-89)
6. B (83-86)
5. B- (80-82)
4. C+ (77-79)
3. C (73-76)
2. C- (70-72)
1. D (69 or below)
0. No grades; don't know

11. What has been your major field of study this year?

1. Office and clerical (bookkeeping, word processing, etc.)
2. Vocational and technical fields
3. Biological sciences (zoology, physiology, etc.)
4. Business (accounting, marketing, personnel, etc.)
5. Education (elementary, special, physical, etc.)
6. Engineering (civil, electrical, etc.)
7. Humanities and Fine Arts (music, religion, English, etc.)
8. Physical Sciences and Mathematics (chemistry, etc.)
9. Social Sciences (psychology, history, etc.)
10. Other academic field
11. Academic, but undecided about which major field

12. The next questions ask about your employment during the first full week in March. If you were on vacation from work that week, answer for the week before your vacation.

Which BEST describes your employment during the first full week in March? (Mark only one circle.)

1. Two or more different jobs
2. One full-time job
3. One part-time job
4. Full-time homemaker (no outside job)
5. Laid-off or waiting to start a job
6. No paid employment at all that week

13a. Which BEST describes your primary job that week? (Mark only one.)

13b. Which BEST describes the last job you held? (Mark only one.)

0. Never had a job – **GO TO QUESTION 19**
1. Laborer (custodian, material mover, maid, landscape worker, farm worker)
2. Service worker (food preparer or food service worker including fast food, waiter/waitress, call center worker, stock clerk, order filler, nursing aide/orderly, teacher assistant, childcare worker)
3. Operative or semi-skilled worker (bus or truck driver, maintenance or repair worker, assembly line worker)
4. Sales clerk in a retail store or by phone (cashier, supervisor of retail workers)
5. Clerical or office worker (secretary, receptionist, bookkeeper, supervisor of office workers, bank teller, postal clerk or carrier)
6. Protective service (police, firefighter, paramedic)
7. Military service
8. Craftsman or skilled worker (carpenter, mechanic, machinist, welder)
9. Farm owner, farm manager
10. Owner of a small business
11. Sales representative (insurance agent, real estate)
12. Manager or administrator (office manager, government official, sales manager)
13. Professional without doctoral degree (registered nurse, school teacher, accountant, architect, artist, information technology worker)
14. Professional with doctoral degree or equivalent (lawyer, physician, dentist, scientist, college professor)
15. None of the above

14. Which BEST describes the kind of setting in which you did (do) this work? (Mark only one circle.)

- (1) A large corporation
- (2) A small business
- (3) A government agency
- (4) The military service
- (5) A school or university
- (6) A police department or police agency
- (7) A social service organization
- (8) With a small group of partners
- (9) On your own (self-employed)
- (0) None of these

15. During March, about how many hours a week did you work on your job(s)?

- (1) 1-14 hours a week
- (2) 15-29
- (3) 30-34
- (4) 35-39
- (5) 40 hours a week
- (6) 41-48
- (7) 49-59
- (8) 60 or more
- (9) Did not work in March—**GO TO QUESTION 17**

16. During March, about how much did you earn PER HOUR on the average? (Answer for your most important job and include all earnings before deductions. If not sure, guess.)

- (00) Did not get paid
- (01) Less than $3.00 per hour
- (02) $3.00 - $3.49
- (03) $3.50 - $3.99
- (04) $4.00 - $4.49
- (05) $4.50 - $4.99
- (06) $5.00 - $5.49
- (07) $5.50 - $5.99
- (08) $6.00 - $6.49
- (09) $6.50 - $6.99
- (10) $7.00 - $7.99
- (11) $8.00 - $8.99
- (12) $9.00 - $9.99
- (13) $10.00 - $11.99
- (14) $12.00 - $14.99
- (15) $15.00 - $19.99
- (16) $20.00 - $24.99
- (17) $25.00 - $29.99
- (18) $30.00 - $39.99
- (19) $40.00 or more

17. During all of last calendar year (January 1 to December 31), how many MONTHS were you working at a full-time paid job?

- (0) None
- (1) One
- (2) Two
- (3) Three
- (4) Four
- (5) Five
- (6) Six
- (7) Seven
- (8) Eight
- (9) Nine
- (10) Ten
- (11) Eleven
- (12) Twelve

18. During all of last year (January 1 to December 31), how much did you yourself earn before taxes? (Include only pay for work, such as salary, wages, tips, commissions, etc.)

- (00) $0
- (01) $1 - $1,999
- (02) $2,000 - $3,999
- (03) $4,000 - $5,999
- (04) $6,000 - $7,999
- (05) $8,000 - $9,999
- (06) $10,000 - $11,999
- (07) $12,000 - $14,999
- (08) $15,000 - $16,999
- (09) $17,000 - $19,999
- (10) $20,000 - $24,999
- (11) $25,000 - $29,999
- (12) $30,000 - $34,999
- (13) $35,000 - $39,999
- (14) $40,000 - $49,999
- (15) $50,000 - $69,999
- (16) $70,000 - $99,999
- (17) $100,000 or more

19. During all of last year (January 1 - December 31), how much of your financial support came from each of the following sources? (Mark one circle for each line.)

	None	A little (1-20%)	Some (21-40%)	About half (41-60%)	Most (61-80%)	Almost all (81-99%)	All
a. Yourself	0	1	2	3	4	5	6
b. Your spouse/partner	0	1	2	3	4	5	6
c. Your parents	0	1	2	3	4	5	6
d. Unemployment compensation	0	1	2	3	4	5	6
e. Welfare (TANF, food stamps, etc.)	0	1	2	3	4	5	6
f. All other sources	0	1	2	3	4	5	6

20. During all of last year (January 1 to December 31), how many weeks were you unemployed AND looking for work, or on lay-off from a job?

- (0) None
- (1) 1-2 weeks
- (2) 3-4 weeks
- (3) 5-9 weeks
- (4) 10-14 weeks
- (5) 15-20 weeks
- (6) 21-26 weeks
- (7) 27 or more weeks

21. During March of this year, how many whole days of work did you miss...

	None	1 Day	2 Days	3 Days	4 to 5 Days	6 to 10 Days	11 or More
a. Because of illness	1	2	3	4	5	6	7
b. For other reasons	1	2	3	4	5	6	7

The next questions are about some other things in your life.

22a. How would you describe your political preference? (Mark one.)

- (1) Strongly Republican
- (2) Mildly Republican
- (3) Mildly Democrat
- (4) Strongly Democrat
- (5) Independent
- (6) No preference
- (7) Other
- (8) Don't know, haven't decided

22b. How would you describe your political beliefs? (Mark one.)

- (1) Very conservative
- (2) Conservative
- (3) Moderate
- (4) Liberal
- (5) Very liberal
- (6) Radical
- (8) None of the above, or don't know

23. How often do you attend religious services?

- (1) Never
- (2) Rarely
- (3) Once or twice a month
- (4) About once a week or more

24. How important is religion in your life?

- (1) Not important
- (2) A little important
- (3) Pretty important
- (4) Very important

25. During a typical week, on how many evenings do you go out for fun and recreation?

- ○ Less than one
- ○ One
- ○ Two
- ○ Three
- ○ Four or five
- ○ Six or seven

26. On the average, how often do you go out with a date (or your spouse/partner)?

- (1) Never
- (2) Once a month or less
- (3) 2 or 3 times a month
- (4) Once a week
- (5) 2 or 3 times a week
- (6) Over 3 times a week

27. During an average week, how much do you usually drive a car, truck, or motorcycle?

- (1) Not at all
- (2) 1 to 10 miles
- (3) 11 to 50 miles
- (4) 51 to 100 miles
- (5) 101 to 200 miles
- (6) More than 200 miles

28. Within the LAST 12 MONTHS how many times, if any, have you received a ticket (OR been stopped and warned) for moving violations, such as speeding, running a stop light, or improper passing?

- (0) None—**GO TO QUESTION 30**
- (1) Once
- (2) Twice
- (3) Three times
- (4) Four or more times

29. How many of these tickets or warnings occurred after you were…

	None	One	Two	Three	Four +
a. Drinking alcoholic beverages?	(0)	(1)	(2)	(3)	(4)
b. Smoking marijuana or hashish?	(0)	(1)	(2)	(3)	(4)
c. Using other illegal drugs?	(0)	(1)	(2)	(3)	(4)

30. We are interested in any accidents which occurred while you were driving a car, truck, or motorcycle. ("Accidents" means a collision involving property damage or personal injury—not bumps or scratches in parking lots.)

During the LAST 12 MONTHS, how many accidents have you had while you were driving (whether or not you were responsible)?

- (0) None—**GO TO QUESTION 32**
- (1) One
- (2) Two
- (3) Three
- (4) Four or more

31. How many of these accidents occurred after you were…

	None	One	Two	Three	Four +
a. Drinking alcoholic beverages?	(0)	(1)	(2)	(3)	(4)
b. Smoking marijuana or hashish?	(0)	(1)	(2)	(3)	(4)
c. Using other illegal drugs?	(0)	(1)	(2)	(3)	(4)

32. During March of this year did you live mostly…

- (1) On a farm
- (2) In the country, not on a farm
- (3) In a small city or town (under 50,000 people)
- (4) In a medium-sized city (50,000 - 100,000)
- (5) In a suburb of a medium-sized city
- (6) In a large city (100,000 - 500,000)
- (7) In a suburb of a large city
- (8) In a very large city (over 500,000)
- (9) In a suburb of a very large city

33. In what state were you living?

(01) Al	(09) DC	(17) Ks	(25) Mo	(33) NM	(41) SC	(49) Wi
(02) Ak	(10) Fl	(18) Ky	(26) Ms	(34) Nv	(42) SD	(50) WV
(03) Ar	(11) Ga	(19) La	(27) Mt	(35) NY	(43) Tn	(51) Wy
(04) Az	(12) Hi	(20) Ma	(28) NC	(36) Oh	(44) Tx	
(05) Ca	(13) Id	(21) Md	(29) ND	(37) Ok	(45) Ut	
(06) Co	(14) Ia	(22) Me	(30) Ne	(38) Or	(46) Va	(52) Other
(07) Ct	(15) Il	(23) Mi	(31) NH	(39) Pa	(47) Vt	
(08) De	(16) In	(24) Mn	(32) NJ	(40) RI	(48) Wa	

APPENDIX G: Base-Year Address Form

WHY YOUR NAME AND ADDRESS?

As we told you earlier, we'd like to send you a summary of the nationwide results of the present study, and in about a year we want to mail a similar questionnaire to some of you. In order to include you in these mailings, we would like to have an address where information will be sure to reach you during the coming year.

HOW IS CONFIDENTIALITY PROTECTED?

- The information collected in the questionnaire is never connected with your name and contact information; they are stored separately at all times.
- The information on this page will be used ONLY for contacting you, and will always be kept separate from your answers. A special Grant of Confidentiality from the U.S. government protects all information gathered in this research project.
- The questionnaire and address cards will be collected separately, sealed immediately in separate envelopes, and sent to two different cities for processing.
- Once a questionnaire and address card have been separated, there is no way they can be matched, except by using a special computer file at the University of Michigan. That file contains the two DIFFERENT numbers that appear on the back of this address card and on the back of the questionnaire. These numbers will be used ONLY to match a follow-up questionnaire with this one.

Please separate this card from the rest of the booklet.

FOLD ALONG THE PERFORATED LINE AND TEAR CAREFULLY.

Please **PRINT** your name and contact information.

FIRST NAME _____ INITIAL _____ LAST NAME _____

STREET/
P.O. BOX _____
NUMBER STREET or P.O. BOX (APT#)

CITY _____

STATE _____ ZIP _____

PHONE NUMBER(S) ( ) — _____
AREA

( ) — _____
AREA

EMAIL ADDRESS: _____

THANK YOU AGAIN FOR YOUR HELP

APPENDIX H: Follow-Up Address Correction Form

APPENDIX I: Letter of Invitation to New Schools

UNIVERSITY OF MICHIGAN
SURVEY RESEARCH CENTER • INSTITUTE FOR SOCIAL RESEARCH

MONITORING THE FUTURE PROGRAM
426 THOMPSON STREET • P.O. BOX 1248
ANN ARBOR, MICHIGAN 48106-1248
Web: www.monitoringthefuture.org
T: 800 766-2864 F: 734 936-9528

September 12, 2014

Ms. Susan Davis, Principal
Anytown High School
700 Main Street
Anytown, MI 48104

Dear Ms. Davis:

I am writing to invite your school to participate in one of the nation's most influential studies of American young people, *Monitoring the Future* (MTF). You almost certainly have seen results from this study—now in its fortieth year—in the news and professional literatures. Its results are featured each year in virtually all national news outlets. Its importance is reflected in the fact that several U.S. Presidents have participated in the release of its findings. MTF serves many important purposes, including measurement of progress on several of the nation's education, health, and drug-reduction goals. It also played a critical role in documenting the increase in teen cigarette smoking in the 1990s, which led to major policy initiatives that have dramatically reduced smoking by American teens.

Your part is quite limited—to allow some of your 10th graders to take a 45-minute paper and pencil questionnaire, preferably during a regular class period (traditional or block schedule). Our procedures minimize the impact on the normal functioning of the school. Our personnel would conduct the administration during one day in the spring of 2015 and again in the spring of 2016. ***Each year your school will receive $1,000.00 as a token of our appreciation.***

We routinely arrange to have parents notified before administering surveys, and would adapt our standard permission materials and procedures to your requirements. Students are asked about a range of issues of importance to the nation, including their educational and occupational plans and experiences, life goals, use of leisure time, health and safety, and alcohol and drug use. There are no questions dealing with sexual behavior, abortion, or sensitive parental behaviors. Neither students, schools nor districts are ever identified.

You will receive the only copy of a special report comparing your students' aggregated responses with national data (sample enclosed). Copies of our national reports will follow for three years.

In a few days I, or my associate, Ernest Dopp, will call you to discuss the study further and answer any questions you may have. We very much hope that you will help us to continue this unique study that has become so important to the nation and to the welfare of our young people.

Sincerely yours,

Lloyd D. Johnston, Ph.D.
Angus Campbell Collegiate Research Professor
University Distinguished Senior Research Scientist &
Principal Investigator

APPENDIX J: Fact Sheet for Principals

FACT SHEET FOR PRINCIPALS

What is Monitoring the Future?

Monitoring the Future is a long-term, annual study of American students conducted by the University of Michigan's Survey Research Center (SRC). The SRC is part of the world's largest and most respected university-based social science research organization. Monitoring the Future is funded by the National Institutes of Health.

Importance of Your Participation

In order to obtain an accurate cross-section of all 12th graders in the United States, and to minimize the burden on schools, we use a carefully controlled sampling procedure to select only about 150 schools each year. Your school is one of the few selected by this scientific process. Therefore, your participation is very important to the representativeness of the national sample. Although the study is ongoing, no school participates more than two years in a row. We invite your school's participation in the national 12th grade sample in the spring of 2015 and the spring of 2016.

Confidentiality

Both the school's participation and student responses are kept in complete confidence. Study findings are reported only in a statistical fashion which will not identify individual students or schools. A Grant of Confidentiality from the U.S. Department of Justice fully ensures our ability to keep the data confidential. Student participation is completely voluntary.

Involvement of School Staff

Although we ask teachers to stay in their classrooms and to take attendance, they are free to do other things during the survey administration. We do not request access to student records. Monitoring the Future pays all costs associated with the study.

Timeline for Participation

The study will be administered on a mutually agreeable date between February 15 and May 31. In January or February, a member of our Ann Arbor staff will call you, or a contact person that you designate, to arrange the administrative details. The information will be sent to our field researcher, who will call to set an administration date. About two weeks before the administration, he or she will visit the school for about half an hour to provide participating classroom teachers with student flyers describing the study, and to meet the principal and/or liaison person. On the administration date, the same researcher returns, with assistants as needed, to carry out the survey during normal class periods.

Reports to Principals

We will send you an individualized *School Report.* Because this report is based on the combined responses of students in your school, we will send you the only copy by certified mail. A sample school report is enclosed.

Dissemination of Results

Generalized findings from the study appear in news reported on all television networks, in magazines such as *Newsweek* and *Time*, and in every major newspaper in the country. Study findings are also discussed in countless social science and health journals. School counselors and district officials, health-care professionals, local, state and national policy makers and many other individuals and organizations routinely access these findings in continuing efforts to improve the health and lives of our nation's youth.

15/12-1

APPENDIX K: Description of Study

monitoring the future

a continuing study of American youth

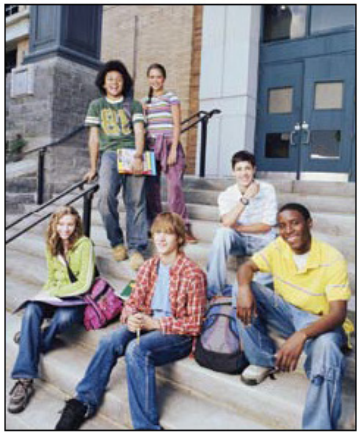
Monitoring the Future

A University of Michigan study since 1975

"Respected"—U.S. News and World Report
"Reliable barometer, leading survey"—The New York Times

Design of the Study

Each year since 1975, Monitoring the Future has surveyed a nationwide sample of high school seniors. Since 1991, the annual surveys have also included nationwide samples of 8th and 10th grade students. In addition, annual follow-up surveys are mailed to a sample of the seniors for a number of years after their initial participation. The Monitoring the Future project is conducted by the University of Michigan's Survey Research Center (SRC) under a series of research grants from the National Institutes of Health.



Research Questions

The study focuses on students' experiences and views about a wide range of subjects of importance to the nation. The questions listed below provide a sampling of the kinds of issues treated in this study:

- Is there emerging a generation with fundamentally different attitudes and values? If so, what are the changes and how fast are they occurring? What are the implications of these changes for the future of our society?
- Is the social meaning of drug use, alcohol use, or cigarette smoking changing? Are patterns of use changing? What are the trends for specific substances?
- How do young people feel about the educational and economic opportunities available to them? Do they feel they are treated fairly?
- How many hours do students work? At what kinds of jobs? What effect does working have on students? And what are the trends in those effects?
- How do students spend their leisure time? Do they do more or less homework today, compared to a few years ago? Do they read less and watch more TV? What effects are changes in these activities having on students?

These questions are addressed annually in the school-based surveys, as well as in the follow-up surveys. Thus, four kinds of change can be identified:

- changes from one class cohort to another
- life cycle or maturational changes which show up consistently for all cohorts
- changes in particular years reflected across all age groups
- changes linked to different types of environments (high school, college, employment, etc.) or role transitions (leaving the parental home, marriage, parenthood, etc.).

Questionnaire Administration

Students are asked to complete a self-administered, 45-minute paper and pencil questionnaire, either in their normal classroom or some other group setting. The procedures have been designed to minimize impact on the normal school day. To avoid placing any unnecessary burden on the school staff, SRC staff members conduct all questionnaire administrations. This arrangement also provides further guarantees that student responses will be kept confidential.

SRC staff members will spend no more than one day in your school, will not request access to any school records, and will ask only that the teacher be present during the administration. Our representatives will bring questionnaires and pencils to your school, distribute them to the students, and then collect the completed questionnaires.

Dissemination of Results

Results from the Monitoring the Future Study are reported in many ways:

- Results contained in the annual reports of nationwide responses are disseminated to the news media, key decision makers in Washington, members of the education community, and interested members of the public. Each principal of a participating school receives this annual report for three years.
- The results are reported in a variety of scholarly, professional, and popular publications, such as *Developmental Psychology*, *The American Journal of Public Health*, *Public Opinion Quarterly*, *NASSP Bulletin*, *Newsweek*, *Time*, *Reader's Digest*, etc.
- The study's principal investigators have served as advisors to the White House, both Houses of Congress, the United Nations, the World Health Organization, the U.S. Department of Education, and various other agencies of government.

Confidentiality

The identities of participating communities, schools, and students are all kept in complete confidence. Results are reported only in a statistical fashion which does not identify individual students or schools. A Grant of Confidentiality from the U.S. Department of Justice fully ensures our ability to keep the data confidential. Of course, student participation is completely voluntary.

Sample Selection

Each year, data collections take place in about 140 public and private schools at each grade level. The schools are selected by the Sampling Section of the Survey Research Center to provide an accurate cross-section of secondary school students throughout the United States. The number of schools is deliberately kept small to limit the total demands placed on the educational community.

Within each school, up to 350 students usually are sampled. In schools with fewer than 350 students in the relevant grade, the total class is included, when feasible. In larger schools, a subset of the class is selected by sampling classrooms or by other methods convenient to the school. The total sample of students for each grade level numbers about 17,000.

Survey Research Center

The University of Michigan's Survey Research Center has been conducting nationwide surveys of adults and young people for over 60 years. It is part of the world's largest university-based social science research organization, the Institute for Social Research. It has a worldwide reputation for its work in the fields of sociology, psychology, political science, economics, and education.

Survey Research Center
The University of Michigan

APPENDIX L: Instructions to Teachers for Classroom Administration

UNIVERSITY OF MICHIGAN
SURVEY RESEARCH CENTER • INSTITUTE FOR SOCIAL RESEARCH

MONITORING THE FUTURE PROGRAM
426 THOMPSON STREET • P.O. BOX 1248
ANN ARBOR, MICHIGAN 48106-1248
Web: www.monitoringthefuture.org
T: 800 766-2864 F: 734 936-9528

MEMORANDUM

TO: Teachers of Students Participating in the Monitoring the Future Study

FROM: The Staff of the Monitoring the Future Study

DATE: Spring, 2015

The University of Michigan will soon be conducting a national survey of some of the students in your school. As a teacher whose classes have been selected to participate, you probably will be the person to announce the study to your students and to distribute flyers describing it. In addition, your presence in the classroom during the survey administration will help to maintain order. To provide standardized administration conditions and to guarantee that student responses will be confidential, a field researcher from the University of Michigan will conduct the survey. We would like to thank you in advance for your help in making this important research a success.

Please take a few minutes to acquaint yourself with the study by reviewing the enclosed materials. The large brochure describes the design of the study, its research topics, and dissemination of survey results. The small flyers, intended for your students, provide similar information. Since much of the success of the study will depend upon the manner in which the survey is introduced to your students, we ask that you follow the procedures outlined below.

As Soon as You Receive This Packet

As soon as you receive this packet, please (1) distribute the small flyers in your participating classes, (2) post the large brochure, and (3) make an announcement which includes the following information:

- Students in this school are being asked to take part in a nationwide survey of 8th, 10th, and 12th grade students conducted by the University of Michigan. The administration will take place on _____.
- The purpose of the survey is to learn how students feel about a number of important issues such as education, work, leisure, the environment, drugs, and government policies.
- The flyer provides some information about the study; more details are in the large brochure.
- The questionnaires used in the survey are not tests; there are no right or wrong answers.

<Over>

The Day of the Survey

We ask you to do just four things on the day of the survey:

- Please briefly introduce the field researcher to the students. For example, "This is Mrs. Smith representing the University of Michigan. She is here today to conduct the Monitoring the Future study."

- Please help the researcher make certain that any student with a parent or guardian refusal does not participate in the study. Ideally, arrangements might be made in advance for such students to spend the class period in the library or to work on something else in the classroom.

- During the survey administration, please complete the enclosed Enrollment Verification Sheet by recording that day's enrollment figure for each participating class and give it to the field researcher.

- To help guarantee an orderly atmosphere for the survey we ask that you remain in the room during the administration. The field researcher will be prepared to respond to any questions from students. ***Please avoid walking around the room so students won't feel that you might see their answers.***

Your participation and that of your students is critical to the success of this project. We greatly appreciate your help.

cla_pas, 12/14

APPENDIX M: Instructions to Teachers for Mass Administration

UNIVERSITY OF MICHIGAN
SURVEY RESEARCH CENTER • INSTITUTE FOR SOCIAL RESEARCH

MONITORING THE FUTURE PROGRAM
426 THOMPSON STREET • P.O. BOX 1248
ANN ARBOR, MICHIGAN 48106-1248
Web: www.monitoringthefuture.org
T: 800 766-2864 F: 734 936-9528

MEMORANDUM

TO: Teachers of Students Participating in the Monitoring the Future Study

FROM: The Staff of the Monitoring the Future Study

DATE: Spring, 2015

The University of Michigan will soon be conducting a national survey of some of the students in your school. As a teacher whose students have been selected to participate in the study, you probably will be the person to announce the study to your students and to distribute flyers describing it. To provide standardized administration conditions and to guarantee that student responses will be confidential, a field researcher from the University of Michigan will conduct the survey. We would like to thank you in advance for your help in making this important research a success.

Please take a few minutes to acquaint yourself with the study by reviewing the enclosed materials. The large brochure describes the design of the study, its research topics, and dissemination of survey results. The small flyers, intended for your students, provide similar information. Since much of the success of the study will depend upon the manner in which the survey is introduced to your students, we ask that you follow the procedures outlined below.

As Soon as You Receive This Packet

As soon as you receive this packet, please (1) distribute the small flyers in your participating classes, (2) post the large brochure, and (3) make an announcement which includes the following information:

- Students in this school are being asked to take part in a nationwide survey of 8th, 10th, and 12th grade students conducted by the University of Michigan. The administration will take place on _____.
- The purpose of the survey is to learn how students feel about a number of important issues such as education, work, leisure, the environment, drugs, and government policies.
- The flyer provides some information about the study; more details are in the large brochure.
- The questionnaires used in the survey are not tests; there are no right or wrong answers.

The Day of the Survey

On the day of the survey, please remind students to report to _____ at _____ for the administration. You may be asked to accompany the students and be present at the administration.

Please help the field researcher make certain that any student with a parent or guardian refusal does not participate in the study. Ideally, arrangements might be made in advance for such students to spend the class period in the library or to work on something else in the room where the study takes place.

Your support and the participation of your students are critical to the success of this project. We greatly appreciate your help.

mas_pas, 12/14

APPENDIX N: Student Flyer

monitoring the future

a continuing study of American youth

A number of students in your school will be asked to participate in an important nationwide study.

This flyer tells you about the study and answers questions you may have.

Survey Research Center
The University of Michigan

What Is the Study About?

The questions cover a wide range of issues such as education, the school environment, use of free time, future plans, work, alcohol, drugs, and government policies. We believe that young people's experiences and their feelings about how things are now and how they ought to be in the future are important. In a sense, your answers will be a kind of vote on these issues.

The "votes" of all of the study participants taken together will be an accurate indication of American students' thoughts and experiences. Next year and in the following years, other students will also be asked for their ideas on these subjects so that we can find out how things change from one year to the next.

Why That Name for the Study?

We call it Monitoring the Future because we know that studying young people today will tell us a lot about what the whole nation will be like tomorrow.

Do I Have a Choice?

You certainly do! Your participation in this study is completely voluntary and you may skip any question you do not want to answer. After you have finished reading about the study, we think you will agree that it is important and exciting and that you will want to be a part of it.

Why Should I Participate?

A lot of people think they know all there is to know about young people, but their impressions are based on only a few people they know or on news headlines.

Your generation has a lot to tell the rest of the country about what you value, the problems that concern you, and some of the ways you would like things to change. More of you need to be heard. Many students say the questionnaire is interesting and that they enjoy filling it out.

Will Anyone I Know See My Answers?

No, your individual answers are never seen by anyone in your school, or anyone else who knows you. No participating person, school or school district can be identified in any report of study results. We even have a special Grant of Confidentiality from the U.S. government which permits us to protect all of the information gathered in the study.

How Are the Results Used?

We believe that a study like this is successful only if it makes a difference. Each year, educators, journalists and policy makers at all levels use the study results to help them better understand students' experiences and wishes. We present an annual report to the nation as a whole which is covered by television, radio, and many news organizations.

There are also special reports to many interested groups. For example, educators learn what students say about school and their feelings about further education. National leaders learn what issues are especially important to students now; community and business leaders learn about students' hopes and plans for the future.

Why My School?

In order to represent all students throughout the United States accurately, about 140 schools have been selected by scientific random sampling methods at each of three grade levels—8th, 10th, and 12th grades. Your school happens to be one of those chosen.

Who Is Doing This Study?

The University of Michigan's Survey Research Center is one of the world's largest and most respected social research organizations. It has been conducting nationwide surveys for more than 60 years. The study is funded by the National Institutes of Health.

Survey Research Center

The researchers conducting
the study can be contacted
at 1-800-766-2864.

APPENDIX O: Implicit Parental Consent Form – 8th and 10th Grades

Standard Parental Consent Letter—8th & 10th Grades

Spring, 2015

Dear Parent/Guardian:

[School Name] has been invited by the University of Michigan to participate in a nationwide survey of 8/10th graders, entitled *Monitoring the Future: a continuing study of American youth*. I am writing to ask your permission for your son or daughter to participate.

This annual survey, which is funded by the National Institutes of Health, has been tracking changes in the attitudes, opinions and behavior of American young people for the past 39 years. Its results are widely reported and are used by many organizations to develop better policies and programs that affect the nation's youth.

The 8/10th graders will be asked to complete a 45-minute questionnaire during regular school hours, which asks about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about using alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish. They usually find the questionnaire interesting and enjoy the opportunity to express their views. The enclosed brochure provides you with additional information about the study.

The questionnaires are anonymous—containing no names or other identifying information—and no school staff are involved in administering the questionnaires; review copies are available at the school. The school will receive a monetary contribution this year, as well as national reports from the study for each of the next three years.

We believe this study is important and worthwhile. If for any reason you do not wish your son/daughter to participate, please ask your son or daughter to return the attached slip to _____ by _____.

Thank you for your consideration.

Sincerely,

_____, Principal

The researchers conducting the study can be contacted at the University of Michigan's Survey Research Center at (800) 766-2864.
If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 [or toll free, (866) 936-0933], irbhsbs@umich.edu.
IRB Number: HUM00063656. Approval Date: 11/21/2014.

✂----------

IF YOU DO NOT WISH YOUR SON/DAUGHTER TO PARTICIPATE IN THIS STUDY, PLEASE ASK HIM/HER TO RETURN THIS SLIP TO _____ BY _____.

Student's Name _____

I prefer that my son/daughter not participate in the Monitoring the Future study.

_____
Parent or Guardian Signature Date

APPENDIX P: Implicit Parental Consent Form – 12th Grade

Standard Parental Consent Letter—12th Grade

Spring, 2015

Dear Parent/Guardian:

[School Name] has been invited by the University of Michigan to participate in a nationwide survey of 12th graders, entitled *Monitoring the Future: a continuing study of American youth*. I am writing to ask your permission for your son or daughter to participate.

This annual survey, which is funded by the National Institutes of Health, has been tracking changes in the attitudes, opinions and behavior of American young people for the past 39 years. Its results are widely reported and are used by many organizations to develop better policies and programs that affect the nation's youth.

The 12th graders will be asked to complete a 45-minute questionnaire during regular school hours, which asks about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about using alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish. They usually find the questionnaire interesting and enjoy the opportunity to express their views. The enclosed brochure provides you with additional information about the study.

Both the school's participation and student responses are kept completely confidential. No school staff are involved in administering the questionnaires; review copies are available at the school. The school will receive a monetary contribution this year, as well as national reports from the study for each of the next three years. Students will be asked to voluntarily provide information for possible future recontact.

We believe this study is important and worthwhile. If for any reason you do not wish your son/daughter to participate, please ask your son or daughter to return the attached slip to _____ by _____.

Thank you for your consideration.

Sincerely,

_____, Principal

The researchers conducting the study can be contacted at the University of Michigan's Survey Research Center at (800) 766-2864.
If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 [or toll free, (866) 936-0933], irbhsbs@umich.edu.
IRB Number: HUM00063656. Approval Date: 11/21/2014.

✂----------

IF YOU DO NOT WISH YOUR SON/DAUGHTER TO PARTICIPATE IN THIS STUDY, PLEASE ASK HIM/HER TO RETURN THIS SLIP TO _____ BY _____.

Student's Name _____

I prefer that my son/daughter not participate in the Monitoring the Future study.

_____
Parent or Guardian Signature Date

APPENDIX Q: Explicit Parental Consent Form – 8th and 10th Grades

Active Parental Consent Letter—8th and 10th Grades

Spring, 2015

Dear Parent/Guardian:

[School Name] has been invited by the University of Michigan to participate in a nationwide survey of 8/10th graders, entitled *Monitoring the Future: a continuing study of American youth*. I am writing to ask for your written permission for your son or daughter to participate. **This letter requests a response from you.**

This annual survey, which is funded by the National Institutes of Health, has been tracking changes in the attitudes, opinions and behavior of American youth for the past 39 years. Its results are widely reported and are used by many organizations to develop better policies and programs that affect the nation's young people.

The 8/10th graders will be asked to complete a 45-minute questionnaire during regular school hours, which asks about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about using alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish. They usually find the questionnaire interesting and enjoy the opportunity to express their views. The enclosed brochure provides you with additional information about the study.

The questionnaires are anonymous—containing no names or other identifying information—and no school staff are involved in administering the questionnaires; review copies are available at the school. The school will receive a monetary contribution this year, as well as national reports from the study for each of the next three years.

We believe this study is important and worthwhile. Please return the enclosed card to _____ by _____. **Your response is important because your son or daughter cannot participate unless you sign and return the postcard.**

Thank you very much for your consideration.

Sincerely,

_____, Principal

The researchers conducting the study can be contacted at the University of Michigan's Survey Research Center at (800) 766-2864.
If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 [or toll free, (866) 936-0933], irbhsbs@umich.edu.
IRB Number: HUM00063656. Approval Date: 11/21/2014.

Sample Active Follow-up Letter—8th and 10th Grades

Spring, 2015

Dear Parent/Guardian:

We would like to remind you that your written permission is necessary for your son or daughter to take part in the upcoming University of Michigan survey, *Monitoring the Future: a continuing study of American youth*. As you may recall, 8/10th graders have been invited to participate in a nationwide survey that asks students about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish.

The students' responses are anonymous and the school's participation is kept confidential. School staff will not be involved in administering the questionnaires. We believe this study is important and worthwhile. If you will allow your son or daughter to participate, please sign the attached slip and ask him/her to return it to _____ within two days.

Thank you in advance for your consideration.

Sincerely,

_____, Principal

✂----------

PLEASE ASK YOUR SON/DAUGHTER TO RETURN THIS SLIP TO _____ WITHIN TWO DAYS.

Student's Name _____

I give my son/daughter permission to participate in this study. _____
Parent or Guardian Signature Date

APPENDIX R: Explicit Parental Consent Form – 12th Grade

Active Parental Consent Letter—12th Grade

Spring, 2015

Dear Parent/Guardian:

[School Name] has been invited by the University of Michigan to participate in a nationwide survey of 12th graders, entitled *Monitoring the Future: a continuing study of American youth.* I am writing to ask for your written permission for your son or daughter to participate. **This letter requests a response from you.**

This annual survey, which is funded by the National Institutes of Health, has been tracking changes in the attitudes, opinions and behavior of American youth for the past 39 years. Its results are widely reported and are used by many organizations to develop better policies and programs that affect the nation's young people.

The 12th graders will be asked to complete a 45-minute questionnaire during regular school hours, which asks about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about using alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish. They usually find the questionnaire interesting and enjoy the opportunity to express their views. The enclosed brochure provides you with additional information about the study.

Both the school's participation and student responses are kept completely confidential. No school staff are involved in administering the questionnaires; review copies are available at the school. The school will receive a monetary contribution this year, as well as national reports from the study for each of the next three years. Students will be asked to voluntarily provide information for possible future recontact.

We believe this study is important and worthwhile. Please return the enclosed card to _____ by _____. **Your response is important because your son or daughter cannot participate unless you sign and return the postcard.**

Thank you very much for your consideration.

Sincerely,

_____, Principal

The researchers conducting the study can be contacted at the University of Michigan's Survey Research Center at (800) 766-2864.
If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Building 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 [or toll free, (866) 936-0933], irbhsbs@umich.edu.
IRB Number: HUM00063656. Approval Date: 11/21/2014.

Sample Active Follow-up Letter—12th Grade

Spring, 2015

Dear Parent/Guardian:

We would like to remind you that your written permission is necessary for your son or daughter to take part in the upcoming University of Michigan survey, *Monitoring the Future: a continuing study of American youth*. As you may recall, 12th graders have been invited to participate in a nationwide survey that asks students about school experiences, attitudes toward school and education, plans for the future, use of and attitudes about alcohol and drugs, work experiences and preferences, and health and leisure activities. There are no questions about sexual behavior or abortion. Students are informed that their participation is voluntary and that they may skip any questions they wish.

Both the school's participation and student responses are kept confidential, and school staff will not be involved in administering the questionnaires. We believe this study is important and worthwhile. If you will allow your son or daughter to participate, please sign the attached slip and ask him/her to return it to _____ within two days. Students will be asked to voluntarily provide information for possible future recontact.

Thank you in advance for your consideration.

Sincerely,

_____, Principal

✂----------

PLEASE ASK YOUR SON/DAUGHTER TO RETURN THIS SLIP TO _____ WITHIN TWO DAYS.

Student's Name _____

I give my son/daughter permission to participate in this study. _____
Parent or Guardian Signature Date