WHEN FOUR MONTHS EQUAL A YEAR: AN EXPLORATION OF INCONSISTENCIES IN STUDENTS' MONTHLY VERSUS YEARLY REPORTS OF DRUG USE

Monitoring the Future Occasional Paper 9

Jerald G. Bachman
Patrick M. O'Malley

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

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ABSTRACT

This analysis of Monitoring the Future surveys of the high school senior classes of 1976 through 1979 is focused on certain inconsistencies between students' reports of monthly versus yearly drug use. Reports of frequency of drug use during the past month are roughly three times larger than would be estimated based on reports of use during the past year, and this phenomenon shows up fairly consistently for alcohol, marijuana, and ten other categories of illicitly used drugs. The paper explores four possible explanations of the phenomenon, any or all of which could be valid: forgetting, "telescoping," developmental trend, or "senioritis." The phenomenon of forgetting, i.e., the underreporting of events that are more distant in time, has been observed in a wide range of surveys; and our own findings are general and stable enough to fit in very well with that explanation. We conclude that self-reports of drug use during the past year, and also during the lifetime, are in many cases systematically underreported. However, we suspect that percentages reporting <u>any</u> use during a given interval are likely to be more accurate; further, we presume that analyses of <u>trends</u> are likely to be largely valid, since any biases are likely to be fairly constant from year to year.

<u>NOTE:</u> This paper represents a rather extensive analysis of a phenomenon which was initially and much more briefly reported in Occasional Paper 5 in this series. Since the present paper was developed in a form suitable for journal publication, it necessarily involved some degree of overlap with material appearing in pages 5-9 of Occasional Paper 5.

Introduction

The basic finding presented in this brief report, already implied by the title, can be summarized in a sentence: High school seniors' reports of drug use during the past month are not consistent with their reports of drug use during the past year; either the annual frequencies are too low, the monthly frequencies are too high, or both. Although phenomena of this sort are not new to the literature of survey methodology, we considered an early presentation of these findings useful for several reasons: (a) the effects are quite large, (b) they show an impressive degree of consistency across different drugs and different levels of use, and (c) they are based on large and nationally representative samplings of an important area of behavior—young people's use of drugs.

In what follows we first present an overview of our sample and survey procedures, we then report in some detail the pattern of inconsistencies that emerges when self-reports of drug use for the past month and the past year are compared, we consider several possible explanations for the discrepancies and examine preliminary data bearing on those explanations, and we note some ways in which the present findings match and extend findings in other survey areas—particularly studies of accuracy in reporting health-related events. (This report does not attempt any overall description of recent levels and trends in drug use, or the correlates of drug use, since all these aspects of the data have been treated extensively in other reports. See Johnston, Bachman, and O'Malley, 1979a, 1979b; Bachman, Johnston, and O'Malley, 1981.)

Methods

Our data are obtained from the Montoring the Future project, an ongoing study of high school seniors conducted by the Institute for Social Research under a grant from the National Institute on Drug Abuse. The study design has been described extensively elsewhere (Bachman and Johnston, 1978; Johnston, Bachman, and O'Malley, 1977, 1979a; Bachman, Johnston, and O'Malley, 1980); briefly, it involves nationally representative surveys of each high school senior class, beginning in 1975, plus follow-up surveys mailed each year to a subset of each senior class sample.

Sample and Questionnaire Administration. The present report relies primarily on the survey of high school seniors during the spring of 1979. A three-stage national probability sample (Kish, 1965) led to questionnaire administrations in 111 public high schools and 20 private ones, and yielded a total of 16,654 respondents (reflecting a response rate of approximately 80 percent of all seniors included in the sample).

The questionnaires were administered by professional interviewers from the Institute for Social Research during school hours, usually in a regularly-scheduled class period. Special procedures were employed to ensure confidentiality, and these procedures were carefully explained in the questionnaire instructions and reviewed orally by the interviewers when they administered the questionnaires. The instructions also stressed the voluntary nature of participation and suggested leaving blank any question that might be objectionable to the respondent or her/his parents.

Drug Use Measures. Although the Monitoring the Future project has a primary focus on drug use and related attitudes, a much broader range of topics are of relevance to the project and are included in the questionnaire content. Items specific to drug use occur near the middle of the question sequence, after respondents have dealt with a variety of other matters. All items employ closed-ended response alternatives in order to facilitate optical scanning of the completed forms.

Use of alcohol, use of marijuana, and ten other categories of illicit drug use, were measured by questions having the following format:

On how many occasions (if any) have you used (NAME OF DRUG CATEGORY). . .

a. . .in your lifetime?

b. . .during the last 12 months?

c. . .during the last 30 days?

Seven response categories were available: 0 occasions, 1-2 occasions, 3-5, 6-9, 10-19, 20-39, 40 or more.

The above format for self-reports of drug use was designed to meet a number of criteria: (a) it is simple and straightforward for respondents; (b) it is suited to the closed-ended optically scanned questionnaire method; (c) the response scale is roughly logarithmic (on the assumption that people can make more accurate recollections about the exact number of relatively rare events than about the exact number of more frequent events); (d) it is broadly applicable to three different time intervals (lifetime, year, month) and a variety of different drugs (ranging from the frequently used alcohol to the rarely used heroin). Although the use of a seven-point scale causes some roughness and inaccuracy for our present purposes, we think it will be clear in what follows that the basic findings are not fundamentally distorted by scale limitations.

Results

The relationship between annual and monthly self-reports of frequency of alcohol use is evident from the percentage distribution shown in Table 1. Note that the cell entries are percentages based on the total sample (excluding cases with missing data or logically impossible answers). Thus, for example, the entries in the second row of the table indicate that 9.4 percent of the total sample reported drinking alcohol on one or two occasions during the last year but not drinking at all during the last month, whereas another 2.8 percent reported alcohol use on one or two occasions in the last year and in the last month. Put another way, just under one quarter of those who reported drinking on one or two occasions in the past year also reported some use during the past month—a minority, but a somewhat larger

Table 1

Twelve Month Versus Thirty Day Self-Reported Frequency of Alcohol Use (N=15,461)

		Number of Uses in Last 30 Days							Row Percent	Mean Ratio[c]
	Interval	0	1-2	3-5	6-9	10-19	20-39	40+		
	(Midpoint)	(0)	(1.5)	(4.0)	(7.5)	(14.5)	(29.5)	--		
Number of Uses in Last Year	0	12.0%[a]							12.0	
	(0)	(INAP)[b]								--
	1-2	9.4	2.8						12.3	
	(1.5)	(0.0)[b]	(12.0)							(2.77)
	3-5	4.0	6.8	0.6					11.3	
	(4.0)	(0.0)	(4.5)	(12.0)						(3.34)
	6-9	1.6	5.8	3.3	0.5				11.2	
	(7.5)	(0.0)	(2.4)	(6.4)	(12.0)					(3.63)
	10-19	0.9	4.2	6.9	3.5	0.4			16.0	
	(14.5)	(0.0)	(1.2)	(3.3)	(6.2)	(12.0)				(3.43)
	20-39	0.3	1.3	4.5	4.9	2.7	0.2		13.9	
	(29.5)	(0.0)	(0.6)	(1.6)	(3.1)	(5.9)	(12.0)			(2.99)
	40+	0.1	0.5	2.6	5.7	7.7	3.9	2.7	23.4	
	--	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)		--
	Column Percent	28.4	21.5	17.9	14.6	10.8	4.2	2.7	100.0	
						(Overall Mean Ratio for Rows Shown				= 3.23)

[a] Table entries are percentages of total sample, excluding those with missing or logically inconsistent data on the alcohol questions. (Due to rounding, percentages and totals do not match exactly.)

[b] Entries in parentheses show a ratio consisting of actual reported monthly use (midpoint) divided by "expected" monthly use, the latter defined as reported annual use (midpoint) divided by 12.

[c] This is the mean for each row of actual versus "expected" monthly use (see note b above).

minority than might be expected if the monthly and annual data were strictly "proportionate." If we move further down the table to those who reported 10-19 uses in the past year, the lack of proportionality becomes much clearer. Assuming that their 10-19 uses were spread more or less equally across the twelve months of the year, we would expect that most respondents would report their usage during the past month to be 1-2 occasions, while some would report none and others would report more. In fact, however, among all seniors who reported 10-19 uses of alcohol in the past year, more than two-thirds reported using alcohol three or more times during the past month, and only a handful reported no use. The same pattern of "too much" use during the past month can be seen for the other levels of annual use (except, of course, that we cannot make appropriate extrapolations for the row involving 40 or more uses).

The same general sort of inconsistency is evident if we extrapolate from annual to monthly reports by reading down the columns in Table 1 rather than reading across the rows; however, the scale limitations are more severe. Thus, among those reporting 1-2 uses of alcohol during the past thirty days, we might reasonably expect most to report yearly use totalling one to two dozen occasions. In fact, however, the majority report fewer than ten uses during the past year. Similarly, we might expect most of those who report 3-5 uses in the past month would also report 40 or more uses over the whole year, but only a small minority (about one in seven) do so; the majority report fewer than twenty uses during the year. For the next category of monthly use, 6-9 occasions, we would expect the large majority to report more than 40 occasions for the year, but well under half do so. In short, when we try to extrapolate from monthly use, we find that seniors' reports of alcohol use throughout the year are far "too low."

Before we try to sort out whether the monthly reports of alcohol use are too high or the annual reports are too low, let us first attempt to quantify the extent of the discrepancy for alcohol reports and then consider whether there is a similar phenomenon for reported use of marijuana and other illicit drug use.

Quantifying the Discrepancy. The parenthetical entries in Table 1 represent an attempt to quantify the discrepancies described in rather general terms above. As a first step, we chose to treat each of the response intervals in terms of its midpoint; of course, no midpoint is possible for the top category—40 or more occasions.* Then, for each of five levels of yearly use (midpoints ranging from 1.5 to 29.5) we computed a set of "discrepancy ratios" in which the reported "actual" monthly use is divided by an "expected" monthly use, defined as one twelfth of the reported annual use (in all instances using midpoints of the scale intervals). Thus, for example, the third row of Table 1 refers to those who reported 3-5 uses of alcohol during the past year; from the midpoint of 4.0 we extrapolate an "expected"

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*The use of the midpoint seemed the simplest approach, if not necessarily the most elegant. An alternative would be to use a different sort of midpoint derived from a log transformation of each interval. Thus, for example, the interval 1-2 would have a midpoint of 1.41 by this method. The ratios shown in Table 1 would be affected only trivially by this approach, so it was not pursued further for this report. Much more elaborate alternatives to simple midpoints would make use of the actual distributions of responses obtained for each item; however, this would vastly complicate the process of applying the procedure to other drugs (with other distributions), and thus it was not considered worth pursuing here.

monthly use of .33; those who reported 1-2 uses during the past month are assigned a ratio value of 4.5 (the midpoint monthly use, 1.5, divided by the "expected" monthly use, .33); those who reported 3-5 uses during the past month are assigned a ratio value of 12.0 (4.0 divided by .33). Discrepancy ratios such as those illustrated above are shown in parentheses for most combinations of annual and monthly use in Table 1; excluded are those who reported zero use during the past year and those who reported 40 or more occasions of alcohol use during the past year. Thus any respondent who reported from one to 39 occasions of alcohol use during the past year can be assigned a ratio (ranging from 0.0 to 12.0); furthermore, means of those ratios can be computed for each row in Table 1 as well as for the total of all respondents who fall in the 1-39 range of uses during the past year.

An examination of the mean discrepancy ratios for each row in Table 1 reveals a considerable consistency; whether we consider respondents whose reported use of alcohol in the past year is 1-2, or 6-9, or 20-39, their average reports of monthly use are roughly three times as large as would be extrapolated based on their reported annual use. A grand mean of discrepancy ratios based on all respondents reporting 1-39 occasions of alcohol use during the past year (just under two thirds of the total sample) shows a ratio of 3.23. In other words, given the rate of use reported for the past month, on the average, it would take less than four months to accumulate the amount of alcohol use reported for the entire preceding year.

Consistency Across Different Drugs. Table 2 presents results for that class of illicit drugs most widely used among high school students, marijuana and hashish (which we will henceforth denote simply as marijuana). It is of interest to note both the differences and similarities between the marijuana use data in Table 2 and the alcohol use data in Table 1. Perhaps the most important difference is that about half of all seniors reported no use of marijuana during the past year, in contrast to only 12 percent reporting no use of alcohol. On the other hand, at the top end of the scale of annual use there are fewer differences, and there are actually more seniors reporting very frequent use of marijuana (twenty or more times per month) than is true for alcohol. The fact that so many seniors report no use of marijuana in the past year means that there is a much smaller proportion who fall in the range of 1-39 occasions of use during the past year. Accordingly, we can compute ratios of "actual" versus "expected" monthly use for only about one third of all seniors. Nevertheless, those discrepancy ratios show an impressive similarity to the ones obtained for alcohol use. Again we find that average reports of use in the past month are about three times what would be expected based on use reported for the past year; the overall ratio is 3.02.

The computation procedures used in Table 1 and 2 were applied also to ten other categories of illicitly used drugs, and the results are displayed in Table 3. First it should be noted that the large majority of seniors in 1979 reported no illicit drug use other than marijuana; for most drug categories shown in Table 3, fewer than ten percent of seniors reported any use during the past year. Most of the mean ratios in Table 3 are thus based on rather small proportions of seniors, although the actual numbers of cases remain fairly substantial for all drugs except heroin. The mean discrepancy ratios for the other drugs show considerable degree of consistency with the overall findings for alcohol and marijuana; however, the findings for the class of 1979 (next to last column in the table) do show a degree of variability which we were inclined to attribute largely to random "noise." Accordingly, we repeated the calculations using comparable data from the classes of 1976 through 1978, and have entered the mean ratios for all four years in the last column of Table 3. A

Table 2

Twelve Month Versus Thirty Day Self-Reported Frequency of Marijuana Use (N=15,879)

		Number of Uses in Last 30 Days							Row Percent	Mean Ratio[c]
	Interval	0	1-2	3-5	6-9	10-19	20-39	40+		
	(Midpoint)	(0)	(1.5)	(4.0)	(7.5)	(14.5)	(29.5)	--		
	0	49.4%[a]							49.4	
	(0)	(INAP)[b]								--
	1-2	7.7	2.1						9.8	
	(1.5)	(0.0)[b]	(12.0)							(2.58)
Number of Uses in Last Year	3-5	3.3	2.9	0.4					6.6	
	(4.0)	(0.0)	(4.5)	(12.0)						(2.67)
	6-9	1.4	2.0	1.3	0.3				5.0	
	(7.5)	(0.0)	(2.4)	(6.4)	(12.0)					(3.29)
	10-19	1.1	1.6	2.3	1.4	0.3			6.7	
	(14.5)	(0.0)	(1.2)	(3.3)	(6.2)	(12.0)				(3.28)
	20-39	0.5	0.4	1.1	1.3	1.8	0.3		5.4	
	(29.5)	(0.0)	(0.6)	(1.6)	(3.1)	(5.9)	(12.0)			(3.66)
	40+	0.3	0.4	0.8	1.4	4.4	4.8	5.1	17.2	
	--	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)	(INAP)		--
	Column Percent	63.6	9.4	5.9	4.5	6.5	5.1	5.1	100.0	

(Overall Mean Ratio for Rows Shown = 3.02)

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[a] Table entries are percentages of total sample, excluding those with missing or logically inconsistent data on the marijuana questions. (Due to rounding, percentages and totals do not match exactly.)

[b] Entries in parentheses show a ratio consisting of actual reported monthly use (midpoint) divided by "expected" monthly use, the latter defined as reported annual use (midpoint) divided by 12.

[c] This is the mean for each row of actual versus "expected" monthly use (see note b above).

Table 3

Mean Ratios of Reported Monthly Use Versus the "Expected" Monthly Use Based on Extrapolations from Reported Annual Use: Twelve Types of Drugs

	Class of 1979					
	Number of Uses Reported in Last Year[a]					
Type of Drug	0	1-39	40+	N for Ratio	Mean Ratio	Mean Ratio, Classes of 1976-1979
Alcohol	12.0	64.6	23.4	9996	3.23	3.29
Marijuana	49.4	33.4	17.2	5315	3.02	3.17
LSD	93.4	6.5	0.1	1051	2.49	2.39
Other Psychedelics	93.3	6.6	0.1	1054	2.18	2.36
Cocaine	88.0	11.4	0.6	1828	2.87	2.72
Amphetamines[b]	81.8	16.7	1.5	2674	3.08	2.91
Quaaludes[b]	94.2	5.7	0.1	919	2.63	2.48
Barbiturates[b]	92.6	7.2	0.2	1156	2.70	2.55
Tranquilizers[b]	90.4	9.4	0.2	1489	2.58	2.56
Heroin	99.5	0.5	0.0	77	2.74	2.68
Other Narcotics[b]	93.8	6.1	0.1	958	2.55	2.58
Inhalants (4 forms)	94.7	5.1	0.2	660	2.39	2.56

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[a] Table entries are percentages of total sample reporting each level of use.

[b] The question covers illicit use only, i.e., "without a doctor telling you to take them."

much clearer pattern then emerges: alcohol and marijuana both show discrepancy ratios slightly larger than three, whereas the ratios for other illicit drugs are somewhat lower, with most lying within a range of 2.5 to 2.7. Thus for alcohol and marijuana it takes just under four months to equal a year, whereas for the other illicit drugs it takes somewhat less than five. There is, thus, a systematic difference between the more "popular" drugs and those less commonly used; but perhaps the more impressive finding is the extent to which the pattern is largely similar whether one is dealing with marijuana or cocaine or heroin.

Discussion

The findings presented above seem quite solid; however, the following attempts to explain the findings are much more tentative. We will consider four possible explanations, any or all of which could be valid to some degree:

1. Forgetting. Annual reports are underestimates of actual amounts of drug use, perhaps due to forgetting and/or to a failure to make careful estimates for longer time intervals (Cannell, Marquis and Laurent, 1977).

2. Telescoping. Monthly reports of drug use are overestimates of actual use, perhaps as a result of a "telescoping" of time—a tendency to remember events as occurring more recently in time than they actually did (Sudman and Bradburn, 1974).

3. Developmental Trend. Actual drug use increases quite rapidly during the senior year, and this acceleration in use accounts for the apparent discrepancy between monthly and yearly reports.

4. Senioritis. Drug use in the last months of the senior year is atypical; students are suffering from what has been termed "senioritis" and are much more likely than usual to be involved in parties and other activities that include the use of alcohol, marijuana, and perhaps other illicit drugs.

The first two explanations refer to two types of respondent errors in reporting. Ideally, we would examine each of these by comparing respondent reports with external validity data; unfortunately, no such data exist for individual respondents in the Monitoring the Future study. (That is true also for most other drug use surveys. There are some important exceptions, but they are not well suited to dealing with the issues treated in this report.)

Cannell and his colleagues (Cannell, Fisher and Bakker, 1965; Cannell and Fowler, 1963; Oksenberg and Cannell, 1977), as well as a number of other investigators (see Cannell, Marquis and Laurent, 1977, for a summary), have analyzed the reporting of health events in interviews and have been able to relate such reports to external validity data. One of the conclusions from such analyses bears repeating here:

> Perhaps the best documented phenomenon of underreporting of health events as well as of a wide variety of other types of events and behaviors, is the decrease in the reporting of events as time elapses. This is characteristic of studies of consumer purchases, reports of income, behavior of children as reported by parents, and so forth. (Cannell, Marquis and Laurent, 1977, p. 7)

Oksenberg and Cannell also note that underreporting increases as the time between an event and the interview increases, adding: "This generalization will surprise no one, but what is unexpected is the rapidity with which the failure to report the event increases with time" (1977, p. 2). Indeed, there is evidence of considerable underreporting of health events (physician visits, illness incidents, etc.) over intervals as short as two or three weeks; and for intervals longer than six months the underreporting can exceed fifty percent.

A further bit of data is available from Delbert Elliott, who has found that reports of delinquent behavior do not increase proportionately to the time interval involved; for example, the average number of delinquent acts reported during a four-month interval is nearly identical to the average number reported during an eight-month interval (personal communication).

The above findings from other areas of survey research, as well as our own findings, are clearly consistent with the explanation that forgetting increases over longer time intervals. There is thus a good deal of indirect evidence to suggest that much of the discrepancy reported here is due to an underreporting of drug use over the past twelve months. We suspect that estimates are far more accurate for the shorter and more recent interval of the past month; nevertheless, it seems likely that even for a thirty-day interval there are difficulties in recall, and some respondents may underestimate while others may actually overestimate by "telescoping" their recollections of events during the past several months.

One of the reasons why events in the past are underreported in surveys may be that many individuals are simply not sufficiently careful or motivated in their role of respondent (Cannell et al, 1977). Such individuals may fail to search memory adequately; furthermore, in the case of relatively frequent events that could not be recalled in detail, they may make careless and imprecise estimates of the total number of occurrences over longer intervals (Cannell, personal communication). We did not have any direct evidence of respondent motivation in the Monitoring the Future survey; however, we considered it possible that students with higher grade-point averages, in contrast to their less academically successful classmates, might be better motivated or otherwise more "skillful" and consistent in the role of questionnaire respondent. If so, then it seemed likely that students with (self-reported) grades averaging A would show smaller "discrepancy ratios" than B students, while students averaging C or lower would likely show the largest "discrepancy ratios." When we tested this assumption empirically, we found that the expected pattern of findings emerged clearly for alcohol use and marijuana use (using data from seniors in 1979). For reports of alcohol use, the mean "expected" versus "actual" ratios are 2.86 for A students, 3.17 for B students, and 3.64 for students with grades averaging C or lower. For reports of marijuana use, the corresponding ratios are 2.48, 2.87, and 3.47. In each case the A students' mean discrepancy ratio is about one-fourth of a standard deviation lower than that of the C students, an effect that is statistically trustworthy ($p < .01$), yet not really massive in size. For the other drug categories shown in Table 3, a comparison of ratios for different grade levels produced no consistent pattern at all, perhaps because of the much smaller numbers of cases involved in each subgroup and/or because the use of the other drugs is sufficiently rare (especially among the A students) that the drug users are in no sense "typical" or "representative" of others in that grade category. Thus the present evidence on respondent motivation or "skill" in reporting annual and monthly drug use is quite limited; nevertheless, the findings for the most widely used drugs—alcohol and marijuana—provide some modest support for one or both of the first two explanations.

Apart from general differences in respondent motivation, it has been proposed that events which are particularly important or salient to respondents are less likely to be underreported—presumably because they are less likely to be forgotten (Cannell et al., 1977). In the present study of drug use reporting, it seems plausible to suppose that seniors who have used alcohol or marijuana on only a very few occasions during the last twelve months might consider those events as more important or salient that those who used much more frequently. If so, then one might suppose that such differences would be reflected in the discrepancy ratios. Indeed, in the case of marijuana use the expected pattern appears fairly strong and consistent; as number of uses reported for the last year increases from 1-2 up to 20-39, the mean discrepancy ratios rise more or less regularly from 2.58 to 3.66 (see right-hand column of Table 2). For alcohol use the pattern is less clear, however; those who reported only 1-2 uses during the past year showed the lowest discrepancy ratio, but the pattern for the higher levels of use is curvilinear (see right-hand column of Table 1). The patterns for the other drugs are not consistent, perhaps reflecting the fact that relatively few students reported any use at all and very few reported more than a few occasions during the past year. On the other hand, that lower frequency itself might argue that the other illicit drugs would show lower discrepancy ratios on the grounds that in general the use of such drugs is more salient because it is more rare. That is true to some degree for the other illicit drugs taken as a whole; however, within that set of ten drugs there is no clear relationship between rarity and discrepancy ratio (see Table 3).

Thus far we have been dealing with the first two explanations—forgetting and telescoping. Both lines of explanation account for the discrepancy in terms of inaccurate reporting. An alternative approach is to consider the possibility that the reporting is not inaccurate and that the discrepancy is real. Of course, there is no need to assume that all of the discrepancy is genuine; even if only a small portion is, it is still of interest to explore some explanations for a genuine discrepancy. One possible explanation we have labeled "developmental trend." It could be argued that there is a marked acceleration of drug use during the senior year of high school, with each month involving more use than the last. There is indeed some degree of acceleration going on during high school, with each new grade level involving somewhat more overall use than the previous one (Abelson, Fishburne and Cisin, 1977; Johnston et al., 1979b); nevertheless, the increase is moderate from year to year and could not begin to account for the size of discrepancy we have been observing.

Another possible explanation of a genuine discrepancy is what we have called "senioritis"—the oft observed tendency for seniors to become increasingly exuberant as the time approaches for their liberation from high school. The notion is that our data on monthly use may be inflated—and therefore unrepresentative—because we surveyed our respondents during the spring of their senior year. First it should be pointed out that the data collections typically occur in April, and that means that questions about the past thirty days refer to a period during March and/or April. Although the end of high school is clearly in sight, the students have not yet reached the last few weeks, when "senioritis" is alleged to be most severe. Nevertheless, the possibility remains that drug use is already atypical during the period referenced in the questions about the past thirty days. Thus it is useful to consider what evidence might be brought to bear on this issue.

If "senioritis" includes much greater than average amounts of partying during the waning months of the senior year, and if this is an important contributor to the levels of drug use reported for the past month, then it should follow that any apparent overreporting for the past month would be most evident for those classes of drugs most likely to be included at parties. Alcohol and marijuana would certainly head the list of such drugs, and they have two of the largest discrepancy ratios shown in Table 3. But the ratio for amphetamines is just about as large as that for marijuana, and the ratio for heroin is only slightly lower. Thus, the considerable degree of consistency in discrepancy ratios across both party drugs and non-party drugs tends to undermine the "senioritis" explanation as a means of accounting for most or all of the discrepancy between "actual" and "expected" monthly use.

One other kind of evidence can be brought to bear on the "senioritis" interpretation. We conducted a very preliminary analysis of longitudinal data available from a small subset of young adults who were first surveyed as seniors in 1975 and then participated in follow-up surveys, including one in 1979 when they were four years beyond high school and averaged about 22 years of age. If the apparent overreporting is due primarily to senioritis, then we might expect to see less of it among those four years older. (This argument, like many of the others in this discussion section, is far from airtight. A minority of the members of the class of 1975 were nearing the end of college when they were resurveyed in 1979, and thus may have been experiencing a second bout of "senioritis." More importantly, it could be that we are observing a phenomenon not limited to seniors and thus better described as a more generalized "rites of spring.") When the 22-year olds' discrepancy ratios were compared with their own senior-year data from 1975, and with the data for the 1979 seniors, the ratios at age 22 were detectably smaller; but the findings were clear only for alcohol and marijuana, and the differences were not very large. These findings, which must be considered tentative at present, suggest that a portion of the discrepancy we have observed, at least for reports of alcohol and marijuana use, may indeed be attributable to "senioritis." However, a much larger portion seems to be too broadly present and consistent to yield to that explanation.

Having considered four possible explanations for our finding of discrepant monthly and annual reports of drug use, we cannot rule out any of them, nor can we claim that there is fully convincing evidence in support of any of them. The closest we can come is to observe that the phenomenon of forgetting, i.e., the underreporting of events that are more distant in time, has been observed in a wide range of surveys, and our own findings are general and stable enough to fit in very well with that explanation.

What implications does all this have for interpretations of drug use data from the Monitoring the Future project? Obviously, it means that drug use during the past year, and presumably also lifetime drug use, are in many cases sytematically underestimated. But we suspect that other aspects of the data are less subject to error. In particular, we think it likely that a respondent will remember having used a particular class of drug at least once, even though the number of times (beyond one or two) may be less clearly recalled. If this assumption is correct, then there may be relatively little recall error involved when data are presented in terms of percentages of respondents who report any use of a drug during the past year or during their lifetimes. Additionally, we have no reason to suppose that the patterns of inconsistency explored here will change abruptly from one year to the next; therefore, analyses of trends are likely to be largely valid, since the biases will be fairly constant from year to year.

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