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DRUG USE AMONG SYDNEY TEENAGERS IN 1985 AND 1986.

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Abstract

To investigate adolescent drug use behaviour, a random community sample of Sydney teenagers aged 14 to 19 years was interviewed at home in 1985 (N=996) and again in 1986 (N=756). Respondents were asked about current use of alcohol, tobacco, marijuana, other illicit drugs, medications and inhalants. Drug use was common: 16 per cent of respondents were heavy drinkers, 28 per cent smoked tobacco, 10 per cent used marijuana and 4 per cent used drugs other than alcohol, tobacco or marijuana. Seventeen per cent were multiple drug users. Drug use was more common among boys than girls, except for tobacco smoking, and increased with age: older males had particularly high prevalences of heavy drinking, tobacco and marijuana use. The prevalence of heavy drinking, tobacco and marijuana use increased by 2-3 per cent over the one year follow-up period. About half of the heavy drinkers and marijuana users, and 80 per cent of tobacco smokers had not changed one year later, which indicates the stability of these behaviours. One-third of eligible teenagers contacted at the first interview declined to participate: it is likely that this study underestimates the prevalence of drug use in the community. Heavy drinking, tobacco smoking and marijuana use remain important target behaviours for adolescent drug use prevention programs.

Introduction

Despite the high level of concern about drug use in the Australian community, there have been few community-based studies of drug use. Estimates of drug use and abuse are usually drawn from diverse sources such as morbidity and mortality statistics, court records, and sales statistics. Most Australian studies of drug use have focussed on teenagers, who form a major target group for drug use prevention programs. Almost all these studies have involved school student populations. Student surveys are often used in drug research because the populations are better defined than community samples, response rates are usually very high, and costs are lower than for community surveys.¹ However, school student populations exclude early school leavers — only 42 per cent of 15 to 19 year olds were still at school in Sydney in 1986² — and older

teenagers past school age. As drug users are likely to leave school at an earlier age than non-users,³ school studies may underestimate the prevalence of drug use in the community. Further, late adolescence to young adulthood is an important period for initiation into illicit drug use.⁴

Most Australian teenage drug use data are cross-sectional. Although repeated cross-sectional data give valuable information on prevalence changes over time, they are unable to describe the patterns of cessation and uptake of drug use. It may be argued that stable drug behaviours are of greater concern than sporadic or short-term use, although the risks of occasional drug use must not be underestimated. Longitudinal data are essential for identifying those at risk of continued and progressive drug use.

To address some of these deficiencies in our knowledge of adolescent drug use, we began a community-based longitudinal study of licit and illicit drug use among a sample of Sydney teenagers in 1985. As a main objective of the study was to provide information for prevention purposes, we have looked at behaviours which may be considered as harmful from a health or societal view: heavy drinking (rather than any alcohol use); tobacco smoking; use of marijuana; use of heroin, cocaine and hallucinogens; non-medical use of tranquilizers and amphetamines; and use of inhalants.

Methods

Sampling procedure

The following procedure was used to select 1000 teenagers living in the Sydney metropolitan area in late 1985. Ten electoral subdivisions were selected at random. Within each subdivision, ten addresses were selected randomly from the electoral rolls, and served as the starting point from which the interviewer proceeded in a clockwise direction around the residential block. The interviewer was instructed to obtain ten interviews, and given an incentive to obtain these from the first ten households. Households were visited on weekends (40% of interviews) and weekday evenings (20% on Monday, the remaining 40% distributed fairly evenly over the other days). Up to four callbacks were made if the occupants were out. For each household contacted, the youngest person between

the ages of 14 and 19 years was selected for entry into the study. Choice of sex was made randomly with balancing within clusters. This procedure has been shown previously to give a representative sample of the Sydney population.⁵

A total of 15,976 households were approached. There were no eligible occupants in 9,815 houses. In 4,691 (76%) of households with eligible occupants, the eligible person could not be contacted for interview. One-third of eligible persons contacted refused to be interviewed. The response rate was 68 per cent of eligible persons contacted, but only 16 per cent of total eligibles (contacted and non-contacted) in all households contacted.

In mid-1986, letters were sent to all 1000 respondents asking them to take part in a second interview. Of these, 760 (76%) were interviewed again in their homes. Of the 240 respondents who were not reinterviewed in 1986, 30 per cent refused to participate, 56 per cent had changed address and could not be found, and 14 per cent could not be interviewed for other reasons. Four respondents reinterviewed in 1986 were found to have been outside the eligible age range of 14 to 19 years in 1985, and have been excluded from analyses.

Interview protocol and questionnaire

Interviews were conducted by trained interviewers from a commercial survey company (Roy Morgan Research). A detailed letter was given to all eligible contacts, and their parents where relevant, explaining the purpose of the interview, the confidentiality of the responses, and how the results would be used. Interviewers requested that no other persons be present during the interview, which was the case in 75% of interviews. Privacy was further ensured by presenting many questions and possible responses on cards rather than reading aloud.

The measure of alcohol use was based on the methodology suggested by Gregson and Stacey,⁶ by which information is sought on the quantity of alcohol consumed on specific occasions. This avoids the need for respondents to classify themselves into given categories of typical consumption, a difficult task for persons with irregular drinking patterns. Respondents were asked about the last two drinking occasions — when they occurred, the type of alcoholic beverage and the number of glasses consumed. Respondents were classified as non-drinkers, non-heavy drinkers or heavy drinkers. Heavy drinkers were defined as those who drank five glasses or more on both occasions or eight glasses or more on one of last two occasions (giving an average of five or more glasses for the two occasions in most cases). The cut-off point for heavy drinking of five glasses per occasion has been used frequently in other studies.⁷ We preferred to define heavy drinking

in this way rather than to calculate the average daily consumption of alcohol. Given the episodic nature of teenage drinking, very few teenagers would exceed the non-harmful limit for average daily consumption. A measure of average daily consumption would underestimate the proportion of teenagers whose drinking patterns carry a high risk of acute harmful consequences.

The proportions of daily, occasional, ex- and never smokers are derived from a detailed question on current levels of tobacco use. To measure current use of other drugs, respondents were shown a card listing drug-using behaviours (use of marijuana, heroin, cocaine, amphetamines, hallucinogens, inhalants, and excessive use of tranquilizers) and asked: "Which of these things does anyone you know now do?". Respondents were shown another card listing members of the social network (family, friends and acquaintances) and including the category 'myself'. Current users of illicit drugs, tranquilizers and inhalants are those respondents who selected 'myself' for those behaviours.

Results

Characteristics of the sample

Sociodemographic characteristics of the study sample in 1985 are given in Table 1. Of 996 respondents, 54 per cent were males and 46 per cent were females. The majority of respondents attended an educational institution in 1985: 71 per cent were at high school, 6 per cent at technical institutions, and 4 per cent at tertiary institutions. About 37 per cent of respondents were employed: 17 per cent worked full-time and 20 per cent had part-time work. Eight per cent were unemployed, that is, looking for work, whether or not attending an educational institution. Only 5 per cent of the total sample were neither working nor studying. Most (99%) respondents were single.

A comparison with data from the Australian Bureau of Statistics (ABS) in Table 1 shows that high school students, full-time students and part-time workers were over-represented in the study sample. Although the proportions of unemployed teenagers were similar, teenagers who were neither employed nor at high school were under-represented in the study sample.

Drug use in 1985

The prevalences of drug use among the 996 teenagers interviewed in 1985 are given in Table 2. About 15 per cent were non-drinkers, 66 per cent were non-heavy drinkers and 16 per cent were classified as heavy drinkers. One-fifth smoked tobacco daily, and 7 per cent smoked occasionally. One-tenth of the sample used marijuana. A small proportion (4%) used drugs other than alcohol,

TABLE 1

Sociodemographic characteristics of the study sample, 996 Sydney teenagers, 1985.

Sociodemographic characteristic		%		
	Age 14	22.2		
	15	20.3		
	16	17.6		
	17	14.4		
	18	13.8		
	19	11.8		
	Male	53.6		
	Female	46.4		
			Study sample ages 15-19	ABS sample ages 15-19
			%	%
Institution attended in 1985	Secondary	71.2	63.4	42.3**
	Technical	5.7	7.4	12.2
	Tertiary	4.1	5.3	8.2
	Other	0.8	0.7	2.6
	Total studying in 1985	81.8	76.8	65.3
Attendance	Full-time	77.8	71.7	54.5**
	Part-time	4.0	4.9	10.8
Employment	Full-time	17.2	22.1	35.7**
	Part-time	19.6	21.7	12.5
	Unemployed	8.0	10.1	11.2
	Neither studying nor employed	4.8	6.2	9.2*

* $p < .05$, ** $p < .001$

Source: Australian Bureau of Statistics. Transition from education to work, Australia, May 1986. Catalogue No. 6227.0. Australian Bureau of Statistics Labour Force Estimates, November 1985 (GRP100 Table A1, GRP300 Table A3, 16/12/85), December 1985 (GRP100 Table A1, GRP300 Table A3, 24/01/86), January 1986 (GRP100 Table A1, GRP300 Table A3, 14/02/86) for New South Wales Metropolitan population.

tobacco and marijuana. Heavy drinking and marijuana use were more common among boys than girls. The prevalence of daily and occasional smoking was similar for both sexes, as was the use of drugs other than alcohol, tobacco and marijuana.

Drug use increased with age as shown in Figure 1. The prevalence of heavy drinking increased steadily from 2 per cent at age 14 to 35 per cent at age

19. The prevalence of tobacco smoking (daily and occasional) increased from 9 per cent to 28 per cent between the ages of 14 and 16 years, and continued to rise more slowly thereafter. There was a steep rise in marijuana use from 5 per cent at age 17 to 20 per cent at age 18 and 29 per cent at age 19. The use of drugs other than alcohol, tobacco and marijuana increased from less than 1 per cent in the youngest group to about 10 per cent in the oldest.

TABLE 2

Prevalence of self-reported drug use in 996 Sydney teenagers, 1985.

Drug use in 1985	Prevalence %	95% confidence interval
Alcohol*		
Non-drinkers	15.3	13.1 – 17.5
Non-heavy drinkers	65.8	62.9 – 68.8
Heavy drinkers	15.5	13.3 – 17.8
Tobacco smoking		
All smokers	28.4	25.6 – 31.2
Daily smokers	21.0	18.5 – 23.5
Occasional smokers	7.4	5.8 – 9.0
Ex-smokers	31.2	28.3 – 34.1
Never smoked	39.7	36.7 – 42.7
Marijuana use	10.1	8.2 – 12.0
Other drugs	3.6	2.4 – 4.8
Amphetamines	2.3	1.4 – 3.2
Hallucinogens	1.6	0.8 – 2.4
Cocaine	1.4	0.7 – 2.1
Tranquilizers	1.0	0.4 – 1.6
Heroin	0.6	0.1 – 1.1
Inhalants	0.5	0.1 – 0.9

* 3.2% of the sample could not be classified due to missing data

Data on multiple drug use are given in Table 3. Almost two-thirds of respondents were not heavy drinkers and did not use tobacco, marijuana or other drugs. Heavy drinkers were very likely to report other drug behaviours: two-thirds also smoked tobacco, and a quarter smoked tobacco and used marijuana. On the other hand, about half the tobacco smokers did not drink heavily or use other drugs. Marijuana use was closely associated with heavy drinking and tobacco smoking. Only 2 per cent of respondents used marijuana exclusively. The most frequent drug combinations were heavy drinking and tobacco smoking (6%), tobacco smoking and marijuana use (2%), and heavy drinking, tobacco smoking and marijuana use (3%).

Respondents who were lost to follow-up were much more likely to be using licit or illicit drugs in

1985, than those reinterviewed in 1986. The differences between the two groups were statistically significant.

Change in drug use from 1985 to 1986

The prevalences of heavy drinking, tobacco smoking and marijuana use in the 756 teenagers interviewed in 1985 and 1986 increased 2–3 per cent as shown in Table 4. The change in the use of drugs other than alcohol, tobacco and marijuana was negligible. Only the increase in tobacco smoking was statistically significant (McNemar's chi-square = 6.2, $p < .05$). When 1986 prevalences were standardised to the 1985 age distribution of the 756 respondents, it appeared that prevalence changes were related to age rather than to temporal changes, as drug use in 14 to 19 year olds did not increase.

FIGURE 1
Prevalence of drug use in 996 Sydney teenagers, 1985.

The rates of uptake and cessation of drug use in boys and girls are illustrated in Figures 2 and 3. Half the 1985 heavy drinkers remained heavy drinkers in 1986. The rates of uptake of heavy drinking were similar for boys and girls, but girls were more likely to have stopped drinking heavily. Over 80 per cent of the 1985 smokers were still smoking in 1986. Girls were more likely than boys to take up tobacco smoking, but less likely to give up smoking. Over half the 1985 marijuana users had stopped by the second interview, while 6 per cent of non-users had taken up marijuana use. The rate of uptake of marijuana use was twice as high in boys as in girls, and girls were more likely to have stopped. Few of the 1985 users of other drugs (10% of boys and none of the girls) reported use in 1986, and very few had taken up the use of other drugs. The peak age for uptake of heavy drinking was 16 years in boys and 17 years in girls. Uptake of tobacco smoking peaked at age 16, and of marijuana at age 17, in boys and girls alike.

Discussion

The levels of drug use indicated by the study are worrying, particularly in older males, among whom 50 per cent were tobacco smokers, 40 per cent heavy drinkers, 35 per cent marijuana users and 10 per cent users of other drugs. Multiple drug use is also of concern: the importance of the licit drugs, alcohol and tobacco, is emphasised by the finding that teenagers were most unlikely to be using an illicit drug if they were not using alcohol or tobacco.

Individual drug behaviours changed considerably over one year. It would seem that some teenagers experiment with drugs over a short period of time, and that the behaviour does not become established. However, most tobacco smokers and heavy drinkers, and almost half the marijuana users did not change their behaviour. Although a follow-up period of one year is too short to allow conclusions to be made about the stability of drug behaviours, it would appear that the smoking habit becomes entrenched at an early stage of use.

TABLE 3

Combinations of drug use behaviours in 996 Sydney teenagers, 1985.

Drug use combinations	%
No drug use ^a	64.3
Heavy drinking	4.3
Tobacco smoking	14.8
Marijuana	1.5
Other drugs ^b	0.3
Heavy drinking and tobacco	5.7
Heavy drinking and marijuana	0.6
Tobacco and marijuana	2.2
Tobacco and other drugs	0.1
Marijuana and other drugs	0.6
Heavy drinking, tobacco and marijuana	2.9
Heavy drinking, tobacco and other drugs	0.3
Heavy drinking, tobacco, marijuana & other drugs	1.7
	Total 100.0

^a 'No drug use' includes non-heavy drinking

^b 'Other drugs' includes amphetamines, cocaine, hallucinogens, heroin, inhalants, too many tranquilizers.

Peak ages for uptake of heavy drinking may indicate that alcohol use in girls but not boys is influenced by the restriction of the minimum legal drinking age of 18 years. Girls have higher uptake and continuation rates for tobacco smoking than boys, although the peak uptake age was 16 years for both sexes. The peak in marijuana uptake one year later suggests the temporal relationship between tobacco smoking and marijuana use noted in other studies.⁸

There were too few users of drugs other than alcohol, tobacco and marijuana to allow patterns of use to be described with validity. The very low prevalence is probably due to the youth of the sample. Other studies have shown that the use of illicit drugs other than marijuana is more common in early adulthood than in adolescence. Further, the use of these drugs usually indicates heavy involvement with drugs, and it is probable that heavy illicit drug users have been missed in this sample.

These estimates of licit and illicit drug use are generally lower than those of previous Australian

school-based studies,^{9,10} when the same age groups and school students are compared. Although methodological differences limit greatly the comparability of the various studies, the prevalence of drug use would be expected to be higher in the community than in school populations. This discrepancy brings into question the validity of the measures of drug use and the presence of bias.

As in most studies of drug use, we have relied on self-reports of drug behaviour. The validity of self-reported drug use has not been firmly established, mainly because there are few feasible and valid objective measures of drug use in populations. Self-reports of tobacco smoking in an Australian population which included 14 to 19 year olds have been shown to be valid by saliva cotinine levels.¹¹ Population surveys of alcohol use are said to underestimate true consumption by at least 20 per cent,¹² but validity studies of teenage alcohol use are lacking. North American studies have shown that, although self-reports tend to underestimate drug use, they are generally reliable, and teenagers do not deliberately misreport their drug use.¹³⁻¹⁵ Further

TABLE 4

Prevalence of drug use in 1986 and change in prevalence from 1985 to 1986 in 756 Sydney teenagers.

	Prevalence 1986 (age 14-21) %	Change (95% CI) ^a 1985-1986	Age-standardised	
			Prevalence 1986 (age 14-19) ^b %	Change 1985-1986
Heavy drinking	14.6	+2.4 (-0.2,+4.9)	11.3	-1.0
Tobacco smoking	27.5	+3.2 (+0.8,+5.6)	23.2	-1.1
Marijuana use	8.6	+1.6 (-0.6,+3.8)	6.1	-0.9
Other drug use	1.3	-0.2 (-0.9,+1.4)	0.8	-0.7

^a for difference in proportions for paired data^b age-standardised to 1985 population age distribution, N=756

study is needed to find out whether Australian teenagers answer questions about drug use as reliably as North American teenagers.

The setting of the interview, and lack of privacy and anonymity might have affected the validity of our study. A comparison of self-reports from school and community studies in Canada showed that adolescents tended to give more socially acceptable answers at home than at school.¹⁶ The evidence in the literature that lack of privacy or lack of anonymity lead to low estimates is inconclusive.¹⁷⁻²⁰ In our study, the presence of adults in the room during the interview did not appear to affect the responses (unpublished observations).

The main source of bias in our study would seem to be non-response, due to both refusals and non-contact. A refusal rate of about one-third at the first contact is high but not unusual in household surveys.²¹ The practice of selecting for the study the youngest eligible person in the household should not necessarily bias the sample towards younger teenagers. Rather, the difficulty would seem to lie in the fact that the older teenagers, especially males, are rarely at home to be interviewed. This problem has been encountered by other researchers, and is likely to lead to an underestimation of drug use.²¹ If the 240 respondents who were lost to follow-up were more likely to report drug use at the first interview, it might reasonably be assumed that non-respondents to the first interview were also more likely to be

using drugs. In that case, this study should be considered to underestimate the prevalence of drug use in the community. With this in mind, the level of drug use among Sydney teenagers becomes even more significant.

Heavy alcohol use and tobacco smoking would appear to be the most important target behaviours for drug use prevention programmes. Although the evidence is inconclusive that heavy drinking in adolescence will lead necessarily to alcohol problems later in life, the teenage heavy drinker is at high risk of accidental injury or death, particularly on the roads. As for tobacco smoking, it would seem that preventive efforts need to be oriented towards girls. Another reason for concentrating on alcohol and tobacco is the place of licit drug use in the progression to use of marijuana and other illicit drugs. Numerous studies have shown that teenagers are most unlikely to use illicit drugs if they have not used alcohol and/or cigarettes.⁴ Other analyses of our data show that the uptake of marijuana use is predicted by prior heavy drinking and tobacco use (unpublished observations). Although a causal association between licit and illicit drug use is not inferred, nor is the progression inevitable, the implication is that the prevention of licit drug use may stop the progression towards illicit drug use. Marijuana use also warrants more attention, in light of the increasing body of evidence of its health risks, and its close association with heavy drinking and tobacco smoking.

FIGURE 2
Uptake of drug use from 1985 to 1986 in 1985 non-users.

FIGURE 3
Cessation of drug use from 1985 to 1986 in 1985 users.

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