

maternal and child health-oriented programs if program records can be linked to the birth records. For health outcome, evaluations, or the development of guidelines for the distribution of funds, this procedure could be performed periodically. With coverage and targeting information available to them, WIC Program managers from State and local levels will have additional tools to guide their program decisions on a continuing basis.

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Adults' Accounts of Onset of Regular Smoking: Influences of School, Work, and Other Settings

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Synopsis

A representative population sample of 546 adults in Victoria, Australia, who had ever smoked were asked to describe the general setting where they first took up regular smoking and who, if anyone, influenced them to begin. Although school was the dominant setting (35 percent), particularly for younger respondents 20-34 years (55 percent), the workplace was also an important setting for uptake

of regular smoking. Overall, 34 percent reported taking up smoking while in a job.

The probability of taking up smoking at work increased with age but, even among younger respondents, many did not begin smoking until they started work. Fourteen percent took it up between leaving school and commencing college or a university or their first job, and 22 percent of those who attended college or a university took up smoking in that setting.

One-quarter of the sample said that nobody had influenced them to take up smoking, but most of the remainder indicated that either friends, family, or workmates had played a part. Most mentioned were good friends at school (20 percent), good friends known socially (14 percent), and good friends at work (7 percent). Others listed were family (7 percent), boy friend or girl friend (7 percent), and "other people" at school (5 percent), or at work (5 percent), or known socially (5 percent). Overall, 10 percent had taken up regular smoking under the influence of workmates at work, suggesting that smoke-free workplace policies might be useful in the long term in reducing the prevalence of smoking in the community.

THE ACQUISITION of the smoking habit has been widely studied in school populations where parental and peer group conformity has repeatedly been shown to be influential (1). Although it is true that the smoking futures of most people in industrialized countries were determined before they left secondary school, it has been presumed that many smokers took up the habit at ages after which they may be presumed to have left school (2). However, there is no study that we are aware of that presents population data on the broad occupational settings where people took up smoking.

It is important to have data on the contexts in which those who adopt smoking do so, not only to complete the picture of the natural history of smoking but also to identify new opportunities to intervene to reduce the prevalence of smoking. Our interest lay particularly in the acquisition of regular smoking among those entering the work force. In 1985 the U.S. Surgeon General (2) drew attention to the fact that

... a substantial fraction of smokers report beginning to smoke at ages when they would first be entering the workforce. This suggests that a set of influences that promotes initiation may be present in the initial socialization into the workforce.

However, it is desirable to support such inferences with the direct accounts of past and present smokers about the settings where they took up regular smoking.

The major aim of our study was to obtain estimates of the adult population who have ever smoked showing

- the proportion who took up smoking while in school, or while working, unemployed, or engaged in home duties;
- the proportion influenced by various categories of social agents; and
- to explore how beginning to smoke and social influence might be affected by sociodemographic factors.

Methods

Sample. A total of 1,013 male and female residents of the State of Victoria, Australia, more than 19 years of age, were interviewed because, by this age, the vast majority of those who are going to start smoking have already done so (3). Of these, 546

(54 percent) reported ever having smoked regularly, and it is data from this group that we report.

Procedure. Interviewing was done in November 1988, by a large market research company that conducts weekly sample surveys for various clients. The sampling procedure used has been described in previous reports on the prevalence of smoking in Australian populations (4). In brief, individual households were sampled in clusters from census collectors' districts throughout Victoria. Respondents were selected according to a standard procedure at the time contact was made by field interviewers, and one respondent per household was interviewed.

Questions. In addition to questions about current smoking status and demographic indices such as education and occupational status, each person who had ever smoked was shown a card listing response options and asked, "Which one best describes when you first began to smoke regularly?" The options were (a) while at school, (b) between school and first starting work, or college, (c) while at college, (d) while in my first job, (e) while in my second or subsequent job, (f) while unemployed, (g) while at home (full-time home duties), (h) other (to be described).

Looking at another set of response options that listed possible social influences, respondents were next asked, "As far as you can remember, which one of those people most influenced you to take up smoking?" The options were (a) family, (b) boy friend or girl friend, (c) good friends at school, (d) other people at school, (e) good friends at work, (f) other people at work, (g) good friends I knew socially, (h) other people I knew socially, (i) nobody.

Analysis. Estimates are reported as percentages of the total sample or subgroups, including respondents who could not answer the question in the denominator. Where *P* values are quoted for the significance of differences between proportions, a chi-square test was used.

Results

Ninety-seven percent of ever smokers were able to recall the context in which they first began to smoke regularly. As expected, the most common social context in which respondents reported beginning to smoke regularly was school. Overall, 35

Table 1. Setting where adults first began regular smoking (percentage)¹

Setting	Total (N = 546)	Sex		Age group		
		Men (N = 282)	Women (N = 264)	20-34 (N = 225)	34-49 (N = 148)	50 or more (N = 173)
At school	35	40	29	55	26	16
Between school and job or college	14	13	15	14	16	12
At college (university)	5	4	6	4	9	2
In first job	27	26	28	17	34	34
In later job	7	7	8	4	7	12
Unemployed	1	2	0	2	0	1
Home duties	5	1	9	1	3	11
Other	3	4	2	1	2	6
Cannot say	3	4	3	2	3	5

¹ Percentages of total number in each group listed in columns.

percent began smoking regularly at school. Analyses by the age groups 20-34, 35-49, and 50 or more years showed that as age increased, reports of having taken up smoking at school decreased ($\chi^2 = 71.1$, $df = 2$, $P < .0001$).

To assess whether this trend was real, or was due to younger people having had less opportunity to smoke in other situations, the analysis was redone using all respondents (not just ever smokers) as the denominator. The result was a highly significant age effect ($\chi^2 = 70.1$, $df = 2$, $P < .0001$). As almost all respondents would have left secondary school by the age of 20, this provides evidence of different increasing proportions of the population taking up smoking at school for younger age cohorts, and it is evidence that the change in proportion of ever smokers by age is a real effect.

Among ever smokers, men (40 percent) were more likely than women (29 percent) to have begun smoking at school ($\chi^2 = 6.71$, $df = 1$, $P < .01$). As can be seen from the following table, there was an interaction between age and sex in the percentage of persons taking up smoking at school.

Sex	Age		
	20-34	35-49	50 or more
Men	57	35	24
Women	53	16	7

Whereas chi-square tests between sexes on each age group separately revealed that there was no significant difference between the sexes in the less than 35 age group, for both older groups men took up smoking at school in higher proportions than women (35-49 years, $\chi^2 = 6.94$, $df = 1$, $P < .01$; 50 years or more, $\chi^2 = 9.22$, $df = 1$, $P < .01$).

Table 1 gives the overall percentages for all the settings where people took up regular smoking, as well as for sex and age groupings separately.

Taking up smoking in their first (27 percent) or later jobs (7 percent) was about equally common among men and women, but older respondents were increasingly likely to have started smoking at the time they were in their first jobs ($\chi^2 = 18.5$, $df = 2$, $P < .0001$). Overall, 14 percent took up smoking after leaving secondary school but before beginning their next occupation, and this was not related either to sex or age. Only 5 percent overall took up smoking at a university or college. However, among respondents who had gone to a university or college, the proportion was 22 percent, which makes it an important setting for recruitment of smokers.

Table 2 provides overall percentages on sources of influence and cross-tabulates answers to the question by sex and age group separately. Overall, 30 percent did not attribute their taking up regular smoking to anyone (25 percent who said nobody, 4 percent who could not say, and 1 percent who gave other responses), but 70 percent did name the category of persons who influenced them to smoke.

Twenty-five percent were influenced by people at school, mostly good friends (20 percent). Good friends known socially were also a relatively common source of influence (14 percent), as were good friends at work (7 percent). Notably, "other people" were equally influential in the school, work, and purely social contexts (5 percent for each). Family (7 percent) and boy friend or girl friend (7 percent) were the other major sources of influence. Taking the three main categories of context (school, social, and work) and cross-tabulating them with major influence (friend, other person) showed a significant trend ($\chi^2 = 11.3$, $df = 2$, $P < .001$). Whereas good friends at work were only slightly more influential than other workmates, and good friends known socially were three times more influential than acquaintances, good friends at

Table 2. Persons who influenced smokers to begin regular smoking (percentages)

Persons	Total (N = 546)	Sex		Age group		
		Men (N = 282)	Women (N = 264)	20-34 (N = 225)	34-49 (N = 148)	50 or more (N = 173)
Family.....	7	5	8	8	7	5
Boy friend or girl friend	7	4	10	6	8	7
Good friends at school.....	20	22	19	30	20	8
Other people at school	5	6	4	7	3	5
Good friends at work	7	6	8	4	10	9
Other people at work	5	5	5	3	8	6
Good friends I knew socially	14	13	15	12	11	18
Other people I knew socially	5	6	5	4	4	8
Subtotal, social influence ¹	70	66	74	76	72	64
Nobody.....	25	29	21	24	24	27
Other	1	1	2	0	1	3
Cannot say	4	4	4	1	4	7
Subtotal, not social influence ¹	30	34	26	24	28	36

¹ Not all columns add exactly because of rounding errors.

school were four times as influential as other people at school.

Men (29 percent) were more likely than women (21 percent) to report no social influence on adoption of regular smoking ($\chi^2=5.0$, $df=1$, $P<.05$). Women were more than twice as likely to have been influenced by their boy friends as men by their girl friends ($\chi^2=6.6$, $df=1$, $P<.05$). The only clear relationship between age group and influence to take up smoking was for people at school. Younger people were more likely than older ones to report being influenced by people at school, both friends and others combined ($\chi^2=31.6$, $df=2$, $P<.0001$).

In further analyses, not shown in the tables, it was found that absence of reported social influence (the "nobody" category) was related to educational attainment and to current smoking status. Whereas only 19 percent of those who completed 12 years or more of formal education said nobody influenced them to take up regular smoking, and 27 percent of those completing 11 or 12 years, 31 percent of those who completed less than 10 years school said nobody influenced them ($\chi^2=7.9$, $df=2$, $P<.01$). Thirty percent of the current smokers reported no influence compared to 18 percent of the ex-smokers ($\chi^2=9.5$, $df=1$, $P<.001$).

Relationships between setting and influences on smoking uptake were also found. Respondents who took up smoking after leaving school were more likely to report no influence (29 percent) than those who started at school (16 percent), and this was a significant difference ($\chi^2=12.2$, $df=1$, $P<.001$).

Of the entire sample of 546 smokers and ex-smokers, 10 percent reported that they had taken

up smoking while employed in a job and had been influenced by workmates. Including in the denominator the remaining 467 who had never smoked regularly, it can be estimated that approximately 5 percent of the adult population had taken up smoking in these circumstances.

Discussion

Consistent with the increased prevalence of smoking among school children in the 1960s and 1970s (5), we found the highest proportion of persons who took up regular smoking while at school to be in their twenties or early thirties. Older people took up smoking more often after leaving school, most commonly in their first job. Since overall smoking prevalence levels and trends in Australia appear broadly similar to those in the United States and other western countries (6), these findings probably apply in these countries. The patterns found are unlikely to be due to an age-related recall bias. The high level of recall of the context in which respondents first began to smoke regularly suggests that this is a salient event, and thus it is unlikely that there would be appreciable bias in recall as a function of time. The finding that an additional 14 percent of respondents took up smoking immediately on leaving school reinforces the importance of the school environment as a place that is currently preparing adolescents for life as smokers. The trends lend support to public health interventions designed to prevent the acquisition of the smoking habit at school. However, regardless of the success of these interventions (7), people will still move from school into environ-

ments that may put them at risk of taking up regular smoking or inhibit attempts to stop.

One such environment is the workplace, and it is one which is becoming increasingly smoke-free (8,9). Workplace smoking bans may reduce smoking prevalence among employees through increased cessation, but this has not been consistently shown (10,11). Our data suggest another way in which workplace smoking bans could reduce the prevalence of smoking, as well as reducing the amount smoked by smokers. By insulating young people from the opportunity to smoke at work when they are adjusting to new adult-worker responsibilities and pressures, workplace smoking bans would have a lasting impact on uptake of smoking. By reducing uptake, they would ultimately have a worthwhile effect on overall prevalence of the habit.

The most recent estimate of the current proportion of people taking up regular smoking in their first or later job is found in the 20- to 34-year-olds in our sample. It would seem that about 20 percent of young adult smokers may have taken up smoking in their first or later job and that in about one-third of these instances the cause of smoking is attributable to the social influence of workmates. Arguably, persons in this latter category would not have taken up smoking except for the smoking milieu of their jobs, and had bans on smoking at work previously been in place, they might now be nonsmokers.

The results show that good friends are a more frequent source of influence than acquaintances in influencing people to become regular smokers. This differential is most marked at school and is least within the work environment. It is possible that interactions with acquaintances are relatively more common at work than at school. It may be that friendship is not the influence, but it is the increased frequency of interactions that friendships entail that leads to friends being more common influences on smoking than acquaintances. In this interpretation, it is the opportunities provided by extent of interactions that are the factors determining smoking uptake, and at work people interact as much with workmates they do not count as friends as they do with friends.

One final issue warrants mention. Current smokers were more likely to have reported that nobody influenced them to take up smoking. If not due to recall bias, it suggests that smokers who began more for personal reasons than social compliance may be either less likely to try to quit or less successful in their attempts. The lack of social influence in uptake may also be indicative of

reduced potential for social influences on cessation. If this were so, it would suggest that this group of smokers are least likely to be motivated to quit by reducing the social acceptability of smoking.

As far as we know, earlier estimates of the influence of the work environment on smoking uptake have been exclusively determined inferentially from age-of-onset data. This study, which investigated the issue with direct measures, confirms that the workplace was and is an important place where people take up smoking. There is a need to target smoking prevention programs to the workplace and the home, as well as to the schools.

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