THE DEVELOPMENT AND MAINTENANCE OF SMOKING, DRINKING AND OTHER DRUG USE AMONG DUBLIN POST-PRIMARY PUPILS

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GENERAL SUMMARY

The present report is complementary to the study published in 1986 on *Smoking, Drinking and Other Drug Use Among Dublin Post-Primary School Pupils*. It includes data from a follow-up phase and is especially concerned with identifying factors that predict initiation to, and changes in, substance use behaviours. The findings of the earlier report had shown that rates of smoking were high in comparison to other countries. The level of alcohol consumption was midway between that of high consumption countries like France and that of low consumption countries like Israel. As regards illegal substances, it was shown that while the use of solvents is moderately high, the use of other illegal substances is rather low. The findings of the earlier report also identified several factors that were associated with use. Peer example, beliefs in positive consequences and tendencies towards deviant behaviours were all shown to be related to substance use. On the other hand, parental disapproval, "bonding" to family and school and beliefs in negative consequences tended to act as restraining factors in substance use.

While the earlier report provides an indication of the prevalence of the use of various drugs, and of the correlates of such use, the cross-sectional nature of the analysis precludes a full understanding of the causes of such behaviour. The major problem is that such analyses make it difficult to distinguish between the events that come about *as a result* of substance use from those that *bring about* such use. Thus, it is hard to discern whether friends' use is actually a causal factor in substance use or whether young people who are inclined to use various substances select friends who are similarly inclined. Panel or longitudinal studies try to disentangle such factors.

Previous Longitudinal Studies

Five general categories of longitudinal studies can be identified in the extant literature. The first kind of study attempts to relate substance use at Time 1 with use of substances at Time 2 and is mainly concerned with the stability and change in use over time. The second type of study focuses on the extent to which particular traits, characteristics or behaviours at Time 1 are associated with use of cigarettes, alcohol or other drug use at Time 2. Two other kinds of panel studies are concerned specifically with initiation to substance use, and changes in level of use, respectively. A final category

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of study is concerned with predicting cessation of use of a substance between Time 1 and Time 2.

Methodology

The research design comprised a panel study using anonymous questionnaires administered to a sample of Dublin post-primary school pupils. The present report draws particularly from the final phase of this survey and investigates issues regarding the development and continuance of smoking, drinking and drug use over time. At this final phase, data were obtained from 2,057 students from 24 schools stratified for gender, size of school and school type. The sample was equally divided between males and females, with a median age of 15.8 years. All levels of socio-economic background were represented and the participants were relatively evenly distributed among class levels.

In the questionnaire pupils were asked particularly about their smoking, drinking and drug use. Questions focused on lifetime prevalence of each behaviour, current frequency of use and future intentions. Additional questions pertained to background characteristics and items related to self-esteem, attitudes to sex roles and relationships with parents.

The internal consistency of the items measuring substance use remained very good at phase III. The possibility of over-reporting was investigated by including a fictitious substance in the list. However, the outcomes suggested that the estimates of drug use are likely to be biased only slightly by over-reporting.

Questionnaires were matched across phases by means of a self-generated code. Overall, over 77 per cent of the questionnaires were matched. The analyses indicated that the results regarding the prediction of substance use were relatively unbiased by attrition or by the matching procedure.

Differences Between Cohorts

Since only one year had elapsed between Time 1 and Time 2, only minor cohort differences were to be expected. Nevertheless, such differences are of interest because they may indicate the direction of changes in substance use by young people. As regards cigarette smoking among girls, it seemed that the younger cohorts were smoking more at an earlier age. Furthermore, this trend may well result in girls "catching up" with boys at all age groups in relation to smoking.

As regards cohort differences in drinking, the strongest indications are in relation to reports of having felt drunk. The results showed that at each age level the younger cohort reported higher levels of frequency of being drunk.

For illegal drug use, there was no indication of any difference between younger and older cohorts for either current drug use or for lifetime prevalence. In contrast to rates for smoking and drinking, the rates were almost identical for the two cohorts.

Development and Maintenance of Smoking

The strongest predictor of both initiation to smoking and of changes in smoking was attitude. The impact of attitude was independent of beliefs about positive and negative consequences. Interestingly, normative influences were not nearly as strong as in the cross-sectional analyses. In particular it seems that a large part of the strong relationship between friends' smoking and reported smoking is due to selective friendships that derive from, rather than are, the cause of beginning to smoke.

Development and Maintenance of Drinking

Attitude to drinking and peer drinking were the strongest predictors of changes in and initiation to drinking behaviour. Friends' drinking was a significant predictor of changes in drinking from Time 1 to Time 2 and is also an important predictor of initiation to drinking. Attitude to drinking was similarly influential except in the case of changes in female drinking, where attitude at Time 1 was not a significant predictor.

Development and Maintenance of Drug Use

The results here were markedly different from those pertaining to smoking and alcohol and significant gender differences were evident. Peer approval (in addition to peer example) was an important predictor for girls while peer example was the only aspect of peer influence to emerge as important for boys. Furthermore, the level of success in prediction was much higher in the case of girls.

Recommendations

The recommendations presented in the final chapter focus on environmental, community and legal aspects of prevention of adolescent substance use. Such approaches attempt to limit both physical and social availability of drugs in the community.

As regards *physical availability*, a large volume of research has focused on minimum drinking age as a means of reducing adolescent drinking. The evidence suggested that a decrease of about one-third could be expected with the raising of the minimum age to 21 years. However, it is unlikely that increases in the minimum age would be effective without a mechanism for verifying age. There is also some evidence that bar staff (i.e., server)

intervention programmes can be helpful in reducing alcohol problems in this area.

While there is some evidence from other countries that price affects drinking among adolescents, it is difficult to generalise these findings to the Irish situation. More work is needed to evaluate the potential effects of price increases on youth drinking and smoking.

The situation regarding the physical availability of illegal drugs is considerably different. It is likely that the low availability of such drugs is, at least in part, the result of deterrence efforts. However, there is also some indication that such efforts have been made as effective as can be in reducing drug use. Thus, it is recommended that increases in deterrence should be considered only to be part of a broader effort to reduce demand as well as the supply of illegal drugs.

Social availability refers to the extent to which there is perceived normative support within the community to smoke, drink or use other drugs. A case can be made that social availability is even more important than decreasing physical availability in preventing adolescent substance use. Considerable attention has been given to the effects of alcohol and tobacco advertising. Furthermore, several studies have been carried out on the effects of alcohol incidents in television programmes. The available research seems to suggest that exposure to alcohol on television and advertising can have a small but significant effect on the beliefs and behaviour of children and adolescents.

There has been considerable research on the effects of labelling and health warnings. The earlier warnings on cigarette warning labels tended to be small, inconspicuous and overly abstract. However, more recent work indicates that properly designed warning labels can have an impact on public awareness. These are most likely to be effective if they are prominent, simply worded and to the point and are changed on a regular basis to prevent overexposure to any given message.

There are some guidelines for promoting the effectiveness of *community action* in relation to substance use. Rather than attempting to develop an overall plan, such as stopping all youthful substance use, it seems better if community groups focus on specific objectives and on steps towards obtaining that overall goal. Having short-term objectives has the advantage of allowing group members to experience successes and progress towards larger goals.

Chapter 1

INTRODUCTION AND BACKGROUND

The concern with smoking, drinking and other drug use among young Irish people led to a study by The Economic and Social Research Institute of the social-psychological factors related to use of such substances. This three-phased panel study began in February 1984 and the data collection was completed in April 1985 and attempted to look at a range of factors associated with such behaviours. A report on the first two phases of the project was published in December 1986 (Grube and Morgan, 1986). That report focused on two major areas: (i) the prevalence of smoking, drinking and illegal drug use, and (ii) identifying the factors that are associated with use of such substances. The present report includes data from the third phase of the report and also from the two earlier phases with a view to answering questions about the major factors that predict initiation and changes in smoking, drinking and other drug use.

Prevalence of Smoking, Drinking and Other Drug Use in Ireland

The findings of the earlier report indicated that rates of cigarette smoking were high in comparison with other countries. Among the entire sample, about two-thirds had smoked at some time in their lives, and about one-quarter of the pupils were regular smokers in the sense that they had smoked every day during the previous month. In general, there was a tendency for girls to start smoking at a later age than did boys. However, by age 16, the girls had caught up with the boys, so that there were no gender differences in smoking from age 16 years onwards. The level of cigarette smoking is particularly high in comparison to countries like the United States, which has only about two-thirds the rate of cigarette smoking of the present sample.

The level of alcohol consumption is midway between that of high-consumption countries like France and that of low-consumption countries like Israel. About two-thirds of the total sample had drunk alcohol at least once. Of the various drinks consumed, the most popular drinks were beer and wine, while cider and spirits had been consumed less frequently. In comparison to other countries, a relatively high proportion of the students had been drunk while there was also a high proportion of abstainers in the group.

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Nearly 22 per cent of the students had tried illegal substances. The most frequently used of these substances were solvents (like glue) and marijuana. About 13 per cent had tried these. However, the use of other illegal drugs was much lower. In comparison with other countries the use of solvents is moderately high but the use of other substances is rather low.

Factors Associated with Substance Use

Of the various background characteristics examined, gender and age showed the strongest associations with substance use. As might be expected, there was a tendency for older students to use the various substances. As noted above, the significant difference in relation to cigarette smoking was that girls tended to start somewhat later but they had caught up with boys by age 16 years. On the other hand, the level of alcohol use and illegal drug use was higher among boys at all ages and with all measures. Contrary to popular belief, neither fathers' socio-economic status nor mothers' employment (full-time mother vs. being in employment) related to smoking, alcohol or other drug use.

Two aspects of parental influence were examined, viz., parental example and perceived parental approval/disapproval of substance use by their offspring. No significant association emerged between parental smoking and their children's smoking. In fact, when both parents smoked there was only a slightly greater probability that their children would smoke, than when neither parent smoked. On the other hand, there was a significant relationship between parental drinking and that of their children. The results in relation to parental disapproval were more consistent. In general, there was a moderately strong relationship between the level of perceived disapproval by parents and the substance use of their offspring.

When the same aspects of peer influence were examined, a somewhat different pattern of results emerged. Overall, of all the variables examined, the strongest associations of reported use were with perceived friends' use. In particular, the perceived use by best friend was especially strongly associated with cigarette smoking, drinking and other drug use, while the example of other good friends was somewhat less strongly associated with reported use. In the case of approval, the associations tended to be significant but weaker. However, it was still the case that best-friend influence related to use more than did the influence of other friends.

A major feature of the previous study was the attempt to examine the extent to which students who smoked, drank alcohol, or used other drugs were inclined to believe that these behaviours would lead to positive consequences and less likely to believe that they would lead to negative consequences. It emerged that, indeed, this was the case. Thus, young

people who smoked were less inclined to believe that smoking would cause damage to their health but they were also inclined to believe that smoking would cause them to enjoy themselves more. Furthermore, there were differences between smokers and non-smokers in relation to the value they placed on such consequences. In comparison to non-smokers, regular smokers were more likely to judge positive consequences (feeling relaxed) as more important and negative consequences as less important.

The extent to which "social bonding" would constrain young people from substance use was also examined. The central idea in this perspective is that to the extent that individuals have an attachment or an involvement or a commitment to a conventional social institution, they should be less likely to smoke, drink or use illegal drugs. In line with this view, it was shown that bonding to the family (particularly relationship with parents), commitment to school, and bonding to religion (especially frequency of prayer and judged importance of religion) were all associated with relatively lower levels of use of these various substances.

Finally, the association between reports of other deviant behaviours and substance use was examined. In line with previous findings in this area, there was an association between reports of having stolen, damaged property, etc., and respondents' reports of substance use. Specifically, those students who admitted to antisocial behaviours tended to be more likely to smoke, drink alcohol and use other substances.

Limitations of Cross-sectional Studies

While the earlier report provided an indication of the prevalence of use of various substances, and of the correlates of such use, the cross-sectional nature of the analysis limited its value in understanding the causes of such behaviour. The main drawback of such designs is that they make it difficult to distinguish between the events that come about as a result of substance use and those events that actually contribute to the initiation to use. For example, while it is well established that peer use is indeed associated with reported use, it is less clear that such use results from peer use or whether young people who are inclined to use various substances will themselves select friends who are similarly inclined. Panel studies attempt to disentangle such factors. Thus, the main emphasis on the present report will be on those matters that are appropriately resolved by means of panel studies.

Outline of Present Report

This report is concerned with describing the background, methods, findings and recommendations of this final part of the project, with particular reference to developmental issues, especially identifying factors

that predict initiation to, and changes in, substance use behaviours. Chapter 2 presents a review of the panel and longitudinal studies of substance use. The third chapter is concerned with methodology and with the specific issues raised by the methods used here. Chapter 4 is concerned with prevalence of substance use and specifically with age-related changes in smoking, drinking and other drug use. The fifth chapter is concerned with the central matters of change and development of substance use. Specifically, the matters examined include the prediction of substance use from variables measured one year earlier, prediction of change in substance use and the prediction of initiation of substance use. Finally, Chapter 6 presents some recommendations as to interventions based both on the present findings and on the findings from evaluations of interventions elsewhere.

Chapter 2

LONGITUDINAL STUDIES OF SUBSTANCE USE AND HYPOTHESES

In the present chapter we will examine the distinctive contribution of longitudinal and panel studies to the literature on substance use. Particular emphasis will be given to the advantages of such work over cross-sectional studies. For convenience, the studies will be divided into categories relating to the type of question that was the focus of a particular study. The theoretical framework guiding the present work will then be briefly described. Finally, a number of hypotheses will be proposed arising out of the literature review and the theoretical framework.

Longitudinal Studies of Substance Use

In general, five types of longitudinal studies of smoking, drinking, and drug use can be identified. The first category of study attempts to relate substance use at Time 1 with use of substances at Time 2. These studies are primarily concerned with issues of stability and change in substance use over time. The second type of study is concerned with the extent to which particular traits, characteristics or behaviours (other than drug use) at Time 1 are associated with use of cigarettes, alcohol or other drugs at Time 2. A third kind of study identifies individuals who have not used a particular kind of drug at Time 1, and then attempts to pinpoint what characteristics at Time 1 differentiate those who have begun to use the substance in question by the later stages of the study. Another type of study is concerned with changes in level of usage from Time 1 to Time 2, and the factors at Time 1 that predict such change. Finally, some studies have been concerned with predicting cessation of use of a substance between Time 1 and Time 2.

Stability and change in drug use. Several studies have examined the question of the extent to which it is possible to predict drug use at a given time from measures of drug use taken at some time earlier. In many instances alcohol usage has been the target substance and the evidence suggests that drinking (particularly heavy drinking and/or problem drinking) is strongly related to measures of consumption taken even several years earlier. For example, Donovan, Jessor and Jessor (1983) found a stable pattern of drinking over a four-year period among a sample of

Americans who were either in high school or college during the initial testing phase. Interestingly, it emerged that the high level of stability applied only to non-problem drinking; in the case of problem drinking the continuity over this same period was much less marked.

As might be expected, the magnitude of the correlation between Time 1 and Time 2 substance use behaviours increases with shorter intervals between these measurements. Thus, studies examining continuity over short intervals during adolescence have found that among those who have begun to use a given substance, Time 1 usage predicts Time 2 usage with a high level of accuracy (Kandel, 1980). On the other hand, smoking at age 20 was predictable on the basis of early initiation (age 14) while drinking at age 20 was not predictable on the same basis (Pulkkinen, 1983). Similarly, the recent study by Ghodsian and Power (1987) based on the National Child Development Study (17,000 children born in 1958) found a remarkably weak association between current drinking at age 16 and 23 years. The correlations were .15 and .16 for men and women, respectively.

A few studies have tried to predict use of a given substance at Time 2 from use of a different substance at Time 1. Such attempts are usually attempts to test the "stepping-stone" or "stage" hypothesis, i.e., that use of legal drugs like alcohol and cigarettes may lead to, or precede, usage of illegal substances. For example, Coombs, Fawzy and Gerber (1984) tested this latter hypothesis among a sample of 900 Californian students aged 9 to 17 years. These researchers concluded that about 15 per cent of students escalate their drug usage in this way.

Prediction of drug use from earlier characteristics. A second area of interest has involved the attempt to predict usage of a drug at Time 2 from characteristics, or behaviours, at Time 1. In many instances the focus of such studies has been the attempt to predict high levels of such usage, particularly problem drinking. Furthermore, in many instances the interval between the measurements has spanned a decade or more.

Ensminger, Brown and Kellam (1982) studied over 700 first graders in a poor Chicago neighbourhood and reassessed the same students ten years later. It emerged that teacher ratings of shyness and aggressiveness did indeed relate to subsequent substance use. Specifically, those children who were rated by their teacher as aggressive were more likely to smoke cigarettes, drink alcohol and use marijuana while, in contrast, rated shyness at first grade was associated with lower usage of these same substances. Similarly, a study by Vicary and Lerner (1986) showed that parental child-rearing practices were associated with subsequent levels of problem drinking.

Other studies have demonstrated an association between various forms

of problem behaviour in adolescence and substance use in young adulthood. Donovan, *et al.,* (1983) found that proneness to problem behaviour at high school was significantly related to level of alcohol consumption seven years later. Similarly, Pulkkinen (1983) found that teachers' ratings of aggression at age 14 predicted male drinking at age 20 and cigarette smoking of both males and females.

The studies in this category are remarkable in the sense that they have shown the extent to which substance use can be predicted over a relatively long time span. They are concerned particularly with intrapersonal influences rather than with the social and normative influences that are the focus of the studies discussed in the next section.

Prediction of initiation to drug use. Several studies have been concerned with predicting the onset of smoking, drinking and drug use. Although cross-sectional studies have shown that adolescent drug use tends to be strongly associated with attitude, peer usage and peer approval, the direction of causality is unclear (cf. Grube and Morgan, 1986). Panel studies that identify young people who have never used a particular substance at Time 1 but who have done so at Time 2, can help to disentangle the effects of selective friendship choices from those of peer influence. In fact, a large number of these studies have been concerned with normative influences and with beliefs about consequences.

On the basis of a longitudinal study of 959 friendship pairs, Kandel (1985) concluded that selection (assortative pairing) and socialisation (peer influence) contribute about equally to the level of similarity in substance use that was found among adolescent friends. Kandel's results also suggest that the relative influence of parents and peers in relation to initiation to drugs depends on the substance involved. For example, peer influences were more important for initiation to marijuana (accounting for 48 per cent of the variance vs. 14 per cent for parents), while parental factors were more important for hard drugs (accounting for 40 per cent as opposed to 33 per cent for parents).

Chassin, Presson, Sherman, Corty and Olshavsky (1984) contrasted attitudes, personality factors and modelling factors in predicting initiation to smoking one year later. It emerged that all three classes of variables were significant predictors of smoking onset. Furthermore, each type of variable made an independent contribution to the prediction of smoking initiation. More recently, Chassin, Presson, Sherman, Montello and McGrew (1986) investigated age-related changes in the magnitude of parent and peer influences on initiation to smoking among adolescents. Their results showed that the magnitude of peer and parent influences did not vary significantly across groups age 12 to 17 years, i.e., the relative influence of

parents and peers was constant for adolescents of different ages.

A number of studies, notably those of Bauman and his colleagues (e.g., Bauman and Chenoweth, 1984; Bauman, Fisher, Bryan, and Chenoweth, 1985) have shown that initiation to both smoking and drinking can be predicted on the basis of beliefs about the consequences of the use of these drugs. For instance, if a young person believes that drinking is likely to make them "look cool" and if looking "cool" is highly valued, then this set of beliefs (and other similar sets) is likely to increase the likelihood that they will begin to drink. As in the case of peer influences, panel studies have been useful in distinguishing beliefs that follow from substance use vs. from those that precede initiation.

It is worth noting that the magnitude of the relationships found in panel studies between predictor variables and measures of initiation is much lower than the corresponding relationships found in cross-sectional studies. This seems due to the reciprocal causal interaction between substance use and such influences as having friend-users, denial of negative consequences, etc. Furthermore, a few panel studies have failed to find effects for even those variables that in cross-sectional studies are the strongest correlates of drug use. For example, Brook, Lukoff and Whiteman (1980) found that while peer factors predicted initiation to marijuana use, such factors were not significantly associated with initiation once personality and demographic factors were controlled.

Predicting increases in drug use. Another analytic strategy focuses on those individuals who have begun to use a particular drug at Time 1 and attempts to predict increases at Time 2 in usage of this substance from Time 1 variables. In other words, how do Time 1 variables predict Time 2 usage, controlling for Time 1 levels of usage? In many studies, this type of information is presented at the same time as information relating to prediction of initiation. Since a given population of adolescents will contain a proportion of respondents who have begun to use a given substance and a number who are just about to commence usage, the same studies have frequently collected information on both initiation to, and increase in, substance use.

The studies mentioned above by Bauman, *et al.* (1984) and by Chassin, *et al.* (1984), which have been concerned respectively with beliefs about consequences and with interpersonal factors, have shown that these same variables have some success in predicting increases in smoking behaviour. In both studies, however, the results for those who had begun to smoke and for those who had increased their smoking, were not strictly parallel, indicating that factors may vary in importance at different stages of "becoming" a substance user.

In some other studies the distinction between initiation and increase has been blurred. For example, the British study by Murray, Swan, Johnson and Bewley (1983) has defined increase to include "initiation". This study also differs from most of the other longitudinal studies in that it analyses the predictors in a univariate manner exclusively, in contrast to most longitudinal studies of drug use which have utilised multivariate methods.

Several studies in this category have been concerned with fitting a path or other causal model to the data on change and development of drug use. The work of Kaplan, Martin and Robbins (1984) depict their results in the form of a path analysis whereby increases in drug use are thought to result from an initial process of self-derogation followed by self-enhancing effects of the deviant (drug-taking) behaviour. The work of Kandel (1980; 1985) has sought to test a model of the development of substance use, particularly the transition from legal drugs to marijuana and from marijuana to "hard" drugs.

The success with which panel studies can predict follow-up substance use from Time 1 measures is heavily dependent on which measures are included in the prediction equation. As might be expected, the inclusion of the baseline measure of the dependent variable in the regression equation, markedly increases the predictability of Time 2 substance use. Thus, Downs (1987) found that 66 per cent of Time 2 adolescent alcohol involvement was predictable from Time 1 variables one year before. However, it is noteworthy that this figure included Time 1 alcohol involvement as a predictor in the equation and it would be expected that Time 1 and Time 2 consumption measures would be highly correlated. More interesting is the apparent success in this study of predicting Time 2 alcohol involvement while omitting the original dependent variable (49 per cent accounted for). Again, however, it is noteworthy that this level of prediction is achieved through the inclusion of a quantity-frequency measure of consumption, which indeed is strongly correlated with alcohol involvement. A related point is that it makes a great deal of difference whether a given study merely omits the Time 1 measure of consumption or actually controls for the level of original consumption.

Predicting cessation of drug use. The factors associated with reduction in drug use and total cessation, while not receiving the same level of attention as initiation and increase in use, have provided some worthwhile insights. Socio-demographic factors have been the focus of a number of long-term studies, while short-term studies have focused on interpersonal influences.

Among the socio-demographic variables, age, gender and level of education have been examined. It would seem that there is a substantial fall-off in the use of drugs, alcohol and tobacco after age 35 (Kandel,

1980). Similarly, the study by O'Connor and Daly (1985) found that gender and level of education were predictive of quitting smoking, with men and the better educated tending to quit.

In the short-term panel studies, there is evidence that the interpersonal factors that predict initiation can also predict cessation. Thus, Hansen, Collins, Johnson and Graham (1985) found that cessation of smoking one year later was predictable from attitudes, peer smoking and beliefs, as was the case of increase in smoking in the studies reviewed above. The study by Bachman, O'Malley, and Johnston (1985) is particularly intriguing, since they looked at drug use in the three years following high school. While they found that post-high school use was to some extent predictable from earlier use, they also found that usage rates for alcohol and marijuana were influenced by living arrangements. Specifically, those who got married showed a decrease in drug use while those who left the parental home but who entered other living arrangements actually showed an increase in usage.

Variables Examined in the Present Study

The theoretical framework and rationale guiding the present study has been described in detail previously (Grube and Morgan, 1986, Ch. 2). Figure 2.1 summarises the variables included in this framework and thought to be important for adolescent substance use. Our model orders the variables according to the extent to which they are thought to influence substance use directly or are mediated through other more immediate variables. At one extreme the effects of background characteristics such as age and gender are seen to be primarily mediated through other variables, while other variables, such as intentions, directly influence drug use. The present report focuses particularly on normative beliefs, expectancy-value beliefs, social bonding, tolerance of deviance and background characteristics as factors in the initiation to adolescent substance use and in determining increases in levels of usage.

Normative beliefs. Normative beliefs refer to perceptions of the extent to which significant others prescribe or proscribe a given behaviour. The assumption is that young people who smoke, drink or use other drugs perceive greater social support for such behaviours than do young people who do not engage in them.

Our model proposes that there are two separate normative beliefs which are important in determining substance use: perceived approval and behavioural norms. Perceived approval consists of beliefs about the approval or disapproval of others for a particular behaviour, while behavioural norms refers to the extent to which others are seen to engage

Figure 2.1: *Hypothesised Influences on Adolescent Substance Use*

DISTAL	INTERMEDIATE			IMMEDIATE
Background Characteristics	*Personality/Values*	*Expectancy-Value Beliefs*	*Attitude*	*Behavioural Intention*

Gender
Geographic Location
Socio-economic status
Age
	Value for independance
	Extroversion/sensation
	  seeking
	Self-esteem
	Tolerance of deviance
	Internality-externality
		Perceived consequences
		Evaluation of perceived
		  consequences
			Evaluation of behaviour	Subjective likelihood

Physiological-Genetic Factors	*Social bonding*	*Substance Use Environment*	*Perceived Availability*	*Habit*

Genetic bases for
  personality
Susceptibility to drug
Susceptibility to addiction
	Attachment to family
	Attachment to peers
	Attachment to
	  religion
	Attachment to school
		Behaviours of parents
		Behaviours of peers
		Attitudes of parents
		Attitudes of peers
		Social/legal sanctions
		Media
			Perceived access
			Expected cost/resources
			Knowledge
				Cognitive scripts
				Conditioned
				behaviours

Socio-Cultural Factors	*Previous Behaviour*	*Dependency*	*Normative Beliefs*	

Meaning and role of
  substance use
Cultural Definitions
	Past substance use	Tolerance
		Physical dependence
		Adaptive dependence
			Perception of parental
			  behaviour
			Perception of peer
			  behaviour
			Perception of parental
			  attitudes
			Perception of peer
			  attitudes	

in the behaviour themselves. Interestingly, these types of normative beliefs may not be consistent with each other in at least two ways. For example, parents may forbid their children to smoke (disapproval) and yet may convey a contradictory message through their own smoking. Another possibility is that different reference groups may hold differing norms. For example, illegal drug use may be frowned on by parents but strongly approved by the peer group.

Based on the cross-sectional results and on the extant literature, it is expected that the effects of normative beliefs on initiation to, and increase in, use of drugs will be dependent on the reference group and the type of normative belief. Specifically, it is expected that peer behaviour and parental disapproval are likely to be the strongest predictors of such changes. In other words, having friends who use a given substance and having parents who are seen as not very disapproving of usage are predicted to be the strongest influences in the outcomes being examined. We also predict that the domain of normative influences should be relatively important in the prediction of drug-use initiation and change.

Expectancy-value Beliefs. These beliefs have two components: (i) perceptions of the likelihood that a behaviour will have particular consequences and (ii) the evaluations of these consequences. The relationships between expectancy-value beliefs and drug use has been demonstrated in several studies, including the cross-sectional analysis of the present work. For example, smokers were shown to be less likely to believe that cigarettes harm their health, cause bad breath or cost too much money. Furthermore, in comparison to non-smokers, they also evaluated these consequences as being less important. Conversely, young people who smoke are more likely to think that positive consequences will follow (increasing popularity, feeling relaxed, helping concentration) and also to evaluate these consequences as more important.

Based on the findings from the cross-sectional analysis and from the panel studies that examined the effects of expectancy-value beliefs, particularly those of Bauman and his colleagues (e.g., Bauman, *et al.*, 1985), it is proposed that such beliefs should predict initiation to, and increases in, substance use. However, in comparison to the normative influences, it is thought that expectancy-value beliefs should be less powerful predictors.

Social Bonding. The social control perspective (Hirschi, 1969) suggests that individuals are constrained from engaging in deviant behaviours to the extent that they are bonded to conventional institutions such as the family, school and church. According to this view, a failure in bonding to traditional institutions or a weakening of established bonds will increase

the likelihood of deviant behaviour, including drug use. In the present model, three related aspects of bonding are measured, viz., attachment, commitment and involvement. Attachment refers to affective bonds and is measured by items relating to liking for parents, etc. Commitment refers to the extent that an institution is valued, i.e., how important is it to get on well with one's parents, or to do well in school. Finally, involvement refers to the extent that an individual spends time and effort in supporting a given institution, e.g., time spent studying, going to Mass, etc.

We predict that bonding to family, church and school should be negatively related to initiation to, and continuance/increase in, substance use. Conversely, Time 1 bonding should be related to cessation of use at Time 2 by those who have commenced at Time 1. These predictions are based on the extant literature, particularly the work of Kaplan, *et al.* (1984) and of Krohn, Massey, Skinner and Lauer (1983). Furthermore, the cross-sectional analysis of the present data showed significant associations between bonding variables and drug use, particularly in the bivariate analyses. However, in the multivariate analysis the relationship of social bonding to drug use diminishes considerably, suggesting that the impact of bonding variables may be mediated through other factors, particularly normative beliefs and expectancy-value beliefs. For these reasons, it is predicted that the magnitude of the relationship with initiation and change in substance use should be quite small in comparison with the domains of influence discussed above.

Tolerance of deviance. This concept refers to the general attitudes towards deviant or problem behaviours (Jessor and Jessor, 1977), and implies an overt acceptance of behaviours that are seen as illicit and conventionally unacceptable. In the present study tolerance of deviance is measured behaviourally, in terms of the frequency with which respondents reported having been involved in various forms of problem behaviour, e.g., having lied to parents/teachers, damaged other people's property, stolen things, etc. The cross-sectional analysis showed that tolerance of deviance was associated with cigarette smoking, drinking and drug use. In general, these relationships were moderately large, being somewhat larger than the social bonding items but smaller than those for expectancy-value beliefs or for normative beliefs.

We predict that tolerance of deviance should be related to initiation and increase in substance use. It is expected that this relationship should be moderately large. These predictions are based on the extant literature, particularly the results emanating from the cross-sectional analysis.

Background characteristics. In the model outlined in the previous report, background characteristics were considered to be the most distal of the

factors related to substance use. In other words, the effects of these variables were thought to be entirely mediated through more immediate factors such as normative beliefs, expectancy-value beliefs, etc. In the present study, the possible effects of gender, age and socio-economic factors were explored.

As regards gender, the general guiding hypothesis was that such differences seem to be historically and culturally determined, resulting in different patterns for various substances in various countries. The results showed that while boys tended to drink rather more and use illicit drugs to a rather greater extent, an age-by-gender interaction was the most striking feature in relation to smoking. Specifically, at younger ages, more boys than girls have tried a cigarette and many more boys are regular smokers. However, by age 16 these differences have completely disappeared, indicating that girls' smoking lags behind that of boys by several years.

In addition to affecting levels of substance use, gender may also affect what factors are predictive of smoking, drinking and drug use (e.g., Ensminger, *et al.*, 1982). However, the cross-sectional analysis in our previous report showed little or no differences between boys and girls in the correlates of smoking, drinking, or drug use. In addition, the regression equations were almost identical for boys and girls, indicating that the patterns of influence on substance use were very similar for the two sexes.

As in the previous literature, the cross-sectional analysis had shown that socio-economic factors were not strongly related to adolescent substance use. Specifically, neither father's occupational status nor maternal employment were strongly related to cigarette smoking, drinking or other drug use. On these grounds, socio-economic factors are not predicted to be related to initiation or changes in substance use.

The cross-sectional report showed that substance use was indeed strongly related to age of respondents. In general, older students were more likely to smoke, drink and use other drugs than were younger students. Our model, however, suggests that the effects of age are mediated rather than direct. In particular, it was suggested that the effects are mediated through normative beliefs, expectancy-value beliefs and social bonding. Thus, it is expected that direct effects of age will not be apparent in relation to initiation and change in substance use when these more immediate factors are included in the analyses.

Chapter 3

METHODOLOGY

The basic research design comprised a panel survey using anonymous questionnaires administered to a sample of Dublin post-primary students on three occasions. The initial data collection (phase I) occurred in February 1984. A short-term follow-up (phase II) took place one month later and the final follow-up (phase III) took place one year later in March 1985. The present report presents the data from phase III of this study and investigates issues concerning the development and continuance of smoking, drinking and drug use over time. This chapter briefly describes those aspects of the methodology that are relevant to phase III and to the matching of the survey respondents over the phases. A more detailed description of the complete study design and procedures may be found in the previous report on the first two phases of the study (Grube and Morgan, 1986).

Sample

The focus of the study was on post-primary students from the greater Dublin area and the basic sampling unit was at the class level within schools. An initial sample of 24 schools, stratified for gender composition, size and school type (secondary, vocational, community/comprehensive) was obtained from the Department of Education register. These schools were then invited to participate in the study. Only two schools declined to take part and were replaced with other schools matched on the stratification characteristics. Once the sample of schools had been obtained, each post-primary class level (first year, second year, intermediate certificate and fifth year/leaving certificate) was randomly assigned to 6 schools. The surveys were then administered to the selected class level in each school.

At phase I of the study 2,927 students completed the questionnaire and at phase II 2,782 students did so. At the final phase data were obtained from 2,057 students. The relatively smaller sample size at phase III primarily is the result of two factors. First and most importantly, students who either completed their education, who left school for other reasons, or who changed schools during the course of the study were excluded from phase III. We estimate that about 606 students completed their

schooling during this period. An unknown number left school or changed schools. Second, one boys' secondary school dropped out of the study after phase II resulting in the loss of 159 second year students from the phase III sample. This school was not replaced because the primary purpose of the final phase of the study was to investigate change in smoking, drinking and other drug use behaviours and in related beliefs.

Table 3.1 shows the breakdown of the phase III sample on major background characteristics. The sample was very nearly equally divided

Table 3.1: *Sample Characteristics*

	Sample Breakdown	
	N	Per cent
Gender		
Male	1050	51.4
Female	992	48.6
Age		
<14	350	17.0
15	569	27.7
16	360	17.5
>17	778	37.8
Father's Occupation		
Professional/Administrative	201	10.5
Managerial	253	13.2
Higher non-manual	278	14.5
Lower non-manual	179	9.3
Routine non-manual	203	10.6
Skilled manual	424	22.1
Semi-skilled manual	271	14.2
Routine manual	106	5.5
Class in School		
Second year	485	23.6
Intermediate Certificate	593	28.8
Fifth year	388	18.9
Leaving Certificate	591	28.7
Type of School		
Girls' Secondary	593	28.8
Boys' Secondary	601	29.2
Mixed Sex Secondary	120	5.8
Community/Comprehensive	549	26.7
Vocational	194	9.4

between males (51.4 per cent) and females (48.6 per cent). The students ranged in reported age from just over 12 to somewhat over 20 years old. However, the great majority of the students (99.7 per cent) were between 13 and 19 years old and the median age was 15.8 years old. In terms of socio-economic background, skilled manual jobs were listed most frequently as father's occupation, followed by semi-skilled manual and higher non-manual occupations. The students were relatively evenly distributed among class levels, although there was some tendency for fifth year students to be under represented. This pattern continues a trend that was noted in the previous report. Finally, about 64 per cent of the students were enrolled in secondary schools, 27 per cent in community/comprehensive schools and 9 per cent in vocational schools. For the most part, the distribution of the students on these background variables is very similar to that which would be expected from the sample characteristics at phases I and II.

Survey Administration

The data were obtained using anonymous questionnaires. The questionnaires were self-administered and, for the most part, simply required the students to circle the most appropriate answer to each item. Data collection occurred in the students' regular classroom or in another group setting. At least one trained research staff member served as a supervisor in each classroom or group session. In most cases the teacher was not present during data collection. When disciplinary problems were anticipated the teacher was asked to remain in the room, but did not participate in the data collection process.

At the beginning of the data collection session the supervisor explained to each class or group that the survey was concerned with smoking, drinking and drug use. The students were assured of the anonymity and confidentiality of their answers and were told specifically not to put their names on the questionnaires. The need for truthful answers was emphasised. These points were reiterated with written instructions inside the questionnaire.

Survey Instruments

The questionnaire from phase III was relatively short and focused on tobacco, alcohol and other drug use behaviours. The items used to measure these behaviours at phase III were very similar to those used at phases I and II. The survey instrument from phase III is reproduced in Appendix A. The instruments from the earlier phases may be found in the previous report (Grube and Morgan, 1986).

Tobacco use was ascertained by asking the students a series of questions about cigarettes smoking. The students were asked to indicate their lifetime cigarette smoking ("Have you *ever* smoked a cigarette?"), their current frequency of cigarette smoking ("Overall, about how many cigarettes did you smoke during the *past month*?") and their future intentions regarding cigarette smoking ("About how many cigarettes do you think you will smoke *next month*?"). Age of first use of tobacco also was asked.

In the case of drinking, the students were first asked if they had ever had a drink of any alcoholic beverage ("Have you ever had a whole drink [more than a sip or taste] of any alcoholic beverage?"). Those who responded in the affirmative were then asked a series of more detailed questions about cider, beer, wine and spirits. These questions included lifetime drinking ("Have you *ever* had a whole drink of the following alcoholic beverages?"), frequency of current drinking ("On how many different occasions during the *past month* did you drink a whole drink of each of the following alcoholic beverages?") and usual quantity ingested ("About how many whole drinks or glasses of each of the following do you *usually* have on any one occasion?"). All of the students were asked about their future drinking intentions ("On how many different occasions do you think you will have at least one whole drink [more than just a sip or taste] of each of the following alcoholic beverages during the NEXT MONTH?"). It should be noted that the wording of all of the drinking frequency items purposely focused on whole drinks and excluded sips or tastes. Additional drinking-related measures included lifetime frequency of getting drunk ("How often have you ever had enough of any alcoholic beverage to feel drunk?"), age of initiation to drinking and age of first intoxication. Overall measures of current drinking, future drinking intentions and usual quantity consumed were obtained by taking the mean of the items for cider, beer, wine and spirits. A scale of lifetime drinking was obtained by summing the responses for the individual beverages.

The drug use items were similar to those for drinking. The students were first presented with a list of nine categories of substances (glue and solvents, marijuana, heroin, cocaine, LSD, barbiturates or tranquillisers, speed, psilocybin and cough syrup) and asked to indicate their lifetime use of each of them ("Have you *ever* used any of the following to get 'high' or to try to get 'high'?"). They also were asked to specify any other drugs they had ever used. Embedded in the middle of the list was a fictitious drug (norenol) which was included to help assess over-reporting of drug use. The students were then presented with the same list of drugs and asked about their current use ("How many occasions or times during the PAST MONTH did you use each of the following to get high or to try to get

high?") and future intentions ("How many occasions or times during the NEXT MONTH do you think you will use each of the following "drugs" to get "high"?"). Age of first experience with drugs was determined also. Overall measures of drug use were obtained by summing the number of drugs each respondent reported using or intending to use.

Additional questions pertained to the background characteristics of the students (e.g., age, sex, mother's and father's occupations). These items are described in the previous report (Grube and Morgan, 1986). The survey instrument also contained other measures. These included items relating to self-esteem, attitudes toward traditional and non-traditional sex roles, school work, college plans and relationships with parents. These latter items were primarily for other research purposes (e.g., Morgan and Grube, 1987) and will not be discussed here.

Reliability and Validity of Substance Use Measures

In the previous report (Grube and Morgan, 1986) it was shown that the measures of smoking, drinking and drug use were highly reliable at the first two phases of the study. The internal consistency of these same substance use scales remained very good at phase III. The reliability coefficients (Cronbach's alpha – shown in Table 3.2) for these scales range from .75 to .93, averaging .83. Thus, it is apparent that the students did not simply respond in a random fashion to the items in the survey, but rather were highly consistent in how they answered related questions. Test-retest reliability was not directly measured between the earlier phases and phase III because it was expected that the students' substance use behaviours would, in fact, show change over the one year period. Thus, the test-retest

Table 3.2: *Internal Reliability of Substance Use Scales*

Scale	Number of Items	N	Reliability Coefficient
Ever drink alcoholic beverages	4	2,041	.80
Frequency of Drinking Past Month	4	1,996	.75
Number of Drinks Usually Consumed	4	2,004	.76
Frequency of Drinking Next Month	4	1,988	.76
Ever Use Drugs	10	1,994	.86
Number of Drugs Previous Month	10	1,967	.92
Number of Drugs Next Month	10	1,941	.93

Note: The reliability coefficient is Cronbach's Alpha corrected for bias.

correlation coefficients would be more a measure of the stability of the behaviour than of the reliability of the measures. However, the extent to which the students gave inconsistent responses over the one year period was considered. Specifically, we examined the percentage of students who reported that they had used tobacco, alcohol, or drugs at the earlier phases and then reported never having used these substances at phase III. As expected, the frequency of such inconsistent responses was quite low: only 2.4 per cent, 3.6 per cent and 5.0 per cent of the students gave inconsistent responses for smoking, drinking and drug use, respectively. These figures compare very favourably with those reported by other researchers (e.g., Single, Kandel and Johnson, 1975).

The primary threats to validity in surveys of adolescent substance use are intentional under- or over-reporting of smoking, drinking and drug use by some respondents.[1] Under-reporting is a concern because the respondents are being asked to provide sensitive information about disapproved and, in some cases, illegal behaviours. Fear of getting into trouble or of appearing in an unfavourable light may cause some adolescents to falsely deny engaging in these behaviours. In contrast, over-reporting is a concern because other adolescents may exaggerate their involvement with tobacco, alcohol and other drugs in order to appear more grown-up, sophisticated or rebellious.

The anonymity and confidentiality procedures implemented during the survey administration were designed to reduce under-reporting as much as possible by removing the perceived need to give false or misleading information. Previous studies indicate that such procedures can result in self-reports of smoking, drinking and drugs use that show very good agreement with collateral reports, biochemical measures, or other more objective indicators of substance use behaviours (see Grube and Morgan, 1986 for a review of these measurement issues). However, the same conditions that reduce the need for under-reporting may, in some circumstances, increase over-reporting because they remove the negative consequences of admitting to disapproved behaviours. Therefore, the possibility of over-reporting substance use behaviours was investigated by including a fictitious drug (*norenol*) in the lists of substances that comprised the drug use and intentions measures. Overall, 37 students (1.8 per cent) reported that they had ever used norenol, 22 students (1.1 per

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[1.] It is possible that over- and under-reporting tend to counterbalance one another in such a way that the aggregate data provide relatively unbiased estimates of drug use prevalence. Evidence in support of this argument is provided by studies which have verified self-reported drug use with biochemical measures (e.g., Akers, Massey, Clarke and Lauer, 1983). Typically, these studies have shown that nearly equal numbers of respondents over- and under-report their drug use behaviours.

cent) reported using this drug within the past month and 23 students (1.2 per cent) indicated that they planned to use it next month.[2] Some of these responses may be the result of students deliberately giving misleading answers, but it also is likely that some of them represent honest mistakes. In either case, these data suggest that the estimates of drug use are likely to be biased only slightly by over-reporting. Eliminating all respondents who reported using norenol resulted in less than a 1 per cent reduction, on the average, in the lifetime and current prevalence rates for tobacco, alcohol, or any of the other illicit drugs.

Matching Procedure

Because the questionnaires were administered anonymously, they were linked across the phases with a self-generated identification code using an off-one procedure to compensate for respondent errors (Kearney, Hopkins, Mauss and Weisheit, 1984; Grube, Morgan and Kearney, 1989). This code comprised seven elements: gender, day, month and year of birth, number of older brothers, number of older sisters and initial of mother's first name. School and class level also were used in the matching process. The matching took place in two stages. In the first stage only those questionnaires with perfect matches on school and class level and on all seven of the code elements were paired. In the second stage, the remaining questionnaires were paired if they matched on school and class level and differed on only one of the remaining code elements. In those cases where phase I and II questionnaires had themselves been off-one matches, the phase III code was allowed to differ only on same element on which they had not matched. Details concerning the matching procedure and the consequences of this procedure for the reliability and validity of the findings are reported in previous publications (Grube and Morgan, 1986; Grube, Morgan and Kearney, 1989).

Table 3.3 shows the matching rates for the students attending the phase III sessions. The success of the matching procedure appears to be very

Table 3.3: *Matching Status of Phase III Questionnaire*

	Matching Status	
	N	*Per cent*
Exact	1,281	62.3
Off-One	310	15.1
Unmatched	466	22.7

[2.] This "drug", of course, was excluded from the summary drug use measures.

good. Overall, 1,591 of the questionnaires obtained at phase III (77.3 per cent) were linked to questionnaires from phases I and II. Thus, over three-quarters of the maximum possible number of matches was obtained. Of these questionnaires, 1,187 (57.7 per cent) were paired with both phase I and phase II questionnaires, 251 (12.2 per cent) were paired only with a phase I questionnaire and 153 (7.4 per cent) were paired only with a phase II questionnaire.

Potential bias due to the use of the matching procedure was investigated by comparing the exact, off-one and unmatched respondents from phase III on the background and substance use variables. Table 3.4 displays the

Table 3.4: *Comparison of Background Variables for Matched and Unmatched Phase III Respondents*

Variable	Exact	Off-One	Unmatched	χ^2	η^2
Gender					
Male	55.6	17.0	27.3	49.33*	.02
Female	70.3	13.2	16.5		
Age					
<14	63.4	14.9	21.7	7.58	< .01
15	63.9	13.0	23.2		
16	59.0	14.7	26.3		
>17	62.1	16.9	21.0		
Father's Occupation					
Professional/Administrative	66.2	12.4	21.4	50.07*	.02
Managerial	73.1	12.6	14.2		
Higher non-manual	68.3	15.8	15.8		
Lower non-manual	68.7	15.6	15.6		
Routine non-manual	65.5	17.7	16.7		
Skilled manual	65.3	16.0	18.6		
Semi-skilled manual	66.4	20.7	12.9		
Routine manual	47.2	14.2	38.7		
Class in School					
Second Year	61.2	16.3	22.5	5.29	<.01
Third Year	62.7	14.0	23.3		
Fourth Year	62.1	12.9	25.0		
Leaving Certificate	62.8	16.6	20.6		
Type of School					
Girls' Secondary	75.4	12.5	12.1	109.968*	.05
Boys' Secondary	60.4	17.6	22.0		
Mixed Secondary	65.8	11.7	22.5		
Community/Comprehensive	56.1	16.4	27.5		
Vocational	43.3	13.4	43.3		

Note: Table entries are row percentages.
*p < .001

results for the background characteristics of the students. It can be seen that matching rates were considerably higher for females and consequently for students from girl's secondary schools. Matching success also was higher for respondents whose fathers worked in managerial positions. Conversely, matching rates tended to be lower for students whose fathers worked at routine manual occupations and for students who attended community/comprehensive schools or vocational schools. However, these differences are relatively modest and the significant background variables account for only 3 per cent of the variance in matching success, on the average. Neither age nor class level was significantly related to matching rates.

The percentage of students in each matching condition who reported ever having smoked cigarettes, taken a full drink of an alcoholic beverage or used drugs is shown in Table 3.5. The unmatched respondents tended to report the highest lifetime prevalences for each of these behaviours and exactly matched respondents the lowest. In most cases, the off-one matches fell in between, but appear to resemble the unmatched respondents more than the exactly matched respondents. Matching status accounted for only about 1 per cent of the variance in these behaviours and, importantly, the prevalence rates for the combined exact and off-one matching groups closely approximated those for the total sample. These rates differed by less than 2 per cent for each behaviour.

Table 3.5: *Lifetime Smoking, Drinking and Drug Use Prevalence by Phase III Matching Status*

Variable	Exact	Off-One	Unmatched	Total Sample	χ^2	η^2
Smoking	71.4	78.4	81.3	74.7	20.33**	.01
Drinking	75.6	80.6	85.4	78.6	20.27**	.01
Drug Use	18.3	23.4	23.1	20.1	7.21*	<.01

*p < .05
**p < .001

In terms of current behaviours, there was again a tendency for the unmatched respondents to report more frequent use of tobacco, alcohol, and other drugs during the previous month (Table 3.6). A similar pattern can be seen for future substance use intentions. As with lifetime prevalences, the off-one matches are intermediate to the exactly matched and unmatched respondents. Matching status accounted for only about 4 per cent of the variance in current substance use and in future intentions. Furthermore, previously reported analyses (Grube, Morgan and Kearney,

1989) indicate that the major predictors of substance use did not differ significantly among matched and unmatched respondents. Thus, the regression analyses reported here also should be unbiased by the use of the matching procedure.

Table 3.6: *Mean Ranking of Matched and Unmatched Respondents on Substance Use Behaviours and Intentions*

Variable	Exact	Off-One	Unmatched	H	$\eta^2{}_{tt}$
Smoking Last Month	962.4	1,056.6	1,187.7	64.20*	.03
Smoking Next Month	967.3	1,056.3	1,180.3	59.63*	.03
Drinking Last Month	940.5	1,096.6	1,222.1	86.46*	.04
Drinking Next Month	939.5	1,062.6	1,203.5	72.26*	.04
Drug Use Last Month	971.3	1,019.9	1,149.2	85.60*	.04
Drug Use Next Month	968.7	1,030.0	1,134.6	80.51*	.04

Note. Test statistic is Kruskal-Wallis analysis of variance on ranks corrected for ties.
*p < .001

Consistent with the findings from phases I and II, it appears that the matching procedure did not introduce undue bias into the sample composition. The differences between exactly matched, off-one matched and unmatched respondents in terms of their background characteristics and substance use behaviours are relatively small. Moreover, the characteristics of the combined exact and off-one matches closely resemble those for the sample as a whole. As a result, the use of the matching procedure should not have an appreciable effect on the prevalence findings presented in this report.

Attrition

Another major concern in panel studies is attrition or subject loss between panels. Previous research suggests that respondents who are lost often differ in important ways from those who are retained. School dropouts and absentees may be more frequent smokers, drinkers, and drug users (e.g., Friedman, 1985; Plant, Peck and Stuart, 1982). Such differences may result in biases in the data and thus to erroneous conclusions.

Because the surveys were anonymous, attrition cannot be ascertained directly in the present study. However, an estimate of subject loss can be obtained by examining the percentage of students attending phases I and II

who were not paired with phase III questionnaires.[3] After excluding those students who were known to have graduated and those from the school which dropped out of the study, 55.6 per cent of 2,862 respondents were matched across the panels. This figure is comparable with those obtained in similar panel studies with school-aged populations (e.g., Kandel, Kessler and Marguilies, 1978; Krohn, *et al.*, 1983; Bauman, *et al.*, 1985).

The potential biasing effects of attrition were investigated by comparing the respondents who attended the earlier phases of the study, but who apparently were not present at phase III, with those who were present at both the earlier and later phases. Table 3.7 shows a breakdown of the background variables from phases I and II for respondents who were retained and lost from the study. It can be seen in this table that proportionally more females were retained in the study as were students who attended girls' secondary schools. In contrast, somewhat fewer students were retained in the study whose fathers were employed in routine manual occupations or who were enrolled in vocational schools. Age and class level, however, were not related to attrition. Overall, the relationships between the significant background factors and attrition were relatively small, with these variables accounting for only 1 to 2 per cent of the variance in subject loss.

In terms of substance use behaviours, respondents lost to the study were considerably more likely to report at phases I and II that they had tried tobacco, alcohol or other drugs at sometime in their lives (Table 3.8). Lifetime prevalence rates for smoking, drinking and drug use were 14 to 15 per cent higher among these respondents. They also reported that they had used these substances more frequently within the previous month and intended to so more often in the next month (Table 3.9). Again, however, the relationships among these variables are relatively modest, with retention status accounting for about 3 to 4 per cent of the variance in substance use behaviours. The data indicate that smoking, drinking and other drug use are considerably more frequent among students who were absent from school at the third phase or who left school between the first and third phases of the study. Thus, the findings regarding prevalence should not be generalised to school leavers or other populations of young people who are not currently students.

[3.] The underlying assumption of these analyses is that students who were present at phases I and II, but who were not matched to phase III, primarily consist of school leavers, absentees and individuals who have changed schools. Some unknown percentage of these students are "mismatches". That is, they actually were present at phase III, but were not matched to a phase I or II questionnaire because of coding errors, duplicate codes, or some other matching error. Given a matching success rate of over 77 per cent, it is likely that the number of such errors is relatively small.

Table 3.7: *Phase I and Phase II Background Variables by Attrition Status*

Variable	Retained	Lost	χ^2	η^2
Gender				
Male	48.0	57.7	25.64*	.01
Female	52.0	42.3		
Age				
<13	19.6	17.2	8.06	< .01
14	27.3	25.5		
15	16.2	19.6		
16	24.6	24.7		
>17	12.3	13.1		
Father's Occupation				
Professional/Administrative	10.1	11.9	42.427*	.02
Managerial	13.8	8.9		
Higher non-manual	14.9	12.7		
Lower non-manual	9.6	9.9		
Routine non-manual	10.7	8.3		
Skilled manual	21.9	25.0		
Semi-skilled manual	15.0	15.0		
Routine manual	4.1	8.5		
Class in School				
First Year	23.6	22.3	5.36	< .01
Second Year	28.6	26.1		
Third Year	18.3	21.2		
Fourth Year	29.5	30.4		
Type of School				
Girls' Secondary	32.7	23.0	61.41*	.02
Boys' Secondary	29.5	29.8		
Mixed Secondary	5.8	3.6		
Community/Comprehensive	25.0	31.7		
Vocational	6.9	11.9		

*Note:*Table entries are column percentages.
*p < .001

Table 3.8: *Phase I and Phase II Lifetime Smoking, Drinking and Drug Use Prevalence by Attrition Status*

Variable	Retained	Lost	Total Sample	χ^2	η^2
Smoking	61.6	75.4	66.7	44.96*	.02
Drinking	59.0	72.8	64.1	43.28*	.02
Drug Use	16.4	30.8	21.6	62.50*	.03

*p < .001.

Table 3.9: *Ranking of Retained and Lost Respondents on Substance Use Behaviours and Intentions at Phases I and II*

Variable	Retained	Lost	H	$\eta^2{}_{II}$
Smoking Last Month	1,317.8	1,570.2	82.74*	.03
Smoking Next Month	1,063.4	1,242.3	60.24*	.03
Drinking Last Month	1,279.4	1,570.0	87.23*	.03
Drinking Next Month	1,285.5	1,577.1	90.39*	.03
Drug Use Last Month	1,337.8	1,514.7	77.22*	.03
Drug Use Next Month	1,341.0	1,504.2	72.01*	.03

*Note:*Test statistic is Kruskal-Wallis analysis of variance on ranks corrected for ties.
*$p < .001$

Importantly, it appears that the processes underlying substance use behaviours are very similar among respondents retained and lost from the study. A series of hierarchical regressions predicting phase I and II substance use from the major variables in the theoretical model indicated that in no case was there a substantively significant interaction between attrition status and the predictors. Thus, the results regarding the prediction of smoking, drinking and drug use reported in the present paper are probably relatively unbiased by attrition.

Chapter 4

PREVALENCE AND CHANGES IN CIGARETTE SMOKING, ALCOHOL CONSUMPTION AND ILLEGAL DRUG USE

The present chapter will compare the rates of prevalence of substance use among the respondents at the first phase of the study (1984) with the rates obtaining among these same respondents one year later. The prevalence rates are, therefore, specifically for students who were present at both sessions. This information will be presented for each age group, so that the critical years of initiation/change can be pinpointed. For each substance the critical measures presented will be: (i) lifetime use, (ii) previous month's use, (iii) regular usage.

I. Prevalence of Cigarette Smoking

Table 4.1 shows the lifetime prevalence rates for each age group of cigarette smoking, as ascertained from the question "Have you *ever* smoked a cigarette?", at the first phase of the survey (Time 1) and one year later. As

Table 4.1: *Lifetime Prevalence Rates of Cigarette Smoking at Time 1 and Time 2 (one year apart)*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	47.3	56.4	42.1	57.0	43.1	56.9
	(26)	(31)	(93)	(120)	(119)	(157)
14	62.6	69.1	59.3	72.4	60.5	71.2
	(87)	(96)	(144)	(176)	(231)	(272)
15	70.0	76.9	59.8	70.1	65.6	74.0
	(91)	(100)	(58)	(68)	(149)	(168)
16	71.2	72.5	66.2	74.4	69.3	73.2
	(158)	(161)	(88)	(99)	(246)	(260)
17 or more	72.4	75.6	61.4	65.9	60.5	73.1
	(89)	(93)	(27)	(29)	(116)	(122)
Total	67.4	71.9	55.6	67.5	61.2	69.6
	(451)	(481)	(410)	(498)	(861)	(979)

Note: Table entries are row percentages, i.e., the percentage who reported ever smoking a cigarette. Cell sizes are in parentheses.

can be seen from the table, just over three-fifths of the students had smoked in 1984 while for the same population of students (now one year older) nearly 70 per cent had smoked by 1985.

Overall, it is worth noting that over two-fifths of the pupils had begun to smoke before age 13. Somewhat more boys than girls had started to smoke before this age. Another point is that there seems to be a levelling off in the numbers who begin to smoke after age 16, with the implication that those pupils who have not smoked by this stage are unlikely to do so afterwards. Finally, it seems that while girls' smoking lags behind that of boys, they do actually catch up, so that the lifetime prevalence rates become more similar.

Table 4.2 shows the corresponding figures for each age group for current smoking at phase I and phase II. Current smokers are defined as those students who reported having smoked cigarettes (at least 1-2) during the previous month. Overall, it can be seen that while at phase I, one-third of the boys were regular cigarette smokers and a further 4 per cent were current smokers in phase II, the picture is somewhat different for girls. While just over one-quarter of the girls were current smokers at phase I, the corresponding figure was over one-third at phase II.

Table 4.2: *Prevalence Rates of Current Cigarette Smoking at Time 1 and Time 2*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	20.0	23.6	18.0	32.4	18.5	30.8
	(11)	(13)	(40)	(72)	(51)	85)
14	25.9	37.4	30.9	39.5	29.1	38.7
	(36)	(52)	(75)	(96)	(111)	(148)
15	33.8	32.3	26.8	36.1	30.8	33.9
	(44)	(42)	(26)	(35)	(70)	(77)
16	37.2	41.7	35.3	36.8	36.3	40.0
	(82)	(93)	(47)	(49)	(129)	(142)
17 or more	38.2	40.7	29.5	31.8	35.9	38.3
	(47)	(50)	(13)	(14)	(60)	(64)
Total	33.0	37.3	27.2	36.0	29.9	36.7
	(220)	(250)	(201)	(266)	(421)	(516)

Note: Table entries are the percentage of each age group who reported that they smoked during the previous month. Cell sizes are in parentheses.

It is worth noting that the female 17-year-old age group seems to be an exception to the general trends in that they have lower rates of current smoking and indeed have lower rates of lifetime smoking. Given the small

number of these girls in the present study, it is difficult to say how this pattern came about.

Table 4.3 shows the percentage of regular smokers at each age for boys and girls. In the present work, regular smoking was defined as having smoked daily (at least 1-2 cigarettes) during the previous month. This table shows that at the time of the initial phase, more than one-quarter of the boys were regular cigarette smokers, while the number of regular female smokers was just half of that number. By phase II the level of smoking among the boys had increased by just over 5 per cent. During the same interval the level of smoking among girls had actually doubled.

Table 4.3: *Rates of Regular Cigarette Smoking at Time 1 and Time 2*

| | Boys | | Girls | | Total Sample | |
Age at Time 1	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	9.4	18.8	9.2	21.3	5.8	20.7
	(4)	(10)	(12)	(47)	(16)	(57)
14	19.7	27.6	17.4	26.3	12.8	26.2
	(22)	(38)	(27)	(62)	(49)	(100)
15	26.2	29.0	14.2	20.8	18.6	25.6
	(31)	(38)	(11)	(20)	(42)	(58)
16	30.9	33.1	23.1	27.2	25.4	30.4
	(61)	(71)	(29)	(37)	(90)	(108)
17 or more	34.3	32.1	25.0	26.9	27.9	29.9
	(40)	(39)	(10)	(11)	(50)	(50)
Total	26.4	29.7	16.1	24.3	17.6	26.5
	(158)	(196)	(89)	(177)	(247)	(373)

Note: Table entries are the percentage of each group who reported smoking daily. Cell sizes are in parentheses.

It is clear from Table 4.3 that most of those who become regular smokers do so during the post-primary school years. In other words, while it is true that most smokers have their first cigarette during the primary school years, regular smoking begins during early adolescence. Specifically, it can be seen that the years between 13 and 14 in the case of boys, and between 13 and 15 in the case of girls, are especially critical. Some of the increases in rates of regular smoking are quite striking. The boys who were aged 13 years at phase I had a level of regular smoking that had increased 2.5 times, one year later. The corresponding increase in the case of girls was 4 times what it had been at phase I. The increases for the 14 year olds and 15 year old girls are large but not as dramatic.

It would seem, therefore, that the first two years in post-primary school are especially significant for regular smoking in the case of boys, while the entire junior cycle is important for girls' smoking. This point will be examined again, when comparisons will be made regarding the critical years for initiation to regular drinking and other drug use.

A point of considerable importance concerns the extent to which cohort effects are evident, i.e., the extent to which a particular age group in 1985 is smoking more or less than the same age group in 1984. In general it would seem that in the case of girls, the younger cohorts are smoking more frequently at younger ages. In this regard, girls are coming to resemble boys more and more. The effect is particularly striking for the 14 to 15 year transition. For example, there is over a 12 per cent increase in lifetime prevalence among the more recent 15 year old cohort compared with the phase I 15 year olds. Similarly, the overall gap has narrowed considerably. At phase I, there was nearly a 12 per cent difference between boys and girls. This difference had decreased to only over 4 per cent by phase II.

It is interesting that this tendency for girls to catch up on boys has been evident over the last 20 years. The O'Connor and Daly (1985) data show that among older cohorts there were major differences among males and females, while these differences were much less among younger cohorts. It now seems that the differences may be about to disappear totally among new smokers.

Comparison With Other Findings

The high level of prevalence of lifetime smoking is similar to that emerging from previous studies in this area. O'Rourke, O'Byrne, Condren and Wilson-Davis (1983) found that in 1980-81 about 70 per cent of young people in a very similar sample, had tried at least one cigarette in their lives. Interestingly, this same group of researchers had found that in 1970 the corresponding rate was 68 per cent among a similar sample. These results suggest that the tendency among young people to try out cigarettes has remained remarkably stable over the years, with just over two-thirds of the pupils having done so. In other words, it still remains the norm that a young person will experiment with cigarettes in the course of growing up.

The studies by O'Rourke, *et al.*, are also in agreement with the present work in suggesting that the first experience of smoking often takes place during the primary school years. Consistent with our findings, these studies also suggest that the year between 13 and 14 is of critical importance for initiation to regular smoking.

It is also apparent that the level of smoking among this Irish sample is among the highest in the world. The figures reported by Todd (1986) for

Great Britain suggest that about 21 per cent of 16 year old boys and about 19 per cent of 16 year old girls were regular smokers. The rates of smoking in the present study are well above these figures. Similarly the rates of regular smoking in the cross-national study in Norway, Finland, and Austria by Aaro, Kannas, Ledwith, Lorant and Rimpela (1984) suggest that the rate of regular smoking by adolescents in these countries is considerably lower than those emerging above. Kandel, Adler and Sudit (1981) provide measures of smoking which are directly comparable to those above. This study indicates that while French adolescents smoke rather more than do post-primary pupils in Ireland, Israeli adolescents tend to smoke a great deal less.

It would also seem that the level of smoking reported here is considerably higher than the rates obtaining in the United States. A series of studies by Johnston, O'Malley and Bachman (1984; 1985) provide a direct comparison with the 16 year olds (and older) in the present study. The percentage of current smokers reported by Johnston, *et al.,* is about 8 per cent lower than those emerging in the present study. There is a similar difference in the case of regular smoking. Another interesting feature of the results from the United States is that there has been a decline in the numbers who smoke regularly, particularly among boys.

Finally, it would seem that smoking rates in Australia are considerably lower than those emerging here. Homel, Flaherty, Treblico, and Dunoon (1984) found levels of smoking that are substantially lower than in the present study. In terms of regular smoking, the rates were about 5 per cent lower than for comparable age groups in the Dublin sample.

II Prevalence of Alcohol Consumption

Table 4.4 shows the lifetime prevalence rates for each age group for alcohol consumption, as ascertained from the question, "Have you ever had a whole drink of ...", at Time 1 and Time 2. It can be seen that almost three-fifths of the sample had taken a drink at Time 1, while for the same population at Time 2 (who were now a year older), nearly three-quarters of the group reported having a drink.

It can be seen that under two-fifths of the total group had consumed an alcoholic drink before age 13. Indeed, somewhat significantly, more boys than girls had consumed a drink before this age. Looking through the various years, it would seem that there is a steady increase in the numbers who have begun to drink. In contrast to smoking, there does not seem to be any particular age at which young people were especially likely to start drinking. On average, about an additional 12-15 per cent of each age group reported having a drink, over the figure for the previous year. There are

sizeable gender differences at every age group but with some suggestion of a narrowing of these differences in older age groups.

Table 4.4: *Lifetime Prevalence Rates of Alcohol Consumption at Time 1 and Time 2*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	50.9	63.6	35.1	51.4	38.3	53.8
	(28)	(35)	(78)	(114)	(106)	(149)
14	70.0	81.4	45.7	59.3	54.6	67.4
	(98)	(114)	(111)	(144)	(209)	(258)
15	65.9	86.8	53.6	63.9	60.6	77.0
	(85)	(112)	(52)	(62)	(137)	(174)
16	74.3	87.4	67.7	78.9	71.8	84.2
	(165)	(194)	(90)	(105)	(255)	(299)
17 or more	78.5	90.9	59.1	79.5	73.3	87.9
	(95)	(110)	(26)	(35)	(121)	(145)
Total	70.6	84.7	48.3	62.2	58.9	72.9
	(471)	(565)	(357)	(460)	(828)	(1,025)

Note: Table entries are row percentages, i.e., the percentage who reported ever having consumed a full drink. Cell sizes are in parentheses.

Table 4.5 shows the prevalence of current drinking at Time 1 and Time 2. Current drinking was defined as having consumed any alcoholic beverage during the previous month. Overall, just under two-fifths of the sample reported being current drinkers at Time 1, while one year later over half of the same sample indicated that they had had a drink during the previous month. As in the case of lifetime rates of prevalence, there was no indication that any particular age group was especially likely to become current drinkers. Rather, from age 13 years onwards, there was a steady increase in the numbers who indicated that they had drunk during the previous month.

The numbers who reported ever having felt drunk is shown in Table 4.6. Less than one-third of the sample reported being drunk at Time 1, while over half said that they had been drunk one year later. As with the earlier measures of drinking prevalence, there was no indication that any age group was particularly likely to begin getting drunk. Rather, there were steady increases in lifetime prevalence of having felt drunk at each age level.

It is worth noting that the pattern of gender differences that is evident here corroborates previous findings. A consistent outcome is that there

are greater differences between males and females at high levels of consumption and reports of having felt drunk (Johnston, *et al.*, 1984; 1985). In contrast, only minimal differences are found in relation to lifetime prevalence rates of drinking (Kandel, *et al.*, 1981).

Table 4.5: *Prevalence of Current Drinking at Time 1 and Time 2.*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	31.5	46.3	17.7	26.6	20.4	30.4
	(17)	(25)	(39)	(59)	(56)	(84)
14	46.7	60.1	27.5	38.2	34.5	46.2
	(64)	(83)	(66)	(92)	(130)	(175)
15	44.2	58.1	34.0	38.9	39.8	50.0
	(57)	(75)	(33)	(37)	(90)	(112)
16	56.8	68.0	45.9	59.4	52.7	64.8
	(126)	(151)	(61)	(79)	(187)	(230)
17 or more	64.5	78.5	34.9	54.5	56.7	72.1
	(78)	(95)	(15)	(24)	(93)	(119)
Total	51.6	64.6	29.2	39.6	39.8	51.5
	(342)	(429)	(214)	(291)	(556)	(720)

Note: Table entries are percentages, i.e., the percentage who reported having consumed a full drink in the previous month. Cell sizes are in parentheses.

Table 4.6: *Lifetime Prevalence of Having Felt Drunk at Time 1 and Time 2*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	25.8	40.0	9.0	27.0	12.3	29.6
	(14)	(22)	(20)	(60)	(34)	(82)
14	28.6	51.4	14.4	37.0	19.6	42.3
	(40)	(72)	(35)	(90)	(75)	(162)
15	38.8	64.3	23.7	41.2	32.3	54.4
	(50)	(83)	(23)	(40)	(73)	(123)
16	49.5	69.4	36.8	53.4	44.8	63.4
	(110)	(154)	(49)	(71)	(159)	(235)
17 or more	61.2	78.5	34.1	43.2	53.9	69.1
	(74)	(95)	(15)	(19)	(89)	(114)
Total	43.2	63.9	19.2	37.9	30.6	50.2
	(288)	(426)	(142)	(280)	(430)	(706)

Note: Table entries are percentages, i.e.,the percentage who reported ever having been drunk. Cell sizes are in parentheses.

An important question concerns the extent to which cohort effects are evident, i.e., the extent to which any particular age group at Time 1 are drinking more or less than the same age group at Time 2. The strongest evidence in this regard is in relation to reports of having felt drunk. At each age level there are higher levels of reports of having felt drunk among the younger cohort.

Comparison with Other Findings

Perhaps the most relevant comparison with the present results is presented by O'Connor (1978) who presents information on the lifetime prevalence of drinking among 18-21 year olds in Dublin. She reports a lifetime prevalence rate of 82 per cent. This figure is somewhat lower than for the oldest age group in the present study, thus tentatively suggesting that the number of total abstainers among young people may have declined over the last ten years.

In comparison with other countries, it would seem that the present results indicate that Ireland is between low consumption countries like Israel and high consumption countries like France. Furthermore, it would seem Ireland is coming to resemble many western European countries in the sense that the sizeable percentage of total abstainers is diminishing.

As noted in the previous report, a distinguishing feature of drinking statistics among Irish adolescents was the large minority who had never consumed alcohol. Thus, in contrast to Scotland, England and France, a significant minority of Irish adolescents (over 20 per cent at age 17 years) had never drunk alcohol. The present results indicate that this minority may be declining still further among both boys and girls.

Comparable data from France (Kandel, *et al.*, 1981) indicate that adolescent drinking is more common in France than in our sample. Similarly, the data from Australia (Homel, *et al.*, 1984) indicate substantially higher levels of current drinking than among the present group. However, it is interesting that the number of young Australians who reported having been drunk is roughly similar to that in the present study and for older age groups the rates reported here are higher.

The pattern of drinking here is remarkably similar to that emerging from the annual surveys of high school seniors in the United States (Johnston, *et al.*, 1984; 1985). Around 92 per cent of high school seniors reported having a drink at some time in their lives – a figure which is remarkably close to the 88 per cent of the oldest age group who reported having consumed alcohol. The current drinking rates are also remarkably similar – 70 per cent among the US high school seniors and 72 per cent among the corresponding age group in the Dublin sample. Another

similarity with the Dublin adolescents is that almost half the American high school seniors reported usually get "high" or "moderately high" when drinking.

On the other hand, the rates of drinking described above are much higher than those emerging from low consumption countries. A study by Kandel, *et al.* (1981) showed much lower rates for lifetime prevalence and for current drinking among Israeli adolescents. Similarly, a study by Aaro, *et al.* (1984) shows rates of lifetime and current drinking rates for Finland and Norway that are significantly lower than among Dublin adolescents of the same age.

III Prevalence of Illegal Drug Use

Table 4.7 shows the lifetime prevalence of illegal drug use at Time 1 and Time 2, as ascertained from the question, "Have you *ever* used any of the following substances to get "high" or to try to get "high"?" The figures shown are percentages of those who reported using *any* of the listed substances. It can be seen that one-sixth of the students reported having used illegal drugs at Time 1, while one year later just over one-fifth had used such substances at some time.

Table 4.7: *Lifetime Prevalence of Illegal Drug Use at Time 1 and Time 2*

Age at Time 1	Boys		Girls		Total Sample	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	1.9	16.7	3.2	8.8	3.0	10.3
	(1)	(9)	(7)	(19)	(8)	(28)
14	13.1	18.8	10.0	13.8	11.1	15.6
	(18)	(26)	(24)	(33)	(42)	(59)
15	30.6	33.9	8.5	14.9	21.1	25.7
	(38)	(42)	(8)	(14)	(46)	(56)
16	27.9	31.1	20.0	19.2	24.9	26.6
	(61)	(68)	(26)	(25)	(87)	(93)
17 or more	29.2	35.8	18.6	18.6	26.4	31.3
	(35)	(43)	(8)	(8)	(43)	(51)
Total	23.4	28.7	10.1	13.7	16.4	20.8
	(153)	(188)	(73)	(99)	(226)	(287)

Note: Table entries are row percentages. Cell sizes are in parentheses.

It can be seen from Table 4.7 that only a very small number of students (3 per cent) reported using illegal substances before age 13 years. From then to age 18 years there are consistent increases in the additional

numbers who reported using such substances at each age level. As in the case of drinking, there was no indication that any particular age was critical in regard to initiation to illegal substances. The central finding in this regard is that such initiation seems to occur at a later stage than either smoking or drinking.

There were large and consistent gender differences in relation to illegal drug use. These were found on both lifetime prevalence and current measures and at every age group. As can be seen from Tables 4.7 and 4.8, the rates of usage among boys were about twice those of girls. Unlike the pattern of cigarette smoking, there was no indication that girls' rates of illegal drug use "caught up" with those of boys.

Table 4.8: *Current Prevalence of Illegal Drug Use At Time 1 and Time 2*

	Boys		Girls		Total Sample	
Age at Time 1	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
13 or less	–	11.3 (6)	0.9 (2)	4.7 (10)	0.7 (2)	6.0 (16)
14	5.9 (8)	8.1 (11)	5.4 (13)	9.7 (23)	5.6 (21)	9.1 (34)
15	16.7 (20)	13.9 (17)	3.3 (3)	6.4 (6)	10.8 (23)	10.8 (23)
16	12.5 (27)	13.5 (29)	10.9 (14)	7.7 (10)	11.9 (41)	11.3 (39)
17 or more	12.7 (15)	12.1 (14)	7.0 (3)	11.6 (5)	11.2 (18)	11.9 (19)
Total	10.9 (70)	12.0 (77)	4.9 (35)	7.5 (54)	7.7 (105)	9.6 (131)

Note: Table entries are row percentages. Cell sizes are in parentheses.

Table 4.9 shows the lifetime rates of use for specific illegal substances. Overall, the pattern is rather similar for Times 1 and 2. In both phases solvents and marijuana are the most widely used illegal substances, while the rates for other substances are low, particularly for serious drugs like heroin. As was shown in the earlier report, solvents tend to be used by the younger age groups, while marijuana tends to be used especially by the older age groups. Thus, the fact that there is no difference at Times 1 and 2 for solvents is due to the fact that solvents are more likely to be used by younger pupils. On the other hand, because marijuana tends to be used by older pupils, the rate of prevalence for this substance is somewhat higher at Time 2.

Table 4.9: *Lifetime Prevalence Rates of Specific Illegal Substances at Time 1 and Time 2*

	Time 1	Time 2
Solvents	10.9 (149)	11.1 (155)
Marijuana	8.9 (123)	14.2 (186
Heroin	0.4 (6)	0.9 (12)
Cocaine	0.7 (10)	0.9 (13)
L S D	1.5 (21)	1.6 (22)
Tranquillizers	1.5 (21)	3.6 (49)
Speed	1.5 (20)	2.5 (35)
Psilocybin	2.6 (36)	3.5 (48)
Cough Syrup	3.7 (51)	4.5 (62)
Other Drugs	1.6 (25)	2.0 (30)

Tables 4.7 and 4.8 also give an indication of the extent of cohort differences. There was no indication of any difference between the younger and older cohorts for either current drug use or for lifetime prevalence. In general, it would seem that the rates of illegal substance use are almost identical. This presents an interesting contrast with the situation regarding cigarette smoking and drinking.

Comparison with Other Findings

The outcomes of this study can be compared with those of Shelley, Wilson-Davis, O'Rourke and O'Rourke (1982) who examined the prevalence of illegal drug use in Dublin post-primary schools. The major difference between the present results and those of Shelley, *et al.* concern use of solvents. Apparently there was a substantial increase in the numbers who used solvents between 1980 and 1984, especially among the younger age groups.

In general, the results from other countries suggest a moderately high level of solvent use by Irish adolescents, while the rates of use of other

substances is low by international standards. For example, Kandel, *et al.* (1981) report rates of use for marijuana and other drugs that are about twice as high as those reported above. Similarly, Johnston, *et al.* (1984; 1985) have reported much higher rates of illegal drug use among US adolescents, particularly marijuana. For example, Johnston, *et al.* (1984) show that over half their high school seniors had used marijuana at least once. On the other hand, it is interesting that the level of use of inhalants and solvents is rather similar to the rates shown above. Similarly, Homel, *et al.* (1984) show that while rates of marijuana use were very substantially higher than those emerging above, the rates of solvent use were somewhat similar to the rates emerging among the Dublin adolescents.

Chapter 5

PREDICTING SUBSTANCE USE, STABILITY OF SUBSTANCE USE AND INITIATION TO SUBSTANCE USE

The present chapter will focus on three areas. First, the extent to which substance use at Time 2 can be predicted from variables at Time 1 will be examined. A second analysis will examine change in substance use over the interval between the two phases. In these regression analyses, all subjects present on both occasions will be included. Finally, a discriminant function analysis will be confined to those respondents who were not current users at Time 1. This analysis will be aimed at pinpointing the major factors associated with initiation to use of a particular substance. Each of these analyses will be performed for each substance: cigarette smoking, alcohol consumption and other drug use.

I. Prediction of Smoking Behaviour

Time 1 Variables and Time 2 Smoking
To examine the extent to which Time 2 smoking could be predicted from Time 1 variables, a series of hierarchical regression analyses were performed. In these analyses, variables were entered in blocks in order of their theoretical immediacy. In other words, the theoretically most immediate variables were entered first as a block, followed by the next most immediate and, finally, by the most distal. At each step the increment in explained variance was examined for significance. A final model was retained when the addition of further variables led to a substantially or statistically insignificant increase in the variance accounted for. Finally, to ascertain the relative contribution of the individual variables, the regression coefficients from the final model were examined.

The previous report has examined the convergent and discriminant validity of the various measures that were included in these analyses. Factor analyses showed that the number of factors obtained corresponded to relevant dimensions postulated in the overall theoretical model. Furthermore, all the relevant items loaded significantly on a single factor, as expected, while loadings on "inappropriate factors" tended to be negligible. Consequently, for the regression analyses, mean scale values

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were used corresponding to the dimensions of the model. For some variables, single items were used (e.g., father's occupational status). Finally, separate analyses were carried out for males and females since the previous literature and indeed the emerging levels of prevalence of usage suggest that different processes may underlie the use of such substances for boys and girls.

The number of cigarettes that the respondents reported smoking during the previous month was predicted from Time 1 variables measured one year earlier. At the first stage, the following variables were entered in the equation: parental smoking, parental disapproval, peer approval, peer smoking, expectancy value beliefs and attitude to smoking. At the second step, social bonding and reported problem behaviours were entered and at the final step background variables, including age, father's occupational status and maternal employment (outside the home or exclusively in the home) were entered.

In the case of boys, the number of cigarettes smoked during the previous month was predicted moderately well from the attitude and belief items ($R^2 = .42$). The addition of social bonding and problem behaviours to the regression equation led to a very small increase in the prediction of smoking behaviour - an increase that was neither statistically nor substantially large ($p > .05$, $\Delta R^2 < .01$). Furthermore, the addition of more distal variables (including age and father's occupational status) did not lead to any improvement in prediction.

For girls, a similar series of regression analysis was carried out predicting current smoking from Time 1 variables. The most immediate variables account for 35 per cent of the variance and as in the case of boys, the addition of further variables did not lead to increments in prediction that were substantively significant. Table 5.1 shows the standardised and unstandardised regression coefficients from this model for boys and girls, together with the associated significance tests.

It can be seen from Table 5.1 that the major predictors of Time 2 current smoking are attitude to smoking and peer smoking. It is also the case that for both boys and girls, peer disapproval is not significantly related to smoking. The case of parental influence is of special interest. For boys, parental disapproval is negatively associated with subsequent smoking, while parental smoking is not a significant predictor. In the case of females, the opposite pattern of parental influence obtains: parental smoking is positively related to girls' smoking while level of parental disapproval is not a significant predictor. For both boys and girls expectancy-value beliefs are weak but significant predictors of Time 2 smoking.

Table 5.1: *Regression Coefficients for Prediction Time 2 Smoking from Time 1 Variables*

Predictor	b	SE b	β	t
	Boys			
Parental Smoking	.01	.02	.01	.32
Parental Disapproval	−.12	.04	−.11	3.11**
Peer Smoking	.25	.04	.26	6.63***
Peer Disapproval	.04	.04	.04	1.09
Attitude to Smoking	.39	.04	.39	9.13***
Expectancy-Value Beliefs	.03	.01	.11	2.74*
$R^2 = .42$***				
	Girls			
Parental Smoking	.04	.02	.07	2.25*
Parental Disapproval	−.03	.04	−.03	.88
Peer Smoking	.31	.03	.31	7.96***
Peer Disapproval	+.02	.03	+.03	.45
Attitude to Smoking	.29	.04	.34	7.99***
Expectancy-Value Beliefs	.02	.01	.08	1.96*
$R^2 = .35$***				

* $p < .05$
** $p < .01$
*** $p < .001$

It is worthwhile to compare the present results with the cross-sectional analysis carried out in the earlier study. As with the present analyses, the strongest predictors in the cross-sectional analyses of smoking behaviour were peer smoking and attitude to smoking. Furthermore, as in the present analysis, peer disapproval did not relate significantly to smoking for either boys or girls. Again, as in the present analysis, parental example related to reported smoking behaviour in the case of boys. The difference lies in the role of perceived disapproval of parents. In the cross-sectional analyses this variable related significantly to smoking intentions for both males and females while the analysis above revealed that parental disapproval predicted subsequent smoking only for males. It seems likely that this difference is due to the earlier acquisition of smoking by boys, resulting in the greater overall level of predictability in the cross-sectional study.

Stability and Change in Smoking

The previous analyses demonstrate that cigarette smoking at Time 2 can be predicted moderately well from beliefs and attitudes measured one year earlier. However, it is unclear whether these social-psychological factors can predict *change* in this behaviour. To some extent, the pattern of findings

obtained in the previous analysis may reflect the fact that smoking behaviour as well as attitudes and beliefs are relatively stable over time and are related to one another, but not necessarily causally. Therefore, a second analysis was undertaken in which smoking at Time 2 was predicted from the Time 1 variables while controlling for smoking at Time 1.

A series of hierarchical regression analyses thus were performed in which Time 1 smoking was entered first in the equation to predict Time 2 smoking. As in the previous analyses, the dependent variable was the number of cigarettes smoked daily during the previous month. After Time 1 smoking was entered in the equation, belief and attitudinal variables, social bonding, problem and background variables were entered at the second, third and fourth stages, respectively.

The results are shown separately for boys and girls in Table 5.2. In the case of girls, Time 1 smoking predicts Time 2 smoking reasonably well, accounting for over 36 per cent of the variance. The addition of attitudinal, expectancy-value, and normative variables adds significantly to prediction ($\Delta R^2 = p < .001$). The addition of social bonding and distal variables did not significantly add to the prediction ($p > .05$). Consequently, the full model shown in Table 5.2 contains Time 1 smoking as well as normative variables and attitude to smoking.

In the case of boys, a somewhat similar picture emerged. Time 1 smoking predicts Time 2 smoking to a greater extent than in the case of girls ($R^2 = .50$). Furthermore, the addition of other variables brings about an increment in prediction which is substantial and significant ($\Delta R^2 = .07$; $p < .001$). Thus, the same model has been retained as in the case of girls and the pattern is very similar.

It can be seen from Table 5.2 that while Time 1 smoking is the strongest predictor of smoking at Time 2 for both boys and girls, the level of prediction of Time 1 smoking is greater in the case of boys. In other words, smoking appears to be more stable for boys than for girls. The major reason for this may be that smoking is established at a younger age in the case of boys, while the smoking of girls lags behind that of boys by several years.

The next strongest predictor of Time 2 is attitude, with expectancy-value a marginally significant predictor in the case of boys and just falling short of significance in the case of girls. A striking feature of the results is that the normative influences in general seem to have a minimal influence. It is noteworthy that parental influences are minimal in the case of both boys and girls. Neither perceived example nor perceived approval relate significantly to Time 2 smoking. Furthermore, level of peer disapproval does not relate to smoking. Only perceived peer smoking is shown to be related to Time 2 smoking.

DEVELOPMENT AND MAINTENANCE OF SUBSTANCE USE

Table 5.2: *Change in Smoking Behaviour: Regression Coefficients for Prediction of Time 2 Smoking*

Predictor	b	SE b	β	t
			Boys	
Time 1 Smoking	.33	.02	.80	13.30***
Parental Smoking	.00	.02	.00	.13
Parental Disapproval	.04	.03	.03	1.28
Peer Smoking	.07	.03	.07	1.98*
Peer Disapproval	.01	.03	.01	1.69
Attitude to Smoking	.23	.03	.23	5.98***
Expectancy-Value Beliefs	.02	.01	.06	1.96*
$R^2 = .57$***				
			Girls	
Time 1 Smoking	.30	.03	.43	11.29***
Parental Smoking	.03	.02	.03	1.40
Parental Disapproval	−.03	.03	−.02	−.75
Peer Smoking	.08	.04	.07	1.98*
Peer Disapproval	.02	.03	.03	.81
Attitude to Smoking	.22	.03	.26	6.72***
Expectancy-Value Beliefs	.01	.01	.07	1.84
$R^2 = .46$***				

* $p < .05$
** $p < .01$
*** $p < .001$

A number of conclusions seem warranted on the basis of the comparisons of the present analysis with the previous one. In general, it can be said that the variables associated with change in smoking are somewhat different from those relating to simple prediction from Time 1 to Time 2. In particular, normative factors are important in prediction in smoking, but are not as important in predicting changes in smoking. Interestingly, attitude to smoking is important in prediction of smoking behaviour and as regards changes in smoking behaviour. Furthermore, it is noteworthy that the impact of attitude is not based on expectancy-value beliefs, as has been suggested by Ajzen and Fishbein (1980). In other words, the impact of attitude is stronger (and not dependent on beliefs about the positive and negative consequences of smoking).

Initiation to Smoking

A question of particular interest concerns the factors associated with *initiation* to regular smoking. To examine this question the respondents

who indicated that they were not current smokers at Time 1 were targeted for a separate analysis. It seemed regression analysis would be inappropriate since there was little variability in the predicted behaviour. Specifically, about 82 per cent of those who were non-smokers at Time 1 were still non-smokers at Time 2. Furthermore, only a tiny minority of the "new" smokers were heavy smokers. For these reasons, it seemed more appropriate to dichotomise the dependent variable (new smoker vs remained non-smoker at Time 2) and to use a discriminant function analysis. As in the regression analyses, expectancy-value, attitude and normative variables were entered first in the model, followed by social bonding and problem behaviour, while distal variables were entered at the final stage. Furthermore, as in the previous analyses, separate discriminant function analyses were performed for males and females.

The first stage (expectancy-value, attitude and normative influences) resulted in 86 per cent of the boys being correctly classified. The addition of further variables raised the correct classification rate by less than 1 per cent. Hence, the model shown in Table 5.3 includes these variables only.

Table 5.3: *Discriminant Function Coefficients for Prediction of Initiation*

Predictor	Unstandardised	Standardised
	Boys	
Attitude	.36	.81
Expectancy-value Beliefs	.03	.36
Parental Disapproval	–.02	–.11
Parental Smoking	.02	.09
Peer Disapproval	.01	–.02
Peer Smoking	.02	.36
Per cent correctly classified: 86%.		
Wilks' Lambda = .92; chi-square = 11.42***.		
	Girls	
Attitude	.34	.78
Expectancy-Value Beliefs	.01	.19
Parental Disapproval	.01	.13
Parental Smoking	.01	–.03
Peer Disapproval	.02	.15
Peer Smoking	.12	.17
Per cent correctly classified: 80%.		
Wilks' Lambda = .90; chi-square = 10.02***		

*** $p < .001$.

This table displays the standardised and unstandardised discriminant function coefficients for initiation to smoking. The unstandardised coefficients are the multiples of the variables when they are expressed in the original units. As a multiple regression, the standardised coefficients are used when the variables are standardised to a mean of 0 and a standard deviation of 1.

While it is inappropriate to interpret the magnitude of the coefficients as indicators of the relative importance of the variables, it can be argued that variables with large values contribute more to the overall discriminant function. Thus, in the case of boys, Table 5.3, it can be seen that attitude to smoking at Time 1 contributes to the overall function to a much greater degree than does any of the other variables in the model.

In the case of girls, it emerged that attitude and normative influences at Time 1 resulted in 80 per cent of girls being correctly categorised at Time 2. The addition of other variables resulted in only a further 2 per cent being correctly classified. Thus the model shown in Table 5.3 is the same as in the case of girls. Again, it is evident that attitude to smoking at Time 1 contributes to the overall function to a much greater degree than do other variables in the model.

In many respects, the outcome in relation to initiation to smoking is very similar to that emerging from the study of change in smoking behaviour. Over the year interval, over 80 per cent of the Time 1 non-smokers had remained non-smokers one year later. As in the case of change in smoking, the strongest predictor of initiation was attitude. A second significant point of similarity was that normative influences were rather unimportant in predicting initiation for either boys or girls.

Comparison with Previous Results

The cross-sectional analysis had demonstrated that attitude to smoking and peer smoking behaviour were the strongest correlates of smoking behaviour. It also emerged that parental disapproval related significantly but to a lesser extent than did attitude and peer smoking. Finally, parental smoking was significantly related to smoking in the case of girls only.

There are a number of areas of agreement between the cross-sectional results and the outcomes discussed above. First, it seems that attitude to smoking is a particularly important predictor of smoking in both the cross-sectional and follow-up analyses. In other words, it seems that attitude is important both as regards initiation and maintenance of smoking. A second point of agreement is that the importance of normative influences is dependent on whether the focus is on example or approval and whether parents or peers are involved. In general, it would seem that the influence

of peers is mediated largely through their behaviour while in the case of parents the level of disapproval is the most potent influence.

The strongest contrast between the cross-sectional and longitudinal analyses relates to the role of peer smoking. In the cross-sectional analysis, peer smoking was found to be one of the best predictors of respondent smoking. On the other hand, in the case of change in smoking, peer example is only weakly related to such changes and in the case of initiation to smoking, perceived peer smoking is not a significant predictor. It would seem, therefore, that a large part of the strong relationship between friends' smoking and reported smoking is due to selective friendships.

The outcomes in extant literature would seem to be consistent with the main conclusions emerging here. There is a high level of agreement concerning the stability of smoking behaviour that was evident here (Kandel, 1980; Pulkkinen, 1983). In fact, it would seem cigarette smoking is much more stable than is either drinking or illegal drug use (Kandel, 1980). There is also agreement with the view that peer influence is somewhat more important in the maintenance of smoking than in the case of initiation (Kandel, 1985). Furthermore, there is also support for the finding that attitude to smoking makes an important contribution to initiation to smoking (Chassin, *et al.*, 1984).

However, a few studies have found evidence for the importance of peer example in initiation to smoking, while other studies indicate that expectancy-value beliefs may similarly play an important role. The present study found that peer example related significantly with changes in smoking behaviour only while the Chassin, *et al.* (1984) study found peer example effects for both changes and initiation. This difference may be due to differences relating to measurement of current smoking behaviour. The work of Bauman, *et al.* (1984; 1985) found evidence that initiation to smoking may be predicted by expectancy-value beliefs, but since these analyses were essentially univariate, they are not comparable to the multivariate analyses in the present work.

II. Prediction of Drinking Behaviour

Time 1 Variables and Time 2 Drinking

As in the case of smoking behaviour, a series of hierarchical regression analyses were performed in which variables were entered in blocks in terms of their theoretical immediacy. The number of drinks that the respondents reported that they had consumed during the previous month was the dependent variable. For the predictor variables, mean scale values were used corresponding to the dimensions of the model. These scales have

previously been shown to have satisfactory convergent and discriminant validity.

At the first stage, the following variables were entered in the equation: parental drinking, parental disapproval, peer approval, peer drinking, expectancy-value beliefs and attitude to drinking. At the second step, social bonding and reported problem behaviours were entered and at the final step background variables (including age and parents' occupational status) were entered. Separate regression analyses were carried out for males and females. At each step the increment in explained variance was examined for significance and a final model was retained when the addition of further variables led to a substantially or statistically insignificant increase in the variance accounted for.

In the case of boys, the number of drinks consumed during the previous month was predicted moderately well from the attitude and belief items ($R^2 = .28$). The addition of social bonding and problem behaviours to the regression equation did not lead to a significant increase in drinking behaviour ($\Delta R^2 < .01$). Furthermore, the addition of more distal variables, including age and parents' occupational status, did not lead to any improvement in prediction.

For girls, a similar series of regression analyses was carried out predicting current drinking from Time 1 variables. The most immediate variables accounted for 21 per cent of the variance in drinking behaviour while the addition of social bonding and problem behaviour accounted for an insubstantial increase in prediction ($\Delta R^2 < .01$). Thus, the same model has been retained in the case of girls as for boys. Table 5.4 shows the standardised and unstandardised coefficients together with the associated test of significance.

While the level of prediction was higher in the case of boys, the pattern of significant predictors was very similar for males and females. As regards normative influences, the only significant predictor was peer example and this was the strongest predictor for both males and females. Attitude to drinking at Time 1 was also a significant predictor of Time 2 drinking, as was reported problem behaviours.

The main difference between this pattern of results and those pertaining to smoking was that the amount of variance accounted for was higher for smoking than for drinking. Another difference had to do with the absence of any significant parental influence in the case of drinking. However, there are two major points of similarity with the smoking results. These have to do with peer example and attitude, both of which were significant predictors for smoking and drinking.

Table 5.4: *Regression Coefficients for Prediction of Time 2 Drinking from Time 1 Variables*

Predictor	b	SE b	β	t
			Boys	
Parental Drinking	.01	.03	.01	.03
Parental Disapproval	.02	.03	.02	.59
Peer Drinking	.30	.04	.30	6.52***
Peer Disapproval	−.03	.04	−.03	−.72
Attitude to Drinking	.20	.04	.26	4.95***
Expectancy-Value Beliefs	.02	.01	.07	1.43
$R^2 = .28$***				
			Girls	
Parental Drinking	.03	.02	.05	1.34
Parental Disapproval	.01	.03	.02	.55
Peer Drinking	.22	.04	.24	5.24***
Peer Disapproval	.01	.02	.02	.39
Attitude to Drinking	.07	.02	.14	2.67**
Expectancy-Value Beliefs	.01	.01	.08	1.52
$R^2 = .21$***				

* $p < .05$
** $p < .01$
*** $p < .001$

Stability and Change in Drinking

The pattern of findings above may be a reflection of the fact that the significant attitudes and beliefs and behaviour are at least moderately stable over time, thus casting doubt on whether the predictor variables are causally related to drinking. The second analysis examines the extent to which drinking at Time 2 could be predicted from Time 1 variables while controlling for drinking at Time 1.

A series of hierarchical regressions were thus carried out in which Time 1 drinking was entered first in the equation to predict Time 2 drinking. As in the previous analysis, the dependent variable was the number of drinks consumed during the previous month. After Time 1 drinking, belief and attitude variables were entered at the second step while social bonding as well as problem behaviours and background variables were entered at the third and fourth stages, respectively.

The results are shown separately for boys and girls in Table 5.5. In the case of boys, Time 1 drinking predicted Time 2 drinking moderately well; $R^2 = .34$. The addition of attitude and belief items led to a statistical and

substantial increase in prediction (Δ R^2 = .05; p < .001. The addition of social bonding and problem behaviour led to an increment in prediction that was neither substantially nor statistically significant.

Table 5.5: *Regression Coefficients for Prediction of Change in Drinking Behaviour*

Predictor	b	SE b	β	t
	Boys			
Time 1 Drinking	.59	.06	.43	9.56***
Parental Drinking	.01	.03	.01	.01
Parental Disapproval	-.01	.03	-.01	.14
Peer Drinking	.17	.05	.17	3.59***
Peer Disapproval	.01	.04	.01	.25
Attitude to Drinking	.14	.04	.18	3.58***
Expectancy-Value Beliefs	.02	.01	.07	1.50
R^2 = .39***				
	Girls			
Time 1 Drinking	.74	.08	.40	9.26***
Parental Drinking	.03	.02	.05	1.30
Parental Disapproval	.02	.02	.03	.75
Peer Drinking	.16	.04	.17	4.00***
Peer Disapproval	.01	.01	.01	.04
Attitude to Drinking	.02	.02	.05	1.02
Expectancy-Value Beliefs	.01	.01	.03	.60
R^2 = .31***				

* p < .05
** p < .01
*** p < .001

In the case of girls, Time 1 drinking predicted Time 2 drinking somewhat less well; R^2 = .27. The addition of attitude and belief variables led to a significant increase in prediction (Δ R^2 = .04; p < .001). However, the addition of social bonding and problem drinking led to an insignificant increase in prediction. Thus, in the case of boys and girls, the final model contains Time 1 drinking as well as attitude and belief items.

From Table 5.5 it can be seen that in the case of boys, Time 1 drinking was the strongest predictor of later drinking behaviour. Furthermore, perceived peer drinking and attitude to drinking were also significant predictors of Time 2 drinking behaviour. In the case of girls, Time 1 drinking was also the strongest predictor. However, for girls, peer drinking was the only additional significant predictor.

In comparison to the corresponding results for smoking behaviour, a number of features are similar. In predicting Time 2 drinking behaviour from Time 1 variables, the strongest predictor behaviour and attitude are important factors in the *change* in substance use over the year (attitude being important only for boys in the case of drinking).

However, this similarity has to be balanced by differences between the two sets of results. A major difference is in the overall predictability of the target behaviour. In the case of smoking, the variance accounted for when Time 1 smoking is entered in the equation is 57 per cent for boys and 46 per cent for girls, while the corresponding percentages for drinking are 39 per cent and 31 per cent, respectively. In other words, it would seem that smoking behaviour is much more stable for boys and girls. This seems largely due to the fact that drinking habits are acquired at a later age than in the case of smoking.

Initiation to Drinking

To examine the issue of what factors were associated with initiation to drinking, those respondents who indicated that they were not current drinkers at Time 1 were targeted for analyses. As in the case of smoking, regression analysis seemed inappropriate since about 80 per cent of those who were non-drinkers at Time 1 were also non-drinkers at Time 2. Thus, the dependent variable was treated as a dichotomy (new drinker vs remained non-drinker at Time 2) and a discriminant function analysis carried out separately for boys and girls. The expectancy-value, attitude and normative variables were entered first, followed by social bonding and problem behaviour, while distal variables were entered last.

The first stage of this process resulted in 70 per cent of boys being "grouped" correctly while the addition of further variables raised the correctly classified rate by less than 1 per cent. Thus, the model shown in Table 5.6 includes only the variables from the first stage. This table shows that attitude to drinking at Time 1 contributes to the overall function to a much greater degree than does any of the other variables in the model.

In the case of girls, attitude and normative influences at Time 1 resulted in 78 per cent of respondents being correctly categorised one year later. The addition of further variables resulted in only a further 1 per cent of respondents being correctly categorised. Thus, the model retained in Table 5.6 is the same as for boys. However, the pattern of the results is somewhat different in that attitude to drinking and peer drinking contribute about equally to the overall function, in contrast to the results with boys when attitude was the single major contributor. However, as with

boys, parental influences, expectancy-value beliefs and peer appraisal did not contribute strongly to the discriminant function.

Table5.6: *Discriminant Function Coefficients forPrediction of Initiation to Drinking*

Predictor	Unstandardised	Standardised
	Boys	
Attitude to Drinking	.39	.84
Expectancy-value Beliefs	.02	.14
Parental Disapproval	.12	.26
Parental Drinking	.01	.18
Peer Disapproval	.01	.20
Peer Drinking	.21	.34
Per cent correctly classified: 70%		
Wilks' Lambda = .84; chi-square = 40.35***		
	Girls	
Attitude to Drinking	.28	.57
Expectancy-value Beliefs	.02	.16
Parental Disapproval	.03	.33
Parental Drinking	.02	.16
Peer Disapproval	.01	.02
Peer Drinking	.52	9.53
Per cent correctly classified: 78%		
Wilks' Lambda = .88; chi-square = 51.12***.		

*** $p < .001$

In general terms, the results of the discriminant function analysis of variables associated with initiation to drinking is rather similar to the comparable analysis of initiation to smoking. The strongest point of similarity was that attitude to the use of the substance was the strongest predictor for both boys and girls. However, in the case of drinking, peer drinking at Time 1 was an important predictor of initiation to drinking for girls only, while for initiation to smoking, no aspect of normative influence was found to be strongly associated with initiation.

Comparison with Previous Results

The earlier cross-sectional report had shown that attitude to drinking and peer drinking were the strongest correlates of drinking behaviour. Neither parental drinking nor parental approval nor peer approval was a significant predictor in the cross-sectional regression analysis. In general terms, it would seem that the present results are supportive of the cross-sectional analysis in that attitude to drinking and peer drinking emerge as the only significant

predictor variables. Specifically, peer drinking is a significant predictor from Time 1 to Time 2 and is also a significant predictor of changes in drinking behaviour as well as being an important factor in initiation to drinking. Attitude to drinking follows the same pattern, with a single exception. In the case of changes in drinking among girls, attitude at Time 1 was not a significant predictor. Overall, however, there is a striking similarity between the cross-sectional findings and the follow-up results.

A number of panel studies have examined change in, and initiation to, drinking behaviour. In general, it would seem that while there is some stability in drinking behaviour, the stability is a great deal less than with smoking. For example, Pulkkinen (1983) found that smoking in late adolescence was predictable on the basis of smoking at age 14, while drinking was not predictable on the same basis. Similarly, Ghodsian and Power (1987) found rather weak correlations between current drinking at ages 16 and 23 years, the correlations being .15 and .16 for men and women, respectively.

In general, the results of the study by Downs (1987) is supportive of the present results. The only major difference is that Downs found a higher level of prediction (66 per cent of variance accounted for) from Time 1 to Time 2, one year later - a difference that may be due to the greater stability of drinking among the adults in the Downs' study, as compared with the adolescents in the present work.

The studies by Bauman and his colleagues (particularly Bauman and Chenoweth, 1984; Bauman, *et al.*, 1985) have shown that *initiation* to drinking is predictable on the basis of expectancy-value beliefs. Specifically, those respondents who reported that they valued the positive outcomes of drinking and who thought it likely that these outcomes would result from drinking, were more likely to begin to drink than those who did not hold such views. On the other hand, the present results did not show a similar pattern. However, this apparent contradiction may be due to the additional variables included in the present study, which have not been included in the Bauman studies. The problem is that of comparing multivariate designs with univariate models.

III. Prediction of Illegal Drug Taking

Time 1 Variables and Time 2 Drug Use

As in the case of smoking and drinking behaviour, a series of hierarchical regression analyses were carried out in which variables were entered in terms of their theoretical immediacy. The number of times that respondents had reported using illegal drugs during the previous month,

was the dependent variable. For the predictor variables, mean scale values were calculated corresponding to the dimensions of the model. These scales had previously been shown to have satisfactory discriminant and convergent validity.

At the first stage the following variables were entered in the regression equation: parental disapproval of drug use, peer drug use, peer approval, expectancy-value beliefs and attitude to drug use. Social bonding and problem behaviours were entered at the second stage while at the final stage background variables were entered in the equation. At each stage the increment in explained variance was examined for significance and a final model was retained when the addition of further variables led to an insignificant increase (substantially and statistically) in the variance accounted for. Separate analyses were carried for boys and girls.

In the case of girls, the first set of variables predicted Time 2 drug use moderately well ($R^2 = .16$). The addition of social bonding and problem behaviours led to an increment in prediction that was neither substantially nor statistically significant ($\Delta R^2 < .01$). As a result, the final model shown in Table 5.7 retains only the variables entered at the first stage. From this table it can be seen that all the Time 1 variables entered, with the exception of parental disapproval, predict drug use one year later.

Table 5.7: *Regression Coefficients for Prediction of Time 2 Illegal Drug Use from Time 1 Variables*

Predictor	b	SE b	β	t
			Boys	
Parental Disapproval	−.05	.04	−.05	−1.16
Peer Drug Use	.08	.03	.13	2.67**
Peer Disapproval	.01	.01	.06	1.17
Attitude to Drugs	.03	.02	.07	1.35
Expectancy-Value Beliefs	.02	.01	.15	2.62**
$R^2 = .09$***				
			Girls	
Parental Disapproval	.02	.04	.03	.71
Peer Drug Use	.15	.03	.21	4.77***
Peer Disapproval	.03	.01	.14	3.05**
Attitude to Drugs	.04	.01	.11	2.60**
Expectancy-Value Beliefs	.01	.00	.10	2.29*
$R^2 = .16$***				

* p < .05
** p < .01
*** p < .001

In fact, the results emerging for girls are different in a number of respects from those relating to cigarette smoking and drinking. Interestingly, both attitude to drug use and expectancy-value beliefs are both found to be significant predictors, whereas in the case of other substances, attitude to the substance in question was the only significant predictor. Another difference has to do with level of peer approval. Previously it was found that while peer behaviour predicted subsequent use, peer approval of use of that substance was not a significant predictor. However, for girls' use of illegal drugs, level of peer approval emerges as a significant predictor.

For boys, the first set of variables predicted Time 2 drug use rather less well than for girls ($R^2 = .09$). The addition of social bonding problem behaviours led to an increment in prediction that was neither substantially nor statistically significant ($\Delta R^2 < .01$). Thus, the model shown in Table 5.7 shows only the variables entered at the first stage. From this table it can be seen that in contrast to girls, only two significant predictors emerge as significant. Specifically, peer drug use and expectancy-value beliefs are both significant predictors while in contrast to girls, neither peer approval nor attitude to drugs are significant predictors of illegal drug use at Time 2.

It is interesting that while there were relatively minor gender differences in the case of cigarettes and alcohol, the differences between boys and girls in relation to other drug use is much greater. This may be related to the fact that there are indeed relatively greater gender differences in prevalence rates in the case of illegal drugs than in the case of smoking and alcohol. It is also of particular interest that peer influences are stronger for girls than for boys - both as regards peer approval and peer example.

Stability and Change in Drug Use

A second analysis examines the extent to which illegal drug use at Time 2 can be predicted from Time 1 variables while controlling for drug use at Time 1. A series of hierarchical regressions were carried out in which Time 1 drug use was entered first in the equation to predict Time 2 drug use. As in the previous analyses, the dependent variable was the number of times during the previous month that respondent had reported using drugs. After Time 1, drug use, belief and attitude variables were entered at the second step, while social bonding as well as problem behaviours and background variables were entered at the third and fourth steps, respectively.

The results are displayed for boys and girls in Table 5.8. In the case of girls, Time 1 drug use predicted Time 2 usage moderately well ($R^2 = .10$). The addition of attitude and belief items added substantially to the prediction ($\Delta R^2 = .08$; $p < .001$). However, the addition of social bonding

and problem behaviour did not add to the prediction. Thus, the final model shown in the table includes variables from the first two steps of the regression analysis only. In a number of respects the results are similar to those of the straight prediction from Time 1. In particular, both peer approval and peer example are significant predictors of change in use of illegal drugs, as in the earlier analysis. However, in contrast to the earlier analysis, neither attitude nor expectancy-value beliefs attained significance.

Table 5.8: *Change in Illegal Drug Use from Time 1 to Time 2*

Predictor	b	SE b	β	t
		Boys		
Time 1 Drug Use	.51	.07	.33	6.54***
Parental Disapproval	−.08	.04	−.09	2.07*
Peer Example	.02	.03	.03	.56
Peer Disapproval	.01	.01	.05	.96
Attitude to Drug Use	.01	.01	.01	.10
Expectancy-Value Beliefs	.01	.01	.10	1.91
$R^2 = .17$***				
		Girls		
Time 1 Drug Use	.26	.06	.19	4.31***
Parental Disapproval	−.06	.04	−.06	1.46
Peer Example	.11	.03	.15	3.39***
Peer Disapproval	.03	.01	.13	3.02***
Attitude to Drug Use	.02	.01	.08	1.90
Expectancy-Value Beliefs	.01	.01	.08	1.84
$R^2 = .19$***				

* $p < .05$
** $p < .01$
*** $p < .001$

In the case of boys, Time 1 drug use actually predicted Time 2 drug use rather better than in the case of girls ($R^2 = .15$). The addition of belief and attitude variables led to an increment in prediction that was not substantially significant ($\Delta R^2 = .02$) but which was statistically significant, $p < .05$. Nevertheless, the same model has been retained as in the case of girls. From Table 5.8 it can be seen that apart from drug use at Time 1, only one other variable emerges as a significant predictor, viz., parental approval. Those respondents who perceived their parents as less disapproving were more likely to increase their drug use over the year.

Thus, as in the earlier analysis, there are substantial gender differences, in contrast to alcohol and cigarette smoking.

Initiation to Drug Use

To examine the question of what factors were associated with initiation to illegal drug use, those respondents who indicated that they were not current users of illegal drugs at Time 1 were selected for analysis. As in the earlier analyses, regression techniques seemed particularly inappropriate since above 90 per cent of those who were non-drug users at Time 1 were also non-users at Time 2. Thus, the dependent variable was treated as a dichotomy (new drug user vs remained non-user at Time 2) and a discriminant function analysis carried out separately for boys and girls. The attitude, expectancy-value and normative variables were entered first, followed by social bonding and problem behaviour, while distal variables were entered last.

The first stage of the analysis resulted in 94 per cent of the respondents being "grouped" correctly, while the addition of further variables led to minimal improvements (less than 1 per cent) in the number correctly grouped. Thus, the model shown in Table 5.9 retains the variables involved at this stage only.

Table 5.9: *Discriminant Function Coefficients for Prediction of Initiation to Illegal Drug Use*

Predictor	Unstandardised	Standardised
	Boys	
Attitude to Drug Use	.06	.12
Expectancy-value Beliefs	.10	.62
Parental Disapproval	.37	.28
Peer Disapproval	.20	.54
Peer Drug Use	.04	.09
Per cent correctly classified: 94%		
Wilks' Lambda = .96; chi-square = 11.37***		
	Girls	
Attitude to Drug Use	.02	.08
Expectancy-value Beliefs	.04	.45
Parental Disapproval	.35	.16
Peer Disapproval	.18	.37
Peer Drug Use	1.13	.59
Per cent correctly classified: 95%		
Wilks' Lambda = .94; chi-square = 34.64***.		

*** $p < .001$

As with the prediction of drug use and change in drug use, the pattern of results is rather different for boys and girls. For boys, the strongest predictors are expectancy-value beliefs and peer approval. However, for girls, peer drug use is the strongest predictor while expectancy-value beliefs and peer approval are somewhat less important than for boys.

Comparison with Previous Results

There are fairly major differences between the results emerging here and those pertaining to smoking and alcohol usage. Overall, the level of prediction achieved was much less than in the case of either of the other substances. This may be partly due to the lower levels of prevalence of usage in the case of illegal drugs. The other difference has to do with the fairly pronounced gender differences that were evident. It was noteworthy that peer approval (in addition to peer example) was an important predictor for girls while peer example was the only aspect of peer influence to emerge as important in the case of boys. In other words, it may be that peer influences are of relatively greater importance for girls than for boys.

In many respects, the results above are similar to those emerging from the earlier cross-sectional study. The comparable cross-sectional analyses showed that peer example and attitude were the strongest predictors while peer approval was a significant predictor in the case of girls only. Furthermore, the level of prediction achieved in the case of girls was much higher than in the case of boys (60 per cent vs 34 per cent in the case of prediction of drug use intentions). The main differences have to do with the non-significant effects of attitude and the much weaker levels of prediction in the follow-up analysis.

On several points the extant literature is in agreement with the results shown above. In particular, Kandel's longitudinal studies (e.g., Kandel, 1985) demonstrate that both selective friendship and peer influence are of about equal importance in bringing about similarity between friends in substance use - an outcome which is consistent with the present pattern of results. Another theme echoed in the present study is the finding of substantial gender differences in influence in relation to illegal drugs. In particular, the work of Ensminger, *et al.* (1982) has shown that there are important differences between males and females in the factors associated with initiation and change in illegal drugs. This seemed to be especially true at heavier levels of usage. Finally, some studies that have reported results that are different from the present results have usually employed a different analytic strategy. For example, the work of Brook, *et al.* (1980) found that peer factors did not predict initiation to marijuana once

personality, attitudinal and demographic factors were controlled. This may well be due to reciprocal causal interactions between having friends who are users and attitude to use of illegal drugs, rather than reflections on the unimportance of peer group example.

Chapter 6

RECOMMENDATIONS FOR PREVENTION

The drugs of choice among Dublin post-primary school pupils are tobacco and alcohol. Smoking and drinking are far more prevalent than is use of all other drugs combined. Although these findings may be seen by some as reassuring, smoking and drinking by young people should be matters of concern. First, the health hazards of chronic smoking and abusive drinking are well known and these behaviour patterns may begin in adolescence or young adulthood (Kandel and Logan, 1984; Donovan, *et al.*, 1983). Second, there are immediate risks associated with adolescent smoking and drinking. Adolescents who smoke are two to three times more likely than non-smokers to experience unintentional injuries, particularly burns, that require hospitalisation (Oleckno, 1987). Similarly, drinking is directly implicated in adolescent traffic and pedestrian fatalities, bicycle accidents, burns, drownings, assaults, homicides, suicides and other trauma (Pegg, Beecham, Dore, Hrdlicka and Hukins, 1990; Andreassen, Allebeck and Romelsjo, 1988; Kerr, Campbell and Rutherford, 1987; Krause, Fife and Conroy, 1987; Quan, Gore, Wentz, Allen and Novack, 1989). Although adolescent drinking levels are typically below those for adults, young people are more affected by alcohol and are involved in fatal accidents at lower blood alcohol levels (Hain, Ryan and Spitz, 1989). Finally, there is some evidence that tobacco and alcohol use precedes the use of other drugs (e.g., Yamaguchi and Kandel, 1984). In this regard, smoking and drinking may represent "gateway" behaviours, increasing the probability of being exposed to and experimenting with other drugs. Given the prevalence of smoking and drinking, the potential costs associated with tobacco and alcohol are probably greater than those for other drugs.

This chapter outlines selected strategies for reducing adolescent drug use. Because of the pattern of substance use among Irish adolescents and the potential costs of smoking and drinking, the focus will be primarily on reducing alcohol and tobacco use. Somewhat less attention will be given to other drugs. In contrast to the previous report which emphasized school-based prevention programmes designed to modify individual beliefs and predispositions and to counter peer and social pressures, the

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recommendations in the present report focus on environmental and community strategies to reducing smoking, drinking and use other drugs.

School-based programmes are important and have proved to be moderately effective in reducing adolescent substance use, particularly in the case of smoking (e.g., Polich, Ellickson, Reuter and Kahan, 1984; Flay, 1985; National Institute on Drug Abuse, 1986). In particular, normative education which undermines misperceptions about the extent and social acceptability of smoking, drinking and drug use appears to be a useful strategy (Arkin, Roemhild, Johnson, Luepker and Murray, 1981; Hansen, Graham, Wolkenstein, Lundy, Pearson, Flay and Johnson, 1988; Pentz, Dwyer, MacKinnon, Flay, Hansen, Yui Wang and Anderson-Johnson, 1989). However, the schools cannot be expected to provide a complete answer to the problem of youthful drug use. Absenteeism and dropout rates are highest among adolescents who are at greatest risk for smoking, drinking or other drug use (e.g., Friedman, 1985; Newcomb and Bentler, 1988). As a result, those who could most benefit from preventive efforts are the least likely to be exposed to them in school (cf. Johnson and Solis, 1983). It is also likely that these students are less committed to school and are less likely to pay attention to, accept and be influenced by, information about tobacco, alcohol and other drugs provided by school curricula. Within the school, drug prevention programmes can only take up a small fraction of the available class hours. As a result, exposure to preventive programmes is limited, even for those students in regular attendance. In addition, most adolescent substance use takes place outside of the school and in situations where school programmes and authorities may have little influence (Rhodes and Jason, 1988). Activities with friends where no adults are present are the primary contexts for adolescent drinking and drug use. Finally, adolescent substance use behaviours are embedded within a broader social context that is supportive of drug use - particularly smoking and drinking - and are influenced by factors that cannot be addressed adequately by school programmes (e.g., Mauss, Hopkins, Weisheit and Kearney, 1988). Students are provided with classroom education regarding drugs and then return to an environment in which smoking, drinking, and, to a lesser extent, other drug use are glamorised and pervasive. Limited, intermittent exposure to classroom drug programmes cannot be expected, by itself, to counteract the combined and continuing influences of the family, peers, media and community.

Without a more supportive environment and without community and parental involvement, it is unlikely that any school-based prevention effort can be completely successful. The present chapter therefore focuses on environmental approaches to the prevention of adolescent smoking,

drinking and drug use. These approaches differ from those described in the previous report in that they attempt to influence not only the personal predispositions of the adolescent, but also those aspects of the social and physical environment that impact upon an adolescent's decisions regarding smoking, drinking and drug use (Ratcliffe and Wallack, 1985).

Community and environmental approaches embody more than simply the involvement of parents in school-based prevention efforts. Rather, these approaches to prevention promote social and structural changes that discourage smoking, drinking and other drug use. They seek to limit both physical and social availability of drugs in the community. In addition, they attempt to counter social forces such as advertising and media portrayals that encourage adolescent smoking, drinking and other drug use and attempt to mobilise community norms against these behaviours.

The present chapter considers six broad areas in which environmental interventions may be undertaken to limit the physical and social availability of tobacco, alcohol and other drugs to adolescents: (1) minimum age requirements for purchase or possession of tobacco and alcohol, (2) pricing of tobacco and alcohol, (3) interdiction and deterrence, (4) media portrayals and advertising of alcohol, tobacco and other drugs, (5) school policy and (6) parent and community action. Some of the proposals to be considered here are controversial. For example, the extent to which the state, as opposed to parents, should be responsible for preventing youthful smoking, drinking and other drug use is open to argument. Taxation, minimum age requirements and enforcement are all issues that evoke opposing viewpoints. These proposals are presented here, at least in part, to open public debate about the alternatives that are available for addressing the problems related to youthful drinking, smoking and other drug use.

Physical Availability

Physical availability refers to the ease or difficulty of gaining access to tobacco, alcohol or other drugs and the costs or resources necessary to obtain these substances. An availability-proneness model suggests that adolescent smoking, drinking and other drug use is the result of an interaction between personal predispositions toward substance use (e.g., beliefs, attitudes, personality) and access to tobacco, alcohol and drugs in the environment (Smart, 1980). Overall, this model proposes that adolescent smoking, drinking and drug use increase as availability increases. In general, the research evidence supports this relationship. Those drugs perceived to be most readily available are used most frequently and those less readily available are used less frequently (e.g.,

Johnston, O'Malley and Bachman, 1989; Miller, 1981). Naturally occurring events that change availability also have been found to reduce smoking, drinking and drug use among young people. Thus, a liquor strike in Finland was found to reduce arrests for public drunkenness among male adolescents by about 20 per cent (Säilä, 1987). Conversely, increasing alcohol availability in England and Wales by allowing supermarkets to sell beer, wine and spirits was found to more than double the number of convictions for drunkenness among underage youth (Williams, 1975). Although direct data on perceived availability are not available for Irish adolescents, previous research (Grube and Morgan, 1986; Grube, McGree and Morgan, 1984; O'Rourke, O'Sullivan and Wilson-Davis, 1968) indicates that the probability of drug use increases with spending money, a surrogate for availability.

The availability-proneness model suggests that a significant reduction in adolescent smoking, drinking and drug use may be obtained by decreasing the physical availability of tobacco, alcohol and other drugs. In the following section several strategies will be considered that might reduce availability and the pertinent research will be reviewed. Unfortunately, very little research on policy changes affecting availability and adolescent substance use has been conducted in Ireland or, for that matter, elsewhere in Europe. Thus, it is necessary to consider the research evidence from other countries, in particular the United States, Canada and Australia. In evaluating the relevance of this research for Ireland, it must be recognized that most countries have evolved alcohol and drug policies that reflect their historical, economic and cultural circumstances. The experiences of other countries can be applied to Ireland only after taking into account the unique experiences and characteristics of this country. Policies that are workable in one country may not be effective or accepted in Ireland. None the less, the available studies suggest some policies that should be given consideration.

Minimum Age Requirements

Perhaps one of the most straightforward ways of attempting to limit the availability of tobacco and alcohol to adolescents is through minimum purchase age and possession laws. The effects of such laws on alcohol consumption have been extensively investigated in the United States, Canada and Australia where recent changes in the minimum drinking age have been enacted. In these countries, the control of alcoholic beverages, including the setting of minimum age requirements, falls largely to the states or provinces and not the central government. As a result, local geographical areas within these countries have varied in this regard. In

some cases the minimum drinking age was 18 years and in others 19, 20 or 21. Cross-sectional survey research (Maisto and Rachal, 1980) has shown that adolescents from locales with higher drinking ages are more likely to be abstainers and less likely to be heavy drinkers. They also report less peer approval of drinking, less frequent peer drinking, fewer incidents of drinking and driving and fewer incidents of intoxication. While these data are suggestive that higher minimum drinking age laws reduce adolescent drinking, the possibility that the both the laws and drinking patterns are influenced by some third factor (i.e., more conservative vs. less conservative social environment) cannot be ruled out.

Panel surveys and time series studies have provided a more definitive answer to the question of minimum drinking age and adolescent drinking. During the 1970s the trend in the United States was for the states with higher minimum drinking ages to lower them to 18 years. More recently, this trend has reversed in response to pressure from the federal government. In Australia and Canada the trend has been for states with higher minimum drinking ages to lower them to 18 years. These changes in the laws have provided an unusual series of natural experiments for investigating the effects of minimum drinking age on adolescent drinking behaviours and related problems.

Overall, the findings indicate that lowering the drinking age increases adolescent drinking and raising the drinking age decreases adolescent drinking. Thus, adolescent involvement in fatal automobile crashes (a surrogate measure of drinking) has been found to decrease significantly when drinking age is raised from 18 to 21 (Saffer and Grossman, 1987; Wagenaar, 1986; Arnold, 1985; Cook and Tauchen, 1984). Similarly, panel survey studies show significant decreases in reported drinking, heavy drinking and purchases of alcoholic beverages by adolescents when the drinking age is raised (Coate and Grossman, 1988; Williams and Lillis, 1986; 1988). Importantly, drinking also was found to be reduced among 16 and 17 year olds in these studies, even though they were not directly affected by changes in the laws since drinking was already illegal for them. Presumably, this latter decrease resulted from the greater difficulty younger adolescents faced in purchasing alcohol themselves or in obtaining alcohol from older friends after the minimum drinking age was increased. In the Australian studies it was found that decreasing the minimum drinking age to 18 nearly doubled the rate of involvement of 17 to 20-year olds in traffic crashes and increased the rate of juvenile crime by 20 to 30 per cent (Smith and Burvill, 1986; Smith, 1988). Similarly, reducing the drinking age from 21 to 18 in Ontario, Canada, increased consumption and involvement in alcohol-related traffic crashes among

youth (Schmidt and Kornaczewski, 1975).

One concern that can be raised in this context is the possibility of substitution effects. That is, reducing access to alcohol and tobacco may increase the use of other drugs by adolescents because their *relative* availability increases. This misgiving presupposes that illicit drugs are more or less equivalent to, or interchangeable with, alcohol and tobacco. Such an argument ignores drug specific effects and preferences and normative influences on drug choices. In fact, there is no evidence that substitution effects occur when access to alcohol and tobacco is limited for young people. To the contrary, *decreases* in adolescent marijuana use have been observed after increases in the minimum drinking age (Williams and Lillis, 1984; Hingson, Scotch, Magione, Meyers, Glantz, Heeren, Lin, Mucatel and Pierce, 1983). It is likely that increasing the minimum drinking age decreases perceived normative support for all forms of drug use.

On the basis of the available studies, it is recommended that serious consideration be given to raising the legal age for purchase and possession of tobacco and alcohol to 20 or 21 years. These age limits are higher than the average for other European countries (e.g., Davies and Walsh, 1983). However, they are in line with age requirements for purchasing spirits in several European countries, most notably the Scandinavian countries. Whether such age increases would be acceptable or feasible in Ireland, however, is open to debate. The success of these policies would depend largely upon public acceptance and compliance. It is unlikely that they would be workable if the public saw them as unfair, arbitrary or as removing a "right". In this regard, it is worth noting that in a survey of the public in the Netherlands (a traditionally low alcohol control country), over 60 per cent of adults favoured increasing the drinking age and another 11 per cent were neither for nor against this policy change (Garretsen and Knibbe, 1985). Thus, it should not be assumed that a majority of the population would oppose increases in the minimum age requirements for tobacco and alcohol. A well planned media campaign detailing the prevalence of adolescent drinking and smoking and the problems and costs associated with these behaviours may increase the acceptability of changing the minimum age limits in Ireland. At least, the degree of support for increasing minimum drinking age should be investigated before these policy options are dismissed.

In a few studies no changes in drinking rates among underage youth have been found after increases in the minimum drinking age (e.g., Hingson, *et al.*, 1983; Smith, Hingson, Morelock, Heeren, Mucatel, Mangione and Scotch, 1984). In these cases it appears that lack of enforcement was a major contributing factor. The percentages of

adolescents indicating that they were never questioned about their age when purchasing alcohol were relatively high, averaging about 30 per cent, and did not change after the increases in the minimum drinking age took effect. It is unlikely that minimum drinking and smoking ages can have any effect unless accompanied by relatively strict compliance by retail suppliers of tobacco and alcohol and by enforcement on the part of the authorities. Unfortunately, minimum age laws for purchase and possession of alcohol and tobacco have been inconsistently enforced by both the Garda Siochana and retailers in Ireland (e.g., Walsh and Walsh, 1981).

Even if the minimum age increases recommended here are not implemented, enforcement of existing laws regarding alcohol and minors is important. Under the 1988 Intoxicating Liquor Act, Garda Siochana may confiscate alcohol from suspected underage drinkers and fines and other penalties can be applied to adults who provide alcohol to underage youth outside of a private residence. A suspected minor in possession of alcohol may be detained by an officer and required to provide his or her name, address and age. Refusal to do so or providing information that *appears* to be false may result in arrest. The problem, in either case, is that there is no objective means of verifying age. At the present time it is left to the individual officer to make a subjective judgement about the age of a young person. For younger adolescents such judgements may be relatively easy, but they are far more difficult with older adolescents or those who appear to be older than their actual age.

Similar problems face shopkeepers, clerks and publicans. They are faced with the difficulty of deciding the age of a young patron based on physical appearance, personal knowledge of the individual or the individual's word. However, the law regarding sales to underage youth is also somewhat ambiguous. An adult providing alcohol to a minor is considered to be guilty of an infraction only if there were not "reasonable grounds" for assuming the young person was over 18 years old. It is unclear exactly what constitutes "reasonable grounds". This lack of clarity undoubtedly undermines the application of current minimum age law.

If minimum purchase and possession age limits are to be effective in reducing adolescent smoking and drinking, a mechanism for verifying age must be established. One possibility is to institute an national identity card with photograph, physical description and birth date information, to be used for the purpose of purchasing alcoholic beverages and tobacco products. Such a card would be issued upon request to individuals over the legal minimum age. A small fee could be charged for the card to offset administration costs. The enabling legislation for such an identity card is provided in the Intoxicating Liquor Act of 1988. We strongly recommend

that regulations regarding the issuance of such cards be implemented, regardless of whether the legal minimum ages for purchase and possession of tobacco or alcohol are increased. Alternatively, local or private efforts may be worth considering. For example, local authorities in co-operation with the alcohol industry, merchants, schools and parents' groups might issue age identity cards on a voluntary basis. Such programmes have been established on a limited basis in England and Australia. Apparently neither programme has been evaluated for its effectiveness in reducing underage drinking. Anecdotally, however, the Australian programme has been termed a failure because alcohol retailers do not take the problem of underage drinking seriously and do not require the cards for service. None the less, a properly implemented programme of this type may be effective and may be feasible in Ireland with brewers, distillers, alcohol retailers and local authorities co-operating in issuing and *requiring* cards to verify age.

Server intervention programmes should be considered as means of further reducing availability of alcohol and tobacco to youth and of enforcing minimum age requirements. Server intervention is a relatively new innovation in which researchers, drug abuse specialists, local authorities or other concerned citizens work co-operatively with retailers to review and revise their policies and procedures and provide training for personnel. To date, most server intervention programmes have focused on alcohol and especially on reducing heavy drinking and intoxication among bar patrons. Initial evaluations of these programmes indicate that they can lead to significant changes in staff behaviour and attitudes (Russ and Geller, 1987; Geller, Russ and Delphos, 1987; McKnight, 1987; Gliksman and Single, 1988). More importantly, they have been shown to reduce by as much as one-half the number of patrons who are intoxicated when they leave an establishment (Saltz, 1987).

In the present context, a server intervention programme would focus on reducing sales to underage youth. In the initial policy review, and in considering policy options, the following issues should be addressed (Saltz, 1985). How are minors identified? Are all staff required to enforce age limits, or just a few? If minors are allowed into the same area as drinkers, are there measures to prevent drinkers from providing alcohol to them? What actions are taken to deal with minors found drinking or attempting to purchase alcoholic beverages? What actions are taken to deal with adult patrons providing alcohol to minors? Specific policy revisions and options are then formulated around each of these issues.

The final policy recommendations may vary depending upon the type of business and the initial policy review. However, one policy that might be considered in both on- and off-licence outlets to deal with sales to minors

is to require proof of age (e.g., through an age identification card or other means) for purchase of alcoholic beverages by anyone who appears to be under 25. Once this policy is in place, prominent signs should be posted indicating that it is in effect. The training portion of the server intervention would involve teaching personnel (e.g., bar staff, etc.) about the potential legal and liability issues around serving minors, how to make more accurate judgements about age, how to recognize altered identification, how to respond to pressures to sell to minors, and how to respond to patrons purchasing for minors. Similar policies and procedures could be established in regards to the sale of tobacco products. An excellent guide to the steps involved in implementing server intervention programmes can be found in Saltz (1987).

It should be recognised that server intervention programmes may entail some expenses for training of staff and implementation or through loss of business to customers unable to verify their ages. As a result there may be some reluctance on the part of merchants and publicans to initiate such programmes. Motivation to use server intervention could be increased if it were required for licensing, resulted in insurance discounts or could be used as part of a legal defense if a retailer is charged with sales to a minor.

In sum, raising the minimum drinking age appears to be a powerful means of reducing adolescent drinking. Research suggests that a decrease by as much as one-third in the prevalence of drinking among youth could be expected if the minimum drinking age were raised to 20 or 21 years old for all alcoholic beverages. These reductions would be expected not only for youth directly affected by the changes, but also among those currently under age. Apparently no studies have addressed this issue regarding adolescents and smoking. However, similar effects would be expected for tobacco use if the age for the purchase of cigarettes and other tobacco products were increased and the new purchase age limitations were enforced. Enforcement, server intervention programmes, and community education, alone or in conjunction with increases in the minimum purchase age, may also prove useful.

Price

Increasing the price of alcoholic beverages and tobacco through taxation is another means that has been suggested for reducing availability and thus adolescent drinking and smoking. This suggestion is somewhat controversial and the exact relationship between consumption and price is a matter of considerable debate. In the case of Ireland it has been pointed out that the demand for alcoholic beverages shows relatively low price elasticity and relatively high income elasticity (Walsh, 1980, 1983). As a

result, it was estimated that a 28 per cent increase in the price of alcoholic beverages over a five year period would result in only an 11 per cent decrease in aggregate consumption (Walsh, 1980, p. 50). However, it must be recognised that such analyses are based on *per capita* consumption and may or may not be relevant to adolescent drinking patterns. In particular, adolescents generally have access to fewer resources than adults and thus may be more affected by price changes.

Unfortunately, no studies have considered the effects of price increases on alcohol and tobacco use by Irish adolescents. Given the absence of continuing and large scale surveys of adolescent substance use in this country, such studies are virtually impossible. However, some research from abroad has addressed the question of the relationship between price and drinking among adolescents. In the United States adolescent drinking has been found to be highly price elastic. Saffer and Grossman (1987) estimated that simply increasing the rate of excise tax on alcohol at the rate of inflation would lead to a to a significant decrease in the number of 18 to 21 year olds killed in alcohol-related automobile crashes. Similarly, Coate and Grossman (1988) showed that increasing the price of beer through a similar taxation policy sharply reduced reported drinking among adolescents. More stringent taxation policies were estimated to lead to even greater decreases in adolescent drinking in terms of both frequency and quantity consumed (Grossman, Coate and Arluck, 1987).

Although these studies are suggestive, we cannot strongly recommend price increases as a means of reducing alcohol and tobacco consumption among Irish adolescents. First, it is unclear to what extent the available findings might be generalised to the Irish situation. The price elasticities for alcohol and tobacco among Irish youth are unknown and may be larger or smaller than those for adolescents from the United States. Without further research it is impossible to tell for certain. However, the present study and previous surveys of Irish adolescents (Grube and Morgan, 1986; Grube, McGree and Morgan, 1984; O'Rourke, O'Sullivan and Wilson-Davis, 1968) have shown consistently that spending money is related to smoking, drinking and other drug use. Thus, it seems likely that price should also influence these behaviours. Second, increasing taxation on alcohol and tobacco is likely to be a controversial and unpopular policy and might therefore be difficult to implement. Ireland already has one of the highest tax rates on tobacco and alcohol in Europe (Powell, 1989; Davies and Walsh, 1983; Walsh, 1983). Realistically, there may be very little scope for further increase. Higher taxes on tobacco and alcohol products may also lead to problems of smuggling and cross-border purchasing (Fitz Gerald, Quinn, Whelan and Williams, 1988). As has been pointed out

elsewhere, tax policy in the Republic cannot be made without a consideration of taxes in Northern Ireland (Walsh, 1989). Third, price increases may have unintended social consequences. It has been suggested, for example, given the overall income elasticity of alcohol, that increasing the prices of alcohol might actually increase problems for the families of heavy drinkers as a result of the increased expenditure of income on drink (Walsh, 1980). Fourth, it has been suggested that taxes on tobacco and alcohol are regressive, impacting relatively more on the least well-off portions of the population. This assertion, however, is open to debate (e.g., Walsh, 1989). Finally, if the proposed harmonisation of taxation in the European Community comes into effect, increases in taxes on alcohol and tobacco may not be possible except at a Community-wide level. Under the current plan, Irish taxes on alcohol will have to be reduced to meet the maximum allowed levels (Powell, 1989). This situation represents an unfortunate instance where trade considerations run counter to, and have taken precedence over, public health interests.

None the less, despite these potential problems, increasing the price of tobacco and alcoholic beverages through a taxation policy should be given some consideration. At the least, appropriate economic and social research should be undertaken to address these issues and to evaluate the potential effectiveness of such a policy in reducing smoking and drinking among young people. The possibility of enacting such increases within the framework of the European Community should be explored. England, for example, has argued for greater member control over alcohol and tobacco taxes because they represent health policies rather than trade policies (Powell, 1989).

Interdiction and Deterrence

The most common strategies employed to limit the availability of illicit drugs involve interdiction and deterrence. Much of current Irish drug policy, including the development of specialised drug squads, providing training for officers regarding drugs and increasing the maximum penalties for selling drugs, reflects this orientation towards preventing drug use.

The purposes of interdiction and deterrence efforts are to (1) reduce the quantity of drugs entering the country, (2) increase the risks and costs to drug dealers, (3) create shortages of illicit drugs and increase their prices to users and (4) increase the risks of illicit drug use for consumers (Polich, Ellickson, Reuter and Kahan, 1984). To what extent are interdiction and deterrence effective in reducing drug availability? In support of deterrence and interdiction efforts, the use of illicit drugs is relatively low and the availability of these drugs is lower than that for legal substances such as

tobacco and alcohol. Moreover, the cost of drugs on the street are vastly higher than their production costs. However, it has been suggested that intensive enforcement may be no more effective in deterring adolescent drug use than are routine ongoing efforts (Nadelmann, 1989). For example, despite increased interdiction and deterrence efforts and the expenditure of millions of dollars, the perceived availability of marijuana in the United States has remained high and virtually unchanged over the past 13 years: Over 85 per cent of adolescents in national surveys continue to indicate that this drug would be easy to obtain (Johnston, O'Malley and Bachman, 1989). Research in Canada similarly has found little relationship between enforcement levels and adolescent drug use (Smart, 1989). Other studies have shown that decriminalising cannabis (i.e., reducing the penalty to a modest fine for possession of small amounts by adults for personal use) has little or no effect on adolescent drug use or on perceived availability of drugs (e.g., Single, 1989; Engelsmann, 1989; Mandel, 1987; Johnston, O'Malley and Bachman, 1981). Among Irish students, fear of getting into trouble with authorities or parents was related to smoking, drinking and other drug use (Grube and Morgan, 1986). However, these effects were relatively modest and considerably smaller than those for other expectancy and normative beliefs.

These findings are probably a result of the fact that even intensive interdiction and deterrence efforts have only limited effects on the drug market. Only a very small percentage of drugs can be seized and the probability of arrest for drug dealing or use is relatively low (cf. Polich, *et al.*, 1984). In addition, the illicit drug trade represents a very lucrative and profitable business. Drug dealers have tremendous incentives to overcome obstacles to their activities. Moreover, the authorities themselves face the constraint of limited resources. Huge increases in expenditures and resources would be necessary to bring about even a small decrease in drug availability or small increases in price. For example, it has been estimated (Polich *et al.*, 1984) that a doubling of interdiction and enforcement efforts in the United States would lead to only 3.4 per cent increase in the street price cocaine and a 12.4 per cent increase in the street price of marijuana (amounting to only a few pennies per marijuana cigarette). Furthermore, because of limited resources, increasing pressures on drug dealers would probably decrease pressures on other types of offenders. It is uncertain whether the public would accept such a situation.

This is not to argue that illicit drugs should be legalised or that deterrence and interdiction efforts should be abandoned. The low availability and use of illicit drugs, compared with tobacco and alcohol, is undoubtedly the result, at least in part, of their illegality and ongoing

deterrence efforts. If illicit drugs were as readily available as alcohol and tobacco, prevalence rates would probably be much higher than they are now. Moreover, deterrence efforts are likely to influence the overall normative climate by conveying the message that drug use behaviours are socially unacceptable.

Rather than simply increasing enforcement of existing policies, consideration should be given to some additional deterrence strategies. These include increasing the *minimum* penalties for selling drugs, eliminating the possibility of parole for individuals convicted of drug dealing, and confiscating property belonging to convicted drug dealers. Similar policies have been implemented in Britain and the United States, but have yet to be systematically evaluated (Stimson, 1987). However, they may be worth considering.

Social Availability

Whereas physical availability refers to the actual or perceived access to drugs, social availability refers to the extent to which there is perceived normative support within a community to smoke, drink or use other drugs. To some extent, social and physical availability are related. As previously noted, the fact that certain drugs are illegal conveys the message that they are socially disapproved by the wider community. However, efforts at reducing the social availability of tobacco, alcohol and other drugs to youth should go beyond simply limiting physical availability. In fact, decreasing social availability may be even more important than decreasing physical availability. In the present series of surveys, normative factors were among the strongest correlates of smoking, drinking and drug use, far outweighing availability of spending money or fear of getting into trouble. This same conclusion has been reached in studies examining drug availability more directly. National data from the United States show that changes in adolescent marijuana use from 1976 to 1986 are related to changes in both perceived physical availability and perceived social availability (peer disapproval) (Bachman, Johnston and O'Malley, 1988). However, perceived disapproval contributed considerably more to the prediction of changes in marijuana use over time than did physical availability.

Media: Advertising and Content

One of the most ubiquitous sources of normative support for adolescent drinking, smoking and, to a lesser extent, other drug use are the mass media. Alcohol and tobacco advertising constitute a major portion of outdoor advertising and are also common in the print and some broadcast media. In terms of content, over two-thirds of programmes on British

television have been found to contain references to alcohol and about one-third contain actual or implied drinking (Hansen, 1984). Similar findings have been reported for American television where it is estimated that over eight alcohol-related acts, not counting commercials, occur each hour during prime-time (Wallack, Grube, Madden and Breed, 1989). Of particular concern, alcohol use on television often occurs in situations or is consumed in a manner that can be considered inappropriate. Drinking on television rarely is accompanied by negative consequences. Rather, it is frequently glamorised and associated with high status characters. As a result, the potential for modeling and observational learning is enhanced. Smoking on television is somewhat less frequent than drinking. Even so, about 40 per cent of programme episodes contain smoking or references to tobacco (Madden and Overby, 1990).

Although these issues have not been investigated in Ireland, the patterns of televised smoking and drinking are probably similar to those for Britain and the United States and should be cause for concern. In particular, there is evidence suggesting that exposure to alcohol and tobacco advertising and media portrayals can influence adolescents. Young people often cite television and the print media as a major sources of information about drugs (e.g., Sheppard, 1984; Casswell, Gilmore, Silva and Brasch, 1988). Correlational studies have routinely demonstrated a small but significant relationship between exposure to alcohol content and advertising on television and drinking beliefs and behaviours among children and adolescents, even when important background characteristics are controlled (e.g., Wallack, Cassady and Grube, in press; Aitken, Eadie, Leather, McNeil and Scott, 1989; Tucker, 1985; Neuendorf, 1985; Atkin, Neuendorf and McDermott, 1983; Strickland, 1983). Experimental studies with children and adolescents also have shown dramatic effects on drinking beliefs and related behaviours as a result of exposure to even short segments of television programming with high alcohol content (Rychtarik, Fairbank, Allen, Foy and Drabman, 1983; Futch, 1984; Kotch, Coulter and Lipsitz, 1986). Exposure to cigarette advertising also has been linked to smoking beliefs and behaviours among young people (Aitkin and Eadie, 1990; Klitzner, Gruenewald and Bamberger, 1989; Goldstein, Fischer, Richards and Creten, 1987; Chapman and Fitzgerald, 1982).

Advertisements for tobacco and alcohol products that feature celebrity endorsements may be particularly problematic and deserving of attention. Such advertisements seem to be especially appealing to young people. Research shows that adolescents prefer advertisements containing celebrities and perceive such advertisements to be more interesting and trustworthy than other advertisements (Atkin and Block, 1983). Moreover,

exposure to celebrity advertisements is related to more favourable attitudes towards alcohol and tobacco and an increased probability of use (Atkin and Block, 1983; McDermott, Hocking, Johnson and Atkin, 1989).

A complete ban on alcohol and tobacco advertising is probably unrealistic. However, restricting advertising (e.g., banning outdoor tobacco or alcohol advertisements within one-quarter mile of any primary or post-primary school; banning broadcast advertising for tobacco and alcohol), requiring equal time for public service counter-advertising and requiring beverage alcohol distillers and brewers to produce "responsible drinking" advertisements may be useful strategies. Community members and groups can work with or put social pressure on actors, musicians, sports figures and others who appeal to youth to discourage them from participating in advertising for alcohol or tobacco and to encourage them to participate in counter-advertising campaigns.

In the case of print and broadcast media content, "co-operative consultation" may be a fruitful approach to reducing gratuitous appearances. Co-operative consultation is an intervention technique that uses findings from content analyses as a basic resource to influence media gatekeepers. It has been used successfully to decrease the presence and glamorisation of alcohol and drugs on television, in newspapers and in comic books and to increase the realistic treatment of drinking problems in these media (e.g., Breed and DeFoe, 1981; DeFoe and Breed, 1989). Co-operative consultation comprises a three-stage cycle. Stage one involves collecting data on the prevalence and nature of tobacco, alcohol and drugs in the media. In the second stage, material from this research is summarised and presented to key industry personnel. The results are explained and general recommendations for improvements in how substance use is presented are offered. In the third stage, concrete recommendations are made about certain characters and plots. This is done in a non-threatening, confidential manner. Each publisher or producer can see what the potential problem areas are and possible solutions are offered. Many of these suggestions may be ignored or rejected as being inappropriate while some may be accepted and acted upon. But the process of intervention continues with the intervener always asking for feedback. Once received, this feedback is used in formulating the next goal to be accomplished.

The problem with the application of co-operative consultation in Ireland is that a substantial number of television programs originate from abroad. As a result there may be little opportunity for Irish public health professionals to exert influence on programme content. However, co-operative consultation may be effective with local programming and advertisers and possibly with distributors of international programming.

Another strategy to promote an overall normative climate that discourages alcohol use is to introduce health warning labels on alcohol packaging and in advertising as in the case of cigarettes. Requiring warning labels that *specifically* identify the potentially harmful constituents of alcohol and the possible health consequences of use may be especially appropriate. Requiring health warning signs in retail outlets that sell alcohol should be considered also.

Previous research has considered the effects of labelling in the context of cigarette, drug, food and other consumer products. Overall, the results of this research have been mixed. On the one hand, some studies indicate that health warnings may have led to changes in beliefs and knowledge and to small, but significant, reductions in consumption levels for cigarettes and food products containing saccharin (e.g., Schucker, Stokes, Stewart and Henderson, 1983; Orwin, Schucker and Stokes, 1984). Similarly, there is evidence that consumers use product labels to avoid certain food additives and ingredients such as sodium (Heimbach, 1986) and use product information inserts to learn about possible side effects of medications (e.g., Morris, Maziz and Gordon, 1977). On the other hand, research on early cigarette warning labels concluded that only a small percentage of the public was aware of them and therefore their effect would be negligible (Myers, Iscoe, Jennings, Lennox, Minsty, and Sacks, 1981). This lack of awareness was attributed to the fact that early cigarette warning labels were small, inconspicuous and overly abstract. Similar problems have been noted with health warning labels on outdoor advertising (Davis and Kendrick, 1989). A recent review of the literature concluded that properly designed health warning labels can have a small impact on public awareness, knowledge, attitudes and behaviour if they are prominent, simply worded and to the point, and are changed on a regular basis to prevent over-exposure to any given message (Richardson, Reinhart, Rosenthal, Hayes, and Silver, 1987). However, health warning labels alone are not an answer to youthful smoking and drinking. They should be considered only as a minor part of an broader overall strategy.

School Policy

Many institutions within society (e.g., churches, youth groups, schools, places of work) have adopted policies and enacted informal or formal sanctions to regulate the use of tobacco, alcohol and other drugs by their members. Use of these institutions is often neglected in prevention efforts. One potentially important area of intervention to prevent or reduce adolescent substance use is through school policies regarding students' smoking, drinking and other drug use. In a recent survey it was found that

administrators from schools with diminishing drug and alcohol problems generally attributed these changes to increased disciplinary policies or increased enforcement of existing policies (Moskowitz, 1988). It is not known if strict policies reduce adolescent smoking, drinking and drug use overall, or only within the confines of the school. In either case, however, it is an intervention strategy worth pursuing.

In terms of implementing formal and informal policies concerning smoking, drinking and drug use at school, several points seem to be important. First, school policies regarding these behaviours should be clear and students should be well informed as to what these policies are. Second, where appropriate, student involvement in the formulation and enforcement of these policies may be helpful and may increase student acceptance of them. Student involvement also allows the clarification and mobilisation of existing student norms against drug use. Third, it may be useful to involve parents and relevant authorities in the formulation and enforcement of school policies. Such involvement provides broader support for the policies, mobilises community norms against substance use behaviours and reinforces the school's role in this regard. At the very least, parents should be notified of infractions. Fourth, policies should be enforced uniformly and swiftly if they are violated. All staff members should be aware of the policies and should be involved in enforcement of them. Fifth, certain types of punishment may be inappropriate because they create other problems. Expelling students, for example, may simply move the problem of adolescent drug or alcohol use from the school into the community. Such a policy also may serve to further limit access to school-based prevention programmes on the part of those students who need them most. Detention after school hours, exclusion from school events, "community service" (e.g., cleaning up the school grounds after hours, etc.) or referral to specialised programmes may be more appropriate for first or minor infractions. However, more severe penalties, including expulsion and notification of the police may be necessary in more serious cases. Sixth, the schools should carefully review their existing formal and informal policies to determine if, in fact, they are encouraging substance use among their students. Smoking areas, for example, should not allowed and smoking on school grounds not tolerated.

Parent and Community Action

The recommendations described thus far all entail governmental or institutional activities. Community involvement in these interventions is secondary. In contrast, community action groups can directly participate in the initiation, planning and implementation of prevention activities. These

groups are potentially powerful tools for decreasing both the social and physical availability of tobacco, alcohol and other drugs to adolescents. At the least, community action groups can provide a normative climate that is supportive of policy and social changes that otherwise would not be possible.

Parent groups are perhaps the most common form of community action to counter adolescent tobacco, alcohol and other drug use. Research on parent groups has shown that they can address significant aspects of the home and family, the peer group, the schools and the larger community that potentially decrease the physical and social availability of tobacco, alcohol and other drugs to youth (Klitzner, Bamberger and Gruenewald, 1990; Klitzner, Gruenewald and Bamberger, 1990).

In terms of the home and family, parent groups can serve an educational function by increasing parental awareness of adolescent smoking, drinking and drug use and by informing parents about the early signs of drug involvement. Written materials, speakers and informal social networks can help disseminate information on these issues. Parent groups can also help group members formulate family rules related to drug use and increase their involvement in their children's activities.

Friends represent perhaps the most important influence on adolescent smoking, drinking and drug use. To help counteract peer influences, parents whose children socialise with one another can form support groups to establish consistent guidelines and rules regarding tobacco, alcohol and other drugs and to keep one another informed of infractions of these rules. Parent groups also can serve to keep one another informed about activities such as parties where use of tobacco, alcohol or other drugs may take place. They also can plan and give tobacco, alcohol and drug free events for their children.

Parents' groups can provide a major impetus for bringing about changes in the schools and community. They can give input into the establishment and enforcement of school rules and community policies regarding tobacco, alcohol and other drugs and can help design and implement drug education efforts. Perhaps most importantly, parent groups can provide visible support for policies and other activities aimed at reducing adolescent smoking, drinking and drug use. This support may help officials initiate strict policies and take actions that they otherwise would be unwilling to undertake.

A wide range of other activities lend themselves to community action on the part of parents and other community groups, including putting social pressure on merchants who sell alcohol and tobacco to adolescents, countering advertising for tobacco and alcohol, providing drug free

alternative activities for youth, and supporting police enforcement. To attain their goals, parent and community groups can undertake lobbying efforts with elected representatives, boycotts of merchants or other establishments and press conferences or other media events to disseminate information about youthful smoking, drinking and drug use.

There are few guidelines available for successful parent and community action groups. However, successful groups are likely to be goal orientated and have obtainable objectives. Rather than attempting to develop an overall plan to address a general issue, such as stopping all youthful substance use, it probably is best if groups focus on specific objectives or on steps toward obtaining that overall goal. A group might focus on stopping neighbourhood merchants from selling alcohol and tobacco to youths, on eliminating outdoor advertising for alcohol and tobacco from the neighbourhood, on implementing stricter policies in the neighbourhood schools or on increasing police involvement in the community. Having relatively discrete objectives has the advantage of allowing group members to experience successes and see progress toward the larger goal. Members are most likely to remain motivated and committed in this situation. Regular meetings and reports of successes also may be important in this regard, as is media coverage. Once a particular objective is achieved, the group can move on to other goals or activities.

Realistic strategies also should be developed for obtaining each objective and specific activities should be planned and implemented. For example, to stop merchants in a neighbourhood from selling alcohol and tobacco to youths a specific step-by-step plan should be drawn up on how to achieve this goal. Such a plan might include the following steps: (1) conduct a study to identify where adolescents obtain alcohol and tobacco (e.g, through a survey of students at local schools or an under-age purchase programme at local pubs, supermarkets, night clubs and shops), (2) release the overall findings from this study to the media to gain wider public awareness of the problem, (3) organize a neighbourhood boycott of those establishments which do sell to minors, (4) print and provide signs to be posted at other local establishments indicating that they do not sell tobacco and alcohol to youth, (5) alert the media about the boycott, (6) organise and implement server training programmes and (7) alert licensing authorities about violations of the law. Other types of parent action can be envisioned.[4]

[4.] We are not advocating illegal, violent or paramilitary activities that sometimes have occurred in response to neighbourhood drug dealing. Rather, parent and community action groups should work together with authorities and other community leaders to promote an overall environment that discourages adolescent smoking, drinking and other drug use.

Besides their direct effects, parent and community action groups have the added benefit of mobilising and increasing the salience of community norms against adolescent smoking, drinking and drug use. Effective use of the media is critical for this aspect of community action. By making community norms explicit, parent and community groups by themselves can discourage youthful smoking, drinking and drug use and can provide important support for policy makers who are attempting to implement legal and other structural changes.

Summary

School-based programmes cannot be completely effective in preventing adolescent tobacco, alcohol and other drug use unless they are supported by environmental changes that reduce the physical and social availability of tobacco, alcohol and other drugs to youth. A number of strategies are available to achieve this end. Specific recommendations to reduce the physical availability of tobacco, alcohol and other drugs include:

(1) increasing the minimum drinking and smoking ages to 20 or 21 years;

(2) establishing some means of verifying age for the purchase of alcohol and tobacco;

(3) increasing enforcement of laws relating to sales or provision of tobacco, alcohol and other drugs to minors;

(4) increasing enforcement of laws relating to purchase and possession of alcohol, tobacco and other drugs by minors;

(5) implementing server training programmes for establishments selling tobacco and alcohol;

(6) continuing interdiction and law enforcement aimed at drug dealers and smugglers; and

(7) increasing costs for drug dealers by increasing minimum prison sentences, eliminating parole options, and confiscating property. In addition, the possibility of increasing the prices of alcohol and tobacco products through taxation should be investigated.

Decreasing the social availability of tobacco, alcohol and drugs is at least as critical as limiting physical availability. Recommendations to achieve this end include:

(1) formulating and strictly enforcing strong school policies, with student and community input, to discourage smoking, drinking and drug use;

(2) counteracting the effects of tobacco and alcohol advertising and portrayals in the media through counter-advertising, warning labels, co-operative consultation and by limiting advertising;

(3) undertaking appropriate parent and community action (e.g., formation of parents groups, boycotts, media campaigns, implementing drug and alcohol free events for youth, meetings with school officials regarding policies, etc.) in co-operation with authorities and local community leaders.

Finally, we propose that nationwide surveys on smoking, drinking and other drug use among Irish youth should be funded and undertaken on a yearly basis. Such surveys are important because they allow a monitoring of changes in adolescent drug use patterns, thus alerting authorities, health professionals, parents, and other concerned community members to potential or developing problems. Moreover, programmes and policies to decrease youthful smoking, drinking and drug use can be adequately designed and evaluated only if appropriate data are available on a regular and ongoing basis. In addition to simply documenting prevalence and use patterns, these surveys should include measures of attitudes and beliefs and of physical and social availability in order to provide data relevant to preventive policies and programmes.

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APPENDIX A

QUESTIONNAIRE (PHASE III)

A Survey of Post-Primary Pupils

In this survey we are asking you about cigarettes, alcohol, other drugs, and about your opinions on other issues. For our study to be scientifically valid, it is very important that you answer all of the questions truthfully. YOUR ANSWERS WILL BE KEPT COMPLETELY CONFIDENTIAL. PLEASE DO NOT PUT YOUR NAME ON THIS SURVEY. We are interested only in group averages and not in any individual's response. Your answers will never be shown to your parents, school authorities, or any other persons.

PLEASE DO NOT PUT YOUR NAME ON THIS QUESTIONNAIRE

- 1 -

		Please do not write in this column

Q-1. The statements below describe different ideas about boys' and girls' education. Circle the number that best describes how much you agree or disagree with each statement.

CARD 5   COLS.

	Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree		
a. Some school subjects are more suitable for boys than for girls	1	2	3	4	5	_____	7
b. Girls should be given an opportunity for apprentice-ships in the various trades	1	2	3	4	5	_____	8
c. Boys in a family should be given more encouragement to go to college than girls	1	2	3	4	5	_____	9
d. In general, the father should have greater authority than the mother in bringing up children	1	2	3	4	5	_____	10
e. Girls' schools should offer the same range of subjects as boys' schools	1	2	3	4	5	_____	11
f. Swearing is more serious for a girl than for a boy	1	2	3	4	5	_____	12
g. Boys should learn more science subjects than girls	1	2	3	4	5	_____	13
h. Girls are basically weak at mathematics	1	2	3	4	5	_____	14

Q-2. On average, how much time do you spend on homework on a typical day during the school year? (Please circle one answer).

1. NONE
2. LESS THAN 30 MINS.
3. 30 MINS. - 1 HOUR
4. 1 HOUR - 2 HOURS
5. 2 HOURS - 3 HOURS
6. 3 HOURS - 4 HOURS
7. 4 HOURS - 5 HOURS
8. MORE THAN 5 HOURS

_____ 15

Q-3. How likely is it that you will go on to a College or to a University or Technical College when you have finished in your present school? (Please circle one answer).

1. VERY UNLIKELY
2. UNLIKELY
3. NOT SURE
4. LIKELY
5. VERY LIKELY

_____ 16

Please do not
write in this
column

CARD 5   COLS.

- 2 -

The following questions are about your cigarette smoking.   Please answer all of them truthfully.
Remember, your answers are strictly confidential.

Q-4.   Have you <u>ever</u> smoked a cigarette?   (Please circle <u>one</u> answer and follow the
instruction).

1   YES ──────►   PLEASE GO TO QUESTION Q-5

───── 17

2   NO ──────►   IF YOU HAVE <u>NEVER</u> SMOKED A
CIGARETTE, PLEASE GO TO
QUESTION Q- 7

Q-5.   How old were you the <u>first</u> time you smoked a cigarette? _____ years old.   ───── 18-19

Q-6.   Overall, about how many cigarettes did you smoke during the <u>past month</u>?
(Please circle <u>one</u> answer)

1   NONE
2   ONLY A FEW, LESS THAN 1 EACH WEEK
3   AT LEAST 1 EACH WEEK, BUT NOT DAILY
4   ABOUT 1-2 A DAY
5   ABOUT 3-5 A DAY   ───── 20
6   ABOUT 6-10 A DAY
7   ABOUT 11-15 A DAY
8   ABOUT 16-20 A DAY
9   MORE THAN 20 A DAY

Q-7.   About how many cigarettes do you think you will smoke <u>next month</u>?
(Please circle <u>one</u> answer)

1   NONE
2   ONLY A FEW, LESS THAN 1 EACH WEEK
3   AT LEAST 1 EACH WEEK, BUT NOT DAILY
4   ABOUT 1-2 A DAY
5   ABOUT 3-5 A DAY   ───── 21
6   ABOUT 6-10 A DAY
7   ABOUT 11-15 A DAY
8   ABOUT 16-20 A DAY
9   MORE THAN 20 A DAY

- 3 -

Now, we would like to ask you some questions about alcohol.   Please answer them truthfully.
Remember, your answers are strictly confidential.

Please do not
write in this
column

CARD 5   COLS.

Q- 8.   Have you ever had a whole drink (more than just a sip or taste) of any alcoholic beverage?
(Please circle one answer and follow the instruction)

      1   YES————→   PLEASE GO TO QUESTION Q-9

      2   NO ————→   IF YOU HAVE NEVER HAD
                       A WHOLE DRINK OF AN
                       ALCOHOLIC BEVERAGE.
                       PLEASE GO TO QUESTION Q-15

_____   22

Q- 9.   How old were you the first time you ever had a whole drink (more than just a sip or taste)
of an alcoholic beverage?

_____ years old

__1__   23-24

Q- 10.   How often have you ever had enough of any alcoholic beverage to feel drunk?
(Please circle one answer)

      1   NEVER
      2   1-2 TIMES
      3   3-4 TIMES
      4   5-6 TIMES
      5   7-8 TIMES
      6   9-10 TIMES
      7   MORE THAN 10 TIMES

_____   25

Q- 11.   How old were you the first time you ever felt drunk from an alcoholic beverage?

_____ years old

__1__   26-27

Q- 12.   Have you ever had a whole drink of the following alcoholic beverages?
(Please circle one answer for each)

		YES	NO
a.	CIDER	1	2
b.	BEER (lager, ale, stout)	1	2
c.	WINE	1	2
d.	SPIRITS (vodka, whiskey, etc.)	1	2

_____   28

_____   29

_____   30

_____   31

- 4 -

Q-13. On how many different occasions during the past month did you drink a whole drink of each of the following alcoholic beverages? (Please circle one answer for each)

		None	1-2 Times	3-4 Times	5-6 Times	7-8 Times	9-10 Times	More than 10 Times		
a.	CIDER	1	2	3	4	5	6	7	_____	32
b.	BEER (lager, ale, stout)	1	2	3	4	5	6	7	_____	33
c.	WINE	1	2	3	4	5	6	7	_____	34
d.	SPIRITS (vodka, whiskey, etc.)..	1	2	3	4	5	6	7	_____	35

Q-14. About how many whole drinks or glasses of each of the following do you usually have on any one occasion? (Please circle one answer for each)

		None	Less than 1 Drink	About 1 Drink	About 2 Drinks	3-4 Drinks	5-6 Drinks	More than 6 Drinks		
a.	CIDER	1	2	3	4	5	6	7	_____	36
b.	BEER (lager, ale, stout)	1	2	3	4	5	6	7	_____	37
c.	WINE	1	2	3	4	5	6	7	_____	38
d.	SPIRITS (vodka, whiskey, etc.)	1	2	3	4	5	6	7	_____	39

Q-15. On how many different occasions do you think you will have at least one whole drink (more than just a sip or taste) of each of the following alcoholic beverages during the NEXT MONTH? (Please circle one answer for each).

		None	1-2 Times	3-4 Times	5-6 Times	7-8 Times	9-10 Times	More than 10 Times		
a.	CIDER	1	2	3	4	5	6	7	_____	40
b.	BEER (lager, ale, stout)	1	2	3	4	5	6	7	_____	41
c.	WINE	1	2	3	4	5	6	7	_____	42
d.	SPIRITS (vodka, whiskey, etc.) ..	1	2	3	4	5	6	7	_____	43

- 5 -

Next are some questions about drugs.   Again, please answer all of the questions truthfully.   Your
answers will never be shown to your parents, school authorities, or any other person.

Q-16.   Have you _ever_ used any of the following to get "high" or to try to get "high"?
(Please circle _one_ answer for _each_)

		YES	NO		
a.	GLUE OR SOLVENTS	1	2	_____	44
b.	MARIJUANA (cannabis, pot, hash, grass)	1	2	_____	45
c.	HEROIN (smack)	1	2	_____	46
d.	COCAINE	1	2	_____	47
e.	LSD (acid)	1	2	_____	48
f.	BARBITURATES/TRANQUILLIZERS	1	2	_____	49
g.	NORENOL (buzz)	1	2	_____	50
h.	SPEED (uppers)	1	2	_____	51
i.	PSILOCYBIN (magic mushrooms)	1	2	_____	52
j.	COUGH SYRUP	1	2	_____	53
k.	OTHER (Please specify: _____				
	_____)	1	2	_____	54

IF YOU HAVE _NEVER_ USED ANY OF THE DRUGS LISTED ABOVE TO GET "HIGH",
PLEASE GO TO QUESTION Q-19

Q-17.   How old were you the _first_ time you ever used one of the drugs listed above to get "high"?

_____ years old

55-56

- 6 -

Please do not
write in this
column

Q-18. How many occasions or times during the PAST MONTH did you use each of the following "drugs" to get "high" or to try to get "high"?   (Please circle one answer for each)

		None	1-2 Times	3-4 Times	5-6 Times	7-8 Times	9-10 Times	More than 10 Times	CARD 5	COLS.
a.	GLUE OR SOLVENTS ...	1	2	3	4	5	6	7	_____	57
b.	MARIJUANA (cannabis, (pot, hash, grass)	1	2	3	4	5	6	7	_____	58
c.	HEROIN (smack)	1	2	3	4	5	6	7	_____	59
d.	COCAINE	1	2	3	4	5	6	7	_____	60
e.	LSD (acid)	1	2	3	4	5	6	7	_____	61
f.	BARBITURATES/ TRANQUILLIZERS	1	2	3	4	5	6	7	_____	62
g.	NORENOL (buzz)	1	2	3	4	5	6	7	_____	63
h.	SPEED (uppers)	1	2	3	4	5	6	7	_____	64
i.	PSILOCYBIN (magic mushrooms) ...	1	2	3	4	5	6	7	_____	65
j.	COUGH SYRUP.........	1	2	3	4	5	6	7	_____	66
k.	OTHER (Please specify: _____) ...	1	2	3	4	5	6	7	_____	67

Q-19. How many occasions or times during the NEXT MONTH do you think you will use each of the following "drugs" to get "high"?   (Please circle one answer for each)

		None	1-2 Times	3-4 Times	5-6 Times	7-8 Times	9-10 Times	More than 10 Times		
a.	GLUE OR SOLVENTS ...	1	2	3	4	5	6	7	_____	68
b.	MARIJUANA (cannabis, pot, hash, grass)	1	2	3	4	5	6	7	_____	69
c.	HEROIN (smack)	1	2	3	4	5	6	7	_____	70
d.	COCAINE	1	2	3	4	5	6	7	_____	71
e.	LSD (acid)	1	2	3	4	5	6	7	_____	72
f.	BARBITURATES/ TRANQUILLIZERS	1	2	3	4	5	6	7	_____	73
g.	NORENOL (buzz)	1	2	3	4	5	6	7	_____	74
h.	SPEED (uppers)	1	2	3	4	5	6	7	_____	75
i.	PSILOCYBIN (magic mushrooms)....	1	2	3	4	5	6	7	_____	76
j.	COUGH SYRUP	1	2	3	4	5	6	7	_____	77
k.	OTHER (Please specify: _____)	1	2	3	4	5	6	7	_____	78

79=Blank 80='5'

- 7 -

Finally. we would like to ask you a few questions about yourself for statistical purposes.

CARD 6   COLS.

Dup.   1-6

Q-20.   What is your sex?

           1   MALE

           2   FEMALE   ____   7

Q-21.   What is your date of birth?

           DATE   _____   8-9

           MONTH   _____   10-11

           YEAR   _____   12-13

Q-22.   How many older brothers do you have? _____   14

Q-23.   How many older sisters do you have? _____   15

Q-24.   How many younger brothers do you have? _____   16

Q-25.   How many younger sisters do you have? _____   17

Q-26.   What is your father's job?   (If he is deceased or now out of work. what did he do when he had a job?)

   _____   18

   _____

What exactly does he do at work?   _____

   _____

If he is a farmer. about how many acres of land does he have ? _____

Q-27.   During the school term. do you have a paid part-time job in the evenings or at weekends?

           1   YES

           2   NO   ____   19

- 8 -

Please do not
write in this
column

CARD 6   COLS.

Q-28.   Does your mother have a job other than keeping house for your family?

                        1   YES ——————▶   Q-28A   What exactly does she do at work?   20

                                                       _____   Y/N

                        2   NO   21

                                                       _____   occ.

                                                       _____

Q-29.   What is the <u>first</u> letter of your mother's Christian (first) name?

          1   A   8   H   15   0   22   V
          2   B   9   I   16   P   23   W
          3   C   10   J   17   Q   24   X
          4   D   11   K   18   R   25   Y   _1_   22-23
          5   E   12   L   19   S   26   Z
          6   F   13   M   20   T
          7   G   14   N   21   U

Q-30.   Here are some statements about how you see yourself.   Circle the number that best
        describes how much you agree or disagree with each statement.

		Strongly Agree	Agree	Disagree	Strongly Disagree		
a.	I feel that I am a person of worth, at least on an equal plane with others.	1	2	3	4	_____	24
b.	I feel that I have a number of good qualities	1	2	3	4	_____	25
c.	I am able to do things as well as most other people	1	2	3	4	_____	26
d.	At times I think I am no good at all	1	2	3	4	_____	27
e.	Most boys and girls of my age are smarter than I am	1	2	3	4	_____	28
f.	I am quite good at games	1	2	3	4	_____	29
g.	I feel very embarrassed when I have to say something in class	1	2	3	4	_____	30
h.	My parents think that I could do much better in school	1	2	3	4	_____	31
i.	I worry a lot	1	2	3	4	_____	32
j.	I often feel ashamed of myself	1	2	3	4	_____	33

- 9 -

Please do not
write in this
column

Q-31.   Here are some statements about your parents.   Circle the number that best describes how they behave towards you.

CARD 6   COLS.

		Never	Hardly Ever	Sometimes	Fairly Often	Very Often		
a.	I can count on my parents to help me out if I have some kind of problem	1	2	3	4	5	_____	34
b.	My parents expect me to do my best in whatever I do.......	1	2	3	4	5	_____	35
c.	My parents help me with my homework if there is something I don't understand	1	2	3	4	5	_____	36
d.	My parents expect me to act independently	1	2	3	4	5	_____	37
e.	I know exactly what my parents expect of me and how they want me to act	1	2	3	4	5	_____	38
f.	My parents let me make my own plans for things I want to do	1	2	3	4	5	_____	39
g.	When my parents want me to do something, they explain why	1	2	3	4	5	_____	40
h.	My parents are very strict towards me if I don't do what is expected of me	1	2	3	4	5	_____	41
i.	My parents let me off easy when I do something they don't like	1	2	3	4	5	_____	42

Blank   43-79

'6'   80

THANK YOU VERY MUCH FOR YOUR HELP

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