

Smoking Behaviours, Intentions and Beliefs Among Dublin Primary School Children

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Abstract: Cigarette smoking and related beliefs were investigated in a survey of 752 Dublin sixth class primary school children. Smoking rates and differences in the beliefs and background of smokers and non-smokers are described. The relative importances of different beliefs as predictors of future smoking intentions also were ascertained. For both boys and girls the most important predictors of intentions were perceived peer smoking and evaluation of negative consequences of smoking. Parental smoking also was important for boys and parental disapproval and perceived likelihood of negative consequences were important for girls. The implications for smoking interventions among young people are discussed.

I INTRODUCTION

Surveys carried out in Ireland indicate that there has been an alarming increase in adolescent cigarette smoking, particularly among girls, during the last two decades (O'Rourke, Wilson-Davis and Gough, 1971; O'Rourke, Condren, O'Byrne and Wilson-Davis, 1983; Cleary and Shelley, 1983). Given the health hazards associated with cigarette smoking (Royal College of

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Physicians, 1977; Department of Health, Education and Welfare, 1979; Cleary and Shelley, 1983) and the enormous difficulty in modifying smoking behaviours once they are established (Leventhal and Cleary, 1980), this increase has led to a growing concern with the development of effective smoking prevention programmes for young people.

Although the success of such programmes depends upon a number of factors, two considerations seem particularly important. First, they should be implemented in the primary or early post-primary years. Survey results suggest that in Ireland the majority of young smokers try their first cigarette between seven and eleven years of age (Corridan, 1963; O'Rourke, O'Sullivan and Wilson-Davis, 1968a) and the largest increases in the numbers of regular smokers seem to have occurred among eleven to fourteen year olds (O'Rourke, *et al.*, 1971, 1983). Second, the content of any preventive programme should be tailored specifically to young adolescents and must be developed from an understanding of the processes that underlie smoking for this age group. For example, it has been suggested that long-term health consequences may be relatively irrelevant to adolescent smoking decisions, but that personal and social consequences such as cost and impairment of athletic ability may be more important (O'Rourke, *et al.*, 1983).

Unfortunately, there is little information about the processes underlying smoking among young people in Ireland. With few exceptions (e.g., O'Connor and Daly, in press) the available studies have been epidemiological and descriptive in nature (O'Rourke, O'Sullivan and Wilson-Davis, 1968a, 1968b; Wilson, 1969; O'Rourke, *et al.*, 1971, 1983). Although such studies are essential for documenting the incidence of smoking, they reveal little about the relative importance of factors that may underlie smoking decisions. Thus, they cannot provide a basis for designing effective preventive programmes for school children.

In response to the need for systematic information about the factors underlying smoking, data are presented here concerning the smoking experiences and beliefs of Dublin sixth class primary school children. Differences in background characteristics and in beliefs about smoking among young people who are smokers or non-smokers are described. In addition, the relative importances of different beliefs as predictors of future smoking intentions are investigated.

Most studies of factors related to adolescent smoking in Ireland have focused on the relationships between this behaviour and selected background variables. These studies have identified only a few consistent relationships. Boys, for example, routinely have been found to smoke more than girls (O'Rourke, *et al.*, 1971, 1983). Recently, however, this difference appears to be diminishing and large increases in smoking among girls have occurred (O'Rourke, *et al.*, 1983). Age also has been found to reliably relate to smoking

among young people in Ireland. Not surprisingly, older adolescents tend to smoke more than younger adolescents (Wilson, 1969; O'Rourke, *et al.*, 1971, 1983). This same pattern has been reported consistently in other countries as well (e.g., Kandel, 1980). Socio-economic variables less frequently have been related to smoking among Irish adolescents. However, it has been reported that boys whose fathers are employed in professional and managerial occupations tend to smoke less than other boys (O'Rourke, *et al.*, 1968b). A stronger relationship has been found between amount of spending money and smoking, with children who have more spending money smoking more (O'Rourke, *et al.*, 1968b).

Relatively less systematic attention has been given to differences in beliefs that may underlie smoking among adolescents in Ireland. However, it has been reported that perceived parental disapproval and perceived parental and peer smoking are related to smoking among older Irish adolescents. Those young people who smoke are less likely to perceive their parents as disapproving of smoking and more likely to perceive their parents and friends to be smokers (O'Rourke, *et al.*, 1968b, 1983; O'Connor and Daly, *in press*). Finally, there is some evidence that a belief that smoking harms health or has other negative consequences is related to a lower likelihood of smoking (O'Rourke, *et al.*, 1971; O'Connor and Daly, *in press*).

One of the problems with many studies of beliefs related to smoking is the lack of a theoretical orientation to guide the researchers as to what beliefs should be relevant. Recently, however, it has been suggested that smoking can be predicted and understood with reference to relatively few cognitive variables within the framework of a theory of reasoned action (Fishbein, 1980, 1982; Ajzen and Fishbein, 1980).¹ The major assumption of the theory of reasoned action is that most social behaviours, including smoking, are both volitional and the result of rational decision-making processes. Consistent with this assumption, the most immediate determinant of behaviour is a behavioural intention. A behavioural intention simply is defined as an individual's own belief about the probability that he or she will engage in a given activity. In the present context, a behavioural intention would refer to the individual's belief about the likelihood that he or she would smoke. Such intentions have been found to be highly predictive of a wide range of behaviours including smoking among young people (e.g., Fishbein, 1982; Chassin, Presson, Sherman, Corty and Olshavsky, *in press*). However, to understand or explain behaviour it is necessary to consider the beliefs that underlie these intentions.

1. Only a very simplified version of the theory of reasoned action is presented here. A complete description of the most recent version of the theory may be found in Fishbein (1980) or Ajzen and Fishbein (1980).

According to the theory of reasoned action there are two types of beliefs that are important to understanding behavioural intentions and thus behaviours: value-expectancies and subjective norms. On the one hand, value-expectancies consist of beliefs about the likelihood that engaging in a behaviour will lead to certain personal consequences each weighted by an evaluation of the consequence. It is assumed that the more likely an individual believes it is that a behaviour will have positively evaluated consequences, the more positive his or her intention will be towards that behaviour. On the other hand, subjective norms refer to beliefs about interpersonal influences, and consist of perceptions of the approval of significant others concerning the behaviour. Generally, the more approval or less disapproval an individual perceives for a given behaviour, the more positive his or her intentions towards that behaviour will be. In this regard, it is important to note that the theory is phenomenological and thus focuses on the individual's beliefs rather than on objective approval or disapproval by others. In fact, such beliefs appear to correlate more highly with behaviours than do actual levels of normative support (e.g., O'Connor, 1978; Newcomb, Huba and Bentler, 1983).

One important aspect of the theory of reasoned action is its emphasis on personalised beliefs. There is considerable evidence that personalised beliefs are more closely related to intentions and behaviour than are general beliefs (cf., Fishbein, 1980). Thus, for example, while almost all cigarette smokers accept the general statement "cigarette smoking is harmful to health", a sizeable minority appear not to believe "*my* cigarette smoking is harmful to *my* health" (Beal, Warren and Fleischman, 1971; Poulton, 1973). Unfortunately, most social-psychological studies of smoking have focused on general beliefs. It has been suggested (Fishbein, 1982) that this is one of the main reasons why inconsistent findings frequently are obtained in such studies.

According to the theory of reasoned action, other variables such as values, personality and background characteristics affect intentions indirectly. That is, they are seen to influence behavioural intentions and thus behaviour through their effects on value-expectancies, subjective norms, or on the relative importances of these two constructs. However, contrary to the theory, it seems very likely that some other variables may influence smoking behaviours and intentions directly. Most notably, perceptions of the smoking of significant others, or behavioural norms, may be one source of direct interpersonal influence not accounted for by the theory in its present form. The importance of modelling for social behaviour, in general, is widely recognised (e.g., Bandura, 1977) and peer and parental behaviour may be particularly central factors in adolescent smoking (e.g., Kandel, 1980; Chassin, *et al.*, in press). In fact, there is some evidence to suggest that the perceived smoking

of parents and peers may be more important than perceived verbal approval as a determinant of smoking among young people (Murray, Swan, Johnson and Bewley, 1983; Grube, Rokeach, Weir and Getzlaf, 1982).

In line with these considerations, measures were obtained from Dublin sixth class primary students relating to (a) future smoking intentions; (b) beliefs about the personal consequences of smoking; (c) evaluations of these consequences; (d) perceived approval or disapproval of parents and peers towards smoking; and (e) perceived smoking behaviours of parents and peers. Measures of the students' previous smoking behaviours and indicators of selected background variables also were obtained. On the basis of the theory of reasoned action (Fishbein, 1980, 1982) it was expected that smokers, relative to non-smokers, would perceive negative consequences of smoking as less likely and positive consequences as more likely; would evaluate positive consequences more positively and negative consequences less negatively; and would perceive more normative support for smoking. Differences in the background characteristics of smokers and non-smokers were anticipated to more or less replicate those previously reported for young people in Ireland.

In terms of predicting intentions, the theory of reasoned action does not specify which cognitive variables will be more important. Rather, it suggests that the relative weights of normative beliefs and value-expectancies will depend upon the particular behaviour and group under consideration. Although research with college students (Fishbein, 1982) indicates that attitudes or value-expectancies are more closely related to smoking intentions than are normative beliefs for that age group, recently it has been hypothesised that normative influences should be more important during initial stages of smoking and for younger adolescents (Flay, d'Avernas, Best, Kersell and Ryan, 1983). Empirical support for this hypothesis has been provided by several studies (Grube, Rokeach, Weir and Getzlaf, 1982; Fishbein, 1982; Chassin, *et al.*, in press). Therefore, it was expected that normative beliefs would be at least as important as predictors of smoking intentions as value-expectancies among young people in Ireland. Similarly, it has been suggested that young girls may be more susceptible to normative influences than are young boys, particularly the direct influences of parents and other adults (Maccoby and Jacklin, 1974, pp. 265-274; Chassin, in press). Thus, it was anticipated that normative influences may be somewhat more important for girls than boys in predicting smoking intentions.

It was expected that normative and value-expectancy beliefs would predict smoking intentions reasonably well. In previous research similar variables have predicted intentions towards a wide range of behaviours with a great deal of accuracy, in some cases accounting for over 80 per cent of the variance (e.g., Fishbein, 1980; Ajzen and Fishbein, 1980). Although the theory

of reasoned action rarely has been applied to children of this age, recent research indicates that value-expectancies and normative beliefs can accurately predict smoking intentions and behaviours among somewhat older adolescents (Chassin, *et al.*, 1981, in press).

II METHOD

Sample and Subjects

The initial sample consisted of 27 Dublin primary schools in which a student from St Patrick's College had been placed for teaching practice at the time of the study (June 1983). Out of these schools, 26 agreed to participate. By its nature, the sample was limited to Catholic schools with sixth class pupils. Within these constraints, however, the sample was found to be reasonably representative of the population of such Dublin primary schools in terms of sex composition ($\chi^2(2) = 1.02, p > .05$), geographical location ($\chi^2(2) = 3.66, p > .05$), and size ($\chi^2(5) = 8.01, p > .05$).

Within each of the schools one classroom of sixth class pupils was randomly selected for inclusion in the survey. The respondents in the study were 752 sixth class students: 419 (55.7%) girls and 333 (44.3%) boys. Their ages ranged from about 11 to 14 years, with a median age of 12.4.

Survey Instrument

The data were collected using structured questionnaires that were completed anonymously by the children in their classrooms. The children were reassured of the complete confidentiality of their answers and the survey was administered by a student teacher. The regular classroom teacher was absent during the testing session. Such conditions of anonymity and confidentiality have been shown to produce self-reports of adolescent smoking that compare very favourably with those obtained using more complex and costly procedures such as randomised response (Akers, Massey, Clarke and Lauer, 1983), the bogus pipeline (e.g., Dill, Hill, Hanselka, Henderson and Davenport, 1982; Akers, *et al.*, 1983), and objective biochemical measures (e.g., Bauman, Koch and Bryan, 1982; Bauman and Koch, 1983; Akers, *et al.*, 1983). In general, the questions followed the format suggested by Ajzen and Fishbein (1980), although certain changes were made to ensure that the items were appropriate for this age group.

The students initially were asked if they ever had smoked a cigarette and, if so, with whom and at what age they had first smoked. Those who reported that they had ever smoked were then asked to indicate how many cigarettes, on the average, they smoked each day during the past month by marking one of eight categories (none – more than 20). Similarly, smoking intentions were ascertained by asking all of the students to indicate how many cigarettes

they thought they were likely to smoke each day during the next month.

Beliefs about the personal consequences of smoking were measured using a series of five-point scales. The students were asked how certain they were that smoking during the next month would lead to each of 14 possible consequences for themselves personally (certain it would – certain it would not) and then to evaluate these consequences (very bad – very good). The list of possible consequences was obtained mainly from a pilot study of another small sample of Dublin primary students. The most frequent responses to the open-ended questions what do you think are the most important reasons why young people your age decide to smoke (not to smoke)? were included in this list. Additional items were obtained from previous research findings (e.g., Baer, 1966; Borgatta and Evans, 1967; Fishbein, 1980, 1982).

Measures of normative approval were obtained by asking the students to indicate on five-point scales how their mother, father, best friend, and other friends would feel if the student smoked cigarettes (very unhappy – very happy). They also were asked how many cigarettes, on the average, they thought each of these people smoked daily.

Finally, the students were asked for basic background information including sex, age, mother's employment status (working outside the home or not) and the amount of pocket money they received each week. Father's occupation also was ascertained and subsequently was coded into one of eight ordinal occupational status categories using an adaptation of the Hall-Jones scale (MacGréil, 1977, pp. 594-600). In addition, each of the schools was classified by geographical location within Dublin (northside, inner city, southside).

III RESULTS AND DISCUSSION

Smoking Behaviours

Out of 751 students who indicated if they ever had smoked a cigarette 365 (48.6%) stated that they had. Thus, nearly half of these 11 to 14 year olds had tried smoking on at least one occasion. Consistent with previous research (e.g., O'Rourke, *et al.*, 1983) a much greater percentage of boys (65.7%) had tried smoking compared with girls (35.1%), $\chi^2(1) = 69.33, p < .05$. Although no recent data are available for primary school children in Ireland, the most current estimate of life-time smoking rates for Dublin post-primary pupils (ages 12 to 18+ years) is approximately 74 per cent for boys and 63 per cent for girls (O'Rourke, *et al.*, 1983). Thus, it would appear that most adolescents who are going to experiment with smoking begin to do so before 14 years of age. In fact, the median reported age at which the students in our sample tried their first cigarette was 9.9 for boys and 10.8 for girls.

The importance of the peer group in first experimentation with smoking also is apparent. The vast majority (73.3%) of the students who had tried smoking were with friends the first time they smoked a cigarette. Only a small percentage were alone (8.8%), with brothers or sisters (5.8%), with parents (5.5%), or with other relatives (6.6%). Similar findings have been reported for post-primary students (O'Rourke, *et al.*, 1983). The apparent importance of peer influences for smoking among young adolescents will be considered in more detail at a later point in this paper.

Although the life-time smoking rates are of some interest because they indicate the extent to which these young people have experimented with smoking, they tell us very little about present smoking habits. Therefore a measure of current smoking behaviour was obtained by asking the students to indicate about how many cigarettes they smoked each day during the month prior to the survey. The question was limited to the month prior to the survey because it seemed preferable to include some time reference without being too restrictive. If no such reference had been included, there may have been some confusion among the students about the question. Some may have answered with reference to the previous week, others the previous month, and still others the previous year. One month seemed a reasonable compromise between a period that was so long as to introduce unreliability because of forgetting and selective memory processes, and one that was so short as to introduce unreliability because of daily variations in behaviour.

It can be seen in Table 1 that the current smoking rates, as would be expected, are considerably lower than the life-time smoking rates. Overall, about 21 per cent of the students reported that they had smoked at least one cigarette during the month prior to the survey.² Of those who did smoke, the majority (about 58%), reported that they only smoked occasionally and not daily. Although these findings may seem reassuring, they should not serve to minimise the problem of smoking among this age group. About 9 per cent of the students smoked at least one cigarette each day and many others may not have had the opportunity to smoke more regularly because of constraints on their behaviour. Moreover, there is some evidence that most adults who are regular smokers begin as light or occasional smokers during adolescence (e.g., Flay, *et al.*, 1983; Cartwright, Martin and Thomson, 1959). Thus, at the least, young people who even occasionally are experimenting with smoking can be considered "at increased risk" of becoming regular smokers.

2. It should be noted that the current smoking rates reported here are considerably lower than those reported by O'Rourke, *et al.*, (1983) even for their youngest age groups. This difference is probably a result of the fact that our question was specific to smoking during the past month while that used in the previous survey ("Do you smoke now?") was open as to time frame.

Table 1: *Smoking during previous month by male and female students*

Cigarettes smoked each day	Sex		Total
	Male	Female	
None	69.2 (229)	86.8 (363)	79.0 (592)
Only a few, not daily	16.9 (56)	8.6 (36)	12.3 (92)
1-2	5.7 (19)	2.9 (12)	4.1 (31)
3-5	3.6 (12)	1.4 (6)	2.4 (18)
6-10	2.7 (9)	0.2 (1)	1.3 (10)
11-15	0.9 (3)	0.0 (0)	0.4 (3)
16-20	0.0 (0)	0.0 (0)	0.0 (0)
More than 20	0.9 (3)	0.0 (0)	0.4 (3)

Note: Main table entries are column percentages and numbers in parentheses are cell sizes. The difference in smoking rates among male and female students was significant, Kruskal-Wallis $H(1) = 36.69, p < .05, \eta^2_H = .05$.

Background, Characteristics and Smoking

On the basis of their current smoking behaviours, the students were divided into three groups: (a) non-smokers were defined as those who reported that they had not smoked at all during the previous month; (b) occasional smokers as those who reported that they had smoked, but not on a daily basis; and (c) regular smokers as those who reported that they had smoked at least one cigarette a day. Differences in the background characteristics of non-smokers, occasional smokers, and regular smokers were ascertained using chi-square analyses. Although the relationships tended to be small, four of the six background variables were significantly ($p < .05$) associated with smoking. These were sex, pocket money, age and location of school. Only mother's working status and father's occupation were not significantly related to this behaviour.

Table 2 displays the significant relationships along with the associated χ^2 values and η^2_{H} a measure of explained variance based on ranks (Serlin, Carr and Marascuilo, 1982).

Table 2: *Smoking behaviour by significant background characteristics*

<i>Students' smoking behaviour</i>					
<i>Characteristic</i>	<i>Non-smoker</i>	<i>Occasional smoker</i>	<i>Regular smoker</i>	χ^2	η^2_{H}
<i>Sex</i>					
Male	69.2 (229)	16.9 (56)	13.9 (46)	36.28*	.05
Female	86.8 (363)	8.6 (36)	4.6 (19)		
<i>Weekly pocket money</i>					
Less than 50p	82.0 (109)	13.5 (18)	4.5 (6)	27.30*	.03
50p-99p	84.0 (178)	10.8 (23)	5.2 (11)		
£1-£1.99	79.6 (180)	11.9 (27)	8.4 (19)		
£2-£2.99	75.8 (72)	12.6 (12)	11.6 (11)		
£3 or more	61.9 (44)	15.5 (11)	22.5 (16)		
<i>Age</i>					
11-12 years	80.8 (341)	11.8 (50)	7.3 (31)	14.08*	.01
13 years	78.8 (224)	12.3 (35)	8.8 (25)		
14 years	62.1 (18)	10.3 (3)	27.6 (8)		
<i>Location of school</i>					
Northside	80.4 (377)	10.0 (47)	9.6 (45)	11.22*	.01
Inner City	69.0 (58)	21.4 (18)	9.5 (8)		
Southside	80.1 (157)	13.8 (27)	6.1 (12)		

Notes: Main table entries are row percentages and numbers in parentheses are cell sizes.

* $p < .05$.

The largest differences in smoking behaviour were obtained for sex of the student. Nearly 31 per cent of the boys had smoked at least occasionally during the previous month compared with about 13 per cent of the girls. It is clear from Tables 1 and 2 that this difference between boys and girls obtains at all levels of smoking, but especially among regular smokers. This pattern closely replicates previous research findings for older adolescents in Ireland (Wilson, 1969; O'Rourke, *et al.*, 1971, 1983).

Amount of weekly pocket money also was related to smoking behaviour. Those students who had more spending money available to them were more likely to be regular smokers. A similar finding has been reported previously for older adolescents (e.g., O'Rourke, *et al.*, 1968b). However, this relationship is open to a number of interpretations. In the previous study it partially may have been due to the fact that both smoking and amount of spending money were age-related. This artefact is less likely to be a problem here because of the restricted age range of the students and therefore this relationship most probably reflects the fact that young people who have more spending money can afford to buy cigarettes more regularly.

Smoking also increased as age increased. Although similar age-related changes in smoking frequently have been noted (e.g. Wilson, 1969; O'Rourke, *et al.*, 1971, 1983), the apparent large increase in regular smoking among the 14 year olds was unexpected. No such sudden increase in regular smoking previously has been reported for this age group. However, our finding may, in part, be due to the small number of 14 year olds in the sample resulting in an unreliable estimate of smoking for this age group. It also is possible that these students are atypical. For example, they primarily may be those who have had academic or other school-related problems and consequently have been held back. Thus, it is not clear that this result solely reflects developmental effects.

Finally, there was a very small relationship between geographical location and smoking. Inner city schools tended to have fewer non-smokers than either northside or southside schools. These findings are particularly interesting given that father's occupational status was unrelated to smoking ($\chi^2(14) = 19.45, p > .05$). This suggests that peer group composition, or the particular youth subculture or environment to which young people are exposed, may be a more important determinant of smoking than socio-economic status, *per se*.

Normative Beliefs and Smoking

Table 3 shows the mean rankings of the students in terms of the number of cigarettes that they believed their best friend, other good friends, mother and father smoked each day. The table also shows the associated Kruskal-Wallis statistics (Mosteller and Rourke, 1973, pp. 210-223) and η^2_{H} values.

As expected, the non-smokers, compared with the regular smokers, indicated that they believed these people smoked fewer cigarettes. The occasional smokers were intermediate to the non-smokers and smokers in this respect.³ Interestingly, the differences in perceived smoking are far greater for peers than for parents. A similar pattern can be seen in Table 4 for perceived disapproval of the students' own smoking. Although the students generally perceived their peers and parents to be disapproving of smoking, the non-smokers indicated that they believed their best friend, other friends, mother and father would be more unhappy than did the regular smokers. Differences in perceived disapproval also seem to be greater for peers than for parents.

In general, these findings concerning normative influences are very similar to those previously reported for older adolescents in Ireland (e.g., Wilson, 1969; O'Rourke, *et al.*, 1968b, 1983; O'Connor and Daly, in press) and

Table 3: Mean ranking of students on perceived smoking behaviour of others

Normative influence	Students' smoking behaviour			H	η^2_H
	Non-smoker	Occasional smoker	Regular smoker		
Best friend	325.0	508.2	603.8	238.00*	.32
Other friends	333.3	506.5	525.9	109.43*	.15
Mother	361.6	389.2	420.6	6.81*	<.01
Father	355.5	378.4	451.9	15.05*	.02

Notes: A higher mean ranking indicates higher levels of perceived smoking. Test statistics is Kruskal-Wallis H corrected for ties.

* $p < .05$.

Table 4: Mean ranking of students on perceived approval of others

Normative influence	Students' smoking behaviour			H	η^2_H
	Non-smoker	Occasional smoker	Regular smoker		
Best friend	340.2	493.6	483.2	67.30*	.09
Other friends	351.1	442.7	455.8	31.66*	.04
Mother	362.6	397.1	427.8	19.82*	.03
Father	366.6	374.2	412.3	7.95*	.01

Notes: A lower mean ranking indicates overall lower perceived approval. Test statistics is Kruskal-Wallis H corrected for ties.

* $p < .05$.

3. Interestingly, neither perceptions of father's pipe smoking nor of cigar smoking was significantly related to the students' cigarette smoking ($p > .05$ in both cases).

elsewhere (e.g., Chassin, *et al.*, 1981; Chassin, *et al.*, in press). Those young people who smoke perceive their parents and friends to be less disapproving of smoking and more likely to be smokers themselves. However, it is not clear what psychological process or processes mediate these relationships. At least three alternative interpretations are possible. First, it is possible that these findings reflect the direct influence of peers and parents on the students' smoking. That is, it simply may be that those students whose peers and parents smoke, or are less disapproving of smoking, are more likely to initiate smoking themselves. Some support for this is provided by longitudinal studies of smoking that have shown that perceived peer smoking and approval are significant predictors of initiation and increase in smoking behaviour of adolescents (e.g., Chassin, *et al.*, in press; Murray, *et al.*, 1983) and by the fact that most of the young people in this study who had smoked reported that they were with friends the first time they had a cigarette. This interpretation also is the most consistent with the theory of reasoned action (e.g., Fishbein, 1980, 1981). Second, the results in the case of peers may be a function of selective friendship choices. The students who smoke simply may be more likely to seek out friends who smoke or are less disapproving of smoking. Similarity of belief and behaviour frequently have been shown to be powerful determinants of interpersonal attraction and friendship formation (e.g., Byrne, 1971). Finally, there may be an element of rationalisation or misperception. There is some evidence (e.g., Chassin, *et al.*, in press; Kandel, 1974) to suggest that young people who smoke may tend to overestimate the extent to which their parents and peers smoke and approve of smoking. In fact, it is likely that all three processes operate. However, regardless of the interpretation, these findings clearly indicate that smoking interventions among young people should focus on modifying normative beliefs.

Beliefs about the Consequences of Smoking

Table 5 shows the mean rankings of the students on perceived likelihood of each of the 14 personal consequences of smoking. Consistent with expectations, the non-smokers indicated that they believed the negative consequences of smoking were more likely than did the regular smokers. Thus, for example, they said that smoking would be more likely to harm their health, give them bad breath, cost too much money and make them feel sick. In general, the occasional smokers were intermediate, although in some instances they were very similar to the regular smokers. Unexpectedly, the smoking groups did not differ significantly on most of the items referring to the likelihood of positive consequences of smoking. Thus, the smokers do not appear to believe, or at least admit, any more than the non-smokers that smoking will make them look grown up, be more popular, or look "tough".

Table 5: Mean ranking of students on perceived likelihood of personal consequences of smoking

Consequence	Students' smoking behaviour			H	η^2_H
	Non-smoker	Occasional smoker	Regular smoker		
Harm Health	390.8	300.9	271.3	37.45*	.05
Look Tough	369.4	372.9	359.7	.16	<.01
Have Bad Breath	388.3	311.9	273.1	33.42*	.05
Look Grown Up	369.7	366.9	371.7	.02	<.01
Cost Too Much Money	392.2	323.0	274.4	40.71*	.05
Feel Sick	409.3	233.1	245.5	86.88*	.12
Increase Chances of Cancer	392.4	300.5	304.3	31.74*	.04
Be Less Fit	387.0	324.3	320.1	13.81*	.02
Be More Popular	366.7	395.2	404.5	3.05	<.01
Feel Relaxed	349.6	420.7	475.4	28.80*	.04
Harm Health of Others	389.5	291.1	289.9	28.51*	.04
Get Into Trouble with					
Parents	386.6	312.3	286.6	37.39*	.05
Get Hooked	382.6	297.3	345.5	14.40*	.02
Get a Bad Name	395.0	290.5	234.3	50.18*	.07

Notes: A higher mean ranking indicates overall greater perceived certainty. Test statistic is Kruskal-Wallis H corrected for ties.

* $p < .05$.

The mean rankings of the students on evaluation of the consequences are presented in Table 6. It is apparent that the regular smokers consistently evaluated the negative consequences of smoking significantly less negatively and the positive consequences more positively, relative to the non-smokers. Thus, while smokers did not indicate that they thought smoking was more likely to make them look more grown up or more popular with their friends, they did indicate that they valued these outcomes more. Once again, the occasional smokers were intermediate.

The theory of reasoned action, of course, assumes that these differences in belief and attitude determine intentions and consequently smoking behaviour. Consistent with this interpretation, there is evidence that value-expectancy beliefs are predictive of initiation of smoking and changes in smoking status (Chassin, *et al.*, in press; Murray, *et al.*, 1983). Alternatively, these differences in belief could result from rationalisation processes through which smokers justify and maintain their ongoing behaviour by minimising the negative consequences of smoking and emphasising the positive consequences. In either case, these findings clearly suggest that smoking inter-

Table 6: Mean ranking of students on evaluation of personal consequences of smoking

Consequence	Students' smoking behaviour			H	η^2_H
	Non-smoker	Occasional smoker	Regular smoker		
Harm Health	361.1	411.0	428.0	23.99*	.03
Look Tough	367.8	376.0	410.5	2.64	<.01
Have Bad Breath	359.5	411.8	435.2	16.22*	.02
Look Grown Up	360.6	396.9	452.3	13.77*	.02
Cost Too Much Money	360.8	394.0	453.8	18.06*	.02
Feel Sick	359.2	408.4	415.7	12.84*	.02
Increase Chances of Cancer	363.0	370.6	428.8	14.88*	.02
Be Less Fit	359.7	396.6	422.2	11.35*	.02
Be More Popular	358.3	407.4	419.8	9.08*	.01
Feel Relaxed	355.2	411.8	442.1	15.47*	.02
Harm Health of Others	362.1	395.8	427.8	12.85*	.02
Get Into Trouble with					
Parents	356.5	413.7	448.1	37.52*	.05
Get Hooked	355.0	400.3	480.2	47.07*	.06
Get a Bad Name	356.5	399.2	468.1	37.72*	.05

Notes: A lower mean ranking indicates overall more negative evaluation. Test statistic is Kruskal-Wallis H corrected for ties.

* $p < .05$.

ventions for this age group should focus, at least in part, on modifying the personal beliefs that are related to smoking and should include both factual beliefs (likelihood) and evaluative beliefs. In particular, the negative personal consequences should be made more salient and the positive personal consequences less salient. The theory of reasoned action also suggests that the focus of such interventions should be on personal consequences rather than general considerations.

Predicting Smoking Intentions

Although the preceding analyses indicate some of the beliefs differences between the primary students who smoked and did not smoke cigarettes, they give no indication of the relative importances of these variables in smoking decisions. Therefore, the contributions of norms and beliefs about the consequences of smoking as predictors of future smoking intentions were examined using regression analyses.

In order to reduce the variables to a manageable number of constructs, separate principal components analyses with oblique rotations ($\delta = 0$) were conducted on the normative, likelihood and evaluation items (Harman, 1976). Tables 7, 8 and 9 show the results of these analyses.

Table 7: *Oblique rotated factor solution for normative beliefs*

Normative belief	Factor			
	I	II	III	IV
	<u>Factor Pattern</u>			
Best Friend's Approval	.87	-.05	.03	.02
Other Friends' Approval	.93	.03	-.03	-.01
Mother's Approval	-.01	-.89	-.01	.01
Father's Approval	.01	-.89	.01	-.01
Best Friend's Smoking	-.07	-.01	-.05	.90
Other Friends' Smoking	.10	.01	.06	.78
Mother's Smoking	.02	.01	.80	-.05
Father's Smoking	-.03	-.01	.78	.05
	<u>Factor Structure</u>			
Best Friend's Approval	.90	-.28	.10	.36
Other Friends' Approval	.91	-.20	.04	.32
Mother's Approval	.22	-.89	.01	.18
Father's Approval	.24	-.89	.03	.17
Best Friend's Smoking	.26	-.16	.05	.87
Other Friends' Smoking	.39	-.17	.16	.82
Mother's Smoking	.07	-.01	.80	.05
Father's Smoking	.05	-.03	.79	.13
Eigenvalue	2.48	1.34	1.18	.93
Percent Variance	31.0	16.7	14.8	11.6

It was expected that four factors corresponding to peer smoking, peer disapproval, parental smoking and parental disapproval would be identified among the normative belief items. As can be seen in Table 7, this expectation clearly was confirmed. It further was expected that three factors corresponding to health consequences (e.g., *harm my health*), other negative personal consequences (e.g., *feel sick*), and positive social consequences (e.g., *be more popular*) would underlie the likelihood and evaluation items. In fact, a somewhat simpler pattern emerged. As can be seen in Tables 8 and 9, only two dimensions were identified for each set of items. The first factor in each case consists of beliefs relating to the negative consequences of smoking and the second factor consists of beliefs relating to the positive consequences of smoking.

For the purposes of predicting intentions, factor scores were estimated for each student on each of the belief dimensions using a conventional regression approach. Where appropriate, these scores were reversed such that higher values consistently indicated higher levels of perceived peer and parental

Table 8: *Oblique rotated factor solution for evaluative beliefs*

<i>Evaluative belief</i>	<i>Factor pattern</i>		<i>Factor structure</i>	
	<i>I</i>	<i>II</i>	<i>I</i>	<i>II</i>
Harm Health	.62	-.06	.64	-.31
Look Tough	.03	-.78	.33	-.79
Bad Breath	.59	-.15	.65	-.38
Look Grown Up	.03	-.83	.36	-.84
Cost Too Much	.40	-.25	.50	-.41
Feel Sick	.69	-.03	.70	-.30
Increase Chances of Cancer	.69	.14	.64	-.13
Less Fit	.62	-.02	.63	-.26
More Popular	-.04	-.86	.30	-.85
Feel Relaxed	.02	-.77	.32	-.78
Harm Others' Health	.62	-.02	.62	-.26
Get Into Trouble	.70	.13	.65	-.15
Get Hooked	.54	-.14	.60	-.35
Get a Bad Name	.65	.03	.64	-.22
Eigenvalue	4.90	1.84		
Percent Variance	35.0	13.1		

Table 9: *Oblique rotated factor solution for likelihood beliefs*

<i>Likelihood belief</i>	<i>Factor pattern</i>		<i>Factor structure</i>	
	<i>I</i>	<i>II</i>	<i>I</i>	<i>II</i>
Harm Health	.70	.01	.70	-.11
Look Tough	.11	.81	-.02	.79
Bad Breath	.67	.07	.66	-.04
Look Grown Up	.06	.82	-.07	.81
Cost Too Much	.55	.02	.55	-.06
Feel Sick	.70	-.08	.71	-.19
Increase Chances of Cancer	.65	-.03	.65	-.14
Less Fit	.69	.05	.68	-.07
More Popular	-.03	.68	-.14	.69
Feel Relaxed	-.30	.41	-.36	.45
Harm Others' Health	.56	-.15	.59	-.24
Get Into Trouble	.48	.07	.47	-.01
Get Hooked	.53	.08	.51	.00
Get a Bad Name	.57	-.08	.58	-.17
Eigenvalue	4.02	1.90		
Percent Variance	28.7	13.6		

smoking; greater peer and parental disapproval of smoking; greater perceived likelihood of the positive and negative consequences of smoking; and less negative (more positive) evaluations of these consequences. These factor scores were then entered into regressions to predict future smoking intentions. Because different processes may underlie smoking for boys and girls, separate regressions were done for the two sexes.

Table 10 shows the correlations among the factor scores and smoking intentions and Table 11 shows the results of the regression analyses. Overall, the predictions of smoking intentions were moderately good. In both cases the variables accounted for slightly over 30 per cent of the variance. Although these predictions are lower than for previous research with adults (Fishbein, 1982), they compare favourably with those obtained in other studies of adolescent smoking intentions (Chassin, *et al.*, 1981).

It is apparent from Table 11 that the most important predictors of smoking intentions for these school children were beliefs concerning evaluation of the

Table 10: *Correlations among smoking intentions, normative beliefs and beliefs about the consequences of smoking*

		<i>Boys</i>								
		(N = 309)								
Intention	1.0									
Parental Disapproval	-.12	1.0								
Peer Disapproval	-.25	.18	1.0							
Parental Smoking	.16	-.01	-.04	1.0						
Peer Smoking	.46	-.14	-.26	.09	1.0					
Likelihood of Negative Consequences	-.32	.31	.33	-.07	-.32	1.0				
Evaluation of Negative Consequences	.41	-.27	-.30	.03	.26	-.51	1.0			
Likelihood of Positive Consequences	.01	.00	-.21	-.02	.06	.01	1.0	1.0		
Evaluation of Positive Consequences	.16	.11	-.31	-.09	.15	-.40	.37	.23	1.0	
		<i>Girls</i>								
		(N = 386)								
Intention	1.0									
Parental Disapproval	-.33	1.0								
Peer Disapproval	-.23	.22	1.0							
Parental Smoking	.05	-.01	-.07	1.0						
Peer Smoking	.40	-.22	-.50	.11	1.0					
Likelihood of Negative Consequences	-.41	.28	.47	-.01	-.41	1.0				
Evaluation of Negative Consequences	.44	-.37	-.34	.05	.33	-.50	1.0			
Likelihood of Positive Consequences	-.06	.02	-.21	.03	.08	.10	.08	1.0		
Evaluation of Positive Consequences	.22	-.17	-.41	.10	.24	-.47	.36	.11	1.0	

Table 11: *Regression analyses predicting future smoking intentions*

<i>Predictor</i>	<i>b</i>	<i>Standard error of b</i>	β	<i>t</i>
<i>Boys</i>				
Parental Disapproval	.03	.06	.03	.57
Peer Disapproval	-.10	.07	-.08	-1.45
Parental Smoking	.13	.06	.11	2.30*
Peer Smoking	.34	.05	.35	6.81*
Likelihood of Negative Consequences	-.05	.07	-.04	-.72
Evaluation of Negative Consequences	.31	.06	.29	4.93*
Likelihood of Positive Consequences	-.07	.06	-.05	1.08
Evaluation of Positive Consequences	-.02	.07	-.02	-.31
$R^2 = .32, F(8, 300) = 17.66^*$				
<i>Girls</i>				
Parental Disapproval	-.08	.03	-.15	-3.20*
Peer Disapproval	.05	.03	.09	1.69
Parental Smoking	.01	.02	.02	.40
Peer Smoking	.17	.03	.26	4.98*
Likelihood of Negative Consequences	-.10	.03	-.18	-3.16*
Evaluation of Negative Consequences	.14	.03	.24	4.53*
Likelihood of Positive Consequences	-.03	.02	-.06	-1.27
Evaluation of Positive Consequences	.00	.02	.01	.13
$R^2 = .31, F(8, 377) = 21.60^*$				

* $p < .05$

negative consequences of smoking and perceived peer smoking. In terms of the regression coefficients, these two variables appear to be nearly equally important. For both boys and girls, those who evaluated the negative consequences of smoking less negatively indicated that they intended to smoke more during the next month. Similarly, those who reported that their friends smoked more said they intended to smoke more themselves. Interestingly, beliefs concerning the positive consequences of smoking and perceived peer disapproval were not significant for either boys or girls.

Some differences between boys and girls also are apparent in Table 11. For boys, parental smoking showed a small, but significant effect. Those boys who reported that their parents smoked more indicated that they also intended to smoke more. No other variables were significant for boys. For girls, two other variables showed significant effects. The largest of these was for perceived likelihood of the negative consequences of smoking. As would be expected, those girls who indicated that they believed it was less likely

that smoking would have negative consequences were more likely to report that they intended to smoke. Finally, those girls who perceived their parents as less disapproving of smoking were more likely to report that they intended to smoke.

The fact that parental approval and parental smoking showed different effects for girls and boys suggests one important difference that may underlie smoking for the two sexes. Namely, parents may have more direct influence on the smoking of their daughters while sons may be more influenced by parental modelling. This pattern is consistent with the findings of previous research showing that young girls generally comply more readily with the verbal requests of adults than do young boys (Maccoby and Jacklin, 1974, pp. 265-274). The results also suggest that girls may be more influenced than boys by beliefs that smoking will have negative consequences for them. It thus appears that different aspects of smoking may be salient for boys and girls in making smoking decisions.

IV SUMMARY AND IMPLICATIONS

In summary, the life-time smoking rate among these young people was relatively high. Approximately 49 per cent of the sample reported that they had tried smoking on at least one occasion. Current smoking rates, however, were considerably lower with about 21 per cent reporting that they had smoked at least one cigarette during the month prior to the survey. Consistent with previous research, smokers and non-smokers were found to differ in their background characteristics. Smokers were more prevalent among boys, older adolescents, those with more spending money and those attending inner city schools. Smokers and non-smokers also differed in their smoking beliefs. Smokers, compared with non-smokers, generally reported that their peers and parents smoked more and were more approving of smoking. Similarly, they indicated that they believed the negative consequences of smoking were less likely; evaluated the negative consequences of smoking less negatively and evaluated the positive consequences of smoking more positively. The primary predictors of future smoking intentions were perceived peer smoking and evaluation of the negative consequences of smoking. In addition, for girls, perceived parental approval was a significant influence, as was perceived likelihood of negative consequences. To a lesser extent, boys were influenced by perceived parental smoking. This is not to say that the other beliefs have no influence on smoking decisions, but rather that their effects may be indirect or mediated through the major predictors. Parental attitudes towards smoking, for example, may influence beliefs about

smoking or choice of friends even though they do not influence smoking intentions directly. The correlations shown in Table 10 clearly suggest that such mediated effects are possible.

These findings should be of some interest to health educators and those involved in smoking prevention programmes among young people. Although it is beyond the scope of this paper to make specific recommendations, our results do suggest certain issues that should be addressed by such programmes. First, it is clear that normative variables, and particularly perceived peer smoking, are important sources of influence on smoking intentions. Thus, prevention programmes for this age group should focus, at least in part, on countering these normative influences. Specifically, smoking interventions among young people should teach decision-making skills and techniques for resisting peer pressures to smoke. Moreover, because young people who smoke may tend to overestimate the extent to which their parents and peers smoke and approve of smoking (e.g., Kandel, 1974), an additional strategy would be to counter such misperceptions with factual information about the actual incidence of smoking and about attitudes towards smoking among parents and peers. One aspect of this approach should be to mobilise or increase the salience of existing normative influences against smoking. Second, beliefs about the negative consequences of smoking also appear to be very important. Thus, prevention programmes should focus on making these negative consequences more salient. Rather than appeals to the general long-term health effects of smoking, a more effective strategy might be to teach young people directly about the immediate negative personal effects of smoking (e.g., raised blood pressure, raised carbon monoxide levels in the blood, bad breath) using bio-feedback or social feedback procedures. Differences in beliefs, and particularly in evaluation of the consequences of smoking, also could be addressed through the use of more traditional attitude and value change procedures. Self-confrontation techniques (e.g., Rokeach, 1973, 1980) focusing on value for health might prove particularly useful in this regard and this technique easily could be adopted to this context.

Although any intervention would have to be tailored to the particular circumstances encountered, it is worth noting that several preventative programmes have been developed abroad that incorporate similar ideas. These programmes have focused on increasing decision-making skills, teaching strategies for resisting pressure to try smoking, and giving immediate feedback of the negative physiological and social consequences of smoking. These programmes have been found to be remarkably successful in leading to a cessation of smoking and in reducing the initiation of smoking among young people as long as three years after the intervention (e.g., Evans, Rozelle, Mittlemark, Hansen, Bane and Havis, 1978; Luepker, Johnson, Murray and Pechacek, 1983).

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