Relation between parents' and children's smoking behaviour and attitudes

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SUMMARY In the MRC/Derbyshire Smoking Study, a cohort of about 6000 adolescents was surveyed annually about their smoking behaviour, attitudes, and other issues from when they entered secondary school at 11–12 until 15–16 years and then again at 18–19 years. Their parents answered a similar questionnaire when their children were aged 11–12 and 15–16 years. In this paper we report the findings of an investigation focussed on the relation between parents' and children's smoking behaviour and attitudes at different stages of adolescence. It reveals substantial agreement between children's and parents' reports of parents' smoking behaviour and attitudes, that children from one-parent families are more likely than their peers to smoke, and that boys are more likely to smoke if their fathers smoke and girls if their mothers smoke. In addition, maternal attitudes were independently related to the boys' smoking behaviour. The implications of these findings for health education are discussed.

Twenty five years ago social researchers implicated parental smoking behaviour¹ and parental permissiveness regarding smoking² as being influential in the development of smoking among children and adolescents. Subsequently, several investigators have reported further details of these relations but there are a number of disagreements. Some reported a sex linking in the relation between parents' and children's smoking behaviour³ and others that this relation is stronger among girls than among boys.⁴ Some considered that parental attitudes are more important than their behaviour⁵ whereas others reported that attitudes were of little importance.⁶

One possible reason for the inconsistency in these findings is that each of the studies had one or more methodological limitations. The studies were usually small and did not consider whether the relationship between parents and children changed during adolescence. In addition, although the findings were usually based on analyses of children's reports of their parents' smoking behaviour and attitudes, no attempt was made to measure the extent to which this differed from that of the parents' own reports. Finally, the studies were usually cross sectional in design and so could not reveal the effect of changing parental smoking behaviour and attitudes on their children.

In this paper we aim to identify more precisely the nature of parental influence on their children's smoking through an analysis of the data collected in a large longitudinal study of adolescent smoking behaviour.

Method

The data were taken from the MRC/Derbyshire Smoking Study.⁷ In that study a cohort of over 6000 adolescents was followed from entrance to secondary school aged 11–12 years in 1974 until they reached school leaving age in 1978. Each year the adolescents were required to answer, in their classrooms, a questionnaire about their smoking behaviour and other issues. In 1981, a questionnaire requesting details of their smoking behaviour was sent to all the adolescents from the cohort whose addresses were provided by their schools in 1978. In 1974 and 1978 a questionnaire requesting details of their own smoking behaviour and attitudes towards smoking was sent to the parents of those adolescents who answered in those years.

The response rate of the adolescents fell from 86% of 7383 in 1974 to 75% of 7611 in 1978 and then rose to 79% of a restricted sample of 6983 in 1981. The parents' response rate fell from 88% of 6330 in 1974 to 75% of 5686 in 1978. The children's and their

parents' replies were individually linked in 1974, then through to 1978 and on to 1981. Of the 6310 11–12 year olds who answered the questions on smoking in 1974, 85% had questionnaires answered by their parents in that year. Of these adolescents 68% were traced in 1978 and 55% in 1981.

In the questionnaire the parents scored 21 attitude items on a five-point scale of strongly agree to strongly disagree. For analysis the parents' replies in 1974 to the various questions about their attitudes towards smoking were grouped to form four composite variables to measure their attitudes towards the following:

(1) Smoking in general (ie, agreeing or disagreeing with "Smoking does more good for a person than harm", "There is nothing wrong with smoking", "Smoking is pleasurable", "Smoking is a dirty habit")

(2) Smoking by children (ie, (dis)agreeing with "Cigarettes should be less available to adolescents", "I wouldn't like my children to smoke", "Children should never smoke")

(3) Smokers' rights (ie, (dis)agreeing with "Morally, no one should prevent someone else from smoking", "Parents who smoke have no right to prevent their children from smoking")

(4) Smoking prevention (ie, (dis)agreeing with "Children should be discouraged from smoking", "There is not enough fuss being made about the dangers of smoking").

The results are in the form of a descriptive presentation of prevalences with regression analyses used to assess the significance of differences between various groups allowing for other factors.⁸ Unless otherwise stated significance tests are all at the 5% level.

Results

Table 1 gives a summary of the information on parents' smoking and attitudes from the 1974

Table 1 *Parents' self-reported smoking behaviour and attitudes (1974)*

	Fathers %	Mothers %
Smoker	54.5	39.4
Favourable attitude to smoking in general	66.5	50.9
Favourable attitude to youth smoking	14.3	12.8
Favourable attitude to smokers' rights	65.4	65.5
Unfavourable attitude to smoking prevention	5.8	5.2
Nmin	2272	2380

parents' questionnaire when their children were aged 11–12 years. Over half the fathers and about 40% of the mothers admitted smoking and about two thirds of the parents held a favourable attitude to smoking in general and to smokers' rights, although less than 15% favoured children smoking and only 5% were against more health education campaigns.

Table 2 compares the data on parents' smoking behaviour obtained directly with the data from the children's reports of their parents' smoking behaviour. Taking the parents' reports as the truth, this shows that of the mothers who smoked, 96% were correctly identified by their children as being smokers, while of the fathers who smoked, 92% were correctly identified. However, of the mothers and fathers who claimed not to smoke, 10% were identified by their children as being smokers.

Table 2 *Comparison of parents' reports of their smoking behaviour with children's reports of their parents' smoking behaviour*

	Mothers' report		Fathers' report	
	Smoker (n)	Non-smoker (n)	Smoker (n)	Non-smoker (n)
Boys' report: Mother smokes	95.8%(1018)	11.1%(1534)	—	—
Father smokes	—	—	92.8%(1333)	9.7%(1061)
Girls' report: Mother smokes	96.0%(1056)	9.7%(1612)	—	—
Father smokes	—	—	90.9%(1337)	9.4%(1115)

Although there was no directly equivalent question on parents' attitude to smoking on both parents' and children's questionnaires, it was possible to compare the mothers' reports of their attitude towards their children smoking with their own children's reports of parental permissiveness towards smoking. Table 3 shows that of those mothers who reported that they would not like their children to smoke, 78% of their sons and 69% of their daughters reported that their parents did not allow them to smoke. This meant that roughly a quarter of the mothers who did not want their children to smoke were not considered anti-smoking by their children. Conversely, of those mothers who were not against their children smoking, only a third of their children reported that their parents did not forbid them to smoke.

In 1974, 91% of the children lived with both parents, 7% with mother alone, 2% with father alone, and the remaining 1% in some institution. Whereas 51% of single mothers and 66% of single fathers

Table 3 Comparison of mothers' attitudes to their children smoking with children's reports of their parents' restrictions on smoking

	Child's report: "My parents don't allow me to smoke"	Mother's report: "I wouldn't like my child to smoke"	
		Agree	Disagree/Don't know
Boys	Agree	1890(78.2%)	139(66.8%)
	Disagree/Don't know	526(21.8%)	69(33.2%)
Girls	Agree	1940(69.2%)	126(67.4%)
	Disagree/Don't know	863(30.8%)	61(32.6%)

smoked in 1974, only 38% of the other mothers and 53% of the other fathers smoked. Table 4 details the proportion of adolescents smoking in 1974, 1978, and 1981, when aged 11–12, 15–16, and 18–19 years respectively, with reference to whether or not they lived with both parents in 1974. At each age those adolescents who came from single-parent families were most likely to smoke. The boys were most likely to smoke if they lived only with their mothers, and conversely the girls if they lived only with their fathers. This appeared as a significant interaction in the regression analysis. The relations were apparent irrespective of the parents' smoking behaviour.

Table 4 Smoking behaviour of adolescents in 1974, 1978, and 1981 who lived with one or both parents in 1974

Parents present in 1974	1974		1978		1981	
	%	No	%	No	%	No
Boys						
Both parents	5.5	2418	23.0	1802	31.2	1828
Mother only	9.2	185	36.4	132	42.4	125
Father only	8.7	46	16.7	30	40.7	27
Other	5.7	35	11.8	17	40.0	15
Girls						
Both parents	2.2	2528	21.2	1950	28.8	1974
Mother only	2.5	200	26.7	135	29.9	144
Father only	6.5	46	50.0	24	58.3	24
Other	2.9	35	34.8	23	35.0	20

Table 5 details the proportion of adolescents smoking in 1974, 1978, and 1981 with reference to their parental smoking behaviour and attitudes in 1974. Since information on both parents in 1974 was used in the statistical analysis those adolescents from one-parent families are not included in this table. A series of regression models^a was fitted to estimate the form and strength of the relation between parental smoking behaviour and attitudes in 1974 and the prevalence of smoking among the boys and girls in 1974, 1978, and 1981. The analyses not only considered the parental behaviour and attitudes

simultaneously but they also took account of those variables already known to be associated with smoking which were social class, sibling smoking behaviour, and the children's friendship patterns.^{7 9} In this analysis several of the parental characteristics were found to be significantly related to the extent of adolescents smoking.

At each of the three ages the boys were significantly more likely to smoke if, when the boys were aged 11–12, their mothers were not opposed to children smoking (attitude 2), irrespective of the mothers' own smoking behaviour. The 11–12 year old boys were also significantly more likely to smoke if their mothers were not opposed to smoking in general (attitude 1). At 15–16 years the boys were significantly more likely to smoke if their mothers had smoked four years previously. Finally, at 15–16 and 18–19 years the boys were significantly more likely to smoke if their fathers had smoked when the boys were 11–12 years.

Among 11–12 and 18–19 year old girls smoking was significantly more likely if their mothers had smoked when the girls were 11–12 years. This relation approached significance among 15–16 year old girls who were also significantly more likely to smoke if their fathers had smoked four years previously. There was no significant relation between parental attitudes and the girls' smoking behaviour.

Table 6 details the proportion of 15–16 and 18–19 year olds smoking according to the change in their parental characteristics between 1974 and 1978 when the adolescents were aged between 11 and 16 years. The numbers available are considerably reduced because many mothers did not reply in 1978. Since in 1978 the fathers were not required to answer the questionnaire, data on their attitudes were not available and information on their smoking behaviour was obtained from the mothers.

There was a consistent pattern in the marginal totals (table 6). Those adolescents whose parents moved in the direction of increasing the risk (eg, adopted smoking) were more likely to adopt smoking themselves than those whose parents did not (eg, remained non-smokers). This pattern was often delayed, being more apparent at 18–19 than at 15–16 years. However, the number of children whose parents' behaviour changed was small, and these patterns did not reach significance in the regression analysis.

Discussion

This study revealed substantial agreement between children and parents in reporting parental smoking behaviour. The slightly higher prevalence of parental smoking reported by the children may have been due

Table 5 Proportion of adolescents smoking in 1974, 1978, and 1981 in relation to characteristics of their parents in 1974

1974 parental characteristics	Boys						Girls					
	1974 (11-12 yr)		1978 (15-16 yr)		1981 (18-19 yr)		1974 (11-12 yr)		1978 (15-16 yr)		1981 (18-19 yr)	
	%	No	%	No	%	No	%	No	%	No	%	No
Father does not smoke	2.5	528	15.5	413	22.7	409	1.9	585	14.7	496	21.7	480
Father used to smoke	3.9	540	19.4	422	29.4	442	1.9	581	19.3	461	27.5	458
Father smokes	7.1	1280	27.6	911	35.9	931	1.9	1275	25.7	930	32.6	980
Mother does not smoke	4.1	1203	18.0	905	28.2	914	1.3	1249	17.7	1010	23.4	985
Mother used to smoke	5.6	268	25.7	206	33.0	215	1.0	306	19.8	242	30.9	249
Mother smokes	7.6	909	28.3	661	34.3	671	3.7	943	26.9	672	35.3	712
Father against smoking	4.1	763	19.2	577	27.4	610	1.7	818	17.5	664	26.0	649
Father favours smoking	6.2	1514	24.5	1117	33.3	1127	2.3	1564	23.7	1179	30.7	1227
Mother against smoking	3.0	1183	20.6	884	28.3	905	1.7	1241	18.2	982	25.1	973
Mother favours smoking	7.9	1224	25.4	913	34.2	916	2.7	1276	24.3	957	32.5	992
Father against youth smoking	5.3	1952	22.9	1448	30.9	1493	1.9	2013	21.2	1561	28.4	1559
Father favours youth smoking	6.5	325	21.5	246	33.2	244	3.0	365	23.3	279	33.3	273
Mother against youth smoking	5.0	2102	22.1	1582	30.0	1598	2.1	2143	21.3	1674	28.2	1698
Mother favours youth smoking	8.8	308	30.4	214	39.9	223	3.2	374	21.1	265	32.6	267
Father against smokers' rights	4.7	786	21.0	587	32.0	606	1.5	791	18.2	610	25.8	620
Father favours smokers' rights	5.9	1487	23.6	1105	30.7	1129	2.4	1588	23.1	1230	30.8	1254
Mother against smokers' rights	4.5	829	19.9	628	31.5	644	1.3	874	19.3	696	26.3	688
Mother favours smokers' rights	6.1	1577	24.8	1167	31.1	1174	2.7	1637	22.4	1239	30.2	1274
Father favours smoking prevention	5.3	2140	22.5	1588	31.3	1641	2.2	2220	21.8	1730	29.2	1754
Father against smoking prevention	7.6	132	25.7	105	30.9	94	6.7	152	17.0	106	28.3	113
Mother favours smoking prevention	5.5	2275	23.0	1705	31.6	1735	2.3	2374	21.3	1828	29.1	1866
Mother against smoking prevention	7.2	125	23.9	88	22.2	81	0.7	134	20.6	102	24.7	93
Smokers	5.9	2407	23.0	1795	31.2	1823	2.2	2520	21.3	1942	28.8	1967

to some children describing their parents as smokers because they smoked once or twice a year. More sensitive questioning would determine if this was the case. However, from the extent of agreement between children and parents we are confident that the parents' report, which was used in subsequent analyses, is a reasonable estimate of parental smoking, perhaps missing some parents who smoked very rarely.

Although it was not possible to make directly equivalent comparisons between the parents' reported attitudes and those perceived by the children, there was a large degree of agreement between children and parents in reporting the parents' attitude to the children smoking. Most parents who did not want their children to smoke were perceived as anti-smoking by their children. However, this was not always the case. Roughly a quarter of the parents who claimed that they were against their children smoking were not described as anti-smoking by those children. This may well be a reflection of developmental changes. During adolescence parents gradually relinquish control

over their children.¹⁰ It may be that while many parents would not like to see their children smoking they are reluctant actively to discourage it. Our analysis of change in mothers' attitudes during early adolescence supports this interpretation. During that period there was a movement towards a more permissive view of smoking by the mothers. It seems that as their children develop mothers become more reluctant to attempt to restrict their smoking as part of a general relaxation of controls.

Both children and parents in one-parent families were more likely to smoke. Such families are known to endure a variety of social and economic problems.¹¹ The consequent higher level of stress seems to be conducive to smoking. Further, it has been shown that when one member of a family ceases to play his or her rôle for any reason (eg, divorce, sickness, death), then other family members take over the vacant rôle to ensure that the family unit continues to function.¹² By taking on additional rôle responsibility the individual can develop a variety of physical and psychological problems. Our finding that the boys without a father and the girls without a

Table 6 Proportion of adolescents smoking in 1978 and 1981 in relation to changing characteristics of their parents between 1974 and 1978

Changing parental characteristics 1974-8	Boys				Girls			
	1978 (15-16 yr)		1981 (18-19 yr)		1978 (15-16 yr)		1981 (18-19 yr)	
	%	No	%	No	%	No	%	No
Father does not smoke	14.9	664	21.2	585	14.5	763	21.2	664
Father stops smoking	20.0	150	23.4	124	21.2	170	19.9	151
Father adopts smoking	15.0	40	30.3	33	14.9	47	24.4	41
Father smokes throughout	24.6	496	34.1	419	22.3	539	27.8	453
Mother does not smoke	16.3	858	24.5	734	15.7	996	19.9	861
Mother stops smoking	20.5	88	21.8	78	20.0	70	30.5	59
Mother adopts smoking	30.6	49	35.6	45	23.5	51	38.5	39
Mother smokes throughout	24.5	364	30.3	307	22.5	417	28.9	360
Mother against smoking	15.6	488	21.2	424	15.2	580	18.6	500
Mother moves against smoking	19.8	202	23.7	173	20.4	245	25.9	212
Mother moves in favour of smoking	19.1	220	28.9	190	17.3	243	22.7	207
Mother favours smoking	23.1	472	31.3	396	20.9	487	28.1	416
Mother against youth smoking	18.7	1215	25.9	1035	17.9	1358	23.5	1181
Mother moves against youth smoking	20.0	50	27.5	51	19.7	61	23.4	47
Mother moves in favour of youth smoking	22.4	98	28.8	80	17.0	100	22.9	83
Mother favours youth smoking	33.3	9	20.0	10	29.6	27	22.2	18
Mother against smokers' rights	15.5	219	24.7	194	10.8	260	20.3	222
Mother moves against smokers' rights	15.5	187	20.8	149	16.3	202	23.3	172
Mother moves in favour of smokers' rights	17.6	267	29.2	233	19.3	316	22.4	272
Mother favours smokers' rights	22.2	703	27.2	603	20.7	774	25.0	668
Mother favours smoking prevention	19.4	792	26.3	692	18.4	860	23.5	745
Mother moves to favour smoking prevention	19.0	147	26.8	123	19.3	161	15.9	126
Mother moves against smoking prevention	19.0	252	29.2	209	16.7	299	27.4	266
Mother against smoking prevention	21.2	170	21.4	140	18.6	220	22.2	185

mother were most likely to smoke suggests that these teenagers adopt smoking to cope with the strain of filling the rôle of the missing same-sex parent.

Our results confirm that, in general, parental smoking behaviour is more important than parental attitudes in the development of smoking among children. The clear sex-linking in the relation between parents' and children's smoking behaviour suggests that to many adolescents the uptake of smoking is part of the process of becoming adult as modelled by the same-sex parent. Even among the older adolescents this influence of parental smoking was still apparent. Further, when the parents changed their smoking behaviour the risk of their children smoking altered accordingly. This agrees with the findings in Horn's original study.¹

Although the fathers' attitudes to smoking were not significantly related to the smoking behaviour of their children, there was a significant relation between mothers' attitudes and the boys' smoking. The smaller influence of fathers' attitudes probably reflects their lesser rôle in child-rearing. The importance of the mothers' attitudes for the boys but not for the girls is interesting. According to the children's own reports the mothers were less likely to discourage smoking among boys than among girls

(table 3). Not only did the mothers have a different attitude to boys smoking, but the boys themselves seemed to be more influenced by their mothers' attitudes.

In conclusion, our findings confirm that parental smoking behaviour and attitudes are an influential factor in the development of smoking among adolescents. One hopeful sign is that by giving up smoking or changing their view of children smoking the parents seemed to reduce the risk of their children smoking. This is a factor that should be considered in the design of future health education programmes for children. Research conducted in Norway¹³ found that the effectiveness of school anti-smoking programmes was greatly increased when the parents were involved.

Previous anti-smoking campaigns have concentrated much of their effort on discouraging children from smoking with the aim of creating a non-smoking generation. This approach does not take sufficient account of the fact, reconfirmed by our findings, that children are influenced by the behaviour and attitudes of adults, especially their parents. The most effective way to stop children smoking may be to discourage smoking among adults. For example, the decline in the prevalence of

smoking among middle class adults over the past 30 years has been followed by the emergence of a social class gradient in the prevalence of smoking among children.¹⁴ Future health education efforts should not consider children in isolation but rather as part of a society in which smoking is still acceptable adult behaviour. Unless action is taken on a societal level to reduce smoking among adults then the aim of creating a non-smoking generation will be frustrated.

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