Primary schoolchildren’s perceptions of smoking: implications for health education

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Abstract

This paper suggests that there is a need, as early as Reception, to implement smoking intervention programmes in the local school curriculum. Findings from a cross-sectional study have shown that primary schoolchildren (4-8 years old) possess negative attitudes and beliefs about smoking, have as yet to establish regular patterns of smoking behaviour, and have a broad understanding of the nature of smoking. Health educators need to capitalize on this negative disposition toward smoking via early intervention; however, to date, there are no smoking-specific health education measures for this age group. The implementation of proactive programmes, before the habit manifests itself, has many supporters but little research has been conducted. This study was devised to fill this significant gap in the literature on smoking.

Data was collected on a representative sample of primary schoolchildren in the city of Liverpool. A triangular methodology was adopted consisting of questionnaires (N = 1701), the Draw and Write investigative technique (N = 976), and semi-structured interviews (N = 50). The results highlight the need to implement smoking intervention programmes from Reception onward, the importance of developing a model that is more than just knowledge based and the necessity of involving the family in any school-based health education strategies.

Introduction

There has been little change evident in patterns of smoking among youth in Great Britain over the last decade (OPCS, 1994; Reid, 1996). Current research has concluded that the rates of smoking among Britain’s teenagers are at the highest rates ever, with 40% of boys and 50% of girls having tried smoking by age 13 (ASH, 1996).

Locally, in the city of Liverpool, where both the prevalence of adult smoking (30%) and the lung cancer mortality rates (134.2 for males and 82.7 for females per 100,000 population) are some of the worst in the country, a recent survey has found that the percentage of local 10 and 11 year olds smoking is higher than the national average (Dawson, 1995). Such trends persist despite compelling scientific evidence linking tobacco smoke to lung cancer and pervasive anti-smoking campaigns targeted specifically at adolescent smokers.

Although studies have shown that school-based anti-smoking strategies can somewhat delay recruitment to the habit (Nutbeam and Aaro, 1991; Stead et al., 1996), most programmes to date have been relatively ineffectual (Reid, 1996). One possible explanation for such futility is that smoking intervention strategies tend to be reactive, i.e. implemented into the school curriculum at a stage when attitudes and beliefs toward smoking have long been established and experimentation with cigarettes is often underway.

At present, in the UK, for example, there is no
mandatory forum to address the issue of smoking in Key Stage 1 of the National Curriculum Guidance 5: Health Education document (National Curriculum Council, 1990) and no smoking-specific intervention available for children under 8 years of age. In Liverpool, few schools approach the topic until Year 6 (Ord and Ashton, 1991), by which time almost one-quarter of children have already tried to smoke (Walters and Whent, 1995).

Because it is easier to establish positive health attitudes than change negative ones (Jurs et al., 1990), the necessity of implementing a smoking education program early in the school curriculum is paramount. This proactive approach to smoking has many advocates (Baric and Fisher, 1979; Schinke and Gilchrist, 1983; Michell, 1989; Oei et al., 1990; Cohen et al., 1990; Amos, 1992; Bush and Iannotti, 1993; Glynn, 1993; Kelder et al., 1994) and is further endorsed by drug educators (Ives and Clements, 1996; Jackson, 1996). It is based on the premise that smoking patterns begin prior to experimentation, with the development of attitudes and beliefs that in turn can influence behaviour (Leventhal and Cleary, 1980). This developmental process begins in early childhood between the ages of 5 and 8 years (Health Education Authority, 1991) when exposure to cigarettes enables children to learn the nuances of smoking from significant others, enables them to become informed about the nature of the habit, and where, ultimately, they cultivate their attitudes, beliefs and perceptions of smoking behaviour (Leventhal and Cleary, 1980; Flay et al., 1983; Conrad et al., 1992; Royal College of Physicians, 1992).

Although this allusion to the necessity and importance of looking at young children “in view of the recognized influence of the early years on attitude and habit formation” (Schneider and Vannamstright, 1979, p. 72) has been espoused by prominent researchers in current smoking studies (Leventhal and Cleary, 1980; Oei and Burton 1990; Stanton and Silva, 1991; Bowen et al., 1991; Young, 1992; Bhatia et al., 1993; OPCS 1993; Fidler and Lambert, 1994), a paucity of pertinent research prevails. In fact, there has been no smoking research conducted on children 4–8 years of age in Liverpool and relatively few at the national (Fidler and Lambert, 1994; Somerset Health Education Authority, 1994) or international levels (Tucker, 1987; Oei and Burton, 1990; Bhatia et al., 1993).

The dearth of research on this particular age group has also resulted in a lack of awareness about young children’s attitudes toward smoking and to what extent they partake in the habit. This, in turn, has ramifications for the development of effective smoking interventions, which need to be based on an accurate understanding of the beliefs and knowledge of the target group (Tones, 1990, as cited in Oakley et al., 1995, p. 1029). Research efforts involving primary school children are therefore necessary before health educators and health promoters can put into practice their general belief that the elimination of smoking-related diseases can only be achieved via primary prevention: deterring children from starting to smoke.

**Study design**

The research study presented here was devised to address the issue of smoking in local young children, specifically before the habit manifests itself, to highlight the necessity of early intervention and, ultimately, to fill a significant gap in the smoking literature. The aim was to yield insights into the acquisition of attitudes and beliefs by examining the knowledge and perceptions that Liverpool primary schoolchildren (4–8 years of age) of varying socio-economic backgrounds have about smoking. This will provide a foundation on which to develop an effective intervention model for health promotion aimed at combating the increasing prevalence of smoking among local children.

**Sample**

All primary schools in the city of Liverpool were invited to participate in the study and, of those responding, 12 were chosen. Selection was based on various social and economic indicators: unemployment statistics from the 1991 Census, Liverpool lung cancer standardized mortality ratios and the Index of Well-being (Shepton, 1994), to
Table 1. Subject profile information

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Consent was obtained from head teachers, parents and the children themselves. Table 1 provides details of the subjects who participated in the study. The sample is fairly evenly distributed; each year group comprises approximately one-quarter of the total sample.

Letters of introduction, consent forms and parental questionnaires were sent home with each child. The purpose of the parental questionnaire was 2-fold. Firstly, it was designed as a validity check, enabling cross-comparisons to be made with the subjects, to ensure that responses were truthful in nature. Secondly, the information was needed to confirm that the proven link between social class and rates of smoking did exist within the sample population (Marsh and McKay, 1994). As expected, the highest proportion of smokers in the parental sample was found among manual labourers, the unemployed and homemakers. Such findings are in accordance with the figures published by the Health Education Authority (Walters and Whent, 1995) and effectively illustrates why the Mersey region, with a rate of unemployment that is twice that of the national average, has smoking-related lung cancer rates 30% higher than the national average (Mersey Regional Cancer Registry, 1993).

Although the correlation between smoking and social class was firmly established in the parental sample, no statistically significant differences were found in the children’s attitudes, beliefs and behaviour toward smoking based on social class.

Several studies of note have had similar findings (Oakley et al., 1992; Glendinning et al., 1994; Reid et al., 1995). However, as previous research has confirmed, parental smoking habits can influence the future smoking behaviour of children (Charlton and Blair, 1989; WHO and Chollat-Traquet, 1992) and adult smoking prevalence is linked to deprivation (Marsh and McKay, 1994), therefore it is suggested that social class is an important intervening variable which can indirectly shape children’s perceptions and behaviour toward smoking.

Methods

As the collection of information from children requires ‘a special approach’ (Oakley et al., 1995) involving diverse skills and different research methods (Mahon et al., 1996), a singular methodology would not suit the requirements of this study’s aims and objectives. Consequently, a consolidation of the methods that best measure attitudes, beliefs and perceptions with the tools that best accommodate children as subjects was deemed to be the best methodological design. Hence, the multi-method approach known as triangulation, the utilization of both quantitative and qualitative methods to investigate human behaviour from a variety of perspectives, was adopted (Cohen and Manion, 1994). Using both the quantitative and qualitative paradigms in this research allows for a ‘holistic’ depiction of the children under study and enables the weakness of one method to be compensated by the strength of the other. Additionally, the outcomes from each approach can be used to cross-validate the research findings, thereby enhancing validity and confidence in the results (Breitmayer et al., 1993).
Although some social scientists argue that the methodological integration of divergent paradigms is infeasible due to fundamental philosophical differences, others like Steckler et al. (1992, p. 4) adopt a more pragmatic approach and suggest that combining qualitative and quantitative methods is not only possible but necessary because:

...social interventions, such as health education and health promotion programs, are complex phenomena which require the application of multiple methodologies in order to properly understand or evaluate them.

For the purpose of this study, the multiple methods selected consisted of a questionnaire, the Draw and Write investigation technique (Williams et al., 1989), and semi-structured interviews. In the subsequent evaluation of the results, the rich, detailed ‘process’ information gathered from the qualitative methods of Draw and Write and semi-structured interviews not only substantiated the factual ‘outcome’ data of the questionnaires but also enriched them as well (Jick, 1983).

**Questionnaire**

A developmentally appropriate questionnaire was created, with the aim of obtaining information on children’s knowledge and experience of smoking to provide baseline data (see Appendix). Using the review findings of previous research that examined the different factors that influence the smoking behaviour of older children, the questionnaire was designed to collect demographic information, personal smoking behaviour, parental, sibling and peer smoking behaviour, current and future intention to smoke, and attitude toward smoking.

This questionnaire was subjected to extensive piloting to establish content validity. The revised version was administered to 1701 children in 12 schools. Each of the 12 questions on the questionnaire was read aloud by the researcher to children in groups of two, who were asked to tick the box that best described what they believed to be the correct answer. Accuracy and confidentiality were stressed. All questionnaire responses were coded and entered on a computer database for statistical analysis consisting mainly of tests of significance ($\chi^2$).

**Draw and Write investigation technique**

The Draw and Write investigation technique, which requires children to draw pictures and write a response in accordance to specific invitations read aloud in the classroom by the researcher, was conducted with 976 children in six of the 12 original schools. Drawing has proven to be an effectual method for delving into the belief systems of young children (Pridmore and Bendelow, 1995) and the value of this particular tool lies in the fact that it simulates day-to-day school activity, it meets the requirements of a large-scale survey, it is a child-centred approach that enables all subjects to partake at their own level and it provides insight into children’s thinking at differing levels of cognitive development (Williams et al., 1989).

The smoking-specific investigation used in the study (Wetton, 1990) employed four different invitations for the purpose of discovering what perceptions and beliefs children had regarding smoking. After administration, coding categories were developed for use in analysing the responses which was based on frequency of responses.

**Interviews**

A subsample of 50 children from the six schools partaking in the Draw and Write investigation technique were asked to participate in semi-structured confidential interviews which explored the underlying attitudes and beliefs children have about smoking. Children were asked to comment on various pictures, respond to several questions and give their opinion on a multitude of smoking-related statements. Many of the issues explored in great detail during the interview stemmed from recurring themes in the Draw and Write method. Each interview, approximately 30 min in length, was tape recorded and transcribed. Content analysis was conducted and themes indicating trends in the attitudes, beliefs and perceptions children of varying ages have about smoking were identified.
Results

The results of this study, involving the analysis of data from the use of three diverse methods within a large sampling frame were extensive, thus only a summary of the findings is detailed below. A detailed account is available in an interim research report entitled *Attitudes, Beliefs and Smoking Behaviour of Liverpool Primary Schoolchildren* (Porcellato et al., 1996).

Summary of questionnaire results

The results of the questionnaire were divided into three sections: smoking experience, attitude toward smoking and intention to smoke in the future.

**Smoking experience**

The majority of children in the sample (94%) had never tried to smoke a cigarette (*N* = 1583). These children were labelled ‘non-triers’. A small proportion of children (6%) tried at least one puff of a cigarette and were subsequently labelled ‘triers’. A large number of triers (70%) were boys (*P* < 0.001) and over 60% had parents who smoke (*P* < 0.001). The children in the study were also asked questions about the smoking habits of their parents, siblings and peers. Almost half of the parents in the sample, 47% of mothers and 48% of fathers, were smokers, whereas less than 10% of siblings and peers smoked, respectively.

**Attitude toward smoking**

As one component in the assessment of attitude toward smoking, children were asked if they thought smoking was good or bad for people. From the data collected, 91% of children believed smoking was bad for people, less than 3% thought it was good and 6% of children did not know. Of the children who had a positive disposition toward smoking (*N* = 42), 70% had parents who smoke (*P* < 0.05) and 60% were 4–5 years of age (*P* < 0.001). Twice as many boys (*N* = 28) as girls thought smoking was good for people (*P* < 0.05). This statistical significance suggests a gender bias in the smoking experiences of the children in this study.

**Future intention to smoke**

An additional means of drawing out children’s attitudes toward smoking was accomplished by asking the children if they thought they would smoke when they grew up. A large proportion of the children (77%) did not intend to smoke in adulthood, whilst 10% were uncertain about their future smoking habits. Of the 13% who intended to smoke, the majority were from Reception and Year 1 (*P* < 0.001). Statistically significant gender differences (*P* < 0.001) were also apparent as boys were twice as likely to want to smoke in the future than girls. At least 60% of the children who intend to smoke when older had parents who smoke (*P* < 0.001).

Summary of Draw and Write findings

The children in a subsample of six schools (*N* = 976) were invited to partake in a Draw and Write session that involved four different inquiries. In the first inquiry, the children were asked to draw someone who smokes and write how they think that person feels and where they think the smoke goes. For the majority of the children in the sample (60%), smoking had negative associations, whilst only a minority (less than 30%) felt it had positive characteristics. Smokers were generally described as feeling ‘sick’, ‘bad’, ‘horrible’ or ‘dizzy’ (Figure 1).

In Inquiry 2, the children were asked to draw a person who had been smoking for a long, long time and write how they could tell from the inside of the body that this person had been smoking for a long time. Of the four inquiries, this one proved to be the most difficult to answer, in particular for the young children who had difficulty understanding the concept of ‘inside the body’. Cancer and damage to specific organs such as the lungs and heart was mentioned by 22% of children, the majority in Year 2 and 3. As depicted in Figure 2, most of the children relied heavily on visible signs of smoking (smoke, cigarettes, ashtray) and physical appearance (wrinkles, yellow fingers, black teeth).

In Inquiry 3, the children were asked to draw a young person who just started to smoke and write
Fig. 1. Examples of responses for Inquiry 1 across year groups.

the answer to three questions: how old do you think this person is? where did this young person learn to smoke? and why does this young person want to smoke? Figure 3 gives details about children's perceptions of smoking acquisition across year groups. Familial references account for at least 40% of the responses regardless of age. The older children, however, specifically mention mother, father or both parents, whereas the young-

sters tend to use the more universal term of ‘home’ to convey the same notion.

A further point of difference between the year groups lies in their interpretation of the question asked. Children in Reception tended to interpret the question where has your young person learned to smoke? literally and thus cited specific locations with much greater frequency than their older counterparts. In addition, the peer group which
plays a minimal role in the eyes of the 4–5 year olds (less than 1%) is one the most frequent responses given by those children in Year 3.

With reference to why young people want to smoke, children in Reception were most likely to state ‘because they want to’ or ‘because they like it’, whereas the 7 and 8 year olds were more likely to cite self image and copying others, particularly friends, as the reason. At least half of the young children drew a young smoker who was less than 10 years of age, whereas the majority of the older age group depicted a young smoker between the ages of 11–20 years.

In Inquiry 4, the subjects were instructed to draw themselves in a room full of smokers and write how they feel and what they would say. Invariably, almost the entire sample denoted negative feelings in the presence of individuals who smoke (Figure 4). However, of the children who enjoyed being in the company of smokers, the majority were children from Reception. With respect to what the subjects would say to smokers,
the most popular response by almost 80% of the children, regardless of age, was asking a smoker to stop or quit smoking, or leave the room. Some children (6%) said they would reprimand the smokers or question their rationale for smoking (4%) and a few stated they would leave the room themselves (2%).

Summary of interview results

Dominant themes to emerge from content analysis of the interviews included negative attitudes toward smoking, knowledge about smoking and familial influences.

Negative attitudes

This pattern of negativity that dominates the research findings can be seen in the manner in which the subjects’ perceived smokers. Despite age, children were twice as likely to express negative feelings about individuals who smoke. Comments attesting to the ‘stupidity’ of smokers ‘because it’s not good for you’ are paramount. All the subjects emphatically stated that smoking was bad for people and could not think of any benefits for indulging in the habit. Negative perceptions were also evident about the social desirability of young smokers. Most of the sample were inclined to believe that smokers generally made less than favourable friends because of the moral taboos attached to the smoking habit.

Knowledge about smoking

An aspect that became obvious from the analysis of Draw and Write, and which is recurrent throughout the interviews, is the fact that this sample of children has well-informed perceptions of smoking founded in a comprehensive and principally accurate knowledge base. The entire sample knew cigarettes could be purchased at shops and many were aware of a minimum age of purchase. Almost without exception, those interviewed believed that non-smokers outlived smokers and knew of the significant health risks involved. Parents were implicated as the main source of information regarding health consequences. Those interviewed also made inferences that implied an understanding of concepts such as addiction, cessation and passive smoking.

Although the attitudes, beliefs and perceptions children hold about smoking are generally sound, they do have some misconceptions about the habit.
which emanate, it would seem, from their belief that smoking is an adult activity. Questions probing the appropriateness of smoking in relation to age revealed that a significant proportion of the sample thought it was ‘OK’ to smoke “when you’re at adult age because adults are bigger than kids”.

**Familial influences**

The premise that one learns to smoke ‘from their families’ was central to the core of childrens’ beliefs about smoking. In the opinion of most of the children interviewed, parents occupy the role of primary educator with regard to smoking acquisition and are not seen to relinquish the position until parental influence gives way to peer influence with the progression of age. This transition from family to friend was also seen in childrens’ perceptions of why people want to smoke. A significant number of children in the older age group felt that young smokers would
originate from families where smoking was prevalent. A girl in Year 3 hypothesized that “they couldn’t have bought the ciggys from the shop so they might have got them off their mum.”

**Discussion**

The overall research findings of this triangulated study lead us to conclude that primary school children in Liverpool, age 4–8 years, generally have a negative disposition toward smoking and, for the most part, have yet to establish regular patterns of smoking behaviour. Moreover, they appear to possess a fairly sophisticated understanding of the nature of smoking in conjunction with a strong belief that the habit is an intrinsic part of adulthood. Although their perceptions are generally accurate, many also harbour misconceptions about the reality of health risks in adulthood. The identification of such factors has generated greater insight into what children think about smoking and, moreover, lends credence to those who espouse the implementation of smoking intervention strategies much earlier in the school curriculum, prior to the manifestation of the habit.

**Negative disposition toward smoking**

The disdain for smoking and smokers as a predominant theme in the resultant data of the diverse methods strongly supports the work of previous researchers who have conducted similar investigations on older children (Oei and Burton, 1990; Bhatia et al., 1993). There is also noteworthy consistency with the results from the Somerset HEA Best of Health Project and Somerset Health Authority Study (1994) looking at children’s perceptions of smoke, smokers and smoking upon which the Draw and Write inquiries (Wetton, 1990) were based. Such congruency suggests that this methodology is valid for assessing children’s perceptions about smoking. When such anti-smoking sentiment abounds, it would seem to be the ideal opportunity to introduce health education measures that could maintain and build upon such negativity, and subsequently enable schoolchildren to resist taking up the habit as they enter adolescence.

**Influence of family**

According to the research findings obtained from all three methods, the family plays an integral role in the smoking perceptions of young children. Parents in particular are accorded special significance by children, who see them as the main source of information with regard to health-related behaviours as well as one of the primary inspirations for young people wanting to smoke.

The results of the study illustrating that children who reported having parents who smoke, siblings and friends who smoke are more likely to have tried a cigarette, more likely to want to smoke in the future and more likely to think that smoking is good rather than bad are consistent with the findings of Shute *et al.* (1981), who found that parents and siblings exert a powerful effect on the behaviour and desires of pre-school and first grade children. In concurrence are the results of a unique smoking study from Oxfordshire conducted by Fidler and Lambert (1994) who examined the influence of the adult role model of smoking on children aged 3–5 years of age and found that parents who smoke do influence their children’s total perception of smoking. Furthermore, Oei *et al.* (1990) also found a highly significant relationship between the smoking habits of children and their parents in their study on the smoking behaviour of 9-year-old children, as did Charlton (1996) on her work about children, smoking and the family circle.

In light of the influential nature of familial relationships, it is somewhat distressing to note that over half of the children in this study live in a home with at least one or more smokers, the majority of whom smoke more than six cigarettes per day, as compared to 47.5% of children who live in a house where no one smokes at all. This knowledge brings home the message that any health promotion measures must stretch beyond the confines of the school and must ‘bridge the interface between school and home’ if attempts are to be even remotely effective. Smoking intervention models must be developed to help dispel the incongruence children experience with regard
to what they perceive to be true, that smoking is bad, and the reality they encounter at home, parents smoking and enjoying it.

**Smoking as an adult activity**

Invariably, almost all the children in the study believed that smoking was bad. However, a significant number of children believed that it was ‘OK’ to smoke “when you’re at adult age because adults are bigger than kids”. According to some, smoking was an appropriate activity “when you are old enough to buy cigarettes” as “…their lungs have grown a bit bigger”. Similarly, others were of the opinion that “only big grown ups smoke and little ones can’t” because “it could kill children because they haven’t got as big lungs”, “because children are only little, we don’t understand”. Such misconceptions could perhaps be dispelled if young children were educated about the ubiquitous effects of smoking on all individuals, at all levels.

**The influence of age**

Further highlighted in this research is the significance of age in relation to perceptions, knowledge, attitudes and beliefs, and behaviour toward smoking. It is apparent that many of the responses given by the children are in effect shaped by their cognitive development. As such, any intervention strategy developed must be developmentally appropriate, whereby cognitive ability is synchronized with age level, comprehensive in nature and more than just knowledge based because these young children are generally well informed about smoking.

Moreover, the research findings of this study have enabled the identification of those children with a positive disposition toward smoking who could potentially be at ‘risk’ of engaging in the habit in the future. As children from Reception accounted for the greatest proportion of subjects who reported that they had tried to smoke, who intend to smoke in the future and who view smoking positively, these 4-5 year olds become an important cohort. Since the rationale for these findings in the Reception year group is not yet understood and the differences in children’s responses based on year group are as yet unclear, further exploration of such variables is merited. According to Flay (1993, p. 372),

Without a full understanding of [the acquisition] process, plus an equally full understanding of behaviour change processes in general, it is impossible to design very effective prevention programs.

In light of this premise, a longitudinal study of the Reception birth cohort will be conducted. By utilizing the research design of the cross-sectional work to track these subjects over the next few years, as they approach the age of experimentation, it will be possible to construct individual profiles which reflect the developmental progression of each child and their respective behaviour changes over time. Such information, which will enable strategies to be tailored accordingly, is fundamental to the creation of an effective smoking intervention model for health education aimed at deterring young local children from starting to smoke.

**Acknowledgements**

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Primary schoolchildrens’ perceptions of smoking


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Appendix: Example of questionnaire

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7. DOES YOUR MOTHER SMOKE?  
   YES NO USED TO SMOKE  

8. DOES YOUR FATHER SMOKE?  
   YES NO USED TO SMOKE  

9. IF YOU HAVE SISTERS, DO ANY OF THEM SMOKE?  
   YES NO  

10. IF YOU HAVE BROTHERS, DO ANY OF THEM SMOKE?  
    YES NO  

11. DO YOU THINK SMOKING IS GOOD OR BAD FOR PEOPLE?  
    GOOD BAD DON’T KNOW  

12. DO YOU WANT TO SMOKE WHEN YOU GROW UP?  
    YES NO DON’T KNOW  

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