

Impacts of Cigarette Sales to Adolescents, Familial Expectations of Smoking, and Drinking/Drug Use on Smoking Behaviour among Teenagers

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Abstract : The current study uses longitudinal data, which show secondary school students' responses in a biennial data of surveys from England (n=4,326/boys=2,313;girls=2,413) and Scotland (n=3,528/boys=1,744;girls=1,784), to describe the association between availability of cigarette sales to minor, pro-smoking attitudes of family members and drinking/drug use and smoking behaviours amongst adolescents. The findings provided strong evidence suggesting that availability of cigarette sales to minor, lack of familial interest on the child's smoking and other substance use were positively associated with the increased level of smoking behaviour in youth. Girls and boys also differed the likelihood of smoking and being a regular smoker. Boys were found to be more likely than girls to be smoking and to be a regular smoker. The implications of promising prevention programmes for preadolescents and areas for future research are presented

Key Words : Smoking behaviour, substance misuse, adolescents, familial interests, and Health

I. Introduction

According to the 1998 England Teenagers' Smoking, Drinking and Drug Survey <Table 1>, about 12% of students in grade 7-12 reported regular use of cigarette. The rate of regular smoking increased 10% to 12% between 1988 and 1998 in England, while the rate in Scotland remained same. In both England and Scotland, surprisingly, the statistics reveals that the regular smoking rate among girls has grown significantly more than that among boys.

While preventive approaches to smoking have been tried at various levels, cigarette use among adolescents continues to be significant health problems in England and Scotland (Aveyard et al., 2001; Hendry and Reid, 2000; Thrush et al., 1997) as well as in many other countries (Willemsen and DE Zwart, 1999; Glynn et al., 1993). Early prevention for smoking behaviour amongst adolescents appears to be crucial, because smoking in the early age could result in not only mental health problems (Silbereisen et al., 1995; McGee and Stanton, 1993) but also serious physical damage (Schubiner et al., 1998; Sussman et al.

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<Table 1> Smoking prevalence by sex and whether in test or control sample: England and Scotland, 1988-1998

Survey year	England						Scotland					
	Boys		Girls		Total		Boys		Girls		Total	
	Test	Control	Test	Control	Test	Control	Test	Control	Test	Control	Test	Control
	Percentage who were regular smokers											
1988	8	6	11	6	10	6						
1990	11	12	13	12	12	12	11	12	13	12	12	12
1992	8	10	10	10	9	10	8	11	14	13	11	12
1994	9	11	14	12	12	12	9	12	14	11	12	12
1996	13	9	16	14	14	11	14	14	14	14	14	14
1998	10	8	14	11	12	10	11	11	12	15	12	13
1998	1079	1234	1013	1330	2161	2565	882	862	858	926	1741	1787

base(100%)

(Taken from Office for national Statistics Social Survey Division, 2000, p.17 & p.70)

1998; Kurtz et al., 1996). Research in the U.S. suggests that the early age onset of smoking also increases the frequency of cigarette use in adulthood (Taioli and Wynder, 1991) as well as in subsequent years (Escobedo et al., 1993). Researchers (Boreham and Shaw, 2001; Vanderburg et al., 1995) also warn that occasional smokers are more likely to be involved in other substance misuse and vice versa.

As a result, the need of targeting on early initiators is recognised and a body of research has emphasised the importance of preventive efforts during the early years of adolescent period, focusing on educational efforts (Ennette et al, 2001; Sussman et al, 1998), familial support to reduce smoking (Russos et al., 1999; Jackson, 1998), the mass media advertisement of the Surgeon General’s warning (DiFranza et al., 1999), and enforcing laws prohibiting cigarette sales to young people (DiFranza, J et al., 2001).

Although familial or regulative efforts on smoking among youth might be effective to reduce

smoking behaviour or prevent them from smoking initiation, it remains unclear the extent to which a range of impacts of those contributory variables, which may make them becoming susceptible or prohibitive, to the level of smoking in the early years of adolescence. There is also growing concern that the level of adolescents’ smoking may be more bound up with other substance misuse such as drinking or drug but it is little known if previous or current substance misuse in the early years (age 11 to 15) of adolescence is an important predictor of smoking.

Using large-scale longitudinal data drawn from England and Scotland teenagers, this study attempts to examine whether ‘availability to minors of cigarettes from a shop’, ‘familial expectations of smoking’, and ‘substance misuse’ contribute to smoking behaviours among them. The findings would be useful in implementing preventive efforts to reduce current smoking behaviour or the initiation of smoking amongst adolescents.

II. Methods

The present study is part of a biennial longitudinal survey questionnaire (Office for national Statistics Social Survey Division, 2000, Smoking, Drinking and Drug Use among young Teenagers 1998) conducted in England and Scotland from 1988 to 1998. All types of students aged 11 to 15 in Local Education Authority, Grant Maintained, and independent secondary schools except special schools were, voluntarily with parental consent, invited to take part in the survey. The sample consisted of 4,726 (2,313 boys and 2,413 girls) in England and 3,528 (1,744 boys and 1,784 girls) in Scotland, representing sample of 200 schools in England and Scotland were chosen by random procedure after stratification on type of school, single sex or mixed. Parental consent forms were distributed by the schools and obtained from parents of the selected children. It was also ensured that no name was identified with the pupils' answers. 85% of those who selected for survey completed a questionnaire under the supervision.

The questionnaire measured current smoking status and classification of smoking behaviour. Smoking and regular smoking was the dependent variable in the analysis. Smoking was measured by the question: "Do you smoke cigarettes at all nowadays?" Respondents were asked to put a tick in the box next to "Yes" or "No". Regular smoking was identified if respondents put a tick in the box next to "I sometimes smoke cigarettes now but I don't smoke as many as one a week", "I usually smoke between one and six cigarettes a week" or "I usually smoke more than six cigarettes a week". Independent factors assessed were sex, self-

perception on availability to minors of cigarettes, self-perception on familial attitudes of smoking which were categorical variables. Four independent variables addressed "availability to minors of cigarettes", "self-perception on familial attitudes of smoking" and "drinking and drug use" are described in Table 2, 3 and 4 respectively. Furthermore, association between smoking, drinking and drug use variables were also included in the test. Logistic regression, using SPSS version 10 (SPSS, 2001), was performed to predict the significant impact of each variable.

III. Results

The logistic analysis reported in <Table 2> presents the odds of smoking related to how they perceive buying cigarettes from a shop, since there appeared to be little association in this sample between availability of cigarette sales to minor and being a regular smoker. Both teenagers in England and Scotland, who found 'fairly easy' or 'very easy' buying cigarettes from a shop were significantly more likely to report smoking than those who usually perceived 'very difficult' to buy cigarettes from a shop {OR=2.737 (.94:7.95), $p \leq .05$ for fairly easy and OR=2.547 (.90:7.19), $p \leq .05$ for very easy in England; OR=3.319 (.99:11.13), $p \leq .05$ for fairly easy and OR=2.891 (.89:9.36), $p \leq .05$ for very easy amongst Scotland students}.

As shown in <Table 3>, when gender difference and familial expectation to child smoking were examined in relation to being a regular smoker <Table 3>, being significantly increased the odds of being a regular smoker.

<Table 2> Effects of availability of buying from a shop on smoking among young teenagers aged 11 to 15 in England and Scotland, 1998

Independent Variable	England			Scotland		
	B	Exp(β)	95% CI	B	Exp(β)	95% CI
Do you find it easy or difficult to buy cigarettes from a shop?						
Very difficult		1			1	
Fairly difficult	.843	2.323	(.66-8.12)	.382	1.466	(.39- 5.48)
Fairly easy	1.007	2.737*	(.94-7.95)	1.200	3.319*	(.99-11.13)
Very easy	.935	2.547*	(.90-7.19)	1.062	2.891*	(.89- 9.36)
I don't usually buy cigarettes from a shop	-.047	.955	(.33-2.73)	-.530	.589	(.18- 1.85)
	Chi-Square=12.666 for 4 df N=4,326 (boys=2,313;girls=2,413)			Chi-Square=30.460 for 4 df N=3,528 (boys=1,744;girls=1,784)		

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

※ Exp(β)=Odds ratio; 95% CI=95% confidence intervals

<Table 3> Familial expectations to children' smoking and its correlates to regular smoking behaviour amongst young teenagers aged 11 to 15 in England and Scotland, 1998

Independent Variable	England			Scotland		
	B	Exp(β)	95% CI	B	Exp(β)	95% CI
Sex	.623	1.865*	(.478-1.35)	.215	1.240	(.47-1.35)
Familial attitude for children' smoking						
They would stop me		1			1	
They would try to persuade me not to smoke	1.101	3.008*	(1.21-7.42)	1.277	3.587*	(1.20-10.69)
They would do nothing	7.588	1973.633	(.00-)	2.648	14.124*	(1.62-123.09)
They would encourage me to smoke	7.616	2029.727	(.00-)	5.724	306.055	(.00-)
They don't know I smoke	.862	2.369*	(1.012-5.54)	.571	1.770	(.69-4.53)
I don't know	.495	1.641	(.583-4.62)	1.151	3.162	(.58-17.05)
	Chi-Square=30.520 for 6 df N=4,326(boys=2,313;girls=2,413)			Chi-Square=15.212 for 6 df N=3,528 (boys=1,744;girls=1,784)		

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

※ Exp(β)=Odds ratio; 95% CI=95% confidence intervals

For the group of England teenagers in the 7th to 11th grade, boys were more than 1.8 times as likely to be susceptible to be a regular smoker {OR=1.865 (.478:1.35), $p \leq .05$ }. In contrast, no

gender variable significantly differ the level of smoking in the Scotland sample.

Having family members who strongly disagree with child smoking was significantly associated

with decreased susceptibility to be a regular smoker. The most noticeable factors associated with a negative smoking outcome amongst UK teenagers were “They don’t know I smoke” {OR=2.369 (1.012:5.54), $p \leq .05$ } in the England sample and “They would do nothing” {OR=14.124 (1.62:123.09), $p \leq .05$ }.

Substance use was also a strong predictor of being a regular smoker. Teenagers who drink regularly or ever used drug were more likely to report smoking (See Table 4). England students who drink almost every day were significantly more likely to be a regular smoker than those never

drink alcohol now {OR=6.428 (1.54:26.63), $p \leq .001$ }. There was also a significant association between drug use and the level of smoking, with students who ever used any types of drug, 7 times more likely to be a regular smoker {OR=7.078 (1.11:8.17), $p \leq .001$ }.

Scotland sample results also indicated a significant association between substance use and the level of smoking. The odds of being a regular smoker were significantly higher among students with almost every day drinking {OR=6.428 (5.06:7.01), $p \leq .001$ } and among those who ever used drug {OR=6.328 (5.06:7.01), $p \leq .001$ }.

<Table 4> Drinking and drug use experience and its correlates on regular smoking behaviour among young teenagers aged 11 to 15 in England and Scotland, 1998

Independent Variable	England			Scotland		
	B	Exp(β)	95% CI	B	Exp(β)	95% CI
Sex	.806	2.238***	(.368-5.54)	.661	1.937***	(1.74-2.72)
How often do you usually have an alcohol drink?						
I never drink alcohol now		1			1	
Only a few time a year	-.055	.946	(3.18-12.95)	1.697	.611	(.39-.94)
About once a month	.884	2.420**	(3.12-9.38)	.297	1.455	(.92-2.29)
About one a fortnight	1.083	2.954***	(2.15-6.36)	1.397	1.743*	(1.12-2.71)
About once a week	1.308	3.700***	(1.70-5.11)	.838	2.798***	(1.79-4.36)
About twice a week	1.689	5.413***	(1.39-24.19)	-.917	3.698***	(2.27-6.01)
Almost every day	1.861	6.428***	(1.54-26.63)	-.460	9.335***	(2.43-.35.78)
Have you ever used or take any of drug ※※?(even if only once)	1.957	7.078***	(1.11-.8.17)	1.934	6.328***	(5.06-7.01)
		Chi-Square=878.473 for 8 df N=4,326 (boys=2,313;girls=2,413)			Chi-Square=662.529 for 8 df N=3,528 (boys=1,744;girls=1,784)	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

※ Exp(β)=Odds ratio; 95% CI=95% confidence intervals

※※ ‘Cannabis; Amphetamines; LSD; Ecstasy; Semeron; Poppers; Tranquillisers; Heroin; Magic Mushrooms; Methadone; Crack; Cocaine; Anabolic Steroids; Glue or Solvents; and any other types of drug’(Office for national Statistics Social Survey Division,1998, p.16)

IV. Discussion and Conclusion

The importance of reducing the availability of the sale of cigarette to young people (Russos et al, 1999) is reassured by the current study. Although regulations strongly restrict the sale of cigarettes to young people under age of 16, the study result provides strong evidence that many of teenagers find easy to purchasing cigarettes from a shop and those availabilities increase the likelihood of smoking among them. This study suggests that it may be difficult to achieve positive outcomes targeting on a high-risk teenagers for cigarette prevention, without finding a way to promote merchant compliance to obtain proof of age or reinforcing regulations.

A previous study (Ennett et al., 2001) attested to the positive and important influence of interactive parent-child relationship. The findings also showed that a positive or negative familial support for the child's smoking behaviour is significantly associated with actual smoking patterns amongst teenagers: Teenagers with families of pro-smoking attitudes were more likely to be a regular smoker, while those with families of negative attitudes would predict a decreased prevalence of smoking in both England and Scotland youths. Although it is cautious to conclude that familial attitudes to child's smoking make a direct impact on adolescent smoking, the findings suggest that positive behavioural or cognitive change on smoking could be achieved by positive interactions (increased interests on child; quality parenting) between family members and children. The stronger familial interaction exists between each other, the less likely the child adapts smoking

behaviours. That is, helping families with smoking adolescents to promote familial-child communication may promote non-smoking behaviours amongst teenagers.

Importantly, the analysis indicates that smoking behaviours may operate differently for gender and geographic locations (maybe depending on socio-demographic circumstances). Being a boy was found to be more vulnerable to smoking than being a girl. Furthermore boys were more likely to be a regular smoker than girls. One possible explanation is that these findings reflect the high prevalence of smoking amongst boys since 1988 and that boys tend to increasingly adapt a regular smoking behaviour when they are exposed to other substance misuse (Siddiqui et al, 1999). On contract, although girls differed little in the prediction of smoking or being a regular smoker, the data <Table 1> showed that the rate of female regular smokers appear to be have grown at a faster rate than that of male regular smokers between 1988 and 1998. This growing population raises the need to provide specialised prevention programmes, since the escalated rate smoking among girls could make significant long-term impacts on their future children (Farkas et al, 1999) as well as short term impacts on their health.

In accordance with previous researches (Boreham and Shaw, 2001; Vanderburg et al., 1995), the findings also showed that there was strong evidence between substance use and teenager smoking. Both drinking problems and drug uses were significantly related to teenager's smoking. This pattern generally held across both England and Scotland subgroups. Thus developing effective methods and programmes to reduce

smoking behaviour problems will also reduce other substance misuse behaviours.

The overall lesson of the present research is that availability of cigarette sales to minor, lack of familial interest to the child's smoking, and other substance misuse affect adolescents' smoking behaviours. This study suggests that regulation reinforcement for the sale of cigarettes to young people, promoting familial relationship, and comprehensive efforts to incorporate other preventive approaches to substance misuse into reducing smoking behaviour may be promising to reduce increasing smoking behaviours among teenagers. Further research attention is required to pay to various dimensions of gender specific pathways to smoking behaviours.

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