

## Research paper

## Poverty as a smoking trap

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## ARTICLE INFO

## Article history:

Received 1 May 2008

Received in revised form 6 September 2008

Accepted 8 October 2008

## Keywords:

Smoking

Poverty

Neighbourhood

Housing

Stress

France

## ABSTRACT

**Background:** The relationship between smoking and poverty is a public health issue in many countries, and several studies have shown a link between living in deprived neighbourhoods and smoking. In France the prevalence of smoking has decreased since the year 2000s. We examined whether reduced smoking rates differed by socio-economic status, anticipating reductions to be smaller amongst lower socio-economic groups. We also investigated whether poor housing conditions and/or living in a deprived neighbourhood were significantly associated with smoking.

**Methods:** Data were collected by telephone surveys conducted between 2000 and 2007 with representative samples of the French population aged 18–75. The data from the last of these surveys (2007,  $N = 6007$ ) were also used to carry out a cluster analysis on various indicators relating to housing conditions and neighbourhood.

**Results:** Between 2000 and 2007 the social differential in smoking rates increased sharply in France. Specific types of neighbourhood and poor housing conditions (described as cramped housing in a noisy and stressful environment or deprived neighbourhood), which were closely correlated with socio-economic status, were found to be significantly correlated with smoking, even after adjusting for potential key confounders and especially for individual markers of social disadvantage.

**Conclusion:** Interventions which do not specifically target smoking but which contribute to improving poor smokers' living conditions, are necessary to promote smoking cessation.

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## Introduction

In France, as in other developed countries, cigarette smoking has been acknowledged as the most frequently occurring preventable cause of death and disability. Every year smoking causes about 66,000 premature deaths in France and about 5 million deaths worldwide (OFDT, 2005; WHO, 2003). Tobacco control has become a priority for the French Government, which has recently reinforced its anti-smoking policy. The spearhead of this policy has been the sharp increase in cigarette taxes: between 2000 and 2004 the price of cigarettes was raised by 70% (from approximately 3 to 5€ per pack). Other actions included extensive public information campaigns, health warnings printed on cigarette packs, restrictions on selling to minors, workplace smoking bans, and a gradual ban on smoking in public indoor places. As a result, the smoking rate decreased slightly between 2000 and 2005 amongst people aged

18–75 (from 34% to 31% for current smoking, and from 29% to 26% for daily smoking) (Peretti-Watel et al., 2008). However, the resulting decrease in smoking rates was not as large as the French health authorities had expected.

Studies show various markers of socio-economic disadvantage are correlated with smoking (Godefroy, 2003; Harman, Graham, Francis, & Inskip, 2006; Marsh & McKay, 1994; Pampel, 2003; Remler, 2004), and that poor smokers seem to be 'poor quitters' (Evandrou & Falkingham, 2002; Jefferis, Power, Graham, & Manor, 2004; Remler, 2004). In a recent American study, for example, it was established that living below the poverty line was significantly associated with persistent smoking across various age cohorts, even after adjusting for potential key confounders such as major depressive disorders, nicotine dependence, and problems with other substances (Agrawal, Sartor, Pergadia, Huizink, & Lynskey, 2008). Other studies have shown that poorly educated smokers are less likely to quit (Cavelaars et al., 2000; Giskes et al., 2005). In the past two decades this association between persistent smoking and social disadvantage has become a public health priority in many countries (Jarvis, 2004).

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Why are poor smokers poor quitters? Less well-educated smokers have been found to be more likely to endorse risk denial statements (Ayanian & Cleary, 1999; Oakes, Chapman, & Borland, 2004; Peretti-Watel et al., 2007). According to some health economists, less highly educated people might be less able to understand information about the harmful effects of smoking on health, and might be less 'future-oriented' (that is, less sensitive to warnings about the long-term effects of unhealthy habits), whilst wealthier people, who expect to live longer after retiring on a larger pension, might have stronger incentives for protecting their health (Dardanoni & Wagstaff, 1987; Farrel & Fuchs, 1982; Grossman, 1972; Sander, 1995).

According to other studies, many individuals, especially amongst the working classes, cope up with their feelings of stress and anxiety by engaging in unhealthy but often pleasurable behaviours, including cigarette smoking (Hughes, 2002; Krueger & Chang, 2008; Le Houezec, 1998; Peretti-Watel et al., 2007). Those confronted with harsh living conditions frequently feel that cigarettes are an essential commodity (Graham, 1994; Graham & Der, 1999). In other words, poor smokers buy cigarettes to cope with hardships in day-to-day life. However, increasing cigarette prices, instead of inducing them to quit, may simply exacerbate these hardships and worsen their living conditions (Marsh & McKay, 1994).

Many of these studies are illustrative of the methodological individualism typical of epidemiology and public health research which have been criticised during the last decade (Diez Roux, 1998; Lupton, 1995; Rockhill, 2001). Other work has focused on the social and structural factors associated with smoking. For example, living in a disadvantaged neighbourhood has been found to be a significant predictor of cigarette smoking, above and beyond personal characteristics such as gender, age, education, occupation or income (Chuang, Cubbin, Ahn, & Winkleby, 2005; Diez Roux, Merkin, Hannan, Jacobs, & Kiefe, 2003; Duncan, Jones, & Moon, 1999; Ohlander, Vikstrom, Lindstrom, & Sundquist, 2006; Reijneveld, 1998). However, to our knowledge, most of these studies have focused on the socio-economic profiles of people living in the same neighbourhood, regardless of the physical characteristics of the neighbourhood.

The aims of the present study were twofold. First, we studied the social differentiation of cigarette smoking in France between 2000 and 2007 using quantitative data extracted from several national surveys. We assumed the reduction in smoking rates would differ by socio-economic status and would be less pronounced amongst populations with a low socio-economic status. Second, in order to clarify how the social environment of socially deprived smokers may shape their smoking habits, we investigated the relationship between the prevalence of smoking and people's socio-demographic characteristics (especially occupation, income level per consumption unit and educational level) as well as their housing conditions and neighbourhood characteristics (including exposure to noise). Poor housing conditions and/or disadvantaged neighbourhoods were expected to be significantly associated with smoking status and this association was expected to remain statistically significant after adjusting for respondents' socio-demographic background.

## Methods

### *Analysis of the social differentiation of smoking (2000–2007)*

In order to illustrate the increasing social differentiation of cigarette smoking in France we combined data from telephone sur-

veys carried out by the National Institute for Prevention and Health Education (INPES). These surveys shared a common methodology and were conducted in 2000 (sample size  $N=13,685$ ), 2003 ( $N=3085$ ), 2005 ( $N=30,513$ ), 2006 ( $N=3206$ ), and 2007 ( $N=6007$ ) (Guilbert et al., 2001) on representative samples of the French population aged 18–75 years. We compared the dynamics of smoking prevalence by occupational status (executive managers and professional occupations, workers, and unemployed). We also compared the two extreme deciles of household income per consumption unit (total household income divided by an index reflecting its composition: one adult generates 1 unit of consumption whilst every additional adult in the household adds 0.7 units, and 0.5 is added for children under 16). The 95% confidence interval corresponding to each smoking rate obtained was calculated and comparisons were made using a standard z-test for independent proportions.

### *Neighbourhood and housing conditions, socio-demographic background and smoking*

Here we used data from the last INPES survey and the Health and Environment Barometer, conducted in 2007 on a sample of 6007 people. In order to investigate neighbourhood and housing conditions, a cluster analysis was conducted based on 16 questions dealing with the characteristics of the neighbourhoods and the respondents' perceptions of their neighbourhood and living conditions. This statistical tool provides a useful way of summarising various answers by presenting them as a small set of contrasting profiles. The method of cluster analysis used here involved the usual agglomerative hierarchical procedure (Everitt, 1993): each observation begins in a cluster by itself, then the two closest clusters are merged to form a new one that replaces the two old clusters and the merging of the two closest clusters is repeated until only one cluster is left. We used the Euclidean distance and the Ward's method to compute the distance between two clusters. At each successive step the clusters became less homogeneous but the partitions became easier to interpret. Analysts usually select a partition that gives a reasonable number of easily interpretable clusters. Therefore, we had a choice of partitions giving two, three, four or five clusters, and we opted for the three-cluster solution. This option seemed to be statistically relevant since the next step of the hierarchical clustering procedure (moving from three to two clusters) induced a great loss of homogeneity. The resulting clusters were characterised in terms of the respondents' socio-demographic background (household composition, household income per consumption unit, housing status, and respondents' gender, age, educational level and occupational status) using Pearson  $\chi^2$  tests.

Factors associated with current smoking and daily smoking at home were investigated using both bivariate analysis and multivariate modelling methods (logistic regressions involving the stepwise method: selection threshold  $p < 0.05$  with the Wald  $\chi^2$  test) to select the most significant covariates. The covariates introduced into the analyses included variables relating to the respondents' socio-demographic background as well as clusters describing neighbourhood and housing conditions. An alternative method would have consisted of introducing the whole set of indicators used to build the clusters into the multivariate model, but this approach would have been less parsimonious (with 16 "independent" covariates instead of just one). In addition, the clusters obtained provide a more comprehensive description of respondents' social environment, since they account for the strong correlations existing between indicators.

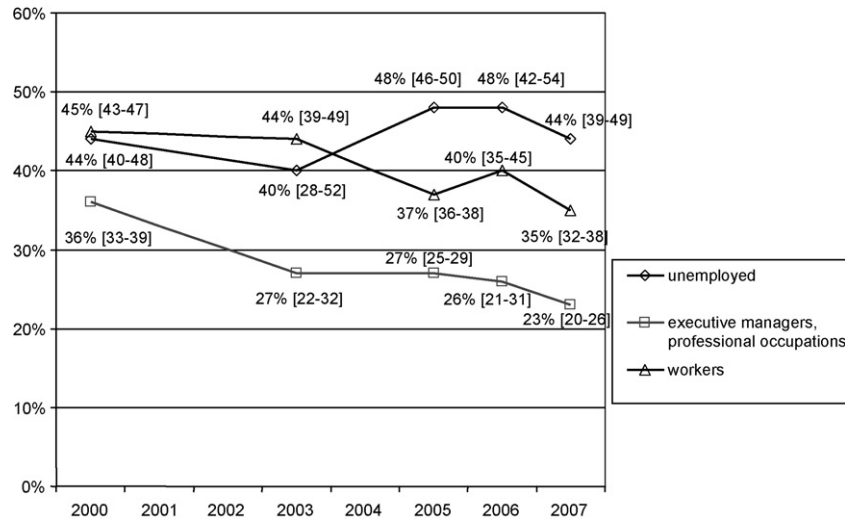


Fig. 1. Smoking prevalence according to occupation, INPES surveys, France, 2000–2007.

## Results

### The increasing social differentiation of smoking (2000–2007)

The prevalence of smoking declined significantly (by 36%) amongst the executive managers and professional occupations from 36% [95% CI = 33–39] in 2000 to 23% [95% CI = 20–26] in 2007. (see Fig. 1). During the same period of time there was a smaller, yet significant, decline of 22% in prevalence of smoking amongst manual workers from 45% [95% CI = 43–47] to 35% [95% CI = 32–38]. In contrast, the prevalence of smoking amongst the relatively small number of unemployed people surveyed showed a somewhat erratic pattern over time, but no significant change between 2000 [44%, 95% CI = 40–48] and 2007 [44%, 95% CI = 39–49].

When comparing the three occupational categories, the range of variation of smoking prevalence was twice as wide in 2007 (44–23% = 21%) as in 2000 (45–36% = 9%). Whilst the smoking rates differed significantly across the three groups in 2007 (as confidence intervals did not overlap: [20–26], [32–38], [39–49]), it was not significantly different for workers and unemployed respondents, in 2000 or 2003 ( $p = 0.64$  and  $p = 0.56$  respectively).

Similar results were obtained on the extreme deciles of household income per consumption unit (see Fig. 2). In the first decile, the smoking rate remained stable between 2000 and 2007, with no significant changes (35% and 31%, respectively). In the last decile, the decrease in the smoking rate was statistically significant between 2000 and 2005 as well as between 2005 and 2007 ( $p < 0.001$  in any case).

Upon comparing these extreme deciles, the smoking rates did not differ significantly in 2000 (35% in the first decile versus 33% in the last decile,  $p = 0.31$ ) but the gap widened between 2000 and 2005 (38% versus 27%) and then remained stable until 2007 as the smoking rate began to decrease in the first decile (31% versus 20%). After 2000, the differences between the two deciles were systematically significant ( $p < 0.05$  in 2003,  $p < 0.001$  in 2005,  $p < 0.01$  in 2006, and  $p < 0.001$  in 2007).

### Patterns of neighbourhood and housing conditions

The largest group, Cluster 1, included 87% of the respondents participating in the Health and Environment Barometer survey (see Table 1). This cluster was therefore very similar to the mean pro-

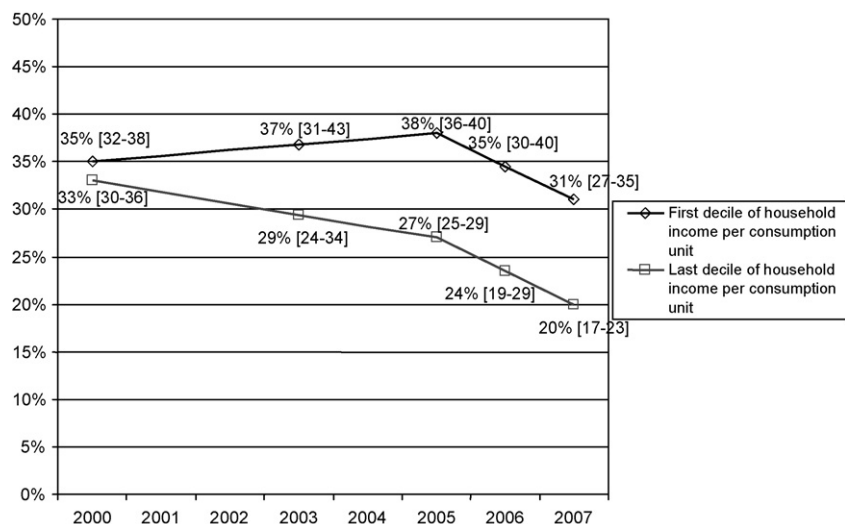


Fig. 2. Smoking prevalence amongst first and last deciles of household income per consumption unit, INPES surveys, France, 2000–2007.

**Table 1**  
Results from a cluster analysis of neighbourhood and housing conditions (INPES Health and Environment Barometer,  $N = 6007$ , 2007).

	Cluster 1 87%	Cluster 2 10%	Cluster 3 3%	Total
Column percentage				
<i>Characteristics/perceptions of the neighbourhood</i>				
Noisy installations in the vicinity				
Highway, trunk road	32%	38%	48% <sup>***</sup>	33%
Bus station	15%	25%	26% <sup>***</sup>	16%
Railway	26%	36%	37% <sup>***</sup>	28%
Building site, demolition site	14%	23%	25% <sup>***</sup>	15%
Neighbourhood perceived as				
... a source of stress and anxiety	32%	49%	65% <sup>***</sup>	35%
... lacking social, cultural or associative life	0%	0%	70% <sup>***</sup>	2%
... lacking convenience stores	0%	0%	66% <sup>***</sup>	2%
<i>Characteristics/perceptions of the housing</i>				
Living in a block of flats	22%	82%	65% <sup>***</sup>	29%
One or two-room flat	1%	78%	22% <sup>***</sup>	9%
Floor area <72 yard <sup>2</sup> (<60 m <sup>2</sup> )	0%	80%	18% <sup>***</sup>	9%
No garden, no yard	21%	73%	63% <sup>***</sup>	28%
No balcony, no terrace	26%	54%	46% <sup>***</sup>	29%
Not satisfied by housing conditions	4%	11%	42% <sup>***</sup>	6%
Frequently bothered by exterior noise at home	12%	27%	51% <sup>***</sup>	15%
Has already perceived the effects of noise on health	24%	30%	41% <sup>***</sup>	25%
<i>Household characteristics</i>				
Household composition				
One-person household	6%	45%	11%	10%
Couple only	47%	40%	42%	46%
Couple with child(ren)	45%	13%	44%	42%
One parent with child(ren)	2%	2%	3% <sup>***</sup>	2%
Monthly household income per consumption unit				
<900€	25%	31%	44%	26%
900–1500€	38%	35%	37%	38%
>1500€	37%	34%	19% <sup>***</sup>	36%
Housing status				
Owner	74%	25%	30%	68%
Tenant	26%	75%	70% <sup>***</sup>	32%
<i>Respondent's characteristics</i>				
Gender				
Man	49%	49%	49%	49%
Woman	51%	51%	51% ns	51%
Age				
<35 years	29%	52%	54%	31%
35–54 years	41%	28%	28%	40%
55–75 years	30%	20%	18% <sup>***</sup>	29%
Education level				
<High school graduation	46%	37%	51%	45%
High school graduation	21%	21%	23%	21%
High school graduation	33%	42%	26% <sup>***</sup>	34%
Occupational status				
Inactive	35%	31%	41%	35%
Manual worker	11%	13%	12%	11%
Other occupation	48%	46%	34%	47%
Unemployed	6%	10%	13% <sup>***</sup>	7%

ns: not significant (Pearson's  $\chi^2$  for proportions, testing differences for each row variable across clusters).

\*\*\* Significant at  $p < 0.001$  (Pearson's  $\chi^2$  for proportions, testing differences for each row variable across clusters).

file. Amongst the respondents who benefited from a fairly *standard neighbourhood and housing conditions*, 32% lived near a highway or a trunk road, 32% perceived their neighbourhood as a source of stress and anxiety, 22% lived in a block of flats, and 24% reported their health had already suffered from the effects of noise.

In comparison with Cluster 1, the respondents in Cluster 2 (10% of the participants) reported greater exposure to noisy equipment and perceived their neighbourhood as a source of stress and anxiety more frequently than others. However, their housing conditions were even more specific: eight out of ten

were living in a one- or two-room flat measuring less than 72 square yards (<60 m<sup>2</sup>), and the majority had no garden, yard, balcony or terrace. They were also more frequently bothered by outside noise at home; 30% perceived this noise to have a harmful effect on their health. Amongst these people living in *cramped housing in a noisy and stressful environment*, 45% lived alone, 31% had a monthly household income per consumption unit of less than 900€ and 75% were tenants. They were also younger than the people in Cluster 1 (52% of those in Cluster 2 were aged under 35) and they had a higher aver-

**Table 2**Factors associated with current smoking and daily smoking at home (INPES Health and Environment Barometer,  $N = 6007$ , 2007).

	Current smoker			Daily smoking at home <sup>a</sup>		
	Row %	uOR	aOR	Row %	uOR	aOR
<i>Neighbourhood and housing conditions</i>						
Cluster 1: standard conditions (ref.)	28%	-1-	-1-	38%	-1-	-1-
Cluster 2: cramped housing in a noisy and stressful environment	38%	1.56 <sup>***</sup>	1.15 ns	60%	2.39 <sup>***</sup>	1.78 <sup>***</sup>
Cluster 3: complaints about a noisy, stressful and deprived neighbourhood	42% <sup>***</sup>	1.88 <sup>***</sup>	1.49 <sup>**</sup>	44% <sup>***</sup>	1.26 ns	1.58 <sup>*</sup>
<i>Household characteristics</i>						
<i>Household composition</i>						
One-person household (ref.)	31%	-1-	-1-	66%	-1-	-1-
Couple only	25%	0.75 <sup>**</sup>	0.80 ns	47%	0.44 <sup>***</sup>	0.48 <sup>***</sup>
Couple with child(ren)	33%	1.12 ns	0.80 ns	31%	0.23 <sup>***</sup>	0.23 <sup>***</sup>
One parent with child(ren)	54% <sup>***</sup>	2.62 <sup>***</sup>	2.12 <sup>***</sup>	47% <sup>***</sup>	0.44 <sup>**</sup>	0.37 <sup>**</sup>
<i>Household income per consumption unit</i>						
<900€ (ref.)	32%	-1-	NS	49%	-1-	-1-
900–1500€	31%	0.97 ns		38%	0.65 <sup>***</sup>	0.64 <sup>**</sup>
>1500€	28% <sup>**</sup>	0.81 <sup>**</sup>		38% <sup>***</sup>	0.65 <sup>***</sup>	0.64 <sup>**</sup>
<i>Housing status</i>						
Owner (ref.)	26%	-1-	-1-	37%	-1-	NS
Tenant	38% <sup>***</sup>	1.79 <sup>***</sup>	1.34 <sup>***</sup>	48% <sup>***</sup>	1.57 <sup>***</sup>	
<i>Respondent's characteristics</i>						
<i>Gender</i>						
Man (ref.)	34%	-1-	-1-	39%	-1-	-1-
Woman	25% <sup>***</sup>	0.66 <sup>***</sup>	0.65 <sup>***</sup>	44% <sup>*</sup>	1.23 <sup>*</sup>	1.26 <sup>*</sup>
<i>Age</i>						
<35 years (ref.)	38%	-1-	-1-	35%	-1-	-1-
35–54 years	34%	0.85 <sup>*</sup>	0.84 <sup>*</sup>	44%	1.50 <sup>***</sup>	1.70 <sup>***</sup>
55–75 years	14% <sup>***</sup>	0.27 <sup>***</sup>	0.35 <sup>***</sup>	50% <sup>***</sup>	1.92 <sup>***</sup>	1.76 <sup>**</sup>
<i>Education level</i>						
High school graduation (ref.)	30%	-1-	-1-	46%	-1-	-1-
High school graduation	33%	1.16 <sup>*</sup>	0.96 ns	39%	0.76 <sup>*</sup>	0.79 ns
High school graduation	27% <sup>**</sup>	0.87 <sup>*</sup>	0.72 <sup>***</sup>	35% <sup>***</sup>	0.64 <sup>***</sup>	0.70 <sup>*</sup>
<i>Occupational status</i>						
Inactive (ref.)	19%	-1-	-1-	41%	-1-	-1-
Manual worker	40%	2.80 <sup>***</sup>	1.50 <sup>***</sup>	40%	0.93 ns	1.16 ns
Other occupation	32%	1.98 <sup>***</sup>	1.41 <sup>***</sup>	40%	0.94 ns	1.33 ns
Unemployed	44%	3.20 <sup>***</sup>	1.86 <sup>***</sup>	51% <sup>*</sup>	1.50 <sup>*</sup>	1.85 <sup>**</sup>

uOR: unadjusted odds ratios (univariate logistic regression); aOR: adjusted odds ratios (multivariate logistic regression); ref.: reference category in logistic regression; NS: marks variables not selected by the stepwise procedure. ns: not significant (Pearson's  $\chi^2$  for proportions, Wald's  $\chi^2$  for odds ratios). Marks variables not selected by the stepwise procedure.

<sup>a</sup> Analysis restricted to smokers ( $N = 1774$ ).

<sup>\*</sup> Significant at  $p < 0.05$  (Pearson's  $\chi^2$  for proportions, Wald's  $\chi^2$  for odds ratios).

<sup>\*\*</sup> Significant at  $p < 0.01$  (Pearson's  $\chi^2$  for proportions, Wald's  $\chi^2$  for odds ratios).

<sup>\*\*\*</sup> Significant at  $p < 0.001$  (Pearson's  $\chi^2$  for proportions, Wald's  $\chi^2$  for odds ratios).

age educational level (because they belonged to a younger age-group).

Lastly, Cluster 3 consisted of only 3% of the survey respondents. These people reported the highest levels of exposure to noisy equipment, 65% stated that their neighbourhood was a source of stress and anxiety, 70% said that it lacked social, cultural and associative amenities, and 66% mentioned the lack of local convenience stores. As far as the housing conditions were concerned, their profile was intermediate between those of Clusters 1 and 2, except that they tended to express dissatisfaction with their housing conditions much more frequently (42%) and to report being bothered by outside noise at home often (51%) or having already suffered health effects of noise (41%). Most of these people, who were characterised by *complaints about a noisy, stressful and deprived neighbourhood*, were tenants living with a partner (44% had children and 42% had no children), half of them reported having a household income per consumption unit of less than 900€. In addition, although they were younger than the people in Cluster 1, they were less highly educated than the latter (54% versus 29% were aged under 35, and 51% versus

46% had not completed high school). The unemployment rate was also higher in Cluster 3.

#### *Factors associated with current smoking and daily smoking at home*

Amongst the respondents participating in the Health and Environment Barometer survey, 29% were current smokers (occasional or daily smokers), and 38% reported smoking every day at home. The smoking rates were higher in Clusters 2 and 3 (38% and 42%, respectively versus 28% in Cluster 1) (see Table 2).

In the multivariate analysis, respondents characterised by *complaints about a noisy, stressful and deprived neighbourhood* were significantly more prone to smoking cigarettes (OR = 1.49). The smokers, as well as those living in *cramped housing in a noisy and stressful environment*, more frequently reported smoking every day at home (OR = 1.58 and 1.78, respectively).



Other significant predictors of current smoking were: raising children alone (*versus* being single: OR = 2.12), being a tenant, being a man, being aged under 35, having a low educational level, and being unemployed (44% of smokers, OR = 1.86). Amongst the smokers, other significant predictors of daily smoking at home included having a low household income per consumption unit, being a woman, being aged over 35, having a low educational level, and being unemployed (51% of unemployed smokers smoked every day at home, OR = 1.85).

## Discussion

Between 2000 and 2007, the prevalence of smoking decreased by 36% amongst executive managers and professional occupations and by 22% amongst manual workers. However, it did not decrease amongst unemployed people, resulting in an increasing social differentiation of smoking. Similarly, when comparing the prevalence of smoking for the extreme deciles of household income per consumption unit, the gap was found to have widened during the 2000s.

As regards the patterns of neighbourhood and housing conditions, two specific profiles were detected: *cramped housing in a noisy and stressful environment* (10% of the respondents) and *complaints about a noisy, stressful and deprived neighbourhood* (3% of the respondents), which were closely correlated with socio-economic status. Despite this correlation, these profiles were also found to be significant predictors of cigarette smoking in the multivariate analysis. Predictors of current smoking were found to include *complaints about a noisy, stressful and deprived neighbourhood* profile, raising children alone, having a low educational level, and being unemployed. Amongst the smokers, the main factors found to be associated with daily smoking at home were the two specific profiles mentioned above, as well as low household income per consumption unit, having a low educational level, and being unemployed.

### *Housing and neighbourhood conditions as environmental stressors*

As poor housing and neighbourhood conditions are a major aspect of socio-economic hardship, this factor may generate “socio-economic stress”. Whilst noise-induced annoyance is a well-known stressor (Lipfert & Wyzga, 2008; Niemann et al., 2006), cramped housing and complaints about a noisy and stressful neighbourhood were also found to be closely associated with markers of social disadvantage and to be significant predictors of cigarette smoking, including smoking at home. Previous studies have strongly suggested that cigarette smoking can be a coping mechanism providing respite from stressful physical environments such as those involving overcrowding, poor quality housing, and traffic or neighbourhood noise (Miles, 2006; Shohaimi et al., 2006). The authors of a previous qualitative study on disadvantaged communities in Glasgow also observed that a poorly resourced environment with limited opportunities for respite and recreation may foster smoking and undermine efforts to give up smoking (Stead, MacAskill, MacKintosh, Reece, & Eadie, 2001).

Wilkinson (1996) has suggested that the poor suffer twice from deprivation: they suffer from its direct material effects, but deprivation also affects their health *via* psychosocial channels. Being at the very bottom of a hierarchical society may fuel “psychosocial stress” and angry feelings based on invidious social comparisons (Kawachi & Kennedy, 1999), and the perception of inequalities of income and well-being can be an incentive for smoking (Siahpush et al., 2006). Likewise, living in an area which is disadvantaged not

only in absolute terms, but also relative to neighbouring areas and society as a whole, may lead to feelings of exclusion and stigmatisation, and people may smoke to cope with these feelings (Stead et al., 2001).

### *From the physical to the cultural environment*

The “psychosocial stress” interpretation is based on the assumption that poor smokers are conscious of their own under-privileged situation. This awareness may, however, be only part of a set of common values: poor smokers who share the same deprived physical environment may also share the same culture. Smoking might then serve not only as a means of coping with stress but also as a means of expressing identification and belonging (Denscombe, 2001; Stead et al., 2001). Moreover, previous qualitative studies (Graham, 1994; Hughes, 2002) have shown that poor smokers frequently felt cigarettes were their only luxury and, whatever their occupational status (employed, unemployed, students), they justified their habit on the grounds that they needed cigarettes to cope with stress. This discourse is typical of the working class, where cigarettes have been omnipresent for decades (Hoggart, 1957). In other words, poor smokers living in deprived areas share not only their exposure to environmental stressors that prompt them to smoke but they may also share a common culture that see cigarettes as the first-choice relaxant. Their smoking habits should not be regarded as a “natural” reaction to environmental stressors and further research is required to explain the social/cultural construction of smoking as a legitimate coping behaviour amongst the poor.

In addition, in order to understand more clearly why poor smokers are “poor quitters”, one should also remember that working-class culture is characterised by a deep-rooted distrust of the authorities (Douglas, 1992; Hoggart, 1957), including health authorities who promote cessation of smoking. As a result, poverty may constitute a smoking trap that the poor activate themselves. Further research is now required on how “cultural distrust” of this kind shapes working-class people’s attitudes toward public health issues and prevention policies.

### *Limitations of the study*

This study had several limitations. First, repeated cross-sectional data provide a set of smoking rates which are useful for making comparisons but each smoking rate recorded results from a mixture of lifetime consumption paths occurring at various stages in successive birth cohorts. A life-course perspective, based on longitudinal or retrospective data, might have reflected the dynamics of smoking more accurately (Kenkel, Lillard, & Mathios, 2003; Peretti-Watel, 2005). Secondly, Fig. 1 does not distinguish between people who have never been smokers from former smokers. However, it is worth noting that other analyses based on the same data have shown that the social differential involved in smoking was mostly due to differences in the quitting rates (Peretti-Watel et al., 2008). Thirdly, the neighbourhood and housing conditions were described here by the respondents and not directly observed by the investigators: our study was therefore based on associations between smoking status and perception of neighbourhood and living conditions. Fourthly, our results should be interpreted with caution since they are based on cross-sectional data: there is always a possibility that the associations between perceived environments and smoking status may be due to an unmeasured confounder. Lastly, we did not collect any data on the socio-economic characteristics of other people living in the respondents’ neighbourhood. It was therefore not possible to compare the effects of the socio-economic and physical char-

acteristics of the neighbourhood on the respondents' smoking habits.

## Conclusion

In France as in other developed countries, the social differentiation of smoking is increasing despite, or rather because of, the government's extensive anti-smoking policies. People's smoking status was found to be significantly correlated with their impression that they were living in poor housing conditions and in underprivileged neighbourhoods, even after further adjustment for personal characteristics such as poor education, low income, or being unemployed. Anti-tobacco policies focusing on either individually based psychological factors, or on nationally based measures are unlikely to deter many poor smokers from smoking. Interventions that improve poor smokers' living conditions, both at the individual and environmental level, might be more effective to promote cessation. Another avenue for prevention might be the conception and promotion of alternate strategies for coping with "socio-economic stress", to deter smokers from relying on smoking to relieve it.

## Conflict of interest

This research was supported by a grant from the National Institute for Prevention and Health Education (INPES). The authors have no conflict of interest to declare.

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