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## RESEARCH REPORT

# Socioeconomic lifecourse influences on women's smoking status in early adulthood

Hilary Graham, Brian Francis, Hazel M Inskip, Juliet Harman, and SWS Study Team

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**Study objective:** To incorporate women's domestic trajectories and circumstances into analyses of the socioeconomic influences on women's smoking status (current and former smoking) in early adulthood.

**Design:** Cross sectional survey

**Setting:** Southampton, UK.

**Participants:** 8437 women aged 25–34 recruited from 1998–2002 via patient lists of general practices

**Main results:** Domestic lifecourse factors contributed to the odds of being a current smoker and former smoker in models that included conventional measures of the socioeconomic lifecourse. Early motherhood, non-cohabitation, and lone motherhood increased the odds of smoking; early motherhood and non-cohabitation reduced the odds of former smoking. For example, relative to childless women, odds ratios (OR) for women who had become mothers <20 years were 1.71 for smoking and 0.76 for former smoking. The effects of education and current SEP remained strong with the inclusion of childbearing and cohabitation variables for both outcomes. For instance, compared with women in education to age  $\geq 22$ , the odds ratio for smoking for those leaving school  $\leq 16$  was 3.37 and for former smoking was 0.42.

**Conclusions:** Both the conventionally measured socioeconomic lifecourse and the domestic lifecourse contributed separately to the odds of smoking and former smoking, suggesting that lifecourse analyses should incorporate women's domestic circumstances as an important pathway of influence on their smoking status in early adulthood.

See end of article for authors' affiliations

Correspondence to:  
Professor H Graham,  
Department of Health  
Sciences, Area 2,  
Seebom Rowntree  
Building, University of  
York, YO30 6AS, UK;  
hmg501@york.ac.uk

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I ncreasing evidence that the socioeconomic environment in both childhood and adulthood influences adult health is starting to stimulate research on how social disadvantage takes its toll across the course of people's lives.<sup>1–2</sup> This research has been characterised by, firstly, a reliance on a comparatively narrow conceptualisation of the socioeconomic lifecourse and, secondly, its application to a comparatively narrow range of health related outcomes.

Conceptually, the socioeconomic lifecourse is represented as a person's journey from the socioeconomic environment of the natal family (typically indexed by father's occupation), through the education system (years/level of education) to adulthood (own occupation). This trajectory captures important determinants of life chances and living standards in rich industrialised societies, and ones with powerful effects on disease and mortality risk in adulthood.<sup>3–4</sup> But defining the socioeconomic lifecourse through a person's relationship to the formal institutions of the labour market and the education system obscures their position in the informal institutions of home and family, positions that are integral to women's socioeconomic lifecourse. Thus, single women are more likely to live in lower income households than single men, and entry into and exit from marriage have greater effects on women's employment patterns, earnings, and household incomes.<sup>5–6</sup> Parenthood has higher economic opportunity costs for women, reducing employment rates and lifetime earnings.<sup>7</sup> Lone mothers face additional economic penalties, with poverty rates well above the mean across rich industrialised countries.<sup>8–9</sup> As such patterns suggest, a woman's partnership and parenthood trajectories are inseparable from the conventionally defined lifecourse. Thus poor childhood circumstances and low educational attainment anticipate early entry into motherhood,<sup>10–11</sup> a pathway to adulthood that in turn increases the risk of lone parenthood and future socioeconomic disadvantage.<sup>11–12</sup>

The primary application of the lifecourse perspective has been to physiological markers of health risk, morbidity, and mortality.<sup>3–4–13</sup> But the concept is also important for understanding health related behaviours like cigarette smoking, which tracks across the lifecourse,<sup>14–16</sup> increasingly displays socioeconomic gradients,<sup>17–20</sup> and makes an important contribution to socioeconomic health inequalities.<sup>21–22</sup>

There is evidence that current socioeconomic position (SEP) has a powerful effect on smoking status after adjustment for childhood circumstances.<sup>14–23–25</sup> Childhood effects have also been found, both for smoking<sup>23–25</sup> and quitting,<sup>14–25</sup> and more strongly for women than men,<sup>23–25</sup> with education mediating the association between childhood SEP and adult smoking status.<sup>14–24–26</sup> While smoking status is related to social mobility, with the upwardly mobile less likely to smoke than those they leave behind, the overall effects of social mobility on smoking status are modest.<sup>15–16</sup>

Women's domestic trajectories and circumstances are rarely included in these socioeconomic lifecourse analyses. However, there is evidence that living with a partner reduces a woman's odds of smoking, after adjustment for childhood circumstances, education, and current SEP,<sup>24</sup> that both poor childhood circumstances and early motherhood contribute separately to the risk of adult smoking,<sup>12–26</sup> and that lone parenthood and economic hardship have separate effects on the odds of smoking.<sup>27–28</sup> In an analysis that included measures of the conventional socioeconomic lifecourse and women's domestic trajectories, age at entry into motherhood and being a single parent at age 33 increased the odds of persistent smoking across adulthood.<sup>26</sup>

Building on these studies, we include childbearing histories and cohabitation status in an analysis of the socioeconomic predictors of women's smoking status in early adulthood.

**Table 1** Socioeconomic and smoking profile of the sample

	Number of cases	% Of sample
<b>Father's collapsed NS-SEC†</b>		
Professional and Managerial	2084	24.7
Intermediate	2582	30.6
Semi-routine/routine	2579	30.6
Missing	1192	14.1
<b>Woman's collapsed NS-SEC†</b>		
Professional and Managerial	3254	38.6
Intermediate	2850	33.8
Semi-routine/routine	2333	27.7
<b>Age of leaving full time education</b>		
22 and over	1218	14.4
19–21	1123	13.3
17–18	2330	27.6
16 and under	3766	44.6
<b>Age of entry into motherhood</b>		
No births at time of interview	3696	43.8
25 and over	2178	25.8
22–24	1085	12.9
20 and 21	690	8.2
<20	788	9.3
<b>Lone motherhood</b>		
No	7623	90.4
Yes	814	9.6
<b>Cohabitation status</b>		
Lives with partner	6106	72.4
Does not live with a partner	2331	27.6
<b>Current smoker</b>		
No	5959	70.6
Yes	2478	29.4
<b>Former smoker</b>		
No	2478	64.0
Yes	1395	36.0
Total who ever smoked	3873	100.0

NS-SEC, National Statistics-Socioeconomic Classification.

## METHODS

### Sample

The study is based on the Southampton Women's Survey (SWS) of 12 484 women aged 20–34 years who were not currently pregnant, resident in the city of Southampton, southern England. It was approved by the Southampton and South West Hampshire local research ethics committee. Participants were recruited from 1998 to 2002 via patient lists of general practices.<sup>29–30</sup> Of those approached, 75% agreed to take part. The final sample is representative of the study population and has a deprivation and ethnic profile in line with that of England and Wales. To include both educational and childbearing trajectories in the transition to adulthood, our analyses are restricted to women aged 25 to 34. Women who had never had a paid job and whose occupation could therefore not be coded (8% in the target age group) were excluded, leaving a sample of 8437 for analysis.

### Measures

All data were self reported. Current smokers were defined as those who smoked  $\geq 1$  cigarette per day; former smokers had smoked  $\geq 1$  cigarette per day for at least a year but were not current smokers at the time of the interview.

Table 1 lists socioeconomic lifecourse measures. Childhood SEP (based on father's occupation at birth) and current SEP (own full time current/last occupation, or part time occupation if never worked full time) were classified using the National Statistics-Socioeconomic Classification (NS-SEC) that, by categorising occupations according to their employment relations and conditions, provides an equivalent schema for male and female occupations.<sup>31</sup> The simplified classification was used (see table 1). For childhood SEP, women not reporting father's occupation (14%) were included as a separate category. Own SEP was coded by

current/last full time occupation (or part time if never worked full time). Seventy seven per cent were currently in full or part time employment; others, such as full time students and housewives out of the labour market who had previously worked, were coded by their last occupation.

Educational and childbearing trajectories were measured, respectively, by age of leaving full time education and by whether, and at what age, the woman had become a mother. Maternal status was derived from household information, and excludes children who had died or who were resident elsewhere. Cohabitation status was defined as living/not living with a partner. Age was included in the analyses as a continuous measure.

### Data analysis

In initial analyses, logistic regression was used to predict current smoking and former smoking separately for each lifecourse factor. In mutually adjusted models that included age and childhood SEP, we examined the effects on smoking behaviour of the domestic lifecourse (childbearing histories and cohabitation status) before widening the model to include education and adult SEP. We show the statistical significance of removing each variable from this final model using the likelihood ratio test. Potential interactions between childhood SEP and subsequent lifecourse factors were also investigated.

## RESULTS

Table 1 describes the socioeconomic and smoking profile of the sample. Smoking prevalence (29%) was lower and quit rates (36%) were higher than national rates for women aged 25–34 in 2000 (32% and 29% respectively).<sup>18</sup> These rate differences were in line with regional variations in smoking

**Table 2** Current smoking: prevalence rates, unadjusted and mutually adjusted odds ratios (95% confidence intervals) (n = 8437). Effects of childhood socioeconomic position, parenthood histories and domestic circumstances, and education and adult socioeconomic position

	%	Unadjusted OR and 95% CI		Mutually adjusted OR and 95% CI		
		A	B	C	D	E
<b>Age†</b>			0.98 (0.96, 1.00)	0.98 (0.96, 1.00)	0.99 (0.97, 1.00)	0.97 (0.95, 0.99)**
<b>Father's collapsed NS-SEC</b>						
Professional and Managerial	22.4	1		1	1	1***
Intermediate	26.6	1.26 (1.10, 1.44)		1.26 (1.11, 1.45)	1.17 (1.02, 1.35)	0.97 (0.84, 1.12)
Semi-routine/routine	34.4	1.82 (1.60, 2.07)		1.83 (1.60, 2.08)	1.52 (1.32, 1.74)	1.13 (0.98, 1.30)
Missing	36.5	1.99 (1.70, 2.33)		2.00 (1.71, 2.34)	1.68 (1.43, 1.98)	1.36 (1.15, 1.61)
<b>Age of entry into motherhood</b>						
No births at time of interview	25.0	1			1	1****
25 and over	19.8	0.74 (0.65, 0.84)			0.74 (0.64, 0.87)	0.63 (0.54, 0.74)
22–24	32.8	1.47 (1.27, 1.70)			1.26 (1.06, 1.49)	0.87 (0.73, 1.04)
20 and 21	47.4	2.72 (2.30, 3.21)			2.15 (1.78, 2.60)	1.35 (1.10, 1.65)
Under 20	55.6	3.75 (3.20, 4.40)			3.01 (2.51, 3.60)	1.71 (1.41, 2.08)
<b>Cohabitation status</b>						
Lives with a partner	26.3	1			1	1*
Does not live with a partner	37.5	1.68 (1.52, 1.86)			1.24 (1.07, 1.45)	1.22 (1.05, 1.42)
<b>Lone mother (child/no partner)‡</b>						
No	26.5	1			1	1****
Yes	56.1	3.55 (3.06, 4.11)			2.01 (1.61, 2.51)	1.93 (1.54, 2.42)
<b>Age of leaving full time education</b>						
22 +	12.6	1				1****
19–21	17.5	1.46 (1.16, 1.84)				1.40 (1.11, 1.77)
17–18	25.6	2.38 (1.96, 2.89)				2.10 (1.71, 2.57)
16 and under	40.7	4.73 (3.95, 5.67)				3.37 (2.75, 4.13)
<b>Woman's collapsed NS-SEC</b>						
Professional and Managerial	20.4	1				1****
Intermediate	28.0	1.51 (1.35, 1.70)				1.08 (0.95, 1.22)
Semi-routine/routine	43.6	3.01 (2.68, 3.39)				1.55 (1.35, 1.78)

Significance in model E: p<0.0001\*\*\*\*; p<0.001\*\*\*; p<0.01\*\*; p<0.05\*. †For age, the odds ratio refers to a one year increase in age. ‡The odds ratio for lone mothers in models D and E gives the additional effect of living with a child for a woman without a partner.

status in England, with prevalence in the south east lower than both northern regions and the country as a whole.<sup>18</sup>

Smoking behaviour was socially patterned. Across both conventional and domestic lifecourse indicators, women on disadvantaged social trajectories had higher rates and unadjusted odds of current smoking, and had lower rates and odds of cessation (tables 2 and 3, columns A and B).

The initial mutually adjusted model, including only age and childhood SEP, showed that women from professional/managerial backgrounds have a lower odds of smoking and higher odds of quitting than other groups (tables 2 and 3, column C). When the model was extended to include the domestic lifecourse (column D), age of motherhood, cohabitation status, and lone motherhood contributed separately to the prediction of current smoking, and age of motherhood and cohabitation status to the odds of quitting. Compared with women who were not mothers, the odds of smoking among women whose first child was born at age  $\leq 21$  were considerably higher; their odds of quitting were appreciably reduced. Women entering motherhood at  $\geq 25$  years had lower odds of smoking and higher odds of quitting than the reference group of non-mothers.

In the final model (tables 2 and 3, column E), domestic factors continued to influence the odds of both outcomes. While attenuated, strong effects for age of motherhood remain. For current smoking, odds were higher for those who had become mothers in their late teens and early 20s, relative both to women who were still childless and to those who were mothers at age 25 and over. Odds rose as age of motherhood fell (OR 1.71, CI 1.41, 2.08, for first birth at <20 years). Living without a partner (OR 1.22, CI 1.05, 1.42) and, over and above this, being a lone mother (OR 1.93, CI 1.54, 2.42) added further to the odds of smoking. The odds declined with age.

For quitting, odds were lower for women who became a mother before age 20 than for the reference group of women who were still childless. But odds were at their highest among women who entered motherhood at or after the age of 25 (OR 1.64, CI 1.33, 2.02). Partnership status also contributed separately to the prediction of quitting, with odds considerably lower (OR 0.64, CI 0.51, 0.80) for non-cohabiting women. Being a lone mother had no additional effect over and above age of motherhood and partnership status. The odds of quitting increased with age.

In this final model, education and adult SEP contributed separately to the odds of both outcomes. The odds of smoking for women who left full time education at the minimum age are over three times higher (OR 3.37, CI 2.75, 4.13) than for those staying beyond age 21; their odds of quitting were more than halved (OR 0.42, CI 0.32, 0.54).

Because our measure of childhood and adult SEP includes a wide range of occupations within its three categories, we repeated the modelling process using the registrar general's social class classification (social class I/II, III non-manual, III manual, IV/V) in place of NS-SEC. The odds ratios for the other variables were unchanged, with pronounced effects of education and the domestic lifecourse remaining (results not given). We also repeated the analysis, entering childhood SEP, education and current SEP together first and then adding the three domestic lifecourse measures. The effects of the conventional lifecourse measures were little attenuated by the inclusion of the domestic lifecourse measures (results not given).

Testing for interactions in model E, childhood circumstances were found to modify the effect of lone motherhood on current smoking. The effect of lone motherhood was greater for women from professional and managerial backgrounds (OR 2.51, CI 1.63, 3.89) than for women whose

**Table 3** Quitting smoking: prevalence rates, unadjusted and mutually adjusted odds ratios (95% confidence intervals) (n = 3873). Effects of childhood socioeconomic position, parenthood histories and domestic circumstances, and education and adult socioeconomic position

	%	Unadjusted OR and 95% CI		Mutually adjusted OR and 95% CI		
		A	B	C	D	E
<b>Age†</b>			1.04 (1.01,1.06)	0.98 (0.96,1.00)	1.02 (0.99,1.05)	1.03 (1.01,1.06)*
<b>Father's collapsed NS-SEC</b>						
Professional and Managerial	43.9	1		1	1	1
Intermediate	36.9	0.75 (0.62,0.90)		0.74 (0.62,0.89)	0.79 (0.65,0.95)	0.89 (0.74,1.09)
Semi-routine/routine	32.1	0.60 (0.50,0.72)		0.60 (0.50,0.71)	0.65 (0.54,0.79)	0.82 (0.67,0.99)
Missing	32.2	0.61 (0.49,0.75)		0.60 (0.49,0.75)	0.68 (0.54,0.84)	0.81 (0.64,1.01)
<b>Age of entry into motherhood</b>						
No births at time of interview	37.2	1			1	1****
25 and over	49.3	1.64 (1.38,1.95)			1.46 (1.19,1.79)	1.64 (1.33,2.02)
22–24	35.2	0.91 (0.75,1.12)			0.93 (0.74,1.17)	1.22 (0.96,1.55)
20 and 21	26.0	0.59 (0.47,0.75)			0.64 (0.49,0.84)	0.90 (0.68,1.19)
Under 20	21.4	0.46 (0.37,0.58)			0.49 (0.38,0.63)	0.76 (0.58,0.99)
<b>Cohabitation status</b>						
Lives with a partner	40.5	1			1	1****
Does not live with a partner	25.7	0.51 (0.44,0.59)			0.62 (0.50,0.78)	0.64 (0.51,0.80)
<b>Lone mother (child/no partner)‡</b>						
No	38.7	1			1	1
Yes	20.4	0.40 (0.33,0.50)			0.74 (0.54,1.02)	0.76 (0.55,1.05)
<b>Age of leaving full time education</b>						
22 +	57.2	1				1****
19–21	47.5	0.68 (0.50,0.90)				0.70 (0.52,0.95)
17–18	37.9	0.46 (0.36,0.58)				0.51 (0.39,0.66)
16 and under	29.7	0.32 (0.25,0.40)				0.42 (0.32,0.54)
<b>Woman's collapsed NS-SEC</b>						
Professional and Managerial	45.8	1				1****
Intermediate	38.1	0.73 (0.62,0.85)				0.91 (0.76,1.08)
Semi-routine/routine	25.2	0.40 (0.34,0.47)				0.60 (0.50,0.72)

Significance in model E: p<0.0001\*\*\*\*; p<0.001\*\*\*; p<0.01\*\*; p<0.05\*. †For age, the odds ratio refers to a one year increase in age. ‡The odds ratio for lone mother in models D and E gives the additional effect of living with a child for a woman without a partner.

fathers had been in semi-routine/routine occupations (OR 1.46, CI 0.77,2.78).

## DISCUSSION

The socioeconomic lifecourse is a theoretical construct introduced into social epidemiology to highlight the association between social circumstances at different life stages, and the ways in which these accumulate and interact in the relation with adult health. Conventionally measured by childhood SEP, education, and adult SEP, the concept can obscure factors known to have a stronger effect on life chances and living standards of women than men, including partnership and parenting trajectories. As a rich seam of sociological research has shown, women's socioeconomic trajectories are fashioned by both gender and socioeconomic inequality, with investment in early motherhood central to the identities of young women negotiating a pathway to adulthood against a backdrop of material and social

disadvantage.<sup>32–33</sup> As such research suggests, the socioeconomic lifecourse is gendered. Conventional indicators may therefore be detecting only some of its influences on health behaviours that, like cigarette smoking, track from adolescence into adulthood.<sup>14–26–34–35</sup>

There are few prospective studies capable of identifying the temporal relations between women's socioeconomic trajectories and their smoking careers. Most of the birth cohort studies relate to men and to older cohorts growing up in a time of greater stability in domestic trajectories.<sup>3–4</sup> Analyses based on such studies may therefore underestimate the effect of early motherhood and lone motherhood on the smoking careers of young women today. This contemporary study was based in the UK, where, as in other rich societies, transitions

## Policy implications

Public health policies should be widened beyond their traditional focus on changing individual behaviour, to moderating the unequal lifecourse pathways in which smoking careers are embedded. This broader vision of tobacco control policy would include evaluation of policies that influence children's exposure to disadvantage, the life chances of young people heading for early school leaving and early parenthood, and the social and material circumstances of women, particularly lone mothers, whose employment opportunities are restricted to the low waged sectors of the labour market.

## What this paper adds

- It extends the concept of the socioeconomic lifecourse beyond its conventional focus on childhood circumstances, education, and adult socioeconomic position to include domestic trajectories and circumstances that are integral to women's socioeconomic lifecourse.
- Through an analysis of a contemporary study of women, it highlights the contribution of the domestic lifecourse, as well as the conventionally measured lifecourse, to the odds of smoking and quitting in early adulthood.
- It suggests that women's domestic trajectories and circumstances should be recognised as important pathways of influence on smoking in public health research and policy.

to adulthood are lengthening and poverty rates among young adults have been rising,<sup>9 36 37</sup> family structures are changing, and more young adults are forming single person households and lone parent families.<sup>9 36 37</sup> Childhood SEP was derived from recalled father's occupation and smoking status was self reported. Validation studies show that both measures are broadly reliable,<sup>38 39</sup> with no systematic socioeconomic biases in underreporting of smoking.<sup>40 41</sup>

In line with other studies in rich societies, we found that smoking risk was strongly patterned by social background, educational pathways, and current occupational status.<sup>15 23-25</sup> Consistent with their findings, education and, to a lesser degree, current SEP were predictive of quitting.<sup>42 43</sup> Our limited measures of childhood and adult SEP may have resulted in an overestimation of the effects of education, with education capturing dimensions of both family background and current circumstances. However, other studies have similarly noted the importance of educational trajectories in shaping smoking careers.<sup>14 24 42 44</sup>

Our study adds to these findings by highlighting the association between women's domestic circumstances and smoking status in early adulthood, with effects that remain after adjustment for conventional measures of the socioeconomic lifecourse. Women following disadvantaged trajectories into early and lone motherhood had higher odds of smoking than those who deferred childbearing and parented within a cohabiting relationship; among the ever-smokers, early motherhood and non-cohabitation reduced the odds of quitting. Reliance on own occupation to measure adult SEP may underestimate its contribution relative to domestic lifecourse factors, with the latter potentially capturing the effects of partner's socioeconomic position on women's living standards and life chances. However, substituting household measures of SEP (social housing and receipt of means tested benefits) for own NS-SEC left the effects of both the conventional and the domestic lifecourse factors on the odds of current smoking and quitting largely unchanged. Elsewhere, early motherhood has been found to increase the odds of adult smoking, over and above the effects of poor childhood circumstances<sup>12 26</sup> and lone parenthood to both increase the odds of smoking<sup>27 28</sup> and to reduce the odds of quitting.<sup>27 43</sup>

The lowest odds of smoking and the highest odds of quitting were among women who had their first child at age  $\geq 25$ : they were less likely to smoke and more likely to have quit than both younger mothers and women who were not mothers at the time of interview. While rates of post-partum resumption are high, pregnancy has a long term cessation effect,<sup>42</sup> an effect that is more pronounced for first time mothers.<sup>45 46</sup> Consistent with these patterns, women who were mothers by their mid-20s were more likely to be former smokers and less likely to be smokers than non-mothers.

While our study points to the importance of the domestic lifecourse for women's smoking status in early adulthood, its cross sectional design means that findings are suggestive not conclusive. Further caveats need to be made. Firstly, father's occupation was not recorded for 14% of the sample, a group with higher adjusted odds of smoking than women from semi-routine and routine backgrounds. Compared with women from these backgrounds, women with missing information on childhood SEP were more likely to have stayed in education beyond 16 (50% v 42%) and to be in a professional/managerial occupation (34% v 28%). But they were more likely to have lost contact with their fathers (21% v 1%) and to be adopted (8% v 0.3%). As this suggests, the "missing data" category may be measuring dimensions of psychosocial disadvantage not captured by father's NS-SEC. When analyses were redone to exclude this group, the odds ratios for all predictors were little changed for either smoking

outcome, and childhood SEP remained a significant predictor of current smoking at the 5% level. None the less, information on father's occupation would have enabled the group to be classified within the NS-SEC schema, with a potentially larger effect on the predictors.

Secondly, our measure of parenthood trajectories, derived from a sample of women at various points in their reproductive careers, combined being a mother with age at first birth. Other datasets suggest that, for women <25 years, age at first birth is strongly associated with past and future socioeconomic circumstances and with adult smoking status.<sup>12 47</sup> At ages  $\geq 25$ , women are less socially differentiated by age at first birth; in consequence, the measure adds little explanatory power to lifecourse models for older women.<sup>12 47</sup> As a further check, we repeated the analyses for the subsample of women who were already mothers (n = 4741). With lone motherhood included, cohabitation status was redundant. The lifecourse predictors, and their relative contribution to the prediction of current smoking and quitting, were unchanged.

Thirdly, there is some evidence that adolescent smoking status influences subsequent social mobility,<sup>48</sup> effects that are hard to detect in cross sectional surveys. A limited check of the effects of a change in NS-SEC between childhood and adulthood on the odds of smoking was undertaken. Such a change was found to have no extra effect over and above those of childhood and adult SEP.

Finally, the study is located in a society where the economic opportunity cost of caring for children is higher than elsewhere.<sup>49</sup> In separate analyses of the SWS, we examined the contribution of women's domestic and socioeconomic trajectories to their current SEP. While strong effects of childhood circumstances and education were seen, both parenthood histories and partnership status emerged as powerful predictors. As this suggests, it would be important to repeat the analysis in societies where the socioeconomic impact of women's reproductive trajectories is less pronounced, to build a cross-national perspective on the effects of childbearing and cohabitation status on women's smoking status in early adulthood.

## CONCLUSIONS

Our study builds on evidence that domestic trajectories and circumstances capture exposures that have yet to be incorporated into the concept of the socioeconomic lifecourse. Consistent with other studies, it shows that women's domestic circumstances may represent an important pathway of influence on their smoking status, operating over and above the effects of the childhood SEP-education-adult SEP trajectory.

Two broad conclusions can be drawn. Firstly, it suggests that lifecourse analyses should be widened to include pathways into social and health disadvantage beyond those indexed by conventional measures of SEP. Our focus on gendered socioeconomic pathways is one part of this larger task of elucidating the processes that shape health risk over the lifecourse in rich, but increasingly diverse, dynamic, and polarised, societies.

Secondly, our study adds to evidence that public health policies should be widened beyond their traditional focus on changing individual behaviour, to moderating the unequal lifecourse pathways in which smoking careers are embedded.<sup>50 51</sup> This broader vision of tobacco control policy would include evaluation of policies that influence children's exposure to disadvantage, the life chances of young people heading for early school leaving and early parenthood, and the social and material circumstances of women, particularly lone mothers, whose employment opportunities are restricted to the low waged sectors of the labour market.

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### Authors' affiliations

**H Graham**, Department of Health Sciences, University of York, UK  
**B Francis, J Harman**, Centre for Applied Statistics, Lancaster University, UK  
**H M Inskip**, MRC Epidemiology Resource Centre, University of Southampton, Southampton General Hospital, UK  
**SWS Study Group**, MRC Epidemiology Resource Centre, University of Southampton

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## REFERENCES

- Kuh DL, Ben-Shlomo Y, eds. *A life course approach to chronic disease epidemiology: tracing the origins of ill health from early to adult life*. 2nd ed. Oxford: Oxford University Press, 2003.
- Kuh D, Hardy R, eds. *A life course approach to women's health*. Oxford: Oxford University Press, 2002.
- Galobardes B, Lynch JW, Davey Smith G. Childhood socioeconomic circumstances and cause-specific mortality in adulthood: systematic review and interpretation. *Epidemiol Rev* 2004;**26**:7–21.
- Pollitt RA, Rose KM, Kaufman JS. Evaluating the evidence for models of life course socioeconomic factors and cardiovascular outcomes: a systematic review. *BMC Public Health* 2005;**5**:7.
- Women and Equality Unit. *Key indicators of women's position in Britain*. London: Women and Equality Unit, 2002.
- Bartley M, Sacker A, Schoon I. Social and economic trajectories and women's health. In: Kuh D, Hardy R, eds. *A life course approach to women's health*. Oxford: Oxford University Press, 2002:233–54.
- Joshi H. Production, reproduction and education: women, children and work in a British perspective. *Population and Development Review* 2002;**28**:445–74.
- Fritzell J. Still different? Income distribution in the Nordic countries in a European perspective. In: Kautto M, Fritzell J, Hvinden B, et al. *Nordic welfare states in the European context* London, Routledge, 2001.
- Rake K, Daly M. *Gender, household and Individual Income in France, Germany, Italy, the Netherlands, Sweden, the USA and the UK*, Luxembourg Income Study Working Paper 332. New York: Maxwell School of Citizenship and Public Affairs, Syracuse University, 2002.
- Singh S, Darroch JE, Frost JJ, et al. Socioeconomic disadvantage and adolescent women's sexual and reproductive behaviour: the case of five developed countries. *Fam Plann Perspect* 2001;**33**:251–8.
- Botting B, Rosato M, Wood R. Teenage mothers and the health of their children. *Popul Trends* 1998;**93**:19–27.
- Hobcraft J, Kiernan K. Childhood poverty, early motherhood and adult social exclusion. *Br J Sociol* 2001;**52**:495–517.
- Parsons TJ, Power C, Logan S, et al. Childhood predictors of adult obesity: a systematic review. *Int J Obes Relat Metab Disord* 1999;**23**(suppl 8):S1–107.
- Schooling M, Kuh D. A life course perspective on women's health behaviours. In: Kuh D, Hardy R, eds. *A life course approach to women's health*. Oxford: Oxford University Press, 2002:279–302.
- Jefferis B, Power C, Graham H, et al. Changing social gradients in cigarette smoking and cessation over two decades of adult follow-up in a British birth cohort. *J Public Health Med* 2004;**26**:13–8.
- Paavola M, Vartiainen E, Haukkala A. Smoking from adolescence to adulthood. *Eur J Public Health* 2004;**14**:417–21.
- Pierce JP. International comparisons of trends in cigarette smoking prevalence. *Am J Public Health* 1989;**79**:152–7.
- Office for National Statistics. *Living in Britain: Results from the 2000/01 General Household Survey*. London: Office for National Statistics, 2001.
- Cavelaars AE, Kunst AE, Geurts JJ, et al. Educational differences in smoking: international comparison. *BMJ* 2000;**320**:1102–7.
- Giskes K, Kunst AE, Benach J, et al. Trends in smoking behaviour between 1985 and 2000 in nine European countries. *J Epidemiol Community Health* 2005;**59**:395–401.
- Davey Smith G, Blane D, Bartley M. Explanations for socioeconomic differentials in mortality. *Eur J Public Health* 1994;**4**:131–44.
- Mackenbach JP, Huisman M, Andersen O, et al. Inequalities in lung cancer by educational level in 10 European populations. *Eur J Cancer* 2004;**40**:126–35.
- Brunner E, Shipley MJ, Blane D, et al. When does cardiovascular risk start? Past and present socioeconomic circumstances and risk factors in adulthood. *J Epidemiol Community Health* 1999;**53**:757–64.
- Graham H, Der G. Influences on women's smoking status: the contribution of socio-economic status in adolescence and adulthood. *Eur J Public Health* 1999;**9**:137–41.
- Power C, Graham H, Due P, et al. The contribution of childhood and adult socioeconomic position to adult obesity and smoking behaviour: an international comparison. *Int J Epidemiol* 2005;**34**:355–44.
- Jefferis B, Power C, Graham H, et al. Effects of childhood socio-economic circumstances on persistent smoking. *Am J Public Health* 2004;**94**:279–85.
- Dorsett R, Marsh A. *The health trap: poverty, smoking and lone parenthood*. London: Policy Studies Institute, 1998.
- Rahkonen O, Laaksonen M, Karvonen S. The contribution of lone parenthood and economic difficulties to smoking. *Soc Sci Med* 2005;**61**:211–16.
- Inskip HM, Godfrey KM, Robinson SM, et al. Cohort profile: the Southampton Women's Survey. *Int J Epidemiol*. Published online first 2005;doi: 10.1093/ije/dyi202.
- Robinson SM, Crozier SR, Borland SE, et al. Impact of educational attainment on the quality of young women's diets. *Eur J Clin Nutr* 2004;**58**:1174–80.
- Rose D, Pevalin DJ, eds. *A researcher's guide to the National Statistics socio-economic classification*. London: Sage, 2003.
- Thomson R. Dream on: the logic of sexual practice. *Journal of Youth Studies* 2000;**3**:407–27.
- Graham H, McDermott E. Qualitative research and the evidence-base of policy: insights from studies of teenage mothers in the UK. *J Soc Policy* 2006;**35**:1.
- Pavis S, Cunningham-Burley S. Male youth culture: understanding the context of health-related behaviours. *Health Educ Res* 1999;**14**:583–96.
- Plumridge EW, Fitzgerald LJ, Abel GM. Performing coolness: smoking refusal and adolescent identities. *Health Educ Res* 2002;**17**:167–79.
- Smeeding T. *Globalization, inequality and the rich countries of the G-20*, Luxembourg Income Study Working Paper 330. New York: Maxwell School of Citizenship and Public Affairs, Syracuse University, 2002.
- Ritakallio V-M. Trends in poverty and income inequality in cross-national comparison. *European Journal of Social Security* 2002;**4**:151–77.
- Berney LR, Blane DB. Collecting retrospective data: accuracy of recall after 50 years judged against historical records. *Soc Sci Med* 1999;**45**:1519–25.
- Patrick DL, Cheadle A, Thompson DC, et al. The validity of self-reported smoking: a review and meta-analysis. *Am J Public Health* 1994;**84**:1086–93.
- Vartiainen E, Seppälä T, Lillsunde P, et al. Validation of self-reported smoking by serum cotinine measurement in a community-based study. *J Epidemiol Community Health* 2005;**56**:167–70.
- Graham H, Owen O. Are there socioeconomic differentials in under-reporting of smoking in pregnancy? *Tob Control* 2003;**12**:434–4.
- Graham H, Der G. Patterns and predictors of smoking cessation among women. *Health Promot Int* 1999;**14**:231–9.
- Jarvis MJ. Patterns and predictors of smoking cessation in the general population. In: Bolliger CT, Fagerstrom KO, eds. *The tobacco epidemic*. Basle: Karger, 1997:151–64.
- Glendinning A, Shucksmith J, Hendry L. Social class and adolescent smoking behaviour. *Soc Sci Med* 1994;**38**:1449–60.
- Batten L, Graham H, High S, et al. Stage of change, low income and benefit status: a profile of women's smoking in early pregnancy. *Health Educ J* 1999;**58**:378–88.
- Brenner H, Mielck A. The role of childbirth in smoking cessation. *Prev Med* 1993;**22**:225–36.
- Hawkes D, Joshi H, Ward K. *Unequal entry to motherhood and unequal starts in life: evidence from the first survey of the UK Millenium Cohort*, Working Paper 6. London: Centre for Longitudinal Studies, Institute of Education, 2004.
- Koivusilta L, Rimpela A, Rimpela M. Health related lifestyle in adolescence predicts adult educational level. *J Epidemiol Community Health* 1998;**52**:794–801.
- Harkness S, Waldfogel J. *The family gap in pay: evidence from seven industrialised countries*, CASE paper 29. London: Centre for Analysis of Social Exclusion, London School of Economics, 1999.
- Lynch JW, Kaplan GA, Salonen JT. Why do the poor behave poorly? Variation in adult health behaviors and psychosocial characteristics by stages of the socioeconomic lifecourse. *Soc Sci Med* 1997;**44**:809–19.
- Barbeau E, Krieger N, Soobader M-J. Working class matters: socioeconomic disadvantage, race/ethnicity, gender and smoking in NHIS 2000. *Am J Public Health* 2004;**94**:269–78.