Int J Public Health (2012) 57:119–126
DOI 10.1007/s00038-011-0270-8

ORIGINAL ARTICLE

Association of life course socioeconomic disadvantage with future problem drinking and heavy drinking: gender differentials in the west of Scotland

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Received: 26 October 2009 / Accepted: 6 June 2011 / Published online: 3 July 2011

Abstract
Objective To examine gender differentials in the association between life course socioeconomic disadvantage and the risk of exceeding internationally recognised weekly and daily guidelines for 'sensible' alcohol consumption and problem drinking.
Methods A population-representative cohort study of 1,218 men and women from the west of Scotland, UK was conducted. Data on life course socioeconomic position were collected in 1987/1988 (at around 35 years of age). Alcohol consumption patterns (detailed 7-day recall) and problem drinking (CAGE questionnaire) were ascertained in 1990/1992.
Results There was evidence of marked gender divergence in the socioeconomic position–alcohol intake/problem gradients. Typically, disadvantage in men conferred an increased risk of exceeding 'sensible' guidelines for weekly consumption (for own education and adult social class) and having alcohol problems (for employment status, income, adult social class and car ownership). In contrast, a reverse gradient was evident in women where adverse social status was generally associated with a reduced prevalence of these outcomes.
Conclusion Investigators should consider more carefully socioeconomic patterning of alcohol intake, and possibly other health-related behaviours, separately in men and women.

Keywords Alcohol · Socioeconomic status · Epidemiology

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Introduction

The study of the health consequences of heavy alcohol consumption can be traced back to the early nineteenth century (Moore 1904). There is now a consensus that alcohol intake has a "U"- or "J"-shaped association with both total and coronary heart disease mortality (Shaper 1990; Anderson et al. 1993; Poikolainen 1995; Britton et al. 1998; Sasaki 2000; Gronbaek 2002), such that abstainers and heavy users experience elevated risk, while moderate drinkers do not. Based on these observations, recommendations for 'sensible' weekly intake (up to 21 units in men, 14 units in women) were first proposed by the UK Health Education Council over 20 years ago (Anderson et al. 1993) and have been officially adopted by the governments of the UK, South Africa, Scandinavia and Australia, amongst other nations (Anon 1991). With over 90% of adults from most western societies claiming to drink alcohol regularly (Rehn 2004; Sproston and Primatesta 2004), the influence on public health of modifying intake at the population level is potentially considerable. However, if interventions are to be successfully implemented, it is necessary to identify the predictors of such health-related behaviours.

One such potential determinant is socioeconomic disadvantage, as indexed, for instance, by occupational social class, income and material assets. In adults, heavy drinking appears to be socially pattered such that more harmful

levels are apparent in the poorer social groups (Bobak et al. 1999; Bloomfield et al. 2006). Recently, revitalised interest in the early and life course origins of chronic diseases (Kuh and Ben Shlomo 2004), such as cardiovascular disease and cancer, has broadened the debate and prompted investigators to examine predictors of their risk factors, including alcohol intake. If pre-adult social indices are shown to influence later heavy drinking, this would point to the need for intervention earlier in life than is currently the case. However, the role of life course socioeconomic adversity in the aetiology of heavy drinking has been little investigated. In a study of Finnish middle-aged men, unfavourable levels of a range of life course markers of socioeconomic position, particularly those from adult life, were predictive of heavy alcohol intake, including binge drinking (Yang et al. 2007). Similar results were apparent in a Scottish study, which used self-reported hangovers as a proxy for heavy alcohol use (Batty et al. 2006a), and in another with data on direct alcohol intake (Batty et al. 2008a).

As informative as these studies are, some were characterised by crude indicators of alcohol intake (Batty et al. 2006b) and did not (Batty et al. 2006a) or were unable to (Yang et al. 2007; Batty et al. 2008b) explore gender differentials in the socioeconomic position–alcohol gradient. Given the suggestion that other health-related outcomes, such as self-perceived health, show gender-specific relations with socioeconomic position in childhood and adulthood (Hyde et al. 2006), gender differentials may exist for health-related behaviours, including heavy alcohol use.

Using data from a cohort study in Scotland, a country in which two-thirds of adults currently exceed guidelines for sensible daily use (up to 4 units in men, 3 units in women) (Sproston and Primatesta 2004), we are able to address several of these shortcomings: ten different socioeconomic indices were available; participants completed a 7-day recall of alcohol intake, unusual in the context of a large population-based study; and data were collected for men and women allowing gender differences in the influence of life course socioeconomic factors on alcohol outcomes to be explored. Additionally, for the first time to our knowledge, these data allow us to explore links between life course socioeconomic position and self-reported alcohol-related problems, such as symptoms of addiction, in middle-aged adults.

Methods

Study participants were from the *West of Scotland Twenty-07 Study*, a population-sampled cohort designed to investigate the influence of social factors on health. The design and sampling have been described in detail elsewhere (MacIntyre et al. 1989; Ford et al. 1994; Benzeval et al. 2008). In brief, the Twenty-07 Study comprises three cohorts recruited at around age 15, 35 and 55 years in 1987/1988. The social class distribution of the study sample did not differ from that of the local population drawn from the UK's 1991 census samples of anonymised records (Der 1998). Our sample therefore has a high degree of generalisability. Our analyses are based on 1,444 men and women recruited at around age 35 years who, in the first wave of data collection, answered questions about their socioeconomic circumstances across the life course. In the second wave of data collection (1990/1992), study members were re-interviewed about their alcohol drinking habits and any related drinking problems. Of the original survey participants, 1,218 (84.3%) participated at follow-up.

Assessment of life course socioeconomic position

Early socioeconomic circumstances were based on four indices. Paternal occupational social class was coded into one of six categories according to the 1981 Registrar General's schema (OPCS 1980). Family structure was denoted by the presence of both biological parents at age 15 years. Respondents also reported their own education, based on age at leaving school (range: 12–19 years) and that of their father. To a degree, the subject's own education may be regarded as a socioeconomic marker that spans the period between early life and adulthood.

Assessment of adult socioeconomic circumstances at baseline (1987/1988) is based here on seven indices. The head of household's current (or last if not currently employed) occupation social class was coded as above. To categorise their employment status, study participants identified themselves as: retired, disabled/invalid, caring for the home/housewife, in education, unemployed (no paid work) or employed/worker/self-employed. Income was based on total household earnings after tax, including any benefits. Respondents were asked to specify an actual amount in pounds sterling per week, month or year, or, if they were unwilling to do so, to identify an appropriate income band on a printed card. Housing tenure was categorised as privately owned or other (council, privately rented [unfurnished], privately rented [furnished], tied to job). Household crowding was calculated by dividing the number of people in the household by the number of rooms; respondents were assigned to a quartile of the distribution, with the highest quartile representing most overcrowding. Participants also indicated whether or not they owned a car or van.

Assessment of alcohol consumption and problem drinking

At the second wave of data collection (1990/1992), participants were asked to recall their alcohol consumption

over each of the 7 days preceding the interview, reporting separately for five categories of alcohol type: beer (including lager and cider), wine, fortified wine, spirits and 'other' (e.g. 'alcopops'). Responses were expressed in units, which represent 8 g of pure alcohol, equivalent to half a pint of ordinary beer, lager or cider, a small glass of wine or a single measure of spirits. For weekly alcohol intake, data were totalled and respondents were dichotomised on the basis of whether or not they exceeded the recommendations for sensible weekly intake (21 units for men, 14 units for women) (Anderson et al. 1993). For daily intake, the total number of days in the preceding 7 days on which a study participant exceeded 4 units (men) and 3 units (women) (Department of Health 1995) was computed. Both alcohol outcomes were dichotomised into whether or not they exceeded these limits (referred to here as "heavy weekly" or "heavy daily" drinkers).

All participants, with the exception of those who indicated they were lifelong non-drinkers, were asked to complete the CAGE questionnaire (Mayfield et al. 1974; Ewing 1984), which is based on the four questions: Have you ever felt you ought to cut down on drinking? Have people annoyed you by criticising your drinking? Have you ever felt bad or *guilty* about your drinking? Have you ever had a drink first thing in the morning (eye-opener) to steady your hands? These items were used to create a simple drinking problem scale, with each positive response given a score of one; a higher score indicated the presence of an alcohol problem. While the CAGE does not provide standard Diagnostic and Statistical Manual diagnosis of alcohol dependence, a positive response on two or more questions indicates a high likelihood of the presence of problematic drinking (Mayfield et al. 1974; Ewing 1984). A total CAGE score of 2 or more was therefore used in the present analyses. We have previously shown that men and women who reported problem drinking on this scale experience elevated rates of mortality (Batty et al. 2008b).

Statistical analyses

Given that the ten different markers of life course socioeconomic position have different coding structures, a direct comparison of the magnitude of the relation of each with alcohol use is problematic. For this reason, we used the relative index of inequality (RII) to quantify this association as we (Batty et al. 2006b) and others (Singh-Manoux et al. 2005) have done previously. First, we reversed the scores for the various socioeconomic measures so that higher scores represented greater disadvantage (risk). For the discrete measures, and in the case of ties for continuous measures, we assigned the mean rank. The RII was then derived by ranking the subjects on each of the socioeconomic variables and dividing this rank score by the sample size to yield a value between 0 and 1.

We also calculated a composite score for socioeconomic adversity. To do so, we dichotomised all the explanatory variables (0, 1) so that experience of disadvantage on any measure contributed a single point to the score. Three indices were then created (early life socioeconomic position, range: 0–4; adult socioeconomic position, range: 0–6; life course socioeconomic position, range: 0–10). Again, a higher score indicated greater adversity. Each index was also assigned a RII using the procedure described above.

When included in a logistic regression model with alcohol intake (daily or weekly) or problem drinking as the outcome, the estimates for the RII can be interpreted as the odds ratio for the disadvantaged end of the socioeconomic distribution relative to the advantaged. Thus, an RII of 2.0 for problem drinking indicates that the odds ratio between the extreme ends of the socioeconomic distribution for this behaviour is twice as high for the most disadvantaged (greatest risk) compared to the most advantaged (lowest risk). Our analytical sample varied slightly (range for men: 494–542; range for women: 606–673) depending on missing data for the socioeconomic predictor and outcome of interest.

Results

Based on men with complete data on alcohol intake and problem drinking, 25.3% exceeded weekly and 46.6% daily guidelines for sensible consumption; 13.3% were categorised as having alcohol-related drinking problems (Table 1). Of women with complete data on alcohol consumption and problem drinking, the corresponding proportions were much lower: 6.2, 27.8 and 5.7%, respectively. There was evidence of differentials in the prevalence of markers of some life span socioeconomic position variables, but not others.

In Tables 2, 3 and 4, we present the association of life course indicators of socioeconomic position with the three alcohol outcomes—heavy weekly drinking, heavy daily drinking and problem drinking—separately in men and women. In men, there was evidence that disadvantaged social circumstances in early and, to a greater degree, later life were related to an elevated risk of exceeding weekly alcohol guidelines; however, statistical significance at conventional levels was only apparent for own education, adult social class and car ownership (Table 2). In women, there was little evidence that any of the individual indicators of socioeconomic position were related to exceeding the guidelines for weekly alcohol intake. Indeed, if anything, there was a suggestion of a reverse socioeconomic–alcohol gradient, whereby disadvantage was associated

Table 1 Study member characteristics ($N = 1,444$)—Twenty-07 Study

	Men ($N = 656$) % (N)	Women ($N = 788$) % (N)	P value for difference
Heavy weekly drinking (>21 units for men, >14 units for women)	25.3 (166)	6.2 (49)	0.001
Heavy daily drinking (>4 units for men, >3 units for women)	46.6 (306)	27.8 (219)	0.001
Problem drinking (CAGE ≥2)	13.3 (87)	5.7 (45)	0.001
Early life socioeconomic characteristics			
Father with no educational qualifications	61.4 (403)	63.5 (500)	0.370
Father had manual occupation	64.5 (423)	61.3 (483)	0.445
Family structure (≤1 biological parent present)	96.3 (631)	95.9 (756)	0.317
Study member left school aged ≤15 year	47.7 (313)	56.9 (448)	0.001
Adult life socioeconomic characteristics			
Unemployed	18.4 (121)	35.8 (282)	0.001
Income (<100 GBP/week)	20.7 (136)	26.3 (207)	0.019
Housing density of ≥0.8 persons/room	26.8 (176)	27.5 (217)	0.845
Living in rented accommodation	33.1 (217)	41.4 (326)	0.002
Study member in manual social class	46.6 (306)	33.9 (267)	0.001
No household car ownership	33.2 (218)	38.8 (306)	0.038

with a lower risk of surpassing sensible weekly drinking advice. Although none of these relative risk estimates differed significantly from unity, the general pattern of increased risk of heavy drinking with social disadvantage in men and the reverse in women was most marked for own education and adult social class (p value for interaction 0.028 and 0.014, respectively). When we collapsed the 11 individual social factors into composite socioeconomic scores for early life, adulthood and across the life course, there was confirmation of the general observation that social disadvantage in men, particularly later in the adult life course, was associated with an increased risk of drinking heavily on a weekly basis, whereas there was typically a null or reverse association in women. Controlling for adult social circumstances, including education in isolation, led to some attenuation of the link between childhood socioeconomic position and later adult intake (the point estimate in men fell by over 50% from 1.69 to 1.26), suggesting that the effect of pre-adult social circumstances on this behaviour may be at least partially mediated by later socioeconomic status.

When heavy daily drinking was the outcome of interest (Table 3), relationships between socioeconomic and alcohol consumption tended to run in the same direction in men and women as the other outcomes. However, only adult social class (men) and paternal social class and car ownership (both women) were significantly related to alcohol consumption, whereby more deprived individuals were more likely to exceed the daily guidelines. The composite life course measures of socioeconomic position essentially confirmed the associations seen for their constituent factors. There was no evidence of effect modification by gender in these analyses.

Of the three alcohol outcomes, problem drinking (measured by CAGE) more frequently revealed significant relationships with socioeconomic disadvantage amongst men, particularly for the adulthood markers of social circumstances (Table 4). Thus, there was a higher prevalence of self-reported problem drinking in males who were disadvantaged according to employment status, income, own social class and car ownership. In women, the association between problem drinking and these indicators was either in the opposing direction (employment status, and non-significantly, income) or null (own social class, car ownership). These differential effects for women resulted in some evidence of effect modification according to gender for each of these four aforementioned associations (p value for interaction ≤0.087).

Discussion

The principal aim of this study was to explore gender differentials in the association of socioeconomic disadvantage up until 35 years of age with the future risk of exceeding existing weekly and daily guidelines for 'sensible' alcohol consumption and problem drinking. While, in general, the association between alcohol intake and life course socioeconomic position seemed to depend somewhat on the exposure and outcome under

Table 2 Relative index of inequality (odds ratios) for the relation of indices of life course socioeconomic position with *heavy weekly drinking* in men and women—Twenty-07 Study

	Men		Women		*P* value for interaction by gender
	N_{cases}/N_{risk}	RII (95% CI)	N_{cases}/N_{risk}	RII (95% CI)	
Early life socioeconomic characteristics					
Father's education	152/502	1.33 (0.59, 3.00)	48/629	0.83 (0.24, 2.91)	0.542
Father's social class	149/494	1.40 (0.69, 2.85)	46/606	1.32 (0.45, 3.88)	0.929
Family structure	165/537	1.39 (0.46, 4.16)	49/673	0.74 (0.11, 4.99)	0.574
Education	165/535	2.16 (1.11, 4.20)	49/667	0.51 (0.17, 1.53)	0.028
Adult life socioeconomic characteristics					
Employment status	165/537	1.04 (0.38, 2.79)	49/673	1.08 (0.32, 3.67)	0.957
Income	162/519	1.43 (0.75, 2.75)	49/654	0.73 (0.26, 2.01)	0.272
Housing density	165/536	1.66 (0.90, 3.06)	49/673	0.71 (0.25, 2.05)	0.174
Housing tenure	165/536	1.89 (0.90, 3.97)	49/673	0.78 (0.24, 2.51)	0.209
Own social class	163/531	3.14 (1.64, 6.00)	47/662	0.62 (0.20, 1.89)	0.014
Car ownership	164/536	3.55 (1.63, 7.71)	49/673	1.21 (0.37, 4.00)	0.139
Additive socioeconomic characteristics					
Early life characteristics score—unadjusted	142/467	1.69 (0.83, 3.46)	45/580	0.95 (0.32, 2.83)	0.388
Early life characteristics score—adjusted for education	142/467	0.95 (0.38, 2.40)	45/580	1.83 (0.44, 7.62)	0.021
Early life characteristics score—adjusted for later life SEP	137/443	1.26 (0.57, 2.80)	43/553	0.94 (0.28, 3.20)	0.316
Adult life characteristics score—unadjusted	159/511	2.10 (1.08, 4.06)	47/643	0.59 (0.20, 1.75)	0.051
Life course score—unadjusted	137/443	2.14 (1.05, 4.37)	43/553	0.72 (0.24, 2.16)	0.104

Early life characteristics comprise: father's social class, family structure and education (age left school). Adult life characteristics comprise: employment status, income, housing tenure, household crowding and car ownership

Life course score: all above variables. Throughout, higher scores on each of the socioeconomic variables represent greater disadvantage

consideration, there was some evidence of gender divergence in these gradients. Typically, disadvantage in men seemed to confer an increased risk of surpassing 'sensible' guidelines for consumption and having alcohol problems, while amongst women there was no relationship or a reverse gradient (i.e. adverse social status was associated with reduced risk). This pattern of gender differences was evident for exceeding weekly alcohol guidelines for intake (own education and adult social class) and problem drinking (employment status, income, adult social class and car ownership), but not daily drinking.

Comparison with prior studies

In young adults in the 1958 British birth cohort study, investigators also found a differential effect of education and occupational social class on heavy drinking (Jefferis et al. 2007). That is, socioeconomic disadvantage was associated with increased risk of heavy drinking in men, but a reduced risk in women. Expressed differently, more affluent and better educated women consume more alcohol. In what remains, essentially, a male-dominated society, it may be that women in professional roles feel a pressure to compete with their male counterparts in all aspects of their jobs, including alcohol consumption.

The Twenty-07 Study comprises three cohorts who were aged 15, 35 and 55 years at survey induction in 1987/1988. The present research question could not be examined in the youngest cohort because very few study members drank alcohol (ostensibly, it is illegal to drink alcohol in public under the age of 18 years in the UK). We have previously produced a report based on the '55 year.' cohort (Batty et al. 2008b); however, those analyses only included men as there were too few females who were classified as problem drinkers or heavy alcohol consumers. In the present manuscript, we have provided for the first time results for both men and women.

Study strengths and limitations

The present study has a number of strengths. First, the social class distribution of the baseline sample was very similar to a comparable group of the local population drawn from the UK's 1991 census samples of anonymised records (Der 1998). This suggests a high degree of generalisability. Second, for an epidemiological investigation, the data on alcohol intake were unusually detailed. Third,

Table 3 Relative index of inequality (odds ratios) for the relation of indices of life course socioeconomic position with *heavy daily drinking* in men and women—Twenty-07 Study

	Men		Women		*P* value for interaction by gender
	N_{cases}/N_{risk}	RII (95% CI)	N_{cases}/N_{risk}	RII (95% CI)	
Early life socioeconomic characteristics					
Father's education	285/502	1.36 (0.65, 2.88)	209/629	1.69 (0.82, 3.51)	0.684
Father's social class	281/494	1.58 (0.82, 3.04)	203/606	2.12 (1.15, 3.89)	0.519
Family structure	305/537	0.88 (0.31, 2.49)	219/673	1.09 (0.40, 2.96)	0.774
Education	305/535	1.42 (0.77, 2.61)	217/667	1.35 (0.71, 2.54)	0.908
Adult life socioeconomic characteristics					
Employment status	305/537	0.85 (0.34, 2.15)	219/673	0.53 (0.27, 1.07)	0.425
Income	298/519	0.95 (0.51, 1.75)	215/654	0.89 (0.50, 1.58)	0.888
Housing density	305/536	1.25 (0.71, 2.22)	219/673	0.93 (0.52, 1.67)	0.475
Housing tenure	305/536	0.81 (0.40, 1.63)	219/673	1.45 (0.76, 2.76)	0.232
Own social class	302/531	1.96 (1.09, 3.52)	216/662	1.51 (0.83, 2.76)	0.544
Car ownership	304/536	1.92 (0.90, 4.07)	219/673	2.32 (1.20, 4.49)	0.711
Additive socioeconomic characteristics					
Early life characteristics score—unadjusted	269/467	1.62 (0.83, 3.16)	195/580	1.85 (0.99, 3.44)	0.778
Early life characteristics score—adjusted for education	269/467	1.30 (0.55, 3.04)	195/580	2.09 (0.93, 4.67)	0.593
Early life characteristics score—adjusted for later life SEP	259/443	1.55 (0.73, 3.26)	188/553	1.51 (0.75, 3.02)	0.888
Adult life characteristics score—unadjusted	294/511	1.07 (0.58, 2.00)	212/643	1.37 (0.75 2.51)	0.581
Life course score—unadjusted	259/443	1.41 (0.72, 2.75)	188/553	1.63 (0.87, 3.06)	0.753

Early life characteristics comprise: father's social class, family structure and education (age left school). Adult life characteristics comprise: employment status, income, housing tenure, household crowding and car ownership

Life course score: all the above variables. Throughout, higher scores on each of the socioeconomic variables represent greater disadvantage

participation in the surveys was high, minimising concerns about selection bias. Fourth, we were able to examine the predictive value of a wider range of socioeconomic markers than has previously been possible. This approach does not come without its shortcomings, however. Multiple exposures and multiple outcomes—as we have utilised—can lead to positive results surfacing by chance alone. Further, given the inter-relationship of these various socioeconomic variables, models in which selected markers of adversity were utilised as covariates raise concerns about collinearity. Finally, our use of the relative index of inequality allowed us to compare the relative strength of different socioeconomic measures across different periods of the life course.

This study is not of course without its limitations. First, for data on early life socioeconomic circumstances, we relied on distant recall by adults in early middle age. In a systematic review, there was a suggestion that studies with prospectively collected information on childhood socioeconomic position tended to reveal somewhat stronger inverse associations with later mortality than studies with retrospective data (Galobardes et al. 2006). However, over a similar period to that in the present study, adult recall of parental occupational social class shows moderate agreement with data collected contemporaneously in early life (Batty et al. 2005). Second, some analyses were hampered by a low number of cases leading to reduced statistical power. Third, it may be that the quantity of alcohol poured in the domestic setting—a location likely to be favoured by the middle-aged group herein—exceeds standard measures (Gill and Donaghy 2004). For this reason, and the secular increases in ethanol content of a standard measure of alcohol (Anon 2003), we may have underestimated intake in this population. However, examining the prevalence of alcohol use was not the function of these analyses. Finally, the data herein were gathered in 1990/1992, and are therefore somewhat dated. However, it is very unlikely that this would render the results of the present analyses—the impact of socioeconomic position on alcohol intake/problems—as being any less pertinent than more contemporary data.

In conclusion, our finding of gender differentials in the influence of socioeconomic disadvantage on alcohol intake suggests that investigators should consider more carefully socioeconomic patterning of alcohol and other health-related behaviours separately in men and women. As the prevalence of patterns of potentially hazardous drinking is increasing in both younger men and women (Batty et al. 2008b), it is also important to examine this association in younger age groups to ascertain whether similar gender differentials are apparent.

Table 4 Relative index of inequality (odds ratios) for the relation of indices of life course socioeconomic position with *problem drinking* in men and women—Twenty-07 Study

	Men		Women		*P* value for interaction by gender
	N_{cases}/N_{risk}	RII (95% CI)	N_{cases}/N_{risk}	RII (95% CI)	
Early life socioeconomic characteristics					
Father's education	78/505	2.03 (0.69, 5.96)	40/629	1.16 (0.29, 4.69)	0.472
Father's social class	79/497	0.84 (0.35, 2.03)	41/606	1.23 (0.40, 3.82)	0.599
Family structure	87/540	0.88 (0.21, 3.70)	45/673	1.41 (0.24, 8.44)	0.688
Education	87/538	1.19 (0.52, 2.71)	44/667	0.88 (0.27, 2.89)	0.685
Adult life socioeconomic characteristics					
Employment status	87/540	5.36 (1.82, 15.77)	45/673	0.22 (0.05, 0.97)	0.001
Income	87/522	2.58 (1.15, 5.79)	45/654	0.61 (0.21, 1.76)	0.034
Housing density	87/539	0.80 (0.37, 1.72)	45/673	0.31 (0.10, 0.95)	0.170
Housing tenure	87/539	2.44 (0.97, 6.13)	45/673	0.74 (0.22, 2.50)	0.125
Own social class	87/534	2.89 (1.28, 6.50)	45/662	0.84 (0.27, 2.59)	0.081
Car ownership	87/539	4.32 (1.69, 11.06)	45/673	1.10 (0.32, 3.85)	0.087
Additive socioeconomic characteristics					
Early life characteristics score—unadjusted	73/470	0.80 (0.32, 1.99)	38/580	0.84 (0.26, 2.73)	0.951
Early life characteristics score—adjusted for education	73/470	0.65 (0.20, 2.07)	38/580	1.22 (0.26, 5.63)	0.474
Early life characteristics score—adjusted for later life SEP	73/446	0.48 (0.17, 1.33)	38/553	1.24 (0.34, 4.54)	0.935
Adult life characteristics score—unadjusted	87/514	3.19 (1.43, 7.14)	45/643	0.44 (0.14, 1.34)	0.005
Life course score—unadjusted	73/446	2.24 (0.93, 5.39)	38/553	0.44 (0.14, 1.41)	0.029

Early life characteristics comprise: father's social class, family structure and education (age left school). Adult life characteristics comprise: employment status, income, housing tenure, household crowding and car ownership

Life course score: all the above variables. Throughout, higher scores on each of the socioeconomic variables represent greater disadvantage

Conflicts of interest The authors declare that they have no competing interests.

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