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Socioeconomic position in childhood and in adulthood and functional limitations in midlife: data from a nationally-representative study of French men and women.

Maria Melchior<sup>1</sup>, France Lert<sup>1</sup>, Magali Martin<sup>2</sup>, Isabelle Ville<sup>2</sup>

*Affiliations:*

<sup>1</sup> INSERM U687-IFR69, HNSM, 14 rue du Val d'Osne, 94415 Saint Maurice, France

<sup>2</sup> Centre for Research on Medicine, Sciences, Health and Society, INSERM-CNRS, 7 rue Guy Môquet, 94801 Villejuif, France

## Abstract

Research shows that lifetime socioeconomic circumstances are associated with adult health. Yet most studies to date have focused on mortality and additional data on morbidity outcomes are needed. Additionally, most research in this area was based in the Northern European countries or the United States, and little is known about the extent of socioeconomic inequalities in health in other industrialized countries with different health and labour market characteristics. In this study, we examined the relationship between the socioeconomic trajectory from childhood to adulthood and functional limitations in midlife in France. We used data from a nationally-representative sample of French men and women (the Life History survey) conducted in 2002-2003. Participants (n=4798) were 35-64 years of age at the time of the survey. Father's occupation when the participant was 15 years of age, lifelong job histories and functional limitations were reported to trained interviewers. Standardized Morbidity Ratios (SMRs) associated with different lifelong trajectories were estimated using indirect age standardisation. Overall, the socioeconomic trajectory from childhood to adulthood was associated with functional limitations in midlife in both men and women. The experience of lifelong socioeconomic disadvantage was associated with SMRs of 1.44,  $p < 0.0001$  in men and 1.21,  $p = 0.0207$  in women. In men, the prevalence of functional limitations was low among those who experienced an upward intergenerational mobility (SMR: 0.67,  $p = 0.015$ ) and high among those who experienced a downward career trajectory (SMR: 1.79,  $p = 0.007$ ). Additionally, the prevalence of functional limitations was elevated among men and women who experienced unemployment. These findings indicate that in French men and women, lifetime socioeconomic circumstances are associated with functional limitations in midlife. Understanding the mechanisms that underlie these health disparities will require additional studies of specific health outcomes.

Across industrialized countries, socioeconomic position in childhood and in adulthood is found to predict adult mortality (Lynch, Kaplan, Cohen, Kauhanen, Wilson, Smith et al. 1994; Beebe-Dimmer, Lynch, Turrell, Lustgarten, Raghunathan & Kaplan, 2004; Melchior, Berkman, Kawachi, Krieger, Zins, Bonenfant et al. 2006) and morbidity, as measured by self-rated health, long-standing limiting illness, overweight, major depression, myocardial infarction, and cancer incidence (Power, Matthews & Manor, 1996; Bartley & Plewis, 2002; Ribet, Zins, Guéguen, Bingham, Goldberg, Ducimetière et al. 2003; Poulton, Caspi, Milne, Thompson, Taylor, Sears et al. 2002; Gilman, Kawachi, Fitzmaurice & Buka, 2002; Hallqvist, Lynch, Bartley, Lang & Blane, 2004; Melchior, Goldberg, Krieger, Kawachi, Menvielle, Zins et al. 2005a). Of studies that investigated childhood and adult socioeconomic circumstances simultaneously, some found that both early life and adult factors predict adult health (Power et al., 1996; Poulton et al., 2002; Gilman et al., 2002; Beebe-Dimmer et al., 2004), while others reported that adult health is primarily a function of adult socioeconomic position (Lynch et al., 1994; Melchior et al., 2005a; Melchior et al., 2006). These inconsistent findings may reflect methodological differences, as well as cross-country differences in the nature of socioeconomic inequalities in health and additional data on lifelong socioeconomic position and various aspects of adult health are still needed.

The nature of socioeconomic inequalities may vary across industrialized countries because of different health patterns and labour market characteristics. Thus, it is important to document the relationship between lifelong socioeconomic position and health in different settings. In this study, we examine socioeconomic inequalities in health in France. At an average of 82.9 years of life, French women have one of the longest life expectancies in the world, but French men's premature death rates (before age 65) are among the highest in Europe, which translates into average longevity (75.8)(OECD, 2006). Additionally, socioeconomic inequalities in men's premature mortality are among the highest in Europe (Haut Comité pour la Santé Publique, 2002). Morbidity and disability rates are overall comparable to other industrialized countries, but cancer rates and common mental disorders are more frequent than in Northern European countries and in the United States, where most

research on socioeconomic inequalities in health has been based (World Health Organization Europe, 2003; Haut Comité pour la Santé Publique, 2002; Lepine, Gasquet, Kovess, Arbabzadeh-Bouchez, Nègre-Pagès, Nachbaur et al. 2005). Currently, about 3% of France's working population is employed in the farming sector, 23% in industry, and over 70% in the service sector, which is similar to other industrialized countries (INSEE, 2004; OECD, 2000). However this is the result of major labour market shifts since Second World War, and in the previous generation over 30% of the population worked in farming (Seys, 1996). Since the 1970s, French women's workforce participation is high (in 2004 65% were employed) (INSEE, 2004), and since the 1980s, France faces mass unemployment (about 10% of the working population or more is unemployed) (OECD, 1989; OECD, 2001).

To date, few studies examined the association between lifelong socioeconomic position and adult health in France, and those that did were based on working men and women (Marshall, Chevalier, Garillon & Coing, 1999; Melchior et al., 2005a; Melchior et al., 2006). Employed individuals tend to be healthier than the non-employed, therefore results from these studies do not directly apply to the whole population (Goldberg & Luce, 2001). To examine the association between the socioeconomic trajectory from childhood to midlife and midlife health in France's general population, we use data from a nationally-representative sample of men and women, the Life History survey. We measure morbidity through the presence of functional limitations, which reflect multiple chronic health problems and predict future morbidity, health care service use, and mortality across a wide range of age groups (Manor, Matthews & Power, 2001; Payne & Saul, 2000; Myint, Luben, Surtees, Wainwright, Welch, Bingham et al. 2005).

Our main hypotheses are that the experience of persistent socioeconomic disadvantage or downward socioeconomic mobility are associated with poor health. To test these hypotheses, we study the relationship between the presence of functional limitations in midlife and 1) the cumulative exposure to socioeconomic disadvantage from childhood to adulthood, 2) intergenerational socioeconomic mobility (i.e. mobility from childhood to adulthood) and 3) adult socioeconomic mobility.

## Methods

### *Study population*

The Life History survey was conducted by France's National Institute of Statistics and Economic Studies (INSEE) (Ville & Guerin-Pace, 2005). The aim of this multidisciplinary household survey was to document the lifelong social, demographic, familial and health characteristics of the French population. The sample (8403 men and women over age 18) was randomly drawn from a national database based on the 1999 population census and is representative of France's general population. Due to small numbers in the general population, three groups were purposely oversampled: 1) individuals born abroad, 2) individuals with at least one parent born abroad, 3) individuals aged less than 60 years and reporting functional limitations. Sampling weights were calculated using prevalence rates established by two national surveys based on the 1999 population census (Clanche, 2002; Dumartin, 2000). The survey response rate was 62%, which is typical of surveys conducted in France. Participants were interviewed at home, by trained interviewers, between February and April 2003 (average duration of interview: 70 minutes).

To study the association between the lifelong socioeconomic trajectory and adult health, we focused on a demographically-homogenous group of adults aged 35 to 64 (n=4798). To limit the possibility of reverse causation, whereby low socioeconomic attainment is due to poor health, we excluded from the analysis individuals who reported health problems prior to entering the labour market (n=465). Participants in this group reported that their health problems started at a median age of 11 and were younger and more likely to have held a 'high grade' occupation at labour market entry than the rest of the sample (45.5% were aged 35 to 45 compared to 32.6%; 36.7% worked in a 'high grade' occupation at labour market entry compared to 26.5%). They were comparable to other study participants in terms of father's and midlife occupational grade. It is important to note that the Life History study is a household survey and severely disabled men and women living in institutions were not included. After excluding participants with incomplete socioeconomic data (n=313; 20.0% with functional limitations compared to 16.1% in

the rest of the sample), our final study population consisted of 1857 men and 2163 women aged 35 to 64, with no health problems prior to labour market entry.

### *Measures*

#### Functional limitations

Participants were asked 'Are you limited in your daily activities at home, at work, or in other settings typical for your age: travel, sports, leisure activities due to a health problem? If yes, what health problem do you suffer from? When did it begin?'

#### Lifetime socioeconomic position

Childhood socioeconomic position was ascertained by father's occupation when participants were aged 15 years of age. Participants were also asked to report their own job history (all jobs, all periods of unemployment, all periods outside of the labour force that lasted at least one year; on average, 4 occupational changes per person). We defined occupational grade at labour market entry as the first occupation held after educational completion (mean age: 18). Occupational grade in midlife was defined as a) occupational grade at the time of occurrence of health problems in participants who reported functional limitations (mean age: 40) or b) occupational grade at age 40 in participants without functional limitations. Occupational grade was coded using France's national job classification (farmers, craftsmen, executives, associate professionals, clerks, manual workers, not in the labour force) and dichotomized into 'high grade' (executives, associate professionals, craftsmen, farmers) and 'low grade' (clerks, manual workers, unemployed, not in the labour force). We included clerks in the 'low grade' group because their levels of income, job authority, and job prestige are low and comparable to manual workers' (Melchior, Niedhammer, Berkman & Goldberg, 2003). Similarly, the unemployed and men and women excluded from the labour force are characterized by low income and low social standing, and we also included them in the 'low grade' group (Desplanques, 1984; Bartley, Sacker & Clarke, 2004). Additionally, for father's occupation, the 'low grade' group included participants who reported that their father was unknown to them or had died before they reached the age of 15.

First, based on all three socioeconomic measures available to us, we assessed participants' lifelong exposure to socioeconomic disadvantage (none, one, two or three exposures).

Second, based on father's and own midlife occupational grade, we identified four intergenerational trajectories: 'Low grade'-'Low grade' (i.e. persistent intergenerational disadvantage), 'High grade'-'Low grade' (i.e. downward intergenerational mobility), 'Low grade'-'High grade' (i.e. upward intergenerational mobility), and 'High grade'-'High grade'.

Third, based on occupational grade at labour market entry and in midlife, we assessed participants' own adult mobility: 'Low grade'-'Low grade' (i.e. persistent disadvantage in adulthood), 'High grade'-'Low grade' (i.e. downward adult mobility), 'Low grade'-'High grade' (i.e. upward adult mobility), and 'High grade'-'High grade'.

Age at the time of the survey was coded in 3 groups (35-44, 45-54, 55-64).

### **Statistical analysis**

To test associations between lifetime socioeconomic circumstances and midlife functional limitations, we calculated Standardized Morbidity Ratios (SMRs) using indirect age standardization. Each SMR was tested against unity by a modified chi-square test (Bouyer, Hémon, Cordier, Dérrienic, Stücker, Stengel et al. 1993). This method allowed us to account for the complex sampling scheme of the Life History study and to produce estimates that apply to France's population of the same age.

Additionally, we tested whether the prevalence of functional limitations was associated with the experience of unemployment from labour market entry to midlife ( $\geq 1$  yr vs.  $<1$  yr) and whether this association was modified by midlife occupational grade.

In secondary analyses, to compare our findings to past studies that contrasted manual vs. non-manual workers (Hallqvist et al., 2004; Beebe-Dimmer et al., 2004), we repeated the analyses limiting the 'low grade' group to 1) manual workers and participants excluded from the labour force and 2) manual workers. Additionally, we



repeated the analyses reclassifying participants who were unemployed in midlife according to their last occupation.

All analyses were conducted separately in men and women, using the SAS statistical software (V8)(SAS Institute, 1997) and Microsoft Excel.

## Results

Among the 1857 men and 2163 women aged 35 to 64 who participated in our study (**Table 1**), approximately half reported that their father worked in an occupation we classified as 'low grade' (manual worker, clerk) or that he was unknown to them or had died before they reached the age of 15 (there were no statistically significant sex differences,  $p$ -value= 0.22). Participants whose father was unknown or had died before they reached the age of 15 were older than the rest of the sample (38.5% were aged 55 to 64, compared with 22.8%) and more likely to report functional limitations (21.5% compared with 15.3%); their educational attainment and occupational characteristics were comparable to participants whose father worked as a manual worker (70.6% had less than tertiary education, 36.5% worked as a manual worker at labour market entry, 28.9% worked as manual workers in midlife) (not shown).

At labour market entry and in midlife, a majority of men and women worked in a 'low grade' occupation. Among the 8.7% of men and 33.1% of women who worked as clerks, a majority were employed in office-based occupations (60.4% in women and 55.6% in men), followed by the police and military for men (25.2%) and personal service for women (ex. housekeepers, restaurant workers, childcare workers: 27.4%). 2.0% of men and 26.7% of women were excluded from the labour force. Women in this group were older than the rest of the sample (33.8% were aged 55 to 64 compared with 20.9% of clerks and 30.4% of manual workers); their educational attainment and likelihood of reporting functional limitations was comparable to manual workers' and clerks' (not shown). While only 4.4% of men and 5.6% of women experienced unemployment at labour market entry, 11.4% and 13.3% were unemployed for at least one year during the course of their worklife.

Overall, 15.7% of men and women reported being limited in their daily activities due to a health problem (**Table 1**). The most frequently-cited health problems were musculoskeletal (ex. low back pain), cardiovascular or respiratory (ex. asthma), or affected the eyes or head (ex. migraine).

As shown in **Table 2**, 30.9% of men and 42.9% of women experienced lifelong socioeconomic disadvantage. According to our classification of socioeconomic trajectories, 22.9% of men and 11.3% of women experienced upward intergenerational mobility, and 15.9% and 26.1% downward mobility. During the course of their own professional career, 44.1% of men and 63.8% of women belonged to the 'low grade' occupational group both at labour market entry and in midlife. Respectively 23.1% and 11.9% experienced upward mobility in adulthood and 4.2% and 7.4% downward mobility.

Men and women whose father worked in a 'low grade' occupation or who were themselves manual workers, clerks or excluded from the labour force in midlife, experienced high rates of functional limitations (**Figure 1**). Participants' occupational grade at labour market entry was not associated with functional limitations.

As shown in **Figure 2**, we found a graded association between the cumulative exposure to socioeconomic from childhood to adulthood and the presence of functional limitations in midlife. Men and women who experienced socioeconomic disadvantage all lifelong were significantly more likely to experience functional limitations than the overall study population (SMRs: 1.44,  $p < 0.0001$  in men, 1.21,  $p = 0.0207$  in women).

**Figure 3** shows the association between participants' intergenerational mobility and midlife health. Men who worked in a higher grade occupation than their father, that is who experienced upward intergenerational mobility, had as low a prevalence of functional limitations as men who experienced favourable circumstances in childhood and in midlife (SMR: 0.67,  $p = 0.015$ ).

Focusing on participants' own socioeconomic trajectory in adulthood (**Figure 4**), we found elevated rates of functional limitations in men and women who consistently belonged to the 'low grade' occupational group (SMRs: 1.29,  $p = 0.001$  in

men, 1.20,  $p=0.005$  in women) as well as in men who experienced downward career mobility (SMR: 1.79,  $p=0.007$ ). A majority of men who belonged to the 'low grade' occupational group throughout their career worked as manual workers (76.8%). Women in this group were most likely to work as clerks (46.6%). A majority of men who experienced adult downward mobility first worked as farmers (42.1%) or craftsmen (12.0%), and later became manual workers (64.7%), unemployed (8.6%) or left the labour force (5.9%) (not shown). Additionally, our secondary analyses revealed elevated rates of functional limitations in men who worked in an occupation with high physical demands (farmer, manual worker, craftsman). Furthermore, in manual workers, health problems occurred at an earlier age (on average 38 years of age, compared with 46 in executives) (not shown).

Finally, as shown in **Figure 4**, the prevalence of functional limitations was elevated among participants who experienced unemployment during the course of their career. In men, this association was modified by midlife occupational grade, with an especially high prevalence in those who held a 'high grade' midlife occupation (SMR: 1.96,  $p=0.004$ ). In women, the SMR associated with unemployment was only elevated in the 'low grade' occupational group (1.38,  $p=0.006$ ).

Restricting the 'low grade' group to manual workers did not change our findings in men; in women, our results were weaker and non-significant. Reclassifying the unemployed according to their last occupation did not modify our findings.

## Discussion

In a nationally-representative sample of French men and women aged 35-64, we found that the experience of cumulative socioeconomic disadvantage from childhood to adulthood is associated with the presence of functional limitations in midlife. Additionally, rates of functional limitations were elevated in men who experience a downward career trajectory, moving from a 'high' to a 'low grade' occupation. To our knowledge, this is one of few studies of lifelong socioeconomic factors and adult morbidity and the first conducted in France. Overall, our findings

add to research showing that adult health reflects trajectories of risk that build up from childhood to adulthood.

### *Study limitations*

Our results need to be interpreted in light of several limitations. First, data were collected cross-sectionally and participants reported their father's occupation and their own job history retrospectively. While some participants may have been reluctant to report unfavourable circumstances, the opposite (reporting a disadvantaged situation if that were not the case) is unlikely. Thus, the associations between lifelong socioeconomic circumstances and functional limitations we report could have been attenuated by misclassification resulting from reporting bias. Reassuringly, our sample is representative of middle-aged men and women in France, and we believe that our measures were not greatly affected by systematic or nondifferential error (Ville & Guerin-Pace, 2005). More broadly, research shows that although socioeconomic data collected prospectively are more accurate than retrospective assessments, job history reports are valid, particularly if job changes are few which was the case in our study (Krieger, Okamoto & Selby, 1998; Bourbonnais, Meyer & Theriault, 1988). Second, our study outcome, functional limitations, is a broad measure of morbidity, which may explain that the SMRs associated with cumulative disadvantage (1.44 in men and 1.21 in women) are somewhat weaker than associations observed between lifetime socioeconomic factors and other health outcomes, such as mortality, cancer incidence, cardiovascular risk factors (Lynch et al., 1994; Hart, Smith & Blane, 1998; Melchior et al., 2005a; Lawlor, Ebrahim & Davey Smith, 2002). Additionally, reports of functional limitations are influenced not only by physical and mental health (Manor et al., 2001) but also by one's usual activities. Men and women with a wide range of activities are probably more limited by health problems than those who are less active. For instance, manual workers, whose job implies high levels of physical demands, are probably more limited by back or upper limb pain in their job than men and women who work in office-based occupations. In other words, functional limitations capture not only health, but also the perceived severity of a health problem and the extent to which it impacts on daily functioning.

It is plausible that both the occurrence of health problems and their consequences are worse in less advantaged socioeconomic groups, but we were not able to test this in our data. Third, our analyses were not adjusted for key risk factors of poor functional health, such as physical activity, cigarette smoking, and alcohol drinking, as these data were not collected in the Life History survey. Other potential risk factors that probably contribute to socioeconomic inequalities in overall health, and that were not measured, are physical and stress-related work exposures, social isolation, poor social supports and financial difficulties (Melchior, Krieger, Kawachi, Berkman, Niedhammer & Goldberg, 2005b; Pope, Sowers, Welch & Albrecht, 2001; Stansfeld, Head, Fuhrer, Wardle & Cattell, 2003). Our results provide descriptive evidence of the extent of socioeconomic disparities in functional health in France, but the underlying mechanisms will need to be studied in future investigations.

#### *Lifetime socioeconomic trajectory and functional limitations*

The associations between childhood and adult socioeconomic factors and health in midlife in our study are consistent with past investigations conducted in other countries (Power et al., 1996; Poulton et al., 2002; Bartley & Plewis, 2002; Bartley et al., 2004; Artazcoz, Borrell & Benach, 2001; Artazcoz, Borrell, Benach, Cortes & Rohlf, 2004). Thus, despite differences in health and labour market patterns, socioeconomic health disparities with regard to broad health indicators appear comparable across industrialized countries. Additionally, our findings based on a nationally-representative sample of French men and women concord with findings from studies conducted in occupational settings in France (Marshall et al., 1999; Melchior et al., 2005a; Melchior et al., 2006). This suggests that in terms of functional limitations, individuals excluded from the labour market may be comparable to those who work in the least advantaged jobs. While research on health inequalities in prospective occupational cohorts such as the Whitehall II study based in London or the GAZEL cohort set up in France can shed light on the mechanisms underlying associations between socioeconomic position and health, studies of the overall population, such as the one we conducted, are important to describe the overall nature and extent of health disparities.

The relationship between lifelong socioeconomic position and functional limitations may reflect both the health effects of unfavourable socioeconomic circumstances, and the socioeconomic consequences of health problems (Bartley et al., 2004). The direct relationship between socioeconomic position and poor functional health, supported by prospective data from the United Kingdom (Bartley et al., 2004; Bartley & Plewis, 2002), could be due to factors such as physical work hazards, work stress, insufficient social supports, inadequate health care and deleterious health behaviours, which are especially frequent in members of low status groups (Melchior et al., 2005b; Stansfeld et al., 2003; Lang, Ducimetière, Arveiler, Amouyel, Ferrières, Ruidavets et al. 1998; Emmons, 2000). Our additional findings indicating particularly high rates of functional limitations in manual workers highlight the potential role of work in shaping socioeconomic inequalities in health {Ozguler, 2000 118 /id;Melchior, 2006 363 /id}.

At the same time, health problems may lead to less favourable occupational trajectories (Leclerc, Zins, Bugel, Chastang, David, Morcet et al. 1994; Ribet et al., 2003; Virtanen, Vahtera, Kivimaki, Liukkonen, Virtanen & Ferrie, 2005). In our study, men who experienced downward career mobility had high rates of functional limitations, while those who experienced upward mobility were as healthy as participants who benefited from the most favourable socioeconomic circumstances. This may reflect such health-related selection processes. Although we aimed to reduce the role of health-related selection by studying the socioeconomic trajectory prior to the occurrence of health problems, we cannot be certain that health or functioning did not prospectively influence participants' socioeconomic trajectory. It may also be that both socioeconomic mobility and functional limitations have common, unmeasured, determinants, which we could not account for. Socioeconomic inequalities in health reflect both 'social causation' and 'health selection' processes, and the role of each of these two phenomena needs to be studied in the context of specific health problems (Hallqvist et al., 2004).

*Women and men*

Overall, associations between lifelong cumulative disadvantage and functional limitations were comparable in men and in women (the SMRs tended to be somewhat more elevated in men). However, downward job mobility was only associated with functional limitations in men, and the effects of unemployment differed by gender: in men the SMR was highest among those who worked in 'high grade' occupations in midlife (1.96); in women the SMR was highest in those who belonged to the 'low grade' group (1.38).

In women, occupational grade was associated with functional limitations only when clerks and those excluded from the labour force were part of the 'low grade' group. This was not the case in men. While both male and female clerks experience high rates of functional limitations, a larger proportion of women worked in clerical jobs. The inclusion of clerks in the 'low grade' occupational group lead to a larger share of women than men being classified as downwardly mobile from childhood to adulthood. Yet in a context where an increasing share of the population works in clerical, rather than industrial or farming jobs, limiting the least advantaged groups to manual workers can bias the results of studies of socioeconomic health inequalities, particularly in women. As other researchers, we measured childhood socioeconomic circumstances using father's occupation, yet it may be that in women mother's occupation is also a relevant indicator. Mother's occupation was ascertained in the Life History survey, but 20% of participants did not answer and an additional 36% reported that their mother was not employed and we could not use this information.

More broadly, characterizing women's socioeconomic position remains a challenge (Krieger, 1991; Berkman & Macintyre, 1997). In particular, women's occupational mobility, more so than men's, may be determined not only by individual and family characteristics, but also by labour market trends and collective factors. Our study was representative of France's general population, which is a strength compared with investigations focusing exclusively on the employed, but we were faced with the issue of classifying participants who did not work. Since the 1990s, over 60% of French women aged 15 to 64 are employed (compared with 75% of men), yet homemakers remain a large group that is difficult to characterize.

Consistent with past research, we chose to keep the non-employed in our analysis, and to consider that they were among the least advantaged (Bartley et al., 2004; Artazcoz et al., 2004).

In addition to occupational status, women's socioeconomic position may also reflect household characteristics, such as partner's occupation (Krieger, Chen & Selby, 2001). Unfortunately, in the Life History survey, only partner's occupation at the time of the survey was collected and given that we defined midlife socioeconomic position as the occupational grade at the time health problems occurred, we could not use this information. Additional elements that could contribute to women's socioeconomic position are the degree of financial autonomy and household income or wealth, and future studies of health inequalities will need to expand on the currently-used socioeconomic indicators (Adler, Epel, Castellazzo & Ickovics, 2000).

### **Conclusion**

Our study of a nationally-representative sample of French men and women shows that individuals who experience lifelong socioeconomic disadvantage have high rates of health-related functional limitations in midlife. This probably reflects both the effects of health-damaging experiences and exposures associated with occupational and socioeconomic disadvantage as well as health-related selection processes, and needs to be brought to the attention of physicians and policymakers.



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**Table 1 Sociodemographic characteristics and midlife health (age 35-64) in the Life History survey: a representative sample of French men and women. Weighted %.**

	<b>MEN n=1857</b>	<b>WOMEN n=2163</b>
Father's occupational grade: Executive	7.7	7.7
Associate professional	11.2	11.3
Craftsman	10.1	11.4
Clerk	11.3	9.9
Farmer	15.8	13.5
Manual worker	37.0	39.1
Father unknown/ deceased <age 15	6.9	7.1
Educational level: <= Junior high school	58.1	59.7
High school	18.5	18.5
> High school	23.4	21.8
Occupational grade at labour market entry: Executive	8.6	5.3
Associate professional	15.9	14.2
Craftsman	1.7	1.4
Clerk	15.2	47.0
Farmer	6.6	3.3
Manual worker	50.1	15.2
Excluded from the labour force	1.9	13.5
Unemployment at labour market entry <sup>1</sup> : no	95.6	94.4
yes	4.4	5.6
Job instability at labour market entry <sup>2</sup> : no	90.4	91.4
yes	9.6	8.6
Midlife occupational grade: Executive	17.7	7.3
Associate professional	21.8	14.5
Craftsman	7.5	3.6
Clerk	8.7	33.1
Farmer	4.7	3.6
Manual worker	35.5	8.0
Unemployed	2.3	3.3
Not in labour force	2.0	26.7
Unemployed <= age 40: no	88.6	86.7
yes	11.4	13.3
Not in labour force >= one year during worklife: no	99.7	52.6
yes	0.3	47.4
Functional limitations:	15.7	15.7
Health problems:		
Back, upper, and lower limb (ex. low back pain)	26.0	33.8
Other musculoskeletal and neurological conditions (ex. arthritis)	4.5	4.6
Eye and head (ex. migraine)	17.7	11.5
Cardiovascular and respiratory conditions (ex. asthma)	14.2	23.4
Digestive, renal, sexual problems (ex. impotence)	9.2	5.7
Metabolic conditions (ex. obesity)	12.2	9.2
Mental disorders (ex. depression)	8.2	6.0
Other health problems	8.0	5.8

<sup>1</sup> >= 1 year unemployment in the first 5 years following educational completion.

<sup>2</sup> Intermittent employment/unemployment or multiple jobs and occupations for >=2 years following educational completion.

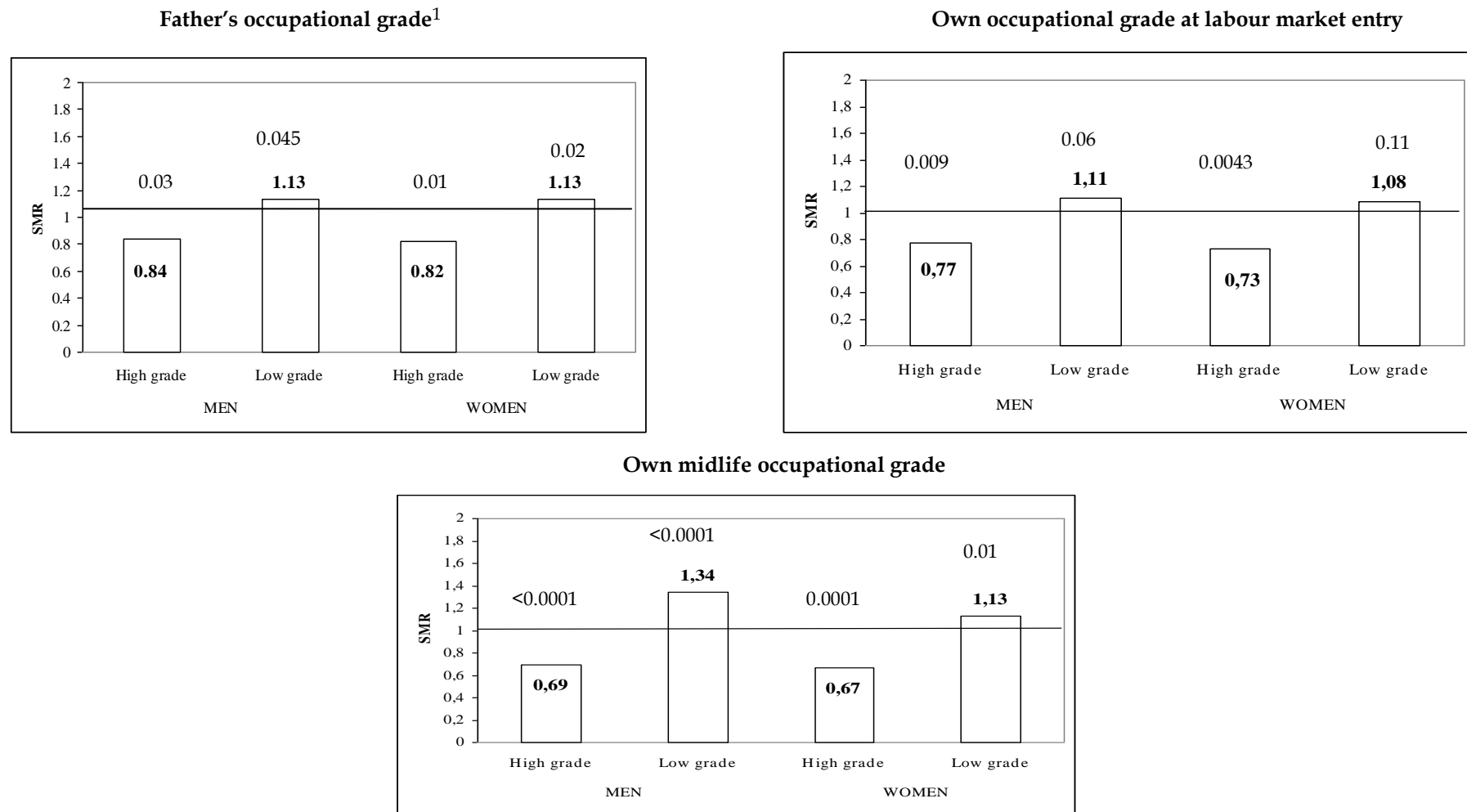
**Table 2. Socioeconomic trajectory in the Life History Survey: a representative sample of French men and women. Weighted %, n participants with functional limitations in the study population (O), n expected (E).**

	MEN n=1857			WOMEN n=2163		
	%	O	E	%	O	E
<b>Cumulative exposure to socioeconomic disadvantage</b>						
<b>Childhood-labour market entry-midlife<sup>1</sup></b>						
No exposure to disadvantage	20.0	58	85.4	11.8	35	58.0
One exposure	20.1	70	90.7	16.3	58	82.4
Two exposures	29.0	121	128.6	29.0	147	145.8
Three exposures to disadvantage	30.9	180	124.1	42.9	262	215.6
<b>Intergenerational mobility</b>						
<b>Childhood-midlife</b>						
High grade-High grade	28.8	87	127.3	17.7	53	88.1
High grade -Low grade	15.9	79	70.4	26.1	129	133.6
Low grade - High grade	22.9	71	104.5	11.3	45	53.9
Low grade- Low grade	32.4	192	125.2	44.9	275	223.5
<b>Own career mobility</b>						
<b>Labour market entry-midlife</b>						
High grade-High grade	28.6	75	122.3	17.1	52	84.6
High grade -Low grade	4.2	36	20.0	7.2	31	31.0
Low grade - High grade	23.1	83	88.0	11.9	42	62.0
Low grade - Low grade	44.1	235	181.4	63.8	324	307.5

<sup>1</sup> 'High grade' occupational groups: executive, associate professional farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, unemployed, not in the labour force (for father's occupational grade the 'low grade' group also includes participants whose father was unknown or deceased before they reached aged 15).

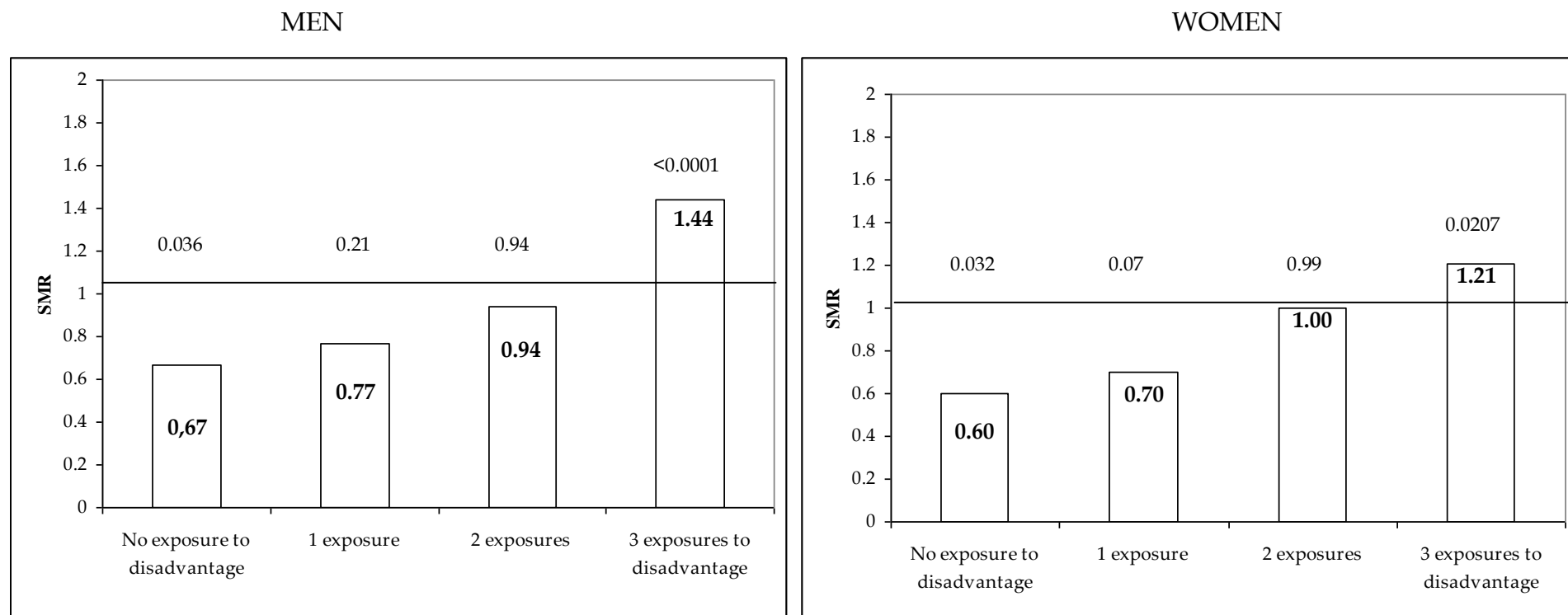


**Figure 1** Father's and own occupational grade and midlife functional limitations (age 35-64) in the Life History survey: a representative sample of French men and women (n=1857 men and 2163 women). Standardized Morbidity Ratios: SMRs, p-value.



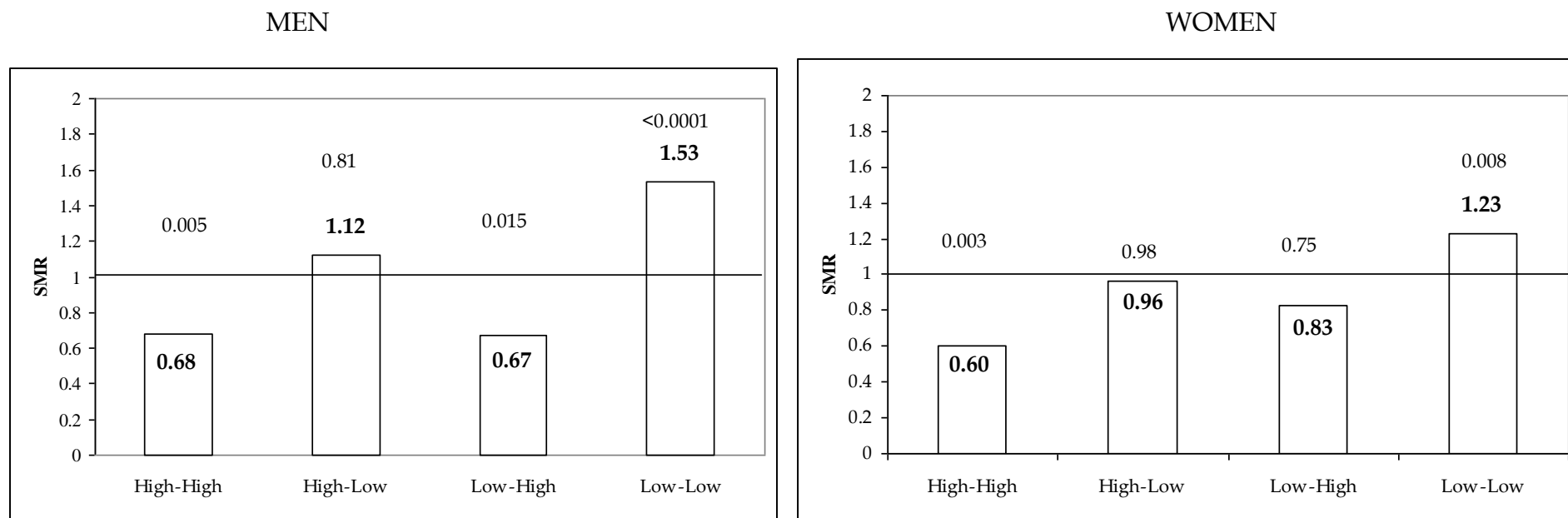
<sup>1</sup>'High grade' occupational groups: executive, associate professional, farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, not in the labour force (for father's occupational grade, the 'low grade' group also includes participants whose father was unknown or had died before they reached aged 15).

Figure 2 Cumulative exposure to socioeconomic disadvantage from childhood to adulthood and midlife functional limitations (age 35-64): the Life History survey: a representative sample of French men and women (n=1857 men and 2163 women)<sup>1</sup>. Standardized Morbidity Ratios: SMRs, p-value.



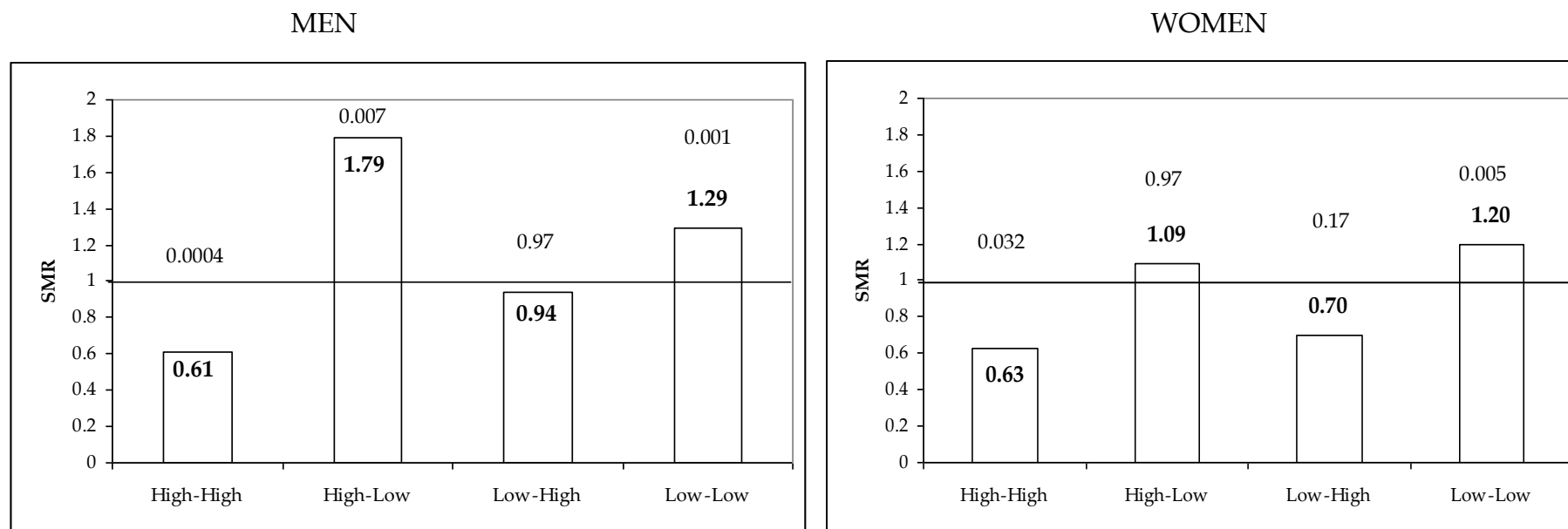
<sup>1</sup> 'High grade' occupational groups: executive, associate professional, farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, not in labour force (for father's occupation, this group also includes participants whose father was unknown or died before they reached aged 15).

**Figure 3 Father's and own midlife occupation (intergenerational mobility) and midlife functional limitations (age 35-64) in the Life History survey: a representative sample of French men and women (n=1857 men and 2163 women)<sup>1</sup>. Standardized Morbidity Ratios: SMRs, p-value.**



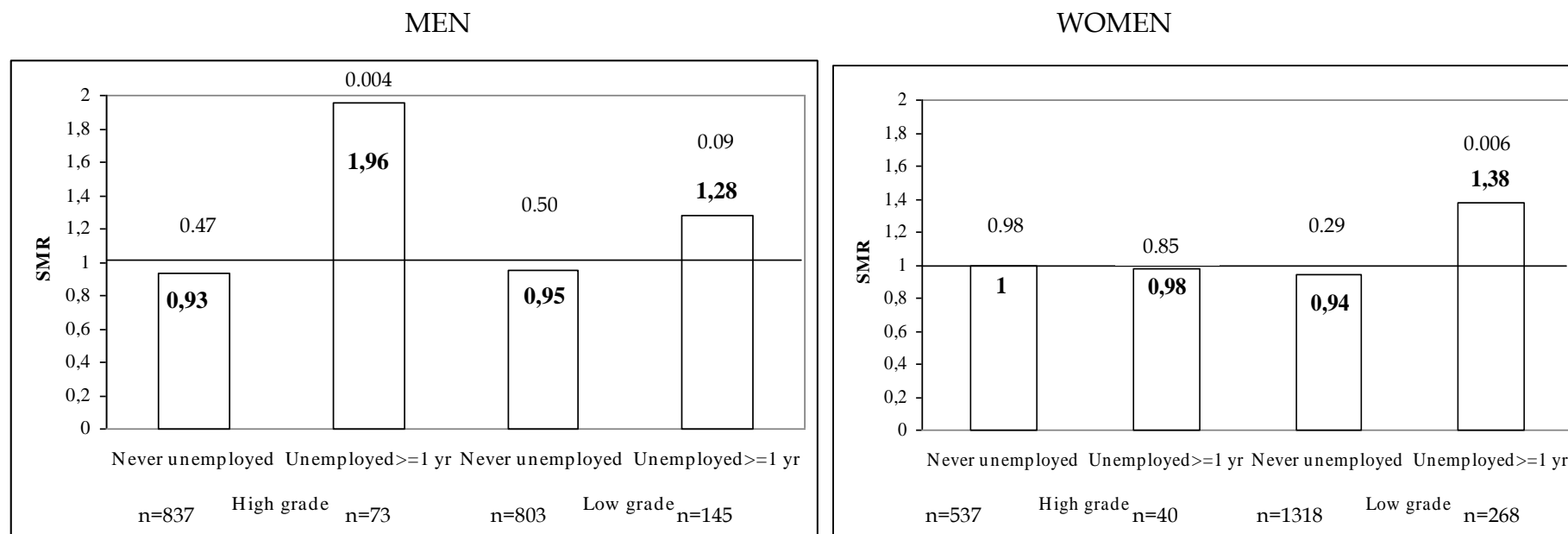
<sup>1</sup> 'High grade' occupational groups: executive, associate professional, farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, not in labour force (for father's occupation, this group also includes participants whose father was unknown or died before they reached aged 15).

**Figure 4 Occupational grade at labour market entry and in midlife (adult mobility) and midlife functional limitations (age 35-64) in the Life History survey: a representative sample of French men and women (n=1857 men and 2163 women)<sup>1</sup>. .Standardized Morbidity Ratios: SMRs, p-value.**



<sup>1</sup> 'High grade' occupational groups: executive, associate professional, farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, not in the labour force.

**Figure 5 Unemployment and midlife functional limitations (age 35-64) by midlife occupational grade<sup>1</sup> in the Life History survey: a representative sample of French men and women (n=1857 men and 2163 women). Standardized Morbidity Ratios: SMRs, p-value.**



<sup>1</sup> 'High grade' occupational groups: executive, associate professional, farmer, craftsman; 'Low grade' occupational groups: manual worker, clerk, not in the labour force.