



## Article

# Gender career divide and women's disadvantage in depressive symptoms and physical limitations in France



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## ABSTRACT

This study investigated the relationship between women's disadvantage in mental health and physical functioning and gender differences in career backgrounds. Sexual division of labor persists and key career characteristics are overrepresented in women: low-skilled first job, downward occupational trajectory, interruptions. These interrelated characteristics are usually linked to poor health. Their overrepresentation in women may be related to the female-male health gap; however, it may not if overrepresentation transposed into substantially weaker associations with poor health outcomes. To address this question, we used the French population survey "Health and Occupational Trajectories" (2006) and focused on 45–74 year-old individuals who ever worked (n=7537). Past career characteristics were qualified by retrospective information. Logistic regressions identified past characteristics related to current depressive symptoms and physical limitations. Non-linear decomposition showed whether these characteristics contributed to the gender health gap, through their different distribution and/or association with health. The overrepresentation of unskilled first jobs, current and past inactivity and unemployment in women contributed to their excess depressive symptoms. These contributions were only slightly reduced by the weaker mental health-relatedness of current inactivity in women and increased by the stronger relatedness of low-skilled and self-employed first jobs. Overrepresentation of current inactivity, past interruptions and downward trajectories also contributed positively to women's excess physical limitations. Gender-specific career backgrounds were significantly linked to women's disadvantage in mental health and physical functioning. We need to further explore whether equalization of opportunities, especially at the early stages and in terms of career continuity, could help to reduce women's mental and physical health disadvantage.

## 1. Background

Large inequalities in health and mortality are related to both occupational classes and occupational trajectories throughout the life course. Withdrawals from the labor force, past unemployment periods, downward trajectories, disrupted careers or work histories of weak ties to employment accompany increased health and mortality risks (Bartley & Plewis, 1997; Blane, Harding, & Rosato, 1999; Cambois, 2004; Karimi, Geoffroy-Perez, Fouquet, Latouche, & Rey, 2015; Lacey, Sacker, Kumari, Worts, McDonough, & Booker, 2015; Lacey, Stafford, Sacker, & McMunn, 2016; McMunn, Bartley, Hardy, & Kuh, 2006; Melchior, Goldberg, Krieger, Kawachi, Menvielle, & Zins, 2005; Pavalko, Elder, & Clipp, 1993; Stone, Evandrou, Falkingham, & Vlachantoni, 2015; Wahrendorf, 2015). These characteristics are much more frequent in women's careers, in France and elsewhere, due to persistent sexual division of labor and uneven involvement of men and

women in work, family and domestic activities (Anxo, Flood, Mencarini, Pailhé, Solaz, & Tanturri, 2011; Pailhé, Robette, & Solaz, 2013). Gender differences in career characteristics contribute to the well-documented gender wage gap (OECD, 2012); whether they also contribute to the gender health gap in the long run is unknown, although it may constitute an important public health issue (Borrell, Palencia, Muntaner, Urquia, Malmusi, & O'Campo, 2014). The contribution may depend on the unequal distribution of critical career characteristics, but also on gender differences in later health risks associated with these characteristics. To address this issue, we explored whether gender health differences may be related to past career characteristics considering their gender-specific frequency and health-relatedness. We focused on depressive symptoms and physical limitations, two health dimensions known to be much more frequent in women (Crimmins, Kim, & Sole-Auro, 2011; Van de Velde, Bracke, & Levecque, 2010).

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### 1.1. Gender-specific distributions of key career characteristics

In most countries, gender-specific differences in commitments to work and family lead women to adjust their working time to the needs of their family, at the expense of their own career and income (Balleer, Gomez-Salvador, & Turunen, 2014; Pailhé et al., 2013; Worts, Sacker, McMunn, & McDonough, 2013). Women experience fewer promotions in both low and highly-qualified positions (Arulampalam, Booth, & Bryan, 2007; Booth, Francesconi, & Frank, 2003; Gobillon, Meurs, & Roux, 2015). In turn, women's lower earnings (OECD, 2012) increase the probability that they will withdraw from work when adjustment is needed.

This context induces gender differences in key career characteristics: (1) qualification at an early stage of the career (more unskilled jobs for women); (2) career direction (fewer promotions for women); work interruptions (more frequent for women) through (3) inactivity, (4) unemployment and (5) part-time contracts; and (6) current work status (more inactivity/unemployment for women). These characteristics are interrelated and usually associated with poor health in later life through several pathways.

### 1.2. Key career characteristics and health

Low-skilled occupations are frequently associated with potentially long-lasting mentally and physically detrimental job conditions (Karasek, Brisson, Kawakami, Houtman, Bongers, & Amick, 1998; Niedhammer, Malard, & Chastang, 2015; Siegrist, 1996). Both men and women suffer from health risks due to work conditions, although frequency and risk levels differ (Campos-Serna, Ronda-Perez, Artazcoz, Moen, & Benavides, 2013; Gadinger, Fischer, Schneider, Terris, Kruckeberg, & Yamamoto, 2010; Vermeulen, & Mustard, 2000). In France, men tend to be more exposed to highly physically demanding work conditions, but women are more exposed to job strain and risks of musculoskeletal disorders, whatever the occupational class (Guignon, 2008).

The longer the exposure, the greater the effect on health and mortality (Bahu, Coutrot, Herbet, Mermilliod, & Rouxel, 2010; Karimi et al., 2015). Stagnant careers, more frequent in women, are likely to increase long-term health risks due to both longer exposures to detrimental factors and fewer opportunities to move towards better work conditions (Liljegren & Ekberg, 2008).

Interrupted, stagnant or unskilled careers are associated with poorer health due to relatively lower individual incomes and poor life conditions. Interrupted careers may also decrease the gain in experience, reduce health protection, deteriorate job quality, and increase the risk of poor health and anxiety through job instability and insecurity (Caroli & Godard, 2016; Ferrie, Shipley, Newman, Stansfeld, & Marmot, 2005; Jusot, Khlat, Rochereau, & Sermet, 2008; László, Pikhart, Kopp, Bobak, Pajak, & Malyutina, 2010; Menendez, Benach, Muntaner, Amable, & O'Campo, 2007; Swaen, Bultmann, Kant, & van Amelsvoort, 2004). Work interruptions in women are often due to family adjustments, mostly childcare. These interruptions could have a positive health effect in the short run, since they protect from work-family strain, but a negative effect in the longer run through their consequences on career progression. Having children decreases employed mothers' well-being when they return to work due to work-family strain (Luppi, 2016; Matysiak, Mencarini, & Vignoli, 2016) and low social protection for maternity leave (Avendano, Berkman, Brugiavini, & Pasini, 2015). In France, parental leave allows working parents (mothers) to interrupt their career for childcare while benefiting from job security.<sup>1</sup> Nevertheless, as described above, interruption

led to worse job conditions and lower wages on return to work (Lequien, 2012). Interrupted careers may be associated with poor health in the long run in France, even if they are due to childcare in women.

Finally, career characteristics have a long-lasting association with poor health through a selection effect: poor health prevents the worker from remaining at or returning to work and compromises promotion opportunities (Fox, Goldblatt, & Jones, 1985; Jusot et al., 2008; McMunn et al., 2006; Ribet, Zins, Gueguen, Bingham, Goldberg, & Ducimetiere, 2003). But the intensity of the effect depends on working conditions and potential substitution income (Lundborga, Nilssonb, & Vikströmc, 2015; Robroek, Schuring, Croezen, Stattin, & Burdorf, 2013). Due to the gender-specific opportunity cost of being inactive, in case of sickness men are more likely than women to remain in the labor force and withdraw when sickness is more severe (Cousteaux, 2011; Moen & Chermack, 2005; Stronks, van de Mheen, van den Bos & Mackenbach, 1995). Therefore, past and current inactivity may be associated with poorer health in later life in both genders, although probably more in men.

### 1.3. Study aims

The literature quoted above clearly shows how job qualification, career direction, career interruptions and work-family histories are related to poor health. It remains unclear whether these career characteristics are similarly related to later health in both sexes. Overrepresentation of health-related career characteristics in women may contribute to the gender health gap, but it may not if the overrepresentation transposed into substantially weaker associations with poor health. We aimed to highlight how the relationship between health and past career is differently structured in men and women, and to identify critical career characteristics involved. We analyzed two potential channels through which this relationship may differ: through differences in the frequency of critical career characteristics in men and women, and through differences in their association with later health.

## 2. Data and methods

### 2.1. Data

The Health and Occupational Trajectory survey "Santé et Itinéraire Professionnel" (SIP) was conducted in 2006 by the French statistical institute in metropolitan France.<sup>2</sup> A sample of households comprising at least one individual aged 19 to 74 years old was drawn from the population census files, and in each household one eligible member was randomly selected. Approximately 14,000 individuals were interviewed (76% of the initial individual sample). Weighting based on household and individual criteria provided representative statistics (Bahu et al., 2010). Our analytical sample consisted of 7537 men and women aged 45–74 years old who had worked for at least one year, which covers 98% of this age group (Appendix Table A1). The questionnaire collected information on current and past health problems and current and past occupations. Past information was collected using a retrospective grid.

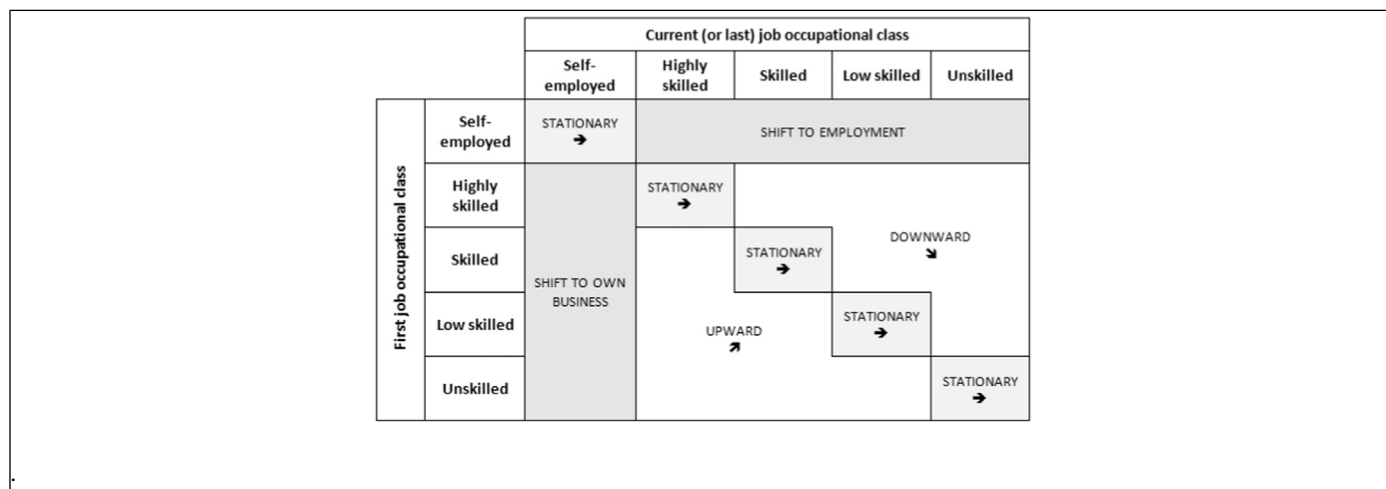
### 2.2. Analytic strategy

Firstly, logistic regressions identified the past career characteristics which were significantly associated with health in 2006 in men and

<sup>1</sup> Regular maternity leave around childbirth lasts sixteen weeks for a first-born or second-born child and can be extended by parental leave up to the third birthday of the child with job security for employed parents (in fact 98% are mothers), but with low compensation (a fixed amount of half of the minimum wage) from the second child.

<sup>2</sup> The survey was coordinated by the departments of statistics of the Ministry of Health and Social Affairs (Direction de la recherche, des études, de l'évaluation et des statistiques - DREES) and of the Ministry of Labor (Direction de l'animation de la recherche, des études et des statistiques - DARES). <http://www.insee.fr/en/methodes/default.asp?page=sources/ope-enq-sante-itineraire-prof-sip.htm>. (Accessed October 5th 2016)

**Box 1.** The five career types based on first and current (or last) occupational class.



women. To check the consistency of our results, we repeated analyses in different sub-groups: people active in 2006 to account for the health selection effect (online supplementary material Table S2), and people aged 45–59 and 60–74 years (Tables S3, S4) to account for the different generations.

In a second step we ran a decomposition method (Blinder, 1973; Oaxaca, 1973) This estimates the gap between two groups in a given outcome, based on the groups’ differences in individuals’ characteristics associated with this outcome (Supplementary material Box S1). It measures how much of the gap is associated with: (1) different distribution of these characteristics across the two groups (the explained component), corresponding to the gap that would be observed if the intensity of the characteristic-outcome associations were the same in both groups (only the distribution would change); (2) different intensity of the characteristic-outcome associations (the unexplained component), corresponding to the gap that would be observed if the distribution of characteristics were identical across both groups (only the intensity of the associations would change). We aimed to determine how much of the health gap in 2006 was associated with different distributions of past career characteristics and/or their health-relatedness in men and women. The method identified each past career characteristic which significantly contributed (positively or negatively) to the gender health gap in 2006 because of its overrepresentation in one gender and/or its different health-relatedness. The method was adapted for non-linear models (Powers, Yoshioka, & Myeong-Su, 2011).

2.3. Measures

2.3.1. Current mental health and physical functioning

Depressive symptoms were measured by the Mini International Neuropsychiatric Interview (MINI) (Sheehan, Lecrubier, Sheehan, Amorim, Janavs, & Weiller, 1998), a non-clinical questionnaire describing symptoms experienced within the previous two weeks. We used the Major Depressive Episodes part of this questionnaire and the recommended score (at least one positive answer to the two screening questions plus at least four positive answers to the seven subsequent questions) (Amorim, Lecrubier, Weiller, Hergueta, & Sheehan, 1998).

Physical functional limitations were measured by self-reported difficulties or inability to perform at least one of the listed activities involving physical body functions (climbing a flight of stairs, bending and kneeling down, using hands for holding or grasping small objects, or cutting toenails) (Nagi, 1976). Physical limitations reflect the consequences of health problems, including musculoskeletal disorders, on physical body functions. They are relevant indicators of functional

health, being strongly associated with activity limitations and related to work conditions (Cambois, Robine, & Romieu, 2005; Chau & Khlal, 2009; Weir, 2007).

2.3.2. Critical career characteristics

(1) **Qualification at first job** corresponds to the first job that lasted at least one year reported in the retrospective grid. Jobs were classified according to five socio-occupational classes illustrating different levels of skill and experience (Desrosières & Thévenot, 2002): self-employed (farm and business owners); highly skilled; skilled; low-skilled clerical and manual workers; unskilled clerical and manual workers. Regarding the two latter classes, it is recommended to distinguish unskilled vs skilled workers rather than clerical vs manual workers (Chardon, 2001), due to substantial job mobility within unskilled and skilled categories with no significant changes in work conditions. Due to potentially detrimental associated work and life conditions, first jobs could contribute to the gender health gap, through both overrepresentation of the lowest skilled jobs in women and a potentially stronger association with poor later health, in line with women’s longer exposure in these jobs. Regarding self-employment, we expected different patterns for men and women. Self-employed jobs tend to have favorable health outcomes for men and unfavorable for women (Cambois & Laborde, 2011a; Cambois, Laborde, Romieu, & Robine, 2011b), due to gender-specific jobs in this category where men often hold more favorable positions, and to a strong health selection effect in men.

(2) **Career direction** was assessed by the trajectory between socio-occupational class at first job and at the current (or last) job reported at the time of survey. We considered five career directions: upward, downward, stagnant, and in/out of self-employment (Box 1). Although it does not account for the full work history, this indicator is highly correlated with mortality through the clear health and mortality gradient across qualifications (Bartley et al., 1997; Blane et al., 1999; Cambois, 2004; Karimi et al., 2015). Only a small proportion of the population (3.2%) had missing information for the first and/or last job; we constructed a separate category for this group. We expected upward trajectories to be favorably associated with later health and, due to their lower frequency in women, to contribute to the men’s advantage. However, the overall contribution of upward trajectories to the gender health gap depends on how their health-relatedness differed in men and women.

(3, 4, 5) **Career episodes of inactivity, unemployment and part-time employment** correspond to episodes of at least one year spent in these statuses as shown by the database; they were collected from the retrospective grid. We summed up the years in such episodes

to obtain three distinct indicators of time spent in these statuses. Rated by total career span, we obtained three continuous variables: percentage spent in inactivity, unemployment and part-time. Career span was the number of years between the first job (lasting at least one year) and the survey date for active people (or year of the last job for retired and other inactive people). Career span was used as a covariate in our models to account for the different career phases in our study population. Past unemployment and inactivity are likely to be associated with poor health due to the consequences on living conditions and to reverse causation (poor health increasing the risk of job loss). Similarly, periods of part-time employment are likely to be associated with poor health. We expected weaker associations in women, for whom such interruptions might be more indirectly and less systematically linked to poor health than in men. Overall, career interruptions could contribute positively to the gender health gap due to their larger frequency in women, probably attenuated by weaker health-relatedness.

(6) Current activity status corresponded to working, unemployed, retired, and inactive other than retired status at the time of survey. Strong associations of unemployment and inactivity (other than retirement) were expected especially for men; however, the effect could be more pronounced than that of past interruptions, due to the contemporary association with poor health.

### 2.3.3. Covariates

Health, family and career interact over the life course, and together contribute to current health status. We included a number of covariates to account for their different distribution across career characteristics.

**2.3.3.1. Sociodemographic variables.** We accounted for sociodemographic characteristics which are determinant for both health and occupational trajectories (Hughes & Waite, 2009; Pailhé et al., 2013; Read, Grundy, & Wolf, 2011; van Hedel, van Lenthe, Avendano, Bopp, Esnaola & Kovács, 2015; Worts et al., 2013; Zhang & Hayward, 2006): educational level (International Standard Classification of Education levels 0–2; 3–4; > 4); partnership at the time of survey; number of children ever had; age included as a continuous variable. Career span was also introduced as a covariate.

**2.3.3.2. Past health problems.** Current depressive symptoms and physical limitations were not available in the retrospective grid. Past diseases were reported, however time of onset could not be clearly identified. We used two variables: (1) number of past illnesses, including mental illnesses, reported in the biographical grid (none, 1, 2, 3 and more); (2) number of sickness leave periods (“*periods of sickness absence of at least six months*” which excludes maternity and parental leaves), which are linked to later health (Melchior, Ferrie, Alexanderson, Goldberg, Kivimaki, & Singh-Manoux, 2009).

## 3. Results

### 3.1. Descriptive statistics

In 2006, 10.6% [9.7–11.6]<sup>3</sup> of women aged 45–74 years reported depressive symptoms *vs* 4.4% [3.7–5.0] of men. Also, 30% [28.9–31.8] of women reported physical limitations *vs*. 24% [22.6–25.4] of men. More women were currently inactive and unemployed, started in low-skilled and unskilled first jobs, experienced career disruptions and stationary or downward trajectories (Table 1).

**Table 1**

Distribution of Career Characteristics and Sociodemographic Characteristics in Men and Women Aged 45–74 Years, 2006.

	Men		Women	
	Sample size	%	Sample size	%
All	3524		4013	
(1) 1st job Farmers	260	6.9	168	4.2
Self-employed	68	2.1	75	1.9
Highly skilled	263	8.0	234	5.9
Skilled	502	15.1	637	15.6
Low-skilled	1143	33.4	1389	35.9
Unskilled	1244	34.6	1460	36.6
Missing	44	1.1	50	1.3
(2) Downward career	406	11.4	459	11.9
Unskilled stationary	598	15.7	974	24.0
Self-employed to employed	148	3.9	94	2.3
Stationary	578	16.4	1073	26.5
Self-employed stationary	172	4.7	145	3.6
Employed to self-employed	325	9.7	212	6.0
Highly skilled stationary	207	6.3	201	5.0
Upward	949	27.8	752	18.1
Missing	141	4.0	103	2.6
(3) % inactive		2.5		12.9
(4) % unemployed		2.2		2.9
(5) % part-time		1.5		11.5
(6) Currently working	1734	52.8	1860	47.0
Unemployed	150	3.9	221	5.5
Retired	1495	39.2	1399	34.6
Inactive other than retired	145	4.1	533	13.0
Length of career (mean)		33.0		30.4

### 3.2. Past career characteristics and current health outcomes

Logistic regressions indicated which past career characteristics were independently associated with depressive symptoms and physical limitations in 2006 in our full sample (Table 2) and in the sub-samples of people who were active in 2006 and people aged 45–59 and 60–74 (Tables S2, S3, S4, Appendix online).

Compared with skilled first jobs, unskilled and self-employed first jobs increased the probability of physical limitations in 2006 in both genders (not significant in the older group in women and in the younger and active groups in men). This was also true for downward *vs* upward trajectories for women (not significant in the older group) and stationary trajectories for men (not significant in the age-stratified subsamples), for past inactivity in women (not significant in younger age group) and current inactivity for both genders (not in the older groups). Older retired men reported less physical limitations in 2006 than older employed men. Regarding depressive symptoms, men (the younger ones) presented an inverted occupational gradient with first job qualification (less depressive symptoms in lowest-skilled *vs*. higher skilled first jobs) and career direction (less depressive symptoms in downward *vs*. upward trajectories). Past episodes of unemployment for both genders (in men, only the younger group) and past episodes of inactivity for women (the older ones) increased the probability of depressive symptoms in 2006. Depressive symptoms were more frequent in currently inactive and unemployed people *vs* employed for both genders (younger and active ones), but less frequent in retired women (and older retired men). Active women in 2006 who previously moved from employment to self-employment reported more depressive symptoms in 2006 than women with upward trajectories.

### 3.3. Contribution of career characteristics to gender health gaps

Table 3 shows the total difference in prevalence of depressive symptoms and physical limitations and the decomposition of this difference for each health outcome. The parts of the gap due to gender-specific distributions of covariates and career characteristics

<sup>3</sup> 95% confidence intervals.

**Table 2**  
Odds ratios for major depressive episodes and physical functional limitations after adjusting on sociodemographic variables<sup>a</sup> in men and women aged 45–74, 2006.

	Major depressive episodes			Physical functional limitations		
	All	Men	Women	All	Men	Women
Women vs. Men	2.04 <sup>***</sup>			1.16 <sup>*</sup>		
(1) Skilled occupation at first job (REF)	1.00	1.00	1.00	1.00	1.00	1.00
Self-employed	1.20	0.47	1.76	1.72 <sup>***</sup>	1.72 <sup>+</sup>	1.71 <sup>**</sup>
Highly skilled	1.20	1.75	1.02	1.07	1.03	1.01
Low-skilled	0.94	0.56 <sup>+</sup>	1.22	1.20	1.42 <sup>+</sup>	1.04
Unskilled	0.94	0.57	1.29	1.62 <sup>***</sup>	1.79 <sup>***</sup>	1.52 <sup>**</sup>
Unknown	0.29 <sup>+</sup>	0.77	0.16 <sup>+</sup>	1.51	1.01	2.07
(2) Upward trajectory (REF)	1.00	1.00	1.00	1.00	1.00	1.00
Downward	0.99	0.56	1.44	1.41 <sup>***</sup>	1.34	1.43 <sup>+</sup>
Stationary	0.88	0.66 <sup>+</sup>	1.07	1.20 <sup>**</sup>	1.31 <sup>**</sup>	1.07
Self-employed to employed	0.76	0.84	0.85	1.13	1.52	0.72
Employed to self-employed	0.92	0.85	0.96	1.03	1.04	0.99
Unknown	1.54	0.73	2.65 <sup>**</sup>	1.25	1.32	1.05
(3) % of career span inactive	1.01 <sup>***</sup>	1.02	1.01 <sup>**</sup>	1.01 <sup>***</sup>	0.99	1.01 <sup>***</sup>
(4) % of career span unemployed	1.02 <sup>***</sup>	1.02 <sup>+</sup>	1.02 <sup>**</sup>	1.01 <sup>**</sup>	1.01	1.01
(5) % of career span in part-time	1.00	0.99	1.00	1.00	1.00	0.99
(6) Employed (REF)	1.00	1.00	1.00	1.00	1.00	1.00
Retired	0.71 <sup>+</sup>	0.75	0.70 <sup>+</sup>	1.04	0.87	1.24
Unemployed	1.79 <sup>***</sup>	1.93 <sup>+</sup>	1.62 <sup>**</sup>	1.35	1.25	1.48
Inactive	1.81 <sup>***</sup>	2.93 <sup>***</sup>	1.53 <sup>**</sup>	1.90 <sup>***</sup>	3.38 <sup>***</sup>	1.54 <sup>***</sup>
Observations	7537	3524	4013	7537	3524	4013

Statistical significance:

<sup>a</sup> Logistic regressions adjusted for age, education, partnership status, number of children, number of past diseases, number of sickness absences, career span

<sup>\*</sup> for  $p < 10\%$

<sup>\*\*</sup> for  $p < 5\%$

<sup>\*\*\*</sup> for  $p < 1\%$

**Table 3**  
Breakdown of gender difference in major depressive episodes and physical functional limitations, and contribution of career characteristics due to (a) different distributions and (b) different intensity (normalized weights) in men and women aged 45–74, 2006<sup>a</sup>.

Difference (women-men) in prevalence	Major Depressive Episodes		Physical Functional Limitations	
	(a) Due to # distribution	(b) Due to # intensity	(a) Due to # distribution	(b) Due to # intensity
	6.2 <sup>***</sup>		6.3 <sup>***</sup>	
<b>Contribution of covariates<sup>a</sup> and career characteristics</b>	<b>2.6</b>	<b>3.6</b>	<b>4.1</b>	<b>2.2</b>
<b>Due to career characteristics</b>	<b>1.7</b>	<b>1.5</b>	<b>3.0</b>	<b>-5.8</b>
(1) 1st job self-employed	-0.18 <sup>**</sup>	0.44 <sup>*</sup>	-0.13	-0.15
Highly skilled	-0.03	-0.22	0.11	-0.18
Skilled	0.01	-0.08	-0.02 <sup>*</sup>	-0.21
Low-skilled	0.07	0.91 <sup>**</sup>	-0.11 <sup>*</sup>	-4.53
Unskilled	0.07 <sup>**</sup>	1.00 <sup>*</sup>	0.05	2.67
Unknown	-0.03 <sup>**</sup>	-0.08	0.02	0.30
(2) Downward career	0.01	0.23	0.03 <sup>**</sup>	1.17
Stationary	-0.20	0.02	0.14	-0.07
Self-employed to employed	0.05	-0.08	0.11	-0.87
Employed to self-employed	0.08	-0.15	0.02	0.55
Upward	0.18	-0.56	0.04	2.14
Unknown	-0.10 <sup>**</sup>	0.14	-0.01	-0.05
(3) % inactivity	0.67 <sup>**</sup>	-0.11	1.56 <sup>***</sup>	1.58
(4) % unemployment	0.09 <sup>**</sup>	0.01	0.11	-0.02
(5) % part-time	0.33	0.06	0.17	-0.14
(6) Currently retired	0.15 <sup>*</sup>	-0.13	-0.18	5.41
Unemployed	0.07 <sup>**</sup>	-0.03	0.11	0.26
Inactive	0.34 <sup>**</sup>	-0.11 <sup>*</sup>	0.71 <sup>**</sup>	-1.28
<b>Residual unexplained components</b>		<b>-1.84</b>		<b>38.87</b>

The sum of the percentage points equals the total contribution, and the total gender difference equals the sum of the total contribution to the explained and unexplained components of the decomposition.

$$^a \text{Decomposition of the difference (Powers et al., 2011)} \overline{Y^W} - \overline{Y^M} = \underbrace{[F(\overline{X^W} \beta_W) - F(\overline{X^M} \beta_W)]}_{\text{explained component}} + \underbrace{[F(\overline{X^M} \beta_W) - F(\overline{X^M} \beta_M)]}_{\text{unexplained component}}$$

<sup>a</sup> Adjusted for age, education, partnership status, number of children, number of past diseases, number of sickness absences, career span.

were 2.6 points for depressive symptoms and 4.1 for physical limitations (42% and 65%, respectively, of the total gender gap). Within these differences, the parts related to career characteristics were substantial (1.7 points and 3 points). The parts of the gap due to gender-specific health-relatedness of covariates and career characteristics were 3.6 points for depressive symptoms and 2.2 points for physical limitations (58% and 35%, respectively, of the total gap), most being related to the covariates and not to career characteristics.

Overrepresentation of unskilled first jobs and the stronger health-relatedness of low- and unskilled first jobs contributed positively to the female disadvantage. These latter findings were partly due to the inverted occupational gradient of depressive symptoms described earlier. Female overrepresentation of skilled and low-skilled jobs negatively contributed to the difference in physical limitations, due to their relatively lower health-relatedness (which did not significantly contribute to the difference). Self-employed first jobs contributed to the female disadvantage in depressive symptoms due to stronger health-relatedness in women; the lower frequency in women only partially reduced this contribution.

Overrepresented downward trajectories in women contributed to the gender gap in physical limitations. Overrepresented past and current inactivity episodes in women contributed to their disadvantage in both health outcomes. However, current inactivity was less strongly mental health-related in women, slightly reducing the contribution to this gap. Overrepresented past and current unemployment episodes in women contributed to their disadvantage in depressive symptoms. Men were more frequently retired in 2006 and this contributed to their mental health advantage.

## 4. Discussion and conclusion

### 4.1. Main outcomes

Firstly, we demonstrated that certain career characteristics were associated with poor mental health and physical limitations for both genders, although with different associations. Secondly, we found that female overrepresentation of critical characteristics contributed to the gender health gap: low/unskilled first jobs, downward careers, current/past inactivity, and current/past unemployment. Thirdly, gender differences in the health-relatedness of career characteristics contributed, but much less, to the gender gap in depressive symptoms; stronger female health-relatedness of self-employment, low/unskilled first jobs, and weaker health-relatedness of current inactivity. The higher frequencies of critical career characteristics in women were not transposed, or only to a low degree, into weaker associations with poor health outcomes.

#### 4.1.1. Gender differences in first job qualifications contributed to the gender health gap

Low/unskilled first jobs contributed to the mental health gap both due to stronger health-relatedness and overrepresentation of unskilled first jobs in women. This was expected, as women probably have longer exposure to detrimental work and life conditions and benefit less from promotion. But this result was also due to the inverted gradient of depressive symptoms in men. Men may be less likely to report mental health problems in general, especially in lower social classes (Annandale & Hunt, 1990). Job strain in upper classes could influence the propensity to report depressive symptoms, while for women propensity appeared high across all classes. Unskilled first jobs were significantly associated with physical limitations, but the associations disappeared in active men (while they remained for active women). This suggests a strong “healthy worker effect” in men.

Regarding self-employment, we confirmed a clear gender-different pattern. A first self-employed job contributed positively to women's disadvantage in depressive symptoms due to stronger health-relatedness, which was not fully compensated by lower frequency. A first job in

self-employment increased current physical limitations for both men and women (with no contribution to the gender health gap), but the association was absent among active men in 2006. Among active women, past trajectories from employment to self-employment increased the risk of depressive symptoms in 2006. Similar patterns were found in France with mortality risks (Cambois et al., 2011a). In men, poor health could compromise self-employment. The gender differences may be explained by contrasted work status and situations in French male and female self-employment. The self-employed class is very heterogeneous, but the limited number of self-employed in the sample prevented finer stratification (occupation, size of the business).

#### 4.1.2. Gender differences in past career direction made little contribution to the gender health gap

Only overrepresentation of downward careers in women slightly contributed to their disadvantage in physical limitations. Possibly, the health association of unfavorable careers was mediated by the contribution of first job skill and interruptions. The early career stages may matter more, whereas women have fewer opportunities of promotion and potentially experience longer detrimental exposure (Guignon, 2008; Karimi et al., 2015; Liljegren et al., 2008; Malard, Chastang, & Niedhammer, 2015). In men, functional limitation was more associated with stationary trajectories, although this did not contribute to the gender gap.

#### 4.1.3. Women's inactivity contributed to the gender health gap despite weaker health-relatedness

As expected, current inactivity and depressive symptoms were associated in women. Current inactivity, largely overrepresented, contributed to the gender gap; however a weaker association than in men slightly attenuated this contribution. Women are known to withdraw from the labor force for reasons other than health, and inactivity may be less critical if the household has another income. Inactivity may alleviate work strain. However, past episodes of inactivity were found to contribute to the mental health gap and remained associated in the older sub-sample. This agrees with evidence that weak ties with the labor market over the life course in women tend to increase health risks in later life, even if these weak ties are linked to childcare (Lacey et al., 2015; Lacey et al., 2016; McMunn et al., 2006). Episodes of inactivity thus deserve further attention, particularly regarding their timing and length and their interaction with current inactivity.

Women's health disadvantage may also be linked to cumulative disadvantages across activity spheres (work, domestic, family), with work-family strain increasing the health risk (Berkman & O'Donnell, 2013; Cullati, 2014; Ertel, Koenen, & Berkman, 2008; Khat, Sermet, & Le Pape, 2000; Lundberg, 1996; McMunn et al., 2006; Melchior, Berkman, Niedhammer, Zins, & Goldberg, 2007; Okechukwu, El Ayadi, Tamers, Sabbath, & Berkman, 2012; Plaisier, de Bruijn, Smit, de Graaf, Ten Have, & Beekman, 2008; Sabbath, Melchior, Goldberg, Zins, & Berkman, 2012). As family structure was a covariate, the contribution of career characteristics was net of family composition. This contribution may be increased for specific family situations, but sample size prevented further analysis.

### 4.2. Study limitations

Sample size was a general limitation. Some results may lack significance due to small sample size rather than absence of an association with health (Type II error). The number of respondents also limited finer subdivision of career types. We considered large occupational classes and summarized careers using only two time points, concealing multiple changes and ignoring length of exposure in different occupational categories. However, the selected indicators have previously been proven to be correlated with health and mortality (cf. Section 2.3.2).

We were concerned by the definition of first job, so we tested alternative constructs (first job lasting at least two to five years, job at age 30). This did not change the observed careers and substantially decreased the sample. We were also concerned by the large age range used; it includes retirement and there is evidence of gender differences in links between retirement and health (Moen, 1996). We found that being retired in 2006 was associated with better health outcomes than being employed. Retirement increased women's disadvantage in mental health due to lower female frequency in this status. We replicated the study on the sample of active persons in 2006, and highlighted a possible health selection effect as explained above. Consideration of the full sample highlighted links between health and career characteristics that would have been hidden by considering only the active population. Finally, we replicated the analysis in the younger/older subsamples. Some results were only significant in one of the two subsamples, possibly demonstrating differentiated work-health histories across generations. However, stratification of the sample increased the uncertainty of the estimates and may explain the fewer significant results.

Another limitation was use of retrospective data for characterizing careers. As these data were based on respondents' memory, the information collected was subject to *ex-post* reconstruction, mistakes or incompleteness. However, this survey was based on a biographical grid where individuals simultaneously reported work, family and residential trajectories; this method tends to limit mistakes (Berney & Blane, 1997). In contrast, the strength of population surveys with retrospective information for studying health and careers is their good representativeness. Prospective datasets, though generally more reliable to describe life course trajectories, often suffer from selective attrition at follow-up.

Finally, we cannot conclude on the causal relationship between career and health in the associations observed, which cannot be properly analyzed with our data. However, this was not the objective. We demonstrated that current health was differently associated with past career for men and women, even controlling for past health and family structure. We believe that this association was partly due to the gender-specific health effect on the chances (or costs) of remaining at work and, to a certain extent, of obtaining promotion (Cousteaux, 2011; Moen et al., 2005; Stronks et al., 1995). In our study, the career interruptions that lasted at least a year may be due indistinctly to poor health or to other reasons, such as childcare, for women especially. The weaker association of inactivity with poor mental health in women illustrates these gender-specific patterns. This is part of the reverse causality pathway that cannot be determined with these data. A focus on individuals who reported no past health problems might reveal a more direct effect of past work characteristics on health (Wahrendorf, 2015). However, this would result in men and women of the study population being selected differently over their working career and would partly conceal the gender-differentiated health and work history that interested us in this study.

#### 4.3. Conclusion

Despite these limitations, we provide novel insights regarding the association between past careers and health. Our survey considered the whole population, highlighting the association of career characteristics with current health even among those who interrupted their career. We examined all types of careers and different interrelated career characteristics to identify their association with current health.

We demonstrated that women's health disadvantage was associated with unequal distributions of current inactivity, first job qualification, past career interruptions and downward trajectories, even while accounting for sociodemographic and past health situations. Women's health was not (or only slightly) less related to critical career characteristics than men's health.

The "gender health/survival paradox" (longer life but poorer health

for women) may not be such a paradox if evidence is found for unequal social determinants of later health over the career. Social organization, public policies and employer practices may help to reduce career interruptions and improve career opportunities; gender equity schemes, promoting work-family reconciliation can be good for health (Arulampalam et al., 2007; Berkman, Buxton, Ertel, & Okechukwu, 2011; Borrell et al., 2014; Palencia, Malmusi, De Moortel, Artazcoz, Backhans, & Vanroelen, 2014; Pavalko & Henderson, 2006). Further analyses are needed to assess whether more equity in the labor market and in work histories could help to reduce the gender health gap in France.

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#### Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ssmph.2016.12.008.

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