THE INFLUENCE OF WORK, HOUSEHOLD STRUCTURE, AND SOCIAL, PERSONAL AND MATERIAL RESOURCES ON GENDER DIFFERENCES IN HEALTH: AN ANALYSIS OF THE 1994 CANADIAN NATIONAL POPULATION HEALTH SURVEY*

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Abstract

Data from the 1994 Canadian National Population Health Survey (NPHS) do not confirm the widespread assumption that women experience considerably more ill health than men. The patterns vary by condition and age and at many ages, the health of women and men is more similar than is often assumed. However, we should not minimize the gender differences that do exist and in this paper we focus on three health problems which are more common among women: distress, migraine and arthritis/rheumatism. We consider to what extent work, household structure and social, personal and material resources explain these gender differences in health. Analysis of the distributions of paid work conditions, household circumstances and resources reveal mostly minor differences by gender and differences in exposure *to these circumstances*

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contribute little to understanding gender differences in health. There is also little evidence that greater vulnerability *is a generalized health response of women to paid and household circumstances. We find limited evidence that social, personal and material resources are involved in pathways linking work and home circumstances to health in ways that differ between the sexes. In conclusion, we consider some reasons for the lack of support for our explanatory model: the measures available in the NPHS data set which contains little information on the household itself; the difficulty of separating 'gender' from the social and material conditions of men's and women's lives; and changes in women's and men's roles which may have led to a narrowing of differences in health.*

Keywords*: Gender, Men, Social determinants of health, Women, Work, Canada.*

Résumé

Les données de l'Enquête Nationale sur la Santé de la Population (ENSP) menée au Canada en 1994 ne corroborent pas l'idée largement répandue que la santé des femmes est nettement moins bonne que celle des hommes. La situation varie selon l'âge et la condition sociale, et, dans de nombreux groupes d'âge, la santé des femmes et celle des hommes se différencient moins qu'on ne le pense souvent. Mais il ne faut pas pour autant minimiser les différences existantes, et les auteurs de cette communication se penchent sur trois problèmes de santé qui touchent plus fréquemment les femmes que les hommes : l'angoisse, la migraine et l'arthritisme/rhumatisme. Il s'agit d'examiner dans quelle mesure le travail, la structure du ménage et les ressources sociales, personnelles et matérielles expliquent ces différences de santé entre hommes et femmes. L'analyse des conditions de travail et de la situation et des ressources du ménage ne révèle que des différences généralement mineures entre sexes, et les différences d'exposition à ces divers contextes n'apportent pas grand-chose à l'explication des différences de santé. Les données ne permettent guère d'affirmer qu'une plus grande vulnérabilité serait la réponse généralisée des femmes à leurs conditions de vie à la maison et au travail. Elles n'indiquent pas davantage que les ressources sociales, personnelles et matérielles seraient impliquées d'une manière différente pour chaque sexe dans les mécanismes qui relient les conditions de vie professionnelle et familiale à la santé. En conclusion, les auteurs examinent quelques-unes des raisons pour lesquelles leur modèle explicatif rencontre si peu de confirmation dans la réalité : les variables présentes dans l'ENSP qui donnent peu d'information sur le ménage lui-même, la difficulté de faire la distinction entre le « genre » et les conditions sociales et matérielles de vie des hommes et des femmes, et l'évolution des rôles respectifs des deux sexes qui peut avoir entraîné un rétrécissement des écarts en matière de santé.

Mots-clés *: Canada, Homme, Femme, Genre, Déterminants sociaux de la santé, Travail.*

1. Introduction

Recent research has challenged the conventional view that, while women have a longer life expectancy, they experience more ill-health than men (Macintyre *et al.*, 1996; Hunt and Annandale, 1999). It has encouraged researchers to move away from the «relatively undifferentiated model of sex differences» (Macintyre *et al*., 1996, p. 621) that has dominated research on gender and health. Yet, in rejecting an overgeneralized view of women's morbidity disadvantage, we risk neglecting gender differences in health that *are* consistent. In this paper we first consider the nature and magnitude of gender differences in health, based on our analysis of the 1994 Canadian National Population Health Survey (NPHS), following which we seek to explain gender differences in health that do exist.

Data from the 1994 NPHS (McDonough *et al.*, 1999a) do not confirm the widespread assumption that women experience considerably more ill health than men. The patterns vary by health problem and age and, overall, support the findings of Macintyre *et al.* (1996) and other studies reported in a special issue of *Social Science and Medicine* (Hunt and Annandale, 1999). Table 1 presents information on gender differences for 17 of the health measures included in the NPHS (see Appendix for information on the measures). These include general measures (self rated health status, two week disability, activity restriction, and chronic conditions) as well as specific measures of mental and physical health problems. In some instances there are clear and consistent gender differences yet in others, the differences vary by age or are very small and not significant. Certain problems, like restricted activity and asthma exhibit no gender differences across the age groups. Other measures show variable gender differences: self-rated health, chronic illness, chronic bronchitis / emphysema, cancer, high blood pressure, back problems, heart problems and injuries, with only the two latter more prevalent among men in some age groups.

Table 1
Patterns of gender differences in health[a], by 10-year age-groups (ages 15-75+)
National Population Health Survey, Canada, 1994

		15-24	25-34	35-44	45-54	55-64	65-74	75+
Female excess at all/most ages								
Two week disability	m	5.8**	5.9**	5.9*	4.4**	4.5	4.0	3.0**
	f	11.5	9.0	8.3	9.2	5.2	6.0	10.1
Distress[b]	m	4.19**	3.50**	2.99**	2.82**	2.42**	2.11**	2.14**
	f	4.98	4.02	3.70	3.61	3.15	3.04	3.30
Depression	m	8.5**	6.8**	5.1**	5.9**	3.2**	2.9*	4.1
	f	13.7	11.1	11.0	10.4	7.1	5.4	3.3
Migraine	m	5.2**	3.2**	5.5**	5.1**	3.0**	3.0**	2.1
	f	8.7	13.1	12.4	13.0	8.7	5.9	4.0
Pain	m	7.5**	10.2*	13.7*	17.5**	18.1**	25.4**	31.2
	f	13.3	13.1	16.9	22.8	26.1	32.2	37.3
Arthritis/rheumatism	m	1.1*	2.5**	6.0	10.4**	20.4**	31.1**	38.1**
	f	2.5	4.4	7.7	17.7	33.1	42.7	50.4
Nonfood allergies	m	21.3	19.8	15.6**	12.4**	12.1**	8.9**	6.9*
	f	23.0	22.4	21.2	17.7	17.3	15.2	11.8
No gender differences								
Restricted activity	m	12.4	14.5	16.8	20.2	29.6	36.4	43.9
	f	13.1	14.2	16.9	23.0	30.0	34.7	48.0
Asthma	m	9.4	6.9	3.9	4.3	4.3	5.5	4.5
	f	11.2	6.9	5.5	5.1	5.5	4.5	4.5
Variable gender differences								
Self rated health[b]	m	4.04**	4.03*	3.91	3.75*	3.45	3.24	3.08
	f	3.91	3.95	3.84	3.65	3.44	3.28	3.08
Chronic illness	m	20.5**	24.2**	31.5**	44.4	59.5	70.3	78.9
	f	26.8	32.3	36.6	47.2	64.1	74.0	83.6
Chronic bronchitis/ emphysema	m	0.9**	1.4*	1.8**	1.5**	5.0	6.6	9.1
	f	3.4	2.6	3.5	3.6	4.5	4.4	7.8
Cancer	m	0.0[c]	0.2*	0.2**	0.8**	2.2	5.1	5.1
	f	0.4	0.9	1.0	3.2	3.9	4.3	5.8
Heart problems	m	0.1	0.2**	0.9	4.4**	8.6**	16.8**	22.1
	f	0.6	1.3	0.5	2.1	5.0	11.1	21.6
High blood pressure	m	0.5	1.3	4.4	9.5	18.4	24.9*	20.5**
	f	0.8	1.4	3.9	10.5	22.5	30.4	36.1

Back problems	m	5.9**	12.6	14.7	19.5	22.2	18.5	14.2*
	f	9.0	12.4	14.1	16.4	20.1	18.4	19.2
Injuries	m	29.1**	25.0**	18.2	14.0	11.0	7.3	7.7
	f	22.0	15.1	16.4	13.2	11.0	9.6	11.4
N	m	1,241	1,581	1,564	1,217	879	791	447
	f	1,364	1,940	1,705	1,284	1,071	1,079	826

* $p<.05$; ** $p<.01$ significant differences in group means/proportions.

a See Appendix for definitions of each health measure.

b All health conditions refer to the proportion of men and women reporting a specific health condition except for distress and self-rated health which are group means (higher values for distress represent greater distress, higher values for self-rated health represent better health).

c No respondents reported condition.

Nevertheless, despite the absence of stable gender differences in health, some differences between women and men in Canada *are* fairly consistent (McDonough *et al.*, 1999a). Specifically, women are more likely to report short-term disability, distress, depression, migraine, pain, arthritis or rheumatism, and nonfood allergies. Here, we focus on three of these: distress, a commonly reported mental health problem; migraine, the problem with the greatest magnitude of difference; and arthritis/rheumatism a painful physical health problem which may limit activity. The question which guides our analysis is: *to what extent do paid and unpaid work conditions and social, personal and material resources explain these differences in the health of women and men?* We start by briefly outlining the value of a model of the social production of health which focusses on the structural dimensions of paid and unpaid work, while also taking into account the roles of social support and personal and material resources in the pathways linking work and health.

2. Work, resources and health

Paid work is associated, on average, with better physical and mental health for both men and women (Arber, 1997; Ross and Bird, 1994; Waldron, 1991; Walters *et al.*, 1995). Yet such general findings may obscure health differences that emerge from the nature of the job and the social organization of work. Within the demand-control model, for instance, it is argued that production processes that simplify and routinize closely

supervised tasks create working conditions that impair health (Karasek and Theorell, 1990). Psychologically demanding jobs in organizational structures that offer individuals little control over their work are positively related to cardiovascular disease (Haan, 1988; Schnall *et al.*, 1994; Theorell *et al.*, 1991), sickness absence (North *et al.*, 1996) and psychological distress (Karasek and Theorell, 1990). But though the health effects of work have been examined extensively for men, there has been much less research on women and on comparisons between women and men (Messing *et al.*, 1995). Jobs performed by women are more likely to be characterized by high psychological demands and low levels of control (Karasek and Theorell, 1990). However, in developing the demand-control model, researchers have argued that other aspects of the social organization of work need to be taken into account in order to more fully reflect the work experiences of women and, maybe, of men in non-traditional occupations. For example, Barnett and Marshall (1991) have argued that interpersonal aspects of work, as well as other types of rewards may be important, including the opportunity to help others in service jobs and some professions. Moreover, issues such as sexual and racial discrimination and harassment have often been neglected (Doyal, 1994; Hall, 1989; Walters *et al.*, 1996).

Much of the literature that takes into account *the domestic sphere* has addressed the workload of women - that the burden of domestic labour continues to fall primarily on women, even when they are employed (Doyal, 1995; Harvey *et al.*, 1991; Lowe, 1989; Michaelson, 1985). Women engaged in paid work generally have better health than full-time homemakers, yet women's experiences may vary in this regard and reflect variations in occupational roles, family demands and resources (Khlat *et al.*, 2000; Lahelma *et al.*, this volume). Research is starting to include a broader range of these aspects of women's lives (Hall, 1992; Matthews and Power, this volume) and to use similar models for the study of paid work and domestic responsibilities (Griffin *et al.*, this volume; Walters *et al.*, 1997; Walters *et al.*, 1996). Studies are also starting to recognize that men's health may be influenced by their roles within the home (Barnett and Marshall, 1992, 1993; Barnett *et al.*, 1992; Bartley *et al.*, 1992; Griffin *et al.*, this volume; Hall, 1992; Hunt and Annandale, 1993; Walters *et al.*, 1996, 1997). Nevertheless, research on work within the home is still in its infancy. We do not have conceptual frameworks which are as well developed as in the case of paid work, nor are the elements of domestic labour clearly identified (Hunt and Annandale, 1993).

There has been little research examining the particular ways in which job and family conditions affect health. The literature on stress suggests that *coping resources*, in particular *social support* and *personal characteristics*, may be important in this regard. Such resources are said to reflect a "latent dimension of coping because they define a potential for action, but not action itself" (Gore, 1985, p. 266). Perceived emotional support is directly associated with better mental and physical health and it usually reduces the health-damaging effects of negative life events and chronic strains (Kessler and McLeod, 1985; House *et al.*, 1988). Analyses of the association between social support and health typically control for sex and until recently there has been relatively little exploration of gender specific models (Fuhrer and Stansfeld, this volume; Roxburgh, 1996; Shye *et al.*, 1995; Umberson *et al.*, 1996). However, there is evidence that the pathways may differ for men and women (Shye *et al.*, 1995).

Two personal coping resources, *perceived control* and *self-esteem*, have been most frequently examined in studies attempting to link social and economic conditions to health outcomes. Perceived control, or the "perception of self as causally important and effective in the world" (Turner and Roszell, 1994, p. 187), is associated with decreased depression (Mirowsky and Ross, 1989), better self-rated health, longevity and lower levels of activity limitation and psychosocial symptoms (Seeman and Lewis, 1995; Seeman and Seeman, 1983). In a similar vein, self-esteem is "the evaluation which the individual makes and customarily maintains with regard to himself or herself: it expresses an attitude of approval or disapproval toward oneself" (Rosenberg, 1965, p. 5). Low self-esteem is linked to higher levels of depression (Rosenberg *et al.*, 1989; Turner and Roszell, 1994) and increased somatic and psychological manifestations of anxiety (Rosenberg, 1985; Luck and Heiss, 1972). There are important gender differences in perceived control and in self-esteem, with women reporting lower levels of both resources (Mirowsky and Ross, 1989; Turner and Roszell, 1994). Although it has been suggested that this differential distribution according to gender may account for women's greater psychological distress, Thoits (1995) notes inconsistent support for this argument and calls for more research to clarify the complex relationship among personality characteristics, coping strategies and the efficacy of coping outcomes.

With respect to *material resources*, there is an extensive body of literature on the relationship between socioeconomic inequalities and inequalities in health, with lower socioeconomic status (SES) associated with

poorer health and shorter life expectancy (McDonough *et al.*, 1997; for reviews, see Feinstein, 1993; Williams and Collins, 1995). The social class gradient in relation to health is generally less pronounced for women than for men (but see McDonough *et al.*, 1999b), though the gender differences vary by age, health outcome and the measures of inequality used (Arber, 1997; Matthews *et al.*, 1999; Macintyre and Hunt, 1997).

Large scale studies seldom explore the particular facets of family, work and material circumstances that contribute to ill-health, though their influence appears to vary for men and women. In an investigation of limiting long-standing illness among women and men in Britain, Arber (1991) found that own occupational class, employment status and, to a lesser extent, housing tenure were associated with men's health status. It was only in the case of women that family roles were significant. The variables associated with women's health were more complex and, in addition to employment status, occupational class ('conventionally' measured by husband's occupation if married) and housing tenure, marital and parental status were important. There is also some support for the different impact of employment status and family structure on women and men in the recent work by Matthews *et al.* (1999). And in an analysis of gender differences in structural and behavioural determinants of health using the 1994 Canadian NPHS data, Denton and Walters (1999) found that social structural factors (being in the highest income category, working full-time, caring for a family and having social support) were more important in predicting good health among women than among men.

Thus, paid work, domestic responsibilities and social, personal and material resources are important elements in men's and women's lives and it crucial to understand how they influence health. The relative absence of comparative research reflects the fact that it is not easy to compare men and women; their experiences have been so different in both the home and the labour force and they differ in access to material resources. To trace the influence of these on health is, therefore, especially complicated. Nevertheless, it is important to aim to systematically investigate the health of women and men using similar indicators rather than, as often in the past, using different indicators for each sex. Only in this way is it possible to reach a fuller understanding of what shapes men's and women's health.

In the search for social mechanisms that might account for gender differences in health, research has typically examined two hypotheses. The *differential exposure* hypothesis suggests that women report more ill

health than men because of higher levels of demands and obligations in their social roles and lower levels of resources to help them cope with these conditions. By implication, equivalent social role conditions and equal resources ought to eliminate gender differences in health. The *differential vulnerability* hypothesis makes reference to women's greater reactivity or responsiveness to life events and ongoing strains that are experienced in equal measure by men and women. It is argued that gendered reactivity is located in a generalized female disadvantage in social roles and coping resources that affects the nature and meaning of stressors and, ultimately, the impact of the latter on health. In other words, social roles and resources are related to health in different ways for men and women.

We explore these issues through an analysis of the 1994 Canadian NPHS. It contains numerous measures of physical and mental health, as well as information about the social and economic circumstances of survey participants, including measures of the nature of the paid work setting, social support and personal characteristics. Yet work within the home is neglected and so, instead of assessing the effect of unpaid work conditions on health, we are limited to considering proxy measures in the form of household structure.

3. The sample and methodology

3.1. Data

The NPHS is a longitudinal study of a nationally representative sample of household residents in Canada initiated in 1994. In each of just over 20,000 households, limited information was collected from all household members and one individual, aged 12 years and older, was selected for a more in-depth interview. The initial household response rate was 88.7 percent, while the selected person response rate was 96.1 percent. More information on the sample design is available in Tamblay and Catlin (1995). Because our explanatory models are more appropriate for nonretired adults, the present analysis uses data for individuals whose ages range from 25 to 64 years of age (inclusive). The sample size is 11,241, though listwise deletion for missing variables reduced the size of the overall sample.

3.2. Measures

The measures of *health* used in this paper are three which showed fairly consistent differences between women and men: distress, a measure of mental health; migraine which is sometimes considered to be a psychosocial health problem, and arthritis/rheumatism a measure of physical health. *Distress* is an unpleasant subjective state characterized by feelings of sadness, restlessness, nervousness and hopelessness (Ross and Van Willigen, 1997) measured by the University of Michigan revision of the Composite Diagnostic Interview (World Health Organization, 1990). Distress increases as scores, ranging from 0 to 24, increase (see Appendix for item list). Participants in the NPHS were also asked to indicate whether a health professional had diagnosed, among other health problems, *arthritis/rheumatism* and *migraine*. Each of these was treated dichotomously, with those reporting the condition assigned a value of 1 and otherwise, 0.

Paid Work Conditions. We use two work status variables and five indicators of work stress as measures of paid work conditions. *Working* is coded 1 for currently working for pay and 0, for all others. *Full-time work* is a dichotomous variable that codes full-time workers (working 30 hours or more per week) as 1 and part-time workers as 0. Work stress variables include: control over job tasks, the psychological demands of work, job insecurity, physical demands of work and social support at work. These measures are derived as part of a modified version of the Job Content Questionnaire (Karasek, 1985) which was originally developed from the 1969, 1972 and 1977 U.S.-based Quality of Employment Surveys (see Appendix for more information). Each of the five work stress variables was dichotomized at its 75th percentile after re-ordering all scales to reflect increasing stress. For each variable a score of 1 represents high levels of job stress, while 0 represents all other levels of job stress.

Household/Family Structure. Three measures of household/family structure are used as proxies for unpaid work conditions in the home: marital status, the ages of children living in the household and household size. *Marital status* consists of two dummy variables: *single* (yes = 1; no = 0) and *formerly married* (yes = 1; no = 0). The age of the youngest child in the household is ascertained by three dummy variables: *at least one child under 6 years* (yes = 1; no = 0); *children 6-11 years* (yes = 1; no = 0); and *children 12-25* (yes = 1; no = 0). *Household size* assesses the number of people living in the household (range: 1-5 or more).

Social and Personal Resources. Three indicators of social and personal resources are examined: social support, perceived control, and self-esteem (see Appendix for details of these measures). *Social support* is derived from four items that reflect perceived emotional support. *Perceived control* is an index derived from the work of Pearlin and Schooler (1978, p. 5). It measures the extent to which individuals believe that their life chances are under their control. *Self-esteem* is an index based on analyses conducted by Pearlin and Schooler (1978) using a sub-set of items from Rosenberg's (1965) self-esteem scale. It refers to "the positiveness of one's attitude toward oneself" (Pearlin and Schooler, 1978, p. 5).

Material Resources. Three measures of material resources are examined: *total household income* (the midpoint of 11 categories ranging from no income to $80,000 or more); *education* (in years); and *home ownership* (coded 1 if dwelling owned by a member of the household and 0, otherwise).

Sex and Age. Female is a dummy variable representing sex, coded 1 for females and 0 for males. For the multivariate analysis, *age* is assigned the mid-point of 5-year age categories ranging from 25 to 64 years.

3.3. Analysis

Our multivariate analysis explores pathways that may account for observed gender differences in health. Logistic and ordinary least squares regression techniques are used according to the measurement of the health outcome of interest. Sampling weights are used in all estimations to adjust for non-response and differential selection probabilities. In addition, the effect of a complex sampling design on variance estimates is taken into consideration in the multivariate analysis by inflating standard error estimates by the square root of the average design effect (1.64) of the survey.

4. Results

In the following sections we report on the two types of analysis we conducted in an effort to understand gender differences in the experience of distress, migraines and arthritis/rheumatism.

Table 2
Paid work conditions, household structure and resources by gender, ages 25-64. National Population Health Survey, Canada, 1994[a]

Variable	Male		Female		*t*-test of significance of difference
	Mean/ Proportion	s.d.	Mean/ Proportion	s.d.	
Paid work conditions					
Employed full time	75.2%		46.7%		**
Employed part time	4.3%		15.9%		**
Not employed	20.5%		37.4%		**
Job conditions: [b]					
Low control	20.4%		29.0%		**
High psychological demands	17.2%		21.2%		**
High job insecurity	21.3%		21.5%		
High physical exertion	20.0%		15.1%		**
Low social support at work	20.7%		21.9%		
Household structure					
Marital status					
Single	16.5%		12.1%		**
Formerly married	8.2%		14.3%		**
Married	75.2%		73.5%		
Household size	3.01	1.27	3.05	1.16	
Age of youngest child in household					
< 6 years	21.3%		23.4%		**
6-11 years	12.2%		14.7%		**
12-25 years	19.7%		20.1%		
No children	46.8%		41.8%		**
Resources					
Social support	3.67	0.78	3.78	0.61	**
Perceived control	20.00	4.31	19.42	4.30	**
Self-esteem	20.46	2.91	20.19	2.97	**
Household income	$47,417	$24,330	$44,914	$22,973	**
Years of education	12.98	2.44	12.82	2.12	**
Homeowner	73.2%		71.3%		**
N	4,460		5,413		

a ** $p<.01$ significant differences in group means/proportions.
b *N* for job conditions: Women = 3,404; Men = 3,568.

4.1. Differential exposure

The first hypothesis tested is that gender differences in health are the result of gendered exposure to paid work conditions, household structure and social, material and psychological resources. We present gender differences in the latter and then consider their effects on the relationship between gender and health in multivariate models. Table 2 shows differences in employment and household conditions and resources by gender. Gender differences were typically small. Women were more likely to be nonemployed and, when employed, less likely to be in full-time jobs. They were more likely to work in jobs characterized by high work stress, with low levels of control and high levels of psychological demands, but less likely to have jobs with high physical exertion. Women were less likely to be single but they were almost twice as likely to be widowed, separated or divorced.

Table 3 presents the effects of gender and social circumstances on the health outcomes of interest. The first column for each measure presents the effect of gender, adjusted only for age. The second column adds paid work and household conditions and social, personal and material resources to the model. If the gender coefficients presented in the first column for each health outcome were reduced to nonsignificance in the second column, it would support the contention that gender differences in health reflect differences in the social and economic conditions of women's and men's lives. By implication, if gender disparities in these circumstances were eliminated, health differences between women and men would disappear.

The partially-adjusted effect of gender confirms the female excess in distress, migraines and arthritis/rheumatism noted in Table 1. The addition of the paid work and household conditions and resources had variable consequences on these relationships. The impact of gender on distress declined by 32 percent ([.69-.47]/69), but remained statistically significant. For the other outcomes, exposure to various social and economic conditions accounted for a relatively small percentage of the age-adjusted gender effect.

Although they played a relatively modest role in explaining gender differences in health, paid work, household conditions and resources exerted independent effects on health. Being employed significantly lowered distress scores, but was unrelated to the other outcomes. The nature of work, as indicated by five job stress items, was variable. Working

condi-

Table 3
Distress, migraine and arthritis/rheumatism
regressed on paid work conditions, household structure, ages 25-64.
National Population Health Survey, Canada, 1994 [a,b]

Variable	Distress		Migraine		Arthritis/rheumatism	
	b (s.e.)	b (s.e.)	Odds ratio (95% CI)	Odds ratio (95% CI)	Odds ratio (95% CI)	Odds ratio (95% CI)
Female	0.69* (0.09)	0.47* (0.08)	3.05* (2.48, 3.39)	2.86* (2.30, 3.55)	1.72* (1.47, 2.03)	1.52* (1.27, 1.80)
Age	-0.03* (0.00)	-0.04* (0.00)	0.99* (0.98, 0.99)	0.99* (0.97, 0.99)	1.08* (1.07, 1.09)	1.06* (1.05, 1.07)
Paid work conditions (ref=not employed)						
Employed		-0.82* (0.15)		0.82 (0.58, 1.15)		0.77 (0.56, 1.05)
Employed full time		0.06 (0.13)		0.94 (0.70, 1.27)		0.85 (0.64, 1.11)
Job conditions:						
Low control		-0.37* (0.11)		0.75* (0.57, 0.99)		0.85 (0.65, 1.09)
High psychol. demands		0.66* (0.12)		1.47* (1.12, 1.92)		1.18 (0.89, 1.57)
High job insecurity		0.28* (0.11)		1.57* (1.21, 2.02)		1.17 (0.90, 1.53)
High physical exertion		0.57* (0.12)		1.03 (0.76, 1.39)		0.98 (0.73, 1.31)
Low social support at work		0.31* (0.11)		1.13 (0.86, 1.48)		1.03 (0.78, 1.35)
Household structure						
Marital status (ref=married)						
Single		0.01 (0.13)		0.74 (0.54, 1.00)		0.78 (0.58, 1.05)
Formerly married		0.53* (0.13)		0.10 (0.82, 1.42)		1.09 (0.85, 1.39)
Household size		0.01 (0.05)		0.98 (0.86, 1.12)		0.91 (0.80, 1.04)

Age of youngest child in household [a]						
<6 years		-0.15 (0.15)		0.92 (0.64, 1.33)		0.69 (0.46, 1.03)
6-11 years		-0.31 (0.16)		0.10 (0.75, 1.58)		0.89 (0.60, 1.32)
12-25 years		0.09 (0.13)		0.10 (0.77, 1.45)		0.96 (0.73, 1.26)
Resources						
Social support		-0.56* (0.05)		0.91 (0.81, 1.03)		1.02 (0.91, 1.13)
Perceived control		-0.26* (0.01)		0.97* (0.94, .98)		0.97* (0.94, .98)
Self-esteem		-0.15* (0.01)		0.96* (0.93, 0.99)		0.98 (0.92, 1.04)
Household income		-0.05* (0.02)		0.98 (0.93, 1.03)		0.98 (0.94, 1.02)
Years of education		0.04* (0.02)		0.10 (0.97, 1.06)		0.96* (0.92, 0.99)
Homeowner		-0.43* (0.09)		0.74* (0.59, 0.92)		0.85 (0.69, 1.04)
Pseudo R^2			0.023	0.039	0.078	0.095
R^2	0.019	0.270				
N	9,866	9,866	9,868	9,868	9,868	9,868

OLS regression used for distress; logistic regression used for migraine and arthritis/rheumatism.

a Reference category is no children in the household.

* $p<.05$.

tions were most consistently associated with distress, while none were related to arthritis/rheumatism. As expected, job stress was positively associated with morbidity. An exception to this pattern was low control over job tasks which lowered distress scores and the odds of reporting migraines.

Among the household variables, marital status was the only item that was associated with the health outcomes and its effect was variable. Relative to the married, individuals who had never married were less likely to report migraines. The formerly married had higher odds of distress

scores compared with the married. Household size and children living in the home were unrelated to all health measures.[1]

Social, personal and material resources exhibited similarly mixed patterns. Social support, perceived control and self-esteem were inversely related to morbidity, although they were not always statistically significant. In that regard, perceived control showed the most consistent pattern of effects on the health outcomes. Home ownership was inversely related to migraine and distress, while increasing household incomes lowered the odds of distress scores. Increasing education lowered the odds of reporting arthritis/rheumatism, but raised distress scores.

In summary, the distributions of paid work conditions, household circumstances and resources revealed mostly minor differences by gender. Exceptions were women's increased likelihood of not being in the labour force, of working part-time and being formerly married. Women were also somewhat more disadvantaged than men when it came to job strain. Given the relatively muted gendered exposure to these living circumstances, it was not surprising that they contributed very little to accounting for gender differences in health.

4.2. Differential vulnerability

The second hypothesis we test is that gender differences in health arise from differential "vulnerability" to paid work and household conditions. The idea is that women suffer more in health terms from these social circumstances, even when the latter are similar to those of men. Positive, statistically significant interactions involving gender and each of the indicators of the paid work and household environments would lend support to this contention. However, women are not always disadvantaged. In some instances, men may be more reactive to the effects of paid work and household conditions. Negative interactions would be indicative of the health-protective effect of paid work and household conditions for women, compared with men.

Among the interaction models tested for the health outcomes of interest, those for arthritis/rheumatism and distress revealed statistically

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1. The absence of effects of household variables was surprising and so we explored whether lone parent status had any influence on gender differences in health. We found almost no effect when it was added to the models. It played no role in accounting for gender differences in health (the exposure hypothesis), nor did women's health suffer more than that of men in the same circumstance (the vulnerability hypothesis).

significant interactions between gender and social conditions (Table 4). Being formerly married raised women's risk of arthritis/rheumatism and increased their distress scores more than it did for men (relative to married men). The lower panel of Table 4 illustrates the joint effects of gender and marital status.[2] Among women, being formerly married makes a difference by raising the predicted probability of reporting arthritis or rheumatism (from .47 among the married to .56 for the formerly married). Formerly married men are less likely than the married to report this health condition, although the difference is not statistically significant. Being separated, divorced or widowed raised the distress scores of both women and men, but did so for women by 85 percent [(2.83-1.53)/1.53 = .85] and for men by 58 percent [(1.84-1.16)/1.16 = .58].

In light of these gendered effects of marital status on health, we next investigate whether social, personal and material resources[3] serve as mitigating factors. For example, women may be more vulnerable to the health-damaging effects of separation, divorce or widowhood because resources that can be used for coping operate less effectively for them than for men. Empirical support for this pathway, however, was only evident for distress.

Table 5 shows the addition of resources to models of paid work conditions and household structure predicting distress. Stratifying the analysis by gender reveals the ways in which the various independent variables may be associated in different (or similar) ways with health for men and women. For example, the statistically significant effect of being formerly married (Model 1) among men is rendered nonsignificant (Model 2), partly through the addition of material resources, but more so by social support. The psychological variables of perceived control and self esteem did nothing to change the magnitude of the formerly married coefficient. (Additional analyses wherein resources were added in successive blocks are not shown here.)

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2. Distress scores and predicted probability of reporting arthritis/rheumatism were calculated by solving the regression equations at observed sample mean or proportion values.

3. Our interest in pathways linking paid and unpaid work conditions to health led us to consider whether certain material resources, like household income and home ownership, act as mediators of these relationships. Specifically, separation, divorce or widowhood may affect levels of these resources which, in turn, affect health. Because education does not play the same role in this pathway, we did not consider it in the analyses that follow.

Table 4
Coefficients for distress and arthritis/rheumatism regressed on paid work conditions, household structure and gender interactions, ages 25-64. National Population Health Survey, Canada, 1994 [a,b]

Variable	Distress	Arthritis/ rheumatism
	b (s.e.)	Odds ratio (95% CI)
Female	0.37** (0.10)	1.33* (1.10, 1.61)
Age	-0.04** (0.004)	1.06** (1.05, 1.07)
Age * Female		
Paid work conditions (ref=not employed)		
Employed	-1.58** (0.17)	0.65* (0.48, 0.89)
Employed full time	-0.06 (0.15)	0.79 (0.60, 1.06)
Job conditions		
Low control	0.15 (0.12)	0.98 (0.76, 1.26)
High psychological demands	0.41** (0.13)	1.11 (0.84, 1.47)
High job insecurity	0.75** (0.13)	1.21 (0.93, 1.58)
High physical exertion	0.47** (0.13)	1.01 (0.75, 1.34)
Low social support at work	0.71** (0.13)	1.08 (0.82, 1.41)
Household structure		
Marital status (ref=married)		
Single	0.42** (0.14)	0.84 (0.63, 1.11)
Formerly married	0.68** (0.23)	0.79 (0.53, 1.17)
Household size	-0.05 (0.06)	0.91 (0.80, 1.03)
Age of youngest child in household [c]		
<6 years	-0.05 (0.17)	0.65* (0.43, 0.97)
6-11 years	-0.14	0.86

	(0.18)	(0.58, 1.26)
12-25 years	0.23	0.95
	(0.15)	(0.72, 1.25)
Interactions [d]		
Gender * Formerly married	0.62*	1.84*
	(0.28)	(1.20, 2.83)
-2Log likelihood		6780.61
Model Chi-square (d.f.)		934.40** (16)
R^2	0.07	
N	9,873	9,874
	Predicted score [e]	Predicted probability [e]
Women		
Formerly married	2.83	0.56
Married	1.53	0.47
Men		
Formerly married	1.84	0.34
Married	1.16	0.40

a OLS regression used for distress; logistic regression used for arthritis/rheumatism.
b * $p<.05$; ** $p<.01$.
c Reference category is no children in the household.
d Only statistically significant interactions are presented here. Interactions involving gender and resources were tested but none were statistically significant.
e Predicted values were calculated at sample mean or proportion values of covariates not involved in the interactions.

Although resources did not completely account for the effect of widowhood, divorce or separation on women's distress, the pathways linking this marital status to distress were similar to those observed for men. Social support and material resources each account for roughly one-third of the effect of being formerly married, while personal resources have very little effect (McDonough *et al.*, 1999a). Hence, formerly married women, like formerly married men, report higher levels of distress than their married counterparts mainly because they have fewer financial resources and less social support.

Apart from their role in mediating the impact of a formerly married state on distress, the patterns of effects exerted by different types of re sources on distress are worth considering. For example, the magnitudes

Table 5
Coefficients for distress among men and women
regressed on paid work conditions, household structure and resources,
ages 25-64. National Population Health Survey, Canada, 1994 [a,b]

Variable	Male		Female	
	Model 1 b (s.e)	Model 2 b (s.e.)	Model 3 b (s.e.)	Model 4 b (s.e.)
Age	-0.04** (0.01)	-0.04** (0.01)	-0.05** (0.01)	-0.05** (0.01)
Paid work conditions (ref=not employed)				
Employed	-1.98** (0.31)	-1.27** (0.29)	-1.48** (0.21)	-0.59** (0.19)
Employed full time	0.39 (0.29)	0.48 (0.26)	-0.27 (0.18)	-0.15 (0.16)
Job conditions				
Low control	0.14 (0.16)	-0.28 (0.15)	0.17 (0.18)	-0.50** (0.15)
High psychological demands	0.46** (0.17)	0.79** (0.16)	0.33 (0.20)	0.49** (0.17)
High job insecurity	0.84** (0.16)	0.35* (0.15)	0.64** (0.20)	0.31 (0.17)
High physical exertion	0.33* (0.16)	0.42* (0.15)	0.65** (0.22)	0.66** (0.19)
Low social support at work	0.77** (0.16)	0.36* (0.15)	0.64** (0.19)	0.30 (0.17)
Household structure				
Marital status (ref=married)				
Single	0.36* (0.19)	0.04 (0.17)	0.59** (0.21)	0.02 (0.19)
Formerly married	0.72** (0.23)	0.34 (0.21)	1.33** (0.19)	0.59** (0.18)
Household size	-0.06 (0.08)	0.00 (0.07)	-0.04 (0.08)	-0.02 (0.07)
Age of youngest child in household [c]				
<6 years	0.21 (0.23)	0.01 (0.22)	-0.36 (0.24)	-0.33 (0.21)
6-11 years	0.05 (0.25)	-0.15 (0.23)	-0.35 (0.25)	-0.45* (0.22)
12-25 years	0.19 (0.21)	0.01 (0.19)	0.25 (0.21)	0.15 (0.18)
Resources				

Social support		-0.41** (0.07)		-0.78** (0.09)
Perceived control		-0.22** (0.01)		-0.29** (0.01)
Self-esteem		-0.12** (0.02)		-0.16** (0.02)
Household income		-0.01 (0.03)		-0.06* (0.03)
Homeowner		-0.44** (0.13)		-0.45** (0.14)
R^2	0.07	0.22	0.06	0.30
N	4,461		5,412	

a OLS regression used for distress.
b * $p<0.05$; ** $p<0.01$.
c Reference category is no children in the household.

of the coefficients for social support and perceived control are larger for women than for men (comparing Models 2 and 4) (McDonough *et al*., 1999a). They indicate that these resources may be more beneficial in reducing women's distress than they are for men. Household income, home ownership and self-esteem were inversely related to distress, but there were no statistically significant gender differences in the strength of these relationships.[4]

In summary, greater vulnerability is not a generalized health response of women to paid work conditions and family structure. A differential effect of these conditions by gender was limited to family structure and was evident only for arthritis/rheumatism and distress: being formerly married increased women's reports of arthritis/rheumatism and distress more than it did among men. Overall, we found little support for the notion that the health costs of comparable paid work experiences and household conditions are greater for women than men.

We also found only limited evidence that social, personal and material resources were involved in pathways linking work circumstances to health in ways that differed between women and men. Formerly married

4. We tested whether gender differences in the effects of social support, perceived control, self-esteem, income and home ownership on distress were statistically significant. Interactions involving social support and perceived control were significant, while those involving the latter three were not (McDonough *et al*., 1999a).

men reported higher levels of distress than their married counterparts because they had less social support and fewer financial resources. Although this pathway was also observed among women, it only partly accounted for the effect of being formerly married on distress. More generally, social support and self-esteem were more effective in reducing distress among women than they were for men, but other resources were equally effective for both sexes.

5. Discussion

When we embarked on this research we expected to find some gender differences in health, though less marked and more variable than is often assumed. This was borne out. We also expected to find that gender differences in features of paid work and household structure, as well as social, material and personal resources would help to explain the gender differences in health that we did observe. Yet, they were not central in accounting for disparities in health.[5] Moreover, in similar social circumstances, women were not more health "reactive" than were men. These findings are consistent with those of recent work that set out to understand the nature of gender differences in health, but found explanatory models of gender differences in work and family structure to be unsatisfactory (Emslie *et al.*, 1999; Griffin *et al.*, this volume; Lahelma *et al.*, 1999).

These social conditions are widely believed to be highly gendered and their failure to illuminate the basis of selected gender differences in health is puzzling. It is possible that the crude measurement of some of the social indicators and the omission of others are responsible. For example, with respect to paid work, gendered features of the workplace such as the experience of sexual harassment and discrimination were not included as measures. Perhaps the most striking omission is the lack of information on domestic responsibilities and the demands that the household division of labour place on men and especially, on women. In this regard the NPHS data set is no different from many other large-scale surveys which appear to be gender blind; women's domestic work, in

5. See McDonough *et al.* (1999a) for information on the other health measures for which significant gender differences were observed. These do not show strikingly different patterns and lend support to our conclusions.

particular, remains invisible. In the absence of a more detailed knowledge of conditions in the home, we were limited to household structure variables that may be simply inadequate as proxy representations of domestic responsibilities. Our model would have been better assessed if we had access to information on work in the home similar to that which was available for the job stress associated with the social organization of paid work (Walters *et al*., 1997).

Refining the measurement of paid and unpaid work conditions in surveys, however, may not bring us any closer to understanding the nature of gender differences (and similarities) in health. In fact, the embeddedness of gender in all social relationships may make it impossible to separate gender from the very life circumstances that we examine in order to understand gender patterns in health (Emslie *et al*., 1999). That is, can we ever assume that we have equalized social role experiences and access to resources across genders simply by "holding constant" evermore sophisticated operational definitions in analytic models? Or, are social relationships so indelibly shaped by gender, that paid and unpaid work conditions cannot be measured in a comparable manner for women and men?

Qualitative research is important in this regard and in-depth interviews can illuminate issues which a fixed-choice questionnaire cannot. Smaller scale studies allow us to understand the meanings men and women attach to their health and the ways they interpret it in the context of their day-to-day lives. Qualitative analyses also provide an understanding of the social and material conditions of men's and women's lives that cannot be captured in the parsimonious measures of large surveys; they establish a context for understanding the results of statistical analysis. They may also help to convey the ways in which gender intimately affects males and females throughout the life course and the ways in which this cannot be divorced from an understanding of power relations. They can also alert us to similarities across women's and men's lives.

Finally, it is possible that variable gender differences in health and the inadequacy of our model to account for those that were observed, are the result of social and political change in the gendered division of labour in the public and private spheres. The past three decades have witnessed an explosion of women into the labour force, while the prospect of lifetime employment in full-time jobs has been fading for many men as a result of downsizing and globalization. As Annandale and Hunt (2000) argue, there are ways in which experiences may be converging for some

men and some women, while differences among women and among men are becoming more pronounced. It is important to document such changes. Longitudinal studies would be helpful in this regard because they can help us understand the health effects of broadly-based social conditions that characterize various historical periods, as well as the health consequences of particular changes in individuals' living circumstances.

In brief, our findings provide little support for the contention that observed gender differences in health emerge from gender disparities in exposure and vulnerability to paid work conditions, household structures and social, personal and material resources. What do these observations mean for future research and policy formulation? We have already argued for more conceptually informed surveys and for the recognition of the relevance of qualitative research which can explore similarities and differences in men's and women's lives and in their health. In the past decade or so in Canada, there has been an increasing interest in inequalities in health and in the social bases of health and illness (Denton and Walters, 1999), yet there has been very little attention to the role of gender in shaping health and illness.

This neglect of gender may be defined in two ways. First, *women* have in many respects been invisible in research on health and second, differences in the health of *women and men* have received scant attention. We would argue that the latter is important, but it would be problematic if we lost sight of women's health per se. It is only because feminist research has drawn attention to power relations and features of women's lives - such as unpaid work in the home - that we are aware of the bias that characterizes many studies and the ways in which key aspects of women's experiences remain statistically invisible. Yet, as the NPHS data show, surveys continue to be blind to the realities of women's day-to-day lives and so it is important that this remain a focus of research and source of pressure on major data collection institutions, such as Statistics Canada. But at the same time, we need to document in much more detail the differences and similarities in men's and women's lives. Such research would acknowledge the common influences on women's and men's health and open up the possibility of collective action or policies that focus on shared experiences.

A final related note of caution is appropriate given that gender differences in health appear to be less pronounced than is often assumed. In exploring inequalities in men's and women's lives and tracing their

influence on health, it is easy to fall into the trap of medicalizing disadvantage. In other words, those inequalities that help to create ill-health are seen as unacceptable while those which have no bearing or an uncertain influence on health are considered to be tolerable. Forms of disadvantage can fade into the background when they do not form part of a health equation. It is important to keep in mind that while our focus has been on understanding what influences health, this is not the sole measure of what should be unacceptable inequalities. The absence of marked gender differences in ill-health does not mean that women are not disadvantaged in myriad other ways in relation to men.

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Appendix

Health measures

General measures of health

Self-rated health measures respondents' evaluations of their health as poor, fair, good, very good or excellent (scored 1 through 5, respectively). *Restricted activity* is assessed through questions that ask respondents to indicate whether they have a long-term disability or handicap, or a physical or mental condition or health problem lasting six months or more which limits them at home, school, at work or in other activities (yes = 1; no = 0). *Two week disability* ascertains whether respondents have, at any time during the two weeks preceding the survey, stayed in bed due to illness or injury (yes = 1; no = 0). *Chronic conditions* is a dichotomous variable indicating whether or not a health professional had previously diagnosed: asthma, arthritis, rheumatism, back problems, high blood pressure, migraines, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, stomach or intestinal ulcers, stroke, urinary incontinence, Alzheimer's, cataracts or glaucoma. Those reporting at least one of these conditions were coded 1 and all others, 0 for this variable.

Mental health

The measure of *distress* was comprised of responses to a question concerning mental and emotional well-being: During the past month, about how often did you feel so sad that nothing could cheer you up; nervous; restless or fidgety; hopeless; worthless; that everything was an effort? Five responses were possible for each of these six items: all of the time, most of the time, some of the time, a little of the time, and none of the time. *Depression* is a subjective state in which feelings of sadness and worthlessness lasting at least two weeks occupy an individual's thoughts and interferes with mental concentration, sleeping and enjoyment of life. The NPHS uses a subset of items from the CIDI which assesses Major Depressive Episode according to the diagnostic criteria of DSM-III-R. Depression is measured on a scale ranging from 0 to 8, with higher values representing higher levels of depression. Depression is treated as a dichotomous variable with scores of 3 or higher coded as 1 and all others, as 0.

Physical health conditions

Respondents were asked to indicate whether a health professional had diagnosed the following health conditions: *arthritis/rheumatism*, *migraine*, *back problems*, *asthma*, *chronic bronchitis/emphysema*, *cancer*, *heart problems*, *nonfood allergies* and *high blood pressure*. Each of these measures was treated dichotomously, with those reporting the condition assigned a value of 1 and otherwise, 0. *Injuries* is a dichotomous measure indicating whether respondents experienced any injuries in the past 12 months that were serious enough to limit normal activity (yes = 1; no = 0). *Pain* is treated as a dichotomous measure that assigns a value of 1 to individuals who usually experience feelings of pain or discomfort that are either mild, moderate or severe in intensity, and a value of 0 to those who report no pain or discomfort.

Work stress

Work stress comprises five dimensions derived from 12 statements to which respondents were asked to indicate whether they strongly agreed, agreed, neither agreed nor disagreed, disagree, or strongly disagreed (coded 0-4). The dimensions and items are as follows:

A. *Control (range 0-20)*

Control was a sum of scores for *skill discretion* and *decision authority* obtained from:

Skill Discretion

1. *Your job requires that you learn new things.*

2. *Your job requires a high level of effort.*
3. *Your job requires that you do things over and over.*

Decision Authority

1. *Your job allows you freedom to decide how you do your job.*
2. *You have a lot to say about what happens in your job.*

B. *Psychological Demands (range 0-8)*

1. *Your job is very hectic.*
2. *You are free from conflicting demands that others make.*

C. *Job Insecurity (range 0-4)*

1. *Your job security is good.*

D. *Physical Exertion (range 0-4)*

1. *Your job requires a lot of physical effort.*

E. *Social Support (range 0-12)*

1. *You are exposed to hostility or conflict from the people you work with.*
2. *Your supervisor is helpful in getting the job done.*
3. *The people you work with are helpful in getting the job done.*

Social and personal resources

Social Support (range 0-4)

Social support is the sum of all responses to the following four questions (coded 1 if yes; 0 if no). Higher scores represent higher levels of social support.

1. *Do you have someone you can confide in/talk to about your private feelings?*
2. *Do you have someone you can really count on in a crisis situation?*
3. *Do you have someone you can really count on when you make personal decisions?*
4. *Do you have someone who makes you feel loved and cared for?*

Perceived Control (range 3-28)

Perceived control is derived from the 7 statements below coded 0-4 with reverse scoring on several items to ensure that higher values reflect increasing control: strongly disagree, disagree, neither agree or disagree, agree, strongly agree.

1. *You have little control over the things that happen to you.*
2. *There is really no way you can solve some of the problems you have.*
3. *There is little you can do to change many of the important things in your life.*

4. *You often feel helpless in dealing with problems of life.*
5. *Sometimes you feel that you are being pushed around in life.*
6. *What happens to you in the future mostly depends on you.*
7. *You can do just about anything you really set your mind to.*

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