

CHRONIC STRESS AND THE SOCIAL PATTERNING OF WOMEN'S HEALTH IN CANADA*

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Abstract

Existing research on the social patterning of women's health draws attention to the significance of social roles and socioeconomic position. Although we know a great deal about health differences according to the occupancy of these positions, we know a lot less about why such patterns exist. This paper addresses this gap by examining the pathways through which social structure is linked to health using data from a 1994 Canadian national probability sample of women, aged 25-64 years. We begin by charting differences in women's self-rated ill-health, distress, and reports of long-standing health conditions by socioeconomic position and social role occupation. We then assess the extent to which these patterns can be understood in relation to the chronic stress arising from these social locations. Socioeconomic position, assessed by housing tenure, education, and household income, was positively related to health. Employment enhanced women's health, as did being currently married and a mother living with children. The ongoing stressors that distinguish the experiences of various structural locations accounted for some of the health effects of social structure, particularly

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for socioeconomic position. However, chronic stress was largely irrelevant to the pathways linking social roles to health. In fact, employed women and parents living with children enjoyed better health despite their greater stress.

Keywords: *Women's health, Roles, Socioeconomic position, Chronic stress.*

Résumé

Les travaux sur les facteurs sociaux de la santé des femmes attirent l'attention sur l'importance des rôles sociaux et de la situation socio-économique. Si nous connaissons bien les différences de santé en fonction de ces divers statuts, on connaît beaucoup moins le pourquoi de ces différences. Les auteurs tentent de combler cette lacune en examinant les mécanismes par lesquels la structure sociale est reliée à la santé, grâce à des données canadiennes recueillies en 1994 auprès d'un échantillon aléatoire national représentatif des femmes de 25 à 64 ans. Les auteurs commencent par une visualisation des différences d'auto-évaluation de la mauvaise santé, de l'anxiété et de la morbidité de longue durée, en fonction du statut socio-économique des femmes et de leurs rôles sociaux. Elles évaluent ensuite dans quelle mesure ces différences peuvent être interprétées en lien avec le stress chronique engendré par de tels environnements sociaux. Le statut socio-économique, représenté par le mode d'occupation du logement, le niveau d'instruction et le revenu du ménage, entretient une relation positive avec la santé. L'activité économique améliore la santé des femmes, de même que le fait d'être mariée et mère de famille vivant avec ses enfants. Les facteurs de stress permanent qui différencient le vécu des diverses strates expliquent certains effets de la structure sociale sur la santé, en particulier le statut socio-économique. Néanmoins, le stress chronique est bien incapable d'expliquer les mécanismes qui relient les rôles sociaux à la santé. En réalité, les femmes qui travaillent et les parents qui vivent avec des enfants sont en meilleure santé malgré un stress plus intense.

Mots-clés : *Santé féminine, Rôles, Situation socioéconomique, Stress chronique.*

1. Introduction

Two areas of research dominate the literature on the social patterning of women's health. The first and most widely researched examines the health effects of the gendered division of labour. Predominant in this "gender" model is an interest in social roles and health that has resulted in a legion of studies documenting the health rewards and costs associ-

ated with being a paid worker, a partner, and a mother. The second area of research on health differences among women concerns the social division of work in the public sphere and its associated distributive inequalities. Because of its focus on the labour market, it has often been called the "job" model of health differences.

While existing research draws attention to the significance of social roles and socioeconomic position for health, its focus on their *occupancy* tells us only part of the story. That is, we know a great deal about the social patterning of health according to major institutionalized roles and unequal distribution of resources, but much less about *why* such health patterns exist. Where effort has been directed toward assessing the meaning of social positions and their implications for health, it has been limited to the quality of social roles, while the socioeconomic dimensions of women's lives remain relatively unexplored. Any compelling explanation of the health consequences of the social division of labour must consider what it is about *both* key structural contexts that give rise to health inequalities among women.

The conceptual and methodological tools of social stress theory and research are relevant to investigating the pathways linking social structure and health. An important underlying assumption of this work is that well-being is deeply affected by socially patterned differences in life circumstances, including "the relatively enduring problems, conflicts, and threats that many people face in their daily lives" (Pearlin, 1989, p. 245). Hence, social roles and socioeconomic position are consequential for health because they signify differential exposure and vulnerability to the problems of daily life. Despite its widespread use in the mental health literature, especially to examine gender differences in health, social stress has received less attention when it comes to health disparities among women.

This paper contributes to research on the social patterning of women's health by examining pathways through which social structure may be linked to health. We begin by charting differences in women's health by socioeconomic position and social role occupation. We then assess the extent to which these patterns are accounted for by chronic stress arising from these social locations.

2. Social roles and health

Early interest in the relationship between social roles and health was sparked by women's entry into the labour force on a massive scale, beginning in the 1960s. Proponents of role strain theory worried that this social change would harm the health of women because of the additional stress of multiple, competing roles (Gove, 1984). In contrast, those supporting the role accumulation hypothesis suggested that multiple roles were beneficial to health because they provide additional opportunities to enhance individuals' sense of purpose and meaning in life (Waldron *et al.*, 1998). Empirical testing of these divergent views suggests that women's experiences are more complex than this simple dualism implies. On average, employed women enjoy better health than those who are not employed (Arber, 1997; Waldron, 1991; Walters *et al.*, 1995). Some of this relationship can be explained by the selection of healthier women into the labour force, but longitudinal research supports the view that women's health benefits from the instrumental and symbolic rewards of paid work (Repetti *et al.*, 1989; Waldron and Jacobs, 1989). Although men derive greater advantage, marriage is also health-protective for women, mainly because of the social support and increased material well-being that it provides and the health-promoting behaviours that it encourages (Waite, 1995; Umberson, 1992; Waldron *et al.*, 1996). In contrast to worker and partner roles, the health effects of being a parent are less clear. Some studies find parental status unrelated to women's health (Bullers, 1994), others report an inverse association between parenthood and health (Noor, 1996), while still others show motherhood to be health-enhancing under some conditions and health-damaging under others (Rosenfield, 1989; Walters *et al.*, 1996; Bartley *et al.*, 1999). Recently, Evenson and Simon (1999) added another dimension of complexity to the social roles debate with their finding that noncustodial parents were most disadvantaged in mental health terms, compared with parents living with their children, parents whose grown-up children had left home, and nonparents.

The contingent nature of the relationship between health and social roles has led researchers to attempt to unpack these structural positions. Some suggest that the quality of social roles, rather than their mere occupancy, is fundamental to understanding the relationship between roles and health (Barnett and Marshall, 1991; Barnett, 1994). Taking up this theme, Walters and colleagues (Walters *et al.*, 1997; Walters *et al.*, 1998)

found that time pressures in family roles, unappreciated work, multiple, competing demands, and the feeling of being too available to other people were inversely related to women's mental health. In contrast, having a good relationship with a partner, including being able to talk about worries and confide in him/her, getting along in general, and his/her understanding of work demands were health-enhancing.

Related research on occupational health tells a similar story. Although it is better to be working than not, the health-promoting effects of employment are conditional on the type of job one has (Loscocco and Spitze, 1990; Griffin *et al.*, this volume). For example, lack of control over work is particularly problematic for health when jobs are also psychologically demanding, that is, time-pressured, fast-paced, and intense (Schnall *et al.*, 1994). Although the health effects of work have been examined extensively for men, there has been much less research on women, despite the fact that women are much more likely than men to be exposed to conditions of high job strain (Karasek and Theorell, 1990).

3. Socioeconomic position and health

The second focus of research on social patterns in women's health is socioeconomic position. We know that socioeconomic disadvantage harms women's health, although there is some disagreement about the strength of the gradient, relative to that for men (for reviews, see McDonough *et al.*, 1999; Arber, 1997). The relationship between women's socioeconomic position and health has not received as much research attention as social roles, partly because of the difficulty in conceptualizing and measuring the class position of those without direct labour market ties. However, even as women exhibit more sustained and significant labour market attachment, preoccupation with the gendered division of labour has given rise to the interpretation of women's employment primarily in the relational context of the household. Hence, entry into paid work is often regarded as an additional role, rather than a structural location emerging from differential access to productive and distributive resources.

Sara Arber (1991) argued persuasively to bridge the gender and job models in studies of women's health differences by conceptualizing paid employment as both a social role and dimension of socioeconomic position (see also Matthews and Power, this volume). Moreover, her conten-

tion that the meaning of social roles depends on the socioeconomic context within which roles are enacted explicitly recognizes the intersecting axes of these two key dimensions of structural differentiation. This was supported empirically by her finding, in a British national probability sample of adult women, of significant interactions involving employment and marital status, and employment and housing tenure. Specifically, structural “disadvantage” (being previously married or living in council housing) was consequential for health only if women were not employed.

A major difficulty in assessing the extent to which social roles and socioeconomic position interact is technical in nature. That is, sample sizes of most population-based health surveys are not large enough to detect differences in health effects emerging from the simultaneous occupation of multiple social roles, as well as the additional dimension of socioeconomic stratification. The large number of possible role combinations also brings with it the potential of considerable variability that complicates the search for patterns. This has led to the creation of profiles representing particular combinations of socioeconomic position and social roles (Bartley *et al.*, 1999).

In summary, we know that women’s health is affected by location in the social structure as it is defined by social roles and socioeconomic position. However, we know less about why this is so. In this regard, research on social stress suggests that these positions are important for health because they signify differences in stress experiences arising from patterned differences in life circumstances (Turner *et al.*, 1995). It is to this research that we now turn.

4. Social stress and health

A central feature of social stress research is the role of the psychosocial environment in the genesis of health inequalities. Stress is defined as

“a state of arousal resulting either from the presence of socioenvironmental demands that tax the ordinary adaptive capacity... or from the absence of the means to attain sought-after ends” (Aneshensel, 1992, p. 16).

The stress process is said to be socially patterned because stressful experiences and the resources to counteract them are differentially distributed in society in ways that are inextricably linked to structural inequalities (Elstad, 1998).

Stress is typically conceptualized as *life events* or sudden changes that require major behavioural adjustment in a relatively short period of time (e.g., marital breakdown, death, financial loss, and residential moves). However, critics of this focus call for greater attention to the role of more persistent demands or *chronic stressors* that challenge people over prolonged periods of time, including barriers to achieving life goals, inequity in rewards, excessive or inadequate environmental demand, frustration of role expectations, and resource deprivation (Wheaton, 1983; Turner *et al.*, 1995). The weight of evidence suggests that only chronic stress is distributed by social position, with individuals from lower status, disadvantaged groups experiencing more ongoing, chronic stress than their more advantaged counterparts. Their greater *exposure* to persistent stressors, in turn, accounts for their poorer health. The stress literature suggests, further, that these individuals are also more *vulnerable* to the health-damaging consequences of chronic stress. Notably, they experience poorer health than others under similar conditions of chronic stress because their lack of material, personal, and social resources restricts their abilities to cope with ongoing strains (for a review, see Thoits, 1995).

Despite growing attention to the social patterning of the stress process, there has been little research focus on differences in these experiences among women. The analysis that follows addresses this gap. Using data from the Canadian National Population Health Survey (NPHS), we examine the effects of socioeconomic position and social roles on health and assess the extent to which these relationships may be explained by differential exposure and vulnerability to chronic stress.

5. Methods

5.1. Data

The NPHS is a longitudinal study of a representative sample of household residents in Canada. Initiated in 1994, data collection is scheduled to occur every second year for six years. 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 (see Tamblay and Catlin, 1995 for details). The initial household response rate was 88.7 percent, while the selected person response rate was 96.1 percent. The present analysis uses 1994 Wave I data

collected from a sample of 6,000 women who were 25-64 years of age, inclusive.

5.2. Measures

Health. Three health measures are examined in this analysis: self-rated ill-health, distress, and long-standing health conditions. *Self-rated ill-health* measures respondents' evaluations of their health as excellent, very good, good, fair, or poor (scored 1 through 5, respectively) with higher scores reflecting greater levels of poor health. *Distress* is an unpleasant subjective state (Ross and Van Willigen, 1997) measured by the University of Michigan revision of the Composite Diagnostic Interview (CIDI) (World Health Organization, 1990). Distress increases as scores, ranging from 0 to 24, increase. *Long-standing health conditions* is a dichotomous variable indicating the presence of a long-term condition diagnosed by a health professional. Those reporting one or more such conditions were coded 1 and others were coded 0. In multivariate analyses involving self-rated ill-health and distress as outcomes, long-term conditions was also used as a control for spuriousness. Specifically, observed relationships between self-assessed and mental health and social positions could arise from their common association with long-term health conditions. The latter could be selecting women into socioeconomic disadvantage and out of social roles and contributing to psychological distress and poor self-rated health. Adjustment for long-term conditions allows us to consider, albeit imperfectly, the relationships between social position and distress and self-rated health, net of this process.

Socioeconomic Position. Three measures of socioeconomic position were used in the models. Education consists of three dummy variables indicating the highest level of formal schooling attained: *less than a secondary school diploma* (yes = 1; no = 0); *secondary school diploma* (yes = 1; no = 0); and *some post-secondary school* (yes = 1; no = 0). Those with post-secondary credentials (i.e., university degree or college diploma) served as the reference group. *Housing tenure* is a dummy variable coded 1 if the dwelling is owner-occupied and 0 otherwise. Income adequacy is based on the respondent's report of household income for the past twelve months, adjusted for family size and expenditures on basic needs. Dummy variables were created for four levels of income adequacy: *low income* (yes = 1; no = 0); *low middle income* (yes = 1; no = 0), *middle income* (yes = 1; no = 0) and *upper middle income* (yes = 1; no = 0). High income households were

the reference group (for Statistics Canada's income adequacy definitions, see Appendix).

Social Roles. Marital status, parental status, and employment status are associated with social roles that are relevant to different aspects of family and work life. Marital status consists of dummy variables for *single* (yes = 1; no = 0) and *formerly married* (yes = 1; no = 0). Currently married or living as common-law served as the reference group. Parental status is comprised of dummy variables for *parents living with their children* (yes = 1; no = 0) and *parents not living with their children* (yes = 1; no = 0). Nonparents are the reference group. The category 'parents not living with their children' represents both "empty-nesters" and women who, for unknown reasons, do not have custody of their children. Employment status is coded 1 if respondents are *employed* and 0 otherwise. Paid workers are distinguished further by their work hours. *Employed full-time* is coded 1 for those who report working 30 hours or more per week and 0 for those working less.

Chronic Stressors. A modified, abbreviated version of Wheaton's (1991, cited in Turner *et al.*, 1995) chronic stress inventory was used to construct six measures of enduring role strain and ambient strain, including financial, social life, relationship, parent, family health, and environment stressors. Rather than a total count of these chronic stressors as used in other work (Turner *et al.*, 1995), we retain them in their disaggregated form to assess the impact of different kinds of stress on women's health. In each case, a coded value of 0 corresponds to no reported stress. *Financial* stress is a dichotomous indicator that codes people who agreed with the statement, "You don't have enough money to buy the things you need," as 1 and others, 0. *Social life* stress is a summary score for five items reflecting the respondent's perceptions of their ability to meet the expectations of others (range = 0-5). *Relationship* stress is a dichotomous measure that codes as 1, any reports of problems with, or finding, an intimate partner. Those without such problems were coded 0. *Child* stress is a summary score for two items about children's affective states and behaviour problems (range = 0-2) asked of parents only. *Family health* stress is a summary score of two items reflecting respondents' concerns about the health of immediate family members (range = 0-2). *Environment* stress is a summary score for three items that indicate problems with residential neighbourhood and friends (range = 0-3). A seventh measure of chronic stress, *job strain*, is derived from a modified version of the Job Content Questionnaire (JCQ) (Karasek, 1985). It is a combination of low

control over, and high psychological demands of, work tasks. Job control was measured by five items and psychological demands, by two. Total scores for job control and demands were each divided by their respective number of items to achieve equal weighting of the two constructs. The reweighted scores for job control and demands were then summed (range = 0-7.6) and dichotomized at the 75th percentile. Those with the highest scores (i.e., above the 75th percentile) were coded 1, and others, 0 for job strain (see Walters *et al.*, this volume for an item list).

Age is included in all the models by using the mid-point of eight categories ranging from 25-29 years to 60-64 years.

5.3. Analytic model

In examining social structural differences in the stress process, two chronic stressors, job strain and child stress, are only applicable to workers and parents, respectively. We estimated the effects of such conditionally relevant variables (Ross and Mirowsky, 1992), while simultaneously including those who are working and not working, and parents and non-parents in the estimation. In the case of job strain, the effects of paid work (W) and job strain (JS) on distress (D) (range 0-24) are estimated by the following:

$$D = b_0 + b_1(W) + b_2(W)(JS) \quad (1)$$

For those who are not working ($W = 0$), the equation reduces to:

$$D = b_0 \quad (2)$$

Among those who are working ($W = 1$), the expression becomes:

$$D = b_0 + [b_1 + b_2(JS)] \quad (3)$$

If Equation (2) is subtracted from Equation (3), the difference in distress between the employed and the nonemployed depends on the job strain experienced by those who are working.

$$D = [b_1 + b_2(JS)] \quad (4)$$

According to this formulation, distress among the employed differs from the nonemployed by an average amount (represented by b_1), plus an average effect that depends on the stress levels of their jobs (represented by b_2) (Ross and Mirowsky, 1992, p. 224).

Ordinary least squares regression was used to examine predictors of self-rated ill-health and distress, while logistic regression was used in examinations of long-standing health conditions. Sampling weights were applied to all estimations to adjust for non-response and differential selection probabilities. In addition, the effect of a complex sampling design on variance estimates was taken into consideration by inflating standard error estimates by the square root of the average design effect (1.64) of the survey. Sample design information that would permit more precise calculation of design effects (Wolter, 1985) was unavailable in the public use data files for the NPHS.

6. Results

6.1. The social patterning of health and chronic stress

In Table 1, age-adjusted means for self-rated ill-health, distress, and long-standing health conditions are presented for women in varying social positions. Health status improved as education and household income increased, although some non-linearity in the relationships was evident. Women living in owner-occupied homes also fared better than those in rental accommodation. The size of the socioeconomic gap in health was greatest for distress and smallest for self-rated ill-health.

Disparities in age-adjusted health status across the social role configurations were variable. Employed women enjoyed better health than the nonemployed, but there were few health differences based on work hours. Married women reported the best health and formerly-married women, the worst. Patterns in the distribution of health across parental status groups were equivocal. Parents whose children were no longer living with them were worse off in health terms than other women, but differences between parents living with children and nonparents varied.

As was the case for socioeconomic position, the size of relative health disparities across social roles depended on both the social position and health measure in question. The formerly married were considerably less well off in terms of distress and long-standing health conditions than the married (distress ratio = 1.42; chronic conditions ratio = 1.36), but differences were not as large for self-rated ill-health (ratio = 1.07). The health advantage of employed women displayed a similar pattern. With

Table 1
 Mean^a self-rated ill-health, distress, and long-standing health conditions
 by education, housing tenure, income adequacy, employment,
 marital and parental status for women, 25-64 years, NPHS, Canada, 1994

	Self-rated ill-health	Distress	Long-standing health conditions
<i>Education</i>			
< Secondary school diploma	2.58	4.34	0.41
Secondary school diploma	2.24	3.68	0.32
Some post-secondary school	2.20	3.77	0.41
Post-secondary degree/diploma	2.05	3.26	0.36
Ratio lowest/highest	1.26	1.33	1.14
N	5,993	5,857	5,989
<i>Housing tenure</i>			
Nonowner	2.42	4.49	0.42
Owner	2.16	3.36	0.36
Ratio nonowner/owner	1.12	1.34	1.17
N	5,998	5,859	5,993
<i>Household income</i>			
Low	2.66	4.89	0.46
Low middle	2.37	5.19	0.43
Middle	2.27	3.77	0.39
Upper middle	2.17	3.32	0.35
High	1.98	3.08	0.35
Ratio lowest/highest	1.34	1.59	1.31
N	5,774	5,650	5,770
<i>Employment status</i>			
Nonemployed	2.48	4.39	0.44
Employed part-time	2.12	3.33	0.36
Employed full-time	2.07	3.27	0.33
Ratio nonemployed/employed full-time	1.20	1.34	1.33
N	5,966	5,830	5,962
<i>Marital status</i>			
Formerly married	2.34	4.83	0.49
Never married	2.36	4.09	0.36
Married	2.19	3.39	0.36
Ratio formerly married/married	1.07	1.42	1.36
N	5,998	5,860	5,993
<i>Parental status</i>			
Nonparent	2.16	3.74	0.37
Parent not living with children (PNC)	2.34	3.97	0.47
Parent living with children (PC)	2.22	3.55	0.35
Ratio PNC/PC	1.05	1.12	1.34
N	5,820	5,793	5,818

a. Means are age-standardized using 5-year age groups.

the exception of long-standing health conditions (ratio = 1.34), the health disparity between the two categories of parents was small.

The distribution of age-adjusted chronic stressors by socioeconomic position and social roles is presented in Table 2. It reveals a pattern of decreasing stress with increasing socioeconomic advantage, but the strength of this gradient varied according to the source of stress. The education disparity across the chronic stressors was greatest for job strain (ratio = 2.38) and financial stress (ratio = 1.71), while housing tenure and household income differences were largest for financial and environment stress.

The distribution of chronic stressors by social roles was more complex. Generally, stress disparities were variable and smaller in magnitude for social roles than for socioeconomic position. They were largest across marital categories and smallest according to parental status. With the exception of job strain, formerly married women reported more chronic stress than other women. Currently married women fared better (i.e., had less stress) than the never-married except for social life and family health stress. Marital status mattered the most for financial strain and relationship stress.

Patterns of mean chronic stress according to employment status indicate that, generally, the employed experienced less stress than the nonemployed. The differences were most pronounced for financial stress and environment stress, where the nonemployed reported stress in the order of 25 percent and 38 percent greater, respectively, than the scores of full-time paid workers. Disparities in chronic stress according to parental status were varied. With the exception of social life stress, women no longer living with their children reported more stress than those who did, but differences between the latter group and nonparents were variable.

In summary, these descriptive patterns reveal that structurally based differences in women's health depend on the health and social position indicators being examined. Socioeconomic differences were largest in magnitude for distress, while social role disparities were most pronounced for long-standing health conditions and more consistent for employment and marital status than for parental status.

Table 2
Mean^a chronic stress measures by education, housing tenure, income adequacy, employment, marital and parental status
for women, 25-64 years, National Population Health Survey, Canada, 1994

	Social life stress	Financial stress	Relationship stress	Child stress	Environment stress	Family health stress	Job strain
<i>Education</i>							
< Secondary school diploma	1.46	0.53	0.34	0.54	0.42	0.31	0.50
Secondary school diploma	1.36	0.40	0.28	0.48	0.34	0.33	0.36
Some post-secondary school	1.43	0.39	0.27	0.55	0.35	0.32	0.26
Post-secondary degree/diploma	1.27	0.31	0.21	0.42	0.28	0.28	0.21
Ratio lowest/highest	1.15	1.71	1.62	1.29	1.50	1.11	2.38
N	5,874	5,874	5,874	4,631	5,874	5,874	3,498
<i>Housing tenure</i>							
Nonowner	1.37	0.54	0.34	0.56	0.53	0.35	0.34
Owner	1.36	0.33	0.24	0.47	0.26	0.29	0.26
Ratio nonowner/owner	1.01	1.64	1.42	1.19	2.04	1.21	1.31
N	5,876	5,876	5,876	4,633	5,876	5,876	3,500
<i>Household income</i>							
Low	1.40	0.68	0.31	0.58	0.50	0.27	0.35
Low middle	1.57	0.63	0.41	0.59	0.52	0.38	0.42
Middle	1.38	0.44	0.27	0.51	0.37	0.32	0.33
Upper middle	1.33	0.34	0.24	0.44	0.28	0.30	0.28
High	1.35	0.18	0.22	0.48	0.24	0.29	0.20
Ratio lowest/highest	1.04	3.78	1.41	1.21	2.08	0.93	1.75

<i>N</i>	5,666	5,666	5,666	4,464	5,666	5,666	3,389
<i>Employment status</i>							
Nonemployed	1.34	0.45	0.29	0.50	0.40	0.35	
Employed part-time	1.37	0.33	0.24	0.48	0.32	0.27	0.32
Employed full-time	1.38	0.36	0.25	0.49	0.29	0.29	0.27
Ratio nonemployed/employed full-time	0.97	1.25	1.16	1.02	1.38	1.21	
<i>N</i>	5,847	5,847	5,847	4,616	5,847	5,847	3,491
<i>Marital status</i>							
Formerly married	1.54	0.58	0.36	0.61	0.44	0.37	0.28
Never married	1.15	0.48	0.36	0.58	0.42	0.28	0.34
Married	1.37	0.34	0.23	0.46	0.30	0.30	0.28
Ratio formerly married/married	1.12	1.71	1.56	1.33	1.47	1.23	1.00
<i>N</i>	5,878	5,878	5,878	4,635	5,878	5,878	3,500
<i>Parental status</i>							
Nonparent	1.07	0.34	0.21		0.33	0.30	0.26
Parent not living with children (PNC)	1.29	0.37	0.29	0.52	0.37	0.34	0.34
Parent living with children (PC)	1.49	0.41	0.27	0.48	0.32	0.30	0.28
Ratio PNC/PC	0.87	0.90	1.07	1.08	1.16	1.13	1.21
<i>N</i>	5,820	5,820	5,820	4,602	5,820	5,820	3,457

a. Means are age-standardized using 5-year age groups.

6.2. Socioeconomic position, social roles, chronic stress, and health

While the data presented in Tables 1 and 2 highlight differences in health and chronic stress according to social location, they tell us nothing about the relationship between health and persistent stressful experiences. Tables 3 through 5 present a series of models that test whether structural differences in self-rated ill-health, distress, and long-standing health conditions, respectively, are the result of differences in exposure to chronic stressors. Model 1 in each table illustrates the effects of education, housing tenure, household income, and the three social roles (marital status, parental status and employment). Model 2 (for self-rated ill-health and distress only) includes reports of one or more long-standing health conditions and, therefore, to some extent, controls for health selection into socioeconomic position and social roles. Finally, Model 3 examines the extent to which chronic stress explains the effects of structural positions on the three health outcomes. Any change in the magnitudes of the Model 2 parameter estimates would support a role for chronic stress in understanding this relationship.

6.2.1. Self-rated ill-health

The partially-adjusted effects of the socioeconomic variables on self-rated ill-health confirm the health disadvantage of women living in rental housing and those with lower education and household income (Table 3, Model 1). Paid work was negatively associated with this outcome, but part-time work conferred no additional health benefit (or harm). Marital and parental status had no effects on perceived ill-health when measures of socioeconomic position were included in the model.

The attenuation of the coefficient for being employed when long-standing health conditions was included (Model 2) suggests that health selection may be operating; that is, the health-enhancing effects of paid work arise, in part, because less healthy women are being selected out of jobs, perhaps because they find it difficult to keep or obtain jobs. Chronic stress arising from social life, financial, and environment concerns, worries about children, and job strain were positively related to women's self-ratings of ill-health (Model 3). Moreover, the magnitudes of the income and education coefficients were reduced with these additions to the model. Further investigation (results not shown) indicated that the income effect on ill-health was partly mediated by concerns about fi-

nances.

Table 3
 Unstandardized coefficients for regression of self-rated ill-health on age, socioeconomic position, social roles, long-standing health conditions, and chronic stressors for women, NPHS, Canada, 1994

	Model 1		Model 2		Model 3	
	<i>b</i>	(s.e.)	<i>b</i>	(s.e.)	<i>b</i>	(s.e.)
Age	0.01**	(0.00)	0.01**	(0.00)	0.01**	(0.00)
Education (Ref=Post-secondary degree/diploma)						
< Secondary school diploma	0.32**	(0.05)	0.30**	(0.05)	0.23**	(0.05)
Secondary school diploma	0.12*	(0.05)	0.15**	(0.05)	0.10*	(0.04)
Some post-secondary school	0.08	(0.04)	0.05	(0.04)	0.02	(0.04)
Housing tenure (Ref=Homeowner)						
Nonowner	0.10*	(0.04)	0.07	(0.04)	0.04	(0.04)
Household income (Ref=High income)						
Low	0.46**	(0.09)	0.46**	(0.08)	0.40**	(0.08)
Low middle	0.39**	(0.07)	0.40**	(0.07)	0.33**	(0.07)
Middle	0.31**	(0.05)	0.31**	(0.05)	0.28**	(0.05)
Upper middle	0.15**	(0.05)	0.16**	(0.05)	0.16**	(0.05)
Employment status						
Employed (Ref=Nonemployed)	-0.23**	(0.05)	-0.18**	(0.05)	-0.24**	(0.05)
Empl. full-time (Ref=Part-time)	0.00	(0.05)	0.01	(0.05)	0.00	(0.05)
Marital status (Ref=Married/common-law)						
Formerly married	-0.03	(0.05)	-0.09	(0.05)	-0.14**	(0.05)
Never married	0.02	(0.06)	0.04	(0.06)	0.02	(0.06)
Parental status (Ref=Nonparent)						
Parent living with children	0.02	(0.05)	0.04	(0.05)	-0.08	(0.05)
Parent not living with children	0.09	(0.07)	0.05	(0.06)	-0.05	(0.06)
One or more long-standing health conditions			0.64**	(0.03)	0.56**	(0.03)
Chronic stressors						
Social life stress					0.12**	(0.01)
Financial stress					0.09**	(0.03)
Relationship stress					0.07	(0.04)
Child stress					0.13**	(0.02)
Environment stress					0.07*	(0.03)
Family health stress					0.02	(0.03)
Job strain					0.15**	(0.04)
Adjusted R-square	0.11		0.19		0.25	
<i>N</i>	5,411		5,411		5,411	

*p<0.05; **p<0.01.

Although it was more difficult to isolate the specific pathway(s) linking education to self-assessed ill-health, greater exposure to job strain among the less-educated was a factor. Controlling for job strain also led to an increase in the health protective effect of being employed. This suggests that were it not for the stress they experience at work, employed women would be in even better health than their nonemployed counterparts. Surprisingly, formerly married women reported significantly lower ill-health than married women.

6.2.2. Distress

The age-adjusted effects of socioeconomic position on distress illustrate several disadvantaged groups (Table 4, Model 1). In comparison with their counterparts with post-secondary credentials, women lacking a secondary school diploma reported higher levels of distress. The mental health of women living in rental accommodation was poorer than that of those in owner-occupied housing, and women who lived in low or low-middle income households were also worse off than women from the wealthiest households. Being employed lowered distress scores, as did working part-time (compared with full-time work), although the latter estimate did not reach statistical significance. This time, the formerly married experienced much poorer health than their married counterparts, but there was no statistically significant difference between the latter group and never-married women. Controlling for the presence of chronic health conditions (Model 2) had little effect on the household income coefficients, but resulted in a modest reduction in the effects of education (the lowest education level only), housing tenure, employment, and marital status (the formerly married estimate only).

Except for job strain, all sources of chronic stress were significantly and positively related to women's levels of distress (Model 3). Moreover, the effects of socioeconomic position and marital and parental status were clearly mediated by the chronic stress that these social locations imply. For example, education and housing tenure effects were rendered nonsignificant, while the coefficients for the two lowest household income groups were reduced by roughly one third. Additional investigation (results not shown) implicated financial stress in the income-distress relationship and environmental stress in that involving housing tenure and distress. Nevertheless, the persistence of income differences suggests that financial worries do not account for *all* the excess distress of women living in poor households.

Table 4
 Unstandardized coefficients for regression of distress on age, socioeconomic position, social roles, long-standing health conditions, and chronic stressors for women, NPHS, Canada, 1994

	Model 1		Model 2		Model 3	
	<i>b</i>	(s.e.)	<i>b</i>	(s.e.)	<i>b</i>	(s.e.)
Age	-0.04**	(0.01)	-0.05**	(0.01)	-0.03**	(0.01)
Education (Ref=Post-secondary degree/diploma)						
< Secondary school diploma	0.53**	(0.19)	0.49**	(0.18)	0.16	(0.17)
Secondary school diploma	0.28	(0.18)	0.32	(0.18)	0.09	(0.16)
Some post-secondary school	0.31	(0.16)	0.24	(0.16)	0.06	(0.15)
Housing tenure (Ref=Homeowner)						
Nonowner	0.46**	(0.16)	0.40**	(0.15)	0.17	(0.14)
Household income (Ref=High income)						
Low	0.98**	(0.33)	0.98**	(0.32)	0.70*	(0.30)
Low middle	1.19**	(0.28)	1.21**	(0.27)	0.80**	(0.25)
Middle	0.23	(0.20)	0.23	(0.20)	0.15	(0.18)
Upper middle	0.02	(0.18)	0.04	(0.18)	0.07	(0.17)
Employment status						
Employed (Ref=Nonemployed)	-0.59**	(0.19)	-0.49**	(0.19)	-0.61**	(0.18)
Empl. full-time (Ref=Part-time)	-0.22	(0.18)	-0.19	(0.18)	-0.28	(0.16)
Marital status (Ref=Married/common-law)						
Formerly married	0.88**	(0.19)	0.74**	(0.19)	0.48**	(0.18)
Never married	0.25	(0.23)	0.28	(0.23)	0.16	(0.21)
Parental status (Ref=Nonparent)						
Parent living with children	-0.20	(0.19)	-0.16	(0.19)	-0.80**	(0.17)
Parent not living with children	0.08	(0.26)	-0.01	(0.25)	-0.44	(0.23)
One or more long-standing health conditions			1.26**	(0.13)	0.74**	(0.12)
Chronic stressors						
Social life stress					0.83**	(0.05)
Financial stress					0.38**	(0.12)
Relationship stress					0.65**	(0.14)
Child stress					0.42**	(0.09)
Environment stress					0.69**	(0.10)
Family health stress					0.36**	(0.11)
Job strain					0.12	(0.16)
Adjusted R-square	0.07		0.09		0.26	
<i>N</i>	5,394		5,394		5,394	

*p<0.05; **p<0.01.

Once again, controlling for chronic stress *increased* the magnitude of the employment coefficient. Additional analyses not shown here suggested that if it were not for their greater social life and child-related stress, employed women would experience even less distress than their nonemployed counterparts. Avison (1995) reported similar findings in a sample of mothers living in a Canadian city once he controlled for the higher levels of ongoing caregiver and work-home strain reported by employed women. Adjusting for chronic stress reduced, but did not eliminate, differences in distress between formerly and currently married women. Although the interconnectedness of the stressors made the task of isolating key mediators of the marital status effect difficult, financial and relationship stress were implicated in pathways linking marital status to distress in analyses not shown here.

Interestingly, the addition of chronic stress also strengthened the health-protective effect of being a parent living with children. Compared with nonparents, these women experienced less distress, but this only became evident after their apparently higher levels of stress arising from social life and child concerns were taken into consideration. A similar pattern was observed among women no longer living with children, although the difference in distress between them and nonparents was not statistically significant.

6.2.3. Long-standing health conditions

Long-standing health conditions were influenced by disadvantaged socioeconomic positions, including having limited post-secondary education and living in rental housing (Table 5, Model 1). Employed women were 25 percent less likely to report long-standing health conditions, while formerly married women were 39 percent more likely than their married counterparts to do so.

Increasing social life, financial, and environment stress and worries about children and family health were associated with a higher likelihood of reporting long-standing health conditions (Model 2). Moreover, education and housing tenure effects were rendered nonsignificant with the addition of these persistent stressors. In other models not shown here, it was determined that the health disadvantage of women with noncredentialed post-secondary education was accounted for by their greater social life stress. Problems with residential neighbourhood acted similarly for women living in rental housing.

Table 5
 Odds ratios for regression of long-standing health conditions on age, socioeconomic position, social roles, and chronic stressors for women, NPHS, Canada, 1994

	Model 1		Model 2	
	OR	(95% CI)	OR	(95% CI)
Age	1.04*	(1.03 - 1.05)	1.05*	(1.04 - 1.06)
Education (Ref=Post-secondary degree/diploma)				
< Secondary school diploma	1.21	(0.98 - 1.50)	1.13	(0.91 - 1.40)
Secondary school diploma	0.89	(0.71 - 1.12)	0.87	(0.69 - 1.09)
Some post-secondary school	1.23*	(1.01 - 1.49)	1.17	(0.97 - 1.43)
Housing tenure (Ref=Homeowner)				
Nonowner	1.27*	(1.05 - 1.52)	1.16	(0.96 - 1.40)
Household income (Ref=High income)				
Low	1.24	(0.86 - 1.80)	1.08	(0.73 - 1.59)
Low middle	1.08	(0.78 - 1.50)	0.91	(0.65 - 1.28)
Middle	1.02	(0.79 - 1.32)	0.97	(0.75 - 1.26)
Upper middle	0.99	(0.79 - 1.25)	0.98	(0.77 - 1.25)
Employment status				
Employed (Ref=Nonemployed)	0.75*	(0.60 - 0.95)	0.75*	(0.59 - 0.96)
Empl. full-time (Ref=Part-time)	0.95	(0.76 - 1.18)	0.94	(0.75 - 1.18)
Marital status (Ref=Married/common-law)				
Formerly married	1.39*	(1.13 - 1.70)	1.27*	(1.03 - 1.57)
Never married	0.99	(0.76 - 1.29)	0.95	(0.73 - 1.25)
Parental status (Ref=Nonparent)				
Parent living with children	0.92	(0.74 - 1.14)	0.77*	(0.61 - 0.97)
Parent not living with children	1.14	(0.86 - 1.51)	0.97	(0.73 - 1.30)
Chronic stressors				
Social life stress			1.18*	(1.10 - 1.26)
Financial stress			1.30*	(1.10 - 1.54)
Relationship stress			0.98	(0.82 - 1.17)
Child stress			1.19*	(1.05 - 1.34)
Environment stress			1.22*	(1.07 - 1.39)
Family health stress			1.30*	(1.13 - 1.49)
Job strain			1.07	(0.86 - 1.33)
Adjusted R-square	0.08		0.12	
N	5,411		5,411	

*p<0.05; **p<0.01.

Exposure to long-term stress helped us understand some of the relationship between social roles and long-term health, but their persistent effects suggest that other unidentified pathways are important. The magnitude of the odds ratio for being formerly married was reduced, partly because of the greater financial stress of this group compared with that of the married, but other stressors also played a role (analysis not shown here). As was the case for the other health outcomes, the health-protective effect of being a parent living with children was enhanced once their greater exposure to child stress was taken into account (analysis not shown here).

To summarize, greater exposure to financial and environment stress, and in a more limited way, to social life stress and job strain accounted for some of the socioeconomic differences in women's health. In stark contrast, the chronic stressors examined here appear to be largely irrelevant to the pathways linking social roles to health. Rather than accounting for the generally poorer health of the nonemployed and mothers no longer living with their children, controlling for persistent stress *enhanced* the health benefits of their more "advantaged" counterparts. In other words, employed women and mothers living with their children experienced better health *despite* their greater chronic stress.

6.3. Differential vulnerability?

Our final series of models tested the vulnerability hypothesis. We assessed whether the impact of chronic stress on health depended on social position by examining first-order cross-product interaction terms involving chronic stressors and each measure of socioeconomic position, and chronic stressors and each social role. In all cases, we found that the main effects model was an adequate representation of the relationships. Hence, in this sample, chronic stress did not operate in ways that systematically rendered women in certain social locations more vulnerable to the health effects of stressful experiences than women in others (results not shown). These findings are consistent with recent work by Stronks *et al.* (1998) who found that the impact of chronic stress and life events on perceived health did not depend on education level.

7. Discussion

This paper set out to describe and account for the social patterning of women's health in Canada. Specifically, we were interested in assessing differences in self-rated ill-health, distress, and long-standing health conditions by socioeconomic position and social roles, and then examining whether these patterns arose from ongoing and difficult life circumstances rooted in these structural contexts. Socioeconomic position was inversely related to ill-health, and limited evidence suggested that those who were particularly disadvantaged in education and household income were considerably worse off than others.

With the exception of self-rated ill-health, the formerly married experienced poorer health than other women, while no differences were found between the currently and never married. These results support those of other studies that have outlined the health disadvantages of marital break-up and widowhood. However, they also underscore the need to distinguish among the various constituencies that comprise the heterogeneous category of the "nonmarried" (Arber, 1991; Elstad, 1996; Waldron *et al.*, 1997). The same may be true for parental status. Parents still living with their children reported less distress and were less likely to report chronic health problems than nonparents, while the difference between nonparents and women whose children were no longer at home was less clear. However, because many of the latter group were older women whose children had left home, it may be that this parental status is a proxy for infirmity not captured by the tested model. Until this possibility can be further evaluated, it is difficult to interpret the health differences between the two groups of parents. Women in paid work fared better than their nonemployed counterparts, although some of this disparity was the result of poor health selecting women out of the labour force. Consistent with other studies, we found no differences in the health of part-time and full-time paid workers (Macran *et al.*, 1996; Arber, 1997; but see Lahelma *et al.*, this volume).

The ongoing stressors that distinguish individuals' experiences in varying social locations accounted for some of the health effects of social position. In particular, psychosocial stress in the workplace, limited economic resources, and concerns about residential neighbourhood helped us understand the poorer health of socioeconomically disadvantaged women. However, the persistence of education and income effects for perceived ill-health and distress suggests that the chronic stressors exam-

ined here do not adequately capture the full essence of persistent stressful experiences arising from these social locations. Alternatively, the stress process itself may be of limited explanatory value for understanding the social patterning of women's health by socioeconomic position.

Indeed, this seems to be particularly the case for the relationship between social roles and health. Employed women reported better health than those not in the labour force, in spite of their *higher* levels of social life and child stress and exposure to job strain. The same was true for women living with their children. They reported *less* distress and long-term health problems than nonparents, even though they experienced problems with their children and *more* social life stress.

Before discussing the implications of these findings for future research and social policy, we must acknowledge that methodological shortcomings could account for our results. For instance, the chronic stress items selected for the NPHS come from a larger, more comprehensive, validated instrument (see Turner *et al.*, 1995) and it is not clear whether and how this shortened inventory may have affected our estimates. Our analysis was also confined to a limited number of health outcomes. Broadening it to encompass a wider range of health measures would give us more confidence in our current findings if the general patterns were repeated.

The cross-sectional nature of our data is also a study limitation. We assumed that chronic stress harms health, but it is also plausible that poor health leads to stressful experiences or increases the perception of chronic stress. Wheaton (1994) investigated this problem in his development of the chronic stress instrument used here. Although he detected reciprocal effects for most types of chronic stress, the impact of chronic stress on distress was persistent and unattenuated when compared to simpler models that assumed a unidirectional causation. Wheaton was also able to validate reports of chronic stress using a number of external referents. More recently, Stronks *et al.* (1998) confirmed the persistence of an effect of chronic stressors on perceived health after controlling for neuroticism. They found that respondents' tendencies to focus on the negative side of themselves and others that may underlie self-reports of both stressors and health complaints did not account for all of the observed relationship between stress and health. This work provides some support for our assumption of a causal direction running from chronic stress to poor health, but longitudinal measurement of chronic stressors and health outcomes would more adequately address this issue.

Measurement at only one point in time is also a problem for assessing the direction of effects in the relationships involving health and social position. We attempted to address this by controlling for long-standing health conditions in models predicting self-rated ill-health and distress, but adjusting for prior or "initial" health status would clearly be a better method for ascertaining the contribution of health selection and social causation processes. Examining subsequent waves of the NPHS in future work will enable us to do so.

The increase in the health-enhancing effects of being employed and a parent living with children, once persistent stressors were controlled, suggests that the rewards of these social positions outweigh the various conflicts and demands that characterize them. Unfortunately, our limited data did not enable us to consider the qualities of social relationships that have been implicated in other work (Walters *et al.*, 1997, 1998; Barnett, 1994), but this is clearly an area that cannot be ignored in our efforts to understand how social roles are linked to health. Future research should also consider women's experiences across the social positions that they occupy simultaneously. For example, in an analysis of longitudinal data, Waldron and colleagues found that employment enhanced physical health, but only among women who were not married, while marriage enhanced health only among the nonemployed (Waldron *et al.*, 1998). Sample size restrictions limit such inquiry to some extent and become especially problematic if one wishes to examine the persistent stress experiences of socioeconomic position and multiple social roles taken together. Nevertheless, the costs and benefits of social roles may not be the same across all possible sub-groups of women and where possible, these distinctions should be investigated.

In a similar vein, we also need to better specify the experiences embedded in various socioeconomic positions. Popay and Bartley (1993) have contributed in a major way to this endeavour with their characterization of the material features of paid and unpaid work. Notably, they took account of numerous conditions and amenities in the home and paid workplaces, as well as in residential neighbourhoods, in an effort to understand the social patterning of health by social class (and by gender). Their characterization of the household environment included having no central heating, no indoor toilet or bath, no electricity, damp housing, insect-infested housing, and housing in poor external repair. Conditions and amenities in the local neighbourhood were measured by having no open space, no recreational facilities, no shops or health care services

nearby, dirty streets, no space for children to play outside, and no play-space for school-aged children. While these indicators may not be appropriate for all national contexts, they are illustrative of the types of experiences we need to consider in our efforts to understand the pathways linking socioeconomic position to health.

Although our results reveal ambiguities that can only be clarified through additional research, some of our findings reinforce what other researchers have already made abundantly clear. One of the most important is our evidence of the poor health of women with little education and low household income (see also, McDonough *et al.*, 1997; Backlund *et al.*, 1999; House *et al.*, 1994). A second observation that our study reinforces is that paid work enhances women's health, despite certain "costs" that it entails in terms of additional stress. To the extent that growing income inequality (Gottschalk and Smeeding, 1997) expands the numbers of women in economically vulnerable groups and pervasive economic restructuring continues to throw women out of work, the findings forecast a worsening of the health of Canadian women. However, this scenario is not inevitable. Policy interventions, such as tax credits, raising the minimum wage, direct income supplementation (Duncan, 1996), increasing access to, and levels of, unemployment insurance benefits and child care, and reversing state withdrawal from job creation can make a difference. Our research, combined with that of many others, suggests that such initiatives should not be delayed.

Finally, in addition to pointing to specific policy areas, social science research, such as ours, can influence social change by affecting the ways in which policy makers and the public think about social conditions and health (Link and Phelan, 1995). The sociological study of stress suggests that interrelated levels of social structure, including social stratification, social institutions, and interpersonal relationships, shape the experiences of individuals; these experiences, in turn, may produce stress that harms health (Pearlin, 1989). By implication, policy focussed on individually-based causative factors and interventions, such as personality traits and stress-reduction programs, will yield only disappointing results. Rather, we must continue our research to better understand the connections between health and the social and economic arrangements within which individuals' lives are embedded and, in so doing, contribute to collective efforts to transform these arrangements.

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Appendix

The following designations illustrate the manner in which information on household income and household size were combined by Statistics Canada to produce five categories of income adequacy.

	Income	Household size
1. Lowest income	<\$10,000	1-4 persons
	<\$15,000	5 or more persons
2. Lower middle income	\$10,000-\$14,999	1 or 2 persons
	\$10,000-\$19,999	3 or 4 persons
	\$15,000-\$29,999	5 or more persons
3. Middle income	\$15,000-\$29,999	1 or 2 persons
	\$20,000-\$39,999	3 or 4 persons
	\$30,000-\$59,999	5 or more persons
4. Upper middle income	\$30,000-\$59,999	1 or 2 persons
	\$40,000-\$79,999	3 or 4 persons
	\$60,000-\$79,999	5 or more persons
5. Highest income	\$60,000 or more	1 or 2 persons
	\$80,000 or more	3 persons or more

References

- ANESHENSEL, C. S. (1992), "Social stress: Theory and research", *Annual Review of Sociology*, vol. 18, p. 15-38.
- ARBER, S. (1991), "Class, paid employment and family roles: Making sense of structural disadvantage, gender and health status", *Social Science and Medicine*, vol. 32, p. 425-436.
- ARBER, S. (1997), "Comparing inequalities in women's and men's health: Britain in the 1990s", *Social Science and Medicine*, vol. 44, p. 773-787.
- AVISON, W. R. (1995), "Roles and resources: The effects of family structure and employment on women's psychosocial resources and psychological distress", *Research in Community and Mental Health*, vol. 8, p. 233-256.

- BACKLUND, E., SORLIE, P. D., and JOHNSON, N. J. (1999), "A comparison of the relationship of education and income with mortality: The national longitudinal mortality study", *Social Science and Medicine*, vol. 49, p. 1373-1384.
- BARNETT, R. C. (1994), "Home-to-work spillover revisited: A study of full-time employed women in dual-earner couples", *Journal of Marriage and the Family*, vol. 56, p. 647-656.
- BARNETT, R. C., and MARSHALL, N. L. (1991), "The relationship between women's work and family roles and their subjective well-being and psychological distress", in: M. Frankenhaeuser, U. Lundberg and M. Chesney, *Women, Work, and Health: Stress and Opportunities*, New York, Plenum Press, p. 111-136.
- BARTLEY, M., SACKER, A., FIRTH, D., and FITZPATRICK, R. (1999), "Social position, social roles and women's health in England: Changing relationships 1984-1993", *Social Science and Medicine*, vol. 48, p. 99-115.
- BULLERS, S. (1994), "Women's roles and health: The mediating effect of perceived control", *Women and Health*, vol. 22, p. 11-30.
- DUNCAN, G. (1996), "Income dynamics and health", *International Journal of Health Services*, vol. 26, p. 419-444.
- ELSTAD, J. I. (1996), "Inequalities in health related to women's marital, parental, and employment status – a comparison between the early 70s and the late 80s, Norway", *Social Science and Medicine*, vol. 42, p. 75-89.
- ELSTAD, J. I. (1998), "The psychosocial perspective on social inequalities in health", in: M. Bartley, D. Blane and G. Davey Smith, *The Sociology of Health Inequalities*, Oxford, Blackwell, p. 39-58.
- EVENSON, R. J., and SIMON, R. W. (1999), "Clarifying the relationship between parenthood and mental health", Paper presented at the annual meeting of the Society for the Study of Social Problems, Chicago.
- GOTTSCHALK, P., and SMEEDING, T. (1997), "Cross-national comparison of earnings and income inequality", *Journal of Economics Literature*, vol. 35, p. 633-687.
- GOVE, W. R. (1984), "Gender differences in mental and physical illness: The effects of fixed roles and nurturant roles", *Social Science and Medicine*, vol. 19, p. 77-91.
- HOUSE, J., LEPKOWSKI, J. M., KINNEY, A. M., MIRO, R. P., KESSLER, R. C., and HERZOG, A. R. (1994), "The social stratification of aging and health", *Journal of Health and Social Behavior*, vol. 35, p. 213-234.
- KARASEK, R. (1985), *Job Content Questionnaire*, Los Angeles, Department of Industrial and Systems Engineering, University of Southern California.
- KARASEK, R., and THEORELL, T. (1990), *Healthy Work: Stress, Productivity and the Reconstruction of Working Life*, New York, Basic Books.
- LINK, B. G., and PHELAN, J. (1995), "Social conditions as fundamental causes of disease", *Journal of Health and Social Behavior*, extra issue, p. 80-94.
- LOSCOCO, K., and SPITZE, G. (1990), "Working conditions, social support, and the well-being of female and male factory workers", *Journal of Health and Social Behavior*, vol. 31, p. 313-327.
- MACRAN, S., CLARKE, L., and JOSHI, H. (1996), "Women's health: Dimensions and differentials", *Social Science and Medicine*, vol. 42, p. 1203-1216.
- MCDONOUGH, P., DUNCAN, G. J., WILLIAMS, D., and HOUSE, J. (1997), "Income dynamics and adult mortality in the United States, 1972 through 1989", *American Journal of Public Health*, vol. 87, p. 1476-1483.

- MCDONOUGH, P., WILLIAMS, D., HOUSE, J., and DUNCAN, G. (1999), "Gender and the socioeconomic gradient in mortality", *Journal of Health and Social Behavior*, vol. 40, p. 17-31.
- NOOR, N. M. (1996), "Work and family roles in relation to women's well-being: A longitudinal study", *British Journal of Social Psychology*, vol. 34, p. 87-106.
- PEARLIN, L. I. (1989), "The sociological study of stress", *Journal of Health and Social Behavior*, vol. 30, p. 241-256.
- POPAY, J., and BARTLEY, M. (1993), "Conditions of formal and domestic labour", in: S. Platt, H. Thomas, S. Scott and G. Williams, *Locating Health: Sociological and Historical Explanations*, Brookfield, Vermont, Avebury, p. 97-120.
- REPETTI, R. L., MATTHEWS, K. A., and WALDRON, I. (1989), "Effects of paid employment on women's mental and physical health", *American Psychologist*, vol. 44, p. 1394-1401.
- ROSENFELD, S. (1989), "The effects of women's employment: Personal control and sex differences in mental health", *Journal of Health and Social Behavior*, vol. 30, p. 77-91.
- ROSS, C. E., and MIROWSKY, J. (1992), "Households, employment, and the sense of control", *Social Psychology Quarterly*, vol. 55, p. 217-235.
- ROSS, C. E., and VAN WILLIGEN, M. (1997), "Education and the subjective quality of life", *Journal of Health and Social Behavior*, vol. 38, p. 275-297.
- SCHNALL, P. L., LANDSBERGIS, P. A., and BAKER, D. (1994), "Job strain and cardiovascular disease", *Annual Review of Public Health*, vol. 15, p. 381-411.
- STRONKS, K., VAN DE MHEEN, H., LOOMAN, C. W. N., and MACKENBACH, J. P. (1998), "The importance of psychosocial stressors for socio-economic inequalities in perceived health", *Social Science and Medicine*, vol. 46, p. 611-623.
- TAMBLAY, J. L., and CATLIN, G. (1995), "Sample design of the National Population Health Survey", *Health Reports*, vol. 16, p. 29-42.
- THOITS, P. (1995), "Stress, coping, and social support processes: Where are we? What Next?", *Journal of Health and Social Behavior*, extra issue, p. 53-79.
- TURNER, R. J., WHEATON, B., and LLOYD, D. (1995), "The epidemiology of social stress", *American Sociological Review*, vol. 60, p. 104-125.
- UMBERSON, D. (1992), "Gender, marital status, and the social control of behavior", *Social Science and Medicine*, vol. 34, p. 907-917.
- WAITE, L. (1995), "Does marriage matter?", *Demography*, vol. 32, p. 483-507.
- WALDRON, I. (1991), "Effects of labour force participation on sex differences in mortality and morbidity", in: M. Frankenhaeuser, U. Lundberg and M. Chesney, *Women, Work and Health: Stresses and Opportunities*, New York, Plenum Press, p. 17-38.
- WALDRON, I., and JACOBS, J. A. (1989), "Effects of multiple roles on women's health: Evidence from a national longitudinal study", *Women and Health*, vol. 15, p. 3-19.
- WALDRON, I., HUGHES, M. E., and BROOKS, T. L. (1996), "Marriage protection and marriage selection -- prospective evidence for reciprocal effects of marital status and health", *Social Science and Medicine*, vol. 43, p. 113-123.
- WALDRON, I., WEISS, C. C., and HUGHES, M. E. (1997), "Marital" status effects on health: Are there differences between never married women and divorced and separated women?", *Social Science and Medicine*, vol. 45, p. 1387-1397.
- WALDRON, I., WEISS, C. C., and HUGHES, M. E. (1998), "Interacting effects of multiple roles on women's health", *Journal of Health and Social Behavior*, vol. 39, p. 216-236.

- WALTERS, V., LENTON, R., and MCKEARY, M. (1995), *Women's Health in the Context of Women's Lives*, Ottawa, Minister of Supply and Services Canada, cat. no. H39-324/1995E.
- WALTERS, V., LENTON, R., FRENCH, S., EYLES, J., MAYR, J., and NEWBOLD, B. (1996), "Paid work, unpaid work and social support: A study of the health of male and female nurses", *Social Science and Medicine*, vol. 43, p. 1627-1636.
- WALTERS, V., FRENCH, S., EYLES, J., LENTON, R., NEWBOLD, B., and MAYR, J. (1997), "The effects of paid and unpaid work on nurses' well-being: The importance of gender", *Sociology of Health, and Illness*, vol. 19, p. 328-347.
- WALTERS, V., EYLES, J., LENTON, R., FRENCH, S., and BEARDWOOD, B. (1998), "Work and health: A study of the occupational and domestic roles of women registered nurses and registered practical nurses in Ontario, Canada", *Gender, Work and Organization*, vol. 5, p. 230-244.
- WHEATON, B. (1983), "Stress, personal coping resources, and psychiatric symptoms: An investigation of interactive models", *Journal of Health and Social Behavior*, vol. 24, p. 208-229.
- WHEATON, B. (1991), "Chronic stress: Models and measurement", Paper presented at the annual meeting of the Society for the Study of Social Problems, Cincinnati, OH.
- WHEATON, B. (1994), "Sampling the stress universe", in: W. R. Avison and I. H. Gotlib, *Stress and Mental Health: Contemporary Issues and Prospects for the Future*, New York, Plenum Press, p. 77-114.
- WOLTER, K. M. (1985), *Introduction to Variance Estimation*, New York, Springer-Verlag.
- WORLD HEALTH ORGANIZATION (1990), *Composite International Diagnostic Interview, Version 1.0*, Geneva, Switzerland, World Health Organization.