

**Gender Differences in Distress:
An exploration of
structural and psychosocial conditions of
family and work**

By

Teresa Marie Mayer

**A thesis submitted to the Faculty of Graduate Studies
In partial fulfillment of the requirements for the Degree of**

Master of Science

**Department of Community Health Sciences
University of Manitoba
Winnipeg, Manitoba**

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Abstract

Psychological distress has consistently been found to be higher for women than men, even when controlling for demographic and socioeconomic conditions. This thesis considered some explanations for women's higher distress, focusing on family and work roles and stressors. I hypothesized that stressors within the family and work domains would contribute to women's higher distress, compared to men, but that women would continue to be more distressed than men. This was a cross-sectional study that used the 1994 Canadian National Population Health Survey. A representative sample of the Canadian population aged 20-64 was selected for this study. Distress was the outcome variable. Independent variables consisted of roles, stressors and psychosocial resources. Three role groups were assessed: Employment status (employed, unemployed and homemakers), marital status (married, never married and previously married) and parental status (non-parents, parents with a child aged 0-5, parents with youngest child aged 6-11 and parents with youngest child living at home aged 12 or more). Staged multiple regression analyses were conducted to assess associations with distress and gender differences. Men and women in the same roles were generally found to be similarly vulnerable to distress. While parenthood was associated with lower distress for both sexes, fatherhood was no longer associated with distress when accounting for other roles. Among women, parenthood remained significantly associated with decreased distress even when accounting for roles, stressors and resources. Men and women who were homemakers had significantly higher distress than their employed counterparts. Women reported significantly more chronic stressors than men, but even when chronic stressors were accounted for, women continued to have significantly higher distress than men. Women were found to be impacted more by low mastery, relative to men. Accounting for roles, stressors and psychosocial resources reduced the difference between men and women's distress, but women continued to be significantly more distressed than men.

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Chapter 1: Introduction

Why study gender differences in distress? In the broad research arena of gender differences in health, women generally have poorer health than men. But when particular aspects of health are examined, women are fare worse than men in only certain health outcomes, and psychological distress is one such area. Some researchers think that physical health may even be influenced by distress. Distress is also associated with mental health, and mental health is a large component of health care utilization in Canada (Stephens and Joubert, 2001). The exploration of gender differences in distress will contribute to the broader knowledge of gender differences in health and to the understanding of what affects mental health.

The study of gender differences in psychological distress has been examined a great deal over the past four decades. The scope of these studies has expanded from examining roles to exploring stressors and personality traits, but no study has been able to discern why women have higher distress than men. There are several important findings from past research that are relevant for this study. First, as with other measures of morbidity, many determinants of health are associated with distress. For example, sociodemographic characteristics, such as lower income, less education and younger age are all associated with higher distress scores. Second, among the determinants of health, roles are important since there are gender differences in distress outcomes within roles. Marital status and presence of children have been found to be associated with distress scores in several studies, but the marital status roles and parenting roles sometimes have different outcomes in distress between the genders. For instance, married men appear to have the least distress compared to non-married men and all women. Single men have

lower distress than single women, and previously married men have lower distress than previously married women. Third, stressors in the family and work environments have been found to be associated with elevated distress levels. For instance, psychosocial work characteristics, such as having a job with low control and high demands, are associated with increased distress. Fourth, coping resources, such as perceived social support and self-esteem, are associated with lower distress scores. Coping resources are also important in determining how men and women differ in their ability to attenuate the effects of stressors in their lives. While coping resources have not been found to explain gender differences in distress, the buffering effects of coping resources has not been considered in most studies as another explanation for gender differences in distress. And finally, women have higher distress scores than men, even when considering all of the above and controlling for variables, such as age and poor health.

This thesis will first go over the relevant literature regarding psychological distress. The social and environmental explanations on why women are more distressed than men will also be discussed in the *Literature Review*. The next chapter, *The Conceptual Framework*, will introduce the stress process theory and two frameworks for examining gender differences in distress. The hypotheses for this study are also stated in this chapter. The *Methods* chapter goes over the study design, variables used (from the 1994 National Population Health Survey), methodological issues and the analysis plan. The next chapter, *Results*, presents findings from the analysis. The last chapter, the *Discussion*, presents each of the hypotheses and reports whether results confirm or refute the hypothesis. Limitations and final conclusions are stated last.

Chapter 2: Literature Review

Overview

While women live longer than men, they report more physical and mental health problems, and use more health care services and therapeutic drugs than men (David and Kaplan, 1995; Waldron, 1983). It has been suggested that women's poor mental health or distress is one of the main factors why women have higher morbidity and use more health care services than men (MacIntyre, Hunt, and Sweeting, 1996). If this is true, then studying gender differences in psychological distress is important in understanding why gender differences exist in overall health.

The literature on gender differences in psychological distress generally focuses on social and environmental explanations or biological reasons on why women are more distressed than men. For example, there is some evidence that women and men differ in physiological responses to stressors which could account for differences in *distress* (Frankenhaeuser, 1991). It has also been suggested that gender differences in distress may be due to biases in reporting (Aneshensel, Frerichs, and Clark, 1981; Kessler, 1979b). Women appear to be more willing to report distress to both interviewers and physicians than men, and some research suggests that men's emotional distress is better measured in other ways, such as in drug abuse or alcoholism¹. If there is measurement bias, then distress would be under-reported by men. While biological and measurement bias are valid explanations for why women are more distressed than men, there is ample

¹Mirowsky and Ross (1989) did not find that drug abuse and heavy drinking masked distress among males and they "conclude[d] that women genuinely suffer more distress than men." (p. 449) Other researchers have investigated the gender differences in alcohol consumption and have not come to the same conclusion. While this is an open topic for discussion, women do suffer from reported distress more so than men, and this is a significant health care issue in its own right (Roxburgh, 1996).

evidence that the social environment is also important in determining some of the differences in distress between the genders (Aneshensel, Frerichs, and Clark, 1981; Romans-Clarkson, Walton et al., 1988). This literature review focuses on the social and environmental factors explaining gender differences in distress, with some attention also paid to biological evidence and gender response differences.

This literature review will first begin with a discussion on the concepts and measurement of psychological distress. Then the association of social and environmental factors with distress will be discussed, primarily focusing on differences in men and women's experience of key social roles. The social roles studied most often include marriage and parenting. The employed role is also considered, including a review of the benefits (role enhancement) and detriments (role overload) of this additional role in women's repertoire. These multiple role theories have guided some research in the exploration of gender differences in distress. However, social roles themselves do not explain why there are gender differences in distress, but can only point to where some of the gender differences lie. Some of the explanations of why women are more distressed than men in the same roles hypothesize that role quality, often measured by stressors, would account for women's higher distress scores. The next section of this chapter will review studies that have investigated the association of stressors with mental health and the impact stressors have on roles, particularly for women. Results suggest that stressors have an impact on distress, but admittedly not a large one, and most stressors do not explain why there are gender differences in distress. In response to the modest associations of stressors and distress, psychosocial resources, such as self-esteem or social support, have been hypothesized to account for gender differences in distress,

particularly since men and women often have disproportionate access to valued resources. The next section of the literature review will discuss gender differences in the psychological consequences of psychosocial resources. Also in this section will be a review on the buffering effects of resources on stressors, since this has been hypothesized and used in studies to explain the relatively small impact of stressors on distress. This chapter will conclude with an overview of key results relevant to this thesis. The conclusion will also introduce two frameworks: The stress theory provides a framework for the analysis of social roles, stressors and psychosocial resources. The differential exposure and differential vulnerability concepts will guide the thesis in explaining gender differences in distress. Chapter 3, *The Conceptual Framework*, will review these frameworks in detail.

The literature concurs that women are more distressed than men despite assessing different conceptual approaches such as multiple role theories and differential exposure and vulnerability hypotheses. Multiple role theories, which investigate the effects of adding the employed role to women's role repertoire, have not explained women's higher distress. Being employed does not appear to enhance women's mental health, nor does it appear to worsen it. While more women are exposed to lower socioeconomic conditions, controlling for this differential exposure accounts for some of women's excess distress, but not all of it. Women are also exposed to more chronic stressors than men. While accounting for these stressors has closed the gap of distress levels between men and women, women continue to be significantly more distressed than men. Exploring the gaps in the literature may provide more information concerning gender differences in

distress, but it is probable that women will continue to demonstrate higher distress levels than men.

Psychological distress

Psychological distress, a measure of nonspecific psychological problems, has consistently been found to be more prevalent among women than men, even when controlling for marital status, employment status, educational attainment and socioeconomic status (Barnett, 1993; Dupuy, Engel et al., 1970; MacIntyre, Hunt, and Sweeting, 1996; Pugliesi, 1995; Roxburgh, 1996; Scott, Ibrahim et al., 1998; Simon, 1992; Simon, 1995; Thoits, 1994). Psychological distress is a term often used to describe a general negative state of mental health. Psychological distress is not a specific pathology, but is a measure of nonspecific psychological problems, often associated with negative affective states such as feeling anxious, depressed or blue (Dohrenwend, Shrout et al., 1980; Stewart, Ware et al., 1992). In fact, "anxiety and depression ... reflect the more prevalent kinds of psychological distress in general populations." (Veit and Ware, 1983, p. 730). In other words, distress is an all-encompassing measure of poor mental health.

Psychological distress has been associated with mental illness, such as depression, but it has also been shown to be a risk factor for disability due to heart disease, back problems and musculoskeletal injuries (Manninen, Heliovaara et al., 1997). Certain factors, or stressors, may contribute to increased levels of psychological distress. For instance, stressful events can produce biological responses in the body and specific stressors produce specific physiological responses, including impaired immune function (Ader, Cohen, and Felten, 1995; Cohen and Herbert, 1996; Johansson, Laakso et al.,

1989; Selye, 1936; Stein, Keller, and Schleifer, 1985; Strauman, Lemieux, and Coe, 1993). There is also evidence that physiological responses sometimes differ between the sexes when exposed to the same challenging event (Baum and Grunberg, 1991; Frankenhaeuser, 1991; Johansson, Laakso et al., 1989). While low levels of psychological distress are not necessarily detrimental to a person's function, higher levels of distress may decrease the person's capacity to function well and cope with ill-health (Harkapaa, 1991).

The psychological distress measure is a *continuum*, and is not a diagnosis. Mean distress scores are most often used to compare different groups; men are less distressed than women, wealthy individuals have lower distress than the poor. Therefore, rates of distress are generally not reported. However, some studies do dichotomize distress into "low" and "high" distress groups, although this is generally not done. For instance, Stephens, Dulberg, and Joubert (1999) used the 75th percentile to classify individuals into high and low distress categories, while Matthews and Power (2002) dichotomized the distress variable.

In the sociological study of distress, scales used to measure depression and anxiety are quite often used as distress measures, while some researchers use scales that specifically measure psychological distress. Most of these scales are similar and generally combine symptoms found in anxiety, depression and loss of behavioral/emotional control (Veit and Ware, 1983). Other researchers also include symptoms of *psychosomatic* illness, as well as mental health symptoms, as part of the distress measure (Matthews and Power, 2002). Thus, distress is measured in many ways; it can be measured by using depression scales, anxiety scales, and distress scales. In fact,

distress has also been measured using any scale that indicates poor mental well-being, such as loneliness (Fiscella and Franks, 1997). While there are several different ways to measure distress, "these scales are similar in content and tend to correlate with each other as highly as their reliabilities permit; they are clearly measures of the same thing" (Dohrenwend, Shrout et al., 1980). Even though distress is measured slightly differently from one survey to the next, there are consistent findings in research regarding associations of different factors with distress.

Researchers often interchange the terms "*mental well-being*" or "*psychological well-being*" with the term "*psychological distress*." However, psychological well-being has been defined as a measure of cheerfulness or enjoyment of life – or positive mental health states (Veit and Ware, 1983). These authors caution against using the term well-being in place of distress, since well-being measures positive mental health, while distress is a negative mental health condition. The term "*poor mental well-being*" has been used frequently in the literature in place of the term distress, and this thesis will also use the term "*poor mental well-being*" interchangeably with "*psychological distress*."

The literature reviewed is mostly composed of studies that are cross-sectional in design, and therefore, the direction of the association of factors with distress is unknown. While some studies explicitly test whether distress may "cause" certain factors (e.g., are more distressed people less likely to be married, or does being unmarried cause distress?), usually the research implies that the causal pathway is from the factor (being married) to distress. It is important to note that cause cannot be discerned unless a longitudinal study is conducted. One other notable point is that most studies inquiring about distress, including this thesis, use surveys with self-reported measures. It is

possible that a person's mental health may influence the respondents' perceptions of roles, stressors and psychosocial resources. Thus, results should be viewed with caution due to possible respondent bias.

Social roles

The social environment has changed for both women and men in the past few decades. More women have become involved and accepted in the workplace, but changes on the home front are not as striking. Women who work for pay outside the home continue to spend more time doing household tasks and caring for children than their husbands (Aneshensel, Frerichs, and Clark, 1981; Lero, Brockman et al., 1993). The changing work environment has also created a new role for men; some men are staying home to care for the family while their wives work for pay. With the changing social environment, more research is required to determine factors associated with mental health (Elliott and Huppert, 1991).

The social roles one occupies has been linked to distress in several studies. As Mirowsky and Ross pointed out, "to learn why some people are more distressed than others, we must first find out *who* is more distressed." (1989, p. 57) Three major role groups have been studied extensively in the exploration of gender differences in distress. These are a) the married, previously married and never married; b) parents and non-parents; and c) the employed, homemakers and unemployed.

Marital status roles

Several studies have reported an association between marital status and levels of psychological distress in which being married is associated with lower levels of distress for both men and women (Roxburgh, 1994; Simon, 1992). (See table 2.1.) Married men,

for example, report lower levels of distress than men who were never married or widowed (Turner, Wheaton, and Lloyd, 1995), or divorced (Gore and Mangione, 1983; Pearlin, 1989; Turner and Marino, 1994; Zimmerman-Tansella, Conini et al., 1991). Married women tend to report lower levels of distress than women who were divorced or separated (Johansson, Laakso et al., 1989; Matthews and Power, 2002; Simon, 1992), but some studies have found very little difference between married women and widows, or married women and never married women (Aneshensel, Frerichs, and Clark, 1981; Zimmerman-Tansella, Conini et al., 1991). Table 2.1 lists studies that have examined marital status and gender differences in distress.

Most studies, however, report significant differences between men and women within these different marital status categories. A recent analysis of the NPHS data by Walters, McDonough, and Strohschein (2002) reported higher levels of distress among formerly married women relative to formerly married men and between never married women and never married men. Aneshensel, Frerichs, and Clark (1981) found that married men had the lowest distress, and this was significantly different compared to married women. Many other studies confirm these findings (Griffin, Fuhrer et al., 2002; Pugliesi, 1995; Roxburgh, 1996). There are some exceptions; for example, Lennon (1996) found no difference in depressive symptoms between widowed men and widowed women, while Aneshensel, Frerichs, and Clark (1981) reported that widowed men had higher distress scores than widowed women.

Findings vary from study to study depending partly on what categories of marital status are used or what type of control is introduced into the analysis. Two studies reported significant differences in psychological distress between the married and non-

married, but no gender differences in marital status were found (Griffin, Fuhrer et al., 2002; Pugliesi, 1995). However, both studies had combined the never married with the formerly married into a single category. It is possible that these studies would have found gender differences in distress among the formerly married if they had split the non-married category into the never married and previously married.

Some researchers have found that adding in resources or stressors to the regression model reduces some of the differences in distress among the marital status categories, also reducing gender differences in marital status groups. In another study, previously married women had higher distress than married women (McDonough, Walters, and Strohschein, 2002). When chronic stressors were added to the model, distress was nearly cut in half for the previously married, but distress continued to be significantly higher when compared to the married. From a survey done in Toronto in 1990-91, the married and never married had lower distress than the previously married (Turner and Marino, 1994). With only sociodemographic factors in the regression model, the married had lower distress than the non-married. When co-worker support and other social support measures were added to the model, the married and never married had similar distress scores. Gender differences were not ascertained.

In a study of employed individuals, and in a simple analysis of variance and controlling for age, men in all marital status categories had significantly lower distress scores compared to women in the same marital status groups (Roxburgh, 1994). When work stressors and interaction effects were accounted for, there were no significant gender differences in distress by marital status. Walters, McDonough, and Strohschein (2002) also controlled for resources, and they found gender differences in the previously

married category. Additionally, there were no longer significant gender differences in distress among the married and the never married. A major difference between Walters et al. (2002) and Roxburgh (1994) is that Roxburgh studied only the employed. This difference may partially explain why Walters et al. (2002) reported a gender difference in marital status while Roxburgh did not when stressors or resources were added to the regression model.

Parenthood and non-parenting roles

Researchers have theorized that parents would have higher distress than non-parents, and that the number of children or the age of children would have an impact on distress. (See table 2.2.) Some studies have found children to be associated with higher distress scores (Elliott and Huppert, 1991; Reskin and Coverman, 1985), while other studies have found that parenthood is not associated with distress (Griffin, Fuhrer et al., 2002; Pugliesi, 1995). To make matters even more cloudy, other researchers suggest that children in the home is associated with *decreased* distress (Lennon, 1994; Romans-Clarkson, Walton et al., 1988). One possible reason for the inconsistency of the parenthood/distress association may be due to defining parenthood by different measures of "children:" A researcher could analyze the number of children present in the home (which can be confounded by differences in age groups used to define children), while other studies examine distress based on the age of the youngest child. A survey may also have more than one way to measure "children" which can exacerbate the definition of parenthood.² This can lead researchers using the same data resource to define parenthood

² For example, in the NPHS, the public use files indicate if there is at least one child present in the home in the age groups 0-5 years and 6-11 years. Another variable, living arrangements, indicates if the household has children, so older children can be deduced

differently. This happened even within the same research team: Walters and McDonough had different definitions of parenthood using the 1994 NPHS survey. Walters et al. (2002) defined parenthood by age of the youngest child in the household (ages 0-5, 6-11 and 12-25), while McDonough, Walters et al. (2002) defined parenthood as living with or without children. There are reasons why they have defined parenthood differently, but these differences are an example of why it is difficult to tease out patterns of distress among parents and non-parents.

Generally, parenthood has not been found to be associated with increased distress, whether measured by number of children (Griffin, Fuhrer et al., 2002; Roxburgh, 1994) or age of children (Pugliesi, 1995). Some studies have found that parents have *lower* distress scores after controlling for stressors or resources (Aneshensel, Rutter, and Lachenbruch, 1991; McDonough, Walters, and Strohschein, 2002). Walters et al. (2002) initially did not find parenthood to be associated with distress. However, when psychosocial and material resources were added to their regression model, women with youngest children in the age group 6-11 years were significantly less distressed than women without children; but women with youngest children in other age groups (0-5, 12 and over) did not significantly differ in distress scores compared to non-mothers. While men also showed lower distress scores when the youngest child in the household was 6-11 years (compared to male non-parents), this was not found to be significantly different,

from this variable, but only if there are no younger children present in the household. This is because the living arrangements variable only indicates if children are present in the home, and the respondent is a parent: Age of children is not known from this variable. Also, if the living arrangements in the household is unusual, then it is not known if children over age 11 are present in the home or not. The number of children present in the household is not available in the NPHS public use file, but can be calculated for children ages 0-11 years in the NPHS master files. Other surveys do enable researchers to utilize number of children in their studies (Fokkema, 2002; Griffin, Fuhrer et al., 2002; Lahelma, Arber et al., 2002).

and the coefficient was 1/3 that of women ($b=-0.45$ for women, while $b=-0.15$ for men.) In a study that sampled women only, McDonough, Walters, and Strohschein (2002), reported that parenthood was not associated with distress unless chronic strains were accounted for. Again, being a parent was associated with lower reported distress. Roxburgh (1994) also found that being a parent (defined as number of children) was significantly associated with lower distress scores among employed men and employed women when chronic stressors and psychosocial resources were in a full regression model³. Additionally, Roxburgh's (1994) results indicate that children appear "to reduce the impact of low mastery on the mental health among men as well as women." (p. 218)

It appears that parenthood is beneficial to mental health when stressors or psychosocial resources are accounted for. However, there are exceptions to this. Pugliesi (1995) controlled for job stressors and two measures of coping resources, and having children under age 16 was not associated with distress before or after controlling for these variables. Conversely, Lennon (1994) reported parents had lower distress than non-parents, whether or not she controlled for sociodemographics or working conditions.

Pugliesi's observations may not concur with Roxburgh (1994) and Walters et al. (2002) for a few reasons. One is that her study used a survey from 1976, and it is possible that changes in the past 25 years may have impacted the parenthood–distress association. She studied only individuals who were working, and women who worked in the 1970's did not have the day care facilities currently in existence. Thus, in Pugliesi's study, the positive influence of children may be reduced by less support for children.

³ Roxburgh found that "number of children" had a higher correlation with distress than "age of youngest child." She did other analyses and concluded that there were no "dramatic differences among employed women as a function of the ages of their children" compared to number of children (p. 110.) She chose to use "number of children" as the parenthood measure.

Additionally, the stressors that Pugliesi studied were only work stressors, and the stressors that Roxburgh (1994) and McDonough (2002) examined included both work stressors and family stressors. It is plausible that family stressors are more important in accounting for the association of parenthood with decreased distress. Additionally, Walters et al. (2002) included several more resources than Pugliesi.

For the most part, parenthood appears to be associated with lower distress *when chronic family stressors or psychosocial and material resources were accounted for*. When studies have not included these in their analyses, parenthood has generally not been found to be associated with distress.

It may appear that stressors and resources account for parents' distress, but not non-parents' distress. It is also feasible that having children may be beneficial to mental health. Another possibility that could explain the relationship between children and stressors/resources with distress is that stressors and resources may be more potent for specific groups of parents. For instance, if a group of parents are exposed to more stressors or lower resources than other parents, then this group of parents may be influencing the patterns that are being observed. It is possible that single parents, and in particular, lone mothers, may obscure some of the effects parenting would have for dual parent families. This would make it appear that parents have the same distress levels as non-parents when accounting for socio-demographic factors. Thus, if lone parents are included in the parent category and they have higher distress scores than other parents, then the positive effect of parenthood among dual parents may not be evident. If single parents are exposed to more stressors and lower resources, then *their* distress would decrease when controlling for these variables. This would mean that the effect of lone

parents would initially increase distress levels within the parenting group, but distress would then be lowered in the parenting group after controlling for resources and stressors. The above assumption then, that parents and non-parents have the same distress levels (when only sociodemographics are in the model), would be confounded because lone parents and dual parents form two very different groups. Thus, it may be important to discern the impact that lone parenthood has on distress.

Lone parenthood has been linked to many social problems, such as child poverty, but it has also been associated with poor health outcomes. While previously married individuals have higher distress than the married, children are not always detrimental to mental well-being. Lone parents, compared to partnered parents, have been found to have higher distress or worse physical health in some studies (Curtis, 1998; Janzen, 1998; Lipman, Offord, and Boyle, 1997; Macran, Clarke, and Joshi, 1996; Simon, 1998; Fokkema, 2002), but no significant association was found in other studies (Lennon, 1996; Romans-Clarkson, Walton et al., 1988; Walters, McDonough, and Strohschein, 2002). In Curtis' (1998) review, she notes that lone parenthood, and in particular, lone motherhood has been associated with more health problems, including mental health in several studies. Even after controlling for socio-demographics, some studies continued to find lone parenthood to be associated with higher distress scores. Curtis' own findings for health status measures do not support this:

"When looking at raw averages, lone mothers had consistently lower scores on all of the health status measures. Once income, education, lifestyle factors, the presence of children and social interaction and other confounding factors are controlled for lone mothers are no worse off than married mothers when it comes to health status and in some cases may be better off." (p. 30)

Walters et al. (2002) reported that lone parenthood is not associated with distress, nor does it appear to have differential effects on gender. In a study among women, Lennon (1996) found that non-employed lone mothers had higher distress than married mothers, but this was not significant. Results from Macran, Clarke, and Joshi (1996) also suggest that lone mothers have higher distress scores than married mothers. However, full-time employed lone mothers had the worst distress, and this was statistically significant. The results from these studies suggest that distress among lone parents is similar or higher compared to other parents, and employment may attenuate or intensify these associations.

Lone parenthood, for the most part, is associated with increased distress, but this higher distress is accounted for by differences in income, education and other factors. Perhaps these results on lone parenthood should not be too surprising. Since parenthood has generally been found to be beneficial to mental health when accounting for resources and stressors, children may attenuate the negative effects of divorce or of being single. It is important to note that controlling for sociodemographic factors often leads to lone parenthood being insignificantly associated with distress, and that this is not an inconsequential finding. Generally, single parents are exposed to worse socioeconomic conditions, and this exposure actually accounts for the greater distress among single parents. Single parents also enjoy the benefits of having children, and parenting in and of itself does not appear to be associated with higher distress among dual or single parents. What has not been considered in these studies is which sociodemographics have the most impact on distress among single parents. Seaborn Thompson and Ensminger (1989) suggest that financial and child stressors may aggravate distress levels among lone

mothers, and that social support may be beneficial. Additionally, employment may also shed more light in the study of the association of single parenthood with distress.

The roles of the employed, homemaker and unemployed

Early studies examining gender differences in distress often compared women, who were homemakers, with men, who were employed. (See table 2.3.) Since women were more distressed, two theories emerged as to how women would cope with the additional role of being a paid worker. The expansion theory suggested that employment would be beneficial to women. As with men, the role of paid worker could bring about satisfaction, which in turn would lead to better mental health. Theorists of the expansion hypothesis suggested "that multiple role involvements can expand rather than constrict an individual's resources... resulting in enhanced physical and psychological well-being." (Thoits, 1986). While the expansion theory hypothesized that multiple roles would be beneficial, another theory postulated that multiple roles among women would result in role overload. Women's roles as wife (and parent) would yield in role conflict when they added on the role of paid worker (Kaplan, 1996). Competing demands from these roles were hypothesized to lead to higher distress among women. Multiple roles have been the focus of several studies and generally examines the impact of adding the paid worker role to women's role repertoire.

Some studies concluded that female homemakers have higher distress than employed women (Kessler and McRae, 1982; Reskin and Coverman, 1985), but other studies and more recent research suggest that employed women and homemakers do not differ in distress⁴ (Radloff, 1975; Roxburgh, 1996; Thoits, 1986). This finding has led

⁴ This point of view differs from Roxburgh and others, who state that employment is

researchers to hypothesize that women's multiple roles are both beneficial and conflicting: The benefits of paid work are canceled by the negative effects of additional strain on the home front. Additionally, studies that have examined whether women are impacted more by the employed role than men have not found a gender/employment interaction effect. Thus, while employed women have higher distress scores than employed men, the employed role itself is no more distressing for women than for men. Multiple roles do not appear to account for gender differences in distress.

While studies do support that the homemaker role is associated with higher distress compared to employed men, this is really a comparison of men with women. Since the homemaker role is designated for women, a true gender comparison within this role is rarely attainable due to the fact that men are not studied in the homemaker role. It is only recently that men have been recognized as doing unpaid work at home. The impact of this "new" role among men is a new area to explore.

The non-employed are those individuals who are not currently working or not in the labour force. The non-employed would include retired individuals and students who are not working as well as homemakers and the unemployed. The unemployed consist of individuals who are in the paid labour force but are not currently working. In addition to the homemaker role, this thesis will examine one other non-employed role, the unemployed.

beneficial for women. However, not all earlier studies show that employment is less distressing for women. The impact of employment on women's distress may be an ongoing issue. Women's roles in the paid workforce, as well as men's roles, have been changing throughout the past few decades. Thus, published studies may use data that do not reflect the current working environments. This researcher believes that more recent papers reflect more current trends in this area, in which homemakers and employed women do not differ in distress. Earlier studies have shown a pattern, but the pattern has now changed, and may continue to change.

Unemployment is detrimental for both men and women, with men being impacted more than women. Unemployed men have higher distress than unemployed women (Radloff, 1975; Theodossiou, 1998). Unemployment also appears to be partly responsible for increased distress: In a longitudinal study, Pearlin, Lieberman et al. (1981) reported that employment loss was associated with increased depressive symptoms.

While the employed have lower distress than the non-employed (Gore and Mangione, 1983; Lennon, 1996; Reskin and Coverman, 1985), the study of the non-employed with the employed does not give any understanding of two major non-employed roles: homemakers and the unemployed. Further, the non-employed constitute a varied group. Within the NPHS, non-employed individuals include students, homemakers, unemployed, retirees, the disabled and others. This group of individuals constitutes a range of life stages. Comparisons of the employed with this group of individuals does not give any insight into the association that the roles of the homemaker or the unemployed have with distress. Additionally, gender differences in distress levels between homemakers, the employed and the unemployed are not known.

Role occupancy is important in the study of gender differences in distress since it has been useful in untangling where some of the differences in distress exist between the genders. However, the roles themselves have not been successful in *explaining* gender differences in distress, partly because men and women may respond differently to the same roles. Being a parent may bring about different strains and benefits to men and women. An employed woman with children will face different environmental and personal circumstances and strains than her employed husband. Sociologists postulated

that these role strains may explain the gender differences in distress. Aneshensel and Pearlin (1987) state that “it is the *quality* of experiences within the roles more than their occupancy alone that mainly matters to the well-being of women.” (p. 89) They also state that “[di]stress results from the quality of experiences within and across roles, not from the mere occupancy of roles.” (p. 83) In other words, if the stressors that women face (in a particular role) differ from the stressors that men encounter (in the same role), then these stressors may account for the higher distress that women face. Stressors within roles constitute a portion of the spectrum of stressors that individuals may experience.

Stressors

Stressors have been defined as “the external danger, deprivation, or opportunity that puts demands on the individual.” (Costa and McCrae, 1989, p. 270) Another definition states that stressors arise when conditions are threatening, where “‘threat’ include[s] reactions to such disparate constructs as loss, unfulfilled needs, violation of self image, and blocked aspirations... the threat that people experience from the circumstances they face depends to some degree on the values they hold – that is, on what they define as important, desirable, or to be cherished.” (Pearlin, 1989) Stressors can be acute life events or chronic strains. Negative acute life events generally occur once or fairly irregularly, such as getting fired from a job or experiencing the death of a loved one. Chronic stressors are defined as “the relatively enduring problems, conflicts and threats that many people face in their daily lives... When problems – or strains – occur within roles, they are likely to affect their incumbents, because typically we attach considerable importance to our major roles.” (Pearlin, 1989) Chronic stressors would

include dealing with a child who is in poor health or having financial difficulties. While negative life event measures have been shown to be associated with distress, the association of life events with distress only accounts for a small proportion of distress. Researchers have found that chronic stressors have a greater impact on mental health than life events (Kessler, Magee, and Nelson, 1996). This may be because persistent roles strains, such as job pressure are more widely experienced than most stressful life events (Wortman, Biernat, and Lang, 1991, p. 87).

Throughout this paper, the term stressors will denote measures of stress, strain, problems, conflicts or threats. The term "stressor" is chosen mostly because several researchers utilize *the stress process* when investigating the association of stressors with distress (Pearlin, 1989). (The next chapter, *The Conceptual Framework*, explains the stress process in detail.)

Early research focused on life events as stressors that may account for psychological distress. Several inventories were created to measure an individual's life events. These life events, both positive and negative, were considered stressors, as the original definition of stress stated that "*all* change is potentially harmful because all change requires adjustment." (Pearlin, 1989) The outcome was often measured as some mental health disorder, often non-specific psychological distress, depression and/or anxiety. Results from this research suggest that these stressors were more detrimental to women's mental health than men. This in turn led to the conclusion that women were differentially vulnerable to stressors (Kessler, 1979a; Kessler, 1979b). However, it is plausible that the stressors encountered by women were not measured, so the distress

resulting from these stressors may have been inaccurately reported as being more vulnerable.

While life events were associated with distress in regression models, the associated R-squared was very small, indicating that life events explained a very small association with distress. Several studies suggested that exposure to role-related stressors would account for a greater proportion of distress (Simon, 1992). Aneshensel and Pearlin stated "that role occupancy increases the chances of exposure to some stressors and precludes the presence of others." (p. 78) They further state that "gender differences in social role occupancy and in experiences within similar social roles affect the types of stressors typically encountered by women and men." (p. 76) Some social scientists created measures of daily strains, while others developed chronic stressors. Both stressor scales attempt to measure persistent strains in people's lives (Aneshensel and Pearlin, 1987). The daily stressors of child-caring, housework and relationship issues, which are hypothesized to be more persistent among women, were postulated to explain differences in distress between women and men. However, since the goal of studying stressors emphasized explaining the effect of stressors on distress, and not in explaining gender differences, chronic stressor measures have not yet been created (and used extensively) that take into account the daily struggles that are more persistent among women. Some researchers are critical of surveys that include work stressors without including home stressors, since home stressors have continuously been hypothesized to be an explanation for women's higher distress (McDonough, Walters, and Stroschein, 2002).

Chronic stressors have generally been found to be associated with higher levels of distress. (See table 2.4) However, it is inconclusive whether gender differences in

chronic stressors account for women's higher distress. In a study among women, McDonough, Walters, and Stroschein (2002) found that relationship stressors, child stressors and family stressors (among other chronic strain measures) were associated with higher distress. They did another analysis to test gender differences in these stressors, but did not find that these stressors impacted men and women differentially. Aneshensel and Pearlin (1987) reported that men were impacted more by work stressors, and women were impacted more by marital problems. Roxburgh (1994) found family health strains and parenting strains to be associated with distress. However, she did not pursue any gender differences in the family strains. Griffin, Fuhrer et al. (2002) reported that low control at home was associated with anxiety and depression and that women were impacted more by low control at home when the outcome was depression, but not when the outcome was anxiety. In another study, parental strains were highly associated with distress, and gender was no longer significant when parental strains were added to the regression model (Simon, 1992). This may be due to women having more parental strains than men or that women are more vulnerable to parental strains, or both. However, Simon did not explore any of these scenarios. In fact, very few studies have examined gender differences among stressors in more than one role configuration and their association with distress.

Chronic stressors have also been able to account for distress among individuals in certain social roles. For instance, earlier in this literature review, it was observed that when parental strains are introduced in regression models, parenthood is associated with *lower* distress levels. Thus, chronic stressors help explain why some social roles are more distressing than others. In many cases, the difference in distress between men and

women decreases, and one study found that men and women were similarly distressed when chronic stressors were added to their model (Simon, 1992). However, most studies continue to show women are significantly more distressed than men. Studies that have examined whether one gender is impacted more by chronic stressors are very few, and results are inconclusive. It may be important to not only explore the differential impact of stressors between women and men, but to also examine these differences within certain roles.

While there is a scarcity of studies that explore gender differences in the association of marital and parental stressors with distress, much research has explored the association of work stressors with health outcomes such as heart disease. Most of this research has been done exclusively on men. There are a couple of work stressor scales that have been validated and used extensively (House, 1981; Karasek and Theorell, 1990). Several researchers have explored the impact of work stressors on mental well-being, since these work stressor scales have been used in several surveys. Some researchers also used the work stressor items in these surveys to explore gender differences in distress (McDonough, Walters, and Stroschein, 2002; Pugliesi, 1995; Roxburgh, 1996).

Job stressors

Work stressors have been associated with ill-health, including psychological distress (Alfredsson, Karasek, and Theorell, 1982; Johnson and Hall, 1988; Karasek, Baker et al., 1981; Pickering, James et al., 1991; Siegrist, 1996). Workplace stressors associated with high levels of psychological distress include low control, psychological demands and repetitive work (Barnett, 1993; Karasek and Theorell, 1990; Pugliesi, 1995;

Roxburgh, 1996). Table 2.5 lists studies that have examined the association of work stressors with distress and gender differences. The measurement of psychological demands aims to ascertain how hard an individual works. Skill discretion, or job routinization, has been defined by Karasek as "the breadth of skills workers could use on the job." Decision authority is defined as the "authority over decision making" (Karasek and Theorell, 1990, p. 31.) Decision latitude, or job control, is the combination of skill discretion and decision authority, and is "interpreted as the worker's ability to control his or her own activities and skill usage, not to control others." (Karasek and Theorell, 1990, p. 60.) Of note, some researchers do not combine Karasek's skill discretion and decision authority measures. When these items are left as separate work stressors, skill discretion quite often is called job routinization, while decision authority is considered job control (Roxburgh, 1994). Thus, job control can take on two different, but fairly similar, meanings, even when using the same work stressor scales.

Job strain has been defined in several ways. Some researchers have defined job strain as any job stressors. However, Karasek et al. have defined job strain as the combination of demands and control. In this literature review, job strain will be restricted to represent the combination of workplace control and demands as defined by Karasek and colleagues, while job or work stressors will signify any type of stressor experienced on the job. Karasek and Theorell (1990) have created four outcomes of job strain when low/high control is crossed with low/high demands: A "high strain" job is one with low control and high demands, a "low strain" job has low demands and high control, an "active job" has high demands and high control, while a "passive job" has low demands and low control. (See Figure 3.3.) They hypothesized that high strain jobs (low control

with high demands) would be the most detrimental to health outcomes among paid workers. Some of their studies have borne this out. For example, they found that persons in high strain jobs are more likely to be depressed than persons in other job strain categories, while individuals in the opposite quadrant, low strain jobs, were usually least depressed (Karasek and Theorell, 1990), and these findings were true for both men and women.

Haynes (1991) reviewed several studies where job control and psychological demands at work were associated with various physical health outcomes, with overwhelming evidence that these work characteristics were associated with physical health. Researchers who have explored the association of psychological and physical demands on the job have found an association with mental health, where high demands are associated with poorer mental health outcomes (Lennon, 1994; Lombardi and Ulbrich, 1997; McDonough, Walters, and Stroschein, 2002; Roxburgh, 1996). However, the association of control at work with distress is less conclusive. Some research suggests that job control is associated with lower distress (Griffin, Fuhrer et al., 2002; Lennon, 1994), while other studies do not find an association (McDonough, Walters, and Stroschein, 2002; Pugliesi, 1988; Pugliesi, 1995; Roxburgh, 1996).

Some studies show some differences between the sexes in physical and mental health outcomes with workplace stressors as risk factors in ill-health (Karasek and Theorell, 1990). However, specific to distress, gender differences in workplace stressors and the association with distress were explored in only a few studies. Some research suggests that men are impacted more by psychological demands (Vermuelen and Mustard, 2000) compared to women, while others found that *women* were impacted more

by job demands (Roxburgh, 1996). Other studies did not find any gender differences in job demands (McDonough, Walters, and Stroschein, 2002; Pugliesi, 1995). The work by Griffin, Fuhrer et al. (2002) indicates that men are impacted more by job control, but McDonough, Walters, and Stroschein (2002) and Pugliesi (1995) did not find this to be true.

Some of the results from these studies are mixed, and may be due in part to the different methods of measuring work stressors and in part by different work stressor items used in the studies. In particular, when considering the association of job control with distress and the gender differences within, results are very inconclusive. How job control is measured can vary greatly from one study to the next. Pugliesi (1995) used job control based on Kohn and Schooler, while McDonough, Walters, and Stroschein (2002) and Roxburgh (1994, 1996) incorporated Karasek's model. While Walters et al. (2002) combined Karasek's skill discretion and decision authority to form the job control variable, Roxburgh (1994) used Karasek's decision authority measure as the job control variable. When comparing the questions used from Roxburgh (1994) and those used in the NPHS (Walter's et al., 2002), there are similarities in the measures of skill discretion (routinization), decision authority (job control) and demands. However, the questions used are not exactly the same, and there is the possibility that results may differ due to the difference in the survey questions.

While job control may or may not have a direct effect on distress, Karasek and colleagues point out that it is important to combine control at work with job demands in order to find out the effects of job control on health outcomes. Vermuelen and Mustard (2000) combined job control and demands into a job strain measure, and while they

found high strain jobs (low control and high demands) to be associated with increased distress, they also found that jobs with high demands and high control (active jobs) were associated with distress. These results are consistent with Walters and Roxburgh, in that job control is not associated with distress. High strain jobs and active jobs are high on demands, but it doesn't appear to matter if the job is low or high in control. Even so, Vermuelen and Mustard (2000) found that the interaction of job control and demands showed slight differences in the regression coefficients for active and high strain jobs. The coefficients for active and high strain jobs are 0.23 ($p < 0.001$) and 0.27 ($p < 0.001$) for men and 0.13 ($p < 0.01$) and 0.19 ($p < 0.001$) for women. Active jobs are not quite as potent as high strain jobs in their effects on psychological distress.

A possible drawback to using Karasek's job strain model, where job control and demands are combined to form four different job strain measures, is that it is not known whether there is a direct effect of either of these job stressor characteristics with distress. It is also difficult to fully understand whether job control is important in accounting for higher distress levels. Roxburgh did explore the possibility of an interaction effect between job control and demands, but did not find any. In a simple analysis where she combined these two job stressors into the four job strain categories, she had similar results to Vermuelen and Mustard (2000); jobs with high demands were associated with distress, and control on the job did not attenuate the effect of high demands. However, Roxburgh did find other significant interaction effects of job control with other variables, such as number of children. Therefore, it may be important to keep job control and job demands separate in analyses and to test for interactions in order to better decipher main and interaction effects.

Psychosocial resources

Researchers discussing the stress process underscore that coping with stressors is important in understanding how stressors affect distress (The next chapter, *The Conceptual Framework*, discusses the stress process in more detail.) Some psychosocial resources, such as social support, mastery and self-esteem are hypothesized to ameliorate distress and to also have a buffering effect on distress due in part to the fact that these resources influence how an individual copes with stressors (Baider, Kaufman et al., 1996; Ensel and Lin, 1991; Harkapaa, 1991; Masse and Poulin, 1991; McLeod and Kessler, 1990; Pearlin, 1989; Thoits, 1994; Thoits, 1995a; Turner, 1983; Turner and Lloyd, 1995; Wheaton, 1994; Williams, Larson et al., 1991). (See Table 2.6.) These resources may “both directly reduce psychological disturbance and physical illness and buffer the deleterious effects of stress exposure on physical and mental health.” (Thoits, 1995b) (See also Cohen and Edwards, 1989; Menaghan, 1983; Pearlin and Schooler, 1978; Rosenfield, 1989.)

Coping is defined as “a set of concrete responses to a stressful situation or event that are intended to resolve the problem or reduce distress.” (Costa and McCrae, 1989, p. 271) Resources, on the other hand, “refer not to what people do, but to what is available to them in developing their coping repertoires.” (Pearlin and Schooler, 1978) The resources do not define what coping strategies are used to deal with stressors, but resources have been found to be indicative of how a person copes with stressors (Thoits, 1995b). There are different types of resources. Internal resources are psychological or personality characteristics, such as self-esteem, that represent the types of internal coping strategies an individual uses when coping with stressors (Cleary and Kessler, 1982).

External resources would include social support, which is defined as “the access to and use of individuals, groups or organizations in dealing with life’s vicissitudes.” (Pearlin, Lieberman et al., 1981) Other resources that an individual may have or use include material resources and community agencies or services (Cleary and Kessler, 1982; Walters, McDonough, and Stroschein, 2002). Psychosocial resources are limited to the internal and external resources that characterize potential coping abilities.

Women generally report lower psychological coping resources than men (Thoits, 1995b), yet often report more social support than men (Janzen, 1998; Turner and Marino, 1994). While women report more instrumental and emotional support than men (Karasek and Theorell, 1990; Pugliesi, 1995; Roxburgh, 1996), women continue to have higher levels of distress compared to men (Roxburgh, 1996). Table 2.6 lists studies that have explored the relationship of psychosocial resources with distress.

Social Support

Social support is often associated with distress, with higher support appearing to reduce distress (Cohen and Ashby Wills, 1985; Roxburgh, 1994; Thoits, 1995b; Turner, 1983; Walters, McDonough, and Stroschein, 2002). However, some studies do not find social support to be associated with lower distress (McFarlane, Norman et al., 1983; Pugliesi, 1995). While most research supports the association of social support with distress, social support does not always buffer the effect of stressors on distress (Cohen and Ashby Wills, 1985; Loscocco and Spitze, 1990; Thoits, 1995b). There are different measures of social support, which may explain why studies are inconsistent in their results on the association of social support with distress. The "most powerful measure of social support appears to be whether a person has an intimate, confiding relationship or

not... Having a confidant significantly reduces the effects of stress experiences on physical and psychological outcomes." (Thoits, 1995b) Confidant support is similar to "partner support" and "perceived support." These social support scales measure an individual's subjective perception of whether they have someone in their lives who they can turn to when needed. Co-worker support, or social support at work, indicates whether an individual feels support in their jobs by colleagues and supervisors. Different measures of social support can have different impacts on the association with distress and whether there is a buffering effect.

Some studies have examined whether gender differences exist in the association of social support with distress. (See Table 2.6) In two studies, the measures of co-worker support and partner support (Roxburgh, 1994) and perceived social support (Walters, McDonough, and Stroschein, 2002) were associated with decreased distress. Roxburgh (1994) did not find gender differences in the effects of social support, while Walters et al. (2002) reported that women were impacted more by social support than men. Among factory workers, social support at work was associated with better well-being, but there was no evidence for gender differences in the association of social support with distress (Loscocco and Spitze, 1990). In a study on working class women, Parry (1986) reported that high social support buffered severe life events for employed women, while low social support in a severe life event was associated with higher distress among employed women. Social support did not affect the distress outcome for unemployed women during a severe life event. Conversely, in a longitudinal study, Ensel and Lin (1991) did not find a buffering effect of resources on stressors. No gender differences were ascertained. Most evidence supports that perceived or confidant support is associated

with lower distress scores. It is less conclusive whether social support buffers the effects of stressors and whether it is more beneficial to women.

Psychological resources

There are several measures of psychological resources, such as self-esteem and mastery. "These coping resources are presumed to influence the choice and/or the efficacy of the coping strategies that people use in response to stressors." (Thoits, 1995b) Two different psychological resources will be reviewed; self-esteem and mastery. Self-esteem "refers to the positiveness of one's attitude toward oneself" (Pearlin and Schooler, 1978) and was developed by Rosenberg (1965). Mastery measures whether an individual "regards one's life chances as being under one's own control" (Pearlin and Schooler, 1978) and was created by Pearlin and Schooler (1978). Mastery has also been called "perceived control." (Walters, McDonough, and Stroschein, 2002)

Thoits (1995b) reviewed several studies, and found that both mastery and self-esteem are associated with lower distress, and both appear to buffer the effects of stressors on distress. When exploring gender differences in these resources, some studies found women are impacted more by psychological resources (Pugliesi, 1995; Walters, McDonough, and Stroschein, 2002), while other studies do not support this (Roxburgh, 1994). Pugliesi (1995) found increased self-esteem was associated with lower distress, with women being impacted more by self-esteem than men. Roxburgh (1994) reported that mastery was associated with decreased distress, but no gender differences were found. In another study, mastery and self-esteem were associated with lower distress, with "social support and [mastery being] more effective in reducing distress among women than they were for men." (Walters, McDonough, and Stroschein, 2002) Table

2.6 has an overview of studies that have studied the association of psychosocial resources with distress.

All of these results indicate that mastery and self-esteem are associated with decreased distress. The evidence is not clear on gender differences, but it is possible that women are impacted more by coping resources than men.

The buffering effects of psychosocial resources on stressors

Many researchers have not investigated the interaction of stressors, psychosocial resources and gender and their associations with distress. In Roxburgh's analysis of women only, she found "that the highest distress is experienced by women in highly routine jobs who have low mastery... [and] that when mastery is high, increases in routinization do not significantly affect distress. However, mastery appears to buffer the negative impact of routine work." (Roxburgh, 1994, pp. 132-133)

Roxburgh (1994) also explored the impact of family health and parenting stressors with mastery and partner support on distress, again only on a sample of women. While both stressors were statistically significant, only one interaction effect was found: high partner support reduced the impact of family health strains. When she looked at both work and family stressors, along with mastery, co-worker support and partner support, she reported similar significant interactions between stressors and psychosocial resources as discussed above, but also found that high mastery also reduced the impact of family health strains on distress. In another analysis with men, she found that the negative impact of job routinization on distress was moderated by mastery for both sexes, and no gender differences were found in this buffering effect.

Vermuelen and Mustard (2000) found high social support at work didn't change the negative effects of active and high strain jobs in distress among men (these two job stressors continued to be statistically significant when combined with high social support), but high social support among women brought these same two job stressors, active and high strain jobs, to insignificance (active and high strain jobs are both high in job demands.) These results indicate that high social support at work buffers the effects of high job demands among women, but not among men.

All in all, psychosocial resources have been found to be associated with lower distress. Some of these resources may have buffering effects on resources. Some gender differences in psychological resources were also found to be significantly associated with distress.

Conclusion

Roles, stressors and coping resources may lend more knowledge into why gender differences in psychological distress persist. Several studies have looked at *some* of these three mechanisms in explaining gender differences in distress, but no explanation has been found that fully accounts for the persistence of women's higher distress. Women have higher distress than men in many role configurations. While some work stressors appear to affect distress similarly for men and women, other work stressors appear to be more salient to men's higher distress level. Coping resources appear to buffer and have a direct association with distress among both men and women, however, some of these resources may be more salient for women.

Three research groups (Pugliesi, 1995; Roxburgh, 1994; Roxburgh, 1996; McDonough, Walters, and Strohschein, 2002; Walters, McDonough, and Strohschein,

2002) have investigated gender differences in roles, role quality and coping resources and their association with psychological distress. While several studies explore these topics, these three studies have more elements that are common with this thesis. First, all three studies use a population cohort, whereas some studies investigate sub-groups, such as factory workers or women only. This thesis will also explore the associations of three major roles with distress: marital status, parental status and employment status. Many studies inquire into gender differences of specific roles, e.g. some studies explore gender differences in distress only among the married. The study by Pugliesi (1995) specifically explores the worker role and uses the stress process framework that is used in this study. All three studies emphasize roles *and* stressors in the family and at work as much as possible, including social and/or psychological resources. None of the studies have included everything I have attempted in this research, but they are instrumental in guiding this thesis, particularly when considering the frameworks, hypotheses and analyses. Finally, all three studies have attempted to discern whether women's higher distress is due to more exposure to stressors and/or whether stressors impact women more than men. Several other studies explore gender differences through the differential exposure and differential vulnerability theories, so these theories are well grounded in sociological studies of gender differences in distress. This thesis will use the differential exposure and differential vulnerability theories to guide the analyses in exploring gender differences in distress.

There are also a number of papers that conceptualize how stressors impact the well-being of individuals. Many social scientists concur that the stress process is a sound framework for examining 1) the ways in which individuals cope with stressors and 2)

whether coping mechanisms deter and/or buffer the effects of stressors on well-being. While it is not possible in a cross-sectional survey to decipher whether coping resources moderate the effects of stressors on well-being, associations can be made between resources and well-being. As well, interactions between coping resources and stressors can be explored. The stress process emphasizes that coping mechanisms are important when investigating the impact of stressors on well-being. Thus, when attempting to account for possible explanations for gender differences in distress, it is important to investigate how coping may differ between men and women, and whether coping has a buffering effect on stressors. The stress process will be used in this study to guide the analysis of the relationships between stressors and psychosocial resources and their associations with distress. The differential exposure and differential vulnerability theories and the stress process framework are further examined in the next chapter, *The Conceptual Framework*.

Table 2.1 Marital status associations with distress

Variable	Significant studies
<p>Marital Status Gender differences: Women have higher distress than men in all marital status categories (with exceptions)</p>	<ul style="list-style-type: none"> ◆ (Roxburgh, 1996) (except previously married non-parents) ◆ (Simon, 1995) (a study on married persons) ◆ (Simon, 1992) ◆ (Lennon, 1996) (except among widowed) ◆ (Radloff, 1975) (men are more depressed if they were never married or widowed) ◆ (Aneshensel, Frerichs, and Clark, 1981) (except among widowed) ◆ (Davies, 1995) (only among married)
<p>Marital Status Married individuals have lower distress than those in other marital status categories</p>	<p>Studies that have found this to be true:</p> <ul style="list-style-type: none"> ◆ (Simon, 1992) ◆ (Pearlin, 1989) ◆ (Booth and Amato, 1991) ◆ (Turner and Marino, 1994; Turner, Wheaton, and Lloyd, 1995) ◆ (Wade and Cairney, 1997) ◆ (Pugliesi, 1995) ◆ (MacIntyre, Hunt, and Sweeting, 1996) ◆ (Gore and Mangione, 1983) (for depression) ◆ (Aneshensel, Frerichs, and Clark, 1981) (but among women, widowed women have lowest depression score) ◆ (Waldron, Weiss, and Hughes, 1997) (women only study) <p>Studies that have not found this to be true:</p> <ul style="list-style-type: none"> ◆ (Dupuy, Engel et al., 1970) (lowest symptom rate was among the never married) ◆ (Reskin and Coverman, 1985) (being single was associated with lower distress)
<p>Marital Status Married individuals have lower distress than those in other marital status categories - with some exceptions</p>	<ul style="list-style-type: none"> ◆ (Zimmerman-Tansella, Conini et al., 1991) (true for men, but not for women) ◆ (Fuhrer, Stansfeld et al., 1999) (true for men, but not for women) ◆ (Lennon, 1996) (Women only study - never married women have low distress too) ◆ (Umberson, Wortman, and Kessler, 1992) (true when compared to widowed men, but not compared to widowed women) ◆ (Romans-Clarkson, Walton et al., 1988) (Women only study - true only when compared to never married and separated women)

Table 2.2 Parental Status associations with distress

Variable	Significant studies
<p>Children Being a parent is associated with distress (some studies show an association with higher distress, while others show an association with lower distress)</p>	<p>Studies that have found this to be true:</p> <ul style="list-style-type: none"> ◆ (Elliott and Huppert, 1991) (Higher distress for women with kids less than 5 years old) ◆ (Romans-Clarkson, Walton et al., 1988) (Women without children had higher distress) ◆ (Radloff, 1975) (Higher depression scores if children were less than 6 years old, lower if children less than 12) ◆ (Reskin and Coverman, 1985) (Higher distress for women and black men) ◆ (Lennon, 1994) (Used number of children - this was associated with decreased distress) ◆ (Roxburgh, 1994) (Among employed women, children appear to have a buffering effect.) <p>Studies that have found this to be true with exceptions:</p> <ul style="list-style-type: none"> ◆ (Cleary and Mechanic, 1983) (This is true for women who work compared to housewives and employed husbands) ◆ (Gove and Geerken, 1977) (For husbands, distress increased as the age of the child increased. For women, distress was highest if the age of the youngest child was between 0 and 4 years old.) <p>Studies that have not found this to be true:</p> <ul style="list-style-type: none"> ◆ (Pugliesi, 1995) (For children age 16 or less) ◆ (Lennon, 1996) (Women only study) ◆ (Barnett and Marshall, 1991) ◆ (Gore and Mangione, 1983) ◆ (MacIntyre, Hunt, and Sweeting, 1996) ◆ (Coverman, 1989) ◆ (Davies, 1995)
<p>Children Parenthood is associated with lower distress when controlling for stressors or resources</p>	<ul style="list-style-type: none"> ◆ (Walters, McDonough, and Strohschein, 2002) (When psychological and material resources are accounted for) ◆ (McDonough, Walters, and Strohschein, 2002) (Women only study - when chronic stressors are accounted for) ◆ (Pugliesi, 1995) (She did not find this to be true) ◆ (Roxburgh, 1994) (When chronic stressors and psychological resources are accounted for)
<p>Children Women are impacted more by children than men</p>	<ul style="list-style-type: none"> ◆ (Roxburgh, 1994) (This was dependent on job control) ◆ (Gore and Mangione, 1983) (True when youngest child was age 6-12) ◆ (Aneshensel, Frerichs, and Clark, 1981) ◆ (Vermuelen and Mustard, 2000) ◆ (Reskin and Coverman, 1985) (Among whites, but not blacks) ◆ (Walters, McDonough, and Strohschein, 2002) (Women and men were similarly impacted by children in the home.)

Table 2.2 Parental Status associations with distress (continued)

Variable	Significant studies
<p>Lone parents Lone parents have more health problems than married/co-habiting parents</p>	<ul style="list-style-type: none"> ◆ (Simon, 1998) (This was true for depression) ◆ (Romans-Clarkson, Walton et al., 1988) (Women only study looking at distress - they did not find this to be true) ◆ (Lennon, 1996) (Women only study looking at distress - she did not find this to be true.) ◆ (Curtis, 1998) Women only study. Some mixed results, outcome is self-reported health and health utility index. When controlling for demographics, lone mothers health status is similar or better than married mothers. ◆ (Walters, McDonough, and Strohschein, 2002) Lone parenthood is not associated with distress (for both men and women, separately and combined. They tried to find a gender interaction with this, but did not find any associations with distress.) ◆ (Macran, Clarke, and Joshi, 1996) Mothers only: Significant only for full-time employed lone parents ◆ (Lipman, Offord, and Boyle, 1997) Mothers only

Table 2.3 Employment Status associations with distress

Variable	Significant studies
Female homemakers have higher distress than employed women (most studies compare married women only)	<p>Studies that found this to be true:</p> <ul style="list-style-type: none"> ◆ (Dupuy, Engel et al., 1970) ◆ (Reskin and Coverman, 1985) ◆ (Rosenfield, 1989) ◆ (Kessler and McRae, 1982) ◆ (Gore and Mangione, 1983) ($p < 0.10$, depression was the distress measure) <p>Studies that did not find this to be true:</p> <ul style="list-style-type: none"> ◆ (Roxburgh, 1996) ◆ (Radloff, 1975) ◆ (Thoits, 1986)
Housewives have higher distress than husbands/employed men	<ul style="list-style-type: none"> ◆ (Roxburgh, 1996) ◆ (Rosenfield, 1992) ◆ (Radloff, 1975) ◆ (Rosenfield, 1989)
Employed women (wives) have higher distress than employed men (husbands)	<ul style="list-style-type: none"> ◆ (Roxburgh, 1996) ◆ (Rosenfield, 1992) ◆ (Radloff, 1975) ◆ (Reskin and Coverman, 1985) ◆ (Aneshensel, Frerichs, and Clark, 1981) (Even when looking at full-time employment) ◆ (Rosenfield, 1989) (Did not find this to be true)

Table 2.3 Employment status associations with distress (continued)

Variable	Significant studies
The employed have lower distress than non-employed or unemployed	<ul style="list-style-type: none"> ◆ (Theodossiou, 1998) (Employed vs. unemployed) ◆ (Radloff, 1975) (Employed vs. unemployed) ◆ (Atkinson, Liem, and Liem, 1986) (Employed vs. unemployed, outcome is social support, not distress) ◆ (Pearlin, Lieberman et al., 1981) (Becoming unemployed is associated with an increase in depressive symptoms) ◆ (Warr, 1987) (The author cites a couple of studies that show decreased mental health for the unemployed) ◆ (Gore and Mangione, 1983) (Full-time employment is related to lower levels of depression) ◆ (Lennon, 1996) (In this women only study, no differences were found between the employed and not employed - except for the interaction effect of marital status and employment status - unmarried, non-employed women have more depressive symptoms) ◆ (Walters, McDonough, and Strohschein, 2002) (Employed vs. non-employed)
Unemployed men have higher distress than unemployed women	<ul style="list-style-type: none"> ◆ (Theodossiou, 1998) ◆ (Radloff, 1975)
Higher occupational classes are associated with lower distress	<p>Studies that found this to be true:</p> <ul style="list-style-type: none"> ◆ (Fuhrer, Stansfeld et al., 1999) ◆ (Turner and Marino, 1994; Turner, Wheaton, and Lloyd, 1995) <p>Studies that did not find this to be true:</p> <ul style="list-style-type: none"> ◆ (Elliott and Huppert, 1991) - Women only study, used husband's occupation ◆ (Roberts and O'Keefe, 1981) - Married couples ◆ (Romans-Clarkson, Walton et al., 1988) - Women only

Table 2.4 Chronic stressors and associations with distress

Stressor	Association with distress	Gender differences
Relationship/marital	(Aneshensel and Pearlin, 1987) (McDonough, Walters, and Stroschein, 2002)	(Aneshensel and Pearlin, 1987) Women impacted more than men (McDonough, Walters, and Stroschein, 2002) No gender differences
Child/parenting	(Roxburgh, 1994) (Simon, 1992) (McDonough, Walters, and Stroschein, 2002)	(Griffin, Fuhrer et al., 2002) Women impacted more (McDonough, Walters, and Stroschein, 2002) No gender differences
Family health	(Roxburgh, 1994) (McDonough, Walters, and Stroschein, 2002)	
Work stressors	(Holahan, Moos, and Bonin, 1999) (Roxburgh, 1994) (Walters, McDonough, and Stroschein, 2002) (Griffin, Fuhrer et al., 2002)	(Aneshensel and Pearlin, 1987) Men impacted more (McDonough, Walters, and Stroschein, 2002) No gender differences

Table 2.5 Job stressors and associations with distress

Job stressor	Association with distress	No association with distress
Control	<ul style="list-style-type: none"> ◆ (Lennon, 1994) Women only ◆ (Griffin, Fuhrer et al., 2002) Men impacted more for anxiety ◆ (Lombardi and Ulbrich, 1997) Women only - associated with depression, but no anxiety 	<ul style="list-style-type: none"> ◆ (Pugliesi, 1995; Roxburgh, 1996) No gender differences ◆ (Pugliesi, 1995) No gender differences ◆ (Walters, McDonough, and Stroschein, 2002) No gender differences were found – Control originally was not associated with distress. Low control was associated with <i>lower</i> distress <i>and</i> when psychosocial resources are in the regression model. When gender interactions were introduced in the regression model, control was no longer significantly associated with distress.
Demands	<ul style="list-style-type: none"> ◆ (Roxburgh, 1996) (Women impacted more than men) ◆ (Walters, McDonough, and Stroschein, 2002) (No gender differences were found) ◆ (Lombardi and Ulbrich, 1997) Women only 	
Physical exertion	<ul style="list-style-type: none"> ◆ (Walters, McDonough, and Stroschein, 2002) (No gender differences were found) ◆ (Lennon, 1994) Women only 	
Job insecurity	<ul style="list-style-type: none"> ◆ (Walters, McDonough, and Stroschein, 2002) (No gender differences were found) 	
Job satisfaction	<ul style="list-style-type: none"> ◆ (Pugliesi, 1995) No gender differences 	

Table 2.6 Psychosocial resources and associations with distress

Resource	Direct association with distress (distress deterring)	Stress buffering association with distress
Social support	<ul style="list-style-type: none"> ◆ (McFarlane, Norman et al., 1983) (There is no association with distress) ◆ (Cohen and Ashby Wills, 1985; Thoits, 1995b; Turner, 1983) (Direct association with distress) ◆ (Roxburgh, 1994) (No gender differences) ◆ (Loscocco and Spitze, 1990) (Factory workers - no gender differences) ◆ (Pugliesi, 1995) (Only women are impacted by social support) 	<ul style="list-style-type: none"> ◆ (Cohen and Ashby Wills, 1985; Loscocco and Spitze, 1990; Thoits, 1995b) (No buffering effect) ◆ (Parry, 1986) (Buffering effect for employed women with life events) ◆ (Ensel and Lin, 1991) (A "mediating" effect on life events) ◆ (Roxburgh, 1994) (Among women only - high partner support reduced the impact of family health strains)
Self-esteem	<ul style="list-style-type: none"> ◆ (Pugliesi, 1995) (Women impacted more than men) ◆ (Walters, McDonough, and Strohscchein, 2002) (No gender differences found) 	
Mastery	<ul style="list-style-type: none"> ◆ (Walters, McDonough, and Strohscchein, 2002) (Women impacted more than men) ◆ (Roxburgh, 1994) (No gender differences found) 	<ul style="list-style-type: none"> ◆ (Roxburgh, 1994) (Distress is associated with highly routine jobs and mastery is low. When mastery is high, routinization is not associated with higher distress.)
Co-worker support	<ul style="list-style-type: none"> ◆ (Walters, McDonough, and Strohscchein, 2002) (No gender differences) ◆ (Roxburgh, 1996) (No gender differences) 	<ul style="list-style-type: none"> ◆ (Vermuelen and Mustard, 2000) (Results for women only: "co-worker support buffers the impact of high job demands when substantive complexity is low." Pages 128-9.) ◆ (Vermuelen and Mustard, 2000) (Social support buffers the impact of job demands for women, more than for men.)

Chapter 3: Conceptual Framework

This thesis utilizes the 1994 Canadian National Population Health Survey (NPHS) to study gender differences in distress. Before explaining the guiding frameworks and theories, it is important to understand how the variables from the NPHS fit into the constructs of these frameworks. Figure 3.1 shows a list of attributes that previous studies have found to be associated with psychological distress, and are divided into family, work, psychosocial and sociodemographic characteristics. Each of these four attributes can also be grouped into structural circumstances, stressors and coping resources. Structural circumstances are defined as those elements in an individual's life that describe their status in family or work roles, or status in society (Denton and Walters, 1999). For example, marital and employment status, as well as socioeconomic status are all considered structural circumstances. Stressors are defined as events or experiences perceived as a threat, demand or challenge that may produce negative physiological or psychological consequences (Cohen, Kamarck, and Mermelstein, 1983; Pearlin, 1989). Acute life events, chronic strains and psychosocial work conditions are stressors that will be explored in this thesis. Psychosocial resources that may buffer the effects of stressors, or have a direct association with low distress levels, are defined as coping resources (Cohen and Edwards, 1989; Menaghan, 1983; Pearlin, 1989). Coping resources can be external to the individual (such as social support) or internal personality/psychological attributes (such as self-esteem). Each variable listed in table 3.1 is explained in more detail in the next chapter, *Methods*.

Two sets of conceptual and theoretical frameworks will guide the exploration of the pathways to distress and in ascertaining gender differences in distress. The first

framework, the stress process, conceptualizes how different factors or stressors affect distress. Karasek's work stress model (Karasek, Baker et al., 1981) examines psychosocial work conditions, and his conceptualization of work strain fits well in the stress process. The second set of theories, the differential exposure and differential vulnerability hypotheses conceptualize how gender differences can be determined empirically and within the stress process framework.

The stress process

The stress process is defined "as combining three major conceptual domains: the sources of stress, the mediators of stress, and the manifestations of stress." (Pearlin, Lieberman et al., 1981) Measures of the sources of stress, or stressors, include life events and chronic stressors. Mediators of stressors include coping and social support. While manifestations of stressors can be physical, psychological or behavioral (Pearlin, 1989), this thesis is concerned with distress as the manifestation of stressors. The stress process implies that stressors cause distress, and that mediators can help individuals cope with stressors. This framework is being used even though a cross-sectional survey cannot assess cause or direction of associations. The framework is useful in shaping how these associations can be viewed, since "the stress process itself is not a theory but rather a framework for describing and analytically orienting research into the fascinating question of how the lives of ordinary people doing ordinary things can fall into disarray." (Pearlin, 1989)⁵

⁵ Other researchers (Dohrenwend and Dohrenwend, 1981) theorize that the directionality is an issue to contend with.

In the stress process framework, the effects of coping resources⁶ on distress fall into two models. In the first model, coping resources may buffer the effects of stressors on distress. This means that the interaction of stressors and coping resources on distress “will be significantly attenuated at higher levels of [coping resources]” (Wheaton, 1985). In this stress-buffering model, stressors show a direct effect on distress, while coping resources indirectly affect distress (Ensel and Lin, 1991; Lombardi and Ulbrich, 1997; Thoits, 1982; Wheaton, 1985). In the second model, coping resources have a direct effect on distress and they are called distress deterrents (Ensel and Lin, 1991; Wheaton, 1985). In theory, coping mechanisms are thought to enable individuals to manage the possible negative effects of stressors. As well, positive coping resources may reduce an individual’s susceptibility to distress levels, whether or not stressors are involved. This study will look at both the stress-buffering and distress-detering models, with emphasis on the distress-detering model. Caution must be used when making inferences about the buffering effect of psychosocial resources. First, it may very well be that coping resources are influenced by stressors, and it may appear that individuals with lower resources are affected more by stressors, when in fact, it is also plausible that the stressors themselves have diminished an individual's coping resources. It is only with longitudinal analyses that we could obtain evidence on whether coping resources truly buffer the effects of stressors.

Structural circumstances appear to be missing from the stress process framework.

⁶ Coping resources are used as a "proxy" for actual coping styles. Actual coping mechanisms would be a more precise measure of a person's actual coping, however only coping resources are available in this study. Several other researchers also use coping or psychosocial resources in their studies considering the stress process (Ensel and Lin, 1991; Pearlin and Schooler, 1978; Wheaton, 1985). Taylor and Aspinwell (1996) even state that personality traits can predict coping styles (page 85).

However, Aneshensel and Pearlin (1987) and Pearlin (1989) assert the importance of roles and structural circumstances. Pearlin (1989) states that "[structural] arrangements determine the stressors to which people are exposed, the mediators they are able to mobilize, and the manner in which they experience stress[ors]." He goes on to state that "interrelated levels of social structure - social stratification, social institutions, interpersonal relationship - mold and structure the experiences of individuals; these experiences, in turn, may result in stress." Roles are emphasized by Aneshensel and Pearlin (1987); "Ideally then, to study the stressors that a person experiences, it is desirable to incorporate the entire constellation of major roles the person occupies and the inter-connections that exist among these roles." (p. 87) And Pearlin (1989) further states, "the structural contexts of people's lives are not extraneous to the stress process but are fundamental to that process." So, while roles and structural circumstances are not specified in the stress process, they are vitally important to stress research.

Figure 3.2 illustrates how structural determinants, stressors and coping resources are associated with psychological distress in this conceptual framework. Structural circumstances, stressors and coping resources are all hypothesized to directly influence distress levels. As well, structural circumstances are viewed as influencing an individual's exposure to stressors that are associated with psychological distress (Aneshensel and Pearlin, 1987). As such, these structural determinants may be regarded as "fundamental causes" of disease (Link and Phelan, 1995). As an example, persons with low education are more likely to report higher levels of distress (Mathews, Manor, and Power, 1999). Low education may lead to a job that has more stressors (Federal Provincial and Territorial Advisory Committee on Population Health, 1994; Johnson and

Hall, 1995), which in turn, may "cause" elevated levels of distress. In addition to education level influencing the frequency and duration of exposure to stressors, the knowledge and skill associated with education may also moderate an individual's response to these stressors (Menaghan, 1983). Structural circumstances may also influence coping resources. For instance, the cognitive skills acquired in a higher education may increase cognitive coping resources. Thus, structural circumstances may have a direct effect on stressors, coping resources and distress. In figure 3.2, stressors are shown to have a direct positive impact on distress - they are hypothesized to be associated with higher distress. However, coping resources may intervene and buffer the effects of stressors. And finally, coping resources are shown to have a direct negative association with distress.⁷

Karasek's work stress model

Karasek and colleagues have considered various psychosocial conditions of work, and attempted to predict poor health outcomes based on certain job conditions (Karasek, Baker et al., 1981; Karasek and Theorell, 1990; Karasek, Theorell et al., 1988). They collaborated with various researchers from many countries in order "to formulate new methodologies for associating social and psychological aspects of work structure with the outcomes of coronary heart disease (CHD) and productivity change." (Karasek and Theorell, 1990, pp. 2-3) They contend that the two conditions that explain a fair amount of poor health outcomes are decision latitude, or control at work, and psychological demands. Decision latitude is the combination of skill discretion ("the breadth of skills workers could use on the job") and decision authority ("their authority over decision

⁷ While cause and direction of association are insinuated in this framework, the reader is reminded that this study cannot ascertain cause or direction.

making") (Karasek and Theorell, 1990, p. 31). Their "concept of decision latitude is interpreted as the worker's ability to control his or her own activities and skill usage, not to control others." (Karasek and Theorell, 1990, p. 60) The measurement of psychological demands aims to ascertain how hard an individual works. They define job strain as the combination of demands and decision latitude. There are four outcomes when low/high control is crossed with low/high demands: A "high strain" job is one with low control and high demands, a "low strain" job has low demands and high control, an "active job" has high demands and high control, while a "passive job" has low demands and low control. (See Figure 3.3.) When they examined jobs in the four quadrants by gender, they found males were more often clustered in the active jobs, while women were clustered in the high strain jobs (Karasek and Theorell, 1990, p. 45). They hypothesized that high strain jobs (low control with high demands) would be the most detrimental to health outcomes among paid workers. Some of their studies have borne this out. For example, they found that persons in high strain jobs are more likely to be depressed than persons in other job strain categories, while individuals in the opposite quadrant, low strain jobs, were usually least depressed (Karasek and Theorell, 1990), and these findings were true for both men and women.

However, since the job strain model doesn't always explain variability in health (or productivity) outcomes, Karasek and colleagues sought out other job conditions that would help explain variations in outcomes without adding too much complexity to the model. They found that physically demanding jobs contribute to the work strain model. Additionally, social support at work is important since many studies "have found that supervisor support is the most important correlate of job satisfaction and low

psychological strain." (Karasek and Theorell, 1990, p. 69) Social support at work can be viewed similarly to the broader definition of social support: Social support on the job can have a direct effect on outcomes, and may also buffer the effects of work stressors. Vermuelen and Mustard (2000) used the combined control/demands/social support model in their study, which was effective in testing whether work social support was a buffer to high strain jobs. Finally, Karasek and Theorell (1990) argue that job insecurity and physical demands are also important when considering the psychosocial work environment. All of these elements, decision latitude, psychological demands, social support, physical exertion and job insecurity are available in the 1994 National Population Health Survey and will be used in this thesis. Based on the literature, the job strain model may not be as important in determining distress. Therefore, job strain will be defined as an interaction between job control and demands. Social support at work will be integrated in the job strain model during regression analyses.

The differential exposure and vulnerability theories

The stress → distress model works well to test how stressors, coping resources and structural determinants work together to "create" distress. Basically, the stress process organizes the pieces that are brought forth into explaining distress. However, this thesis is concerned with gender differences in distress, and the stress process is not sufficient in explaining or exploring gender differences. Thus, another approach is necessary to organize how gender differences will be ascertained. Two competing theories have been used in several studies in an attempt to explain gender differences in distress. The differential exposure perspective postulates that women's greater distress is due to their higher exposure to stressors and other factors compared to men (Pugliesi,

1995; Roxburgh, 1996). The differential vulnerability perspective proposes that if the response to stressors is similar among men and women, but distress is still higher among women, then women are impacted more or are more vulnerable to these stressors than men (Turner and Noh, 1983).

The differential exposure hypothesis maintains that gender differences in distress can be due to one gender being exposed to more stressful or difficult situations. For instance, more women are in lower status jobs which may explain some of the gender differences in distress. While it is possible that all gender differences can be explained by the differential exposure theory, this most likely won't hold true for this analysis. Many stressors in women's day-to-day lives are not available on the dataset that is used for this study. While psychosocial work conditions (stressors) are available, similar stressors within the home are not. Some chronic family stressors are available in the NPHS, but these stressors are generally extraordinary stressors that a small number of families face, and do not explore the daily conditions faced in the home. An example of day-to-day stressors that many women face are caring for children and household tasks which women generally put more time and effort into than men.

Differential vulnerability has been used to explain differences in distress when exposure to stressors or structural circumstances fails to account for gender differences in distress. This may be misleading, because exposure measures may fail in their capacity to measure stressors, and in many cases, exposure to some stressors is not available in the study. Turner, Wheaton, and Lloyd (1995) even state that "unmeasured differences in stress exposure across social statuses parade within research findings as vulnerability differences." Due to the possibility of misrepresenting groups of individuals as

differentially vulnerable, differential vulnerability took on a more defined interpretation. In the first definition, differential vulnerability was implied if a regression model showed women to have higher distress than men, even when accounting for structural circumstances, stressors and coping resources. However, in this definition, it is uncertain *what* women are differentially impacted by. In the refined definition, differential vulnerability is ascertained only for specific factors. This definition can lead the researcher to test whether women are more vulnerable *to certain factors* than men. The method to determine differential vulnerability is quite simple and requires that the interaction of gender with structural circumstances, stressors or coping resources be computed. If the gender interactions are statistically significant, then one sex is deemed more "vulnerable," or is impacted more than the other by that particular characteristic (Kessler, 1979a; Kessler, 1979b). For instance, Walters, McDonough, and Strohschein (2002) found the interaction of gender with formerly married status was significant, which suggests that women are impacted more by being formerly married than men. This study will use the refined method of ascertaining differential vulnerability.

This thesis will attempt to determine differential exposure and vulnerability with coping resources as well. If women are differentially exposed to stressors that lead to distress, or their coping resources differ from men, then some of the gender differences in psychological distress may be explained by the differential exposure theory. If women differ in their response to stressors, perhaps as a result of coping resources, then gender differences in distress can be explained by the differential vulnerability theory. The differential exposure and vulnerability theories have been used to explain differences between social classes, ethnicity and gender in several studies (Pugliesi, 1995; Roxburgh,

1996; Simon, 1992; Turner and Avison, 1989; Turner and Noh, 1983; Ulbrich, Warheit, and Zimmerman, 1989; Umberson, Wortman, and Kessler, 1992; Walters, McDonough, and Strohschein, 2002). However, neither of these theories have been able to explain all the gender differences in distress in most studies (Walters, McDonough, and Strohschein, 2002). Nonetheless, both the differential exposure and differential vulnerability theories will be implemented in the analyses of this study, in order to ascertain differences in the exposure and impact of structural circumstances, stressors and psychosocial resources between men and women.

The association of family and work factors with psychological distress will be examined in this thesis. Family and work factors consist of roles and other structural circumstances as well as stressors experienced within the family and work. In the analyses, roles will first be explored for their association with distress, then interactions among the family and work roles that are associated with distress will be identified. Stressors and coping mechanisms will then be brought into the model and tested on whether they are associated with distress. Chronic stressors will be tested on their association with distress, while event stressors will be used as controls. Coping resources will be explored for their direct and buffering associations with decreased distress. While most stress researchers control for many variables, such as demographics, this thesis will attempt to make some of these structural circumstances visible. That is, structural circumstances are seen to be just as important as the stressors and coping resources. This study will provide a map that will link family and work structural circumstances and stressors, psychosocial coping resources and sociodemographic factors with psychological distress. Gender differences in all these factors will be ascertained.

Hypotheses

The hypotheses reflect both associations with distress and gender differences in these associations. The association of structural circumstances, stressors and psychosocial resources will first be examined. Then the gender differences within each of these domains will be explored. The gaps and inconclusive evidence stated in *The Literature Review* are reflected in the hypotheses.

Associations with distress

Women will report higher levels of distress than men. Low income or low education attainment will be associated with higher distress scores. Younger age will be associated with higher levels of distress.

Roles. Being married, or employed or having children will be associated with lower distress. However, among women, no differences in distress will be found between the homemaker and employed roles. Being employed will moderate the negative association of not being married. Being married and/or having children will buffer the negative association with distress of being unemployed or a homemaker.

Stressors and psychosocial resources. All chronic stressors and work stressors will be associated with higher distress, with the exception that job control will not be associated with distress. All psychosocial resources will be associated with lower distress. Having children will moderate the association of low resources with distress. Perceived support will buffer the effects of family health strains. Mastery will buffer the effects of health strains. Self-esteem will not have a buffering effect on stressors.

Gender differences in exposure

Women will have lower socioeconomic status, higher chronic stress levels and lower perceived support and mastery than men. These differences will be significant and account for some of women's higher distress.

Gender differences in vulnerability

Women will be more vulnerable to high chronic stressors and low psychosocial resources than men. Having children will be more salient among females who are single or previously married. Men will be more impacted by work stressors than women. The buffering effect of perceived support with family health strains will be more beneficial for women. Job support will buffer the effects of high job demands among women, but not among men.

Hypotheses conclusions

Gender will continue to be a predictor of psychological distress, even when controlling for and testing for gender differences in family, work, psychosocial and sociodemographic characteristics.

Figure 3.1 Pathways to psychological distress using NPHS variables

Attributes	Structural Circumstances	Stressors	Coping Resources
Family	Marital status Family type Child < 6 years Child 6-11 years	Relationship problems Family health Problems with children Personal problems Financial problems	
Work	FT/PT work Employment status Pineo classification	Job insecurity Low job control Psychological demands Physical exertion	Work social support
Psychosocial		Life events Childhood and adult stressors	Perceived social support Self-esteem Mastery
Sociodemographic	Age Sex Education attainment Income level		

Figure 3.2 Conceptual Framework of The Stress Process

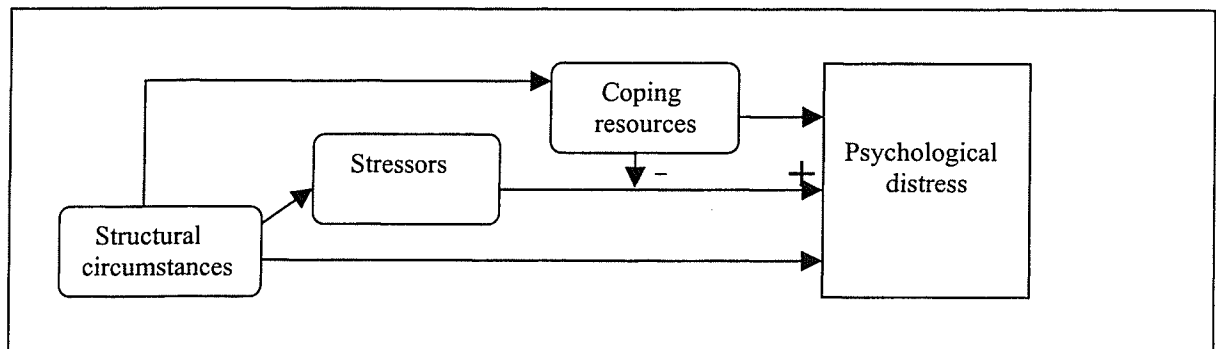


Figure 3.3 Karasek's job strain definition

Job strain		
	Low control	High control
Low demands	Passive	Low strain
High demands	High Strain	Active

Job control = skill discretion + decision authority.
Job demands are work psychological demands.

Chapter 4: Methods

This chapter discusses the study design, population and sample, measures and analyses used in this thesis. The section on measures comprises the bulk of this chapter since several variables are utilized in this study. Descriptions of each of the measures are given, providing details such as the type of variable (ordinal and categorical), dummy variables, the treatment of missing values as well as other details specific to each measure.

National Population Health Survey sampling design

The 1994 National Population Health Survey was produced by Statistics Canada as the inception survey of a longitudinal cohort. The NPHS excludes persons living on reserves, on Canadian Forces Bases and some remote areas (Statistics Canada, 1996). All ten provinces are included in the survey, the territories are excluded. Every two years the same participants are interviewed on various health matters, using the same basic questions each year, but incorporating a series of other questions in subsequent years. Participating households in the 1994 NPHS survey were randomly selected, using a multi-stage, stratified, random sampling of dwellings selected within clusters (Cairney, 1998; Statistics Canada, 1996; Wade and Cairney, 1997). For households included in the survey, every member of the household was interviewed about general health, and family relationships were established. This information is found in the "general" file. For the "health" file, one household member was randomly selected to be interviewed on a comprehensive set of health-related questions. The "general" portion of the survey as well as the health component are available in the "health" file.

The household response rate was 88.7%. A total of 17,626 participants out of 18,342 possible respondents aged 12 years and older completed the "health" portion of the survey for a person response rate of 96% (Akyeampong, 1998; Statistics Canada, 1996; Wade and Cairney, 1997). Each respondent was given a "weight" to ensure that the sample is representative of the Canadian population. The "health" file contains the information that this study used and will be called the NPHS data throughout this thesis.

Statistics Canada has made most of the NPHS data available to everyone in public use files. These files do not contain information that could identify individuals, and have "collapsed" information on certain variables to ensure that persons are not identifiable. For instance, different ethnicities were combined, some of the Atlantic provinces were grouped together and birth date was confined to year and month.

Variables describing sampling strata, which are necessary to account for the design effect of the multi-stage sample design, are also not included in public use files. However, Statistics Canada has developed a remote access system that allows researchers to appropriately analyze the NPHS. A series of bootstrapping algorithms were developed that can be run at home or in the office using "dummy" (or fake) data. The "dummy" data was created by Statistics Canada for the sole purpose of allowing researchers to use the NPHS data without the problems of confidentiality. Once the programs run at home on the dummy data, the programs are sent to Statistics Canada, and then personnel at Statistics Canada runs the programs on the true NPHS data, usually within 24 hours. The program output files are sent back to the researcher after any output that is deemed confidential has been removed. This study used both the public use data and remote access data for the analyses. The public use data was used for setting up the data, doing

initial statistical analyses, and for expanding on the bootstrapping analyses. Bootstrapping techniques were available in Analysis of Variance and multiple regression, but not in other analyses.

Population and study design

This is a cross-sectional study using the 1994 National Population Health Survey (NPHS). The population for this research is all residents in Canada comprising the majority of working age adults. This study selected individuals from the NPHS who were aged 20 to 64 years ($N \approx 17,325,000$) (Statistics Canada, 1994b).

Study Sample

The selected sample consisted of respondents to the "health" portion of the 1994 NPHS survey ages 20 to 64 ($N=12,636$). Only adults aged 20-64 were included in this study since this study is primarily interested in those who are most likely to be in the workforce. Respondents who did not answer the psychological distress portion of the survey were excluded ($N=561$). Since this study examines work and family characteristics, respondents who were not in the workforce or who were not homemakers were excluded ($N=1,412$). Employed individuals were those who stated they were currently working. Homemakers were those who are not employed, but stated that their main activity is either "caring for the family," or "working and caring for the family." Unemployed individuals are considered to be in the workforce, and comprised individuals who are seeking employment. Unemployment was defined using the method described by the Institute for Work and Health and Statistics Canada (Institute for Work and Health, 1998). See table 4.1 for details of the algorithms used to define these three groups. Persons who were not defined as being employed, unemployed or homemakers

tended to state their current main activity was “going to school”, “recovering from illness”, “on disability” or “retired.” A further 78 people were excluded if they had more than one non-imputed missing value. (See the section on *Missing values* and *Appendix A* for more details about this.)

Tables 4.2 and 4.3 show the distribution of respondents who were excluded and included in this study. Of the respondents who were excluded because they were not employed, unemployed or homemakers, about half were retired individuals (N=630). The next two largest groups of individuals who were excluded were those who were recovering from an illness or disability (N=348) and those who were students (N=302). Forty-nine respondents stated that their main activity was working for pay, but they did not currently have a job and were not classified as unemployed. These individuals were not included in the study. For these people, the reasons for not working are given in table 4.4. A further 83 people were in miscellaneous groups in the LFS_Q1 variable.

The final sample size was 10,585 individuals.

Measures

Three groups of variables, structural circumstance, stressors and coping resources, were explored for their association with psychological distress. Structural circumstances within the family are marital status and age of youngest child (0-5, 6-11, 12+). Structural circumstances related to work are full-time or part-time work, employment status and the Pineo socioeconomic job classification scale. Sociodemographic structural circumstances are age, sex, education attainment and income level. Stressors consisted of chronic stressors, event stressors and work stressors. Chronic stressors are problems in relationships, the family, with children, finances, or personal problems. Event stressors

include life events and child & adult stressors and are used as control variables. Work stressors include low control, psychological demands, job insecurity, physical exertion and job dissatisfaction. Coping resources comprise social support at work, perceived social support, self-esteem and mastery. Self-rated health and age were used as a control variables.

All variables were from the 1994 National Population Health Survey public use "health" file. Questions and variable definitions were available from Statistics Canada (Statistics Canada, 1994a; Statistics Canada, 1996). Table 4.5 contains a list of variables used in this study and states whether the variable was derived or re-grouped. Most variables were used directly from the survey (either as is or in dummy variable format), while some variables were grouped or derived by Statistics Canada. A few variables were created or calculated from the NPHS measures for this study. Most of these "study derived" variables were based on measures used in other studies that employed the NPHS. One calculated variable, unemployment, is defined in table 4.1 and was not included in table 4.5. Several variables were re-coded for analyses and described further for each measure.

Dependent variable

The dependent variable was *psychological distress*. There are a variety of scales that measure psychological distress. These scales have high consistency and have been shown to be strongly correlated. In the NPHS, psychological distress (see Table 4.9) is measured using a selection of questions from the scale created by Kessler and Mroczek from the Institute for Social Research at the University of Michigan (Statistics Canada, 1996; Wade and Cairney, 1997). "The Michigan scale was derived from over 500 items

originating from 22 previous distress scales using Item Response Theory to maximize item clarity and to be equally reliable across important subsamples of the U.S. populations” (Wade and Cairney, 1997). The NPHS psychological distress scale used six questions with possible responses ranging from 0 (None of the time) to 4 (All of the time). All scores for each question were summed to give a composite distress score, which ranged from 0 to 24, where a higher score reflects higher distress. The internal reliability of this scale reported by Statistics Canada was $\alpha=0.79$ (Wade and Cairney, 1997).

The distress variable was skewed to the right, therefore it was transformed. Transformation using the square root of distress provided the best results for the least amount of skewness and kurtosis. Appendix B presents details on the transformation process.

Independent variables

The independent variables were both categorical and ordinal. While some of the categorical data appear to be ordinal, this may not be the case (for instance, education or income quintile.) In regression analyses, categorical data were put into separate dummy variables. For the income quintiles, if a person was grouped in the lowest income, then the variable "income1" would be coded 1, and is coded 0 if they are not in the lowest income. This was done for all of the other income levels, including the “missing” income data. Dummy coding was done for all of the categorical data. Some ordinal data were compressed into smaller categories. For instance, self-rated health, which could be thought of as a five-point ordinal scale, was separated into “Good” or “Not good” health. The re-grouped variables are described for each variable.

Family structural circumstances in the NPHS that were considered in this study are:

Marital status. Three marital status categories were grouped by Statistics Canada in the public use file; 1) married/common-law/partner, 2) never married and, 3) previously married (widow/divorced/separated). This grouping was kept in the study.

Age of youngest child in the household. This variable was created using three NPHS variables which describe having children aged 0-5, 6-11 or if the household (family) structure indicated that children (under age 25) were present in the home. If there was a child under the age of six in the home, then the age of the youngest child was 0-5. If there were no children under six years old and there was a child aged 6-11 in the home, then the age of the youngest child was 6-11. If there were no children in the home under 12 years old, but the family structure variable indicated that children were in the household, then the age of the youngest child was set to age 12 or over. If the family structure variable indicated the person is living alone or lives only with a partner, then there were no children present in the home. Otherwise, it was not known if children were present and there were 190 of these individuals.

Work structural circumstances. If someone was not currently working, then none of the work variables were coded.

Full- or part-time work. Full-time work was defined as working 30 hours or more a week, part-time work are those who work less than 30 hours per week. This definition is directly from the NPHS data. Seventeen individuals did not state this, and were given an imputed value.

Pineo socio-economic classification of occupation. Pineo job classifications (Pineo, Porter, & McRoberts, 1977) were re-grouped into eight categories from the 16 groups in the NPHS. The collapsed groups reflect most of the re-grouping done by Vermeulen and Mustard's study (2000). Individuals were grouped as follows: 1) Self-employed professionals, 2) Employed professionals and high level management (two categories grouped together), 3) Semi-professionals, technicians and middle management (three categories grouped together), 4) Supervisors and foremen/forewomen (two categories grouped together), 5) Skilled clerical/sales/services, 6) Skilled crafts and trades, 7) Farmers, semi-skilled manual, unskilled manual and farm labourer (four categories grouped together), 8) Semi-skilled clerical/sales and unskilled clerical/sales/service (two categories grouped together) and 9) Not stated. Note that #9, "not stated," is the category for persons with missing Pineo classification (N=217) and a separate dummy variable was created. If someone did not currently work, they were not given a Pineo classification.

Employment status. Employment status was derived from the variable dvwk94. If the person stated they were currently working, then the person was flagged as being employed. The algorithm for defining employed and unemployed individuals and homemakers can be found in table 4.1. Table 4.1b indicates the number of individuals in the homemaker status by lfs_q1 category.

Sociodemographic variables examined were:

Sex. This variable was coded to 0 for men and 1 for women.

Age. Age was grouped in 5 year groupings by Statistics Canada, starting with ages 20-24 and ending with ages 60-64. No re-grouping was done.

Highest level of education attainment. The variable dvedc294 was originally coded as 12 categories in the NPHS from 1) No schooling, 2) Elementary school, to 11) Bachelor degree and 12) Master/MD/Doctorate degree. For this study, education attainment was regrouped into five categories, similar to the groups in the study by Cole, Ibrahim et al. (2003). This re-grouping was done for a couple of reasons. First, some of the categories had few people which would reduce chances of making any inferences on this data. Secondly, these new categories showed significant differences in the work by Cole, Ibrahim et al. (2003). The revised groups were: 1) Elementary school (includes No schooling and Elementary school), 2) Some secondary school, 3) High school graduation, 4) Beyond high school (this includes “Other beyond high school,” “Some trade school,” “Some community college” and “Some University”), 5) Degree or diploma (this includes “Diploma/certificate trade school,” “Diploma/certificate community college, CEGEP,” “Bachelor degree” and “Master/MD/Doctorate.”). Nine individuals did not state their highest level of education, and were given an imputed value.

Derived income adequacy. For the five income adequacy categories, the NPHS used household size and total household income to place an individual in one of these groups: 1) Lowest income, 2) Lower middle income, 3) Middle income, 4) Upper middle income, 5) Highest income. 327 individuals did not state their income and they were put into a separate “unknown income” dummy variable.

Self-rated health. This variable was used as a control, since persons with poor physical health are more likely to be distressed (Gore and Mangione, 1983; McDonough, Walters, and Stroschein, 2002). Respondents were asked, "In general, how would you describe your health?" Those who responded "poor" or "fair" were coded 0, while responses of "good," "very good" and "excellent" were coded 1. There were no missing values.

Chronic stressors in the NPHS were derived from a list of 17 questions that pertain to chronic stress originating from a 51 item inventory developed by Wheaton (Turner, Wheaton, and Lloyd, 1995; Wheaton, 1994). These questions were tallied to give a total chronic stress index. Moos and Swindle (1990) "have identified eight underlying domains of ongoing life stressors and life events," (page 172) while Wheaton (1994) has identified 12 domains of chronic stress. In the NPHS, a sub-index of six of Wheaton's stressors, such as personal stress and financial problems, was derived from the chronic stress scale. Five of these sub-indices were used in this study. Table 4.10 contains the five chronic stressor questions from the NPHS, valid answers (true or false) and scores. All chronic stressors were grouped into 0) no or few problems and 1) with problems. The median value was chosen as the cut-off to group individuals in no/few problems and having problems. If any chronic stressor value was missing, then the respondent was removed from the study (N=12). See the section *Missing Values* and Appendix A for more information on non-respondents. The chronic stressors are:

Relationship problems with partner/or no mate. This variable reflects having a partner that is not understanding, not affectionate and/or not committed to the relationship, while problems in seeking a mate were identified for those who did not have a marital or common-law partner. Valid values for this variable are 0 for no problems and 1 for one or more problems.

Problems with children. Those who had a child who seemed unhappy or whose behaviour was a serious concern were coded as 1, while people who did not have any problems with their child(ren) were coded 0. Individuals who stated they did not have children were coded in another variable, “child stressor not applicable.”⁸

Family health problems. This variable was coded as 1 if a family member was seriously ill or had an alcohol or drug problem. If a family member did not have any of these problems, then this variable was coded 0.

Financial problems. This variable was coded as 1 if an individual didn't have enough money, otherwise this variable was coded 0.

Personal problems. This variable was coded 1 if the person had two personal stressors, such as taking on too many things, or being criticized by others. If the respondent had one or no personal problems, then they were coded 0, otherwise they were coded 1. The median value was between 1 and 2 personal problems.

⁸ Before the child stressor questions were asked, respondents were asked if they have children. The “child stressor not applicable” variable does not directly correspond to the “age” of children variables. This is probably due to the fact that the “age” variables are based on the presence of children in the household. Thus, a respondent could be a parent, but not have children in their household, particularly if they are separated, divorced or the children have moved out of the home. On the other hand, some respondents did have children in the household, but stated they did not have children. This could reflect a situation in which the respondent is not a parent to the children in the household (e.g. an older sibling, a grandparent or the partner/spouse of the child's parent.)

Work Stressors are defined as a series of work conditions which may be particularly stressful (Karasek, Baker et al., 1981; Karasek and Theorell, 1990). The twelve work stressor questions in the NPHS (see Table 4.11) are a partial list of questions from the 27 item Job Content Questionnaire (JCQ) (Karasek and Theorell, 1990). If *any* of the questions from the JCQ or the job satisfaction question were missing, then *all* variables from the JCQ and the job satisfaction question were set to 0, and individuals were flagged in the “job stressor unknown” variable. This was done for statistical reasons in multivariate regression analyses. In the NPHS, the work stressor questions and groupings include:

Skill discretion or routinization (you do things over and over in your job, you learn new things, high level of skill is required in your job);

Decision authority or level of control (you decide how you do your job, you have input into what happens in your job);

Job control was the combination of skill discretion and decision authority.

Psychological demands (job is hectic, free from conflicting demands from others);

Job insecurity (job security is good); and

Physical exertion (job requires a lot of physical effort).

Each work stressor variable was composed by summing the answers to a set of questions, which was done by Statistics Canada. Possible answers range from strongly disagree (score=0) to strongly agree (score=4). Some questions were reversed scored, so that positive or “less stressful” work conditions were given a lower score.

When Karasek's full scale is implemented, the internal scale reliability for each of the measures from Karasek's full scale were done separately for men and women: The corresponding reliability measures are given for each of the work stressor measures: Skill discretion $\alpha=0.77$ (men) and 0.72 (women); decision authority $\alpha=0.72, 0.71$; psychological demands $\alpha=0.61, 0.70$; job insecurity $\alpha=0.40, 0.36$ (Karasek and Theorell, 1990). While demands and insecurity had low scores for internal scale reliability, the work of McDowell, Boulet, and Kristjansson (1993) led to the omission of some of the JCQ questions used in the NPHS so that these scales would have a higher internal reliability. The removal of some of the questions led to the job insecurity variable being measured with only one question in the NPHS.

Job satisfaction. Another question (not part of the JCQ) asked of respondents was, "How satisfied are you in your job?" Possible answers were 1) Very satisfied, 2) Somewhat satisfied, 3) Not too satisfied, and 4) Not at all satisfied. Persons who stated they were not satisfied (3 and 4), were coded as 1, and people who were at least somewhat satisfied with their jobs were coded 0.

Event stressors include:

Adjusted recent life events. Life events were grouped into "0 recent life events" or "one or more recent life events", from the variable dvrl394. Since some of the questions pertained to parents or married individuals, this variable was adjusted by Statistics Canada so that respondents with/without children and married/non-married were weighted equally. The questions for this scale are in table 4.12. Individuals with missing values (N=4) were given an imputed value.

Childhood and adult stress. “This index measures the number of traumatic events respondents have been exposed to during their childhood, adolescence or adulthood.” (Statistics Canada, 1996). Values for this variable were re-coded to 0 for no stressors and 1 for one or more stressors. See table 4.12 for the list of questions. If a person did not have a valid score (N=5), then they were given an imputed value.

Coping resources cover a range of social and psychological factors that may enable an individual to manage stressful events. Tables 4.13 and 4.14 have the NPHS questions and scores for the coping resource measures of self-esteem, mastery and perceived social support. These variables were re-coded so that individuals were grouped as having “high” or “low” resources. The median value was chosen as the cut-off point. Individuals with “high” (on or above the median) resources were coded 1, and those with “low” (on or below the median) resources were coded 0. Non-respondents were given imputed values.

Self-esteem “refers to the positiveness of one’s attitude toward oneself” (Pearlin and Schooler, 1978) which used six items from the Rosenberg scale (Rosenberg, 1965). The Rosenberg scale was condensed by Pearlin and Schooler (1978) and this condensed scale was used in the NPHS. The median value was 20, so those with “high” self-esteem had scores that ranged from 21 to 24, and those with “low” self-esteem had scores that ranged from 5-20. Nine people were given an imputed value.

Mastery. The scale for mastery was created by Pearlin and Schooler and measures whether an individual “regards one’s life chances as being under one’s own

control” (Pearlin and Schooler, 1978). The median value for this scale was 20, and those with high mastery had scores from 21 to 28, and those with low mastery had scores from 2 to 20. Thirty people were given an imputed value.

Perceived social support indicates whether respondents feel they have someone to confide in, someone they can count on, someone who can give them advice and someone who makes them feel loved (Statistics Canada, 1996). Perceived social support was selected as a social support measure for two reasons. First, "specific structural measures that provide a quantitative count of social connections typically do not show significant main effects [in] regression models with distress as the outcome." (Cohen and Ashby Wills, 1985). Secondly, "measures that index the presence of a significant interpersonal relationship such as marriage or close friendship do show buffering interactions." (Cohen and Ashby Wills, 1985). The median value for this scale was four, which was the highest possible score. Thus, those with high social support had a score of 4, while those with low social support had scores from 0 to 3. 27 people were given an imputed value.

Social support at work “refers to overall levels of helpful social interaction available on the job from both co-workers and supervisors” (Karasek and Theorell, 1990, page 69). This measure was taken from the job content questionnaire (JCQ) created by Karasek and Theorell (1990). Table 4.11 includes the work social support questions in the NPHS. Missing values for work social support were treated the same as for all variables in the JCQ.

Missing values

Three different methods were used to deal with missing values. The first method created dummy variables for missing values. The second method removed individuals with missing values (casewise deletion). The third method imputed values for data with missing values.

In the first method, variables that had a large portion of missing information (missing values were above 2% for income, pineo classification and presence of children in the household), or that were components of a scale that included sub-indices (job stressors) were given "dummy-coded" missing values. That is, a new "dummy" variable for each of the four variables described above was created. The dummy variable was given a value of 1 if a person had missing information and were coded 0 otherwise.

The second method of dealing with missing values was to remove respondents who either had invalid answers to variables that were sub-indices of larger scales or had more than one dummy-coded variable that was missing. If an individual has more than one dummy-coded missing variable, then the variance in statistical analyses may be incorrect. There were 12 individuals who had a missing value for all chronic stressors and all 12 of these individuals were removed from the study. Sixty-six individuals had more than one dummy-coded missing variable. This gave a total of 78 persons removed due to greater than 1 dummy-coded missing variable or not having enough people to create a dummy-coded missing variable.

The third method of dealing with missing values was to impute values for people who had missing values that were not sub-indices and where the number of missing values was small. (Less than 1%). If the number of missing values is very low, a

variable should not be dummy-coded (Cohen and Cohen, 1983). The variables with imputed data were: psychosocial resources (self-esteem, mastery and social support), life events (recent life events and child & adult stressors), marital status, education level and part-time work. See table 4.7.

See Appendix A for details on missing values.

Implementation

Implementation included (1) data management, (2) obtaining bootstrapping data and (3) appropriate approvals. Data management included gaining access to the 1994 NPHS public use file, reading the NPHS data into a computer dataset, obtaining the sample (persons age 20 to 64), refining variables and running descriptive analyses. Other aspects of data management were dealing with missing values, creating dummy variables from categorical data such as educational attainment, and creating other variables, such as unemployment. In order to consider the design effect, bootstrapping files from Statistics Canada were obtained to analyze the data. These files contain dummy or "fake" data and so access to true data was not available, so further approval from ethics was not required. Bootstrapping data was received August, 2001. Obtaining the appropriate approval was done by submitting the study protocol to the University of Manitoba, Faculty of Medicine Ethics Committee. This study was approved by the Ethics Committee January 9, 1999.

Limitations

The National Population Health Survey aggregates data to maintain confidentiality of respondents. For instance, ethnic status was so broadly grouped that it has not been utilized in any studies applying the NPHS public use data, nor will this study incorporate ethnicity in its analyses. While marital status was used in this study,

Statistics Canada combined some of the categories (e.g. widow, separated and divorced are in the same category) for confidentiality purposes. This broad grouping may hide differences within these categories. Some factors that may be important in explaining differences in distress between men and women were not available in the NPHS. For instance, while there is a scale of work stressors, there were no comparable scales for family and home psychosocial stressors. Components of unpaid work at home, such as high control or high repetition would be useful to help discern factors associated with increased distress in men and women.

Another limitation concerns the fact that some variables were derived. The derived variable, unemployment, is only a proxy for true unemployment. The approach used to define unemployment by the Institute of Work and Health (IWH) and Statistics Canada was a creative method that was *comparable* to the approach in the Labour Force Survey. The IWH method of deriving unemployment resulted in under reporting of unemployment in this study.

While coping resources are available in the NPHS, actual coping skills are not measured. Coping mechanisms are important factors in the stress → distress model. Proxy reporting for the selected respondent in the health portion of the NPHS was allowed “only for reasons of illness or incapacity. Such proxy reporting accounts for 4% of the information collected” (Statistics Canada, 1996), page 16). The NPHS public use data do not distinguish which respondents were proxy, and therefore, it could not be discerned whether proxy responses differ significantly from non-proxy responses.

Imputed values for non-respondents may lead to improper statistical inference, however, these inferences would be fairly small to insignificant. One other notable point

is that most studies inquiring about distress, including this thesis, use surveys with self-report measures. It is possible that a person's mental health may influence the respondents' perceptions on roles, stressors and psychosocial resources. While subjective measures of stress fulfill the definition of stressors since the respondent appraises their environment (role) as threatening or challenging events (problems) (Cohen, Kamarck, and Mermelstein, 1983; Pearlin, 1989; Wheaton, 1994), subjective measures should be analyzed with caution.

One variable that may be cause for concern is the work demands scale. Results from the IWH indicate that the condensed version of the NPHS work demands scale, compared to Karasek's full scale, is producing unexpected results - that job demands are associated with better health. (Cam Mustard, personal communication) Thus, results should be viewed with caution due to possible respondent bias. Another variable that may be problematic is the perceived support measure. This variable was dichotomized at the highest ranking (4 vs. 1,2,3) since most people scored high on this scale (84%).

The cross-sectional nature of this study cannot discern causality. While associations can be made between variables and psychological distress, the direction is not known. Therefore, this study can only state that a factor (e.g. being unemployed) is a possible risk factors for distress, but it may be that distress is a risk factor for becoming unemployed.

While the bootstrapping programs work well to account for the design effect of the survey, they are limited in the output that can be produced. Although simple frequencies can be done on the remote data, and on variables that are not included in the public use files, most often information from these variables were removed from

frequency distributions. Therefore, variables that were not in the public use file were not explored in the bootstrapping programs, with a couple exceptions for exploratory analyses. So, it is still not possible to fully explore information on ethnicity or proxy reporting using the remote data. Bootstrapping programs can only perform selected statistical analyses, so more refined analyses had to be done without bootstrapping techniques.

Analysis

The analysis was guided by the conceptual framework. First, the stress process was used in conducting the regression analysis. However, each and every piece of the stress process was not be explored. The differential exposure theory was tested in the initial regression models. Differential vulnerability was tested in the final regression models.

Preliminary Analyses

Initial exploratory analyses were conducted using several statistical analyses. These preliminary results were not considered final results, therefore, corrections for type I errors (which accounts for several statistical tests) were not performed. Initial exploratory analyses consisted of testing for gender differences in all of the variables by doing chi-square tests for nominal data and analysis of variance (ANOVA) for ordinal variables. Possible buffering effects of coping resources were explored using OLS regressions. Another set of analyses explored gender differences in mean distress among roles. These ANOVA's provided a glimpse of where gender differences lie. All of the chi-square tests and ANOVA's helped guide variable selection and significance testing in the final regression modeling analyses.

Simple OLS regressions, regressed on distress and controlled for age and self-rated health, were done on each variable, and in some cases, groups of variables. This exploratory analysis served three purposes: One, if a variable was not found to be significant, then it most likely wasn't used in the multiple regression modeling described below. Some variables were always kept in the model, in particular control variables and variables that indicated roles. Two, initial R-square values and coefficients were observed, and large changes in the beta coefficients in the multivariate regression modeling (described below) would be cause for concern. If this should happen, errors in the model can be deciphered and "fixed." (For instance, problems could occur due to heteroscedacity, multicollinearity, or redundant missing values.) Three, at this point, decisions were made on whether to drop or replace variables. For instance, one or more of the coping resources could be dropped, or the sub-indices of chronic stressors might be replaced with the fully adjusted chronic stressor index, or one of the events scales could be dropped or they could be combined. The F-test, (see Appendix B), was used to test for all of these possibilities, but must be corrected to reduce chances of type I errors.

Regression Modeling

The stress process guided the implementation of the regression analyses. A series of regression analyses were conducted, starting with one measure, and then entering additional measures in a predetermined order. Variables were not dropped from the analyses, unless problems occurred in the modeling (such as multicollinearity). Variables were entered into the regression models "only after other variables that may be a source of spurious relationship have been entered. This leads to an ordering of the variables that reflects their presumed causal priority – ideally, no IV [independent variable] entering

later should be a presumptive cause of an IV that has been entered earlier.” (Cohen and Cohen, 1983, p. 120)

From the conceptual framework, roles and other structural circumstances are the backbone of the analyses. In regression models, structural circumstances were entered first, then stressors, and finally coping resources. While the stress process model insinuates that structural circumstances “cause” stressors and coping resources, only *associations* between structural circumstances and both stressors and coping resources could be analyzed.

The regression models, entering variables in steps, was done as follows:

-
- A. Sex + CV → distress
 - B. Sex + Roles + CV → distress
 - C. Sex + Roles + SD + CV → distress
 - D. SC + S + CV → distress
 - E. SC + S + CR + CV → distress
 - F. SC + S + CR + ME → distress
 - G. SC + S + CR + ME + DV → distress
-

CV=Control variables=Age+self-rated health SD=Sociodemographics
SC=structural circumstances=Sex+Roles+Sociodemographics
S=stressors CR=Coping resources ME=Moderating effects
DV=Differential vulnerability=Interactions with sex

For all sets of regression analyses, distress was the outcome. Each subsequent regression analysis added more variables (variables were not dropped) so it was not necessary to account for multiple testing (type I errors) (Tabachnick and Fidell, 1989). The first analysis, model A, set the stage for gender differences in distress. Models B to E were done for the entire sample and were also stratified by sex. Exposure differences between men and women were tested between Models A and B, Models B and C, up to Models D and E. Model F explored moderating effects of roles while Model G explored gender differences in vulnerability. Tests of differential vulnerability between the sexes

were guided by the models that were stratified by sex: If the beta coefficients differed between the sexes in the regression models, then differential vulnerability was tested by the interaction of sex with the measures that showed possible gender differences. Model G was not stratified by sex.

1. *Associations of measures with distress.* In all of the models, direct associations of each of the measures with distress were examined. An “unadjusted” regression was also done for each of the measures, so it was possible to explore the influence of other variables on each of the measures.

2. *Differential exposure.* Differential exposure was ascertained in two steps: 1) First, if the coefficient for sex decreased or increased from one model to the next, then exposure to the added variables was deemed as “different” between the sexes. (This would not be true when the added variables are gender interactions.) If the coefficient for sex decreases, then women were differentially exposed. If the coefficient for sex increases, then the variables added contribute to *men’s* distress, and men are differentially exposed than women. 2) The decrease or increase in the coefficient was tested for statistical significance by performing the following z-test:

$$z = \frac{(\beta_1 - \beta_2)}{\sqrt{SE_{\beta_1}^2 + SE_{\beta_2}^2}}$$

Bonferroni corrections were done, accounting for the number of times this was tested.⁹ If the z-test was significant, then the added variables accounted for a significant

⁹ It is important to step back here and gain an understanding of how this can actually test for gender differences in exposure. In this analysis, sex=1 for females and sex=0 for males. If the coefficient for sex is positive, then females have higher distress than men. If the addition of other variables decreases the coefficient, then being female is now less important in determining distress, and the other variables now account for some of the excess distress that females were found to have in the previous model. Since the gender difference is now decreased, exposure to these other variables accounts for this decrease.

amount of women's (or men's) higher distress.

3. *Moderating effects of roles* were ascertained for the following interactions:

- "Children" and the "employment" (unemployed and homemaker) roles
- Marital status with the "employment" roles
- Marital status with "children"
- Three-way interaction of marital status, "children" and "employment"
- Children with each of the coping resources (self-esteem, mastery and perceived support)

4. *Differential vulnerability* was tested in further regression models, by testing for gender differences in a) structural circumstances, b) stressors, and c) coping resources and their buffering effects. Gender differences were ascertained by testing whether interactions of sex with selected variables were statistically significant in the regression model. If gender interactions were not significant, then they were dropped from the regression models. Significant interactions were kept in the regression models. Bonferroni corrections, for multiple statistical tests, were not done if interaction variables were dropped.

5. *The work stress model.* Work stressors were dealt with slightly differently than the chronic stressors. The job control and demands variables were tested for interaction effects with job social support, which was based on Karasek and colleagues' (Karasek, Baker et al., 1981; Karasek and Theorell, 1990; Karasek, Theorell et al., 1988) work stress model. Job security, physical exertion and satisfaction were not tested for interactions because additional interactions were not part of the work stress model

Statistical testing using the z-test described above, can show if this decrease is statistically significant or not.

described by Karasek (Karasek and Theorell, 1990). The work stressor interactions were tested only for individuals who were employed.

Power of the analyses

For regression analysis, it was necessary to have about five to ten records for each independent variable to avoid type II errors (Tabachnick and Fidell, 1989). However, potential type I errors must be considered when conducting regression analyses on a large number of variables. The number of variables described in this thesis would give about 50 discrete variables (when adding in dummy variables), excluding interaction terms. The series of regression analyses described above decreases the number of explanatory variables, so that type I errors would be reduced. Also, three steps in the regression analyses helped to decrease the possibility of type I errors. First, variables which were related to each other were excluded by checking for multicollinearity. Secondly, conducting a series of regression models (separate regression analyses) assured that all 50 independent variables are not in any regression model. Thirdly, the final model included most of the variables that were not statistically significant. However, the final model included family and work stressors, even if they were not statistically significant.

Accounting for the design effect

Normalized weights. Weights were used in all of the statistical analyses to generalize results to the Canadian population. Caution must be used when using weights, since the variance can be underestimated. Therefore, a new weight value was created by dividing the old weight by the average of all weights (new weight = old weight / average weight). These normalized weights were close to one, (the average of the weights equals one) and shouldn't severely under- or over-estimate the variance.

Bootstrapping. Bootstrapping was done for the multivariate regression models to account for the design effect.

Other analytical details

Details regarding the following can be found in Appendix B:

- The non-normal distribution of distress
- Heteroscedacity
- Multicollinearity
- Testing of interaction terms
- Creating a short-list of variables

Data management and analytic software

SAS® software was used for all statistical analysis and data management.

Table 4.1 Employment, homemaker and unemployment definitions

EMPLOYED, UNEMPLOYED AND HOMEMAKERS:

The 1994 National Population Health Survey

Employed. If the derived working status is currently working (dvwk94=1), then the respondent is coded as being employed.

Unemployed. If the respondent is not coded as being employed, then do the following: If the derived working status is (1) not currently working, but had a job (dvwk94=2) or (2) did not work during the past 12 months (dvwk94=3) AND one of the following is true (a) if the main activity is looking for work (lfs_q1=6) OR (b) the reason for not working is due to labour disputes or layoffs (dvreas94=4) then the individual is coded as being unemployed.

Homemakers. If the respondent is not coded as being employed or unemployed, then do the following: (1) If the main activity is either (a) caring for family (lfs_q1=1) or (b) caring for family and working for pay or profit (lfs_q1=3) then the respondent is coded as being a homemaker. Or, (2) if the reported main activity is working for pay or profit (lfs_q1=2) and the reason for not working is family responsibilities (dvreas94=2). For criteria number 2, only four respondents fit this part of the definition of homemakers.

Table 4.1b Number of homemakers in each lfs_q1 category by sex

LFS Q1	Men		Women	
	N	%	N	%
Care for family	34	85.0	1,380	98.6
Care for family and work for pay	4	10.0	18	1.3
Work for pay (reason for not working for pay is "family responsibilities")	2	5.0	2	0.1

Table 4.2 Study sample inclusions and exclusions

Variable	----- Included in study -----			--- Excluded from study ---		
	N	%	Wtd %	N	%	Wtd %
<i>Sex</i>						
Male	4,742	44.8	47.9	1,146	55.9	58.8
Female	5,843	55.2	52.1	905	44.1	41.2
<i>Age group</i>						
20-34	4,344	41.0	38.8	572	27.9	30.9
35-49	4,177	39.5	42.1	484	23.6	25.8
50-64	2,064	19.5	19.0	995	48.5	43.3
<i>Marital status</i>						
Married/partner	6,947	65.6	71.9	1,082	52.8	59.7
Never married	2,263	21.4	19.0	539	26.3	26.0
Previously married	1,375	13.0	9.1	426	20.8	14.1
Unknown	0	0.0	0.0	4	0.2	0.2
<i>Province</i>						
Maritimes	2,248	21.2	8.1	456	22.2	8.1
Quebec	1,580	14.9	24.7	338	16.5	27.7
Ontario	3,052	28.8	38.0	648	31.6	38.8
Western	2,265	21.4	16.6	357	17.4	12.7
BC	1,440	13.6	12.7	252	12.3	12.6
<i>Income adequacy</i>						
Low	608	5.7	4.4	308	15.0	10.2
Med-low	1,112	10.5	9.5	328	16.0	13.3
Medium	2,803	26.5	25.4	567	27.7	27.8
Med-high	4,119	38.9	38.8	515	25.1	28.9
High	1,616	15.4	18.3	177	8.6	11.0
Unknown	327	3.1	3.7	156	7.6	8.9
<i>Education attainment</i>						
Elementary/None	372	3.5	3.7	239	11.8	10.2
Some Secondary	1,844	17.4	15.1	408	19.9	17.1
HS graduation	1,790	16.9	17.3	271	13.2	12.8
Beyond HS	2,767	26.2	25.6	612	29.8	31.6
Degree/diploma/cert.	3,803	35.9	38.2	511	24.9	27.7
Not stated	9	0.1	0.1	7	0.3	0.6
<i>Self-rated health</i>						
Excellent	2,822	26.7	28.2	402	19.6	21.6
Very good	4,337	41.0	39.8	606	29.6	32.2
Good	2,669	25.2	25.7	527	25.7	26.8
Fair	657	6.2	5.5	346	16.9	12.6
Poor	100	0.9	0.9	170	8.3	6.9
<i>Total</i>	10,585			2,051		
	N	Mean	Wtd mean	N	Mean	Wtd mean
<i>Health status index</i>	10,581	0.912	0.914	1,989	0.838	0.856
<i>Adj. chronic stress</i>	10,585	3.263	3.211	1,531	3.350	3.170
<i>Total work stress</i>	8,076	19.707	19.512	93	20.075	18.892
<i>Distress</i>	10,585	3.340	3.355	1,490	4.356	4.259

Table 4.3 Study sample inclusions and exclusions: Lfs_q1: “What do you consider to be your current main activity? (For example, working for pay, caring for family.)”

N Weighted %	-Included In Study-			-Excluded from study-				TOTAL	
	Un- Employed	Home- employed makers	Total Included	Other	Missing distress score	Missing >1 or chr stressor	Total Exclusions		
Caring for Family	374 4.5	169 16.9	1,414 98.2	1,957 17.6	0	53 12.7	10 11.5	63 4.7	2,020 15.4
Working for pay or profit	5,383 64.2	81 11.6	4 0.2	5,468 52.1	49 4.4	291 54.1	51 74.8	391 21.5	5,859 47.5
Working and Caring for Family	2,163 26.4	38 4.4	22 1.7	2,223 21.6	0	86 12.6	12 8.7	98 4.6	2,321 18.8
Going to school	193 2.8	28 3.9	0	221 2.5	302 26.1	32 6.5	1 0.0	335 18.3	556 5.1
Recovering from illness/ disability	64 0.9	11 1.2	0	75 0.8	348 20.7	32 4.6	0	380 14.3	455 3.0
Looking for work	40 0.4	480 56.7	0	520 4.5	6 0.3	19 3.4	3 4.6	28 1.5	548 4.0
Retired	28 0.3	11 1.2	0	39 0.3	630 42.7	34 4.8	0	664 27.9	703 4.9
Other	46 0.5	35 4.0	0	81 0.7	76 5.7	12 1.2	1 0.4	89 3.9	170 1.2
Not stated	1 0.0	0	0	1 0.0	1 0.1	2 0.3	0	3 0.1	4 0.0
Total Weight %	8,292 79.8	853 7.3	1,440 12.9	10,585	1,412 61.8	561 32.8	78 5.4	2,051	12,636

Table 4.4 Exclusions: Persons who stated their main activity was working for pay or profit, but did not currently have a job, and were not grouped as unemployed or homemakers.

Reasons for not currently working for pay or profit	N	%	Weighted %
Not stated	24	49.0	47.8
Other reasons	13	26.5	33.9
Not applicable	5	10.2	11.7
Own illness or disability	5	10.2	5.7
Student / Education leave	2	4.1	0.9
Total	49		

Table 4.5 Variable list and corresponding NPHS variable names and values

Variable	NPHS variable name	Valid values
Psychological distress	dvmhds94	0-24
Structural circumstances		
<i>Family</i>		
Marital status	marstatg	1=married/partner, 2=never married, 3=previously married
Youngest child < 6 years old	numle5g	1=yes, 2=no
Youngest child 6-11 yrs old	num6t11g	1=yes, 2=no
Youngest child 12+ yrs old *	dvlvng94	couple with kids, single, etc.
Rent/own home	dwellown	1=yes, 2=no
Homemaker *	lfs_q1	(family care, work)
<i>Work</i>		
Full-time/Part-time	dvmnwh94	1=full-time, 2=part-time
Pineo classification **	dvpin94	1,2=professionals, ... 16=farm labourers
Employed	dvwk94	1=currently working, 2,3=not working
Unemployed **	dvreas94	4=Labour disputes/layoff
<i>Sociodemographics</i>		
Age	agegrp	1=12-14, 2=15-19, ... 80+ years
Sex	sex	1=male, 2=female
Education attainment **	dvedc294	1=No schooling, ... 12=Master/MD/Doctorate
Income level adequacy	dvinc594	1=lowest income, ... 5=highest income
Self-rated health ***	gh_q1	1=Excellent, ... 5=Poor
Stressors		
<i>Chronic/Family</i>		
Relationship problems ***	dvcsi794, dvcsi694	0-3 (with mate), 0-1 (no mate)
Family health problems ***	dvcsii094	0-2
Child stressors ***	dvcsi894	0-2
Financial problems ***	dvcsi594	0-1
Personal problems ***	dvcsi494	0-5
<i>Events</i>		
Recent life events ***	dvrlt394	0-8
Child & adult stressors ***	dvtri94	0-7
<i>Work</i>		
Skill discretion ***	dvwsi294	0-12
Decision authority ***	dvwsi394	0-8
Psychological demands ***	dvwsi494	0-8
Job insecurity ***	dvwsi594	0-4
Physical exertion ***	dvwsi694	0-4
Job [dis]satisfaction ***	wst_q2	1-4
Coping resources		
Self-esteem ***	dvesti94	1-24
Mastery ***	dvmasi94	2-28
Perceived social support ***	dvssi194	0-4
Social support at work ***	dvwsi794	0-12

* Variable was derived using new algorithm for this study (author created the algorithm)

** Variable was derived or re-grouped according to algorithms from other studies

*** Variable was dichotomized at the median or 75th percentile (See discussion on independent variables for more information)

Table 4.6 Variables with non-responses that were given dummy-coded missing values.

Variable	N Missing	Percent	Wtd pct
Income	327	3.1	3.7
Job stress	341	3.2	5.3
Kids in HH	190	1.8	2.2
Pineo	217	2.1	2.3
Total above	1,075	10.2	13.5

Table 4.7 Number of missing values for variables given imputed values

Variable	Count	Pct	Wtd pct
Self-esteem	6	0.06	0.15
Mastery	30	0.28	0.57
Social support	27	0.26	0.19
Recent life events	4	0.04	0.05
Child/adult stressors	5	0.05	0.06
Education	9	0.09	0.06
Part-time job	17	0.16	0.07
Total missing	93	0.88	1.01

Table 4.8 Missing values for imputed variables – original data vs. imputed data

Variable/values	----- Original -----			----- Revised -----		
	Count	Pct	Wtd pct	Count	Pct	Wtd pct
<i>Self-esteem</i>						
Missing	6	0.06	0.15	-	-	-
0	5,972	56.42	52.17	5,976	56.46	52.30
1	4,607	43.52	47.68	4,609	43.54	47.70
<i>Mastery</i>						
missing	30	0.28	0.57	-	-	-
0	5,333	51.46	50.79	5,460	51.58	51.04
1	5,108	48.26	48.65	5,125	48.42	48.96
<i>Social support</i>						
Missing	27	0.26	0.19	-	-	-
0	1,568	14.81	15.88	1,574	14.87	15.92
1	8,990	84.93	83.93	9,011	85.13	84.08
<i>Recent life events</i>						
Missing	4	0.04	0.05	-	-	-
0	6,052	57.18	58.13	6,055	57.20	58.17
1	4,529	42.79	41.82	4,530	42.80	41.83
<i>Child/adult stressors</i>						
Missing	5	0.05	0.06	-	-	-
0	5,061	47.81	49.93	5,063	47.83	49.97
1	5,519	52.14	50.01	5,522	52.17	50.03
<i>Education attainment</i>						
Missing	9	0.09	0.06	-	-	-
None/Elementary	372	3.51	3.74	372	3.51	3.74
Some HS	1,844	17.42	15.09	1,847	17.45	15.12
HS graduation	1,790	16.91	17.29	1,792	16.93	17.30
Beyond HS	2,767	26.14	25.60	2,769	26.16	25.62
Diploma/certificate	2,166	20.46	20.82	2,167	20.47	20.62
University degree	1,637	15.47	17.40	1,638	15.47	17.40
<i>Part-time job</i>						
Missing	17	0.16	0.07	-	-	-
0	9,260	87.48	87.07	9,275	87.62	87.12
1	1,308	12.36	12.86	1,310	12.38	12.88

Table 4.8b Frequencies and weighted percents for variables in analysis by gender

	Men		Women		Total	
	N	%	N	%	N	%
<i>Age</i>						
20-34	1,905	38.2	2,439	39.3	4,344	38.8
35-49	1,928	43.3	2,249	41.0	4,177	42.1
50-64	909	18.3	1,155	19.7	2,064	19.0
<i>Main Activity</i>						
Employed	4,217	89.6	4,075	70.7 *	8,292	79.8
Homemaker	40	0.9	1,400	24.0 *	1,440	12.9
Unemployed	485	9.5	368	5.3 *	853	7.3
<i>Marital status</i>						
Married	3,094	71.5	3,853	72.2	6,947	71.9
Never married	1,185	21.9	1,078	16.3 *	2,263	19.0
Previously married	463	6.6	912	11.5 *	1,375	19.0
<i>Presence of children (youngest age)</i>						
No children	2,556	46.1	2,494	38.2 *	5,050	42.0
Kids 0-5 years	876	21.5	1,396	24.8 *	2,272	23.2
Kids 6-11 years	473	12.4	756	14.1	1,229	13.3
Kids 12+ years	746	17.6	1,098	20.9 *	1,844	19.4
Kids unknown	91	2.3	99	2.0	190	2.2
<i>Income</i>						
Low	228	3.6	380	5.1 *	608	4.4
Mid-low	366	7.7	746	11.1 *	1,112	9.5
Middle	1,197	23.7	1,606	27.0 *	2,803	25.4
Mid-High	1,973	40.4	2,146	37.3 *	4,119	38.8
High	825	20.6	791	16.2 *	1,616	18.3
Unknown	153	4.0	174	3.3	327	3.7
<i>Chronic stressors</i>						
Relationship stress	1,174	23.3	1,582	26.6 *	2,756	25.1
Family stress	1,093	21.4	1,723	27.3 *	2,816	24.5
Child stress	1,109	34.3	1,604	35.3	2,713	34.9
Financial stress	1,944	42.5	2,396	40.3 *	4,390	41.3
Personal stress	1,498	32.5	2,333	41.0 *	3,831	36.9
<i>Work stressors</i>						
Low control	1,399	37.5	949	26.1 *	2,348	32.3
High job demands	1,413	36.1	1,528	37.8	2,941	36.9
Job insecurity	2,846	68.6	2,609	67.0	5,455	67.9
Job dissatisfaction	336	9.0	345	9.1	681	9.1
Physical exertion	2,105	49.2	1,642	40.0 *	3,747	44.9
High total job stress	926	22.5	1,199	30.7 *	2,125	26.3
Job social support	1,939	46.0	1,859	45.9	3,798	45.9
<i>Coping resources</i>						
High self-esteem	2,103	48.2	2,506	47.2	4,609	47.7
High mastery	2,434	52.0	2,691	46.2 *	5,125	49.0
High social support	3,874	80.9	5,137	87.0 *	9,011	84.1
<i>High self-rated health</i>						
	4,472	94.9	5,356	92.5 *	9,828	93.7
Total	4,742	47.9	5,843	52.1	10,585	

% is weighted percent

* Statistically significant gender differences (p<0.05)

Table 4.9 Psychological distress questions**PSYCHOLOGICAL DISTRESS: National Population Health Survey**

Respondents were asked: During the past month, about how often did you feel...	Possible respondents' answers:
1. ... so sad that nothing could cheer you ?	0 None of the time
2. ... nervous?	1 A little of the time
3. ... restless or fidgety?	2 Some of the time
4. ... hopeless?	3 Most of the time
5. ... worthless?	4 All of the time
6. ... that everything was an effort?	

Table 4.9b Distribution of psychological distress scores

Distress Score	Number of respondents	Percentage of respondents
0	2022	19.1
1	1535	14.5
2	1751	16.5
3	1326	12.5
4	1081	10.2
5	760	7.2
6	623	5.9
7	390	3.7
8	294	2.8
9	215	2.0
10 - 24	588	5.6

Table 4.10 Chronic stressor questions

FAMILY STRESSORS: National Population Health Survey

Respondents were asked:

I'd like you tell me if these things are true for you *at this time* by answering "true" if it applies to you now or "false" if it does not.

(Questions 1-3 are asked only if respondent has a partner)

1. Your partner doesn't understand you.
2. Your partner doesn't show enough affection.
3. Your partner is not committed enough to your relationship.

(Question 4 is asked if marital status is single, widowed, divorced or separated.)

4. You find it is very difficult to find someone compatible with you.

(Questions 5 and 6 are asked only if respondent has children)

5. One of your children seems very unhappy.
6. A child's behaviour is a source of serious concern to you.

(Questions 7 and 8 are asked of all respondents)

7. You have a parent, a child or partner who is in very bad health and may die.
8. Someone in your family has an alcohol or drug problem.
9. You are trying to take on too many things at once.
10. There is too much pressure on you to be like other people.
11. There is too much expected of you by others.
12. Your work around the home is not appreciated.
13. People are too critical of you or what you do.
14. You don't have enough money to buy the things you need.

Family stressor items		Score Range
Relationship problems with partner:	Questions 1, 2, 3.	0 - 3
Relationship problems, no partner:	Question 4.	0 - 1
Problems with children:	Questions 5, 6.	0 - 2
Family health problems:	Questions 7, 8.	0 - 2
Personal problems:	Questions 9-13.	0 - 5
Financial problems:	Question 14.	0 - 1

Table 4.11 Work stressor questions

WORK STRESSORS: National Population Health Survey	
Respondents were asked: Please tell me if you STRONGLY AGREE , ..., or STRONGLY DISAGREE with each of the following:	Possible respondents' answers:
a. Your job requires that you learn new things b. Your job requires a high level of skill c. Your job allows you freedom to decide how you do your job d. Your job requires that you do things over and over * e. Your job is very hectic * f. You are free from conflicting demands that others make g. Your job security is good h. Your job requires a lot of physical effort * i. You have a lot to say about what happens in your job j. You are exposed to hostility or conflict from the people you work with * k. Your supervisor is helpful in getting the job done l. The people you work with are helpful in getting the job done	0 Strongly Agree 1 Agree 2 Neither agree nor disagree 3 Disagree 4 Strongly disagree
----- m. How satisfied are you with your job? Valid answers: 1-Very satisfied, 2-Somewhat satisfied, 3-Not too satisfied, 4-Not at all satisfied, 5-Not applicable, 6-Not stated	

* Items d, e, h and j have reversed scores

Work stressor items	Score Range
Skill discretion: questions a, b, d.	0 - 12
Decision authority: questions c, i.	0 - 8
Psychological demands: questions e, f.	0 - 8
Job insecurity: question g.	0 - 4
Physical exertion: question h.	0 - 4
Social support: questions j, k, l.	0 - 12
Job satisfaction: questions m.	0 - 4

Table 4.12 Recent life events and Childhood & adult stressor questions

EVENT STRESSORS: National Population Health Survey

Respondents were asked:

I'd like you tell me if these things are true for you by answering "true" if it applies to you or "false" if it does not. True=1, False=0.

Recent life events questions:

1. Was any one of you beaten up or physically attacked?
2. Did you or someone in your family have an unwanted pregnancy?
3. Did you or someone in your family have an abortion or miscarriage?
4. Did you or someone in your family have a major financial crisis?
5. Did you or someone in your family fail school or training program?
6. Did you or your partner experience a change of job for a worse one?
7. Were you or your partner demoted at work or take a cut in pay?
8. Did you have increased arguments with your partner?
9. Now, just you personally, did you go on Welfare?
10. Did you have a child move back into the house?

Child and adult stressor questions:

1. Did you ever spend 2 weeks or more in the hospital?
2. Did your parents get a divorce?
3. Did your father/mother not work for a long time when they wanted to be working?
4. Did something happen that scared you so much you thought about it for years after?
5. Were you sent away from home because you did something wrong?
6. Did either of your parents drink or use drugs so often it caused family problems?
7. Were you ever physically abused by someone close to you?

Event stressor items	Score Range
Adjusted recent life events:	0 – 10
Child and adult stressors:	0 – 7

Table 4.13 Mastery and Self-esteem questions

SELF-ESTEEM: National Population Health Survey	
<p>Respondents were asked: Now, I am going to read you a series of statements that people might use to describe themselves. Please tell me if you STRONGLY AGREE, ... or STRONGLY DISAGREE with each of the following:</p> <p><i>Self-Esteem questions:</i></p> <p>a. You feel that you have a number of good qualities. b. You feel that you're a person of worth at least equal to others. c. You are able to do things as well as most other people. d. You take a positive attitude toward yourself. e. On the whole you are satisfied with yourself. f. All in all, you're inclined to feel you're a failure. *</p> <p>Score Range: 1-24, median=20/21</p>	<p>Possible respondents' answers:</p> <p>0 Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree</p>

* Scores indicated by an asterisk are reversed scored. A high score reflects either high self-esteem or high mastery.

MASTERY: National Population Health Survey	
<p>Respondents were asked: Now, I am going to read you a series of statements that people might use to describe themselves. Please tell me if you STRONGLY DISAGREE, ... or STRONGLY AGREE with each of the following:</p> <p><i>Mastery questions:</i></p> <p>a. You have little control over the things that happen to you. b. There is really no way you can solve some of the problems you have. c. There is little you can do to change many of the important things in your life. d. You often feel helpless in dealing with problems of life. e. Sometimes you feel that you are being pushed around in life. f. What happens to you in the future mostly depends on you. * g. You can do just about anything you really set your mind to. *</p> <p>Score Range: 2-28, median=20/21</p>	<p>Possible respondents' answers:</p> <p>0 Strongly agree 1 Agree 2 Neither agree nor disagree 3 Disagree 4 Strongly disagree</p>

* Scores indicated by an asterisk are reversed scored. A high score reflects either high self-esteem or high mastery.

Table 4.14 Perceived social support question

PERCEIVED SOCIAL SUPPORT: National Population Health Survey

Respondents were asked: Now a few questions about your contact with different groups and support from family and friends:	Possible respondents' answers:
1. Do you have someone you can confide in, or talk to about your private feelings or concerns? 2. Do you have someone you can really count on to help you out in a crisis situation? 3. Do you have someone you can really count on to give you advice when you are making important personal decisions? 4. Do you have someone that makes you feel loved and cared for?	0 No 1 Yes

Scores range from 0 to 4 (median=4), where a high score reflects high social support.

Chapter 5: Results

This chapter presents results from exploratory analysis and final regression analysis. Differential exposure, differential vulnerability and moderating effects are also discussed for each of the measures that have explored these additional analyses.

Exploratory Analysis

Selection of the SES measure

Stepwise regression was done to check which of the three SES measures would be the best measure or measures in the final regression model. All three SES measures, income, education level and Pineo (work) classification were put into the regression model and then checked for statistical significance and for adjusted R-squared values. Income was the best SES measure since the adjusted R-squared value was much higher compared to the other two SES variables. Also, statistical significance was attained in all tests for the income variable for men, women and overall (men and women combined). This was not true for the other two SES measures.

Selection of work stressor measures

The work stressor items were combined in the full regression models, since the individual work stressor items did not contribute much more than the combined measure. (The adjusted R-squared was the same when the work stressor items were combined or kept as separate variables.) It was imperative however to keep the individual work stressor variables in the analysis examining Karasek's job strain model for employed individuals.

Comparison of mean distress scores within roles

Analysis of variance was used to test for preliminary differences in distress scores within roles. The ANOVA's were adjusted for age and self-rated health and the normalized weight was used. See Table 5.1. Employed men were significantly less distressed than employed women. While men at home were more distressed than women, this was not statistically significant. Unemployed women were more distressed than unemployed men, but this was also not statistically significant. Men in all three marital status categories (married/partner, never married and previously married) were significantly less distressed than women. Women were significantly more distressed if there were no children in the household, or if the age of the youngest child was aged 0-5 or 12 and above. When the youngest child was between 6-11 years old, then men and women were similarly distressed. Women were significantly more distressed than men in the middle three income categories.

Further ANOVAs were generated by re-grouping the roles. Parental status was grouped into "no children" vs. "children." See Table 5.2. Women were significantly more distressed than men when they were employed, with and without children. In the marital status category, only married women had significantly higher distress than men, and this was true whether or not children were present in the home. When all three role categories were combined (marital status was re-grouped to "married/partner" and "not married"), statistically significant differences were found in the employed and homemaker categories. Employed, married women had significantly higher distress than employed, married men regardless of whether there were children in the home. Employed women who were not married and had children also had significantly higher distress than

men in this same role configuration. Men who were homemakers, married and had no children were significantly more distressed than women in this role repertoire. This role was particularly distressing for men since the mean distress was quite a bit higher compared to all role configurations.

Univariate Regression Analysis

Univariate regression analysis was done for each measure, with (the square root of) distress as the dependent variable, controlling for age and self-rated health. See Table 5.3. Regressions were run overall and also stratified by sex. Sex was also used as a control variable in the overall regressions. Table 5.3 exhibits results using the public use data as well as results using the bootstrapping method on the master data files. The results with bootstrap adjustment are discussed below for each of the measures.

Roles

For the employed, unemployed and homemaker roles, employment was used as the reference variable. Unemployment was associated with distress ($b=0.23$), and was equally distressing for men ($b=0.23$) and women ($b=0.23$). Being a homemaker may be more distressful for men ($b=.47$) than women ($b=.10$). Being unemployed or a homemaker were significantly associated with higher distress compared to employed individuals.

The never married and previously married were significantly associated with higher distress compared to the married. For both sexes combined, the previously married ($b=0.25$) had higher distress than the never married ($b=0.10$). The beta coefficients for women were slightly higher than the corresponding beta values for men which indicates that women may be more vulnerable to being distressed if they are never

married or previously married. Among the never married, $b=0.12$ for women while $b=0.07$ for men. Previously married women had a beta coefficient of 0.27 compared to 0.21 for men. All beta values were statistically significant overall and when stratified by gender.

For the “children” measures, the reference group was “no children in the household.” Overall, having the youngest child aged 0-5 years was significantly associated with *lower* distress compared to those without children ($b=-0.08$). Women ($b=-0.07$) and men ($b=-0.08$) appeared to be equally impacted by the presence of youngest children aged 0-5 years in the household, and statistical significance held for each of the genders. However, men and women were differentially impacted by children in the older age groups. Women with the youngest child aged 6-11 ($b=-0.06$) were similarly impacted as women with youngest the child aged 0-5 (although statistical significance was not attained), while men derived no benefit if the youngest child was aged 6-11 ($b=-0.00$) compared to men without children. Women with youngest child aged 12 years and over were more distressed ($b=0.08$) compared to women who did not have children, and this was statistically significant. However, men with youngest child aged 12 and over were less distressed ($b=-0.07$) than men without children, and this was also statistically significant. When men and women were combined, having youngest children aged 12 and over carried the same impact as having no children, since $b=0.01$ and there was no statistical significance. The positive influence of youngest children aged 12 and over on men was canceled by the negative influence of these children on women. These results suggest that women derived benefits from having children ages 0-11 years in the household, while having youngest children aged 12 and over was

distressing. Among men, having youngest children aged 0-5 and 12 and over was beneficial compared to men without children.

SES: Income

Having low or middle low income was associated with higher distress for both men and women, compared to individuals in the highest income category. Men were similarly distressed in the low ($b=0.23$) and middle-low ($b=0.24$) income categories, while women were more distressed in the middle-low category ($b=0.37$), compared to women in the low income category ($b=0.19$) and in the high income category (the reference). Women in the middle income category also had statistically significant higher distress compared to women in the high income category ($b=0.09$). Men in the middle income category were not associated with higher distress. Of some interest, the “unknown” income group was the least distressed of all income categories, and was significantly associated with lower distress compared to the high income group. This was true for overall results and when stratified by men and women.

Chronic stressors

All chronic stressors were significantly associated with higher distress overall and for men and women. Women may be more vulnerable to relationship stressors ($b=0.51$ for women, $b=0.39$ for men), child stressors ($b=0.33$ for women, $b=0.29$ for men) and financial stressors ($b=0.33$ for women, $b=0.27$ for men). Men and women were similarly impacted by family stressors ($b=0.32$ for women and $b=0.35$ for men) and personal stressors ($b=0.54$ for women, $b=0.57$ for men). Personal stressors were the most distressing for both sexes, followed by relationship stressors.

Work stressors

Job stressors were significantly associated with distress overall ($b=0.28$) and for men ($b=0.29$) and women ($b=0.27$). In this model, the homemaker and unemployed roles were independent variables in the regression model as well as the "Unknown" work stressor variable. All of these variables were statistically significant overall and by sex, indicating that they were more distressed than individuals without work stress.

Coping resources

All coping resources were associated with lower distress scores for both men and women. Women may be impacted more by these measures: For self-esteem $b=-0.18$ for men, $b=-0.24$ for women; For mastery $b=-0.50$ for men, $b=-0.61$ for women; For perceived social support, $b=-0.38$ for men, $b=-0.40$ for women. Having high mastery had the most powerful impact on distress, since the beta coefficient for mastery was lower compared to the other coping measures.

Multivariate Regression

Multivariate regressions started with the three role measures; employment status, marital status and presence of children. Then income was added to the model, followed by chronic stressors, then work stressors and finally coping resources. Age and self-rated health were used as control variables.

Roles

When the three role groups were put into a regression model, the beta coefficient for age remained fairly stable, but the beta coefficient for sex was reduced from 0.16 to 0.12. See Table 5.4. Sex continued to be statistically significant. The beta coefficients for the role variables either decreased or were about the same as in the univariate

analysis. Being unemployed was significantly associated with higher distress ($b=0.17$), and this was true for both men ($b=0.22$) and women ($b=0.20$). Compared to the employed, homemakers had higher distress ($b=.10$). Men who were homemakers had a the beta coefficient of 0.45, compared to 0.14 for female homemakers. This suggests that men were more vulnerable to the homemaker role than women. The previously married were associated with more distress compared to the married ($b=0.20$). Never married women had significantly higher distress compared to married women ($b=0.13$), while there was no association with distress among never married men. When the youngest child in the household was between 0-5 years old, then parenthood was associated with lower distress ($b=-0.08$). Mothers showed a significant association ($b=-0.08$), while fathers did not ($b=-0.04$). Women with the youngest child aged 12 years or more had significantly higher distress compared to women who had no children ($b=0.09$).

Adding in SES

When the socioeconomic scale (income) was added to the model, statistical significance remained for the role measures, although the beta coefficients for these variables decreased. See Table 5.5. Individuals in the middle-low income group had the most distress ($b=0.24$), and women may be more vulnerable to this than men ($b=0.29$ for women and $b=0.17$ for men). The lowest income category was also significantly associated with higher distress among men ($b=0.14$), but not among women.

Adding in chronic stressors

Chronic and event stressors were added to the regression model. See Table 5.6. The event measures were used as control variables and are not discussed. All chronic stressors were associated with distress for both men and women. Personal stressors had

the largest association with distress ($b=0.41$ for all, $b=0.45$ for men and $b=0.39$ for women). Relationship stressors were also highly associated with distress ($b=0.23$ for all, $b=0.20$ for men and $b=0.25$ for women). Family stressors ($b=0.15$), child stressors ($b=0.12$) and financial stressors ($b=0.09$) followed. Men may be more vulnerable to personal and family stressors, while women may be more vulnerable to relationship and financial stressors.

Chronic stressors diminished many of the associations found in the role categories. While sex remained statistically significant, the beta coefficient dropped from 0.12 in the previous model to 0.07 in the current model. The coefficient for age also dropped from -0.017 to -0.012, but remained significant in both models. Unemployment was no longer associated with distress, since the beta coefficient dropped from 0.17 in the previous model to 0.08 in the current. Interestingly, the homemaker role had an increase in the beta coefficient from 0.10 to 0.12. This was due to the increase in association for women ($b=0.08$ in previous model, $b=0.11$ in current model), while the homemaker role had a decreased association for men ($b=0.35$ in previous model, $b=0.08$ in current model). Both men and women homemakers continued to be significantly associated with higher distress. There was no longer an association with distress among the never married women. Previously married individuals remained significantly associated with increased distress, although this association decreased from $b=0.20$ in the previous model to $b=0.11$ in the current model. The biggest drop in the beta coefficient for previously married was among women, so that both men and women were similarly impacted by this role ($b=0.13$ for men, $b=.10$ for women). Adding in chronic stressors further decreased the association of older children with distress among women. The association of the

youngest child aged 0-5 years no longer held, but women with youngest children ages 6-11 became significantly associated with distress ($b=-0.11$). While the lower-middle income category was still significantly associated with distress, the coefficient was cut in half for the total group. This group was no longer associated with distress among men ($b=0.05$), but was associated with distress among women ($b=0.17$).

The adjusted R-squared value increased from 0.09 to 0.22 from the previous model.

Adding in work stressors and resources

The job stressor measures were combined in one variable for this analysis. Another analysis was performed for employed individuals only in which the job stressor items were not combined.

There were virtually no changes to the sex, marital status, children, income or chronic stressor beta coefficients and associated statistical significance. See Table 5.7. Compared to model 4, the current analysis, model 5, showed an increase in the beta coefficients for both the unemployed and homemakers, with a corresponding increase in statistical significance. Unemployment was associated with higher distress for both men ($b=0.14$) and women ($b=0.15$). Male homemakers were significantly associated with higher distress ($b=0.33$) and appeared to be impacted more than female homemakers ($b=0.17$).

Individuals who did not answer the job stressor items were associated with higher distress ($b=0.29$) compared to employed persons who did not score high in the work stressor scale. Individuals who scored high on the job stressor scale were also significantly associated with higher distress ($b=0.13$).

Adding in psychosocial resources

The adjusted R-squared value rose from 0.23 to 0.26 when psychosocial resources were added to the regression model. See Table 5.8. All three resources were significantly associated with lower distress. Men and women were similarly impacted by self-esteem ($b=-0.06$ for men, $b=-0.09$ for women). Women may be impacted more by mastery ($b=-0.38$) than men ($b=-0.31$). Men appear to be impacted more by social support ($b=-0.18$) than women ($b=-0.12$).

After adding in coping resources, the marital status and parenting roles remained fairly constant; the beta coefficients and significant associations were similar to the previous model. The homemakers and unemployed saw a decrease in the beta coefficient. This resulted in unemployed men no longer having an association with distress. However, unemployed women and both male and female homemakers remained significantly associated with distress. Overall, income was not associated with distress. However, males who were in the middle or upper middle income categories had lower distress compared to men in the highest income bracket ($b=-0.08$ for middle income, $b=-0.09$ for upper-middle income). The coefficient for low-middle income women decreased from 0.15 in model 5 to 0.10 in the current model, but remained statistically significant. There was a substantial decrease in the beta coefficient and statistical significance for financial stressors. Financial stressors were no longer associated with distress among men, while among women it dropped from $b=0.11$ to $b=0.06$, but remained statistically significant. There was a slight drop in the coefficients for relationship stressors and personal stressors for both men and women, but the statistical

significance remained. The beta coefficient for work stressors dropped from 0.13 to 0.08, but remained statistically significant.

Differential Exposure

Differential exposure effects were checked for each addition to the multivariate model. The z-score was computed, with a score of 1.96 determining statistical significance, and thus differential exposure effects. Table 5.9 has the beta coefficients for the sex variable for each of the models in the multivariate analysis. The z-score compared the current model with the previous model.

The only significant z-score was when chronic and event stressors were added to the regression model. The beta coefficient for sex was 0.12 in the previous model and 0.07 in the model with the chronic stressors. The positive value of the z-score, 2.15, indicates that women were more exposed to chronic and event stressors than men.

Differential Vulnerability

Roles and SES

Differential vulnerability was examined by including interaction variables of sex with all of the role variables in the regression analysis. The only interactions that were statistically significant were the unemployment and homemaker roles. However, the variance inflation values (VIF) for the homemaker role and the gender interaction were 27 and 25 respectively. A VIF over 10 indicates a multicollinearity effect, and therefore the multicollinear variables had to be dropped. So, the interactions of sex with the homemaker and unemployment variables were removed from the model. It could not be determined whether men or women in these roles were differentially vulnerable to distress.

Another differential vulnerability regression was run on the marital and parental status roles only. There were no statistically significant interaction terms, indicating men and women were similarly impacted by these roles. Similarly, none of the sex and income interaction terms were statistically significant, therefore, there were no differential vulnerability effects due to income.

Chronic and job stressors

Interactions of sex with each of the chronic stressor variables were put into another regression model to check for differential vulnerability. None of the interactions were found to be statistically significant, therefore, there were no differential vulnerability effects due to chronic stressors. There were also no differential vulnerability effects due to job stressors.

Coping resources

When the interaction of sex and each of the coping resources were added to the model, the interaction with mastery was statistically significant. In order to discern whether men or women were differentially vulnerable, values from the regression model were used to calculate change in distress for low and high values of mastery for each sex. Table 5.10a gives the values from the regression model, and Table 5.10b has the computed values for change in distress. Figure 5.1 displays how the genders differ in distress at low and high values of mastery. While men and women had higher distress with low mastery, these results indicate that women were significantly more vulnerable to the influence of low mastery than men.

Moderation effects

Moderation effects were explored to assess whether particular role combinations (interactions among roles) were associated with distress and to identify buffering effects for coping resources.

Moderating effects of roles

Three hypotheses concerning role configurations were tested. The first hypothesis stated that employment will moderate the negative association of not being married. Another way to state this would be that the non-employed roles will exacerbate the negative effects of not being married. This hypothesis was tested by the adding the interaction of homemakers and unemployed with marital status into the regression model. Model 7a in Table 5.11 shows the results from the regression model.

Overall, the interactions of the non-employed groups with marital status were not statistically significant. However, the interactions of the homemaker role with marital status were significant for men, and the interaction of the unemployed and homemaker roles with the never married was significant for women. The negative beta coefficient for the interaction of the homemaker role with the never married among men (-1.62) indicates that this combination was beneficial for men. Table 5.12a shows the average distress score for men in the different role combinations. Among men who were homemakers, never having been married was beneficial, while being previously married was detrimental to their mental health. When stressors and coping resources were added to the regression model, men who were never married homemakers continued to be significantly associated with decreased distress ($b=-1.29$), but there was no significant association for the interaction of previously married with homemakers. In the adjusted

model, unemployed, never married men were significantly associated with higher distress ($b=0.21$). This suggests that when stressors and coping resources are accounted for, never married men's mental health was improved if they were homemakers, but unemployment was detrimental to their mental health.

Women who were unemployed appeared to benefit from being single, since the beta coefficient for this interaction was negative. Table 5.12b shows the average distress scores for women in the different role combinations. While unemployed, single women received some benefit in this role combination, the difference in mean distress compared to employed, married women was very small (2.78 vs. 2.89). The interaction effect indicates that among unemployed women, the never married had significantly lower distress than the married. On the other hand, never married women had a higher mean distress score if they were homemakers, compared to employed, married women. Among women, the never married role was detrimental to the homemakers, but beneficial to the unemployed, compared to employed, married women.

When stressors and coping resources were accounted for among women, never married homemakers were not significantly associated with increased distress, but never married, unemployed women continued to be associated with lower distress ($b=-0.34$).

The second hypothesis stated that having children will be beneficial to the homemaker and unemployed roles. This hypothesis was tested by adding the interaction of children with the homemaker and unemployed variables to the regression model. Children were re-defined to include only households that had children age 0-11 years. The reference category for "children" was the combination of households that had

children age 12 years and over, no children, or status of children in the household was unknown. Results did not find any statistically significant interaction effects. When stressors and coping resources were added to the regression model, there continued to be no statistical significance for these interactions.

The third hypothesis was “having children will be more salient among females who are single or previously married.” This was examined by including the interaction of children with the never and previously married in the regression analysis. A statistically significant interaction effect was found among women, but not men. The beta coefficient ($b=0.34$) for the interaction of never married women with children indicates that having children was detrimental to women’s distress among the never married. Table 5.13 shows the mean distress scores for these roles. When results were adjusted for stressors and coping resources, the interaction term was no longer significant.

Buffering effects

Buffering effects were determined for the following interactions: a) presence of children with low coping resources and b) social support and mastery with family health stressors.

To test for the first buffering effect, the interactions of children with the three coping resources, self-esteem, mastery and perceived social support, were put into the full (all variables in the final model) regression model (model 6). The variable for children was re-calculated so that families that had children ages 0-11 years old were used, and all other family types were the reference. There were no statistically significant interaction terms among men, so results for them are not shown in Table 5.14. Among

women, only the interaction of social support with children was statistically significant. The positive beta coefficient for the interaction term indicates that children may have a detrimental effect on social support among women. However, when the beta coefficients were used to calculate mean distress scores, the means show that women with children ages 0-11 years and with high social support had the lowest mean distress score (2.06), while women with low social support and no children had the highest mean distress score (2.35). Women with low social support who had children had the next lowest average distress score (2.11). This difference in mean distress score (0.24) indicates that among women, children conferred a buffering effect for individuals who had low social support. The effect of children on high social support was not as remarkable, since women with no children and high social support had a mean distress score of 2.17 compared to 2.06 for mothers with high social support, giving a difference of 0.11.

Table 5.14 also shows that the gender difference of the interaction of children with social support was not significant. However, there was a gender difference in the effect of children. Among individuals with low social support, the mean distress score for men with children was 2.21 vs. 2.25 for men without children. However, women with children had a mean distress score of 2.16 while women without children had a mean distress score of 2.40. These results suggest that children ages 0-11 years in the home were beneficial to women's mental health, but had no effect on men's mental health. Results were similar when calculating the mean distress for individuals with high social support, with lower distress scores as follows: Men with children, mean distress=2.08; men without children, mean distress=2.07; women with children, mean distress=2.11; women without children, mean distress=2.24.

The interaction of perceived social support with family health stressors was not statistically significant for men, women and overall. The interaction of mastery with family health stressors was significantly associated with distress among women, and a gender difference was found in this interaction term. Table 5.15 shows the beta coefficients for selected variables in this model.

Among women with no family stressors, those with low mastery had a mean distress score of 2.28 compared to 1.94 for women with high mastery. The mean distress score for women with family stressors was 2.46 for women with low mastery and 1.99 for women with high mastery. Mastery moderated the negative impact of family health stressors for women.

Overall, women were impacted more by the buffering effect of mastery on family health stressors. Table 5.16 presents mean distress scores using the beta coefficients from table 5.15. When there were no family health stressors, the gender differences were minimal and not significant. However, when family health stressors were high, the effect of mastery was seen among women, but not among men. For individuals with high family health stressors, the mean distress for women was 2.51 if mastery was low and was 2.03 if mastery was high. The effect of mastery on family health stressors was not seen among men, since men had a mean distress score of 2.11 with low mastery and 2.15 for high mastery. In fact, women had a lower mean distress score than men when both mastery and family health stressors were high.

The work stress model

The work stress model was tested for individuals who were employed; homemakers and the unemployed were excluded from the regression analysis.

Individuals who did not answer the job stressor questions were also excluded from the regressions. The work stress model included structural circumstances (marital status, presence of children and income) and the control variables, age and self-rated health. Multivariate OLS regression was used and individual work stressor items were added in succession: 1) job control and job demands, 2) the interaction of job control with job demands, 3) work social support and the interaction of work social support with interaction of job control and job demands, and 4) job security, physical exertion and job satisfaction. The chronic and event stressors were also added to the regression model, then coping resources were also added.

The job control variable was first used as an interval variable, ranging from 0 to 20. While doing the analysis, all interaction terms with job control (an interval variable) had a high variance inflation, indicating multicollinearity problems. Job control was dichotomized so that approximately 25% of individuals with the lowest job control scores were flagged as having low job control. Multicollinearity problems were resolved for interactions with job control after this was done. All subsequent analyses used the low job control flag instead of the interval job control variable.

Table 5.17a exhibits the beta coefficients and statistical significance for structural circumstances and selected work stressor items. In model 8a, high job demands were significantly associated with distress overall and for men and women. The interaction of job control and job demands was not associated with distress.

When job social support was added to the model (model 8b), significant changes occurred. First, low job control became significantly associated with *lower* distress overall and for men. Social support at work was associated with distress, and the

interaction of job social support with job demands and low control was associated with distress overall and for men. The interaction of job support with low control was also associated with distress among women. The interaction of sex with the job social support/demands interaction was statistically significant and the interaction of job social support with job demands remained statistically significant.

The work stress model was further explored by adding in the remaining work stressor items, but entering only interaction effects that were significant in model 8b. See Table 5.17b, model 8c. Job control again became insignificant. Job demands, job security and job dissatisfaction were all associated with higher distress. Physically exerting jobs were not found to be associated with distress and was not included in the model. Job social support remained significantly associated with lower distress. The interaction of low job control with high job demands was significant only for men. The interaction of job control with job social support was significant overall and for men. This suggests that while job social support was significant for men and women, the association of job support with distress depended on control at the job among men.

When the chronic and event stressors and coping resources were added to the regression analysis, many of the significant findings changed. Insignificant measures and interactions were excluded in the final model (Table 5.17b, model 8d). Low job control was found to be associated with higher distress, but not among men. High job demands, low job support and job dissatisfaction remained significantly associated with higher distress. However, job demands were not associated with distress among women, and job dissatisfaction was not associated with distress among men. Gender differences in these two measures, job demands and job dissatisfaction, as well as job control, was tested by

entering the interaction of gender. Gender differences were not found for low job control. However, distress among men was moderated by job support when job demands were high, but this was not true for women. Job dissatisfaction was salient among women, but not among men.

**Table 5.1 Gender differences in mean (square root of) distress scores,
Adults age 20-64**

	Female	Male	
<i>Overall</i>	1.64	1.48	*
<i>Main Activity</i>			
Employed	1.60	1.45	*
Care at home	1.71	1.91	
Unemployed	1.82	1.69	
<i>Marital Status</i>			
Married	1.59	1.44	*
Never married	1.69	1.54	*
Previously married	1.87	1.64	*
<i>Youngest child</i>			
No children	1.65	1.51	*
Age 0-5	1.58	1.45	*
Age 6-11	1.59	1.51	
Age 12 and up	1.73	1.43	*
Unknown	1.63	1.50	
<i>Income</i>			
Low	1.74	1.70	
Middle-low	1.92	1.70	*
Middle	1.64	1.52	*
Middle-high	1.59	1.43	*
High	1.55	1.46	

* Statistically significant sex differences in mean distress score ($p < 0.05$)
Adjusted for age and self-rated health. Normalized weights were used. No bootstrapping
was done.

**Table 5.2 Gender differences in mean (square root of) distress scores,
Adults age 20-64**

	Women		Men	
	No kids	Kids ‡	No kids	Kids ‡
<i>Main Activity</i>				
Employed	1.62 *	1.57 *	1.47	1.42
Homemaker	1.65	1.71	1.90	1.92
Unemployed	1.79	1.88	1.74	1.62
<i>Marital Status</i>				
Married	1.60 *	1.56 *	1.44	1.43
Never married	1.67	1.89	1.54	1.74
Previously married	1.79	1.90	1.66	1.56
<i>Main Activity and Marital Status</i>				
Employed-married	1.58 *	1.52 *	1.42	1.42
Employed-NM†	1.69	1.82 *	1.53	1.52
Homemaker-married	1.62 *	1.64	2.96	1.92
Homemaker-NM†	1.77	2.00	0.71	1.96
Unemployed-married	1.71	1.79	1.57	1.57
Unemployed-NM†	1.90	2.15	1.88	2.00

* Statistically significant sex differences in mean distress score

‡ Kids were determined by presence of children ages 0-11 years in the home

†NM: Not married

Adjusted for age and self-rated health. Normalized weights were used. No bootstrapping was done.

Table 5.3 Univariate Regressions

	Model 1: Public Use (1)			Model 1: Bootstrap (2)		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.18 †			0.16 *		
<i>Age (3)</i>	-0.07 †	-0.08 †	-0.06 †	-0.016 *	-0.018 *	-0.015 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.12 †	0.46 ***	0.10 †	0.12 *	0.47 *	0.10 *
Unemployed	0.23 †	0.23 †	0.22 †	0.23 *	0.23 *	0.22 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.10 †	0.08 *	0.12 †	0.10 *	0.07 *	0.12 *
Previously married	0.25 †	0.20 †	0.27 †	0.25 *	0.21 *	0.27 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.07 **	-0.07	-0.06	-0.08 *	-0.08 *	-0.07 *
Kids 6-11 years	-0.04	-0.00	-0.06	-0.04	-0.00	-0.06
Kids 12+ years	0.01	-0.08	0.08 *	0.01	-0.07 *	0.08 *
<i>Income</i>						
Low	0.20 †	0.23 ***	0.19 †	0.20 *	0.23 *	0.19 *
Mid-low	0.31 †	0.24 ***	0.38 †	0.31 *	0.24 *	0.37 *
Middle	0.07 *	0.06	0.09 *	0.07	0.05	0.09 *
Mid-High	0.00	-0.03	0.05	0.00	-0.03	0.04
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.16 ***	-0.20 **	-0.11	-0.16 *	-0.20 *	-0.12 *
<i>Chronic stressors</i>						
Relationship stress	0.45 †	0.39 †	0.51 †	0.45 *	0.39 *	0.51 *
Family stress	0.33 †	0.35 †	0.32 †	0.33 *	0.35 *	0.32 *
Child stress (4)	0.32 †	0.30 †	0.33 †	0.32 *	0.29 *	0.33 *
Financial stress	0.30 †	0.27 †	0.33 †	0.30 *	0.27 *	0.33 *
Personal stress	0.56 †	0.58 †	0.54 †	0.56 *	0.57 *	0.54 *
<i>Work stressors (5)</i>						
Job stress NA	0.31 †	0.27 †	0.34 †	0.31 *	0.28 *	0.34 *
Job stress (6)	0.28 †	0.29 †	0.27 †	0.28 *	0.29 *	0.27 *
<i>Coping resources</i>						
Self-esteem	-0.21 †	-0.18 †	-0.24 †	-0.21 *	-0.18 *	-0.24 *
Mastery	-0.55 †	-0.50 †	-0.61 †	-0.55 *	-0.50 *	-0.61 *
Social support	-0.39 †	-0.38 †	-0.45 †	-0.39 *	-0.38 *	-0.40 *

* p < 0.05, ** p < 0.01, *** p < 0.005, † p < 0.001

(1) Adjusted for age and self-reported health; total is further adjusted for sex

(2) Bootstrapping only tested for p < 0.05

(3) Age in the bootstrapping was true age, not grouped

(4) Child stress also adjusted for child stress not applicable

(5) Work stressors further controlled for unemployed and homemakers

(6) Job stress is combined job stressor items (excludes job satisfaction, includes job social support)

Table 5.4 Multivariate Regressions: Roles

	Model 2: Public Use			Model 2: Bootstrapping (1)		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.13 †			0.12 *		
<i>Age(2)</i>	-0.09 †	-0.09 †	-0.09 †	-0.017 *	-0.018 *	-0.017 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.14 †	0.44 ***	0.13 †	0.10 *	0.45 *	0.14 *
Unemployed	0.21 †	0.22 †	0.20 †	0.17 *	0.22 *	0.20 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.11 †	0.08	0.14 †	0.06	0.06	0.13 *
Previously married	0.24 †	0.19 ***	0.28 †	0.20 *	0.18 *	0.28 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.04	-0.02	-0.06	-0.08 *	-0.04	-0.08 *
Kids 6-11 years	-0.01	0.03	-0.05	-0.03	0.03	-0.06
Kids 12+ years	0.04	-0.03	0.09 *	0.03	-0.03	0.09 *
Kids unknown	-0.06	-0.04	-0.07	-0.04	-0.04	-0.06
Adjusted R² (3)	0.08	0.07	0.08			

* p < 0.05, ** p<0.01, *** p<0.005, † p<0.001

(1) Bootstrapping only tested for p<0.05

(2) age in the bootstrapping was true age, not grouped

(3) Bootstrapping did not provide R² values

Table 5.5 Multivariate Regression: Adding in SES

	Model 3: Public Use			Model 3: Bootstrapping		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.12 †			0.12 *		
<i>Age (2)</i>	-0.08 †	-0.09 †	-0.08 †	-0.017 *	-0.018 *	-0.017 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.09 ***	0.34 *	0.08 *	0.10 *	0.35 *	0.08 *
Unemployed	0.17 †	0.17 †	0.17 ***	0.17 *	0.17 *	0.17 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.08 *	0.06	0.09 *	0.06	0.05	0.08 *
Previously married	0.20 †	0.17 ***	0.22 †	0.20 *	0.17 *	0.22 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.07 *	-0.04	-0.09 *	-0.08 *	-0.05	-0.10 *
Kids 6-11 years	-0.03	0.02	-0.07	-0.03	0.02	-0.08
Kids 12+ years	0.03	-0.03	0.08 *	0.03	-0.03	0.08 *
Kids unknown	-0.05	-0.03	-0.06	-0.04	-0.03	-0.06
<i>Income</i>						
Low	0.12 *	0.14	0.11	0.12	0.14 *	0.11
Mid-low	0.24 †	0.17 ***	0.29 †	0.24 *	0.17 *	0.29 *
Middle	0.04	0.03	0.06	0.04	0.03	0.06
Mid-High	-0.01	-0.04	0.03	-0.01	-0.04	0.03
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.19 †	-0.22 ***	-0.15 *	-0.19 *	-0.23 *	-0.15
Adjusted R² (3)	0.09	0.07	0.09			

* p < 0.05, ** p < 0.01, *** p < 0.005, † p < 0.001

(1) Bootstrapping only tested for p < 0.05

(2) age in the bootstrapping was true age, not grouped

(3) Bootstrapping did not provide R² values

Table 5.6 Multivariate Regressions: Adding in Chronic and event stressors (1)

	Model 4: Public Use			Model 4: Bootstrapping (2)		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.07 †			0.07 *		
<i>Age (3)</i>	-0.06 †	-0.06 †	-0.06 †	-0.012 *	-0.013 *	-0.012 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.12 †	0.27 *	0.11 †	0.12 *	0.28 *	0.11 *
Unemployed	0.08 *	0.08	0.09	0.08	0.08	0.09
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.04	0.06	0.04	0.03	0.05	0.03
Previously married	0.11 †	0.13 *	0.10 **	0.11 *	0.13 *	0.10 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.03	0.03	-0.08	-0.05	0.02	-0.10
Kids 6-11 years	-0.04	0.05	-0.10 *	-0.04	0.04	-0.11 *
Kids 12+ years	0.01	0.00	0.02	0.01	-0.00	0.01
Kids unknown	-0.02	-0.01	-0.03	-0.02	-0.01	-0.03
<i>Income</i>						
Low	0.04	0.06	0.03	0.04	0.06	0.03
Mid-low	0.12 ***	0.05	0.17 †	0.12 *	0.05	0.17 *
Middle	0.01	-0.02	0.03	0.01	-0.02	0.03
Mid-High	-0.02	-0.05	0.02	-0.02	-0.05	0.01
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.13 **	-0.18 **	-0.06	-0.13	-0.18 *	-0.07
<i>Chronic stressors</i>						
Relationship stress	0.23 †	0.20 †	0.25 †	0.23 *	0.20 *	0.25 *
Family stress	0.15 †	0.17 †	0.13 †	0.15 *	0.17 *	0.13 *
Child stress	0.12 †	0.11 †	0.12 †	0.12 *	0.11 *	0.12 *
Financial stress	0.09 †	0.07 *	0.12 †	0.09 *	0.07 *	0.12 *
Personal stress	0.42 †	0.45 †	0.39 †	0.41 *	0.45 *	0.39 *
Adjusted R² (4)	0.22	0.20	0.22			

* p < 0.05, ** p < 0.01, *** p < 0.005, † p < 0.001

(1) Event stressors were used as control variables

(2) Bootstrapping only tested for p < 0.05

(3) Age in the bootstrapping was true age, not grouped

(4) Bootstrapping did not provide R² values

Table 5.7 Multivariate Regressions: Adding in Work stressors

	Model 5: Public Use			Model 5: Bootstrapping (1)		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.06 †			0.06 *		
<i>Age (2)</i>	-0.06 †	-0.06 †	-0.06 †	-0.012 *	-0.013 *	-0.012 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.18 †	0.32 *	0.17 †	0.18 *	0.33 *	0.17 *
Unemployed	0.14 †	0.14 ***	0.15 ***	0.14 *	0.14 *	0.15 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.04	0.05	0.04	0.03	0.04	0.03
Previously married	0.12 †	0.14 **	0.11 **	0.11 *	0.14 *	0.10 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.03	0.04	-0.08	-0.05	0.02	-0.10 *
Kids 6-11 years	-0.03	0.05	-0.10 *	-0.04	0.04	-0.11 *
Kids 12+ years	0.01	0.01	0.01	0.01	0.00	0.01
Kids unknown	-0.02	-0.02	-0.03	-0.02	-0.01	-0.03
<i>Income</i>						
Low	0.02	0.06	0.00	0.03	0.06	0.00
Mid-low	0.10 ***	0.04	0.15 ***	0.10 *	0.04	0.15 *
Middle	-0.00	-0.02	0.01	-0.01	-0.02	0.01
Mid-High	-0.02	-0.05	0.00	-0.02	-0.05	0.00
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.12 *	-0.16 *	-0.07	-0.12	-0.16 *	-0.07
<i>Chronic stressors</i>						
Relationship stress	0.22 †	0.20 †	0.24 †	0.22 *	0.20 *	0.24 *
Family stress	0.15 †	0.17 †	0.13 †	0.15 *	0.17 *	0.13 *
Child stress	0.13 †	0.12 †	0.13 †	0.13 *	0.12 *	0.13 *
Financial stress	0.09 †	0.06 *	0.11 †	0.09 *	0.06 *	0.11 *
Personal stress	0.41 †	0.44 †	0.39 †	0.41 *	0.44 *	0.38 *
<i>Work stressors</i>						
Job stress unknown	0.29 †	0.25 †	0.33 †	0.29 *	0.25 *	0.33 *
Job stressors	0.13 †	0.13 †	0.12 †	0.13 *	0.13 *	0.12 *
Adjusted R² (3)	0.23	0.21	0.23			

* p < 0.05, ** p < 0.01, *** p < 0.005, † p < 0.001

(1) Bootstrapping only tested for p < 0.05

(2) Age in the bootstrapping was true age, not grouped

(3) Bootstrapping did not provide R² values

Table 5.8 Multivariate Regressions: Adding in coping resources

	Model 6: Public Use			Model 6: Bootstrapping (1)		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Sex</i>	0.07 †			0.07 *		
<i>Age (2)</i>	-0.07 †	-0.07 †	-0.06 †	-0.014 *	-0.015 *	-0.013 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.14 †	0.32 *	0.13 †	0.14 *	0.33 *	0.13 *
Unemployed	0.08 *	0.08	0.11 *	0.08	0.08	0.11 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.02	0.01	0.04	0.02	0.00	0.04
Previously married	0.12 †	0.12 *	0.13 †	0.12 *	0.12 *	0.13 *
<i>Presence of children</i>						
No children	Ref	Ref	Ref	Ref	Ref	Ref
Kids 0-5 years	-0.02	0.04	-0.08	-0.04	0.03	-0.10 *
Kids 6-11 years	-0.03 *	0.05	-0.10 *	-0.04	0.04	-0.11 *
Kids 12+ years	0.02	0.02	0.01	0.01	0.01	0.01
Kids unknown	-0.04	-0.02	-0.07	-0.03	-0.01	-0.06
<i>Income</i>						
Low	-0.03	-0.04	-0.02	-0.03	-0.04	-0.01
Mid-low	0.04	-0.04	0.10 *	0.04	-0.04	0.10 *
Middle	-0.05	-0.08 *	-0.01	-0.05	-0.08 *	-0.01
Mid-High	-0.05 *	-0.09 **	-0.00	-0.05	-0.09 *	-0.00
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.14 ***	-0.19 ***	-0.08	-0.15	-0.20 *	-0.08
<i>Chronic stressors</i>						
Relationship stress	0.16 †	0.13 †	0.19 †	0.16 *	0.13 *	0.19 *
Family stress	0.14 †	0.17 †	0.12 †	0.15 *	0.17 *	0.12 *
Child stress	0.11 †	0.10 ***	0.10 †	0.10 *	0.10 *	0.10 *
Financial stress	0.04 *	0.02	0.07 ***	0.04	0.01	0.06 *
Personal stress	0.35 †	0.39 †	0.32 †	0.35 *	0.39 *	0.32 *
<i>Work stressors</i>						
Job stress unknown	0.29 †	0.25 †	0.32 †	0.29 *	0.25 *	0.32 *
Job stressors	0.08 †	0.08 *	0.08 *	0.08 *	0.08 *	0.07 *
<i>Coping resources</i>						
Self-esteem	-0.08 †	-0.06 *	-0.09 †	-0.07 *	-0.06 *	-0.09 *
Mastery	-0.35 †	-0.31 †	-0.38 †	-0.35 *	-0.31 *	-0.38 *
Social support	-0.14 †	-0.18 †	-0.12 †	-0.14 *	-0.18 *	-0.12 *
Adjusted R² (3)	0.26	0.24	0.27			

* p < 0.05, ** p < 0.01, *** p < 0.005, † p < 0.001

(1) Bootstrapping only tested for p < 0.05

(2) age in the bootstrapping was true age, not grouped

(3) Bootstrapping did not provide R2 values

Table 5.9 Z-scores for change in sex beta coefficient

Regression model adjusted for:	Beta for sex	Std Error	Z-score
Age and self-rated health	0.15663	0.01830	
+ Roles	0.12559	0.01951	1.149
+ Income	0.12486	0.01945	0.027
+ Chronic and event stressors	0.06812	0.01810	2.136
+ Job stressors	0.06047	0.01809	0.299
+ Coping resources	0.06597	0.01776	-0.217

Table 5.10a Interaction of gender with mastery: regression values

Variable	Beta	Low value	High value
Sex	0.06761	0 (men)	1 (women)
Mastery	-0.30265	-0.4842	0.5158
Sex*mastery	-0.07998		

Table 5.10b Interaction of gender with mastery: change in distress scores

	Men		Women	
	Low mastery	High mastery	Low mastery	High mastery
Sex	0	0	0.0676	0.0676
Mastery	0.1465	-0.1561	0.1465	-0.1561
Sex*mastery	0	0	0.0387	-0.04125
Sum scores	0.1465	-0.1561	0.2529	-0.1297

Figure 5.1 Interaction of gender with mastery

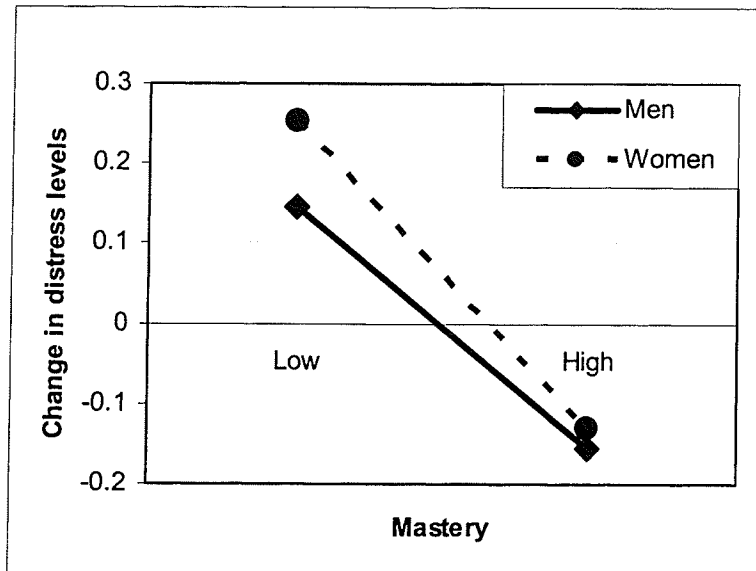


Table 5.11 Role interactions

	Model 7a: Public Use			Model 7b: Public Use		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Intercept</i>	2.66 *	2.64 *	2.82 *	2.68 *	2.64 *	2.86 *
<i>Sex</i>	0.13 *			0.12 *		
<i>Age</i>	-0.08 *	-0.09 *	-0.08 *	-0.09 *	-0.09 *	-0.09 *
<i>Main Activity</i>						
Employed	Ref	Ref	Ref	Ref	Ref	Ref
Care for family	0.13 *	0.64 *	0.11 *	0.13 *	0.45 *	0.13 *
Unemployed	0.18 *	0.14 *	0.23 *	0.21 *	0.22 *	0.20 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.06	0.05	0.07	0.03	0.06	0.01
Previously married	0.20 *	0.18 *	0.23 *	0.21 *	0.18 *	0.22 *
<i>Youngest child</i>						
Age 0-11 years	-0.06 *	-0.00	-0.11 *	-0.08 *	-0.01	-0.16 *
Other	Ref	Ref	Ref	Ref	Ref	Ref
<i>Interactions</i>						
Home*Never married	0.19	-1.62 *	0.26 *			
Home*Prev married	0.11	-0.27 *	0.11			
Unemp*Never married	0.03	0.21	-0.34 *			
Unemp*Prev married	0.20	0.11	0.29			
Home*Kids				-0.04	0.20	0.01
Unemp*Kids				0.07	-0.04	0.23
Never married*Kids				0.26 *	0.27	0.33 *
Prev. married*Kids				0.11	0.04	0.14

* p<0.05

**Table 5.12a Interaction of marital status with employment status:
Average distress scores for men**

	Employed	Homemakers	Unemployed
Married	2.64	3.28	2.78
Never married	2.69	1.71 *	3.04
Previously married	2.82	3.19 *	3.07

* p<0.05

**Table 5.12b Interaction of marital status with employment status:
Average distress scores for women**

	Employed	Homemakers	Unemployed
Married	2.82	2.93	3.05
Never married	2.89	3.26 *	2.78 *
Previously married	3.05	3.27	3.57

* p<0.05

**Table 5.13 Interaction of marital status with parental status:
Average distress scores for women**

	Children 0-11	Other
Married	2.70	2.86
Never married	3.04 *	2.87
Previously married	3.07	3.08

* p<0.05

Table 5.14 Selected beta coefficients for buffering effect of children with coping resources, full regression model

	Women	Overall
Intercept	2.35 *	2.25 *
Kids 0-11 years	-0.24 *	-0.04
Social support	-0.18 *	-0.18 *
Kids * Social support	0.13 *	0.05 *
Sex		0.16 *
Sex * Kids		-0.20 *
Sex * Social support		-0.01
Sex * Kids * Social support		0.08

* p < 0.05

Table 5.15 Selected beta coefficients for buffering effect of mastery with family health stressors, full regression model

	Women	Overall
Intercept	2.28 *	2.40 *
Mastery	-0.34 *	-0.32 *
Family stressors	0.18 *	0.13 *
Mastery*Family stressors	-0.13 *	0.10
Sex		0.09 *
Sex * Mastery		-0.03
Sex * Family stressors		0.05
Sex * mastery * Family stressors		-0.23 *

* p < 0.05

Table 5.16 Mean distress scores for the interaction of mastery with family health stressors by sex, full regression model

	Low Mastery		High Mastery	
	Male	Female	Male	Female
No family health stressors	2.24	2.33	1.92	1.98
Family health stressors	2.11	2.51	2.15	2.03

Table 5.17a Work stress model: Adding in job control, demands and work social support

	Model 8a			Model 8b		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Intercept</i>	2.46	2.55	2.49	2.59	2.75	2.55
<i>Sex</i>	0.12 *			0.12 *		
<i>Age</i>	-0.08 *	-0.10 *	-0.07 *	-0.08 *	-0.10 *	-0.07 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.03	0.00	0.07	0.03	0.01	0.07
Previously married	0.16 *	0.17 *	0.15 *	0.17 *	0.17 *	0.16 *
<i>Presence of children</i>						
Kids 6-11 years	-0.08 *	-0.04	-0.12 *	-0.08 *	-0.05	-0.12 *
<i>Income</i>						
Low	0.01	0.09	-0.07	0.01	0.09	-0.07
Mid-low	0.28 *	0.19 *	0.38 *	0.29 *	0.20 *	0.38 *
Middle	0.08 *	0.06	0.10 *	0.08 *	0.06	0.10 *
Mid-High	0.01	-0.01	0.03	0.00	-0.01	0.03
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.15 *	-0.22 *	-0.06	-0.15 *	-0.21 *	-0.07
<i>Work stressors</i>						
Low job control	-0.05	-0.04	-0.05	-0.11 *	-0.15 *	-0.05
High job demands	0.23 *	0.26 *	0.19 *	0.15 *	0.12 *	0.18 *
Control*Demands	0.01	-0.02	0.04	0.08	0.10 *	0.06
Job social support				-0.26 *	-0.34 *	-0.18 *
Cntl*jobss				0.11 *	0.21 *	-0.00
Demands*jobss				0.06	0.22 *	-0.11
Cntl*demands*jobss				-0.08	-0.22 **	0.05
Adjusted R²	0.09	0.09	0.07	0.10	0.10	0.09

* p < 0.05 ** p=0.07

Table 5.17b Work stress model: Adding in all job stressors, chronic stressors and coping resources

	Model 8c			Model 8d		
	Total Beta	Male Beta	Female Beta	Total Beta	Male Beta	Female Beta
<i>Intercept</i>	2.57	2.73	2.51	2.29	2.43	2.26
<i>Sex</i>	0.13 *			0.08 *		
<i>Age</i>	-0.08 *	-0.10 *	-0.06 *	-0.08 *	-0.09 *	-0.06 *
<i>Marital status</i>						
Married	Ref	Ref	Ref	Ref	Ref	Ref
Never married	0.04	0.00	0.07	0.03	-0.03	0.10 *
Previously married	0.16 *	0.17 *	0.15 *	0.11 *	0.11 **	0.10 *
<i>Presence of children</i>						
Kids 6-11 years	-0.07 *	-0.05	-0.10 *	-0.07 *	-0.02	-0.12 *
<i>Income</i>						
Low	-0.02	0.04	-0.07	-0.09	-0.07	-0.11
Mid-low	0.26 *	0.16 *	0.36 *	0.11 *	0.01	0.21 *
Middle	0.07 *	0.04	0.10 *	-0.02	-0.06	0.02
Mid-High	0.00	-0.01	0.04	-0.04	-0.07	0.02
High	Ref	Ref	Ref	Ref	Ref	Ref
Unknown	-0.16 *	-0.21 *	-0.09	-0.15 *	-0.22 *	-0.06
<i>Work stressors</i>						
Low job control	-0.005	-0.02	0.01	0.06 *	0.03	0.08 *
High job demands	0.15 *	0.13 *	0.16 *	0.08 * †	0.12 *	0.03
Job social support	-0.21 *	-0.25 *	-0.16 *	-0.09 *	-0.10 *	-0.08 *
Demands*jobss	0.06	0.16 *	-0.05			
Job security	-0.13 *	-0.14 *	-0.12 *			
Job dissatisfaction	0.26 *	0.20 *	0.34 *	0.15 * †	0.08	0.22 *
<i>Chronic stressors</i>						
Relationship stress				0.15 *	0.15 *	0.14 *
Family stress				0.13 *	0.15 *	0.11 *
Child stress				0.10 *	0.09 *	0.10 *
Financial stress				0.05 *	0.02	0.07 *
Personal stress				0.30 *	0.32 *	0.28 *
<i>Coping resources</i>						
Self-esteem				-0.09 *	-0.06 *	-0.11 *
Mastery				-0.32 *	-0.31 *	-0.35 *
Social support				-0.18 *	-0.16 *	-0.23 *
Adjusted R² (2)	0.11	0.11	0.10	0.25	0.24	0.25

* p < 0.05 ** p < 0.06 † p < 0.05 for interaction with gender

Chapter 6: Discussion

The discussion will review each of the hypotheses stated in Chapter 3, The Conceptual Framework. Each hypothesis will be stated, and then the analytical results will be interpreted for the hypothesis. The hypothesis will be confirmed, rejected or found to have inconclusive support. If the hypothesis is rejected, then possible reasons for this will be explained. In some cases, future directions will also be discussed, especially when results are inconclusive. As well, limitations will be reported. Karasek's work stress model will be discussed, focusing on gender differences in the work stressors in the NPHS. Finally, some overall limitations of the research and conclusions will be stated.

Basic Findings

Hypothesis 1: Women will report higher levels of distress than men

This study confirmed this hypothesis. Women reported higher distress scores than men, both on a crude basis, and adjusted for age and self-rated health. When controlling for age and self-rated health, men in all marital status categories reported lower mean distress scores than women in the same marital status. See Table 5.1. However, when stressors were accounted for, the gender differences in distress between marital status categories were no longer significant. When coping resources were added to the model, the association of marital status with distress did not change. These results are similar to those of Walters et al. (2002) who reported gender differences among the married and previously married, even after controlling for coping resources.

At the basic level, many studies have found gender differences in distress within each marital status category (Lennon, 1996; Roxburgh, 1996; Simon, 1992; Walters, McDonough, and Strohschein, 2002). However, when other factors were accounted for, some studies have found that differences in distress within marital status groups were diminished (Roxburgh, 1994; Walters, McDonough, and Strohschein, 2002). Results from this study confirm that women had significantly higher distress in the marital status categories, but these differences were reduced when adjusting for other variables.

Hypothesis 2: Low income will be associated with higher distress scores.

Hypothesis 3: Younger age will be associated with higher levels of distress

An association was found between SES (income quintile) and age with distress. As income increased, mean distress levels decreased. Several studies have found this SES gradient with different health outcomes, including distress (Kessler, 1979a; Matthews and Power, 2002; Ulbrich, Warheit, and Zimmerman, 1989). As individuals age, distress levels decreased. Most studies have also found this to be true (Haug and Folmar, 1986; Wade and Cairney, 1997). These two hypotheses were confirmed in this study.

Roles

The second set of hypotheses revolved around the associations of roles with distress. Some of these hypotheses were confirmed, while others were not.

Hypothesis 4: Being married, employed and having children will be associated with lower distress. However, among women, no differences in distress will be found between the homemaker and employed roles.

Married individuals reported lower distress scores than the never married and previously married. See Tables 5.3, 5.4 and 5.7. However, when controlling for stressors and coping resources, only the previously married continued to have higher distress than the married. McDonough, Walters, and Stroschein (2002) reported similar results using the NPHS, while Turner and Marino (1994) found no difference in distress when accounting for resources. The hypothesis that married individuals have lower mean distress than the non-married is supported when examining only roles, but results indicate that accounting for chronic stressors removes the benefits of being married. When chronic stressors were added to the regression model, never married individuals were no longer significantly associated with distress and never married individuals had a reduced association (lower beta coefficient) with distress. One explanation for this would be that the distress faced by the non-married are captured in the chronic stressors; the chronic stressors account for most of the excess distress faced by the never married and some of the excess distress encountered by the previously married, compared to the married.

Employed individuals had significantly lower distress compared to homemakers and the unemployed. This association held even when accounting for stressors. However, when coping resources were added into the regression model (see Table 5.8), unemployed men no longer had significantly lower distress scores than employed men. One explanation for this finding is that poor coping resources account for much of

unemployed men's higher distress. Further research could be done to investigate the results reported here.

Men who care for the family appear to have higher distress than their female counterparts. There were few men who were in this role (N=40), therefore, results should be used with caution. Studies examining the male homemaker role with distress, or any other outcomes, were not found in the literature review. In this study, the homemaker role is basically made up of individuals who state they are caring for their family. This could mean caring for children, spouses, parents or other relatives. If more men are homemakers because they are caring for a spouse, then the stressors faced by these men would be different than most of the women homemakers since most female homemakers are probably caring for children. Further study could examine the homemaker role in more detail, first by sorting out who the homemakers are caring for and then checking for differences in distress among the different types of homemakers. Since more men are taking on the homemaker role, it will be important to conduct further research on this group.

The hypothesis that female homemakers would have the same levels of distress as employed women was rejected in this study. Female homemakers had higher distress than employed women, even when other roles, stressors and coping resources were accounted for. This study does not confirm more recent findings that homemakers are no more distressed than their employed counterparts (Roxburgh, 1996). However, many studies have found a difference in these roles among women (Kessler and McRae, 1982; Reskin and Coverman, 1985). It may be interesting to examine whether female homemakers are more distressed than their employed counterparts in particular job

categories. It could be possible in future research to list the homemaker "job" as another "job classification," such as putting it on the Pineo scale. Homemakers could then be asked about their "job" conditions, just as employed individuals. However, Lombardi and Ulbrich (1997) reported that measures of decision latitude at home did not have "the same meaning as decision latitude on the job." (p. 35) They further state that decision latitude at home is not comparable to decision latitude at work. But they are in favour of studying work conditions at home and work, and their relationship with psychological distress. While researchers continue to state the importance of doing this, so far to this researcher's knowledge, no one has yet been successful in creating and implementing a valid and reliable scale that encompasses "job" conditions, whether the job paid or unpaid. There is still much research that should be done in this arena.

Roxburgh (1994) did not find a difference in distress scores between homemakers and employed women. Her study sample came from Toronto, a high-density populated city. In light of this fact, it would be interesting to explore whether differences between these two roles occur among rural or smaller cities compared to the larger metropolitan areas. It could be hypothesized that in large, urban areas, women homemakers have similar distress compared to their employed counterparts, but that in smaller cities and rural areas female homemakers have higher distress than women who are employed. This may be due to the fact that homemakers who live in the city are close to and have access to many resources and supports whereas homemakers in rural areas probably do not have easily accessible resources and supports.

Univariate regression analysis revealed that parents with a child age 0-5 years old had lower distress scores than individuals without children. See Table 5.3. Men whose

youngest child was 12 years or older also had lower distress than men who were not fathers. However, mothers had higher distress than non-mothers if their youngest child was 12 years or more. Some of these results are consistent with the literature (Gore and Mangione, 1983; Romans-Clarkson, Walton et al., 1988), but the literature varies greatly. Many definitions of parenthood use younger ages of children, and the beneficial effect of parenthood is confirmed by this study. However, the higher distress for women with older children has not been confirmed by other studies. Again, this may be a matter of defining parenthood. In some studies, if parenthood was not found to be associated with distress, it may be because parenthood was not defined by age of youngest child as done in this study. By grouping the parenthood role into age categories of children, this study has been able to find that age of children does matter to the mental well-being of parents. In particular, mothers appear to be impacted more by this than fathers (Aneshensel, Frerichs, and Clark, 1981; Gore and Mangione, 1983; Roxburgh, 1994; Vermuelen and Mustard, 2000).

This study also found that mothers with older children did not have higher distress than non-mothers when stressors were accounted for in the multivariate regression analysis. This suggests that mothers with older children have more stressors, and these stressors account for their higher distress. It is also feasible that mothers whose youngest child is 12 or more and who have lower stressors are not more distressed than non-mothers. More research could be done to ascertain if any particular stressors account for the higher distress found in mothers with older children.

When examining gender differences between parenthood definitions in ANOVA, fathers were generally significantly less distressed than mothers. (See Table 5.1) This

was true when the age of the youngest child was 0-5 years and 12 and over. Men without children also had significantly less distress than women without children. However, when checking for gender differences in the full regression model by entering the interaction variables of sex with the different parental categories (age of youngest child 0-5, 6-11, 12+), no significant interactions were found. In a separate analysis, when the age of the youngest child was between 0 and 11, a significant difference was found between men and women. (See Table 5.14 and Figure 6.1 below.)

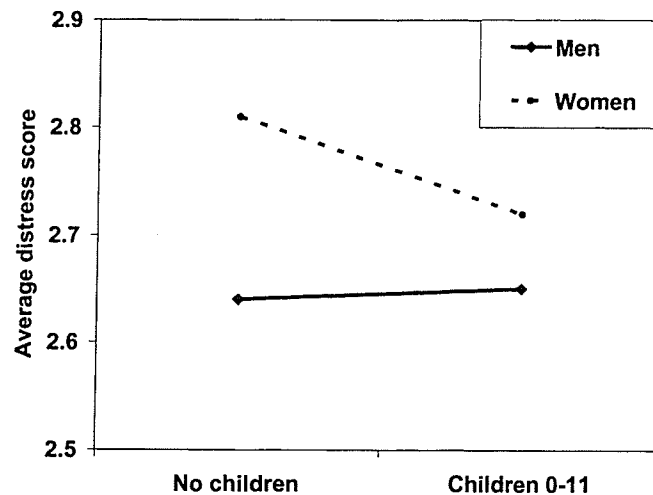


Figure 6.1 The association of children age 0-11 years with distress by gender

Figure 6.1 shows the association of being a parent to children ages 0-11 years with distress by gender. Statistically significant gender differences were found, indicating that the sexes were impacted differently by children in the home. This figure shows that children moderate distress for women, but not for men, when controlling for age and self-rated health, and including the other roles (employment and marital status categories) in the regression. When accounting for stressors and coping resources, having children age 0-11 years remained significantly associated with distress, dependent on gender. This means that younger children continued to moderate women's distress.

Other studies have also reported that motherhood was associated with distress, while fatherhood was not (Aneshensel, Frerichs, and Clark, 1981; Gore and Mangione, 1983; Roxburgh, 1994).

In earlier results (See Table 5.3), children aged 0-5 and 12 and over were found to be beneficial to men's distress when adjusting for age and self-rated health. When roles were added in the model, the benefits of being a father were no longer significant. While children have a positive impact on men's distress, employment roles and marital status were more important to men's mental well-being than fatherhood. This analysis confirms the hypothesis that having children is beneficial to mental well-being for both men and women. However, children confer benefits among women, but not men, when accounting for other roles, stressors and coping resources.

The analysis here also confirms problems with the definition of parenthood. As stated in the literature review, the definition of parenthood appears to play an important function in any analysis attempting to discern whether children are beneficial or detrimental to mental well-being. In the early analytical stages of this study, there was an attempt to discern whether the age of children in the home differentially impacted distress levels. Among men, children did not seem to impact distress. Among women, the age of the youngest child did matter. This analysis conforms with other studies where children were defined in the younger age groups (Elliott and Huppert, 1991). It also indicates that when studies use older children in their analyses, the impact of children on mental well-being may not be observed because age of child may matter. A limitation of this study and other studies is the measurement of "children" is confined to survey definitions. Another limitation of this study is that parenthood could only be defined if the child lived

at home, so parents who were not living with their children were not included in the definition.

Hypothesis 5: Being employed will moderate the negative association of not being married. Being married and/or having children will buffer the negative association of being unemployed or a homemaker with distress.

Different role combinations were explored for possible moderating effects of employment, being married and having children. That is, the roles of being employed, being married and having children were considered beneficial. It was hypothesized that a beneficial role would alleviate distress due to a “non-beneficial” role. This hypothesis reflects gaps that were observed in the literature.

Men who were previously married had lower distress scores if they were employed than if they were homemakers. The results showed that employment moderated the impact of being previously married among men. Having children did not impact the employment roles. One study found that among women, children age 6-12 years old were beneficial for homemakers (Elliott and Huppert, 1991). Results from this study do not concur with those researchers.

This study confirms the hypothesis that employment moderates the impact of being previously married among men, but not among women. Results also confirm the hypothesis that being married moderated the impact of the homemaker role among women. It is inconclusive whether there is a gender difference here or not, probably due to the small numbers in some of the role combinations. The other hypotheses were not confirmed and must be rejected.

While employment was considered to be a beneficial role, it was also hypothesized earlier that employed women would not be less distressed than female homemakers. Results from this study indicate that employment *is* beneficial for both men and women, and that the employed have significantly less distress than homemakers. Thus, the beneficial aspects of employment outweighed the detrimental aspects of possible role overload among women.

These results present gaps that were observed in the literature: that some roles can be viewed as beneficial to mental well-being, and therefore may moderate the “non-beneficial” roles. Results showed that benefits from roles may moderate the impact the disadvantages of other roles, but this was not always the case. Men and women also differed on whether beneficial roles moderated the impact of detrimental roles. There are several studies that have explored the constellation of roles an individual has, and the impact roles may have on each other (Barnett, 1993). The methods and findings from this study will enhance the body of research that explore roles and their associations with distress. There is much complexity involved that could be further studied using the longitudinal data, including the NPHS.

Stressors and Coping Resources

The next set of hypotheses theorized how stressors and coping resources were associated with distress. Some of the hypotheses were confirmed, while others were not.

Hypothesis 6: All chronic stressors will be associated with higher distress

The five chronic stressors used in this study were found to be significantly associated with higher distress, both in univariate and multivariate analysis. When adding coping resources to the regression, financial stressors became non-significant

overall and for men. While the beta coefficient for financial stressors also decreased for women, this particular stressor was still significantly associated with higher distress among females. The fact that the financial stressor variable used only one question to ascertain financial problems may be one reason why financial stressors have the lowest association with distress among the other stressors. Most studies examining the association of chronic stressors with distress have found a significant correlation with higher distress (Aneshensel and Pearlin, 1987; McDonough, Walters, and Stroschein, 2002; Roxburgh, 1994; Simon, 1992). However, no studies were found that have used the personal and financial stressors reported in this study. This hypothesis was confirmed, with the exception that financial stressors were no longer significant when accounting for coping resources.

Hypothesis 7: All work stressors will be associated with higher distress, with the exception of job control

Individuals with higher reported combined job stressors were significantly more distressed than employed individuals with low job stressors. These results agree with other studies (Griffin, Fuhrer et al., 2002; Holahan, Moos, and Bonin, 1999; Roxburgh, 1994; Walters, McDonough, and Stroschein, 2002). There were 341 employed people who did not answer the Job Content Questionnaire section of the survey. These individuals also had higher distress than employed individuals, but the beta coefficient was even higher than for homemakers and unemployed. This suggests that employed individuals who did not answer the job stressor questions were even more distressed than homemakers and the unemployed. Future research may want to delve into who these individuals are, because their significantly higher association with distress belies some

inherent problems with them. Employment, which appears to be beneficial, does not confer an advantage for these people.

The individual work stressor items are discussed in the section of this chapter entitled "Karasek's job stress model." The hypothesis will be confirmed or rejected in that section.

Hypothesis 8: All psychosocial resources will be associated with lower distress.

The three coping resources, self-esteem, mastery and perceived social support, were significantly associated with lower distress, in agreement with other studies (Cohen and Ashby Wills, 1985; Loscocco and Spitze, 1990; Pugliesi, 1995; Roxburgh, 1994; Thoits, 1995b; Turner, 1983; Walters, McDonough, and Stroschein, 2002). Additionally, the interaction of sex with mastery was also significant, which confirms Walters, McDonough, and Stroschein's (2002) results. This was only one of two significant sex interaction effect found in the entire analysis. Results indicated that women were impacted more by low mastery than men, but both genders had equally low levels of distress at high levels of mastery. (See figure 5.1) This hypothesis was confirmed.

Hypothesis 9: Having children will moderate the association of low resources with distress.

This hypothesis was an attempt to replicate Roxburgh's (1994) findings that children moderated the impact of low mastery. Roxburgh's results were not confirmed in this study, but the positive impact of children were found for perceived social support. The presence of children aged 0-11 in the household had a moderating effect among women who had low perceived social support. See Figure 6.2 below. From the figure, it

appears that children were moderators of low and high perceived support. However, the analysis indicated that the moderating effect was differential between low and high perceived support; the interaction term of children with perceived support was statistically significant. The analysis included the full model, that is, all stressors and resources were put in the model. This means that when accounting for stressors and resources among women with low perceived support, children had a positive impact on women's mental well-being. The hypothesis is confirmed for women only.

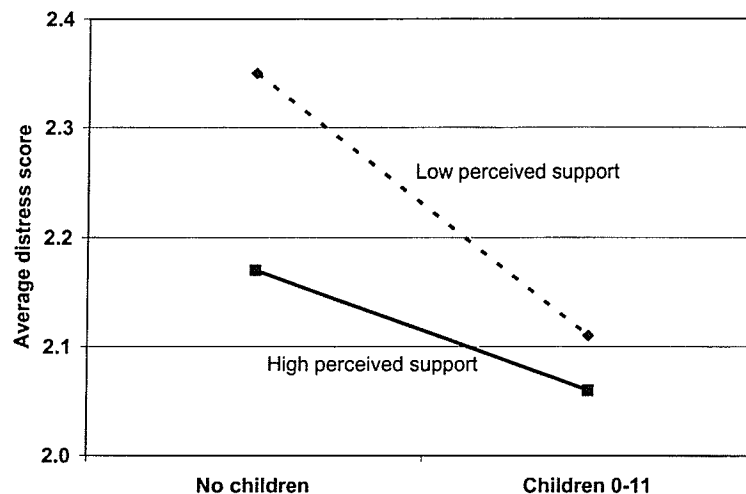


Figure 6.2 Moderating effect of children with perceived support among women

Hypothesis 10: Perceived support will buffer the effects of family health strains.

An analysis was done using the interaction of perceived support with family health stressors. This interaction term was not statistically significant overall, for men or for women. Results from this study do not confirm Roxburgh's (1994) findings that relationship support moderated the impact of family health strains among women. This hypothesis was not confirmed. Longitudinal analysis may be necessary to truly confirm or reject this hypothesis, since a buffering effect would mean that a person at time one who has high resources (high perceived support in this case) and low or medium stressors

would use this resource at a future point in time when they experienced the stressor (family health strains). A cross-sectional analysis can only state if the presence of both resource and stressor have an impact with each other on distress. Another problem with this analysis is that most people had a high score on perceived support (84%). The examination of the association of social support on distress may be more appropriate when a social support variable differentiates low and high social support more evenly.

Hypothesis 11: Mastery will buffer the effects of health strains.

Roxburgh (1994) found that mastery moderated the impact of family health strains, and this hypothesis was an attempt to replicate her observations. Mastery was found to moderate the impact of family health strains among women, but not among men. Mastery was also found to moderate distress scores when there was no family health stressors, for both men and women. A gender interaction of this moderating effect was put into the regression model and was found to be statistically significant. From figure 6.3 below, it can be seen that mastery moderates distress among women, whether or not they have family health strains, but the positive impact of mastery on distress is only found among men with no family health strains. High mastery was not helpful among men with family health strains. Since mastery has the same moderating effect for women with and without family health strains, it does not buffer the effect of family health strains. Among men, mastery moderated distress scores only when family health strains were low. These results indicate that mastery is not helpful for men with family health strains. The hypothesis is not confirmed. It is possible that results from this study do not confirm Roxburgh's findings because the measures of mastery and distress are slightly different.

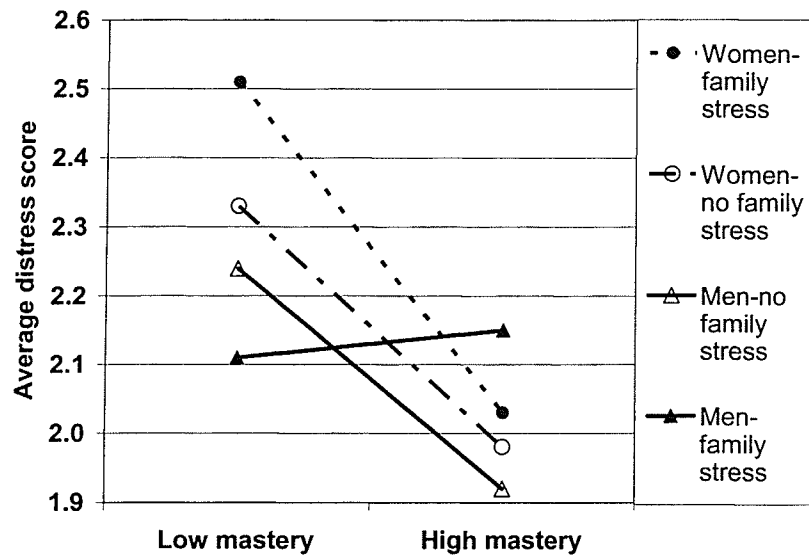


Figure 6.3 Interaction of gender, mastery and family stressors

Hypothesis 12: Self-esteem will not have a buffering effect on stressors

The presence of high self-esteem appeared to impact three of the chronic stressors; child stressors, relationship stressors and personal stressors. High self-esteem did not impact the combined job stressor measure. Both genders were found to be impacted by self-esteem for the personal stressors and a gender difference was not found when analyzing the interaction of gender with self-esteem and personal stressors. Gender differences were observed for the child stressors and relationship stressors; females were impacted by self-esteem, but males were not. These gender differences were checked by putting in an interaction term of sex with self-esteem and the stressor. Statistical significance was attained for the relationship stressor interaction, but the p-value for the interaction with child stressors was 0.051. It cannot be stated that there were gender differences on the impact of self-esteem with child stressors, but the low p-value indicates that there is a potential difference.

Figure 6.4 shows that that self-esteem has a very small effect on high or low relationship stressors, except among women who had high relationship stress. Self-esteem moderates the impact of relationship stressors among women, but not among men. No other studies found self-esteem to have an interaction effect with stressors. The hypothesis must be rejected, because self-esteem moderated the impact of three of the chronic stressors. As stated before, only longitudinal analysis can state with certainty whether self-esteem *buffers* these stressors or not.

The analysis in this study grouped low and high values of stressors and coping resources using the median value as the cut-off. It is possible that a more stringent measure of “high” self-esteem and “high” child stressors may have found a significant interaction. For instance, high self-esteem could have used a cut-off point at the 75th percentile or one standard deviation above the mean, as other researchers have done. Since more individuals score high in the self-esteem measure, a measure of low self-esteem may be a more appropriate measure than high self-esteem. When using a more stringent measure of self-esteem, it is possible that having much higher resources than the average would show more benefits (or lower resources would demonstrate a stronger association with high distress). It is also possible that a higher stressor cut-off would help discern whether highly stressed individuals would benefit from self-esteem or not. There are a couple possibilities using these stricter definitions. One is that for very high levels of relationship stress, high self-esteem is not helpful. Two, high levels of self-esteem may be associated with lower distress among individuals with high levels of relationship stress.

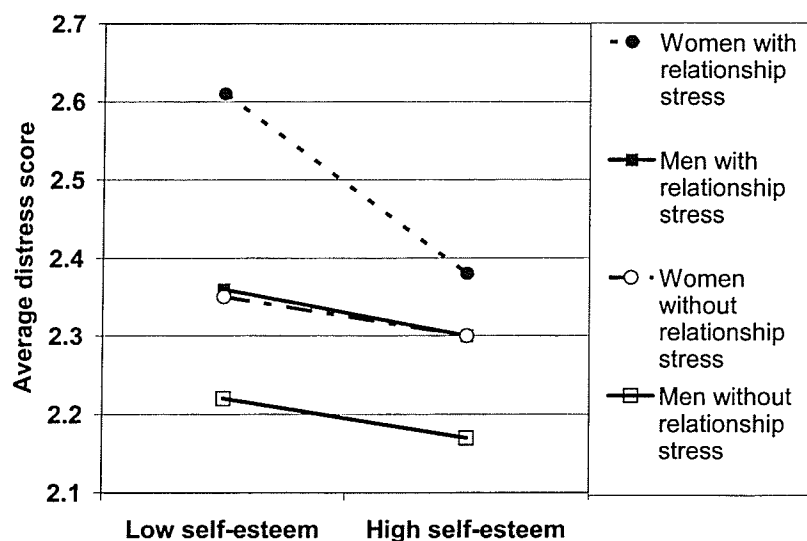


Figure 6.4 Interaction of self-esteem with relationship stressors by gender

Gender differences in exposure

Many studies, including this one, found that there were gender differences in exposure between some roles, stressors and resources. In order to discern whether these differences account for women’s higher distress, intricate statistical methods must be performed. This study used a relatively easy method to uncover whether differences in exposure to particular factors accounted for women’s higher distress. Most studies have not ascertained whether differential exposure accounts for women’s higher distress, including studies that report on differential exposure (McDonough, Walters, and Strohschein, 2002; Roxburgh, 1996).

Hypothesis 13: Women will have lower socioeconomic status, higher chronic stress levels and lower perceived support and mastery than men. These differences will be significant and account for some of women's higher distress.

For the most part, statistically significant gender differences in distress due to exposure were not confirmed. Only chronic and event stressors were found to be

significantly more prevalent among women in accounting for their higher distress. It was observed that women's differential exposure to chronic and event stressors accounted for their higher distress levels. (See Table 5.9) Therefore, some of the reasons why women have higher distress than men is attributable to women's higher exposure to chronic and event stressors (as measured in this study) than men. Women's higher exposure to lower SES, lower perceived support and lower mastery than men were not found to be associated with their higher distress. It is possible that women may be more prone to affirmatively answer the stressor questions than men, which would inflate their scores on the stressor items. The subjective nature of these questions may play a role in why women are more exposed to stressors than men.

Gender differences in vulnerability

There were several hypotheses stating that women would be more vulnerable to several factors, and men would be impacted more by work stressors. Differences in vulnerability were examined by testing whether the interaction of sex with roles, stressors and coping resources were associated with distress. Buffering effects of two coping resources were hypothesized to be more salient among women.

Hypothesis 14: Women will be more vulnerable to high chronic stressors and low psychosocial resources than men.

While women were exposed more to chronic stressors than men, they were not impacted more by chronic stressors than men. The association with distress among women and men who experience similar chronic stressors and coping resources is similar. This does not confirm other studies where women were found to be impacted more by child/parenting stressors than men (Griffin, Fuhrer et al., 2002), but confirms

McDonough, Walters, and Stroschein's (2002) results which did not find any differential vulnerability effects for chronic stressors. Women were reported to be more vulnerable to low levels of mastery, but not to any of the other coping resources. These results concur with Walters, McDonough, and Stroschein (2002), but does not agree with Pugliesi (1995) who reported that women were impacted more by self-esteem than men. Although women were more vulnerable to low mastery, the gender difference in distress remained significant and did not change when this interaction was added to the regression model. The hypothesis was confirmed only for mastery.

Hypothesis 15: Having children will be more salient among females who are single or previously married.

Some studies reported that children were beneficial to mental well-being, especially for women. Curtis (1998) reported that lone mothers self-reported health was as good or better than married mothers when considering many factors. This hypothesis tests whether children moderate the impact of lone parenthood among mothers. Results from this study show that among never married women, the presence of children in the home had a significant impact on distress. (See Table 5.13) However, children did not moderate the distress associated with this role, but intensified it, which runs counter to other studies (Curtis, 1998; Lipman, Offord, and Boyle, 1997; Macran, Clarke, and Joshi, 1996; Simon, 1998) and this hypothesis. Among the previously married, it was observed that children had no impact on distress – the mean distress score was 3.07 for women with children ages 0-11 years and 3.08 for other women.

Table 5.11 presents results of the interaction of parental roles with marital status. Overall, there was a significant interaction between the never married and parent roles.

This interaction was also statistically significant among women, but not among men. However, when sex was put in the interaction, statistical significance was not attained. Therefore women are impacted by these role combinations, but the results here show that these role combinations are not associated with distress among men. However, the number of fathers who were never married and have children living at home is quite low (N=32), and thus the power of this analysis may not be able to discern whether there is a true gender difference or not. Results from this study show indicate that women were impacted more by never having been married and having children than men. But, it is also possible that men might also impacted by having children when they were single, but due to the low number of men in this role combination (N=11), statistical significance could not be found. Other studies have not examined these distinct lone parenthood categories, and therefore could not have not reported the differences children have on mother's distress. The hypothesis is rejected; children do not moderate unmarried women's distress. In fact, children are associated with increased distress among never married women. The hypothesis is partially confirmed in that the association of children with distress among the never married is salient for women, but not for men. However, further research could be done to examine this in more detail.

A problem with this study is that lone parenthood was separated into two types of lone parents: Those who were previously married and those who were never married. By splitting lone parenthood, some power of the analysis might have been lost. Another problem with splitting the non-married is that it is not clear from the NPHS questionnaire whether individuals who had been in a common-law relationship were put into the never

married or previously married category. It is possible that some of the never married individuals had previously been in a long-term relationship.

Results from the above analysis were analyzed in more detail among women. Figure 6.5 presents the average distress scores for women in the different marital status categories stratified by whether they have children ages 0-11 in the household or not. Among married women, children appear to moderate distress and so they are beneficial to married mother's mental well-being. Among the never married women, children exacerbate distress. However, the distress levels of previously married women remains the same, whether they have children or not.

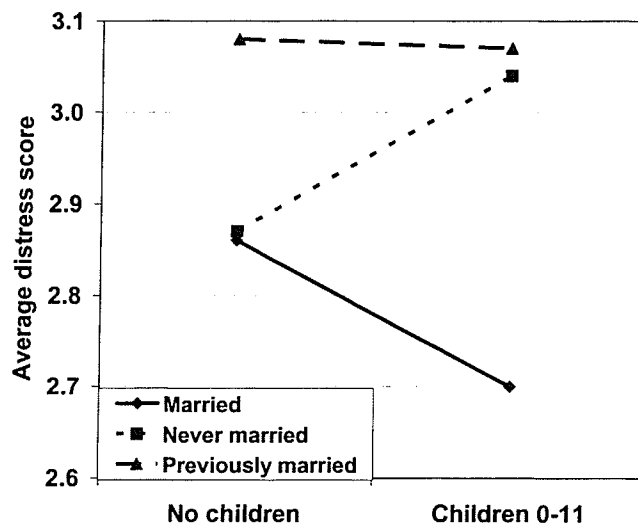


Figure 6.5 Association of marital status and children with distress among women

The results reported here did not account for stressors or coping resources. When stressors and coping resources were entered into the regression model, these differences were no longer significant. Other studies have not found differences in the relationship of parenthood with marital status, particularly among women (Lennon, 1996; Romans-Clarkson, Walton et al., 1988; Walters, McDonough, and Strohschein, 2002). The effect

of chronic stressors and coping resources play an important role in the effect children have on marital status, at least among women.

Hypothesis 16: Men will be impacted more by work stressors than women.

When work stressors were combined into one measure, men and women were similarly impacted. See Tables 5.3 and 5.7. In fact, the beta coefficient was 0.29 for men and 0.27 for women in univariate analysis, and 0.13 for men and 0.12 for women in multivariate analysis. This indicates that work stressors similarly impact men and women. This runs counter to Aneshensel and Pearlin's (1987) results which found that men were impacted more by work stressors than women. However, these results confirm McDonough, Walters, and Strohscchein's (2002) findings that men and women were similarly impacted by work stressors. When work stressors were put into five separate measures, then some gender differences were observed. This is discussed in the section covering Karasek's work stress model and the hypothesis will be confirmed or rejected in that section.

Hypothesis 17: The buffering effect of perceived support with family health strains will be more beneficial for women.

Roxburgh (1994) reported that women were impacted by relationship support with family health strains, and this hypothesis was an attempt to confirm her results. Statistical significance was not attained for the interaction of perceived social support with family health stressors when it was put into the multivariate regression model. This hypothesis was not tested, because it assumes that perceived support has a buffering effect when family health stressors are experienced. Therefore, it is concluded that this hypothesis must be rejected.

Karasek's job strain model

Karasek's job strain model was tested by regression analysis of each of the individual job stressor measures, with distress as the outcome. The sample consisted of employed persons who had answered all of the job stressor questions (N=7,951). The first regression explored the job strain theory by entering the job control and job demands measures and their interaction into the regression model. Then job support and the interaction of job control, demands and job support were entered into the model (which is termed "iso-strain" (Vermuelen and Mustard, 2000)). Finally, the other job stressor measures were entered into the model. The final model included all of the job stressor measures and excluded interaction terms that were not significant. The first part of this section will review the Karasek job strain model, and then it will provide details on three of the hypotheses, two of which were stated above.

From Table 5.17a, Model 8a, the interaction of low control with high demands was not significant overall or for men or women. The first part of Karasek's job strain model was not supported by this research. Low job control and demands did not impact each other on their associations with distress. When job social support was added to the job control and demands interaction, only men were significantly impacted by this. See Table 5.17a, model 8b. Further analysis was done to check whether the job strain model had validity when chronic stressors and coping resources were accounted for. This analysis revealed no significant findings.

Results indicate that Karasek's job iso-strain model (the combination of job control, demands and support) is supported for men. Problems with multicollinearity made it impossible to test whether the job control variable, used as an interval variable,

would have a significant impact on demands. Thus, while the hypothesis is rejected for women, more complex analysis could be done to explore the job strain model in more detail.

One reason why Karasek's job stress model may not be supported for women is that Karasek's full Job Content Questionnaire was not used in the NPHS. The omission of some questions may reduce the correlation between job control and/or job demands with poor health outcomes. This may be particularly true for job control, since this measure was not associated with distress for men or women until chronic stressors and coping resources were accounted for. Another possibility for the lack of association among women is that the work stressors used may not be as salient for women as they are for men. This remains to be open for discussion, since the high variance inflation did not allow the testing of gender differences in the impact of control (used as an interval variable), demands and the interaction of job control and demands. A gender difference in the interaction of job social support with job demands basically supports the previous finding that reflects that the job stressors reported in the NPHS have a higher impact on men than women.

Hypothesis 7: All work stressors will be associated with higher distress, with the exception of job control

From Table 5.17b, model 8c, all job stressors in the model were significantly associated with distress, except for low job control. Physical exertion was not found to be associated with distress and was not included in the results shown. This hypothesis is confirmed, except for physical exertion. However, when chronic and event stressors

were added to the regression analysis, job demands were not significantly associated with distress among women.

When coping resources were further added to the regression (see Table 5.17b, model 8d), the association of job stressors with distress changed. Low job control was significantly associated with distress, but it appeared to impact women more than men. Job demands continued to *not* be significantly associated with distress among women. Job insecurity was no longer significantly associated with distress overall and for men or women.

These results indicate that chronic stressors and coping resources account more for women's distress than many of the work stressor items. Why job control became significantly associated with distress after accounting for chronic stressors and coping resources requires further study. Most studies that examine work stressors do not include other stressors or coping resources in their investigations (Karasek and Theorell, 1990; Vermuelen and Mustard, 2000). Results here show that work stressors should be explored along with other stressors and resources, since the non-work stressors appear to impact distress among employed individuals more so than the work stressor items.

Hypothesis 16: Men will be impacted more by work stressors than women.

Interactions of gender with the job stressors were entered into the regression model to examine whether men were impacted more by job stressors than women. Expanding on model 8d (Table 5.17b), it was found that the interaction terms of gender with low job control and job social support were not significantly associated with distress. This means there were no observed gender differences in the association of job control or job social support with distress. However, the interaction of gender with job

demands was significantly associated with distress. Further analysis revealed that job demands did not impact women, but impacted men. Men with high job demands had higher mean distress scores than men with low job demands. Another significant gender interaction was found with job dissatisfaction. Women were impacted by this measure, while men were not. Women who were not satisfied with their jobs had higher mean distress scores compared to women who were satisfied with their jobs. While it was observed that men had a slightly higher mean distress score if they were not satisfied with their jobs, this was not significant.

The hypothesis above was confirmed only for job demands. An exception must be made to the hypothesis because women were found to be impacted by job dissatisfaction, while men were not. These two observations accounted for chronic and event stressors and coping resources.

Hypothesis 18: Job support will buffer the effects of high job demands among women, but not among men.

In this study, the interaction term of gender with high job demands and high job support was not significantly associated with distress when examining variables used in model 8c. From figure 6.6, it can be seen the job support is associated with lower mean distress scores, whether or not job demands are high or low. However, job support was more salient among women who have highly demanding jobs compared to males with high demands jobs. This is somewhat supported by Vermuelen and Mustard's (2000) observation that women appeared to be impacted by job support in the iso-strain model, but men were not. Longitudinal analysis should be done to examine whether job support truly buffers the effect of high job demands, particularly among women.

The interaction of job support with job demands was not significant in model 8d. The hypothesis is confirmed when the only stressors examined are work stressors, but the hypothesis must be rejected when accounting for chronic and event stressors and coping resources.

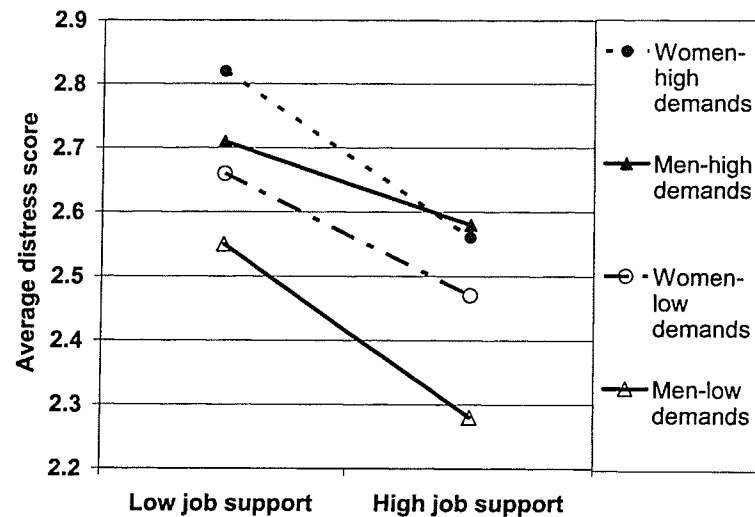


Figure 6.6 The association of gender with the interaction of job support and demands

Limitations

The aggregation of marital status within the NPHS was not as problematic as it could have been. Many studies do not discern between the never married and previously married, and results from this study indicate that separating these two non-married groups showed differences between them. Due to small numbers, significant differences may not have been observed if the previously married were disaggregated into the three sub-categories (separated, divorced and widowed). Therefore, aggregating marital status was not too limiting. However, grouping ethnic status limited this research since ethnicity has

been consistently associated with distress (Cooper, 2002; Majumdar, and Ladak, 1998; Reskin and Coverman, 1985; Ulbrich, Warheit, and Zimmerman, 1989).

While there was a scale of work stressors, there were no comparable scales for family and home psychosocial stressors. Day-to-day stressors that many women face are caring for children and household tasks which women generally put more time and effort into than men. This is not to say that all women face these circumstances, but if they do, they may have higher distress levels because of these added and sometimes unaided responsibilities. Components of unpaid work at home, such as high control or high repetition may be useful to help discern factors associated with increased distress in men and women. Given that chronic stressors appeared to be more important in both their associations with distress than work stressors (in terms of the increased R-squared value), and that the decision latitude work stressor scale is not a valid measure of decision latitude at home, more thought and understanding needs to be done when creating a scale that reflects stressors that individuals face at home.

Results for the unemployed in this study should be reviewed with caution since the IWH method of deriving unemployment resulted in under reporting of unemployment in this study. On the other hand, since unemployment is under reported, results reported in this study are likely to remain valid if the study was able to use true unemployment.

The homemaker category was created for this study and may contain a wide mixture of individuals. It is not known whether women are homemakers by choice, if they are caring primarily for children or other individuals, or perhaps they are homemakers with deteriorating health. Since the homemaker role is probably carries a

wide mix of obligations, it would be helpful in future studies to explore this role in more detail.

Another aspect of the homemaker role is that some unemployed individuals may be considered homemakers while searching for a job. It is possible that women may be more prone to state that their main activity is caring for the family, while men may be more likely to state that their main activity is looking for work. If this is the case, then some women who are homemakers should be put into the unemployed role, and some men should be in the homemaker role. Future research examining these roles may be enhanced by studying these roles in more detail. While some researchers differentiate employed vs. non-employed, this study attempted to group some of the non-employed individuals. It is possible that the unemployed and homemaker categories are imprecise in this thesis, but these groups were defined as well as possible given the data.

One other notable point is that most studies inquiring about distress, including this thesis, use surveys with self-report measures. It is possible that a person's mental health may influence the respondents' perceptions on roles, stressors and psychosocial resources. While subjective measures of stress fulfill the definition of stressors since the respondent appraises their environment (role) as threatening or challenging events (problems) (Cohen, Kamarck, and Mermelstein, 1983; Pearlin, 1989; Wheaton, 1994), subjective measures should be analyzed with caution. Both distress and chronic stressors are subjective measures, and their correlation may impact the associations found in this study. This study attempted to account for some subjectivity by controlling for self-rated health.

The chronic stressor items in the questionnaire were answered by “true” or “false.” The job stressor items and the distress measure were answered on a scale (e.g. “none of the time” or “strongly agree.” The responses to the chronic stressor items may be answered more affirmatively by women than men. The fact that women report both more distress and more chronic stressors than men may be an indication that women tend to report more negative events than men. On the other hand, if women are feeling more pressures and stressors than men, then the subjective measure captures this. Since mental well-being can be a subjective state, it is probably important to have some subjectivity in the questions. However, it is possible that the subjective information captured in the chronic stressors is the same information captured in the distress measure. But even if the subjective information is measuring similarities, what individuals perceive to be more stressful may be important in discerning the causes of distress. The pros and cons of using subjective measures are numerous and I leave this argument for more experienced researchers.

One variable that may be cause for concern is the work demands scale. Results from the IWH indicate that the condensed version of the NPHS work demands scale, compared to Karasek's full scale, is producing unexpected results - that job demands are associated with better health. (Cam Mustard, personal communication) While this study did not find this, it was observed that low job control was initially associated with lower distress in regression analyses. Thus, results should be viewed with caution due to possible inconsistencies in the work stressors items on the NPHS questionnaire.

The cross-sectional nature of this study cannot discern causality. While associations can be made between variables and psychological distress, the direction is

not known. In order to uncover causality and true buffering effects, longitudinal data must be used.

While the NPHS is longitudinal, some questions are dropped in subsequent surveys and other questions are added. While longitudinal research is necessary to determine causality, it is important to note that *all* of the measures used in this study are not available in the other surveys. If longitudinal research on the topics discussed in this thesis is to be done using the NPHS, then some of the measures would have to be omitted and replaced with other covariates.

Conclusion

In this study, differential exposure accounted for most of women's higher distress. Differential vulnerability did not account for much of women's higher distress except among the previously married and those with low mastery. Among the differential exposure effects, chronic and event stressors were the single most important factors that explained women's higher distress. Women's differential exposure to these stressors reduced the beta coefficient for sex from 0.12 to 0.07. However, sex remained significantly associated with distress. The high correlation between distress and chronic stressors may be problematic, but other variables in the model should be helpful in controlling for some of the negative affectivity these two variables measure (Vermuelen and Mustard, 2000).

Role configurations were an important aspect in this study, and should remain important in other studies considering gender differences. Men and women had more similarities than differences in their roles, but some differences did emerge, especially when considering different role constellations. Both men and women were positively

impacted by the presence of children in the home, but fatherhood was not found to be associated with lower distress when accounting for other roles.

The finding that female homemakers fared worse than their employed counterparts indicates that this should be explored further. Studies examining the homemaker and employed roles among women continue to show inconsistencies on whether these two roles differ in distress or not. Reasons for these differences could be the population differences (city vs. national), differences in how homemakers are defined (not working vs. the main responsibility is caring for family at home) and the outcomes measure (distress vs. depression).

Work stressors, while important, did not have the influence that chronic stressors had in their impact on distress. While work stressors should be continued to be studied, it should also be emphasized that other factors may be just as important, or more important, in determining an individual's mental well-being. It may be plausible that some work conditions contribute to a person's subjective measure of chronic stressors, and this could be explored in more detail.

Chronic stressors and coping resources were found to be very important in their associations with distress. First, chronic stressors themselves were directly associated with distress, and accounted for a large portion of women's higher distress relative to men. Additionally, accounting for chronic stressors and coping resources changed the associations with distress for some of the roles: While some roles were found to be no longer significantly associated with distress, other roles were reported to become associated or increase their association with distress. While these results are worthy of note, the limitations in this study need to be heeded: Both the distress and chronic

stressor variables are subjective measures, and as such, could be measuring similar effects.

The use of the stress process was helpful in determining how roles, stressors, coping resources and their interactions were associated with distress. Results indicate that stressors and coping resources did in fact “impact” the association of roles with distress. The possible moderating impact of coping resources was also observed in this study.

The differential exposure and differential vulnerability theories were useful in deciphering gender differences in distress. The differential exposure to the number of chronic stressors among women had the most impact on diminishing the gender differences in distress. However, women were not found to be impacted *more* by chronic stressors than men. This means that men and women with high chronic stressors were similarly distressed. This again raises the issue of the subjective nature of the distress and stressor measures. The only stressor/coping resource that was found to have a differential vulnerability effect was mastery; women’s distress was impacted more by low mastery than men’s.

As expected, women remained significantly more distressed than men, even though several measures were used. However, gender differences were diminished, especially when chronic stressors were accounted for in the analysis.

Policy Implications

Health services utilization was one reason why it is important to study gender differences in distress. While this study did not ascertain health services utilization, it may be important to consider in future studies on gender differences in distress. In fact,

the National Population Health Survey may also be utilized to study this in more detail. Are more distressed individuals using more health services? And if they are, what can be done to alleviate distress so that people can cope better? Answers to these questions would help policy makers create programs that would reduce the need for individuals to encounter with the medical system.

From this study, some of the findings may point policy makers to make changes in the social arena rather than in health. While distress is more frequently found among women, lower income individuals and those who are younger, these are not the only individuals who face distress. Programs at the community level may be helpful that would enhance coping resources and perhaps reduce the amount of stress that individuals face. For instance, programs may have several targets: women, non-married individuals, and individuals who are not working for pay. Programs might be helpful if they target parents who are having difficulties with children or family health. Services could also be provided to individuals who are having relationship problems, financial worries or personal issues. And finally, programs could be available to enhance a person's sense of control (mastery) over their life. While some of these services can be provided through therapeutic counseling, this can be an onerous task for those who have little money, especially single parents who also have to deal with babysitting.

Policy changes as described above may also enhance many other aspects of an individual, and not only distress. When good, effective programs are available and utilized, it will benefit individuals, the community and society.

APPENDIX A – Missing Values

This appendix discusses in detail two of the three different methods used to treat missing values: dummy variable creation and imputation. Casewise deletion does not require a detailed discussion.

Dummy variable creation. Dummy coded missing values retain “the R^2 , $R^{\wedge 2}$, F and Y means for each of the groups... and the information residing in the missing data is positively and fully utilized.” (Cohen and Cohen, 1983, p.284). Thus, incorporating missing values for these variables into the model should not greatly affect model assumptions. However, Cohen and Cohen (1983) caution that if missing values are present in more than one dummy-coded missing variable for the same people, then problems can occur in multivariate analyses. Since partialing out missing values could create potential problems in multiple linear regression, those individuals who had more than one dummy-coded missing variable were excluded from the study (N=66). Table 4.6 has details on dummy-coded missing variables.

Multiple dummy-coded missing variables could potentially be problematic for variables that were sub-indices of scales. The work stressor items fall into this group. If any item from the work stressor index was missing, then all sub-indices were deemed as missing. Thus, only one dummy-coded missing variable was created for *all* work stressors. In the NPHS, there were 341 employed people who had missing work stressor answers and an additional three employed individuals had invalid answers to the job satisfaction question. Anyone who had invalid answers to the work stressor and job satisfaction questions were coded as “1” in the dummy-coded missing work stressor variable. Also, if someone was not currently employed, then they were not allowed to

have a valid answer in any of the work stressor or job satisfaction questions. There were 19 homemakers (out of 1,447) and 103 unemployed individuals (out of 856) who answered the work stressor questions. It was important to remove non-employed individuals from the work stressor items so that reference categories in regression analyses were properly maintained, so that variances did not overlap. An overlap would have the same implications as when an individual had more than one dummy-coded missing variable.

Conditional missing values are those values that are dummy-coded for respondents who are not asked specific questions. For instance, only females would be asked if they are pregnant, and only parents are asked if they are worried about their children. The “child stress not applicable” variable is a conditional missing category. Likewise, the unemployed/homemaker group serves as the conditional missing category for all work related questions. These were the only two scenarios in this data with conditional missing data. The chronic stressor and recent life events scales were adjusted for people who had/did not have children and who were/were not married. While not all people were asked all the questions in each of the scales, the scales were modified so all persons are equally weighted. This means that conditional missing values were not required for these scales.

Imputation. Another method of dealing with missing data created imputed values for people who had missing information in variables that were not sub-indices and where the number of missing values was small. (Less than 1%). The variables with imputed data were: psychosocial resources (self-esteem, mastery and social support), life events

(recent life events and child & adult stressors), marital status, education level and part-time work. See table 4.7.

There are controversies regarding two of the methods of dealing with missing values. Some argue that it is best to do casewise deletion (Cohen and Cohen, 1983), while others argue that imputation is a better approach (Obeng-Manu Gyimah, 2001). The problems with casewise deletion would be a decrease in power and estimates can be biased (Obeng-Manu Gyimah, 2001). Alternatively, Roth and Switzer (1999) state that casewise deletion has a low level of bias. Casewise deletion was not done for most variables, because some of the variables deleted may not even be used in the final analyses. While imputation or casewise deletion would both be valid ways to deal with missing values, imputation was chosen since more recent publications agree that imputation is a good approach when the number of missing values is proportionately small.

Within the literature on imputation, recent publications indicate that imputing a mean score is the worst method to use, partly due to variance inflation (Obeng-Manu Gyimah, 2001). There are several methods of imputation that have become popular, all with advantages and disadvantages. The method of imputation chosen for this study was based on the “closest neighbor” hot-deck approach: The non-respondent is matched to a respondent, and “once a matching donor is found, the values reported by the donor are imputed for the non-respondent.” (Obeng-Manu Gyimah, 2001) “The two advantages of hot-deck are that: a) it uses relationships within the data to make estimates and b) the imputed score already has some error variance imputed into it since it uses an actual score (rather than a regression based imputation).” (Roth and Switzer, 1999) While the

hot-deck approach has its advantages, Obeng-Manu Gyimah (2001) points out the problem that “hot deck imputations do not explicitly take into account the likely possibility that probability distribution for respondent and non-respondent sub-populations are different.” The hot-deck procedure is also not recommended for small datasets, but this is not a concern with this study. The other methods of imputation required complex algorithms. In light of the fact that no method of imputation is perfect, and that less than 1% of the values were imputed for any variable in this study, the hot-deck procedure should have a very small effect, if any, on the analyses. The hot-deck imputation method was chosen for the following reasons: 1) There was no loss of power, 2) the variance would most likely not increase (which would increase the chances of statistical significance) and 3) the algorithm was not too complex.

Imputation using the hot-deck approach was done as follows: An individual with a missing value was matched exactly on three variables (sex, age group, province) and at least one of two variables (marital status or income quintile). Then they were checked if they matched on 18 other variables (distress, pineo classification, employment/unemployed/homemaker status, age of youngest child, education attainment, part-time job, shift work, ownership of dwelling, self-rated health, reason for not working, main activity, family structure, adjusted chronic stress, self-esteem, mastery, social support, recent life events and child/adult stressors). It was possible to have several "matches" for each of the individuals who had missing values. The person who had a “non-missing” value and who matched on the most variables was chosen as the best match, and their non-missing value was given to the person with the missing data. In case of “ties,” the matched individual was chosen using a uniform random number. See

appendix A for the hot-deck program. Table 4.7 has the list of variables that were given the imputed values, while table 4.8 contains the frequency and percentages for the imputed variables, before and after imputation.

APPENDIX B – Analytic details

This appendix discusses the following analytic tools in detail:

- The non-normal distribution of distress
- Heteroscedacity
- Multicollinearity
- Testing of interaction terms
- Creating a short-list of variables

Non-normal distribution of distress. Past research (Wade and Cairney, 1997) has used the distress score from the NPHS in multiple regression, with the assumption that distress, a continuous measure, is normally distributed. In multiple regression, it is important that the response variable, conditional on the predictors, be normally distributed (i.e. the error terms are normally distributed). Therefore, analyses should proceed with caution if the dependent variable continues to show a skewed distribution after accounting for the independent variables in the model. Continuous or ordinal independent variables were checked for normality in all regression analyses.

The distribution of distress is skewed to the right, so most people score low on the distress scale (the median score was 2 with a range from 0-24). See table 4.9b for the distribution of distress scores. Due to the non-normal distribution of distress, the distress variable was transformed using the square root function. Other transformations were attempted, but the square root function provided the best normal distribution because both the skewness and kurtosis values were closest to zero compared to the other transformations.

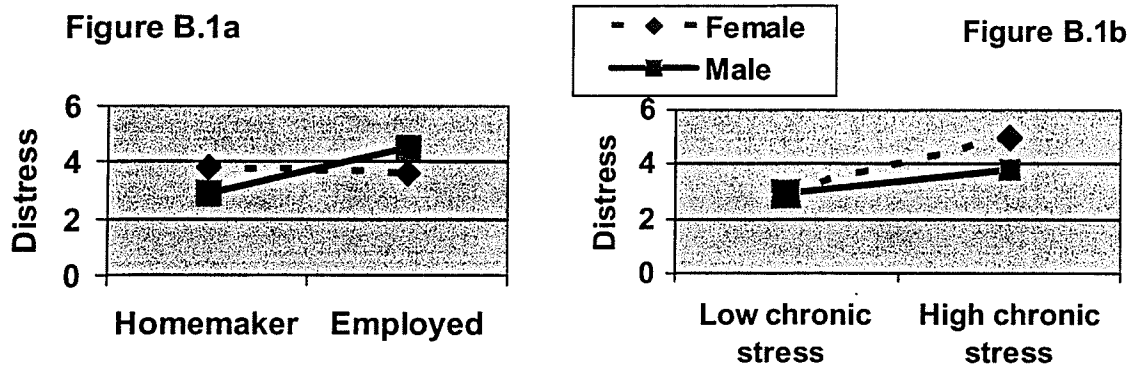
Heteroscedactiy. The ordinal data were those that are scaled items, and include

all of the stressors and coping resources. However, in order to use ordinal data in regression analyses, they must follow a pattern similar to a normal distribution when regressed on distress. If heteroscedacity occurs, the assumptions regarding the regression model are not met. Therefore, these variables were given a bivariate dummy variable distribution, where 1=high stress/coping and 0=low stress/coping. The median value was chosen as the cut-off for determining high and low groupings. For instance, in the case of social support, there is a possibility of having a score from 0 to 4. Four indicates the highest level of social support, and 0 indicates no perceived support. Social support was re-coded to 0 for low support, and 1 for high support. The median value was four, so all those with a four were put into the high support group, and all others were in the low support group. Low and high values (where the cut-off is the median) were determined for all stressors and coping resources.

Multicollinearity. During the regression analyses, it was important to check for multicollinearity. If this was a problem, then the regression model was adjusted by removing variables contributing to the multicollinearity.

Interactions. If interaction effects were significant, then further analyses were done to find out details. It is possible that one term in the interaction be affected, and the other term not be affected. For instance, males may have increased distress when they are homemakers, but female distress may not be affected by the homemaker role. See figure B.1a. In this case, one sex was affected by a variable, but the other sex was not. In another scenario, both sexes may be affected by a stressor, but females were more distressed than men. See figure B.1b. In this case, the stressor is a continuous variable, and at low levels of the stressor, both sexes have similar distress scores. It is also entirely

possible for the interaction to cross, so that one sex has higher (or lower) distress at low scores of a scale, and lower (or higher) distress at the high end of the scale, compared to the other sex. When interactions were tested for a “grouped” variable, such as marital status or employment/unemployed/homemaker status, all groups (represented by the constant, k) must be tested for interaction effects – or rather, $k - 1$ groups, with one group being the reference. In the case of figure B.1a then, it is important that the unemployed interaction also be tested. And finally, a three-way interaction of sex, stressors and coping resources were conducted if preliminary analyses warranted such a test. If a three-way interaction was found to be significant, then extra analyses are required to find out which differences were significant.



Some considerations must be made when examining interaction effects. It is not sufficient to include an interaction term in a regression model and then check only for statistical significance. Cohen and Cohen (1983) point out that when the r^2_{YI} (correlation) for the interaction term is highly correlated with either or both of the main effect terms, then the model should not be used as the interaction term contains much of the variance for both of the main effects. “In general, simple correlations yielded by products with other variables are functions of the arbitrary scaling of the variables in the product and

hence not interpretable; not until the constituents of the product have been linearly partialled from it does it become interpretable as an interaction.” (p. 312) In order to partial out the variance, the main effect terms *must* be in the regression model.

Assessing interactions of ordinal data (stressor and coping resources) were more manageable by centering them at their means. This was done simply by subtracting the mean value from the true score. This linear transformation had no effect on statistical testing, but the coefficients for the transformed data will be adjusted. “With zero meaning an average or representative value, the interpretation [of interactions] may make substituting and plotting unnecessary for some applications. (Centering all the [independent variables] IVs at their means also reduces the multicollinearity that may occur with products, particularly those of highly correlated variables, and produces a zero Y intercept.)” (Cohen & Cohen, 1983, p. 325)

Dealing with too many variables – creating a “short-list.” Another issue that had to be dealt with was the large amount of variables that are in this study. Too many variables can reduce the meaning of the study. As the Cohen’s state, “less is more.” So, variables were reduced in a methodical manner. First, preliminary analyses dictated that some variables should be left out of the regression modeling. Secondly, the possibility of using the composite chronic stressor index instead of the sub-scales should be considered. This may be done if the sub-indices in the regression analysis do not add more than the fully adjusted chronic index. This can be tested by doing the following F-test, first by putting in the full chronic stressor index (group A), and then putting in the five sub-indices (group B) :

$$F = \frac{(R_{AB}^2 - R_A^2) * (n - k_A - k_B - 1)}{(1 - R_{AB}^2) k_B}$$

Where, $R^2_A = R^2$ term for the first model (A), and $R^2_{AB} = R^2$ term when adding in B variables (model A+B). The numerator $df = k_B$ and the denominator $df = n - k_A - k_B - 1$, where k_A = number of independent variables in model "A" and k_B = number of "B" independent variables added to model "A," and n = number of cases/observations/people. Other methods to deal with the large number of variables will be explored during analyses. For instance, the events scales could be combined, or perhaps only one scale could be used (by using the above F-test, making Bernoulli corrections to reduce type I errors). Also, there are three SES measures and only SES measures that were found significant in preliminary analyses were kept in the final model.

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