

**Reproducing occupational inequality:
Marriage, parenthood and the gender divide in occupations**

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Abstract

It is well established that class and gender predict occupational placement across advanced industrialized countries. In exploratory analyses we document a third dimension to occupational segregation associated with family responsibilities, and consider explanations for cross-national variability in this dimension. Using data from ten countries contained in the Luxembourg Income Study we find that family responsibilities systematically influence occupational sorting, but do so differently for men and women. There is less variability in the effects of family status on men's occupational location than on women's across countries. Whereas family responsibilities consistently sort men into the highest pay levels of occupational categories, the pattern for women is bifurcated – with a hollowing out at the middle ranks. Using a novel set of national-level indicators, including data from the Multinational Time Use Survey, we find that the influence of family responsibilities on women's occupational location is associated with prevailing standards for women's domestic labor time.

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Introduction

At the start of the 21st century, one-quarter to one-half of women with completed fertility in advanced industrialized countries had no children or only one child (Frejka and Sardon 2004). In the United States, about 18 percent of women born around 1960 remained childless and 17 percent had only one child (Downs 2003). Figures are even higher in some countries. In West Germany for example, approximately 30 percent of women born in 1960 remained childless (Pinnelli and Di Cesare 2005). Furthermore, fertility patterns are strongly correlated with educational attainment. Women completing university are more likely than other women to remain childless or to have only one child (Lappegård 2000; González and Jurado-Guerrero 2006). The increasing diversity in family responsibilities, and the strong association between educational attainment and family responsibilities calls for fresh research disentangling the influences of class, gender, and family responsibilities on employment outcomes.

There is growing recognition of the central importance of occupational sex segregation for gender inequality in the labor market (England 2005; Reskin and Padavic 1994). Although women have made in-roads into male-dominated and managerial jobs, gender inequality in occupations and jobs persists across countries. Charles and Grusky (2004) argue that there are two processes undergirding sex segregation - a horizontal mechanism associated with gender essentialism, in which women are sorted into non-manual occupations, and a vertical mechanism associated with gender egalitarianism (or lack thereof), in which men are sorted into the "best" positions within occupational categories.

This paper investigates how cross-national variation in occupational segregation is linked to family responsibilities, and how this varies by gender. Theoretical accounts – both neoclassical economic (supply) and structural (demand) – assume that gender segregation in occupation results from gender inequalities associated with family responsibilities. However, little empirical research finds evidence that occupational segregation is structured by family obligations; in fact many studies conclude that gender inequality in occupations is not systematically related to family obligations (e.g., Tomaskovic-Devey 1993; Roos 1985; Trappe and Rosenfeld 2004). The association between family responsibilities and occupational segregation is often discounted. England (2005), for example, argues that part of gender pay gap is linked to sex segregation in occupations and the other is linked to motherhood, but these are largely unrelated. Charles and Grusky (2004) highlight how attitudes about gender and “essential” differences between men and women help to account for cross-national similarities in the persistence of occupational sex segregation. They fail, however, to explicitly consider how family responsibilities and associated shifts in the division of household labor influence how gender is enacted across countries and in ways that might influence occupational segregation.

Through an exploratory analysis of occupational segregation we reconsider how family responsibilities are associated with occupational segregation. We argue that family responsibilities – particularly those associated with marriage and childrearing – are critical determinants of occupational segregation. Family responsibilities influence occupational segregation in several important ways though do so differently – but importantly – for men and women. Furthermore, we expect variation across countries in the extent to which family responsibilities are associated with occupational placement and investigate how national context is associated with occupational sorting.

We make three primary contributions. First, we explore whether there is a third dimension to occupational segregation – family responsibilities – as distinct from gender and class. This allows us examine heterogeneity among women (and men) as women (and men) become more diverse in patterns of family formation. Second, we explore the intersection of family responsibilities and educational attainment to provide a more complete picture of the nexus of gender, family, and class for both men and women. Female-dominated occupations are often grouped and implicitly treated as "bad" jobs (e.g., Mandel and Semyonov 2005; 2006). Although there are reasons to believe that occupational segregation is generally detrimental to female workers, by investigating cleavages along educational attainment we are able to discern important distinctions among female-dominated occupations. Third, we seek to explain variation in the association of family responsibilities with occupational placement across countries by focusing on cross-national variation in labor market conditions and the division of household labor. This work highlights the conceptual relevance of the intersection of class, gender, and family for interpreting occupational inequalities. We find that national conditions overlay micro-level processes that segregate workers by class, gender, and family.

Gender, family and occupational segregation

Both neoclassical economic (supply) and structural (demand) explanations for gender segregation in occupations assert the importance of gender differences in family obligations for gender inequality in occupations. A supply-side explanation for the family gap suggests that additional family responsibilities associated with marriage and childrearing would exact “costs” to the household and lead at least one household member to reduce work effort in the paid labor force in order to manage domestic responsibilities. A demand-side explanation for the family gap

suggests that employers may discriminate in hiring and promoting workers because of family responsibilities, which would contribute to segregation.

Supply-side explanations for occupational segregation imply that women dilute and men intensify their work effort with increasing family responsibilities. Mothers (or potential mothers) may seek jobs that offer non-monetary benefits, or compensating differentials, such as a lower penalty for discontinuous employment or flexibility. To the extent that labor supply effects associated with family responsibilities are gendered, additional family responsibilities would retard advancement for mothers and accelerate advancement for fathers, contributing to occupational segregation along two distinct lines.

First, it would lead to greater occupational sex segregation as men devote greater time and energy to the paid labor force while women devote more time and energy to the domestic sphere. Second, it would lead to occupational segregation in relation to family obligations. "Family men" would be increasingly concentrated in male-dominated jobs that reinforce and reward gender specialization in the household with long usual working hours and a "family wage". "Family women" would be increasingly concentrated in female-dominated jobs that enable them to balance competing work and family demands. Mothers would be increasingly concentrated in jobs that emphasize flexibility through part-time employment or flexible working hours.

From a supply-side perspective the motherhood penalty or fatherhood bonus could result from selection or behavioral change. Either individuals who get married and have children are a select group who act on prior work-family plans, or becoming married or a parent has a distinct effect on behavior. Either way the consequence of retarded advancement for mothers and accelerated advancement for fathers would contribute to occupational segregation.

Demand-side explanations locate the cause of occupational sex segregation in decisions of employers. This argument contends that employers make decisions about whom to hire, promote, and fire on the basis of their preferences (both conscious and unconscious) for different types of workers. Employers may make decisions on the basis of expectations about productivity, in-group preferences, or implicit biases. Regardless of the specifics, however, the argument implies that employer preferences could accommodate aspects of family obligations in relation to hiring and promotion generally, or for employment in particular types of jobs (e.g., part-time).

For example, one reason employers would have a preference for fathers and non-mothers is because employers interpret parental status as an indicator of potential productivity, a form of statistical discrimination. Employers may think men are most productive when they have a family to support and women are most productive when not distracted by having a family to care for. If employers have a preference for the workers that they believe will be most productive - fathers and non-mothers - we would expect segregation on family responsibilities, such that top jobs are awarded to fathers and non-mothers, and mothers and non-fathers accept jobs at lower ranks.

An alternate explanation of employer discrimination comes from the social psychological literature and focuses on how normal cognitive processes bias perceptions, interpretations, and memory in ways consistent with stereotypes (Heilman 1995; Howard and Hollander 1997). In the workplace this selective information processing leads to biases in selection decisions and performance evaluation, as well as self-limiting behaviors among employees (Heilman 1995). For example, to the extent that mothers are stereotyped as "uncommitted" workers, a supervisor may be more likely to notice the tardiness of the mother, more likely to interpret this tardiness as

a signal of lack of commitment, and more likely to remember the tardiness than when the exact same behavior is exhibited by a father. We are unable to disentangle alternate explanations of employer discrimination, but several theoretical perspectives highlight its potential importance.

Both supply and demand explanations for occupational sex segregation contend that to the extent that the division of household labor is gendered - and becomes increasingly so with marriage and childrearing - family obligations will be associated with higher levels of occupational segregation. Married men and fathers should be concentrated in high-wage jobs or jobs that enable them to provide for families and married women and mothers should be concentrated in low-wage jobs or jobs that enable them to balance work and family obligations.

Despite the centrality of gender inequality in domestic work for theoretical accounts of gender segregation in occupations there has been little attention in the cross-national literature to how differences in family obligations may help explain occupational segregation. In the cross-national research, researchers generally conflate gender and family. Motherhood is often implicit in "women", with gender and parental status generally aligned (e.g., Mandel and Semyonov 2005; 2006). At the same time, the fatherhood premium is rarely incorporated. Nor have researchers consistently examined how different family obligations (e.g., marriage, presence of children, age of children, number of children) may have different effects for occupational location of women and men. One reason for these elisions is that there are few data sources that enable researchers to tease apart potentially independent effects of gender and family responsibilities on occupational placement across countries. While some countries collect good data on the division of labor within families and in relation to work in the paid labor force, there is limited comparability across countries.

In addition, previous work on occupational sex segregation has largely focused on the occupational location of women and men working in the paid labor force, thus conflating labor supply effects with occupational sorting effects. A great deal of attention is paid to how the measurement of segregation influences cross-national accounts of it (e.g., the size of occupational groupings, the level of aggregation, and the construction of the index of segregation) (see Charles and Grusky 2004; Jacobs 1999). However, little previous work has considered how gender differences in the influence of family responsibilities on employment across countries might also influence the measurement of occupational segregation. Without paying attention to cross-national variability in how family responsibilities affect labor supply we risk mis-stating their effects.

As a consequence of both conceptual problems and data limitations, the empirical research has not established how family responsibilities affect accounts of occupational segregation. While some assessments are skeptical of the effects of family responsibilities on segregation, other research evidence is suggestive of the importance of family responsibilities for occupational segregation and raise the possibility that both supply and demand factors may be at work.

Research has established that women and men bear the costs of raising children differently for a number of indicators of labor market inequality including employment and wages. Research investigating the "motherhood penalty" has clearly established that women with children are less likely to work in the paid labor force (Gornick and Meyers 2003) and earn less money than women without children (or without young children) (Budig and England 2001). At the same time, investigators have found evidence of a "fatherhood bonus"; men with children are typically more likely to work in the paid labor force and earn a wage premium compared to

men without children. The motherhood penalty in wages has disappeared in Norway, yet a "family gap" remains because men receive a premium for marriage and fatherhood (Petersen et al. 2007).

While the evidence linking family obligations to occupational segregation is less conclusive, research shows that women who have a discontinuous job change, even only a single break in employment, experience a penalty upon return to work in terms of wage and prestige (Femlee 1995; Fuller 2008). Moreover, research has found that employment discontinuity is associated an increased likelihood of women working in female-dominated jobs (Blossfeld 1997). Hakim (1993) argues that family responsibilities encourage women to move into part-time work which is predominantly found in female-dominated industries. In addition, in a recent audit study Correll and colleagues (2007) found that employers discriminate at the point of hire against both mothers and non-fathers, which would contribute to segregation on family obligations.

There are important theoretical reasons to believe that both individual-level factors and country-level conditions might influence the effects of family obligations on occupational segregation. At the individual-level we might anticipate that the effects of family obligations vary by women's capacities to manage competing demands. At the country-level we might expect that the effects of family obligations vary by prevailing expectations concerning who is supposed to care for children vis-à-vis who works in the paid labor force and by how countries support workers to manage work and family demands.

At the individual-level, some women (or men) may be able to reduce the influence of family obligations on work outcomes by outsourcing domestic labor. Hiring domestic help is more common among highly educated women, among families with high incomes, and among

dual-earner families. Purchasing restaurant meals and take-out is also more common among families with high incomes and among dual-earners (see review in van der Lippe, Tijdens, and de Ruijter 2004). Thus, we may expect to see cleavages by class in the extent to which family responsibilities are associated with occupational segregation because more advantaged women can purchase labor substitutes. In addition, high-level workers often have access to more flexibility than lower-level workers (Golden 2001), adding to their ability to maintain continuous employment even in the face of strong family obligations.

At the country-level, there is variation in essentialized notions of gender and how these notions are expressed in households and encoded into work-family supports. Particularly relevant are prevailing ideologies concerning who is supposed to care for children vis-à-vis who works in the paid labor force. Although an ideology of intensive mothering has been dominant in Western countries in the latter half of the 20th century (Hays 1996), there is variation in how the ideal of intensive mothering and cultural conceptions of childhood have been combined with women's increasing employment. Thus, among advanced industrialized countries there is a great deal of variation in conceptions of what children need and how mothers should provide it (Pfau-Effinger 1999; Kremer 2002).

Countries where conditions enable caregivers to devote time to domestic work may generate occupational inequalities primarily defined by family obligations. In this scenario men perform full-time waged work and women combine responsibility for children with part-time employment. This model is supported by states in two key ways – through the promotion of part-time work and through the availability of long-term parental leave or “cash for care” schemes. Extensive parental leave has been associated with lower rates of labor force participation among mothers and greater amounts of time spent on routine household labor

(Pettit and Hook 2005; Hook 2007). Expectations for mothers' exit from the labor force and primary responsibility for domestic labor should be associated with greater occupational sorting on family responsibilities.

Alternatively, where conditions support caregivers to work in the paid labor force there may be little differentiation in occupational choice between mothers and non-mothers or fathers and non-fathers. The central axis of stratification is more likely to be about gender and class rather than family. In this scenario both men and women work, largely full-time, and the government is primarily responsible for the care of children. Key policy components of this model are publicly-provided child care, gender equality in parental leave legislation, and shorter work weeks. These sorts of policies have been associated with higher rates of labor force participation among mothers and with lower amounts of time spent on domestic labor (Pettit and Hook 2005; Hook 2007). Expectations for mothers' continuous labor force attachment and more egalitarian domestic labor arrangements should be associated with lesser occupational sorting on family responsibilities.

Finally, countries where conditions provide little support for work-family conflict may witness a great deal of heterogeneity in occupational segregation. In those countries it is likely that occupational segregation will be more strongly determined by class distinctions than by either gender or family responsibilities. In this scenario solutions are market-based, with caregiving solutions arranged on an individual basis utilizing individual resources (e.g. ability to purchase care, grandparents, staggered work scheduling). Thus we would expect individual resources to be of primary importance, suggesting that women with more resources would not experience the effects of family obligations as acutely as women with fewer. However, women with more resources may also translate their resources into time out of the labor force, whereas

women with fewer resources many not be able to finance such arrangements. In sum, where supports are few, we can expect substantial heterogeneity.

We explore these ideas by examining patterns of occupational segregation by gender, class, and family responsibilities. We find that family responsibilities are linked to patterns of occupational segregation, for both women and men, and that much cross-national variability exists for women. We explore this variability with a focus on domestic labor arrangements.

Research Strategy

We use employment information from social survey data from ten countries contained in the Luxembourg Income Study. We select all available countries with information on respondents' yearly wage, weekly hours worked, weeks worked per year, and occupation (if classifiable into our five-category scheme). The data were collected from 1989 to 2000 in the following countries and years: Austria (1994, 1997, and 2000), Australia (1989), Canada (1994), France (1994), Finland (1991), West Germany (1989, 1994, and 2000), the Netherlands (1991 and 1994), Sweden (1992), the United Kingdom (1991), and the United States (1997). We combine data from multiple years in several surveys to ensure an adequate sample size. We limit the sample to employed individuals aged 18 to 64 years old. Sample sizes range from 10,268 in the UK to 79,284 in the US. The median sample is approximately 18,000.

We combine information about occupational category and hourly wage to create our dependent variable. First, we classify all workers into five occupational categories – professional, management, clerical, sales and service, and production. We do not include a category for farming occupations and military service. Second, we calculate respondents' hourly wage by dividing yearly wage by work hours multiplied by weeks worked per year. We then combine this information by dividing respondents into three wage categories within each

occupation – top third, middle third, and lower third (e.g. management-high). This creates fifteen occupational categories per country. This classification allows us to refine our measurement of occupation and capture both horizontal and vertical segregation. There is strong reason to believe that separating these five broad occupational categories into three pay scales represents occupational segregation, not men and women doing the same job at the same establishment earning vastly different wages.

We then create odds ratios comparing the odds of employment in occupation y in one group to the odds of employment in occupation y in the sample. They are calculated as $(n \text{ of group } x \text{ in occupation } y / n \text{ of group } x) / (n \text{ in occupation } y / N)$. 1 equals exact representation, less than 1 indicates under representation and greater than 1 indicates over representation. We calculate ratios separately for women and men in 15 occupations in 10 countries (300 categories total). We create five ratios for each category: (1) married individuals, (2) individuals with one child, (3) two or more children, (4) a child age three or under, and (5) high education. This information is the input for multidimensional scaling. We also explored a regression-based approach, but confronted several conceptual and methodological problems as described in Appendix A.

Separately by sex, these five ratios are used in MDS to calculate the dissimilarity between the 150 occupation-country combinations. We use classical metric MDS (in STATA) to compute dissimilarities from the ratios. The results tell us how similar (or dissimilar) two occupations are based on the family responsibility and education ratios used as the input. We then repeat these steps, creating odds ratios comparing the odds of employment in occupation y in one group to the odds of employment in occupation y *in the sample of women or men*.

The next step in this research is to explain cross-national variation in the association of family responsibilities with occupational placement. Here we combine the family responsibility dimension with an original collection of national-level data including information on labor market conditions, family policy, and expectations for the division of household labor. We explore the correlations between the family dimension and national-level indicators.

We report correlations for national-level indicators of women's employment and household labor time. We also explored correlations between the family responsibility dimension and GDP, unemployment, maternity leave, parental leave, publicly-funded child care, percentage of women in parliament, percentage of work force that is part-time, and union density (13 national-level indicators in all). Although we found a several statistically significant correlations with specific occupations, we only report women's employment and household labor time because of the consistency of patterns across multiple occupations. For national-level indicators that are only correlated with one occupation, we are suspicious that the correlation may be idiosyncratic. Many of the indicators are also correlated. Recall that many of the policy indicators predict level of women's employment and time spent on domestic labor.

Women's employment rate is calculated from the LIS surveys; women reporting any level of employment are recorded as employed. Data on household labor time come from the Multinational Time Use Survey and were taken from the following surveys: Austria 1992, Australia 1992, Canada 1992, Finland 1987, France 1998, Germany 1992, the Netherlands 1990, Sweden 1991, the United Kingdom 1987, and the United States 2003. Household labor time is the average amount of time women, or men, spend on all types of household labor in a day, including child care. We also tested a measure of men's share of household labor. Men's share was less consistently associated with occupations than was absolute mean time.

Results

Table 1 shows the means of each characteristic entered into MDS, separately for each occupational category and by sex. Reading across the first row, on each family responsibility characteristic women are under-represented and men are over-represented in professional, high-paying occupations. Women with high education are over-represented in professional, high-paying occupations, but men with high education are over-represented to a greater extent. Women with family responsibilities are under-represented in all pay levels of managerial and production occupations, and over-represented in all others, except high-paying professional and sales and service occupations. In general, each of the four family characteristics is consistent in direction within occupations. That is all four family characteristics are uniformly associated either with over- or under-representation. There are several categories, however, where direction is inconsistent and some family responsibilities are associated with over- or under-representation and some are not. For example, in high-paying clerical occupations married women and women with one child are over-represented, whereas women with two or more children or a young child are generally represented in proportion with the population. There are no such inconsistencies among men. This suggests that women's family responsibilities may be better represented by more than one dimension. Interesting educational patterns emerge as well. Women with high levels of education are under-represented in managerial-high, whereas men with high levels of education are grossly over-represented. Women with high levels of education are over-represented in all pay levels of clerical occupations, whereas men are under-represented. Clearly there is sorting by gender and family responsibilities, even among highly educated workers.

The results of MDS show that women's and men's occupational location is structured by two underlying dimensions. The Kruskal stress measures are less than .05 for both men and

women; stress under .1 is generally considered “excellent.” Without a second dimension the stress is over .20, providing a less satisfactory map of occupations. Table 2 shows results of linear regressions predicting these dimensions. For both women and men each of the four characteristics is approximately equally important in determining an occupation’s placement on dimension one, with education showing a slightly larger coefficient. The family characteristics, however, are additive. Any two or more family characteristics added together have a larger value than the coefficient on education. Most importantly, for both women and men each characteristic works in the same direction, with negative values indicating that women (or men) with more family responsibilities and with higher education are over-represented. Dimension two reveals a different pattern with negative values indicating that women (or men) with more family responsibilities and with less education are over-represented. The second dimension is more driven by education than is the first.

Although the dimensions are constructed similarly for women and men, the dimension shows sorting of women and men into very different occupations. Figure 1 shows the range across countries. The vertical axis shows dimension one, which more strongly reflects family responsibilities. As we move up the scale women (or men) with family responsibilities are under-represented in these occupations. The horizontal axis shows dimension two, which more strongly reflects education. As we move up the scale women (or men) with high levels of education are over-represented in these occupations. Beginning in the two upper quadrants, women with greater family responsibilities are under-represented in production and managerial occupations; this is especially pronounced for the highest-paying levels of these occupations. At the highest levels, these occupations show very little variation in dimension 2. Although there is variation between countries this clustering is largely consistent across countries; more so for

production than managerial. The lower left quadrant shows women with greater family responsibilities over-represented and women with high-levels of education under-represented in low and medium-paying clerical and sales and service occupations. The lower right quadrant shows women with greater family responsibilities and with high-levels of education over-represented in professional occupations; although in many countries high-paying professional occupations are located near zero on dimension one, revealing that women with family responsibilities are not over or under-represented.

For men the pattern is largely reversed. Beginning in the two upper quadrants, men with greater family responsibilities are under-represented in clerical and sales and service occupations, and to a lesser extent in low-paying professional and production occupations. Although there is variation between countries this clustering is largely consistent, especially for the lowest-paying levels of clerical and sales and service. The lower left quadrant shows men with greater family responsibilities over-represented and men with high-levels of education under-represented in medium and high-paying production occupations. The lower right quadrant shows men with greater family responsibilities and with high-levels of education over-represented in managerial and medium and high-paying professional occupations; although in many countries medium-paying professional occupations are located near zero on dimension one. Family responsibilities clearly sort men and women into different occupations.

Although informative, Figure 1 conflates sex segregation with segregation by family responsibilities. Recall that the second ratio used to calculate the odds ratio includes the full sample of both women and men (n in occupation y/N). To partial out sex, we replicate the analyses restricting the second ratio to women or men (n of women in occupation y/N of

women). This allows us to address segregation on family responsibilities as distinct from sex segregation.

Table 3 replicates Table 1, showing the means of each characteristic entered into MDS, separately for each occupational category and by sex. The within-gender comparisons show less differentiation than the across-gender comparisons of Table 1. Among women, married women are under-represented in all low-level occupations, women with young children and two or more children are under-represented in most occupations, and women with one child are only under-represented in high-paying professional and managerial and low-paying managerial occupations. Restricting the comparison group to women reveals interesting variation along different aspects of family responsibility. For men the pattern is more consistent across aspects of family responsibility. In general, on each of the four characteristics men with family responsibilities are under-represented in the lowest pay levels of each occupation, with the exception of managerial occupations.

The results of MDS show that women's and men's occupational location is still structured by two underlying dimensions, although the dimensions are different than those previously constructed. The Kruskal stress measures are less than .07 for both men and women. Without a second dimension the stress is over .14. Table 4 shows results of linear regressions predicting these dimensions. The dimensions now very clearly represent an educational dimension and a family responsibility dimension. For both women and men dimension one is largely composed of education and dimension two of family responsibilities. Women's dimension two, however, is driven most strongly by having a young child, and two or more children. Marriage adds very little to this dimension. For men, however, dimension two is equally driven by marriage, having a young child, and two or more children. Higher values on

dimension one indicate that women (or men) with high education are over-represented in an occupation, and higher values on dimension two indicate that women or men with more family responsibilities are over-represented.

Although the dimensions are constructed similarly for women and men, the dimension shows sorting of women and men into very different occupations. Figure 2 shows the range across countries. The vertical axis shows dimension one (education) and the horizontal axis shows dimension two (family responsibilities). For women there is a very clear educational divide between managerial and professional occupations in the upper quadrants and clerical, sales and service, and production occupations in the lower quadrants. The divide along family responsibilities is much less clear. In fact, we observe more variation across countries within occupations than we do across occupations. That is, variation in occupational placement according to family responsibilities appears largely country driven. For example women with family responsibilities (largely a young child and/or two or more children) are under-represented in low-level clerical work in the Netherlands, Germany, and the UK, but over-represented in Sweden, France, and Austria. For men we observe a similar educational divide, but we also see a clear divide in the family responsibility dimension, especially in occupations where men with high levels of education are under-represented. Among men with lower levels of education, men with family responsibilities (married, a young child, and/or two or more children) are over-represented in high-paying production occupations and under-represented in low and medium-paying clerical and sales and service occupations.

Table 5 shows the mean of the family responsibility dimension (dimension two) separately for each occupational category and by sex. Women with family responsibilities are, on average, over-represented in professional and under-represented in managerial occupations.

In clerical, sales and service, and production occupations they are under-represented at the medium-pay levels of each occupation, and slightly over-represented at the low and high-pay levels, suggesting a hollowing out of the middle ranks. There is a great deal of variation, however, with minimum and maximum spanning zero for all occupations. The means for men show a wider spread overall, but a smaller spread within occupations. Whereas women's means range from -.21 to .20, men's range from -.57 to .39, showing stronger sorting. Furthermore, there are several occupations that do not span zero, showing more consistent sorting within occupational categories. Men with family responsibilities are always under-represented in sales and service-low and are always over-represented in production-medium and high. On average, men with family responsibilities are over-represented in all occupations, except low-paying professional, clerical, sales and service, and production occupations as well as medium-paying clerical and sales and service occupations.

In the next part of the analyses, we continue exploratory analyses and examine the correlates of variation across countries. We are now working with an N of 10 (countries), correlating variation across countries in the family responsibility dimension for specific occupations. Table 6 shows the correlations between women's family responsibility dimension in specific occupations, women's employment, and household labor time. We only report results for women in the main analyses because there is less cross-national variation to explain in men's dimension, and the results for men are sensitive to country-outliers (see Appendix B for results and discussion).

Turing back to Table 6 we find that mother's representation at the medium-pay level is correlated with women's household labor time. Recall that women with family responsibilities are generally under-represented at the medium-pay level of occupations. Where women have

greater housework burdens, women with family responsibilities are less likely to be represented at medium-pay levels in professional, managerial, clerical, and sales and service occupations. The left panel of Figure 3 shows this relationship by occupation and country. We see that in countries where women spend the most time on domestic labor (Austria, Germany, and Australia) mothers are under-represented in all medium-pay occupations, particularly in managerial and clerical. In contrast, in some countries where women spend the least time on domestic labor (Finland and France) mothers are over-represented in medium-paying managerial and professional occupations. The other country where women spend the least time on domestic labor, the United States, shows almost no deviation from zero in any of the occupations, indicating that family responsibility is a less salient dimension in this country.

Overall the results show the importance of considering family responsibilities as a separate dimension of occupational segregation. Family responsibilities sort women and men into different occupations. Men show a consistent pattern across countries of all family responsibilities increasing men's representation in high-paying occupations. Women, on the other hand, are more strongly sorted by the presence of a young child or two or more children, and show much more cross-national variability. This variability is related to domestic labor arrangements, particularly in medium-paying occupations.

Discussion

Family responsibilities sort individuals into occupations, and they do so differently by gender, class, and across countries. By gender, family responsibilities clearly sort men and women into different occupations. For example managerial occupations are dominated by women without family responsibilities (among women), and by men with family responsibilities (among men). Furthermore all family responsibilities seem to be equally strong for men,

suggesting that family, whether marriage, one child, or two is a “package deal” for men. Men with the most family responsibilities are over-represented in the higher ranks of all occupations and are under-represented in the lower ranks, with the exception of managerial occupations. In contrast, for women all family responsibilities are not created equal. Occupational sorting is much more strongly related to having a young child or two or more children. Women with a young child or several children are under-represented in almost all occupations because they are more likely to be out of the labor force. Marriage and one child are not as important to women’s occupational location. On average, women with one child are under-represented in very few occupations (when comparing them to other women). Considering the prevalence of childlessness and having one child, it is important to consider family responsibilities in addition to gender as another layer of occupational segregation.

Occupational sorting by family responsibilities also diverges by class. Women with high educational attainment and high family responsibilities may be over-represented in particular occupations, but they are over-represented in very different occupations than women with lower educational attainment. For example, mothers with high education are over-represented in high-paying professional occupations in some countries, whereas mothers with low education are over-represented in low-paying clerical, sales and service occupations. Across countries, all occupations that mothers are over-represented in cannot be considered “bad” jobs.

Across countries, the link between family responsibilities and occupation does not vary greatly for men. This suggests that, at least in these ten advanced industrialized countries, there is little variation in the association of marriage and fatherhood with breadwinning. The tenacity of this association warrants further exploration. In contrast, the link between family responsibilities and occupation varies greatly for women. For example, women with family

responsibilities (especially a young child or two or more children) are over-represented in medium-paying managerial work in Finland and France, but under-represented in Austria, Germany, Australia, and the United Kingdom. In general, we see a hollowing of medium-pay ranks for women with family responsibilities in the second group of countries, suggesting a bifurcated pattern where women with family responsibilities either work at the lowest-paying occupations or in high-paying careers. This variation is correlated with prevailing expectations for women's domestic labor. The hollowing out in the middle is less extreme where women spend less time on domestic labor. That is, where expectations for women's household labor are high the choice to exit with increasing family responsibilities may be clearer. The bifurcated pattern suggests that women at the medium-pay level may have less to lose from exit. Women at the lowest-paying rank may be financially unable to exit, and women at the highest-paying ranks may be unable to exit without risking future career success.

These findings are in line with both neoclassical economic (supply) and structural (demand) accounts of occupational segregation, and we are unable to tease apart these accounts. Either individuals choose different occupations depending on their level of family responsibility or employers discriminate against women with and men without family responsibilities. There is evidence to suggest that both of these explanations have merit, and that supply and demand factors may be more or less salient in some contexts than others.

As levels of family responsibility diverge by education, family responsibilities (and their association with occupations) become a key feature of the new class map. The frequency of both childlessness and having only one child has increased across most advanced industrialized countries, and women with high educational attainment are the most likely to fit this pattern. We find that family responsibilities contribute to labor market inequality for both women and men,

although they do so differently. Women are generally penalized for increasing family responsibilities, thus women who already enjoy an educational advantage are also more likely to have the “advantage” of low family responsibilities (coupled with greater access to outsourcing). As a result we may observe even greater divergence in the fortunes of women along class lines in the future. These processes, however, are not invariable. We find evidence that occupational sorting on family responsibilities is linked to prevailing domestic labor arrangements. Continued research is needed to better understand this variability, but this analysis presents a strong argument for paying increasing attention disentangling gender, class, and family in relation labor market fortunes, including occupational segregation.

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Appendix A: Regression Approach

We explored an alternate framework in which we used logistic regression to predict placement into each of the 15 occupational categories by sex, separately for each country. We regressed family responsibilities (marital status, number of children, presence of a child under three years of age), education (coded into low, medium, and high), age, and part-time status on each category. Because many of the occupations have few job holders relative to other categories, we used *relogit* to address the “rare events” nature of the data (i.e., there are dozens more zeros than ones). *Relogit* creates bias-corrected coefficients by using weighted least squares to estimate bias. The correction directly affects the constant, and indirectly the coefficients (King and Zeng 2001). Preliminary analyses revealed that in the cases where *relogit* made a difference it provided more conservative (that is, smaller) constants and coefficients than did *logit*. Using the coefficients from the 300 logistic regressions we then used multidimensional scaling (MDS) to create a family responsibility dimension, separately for men and women.

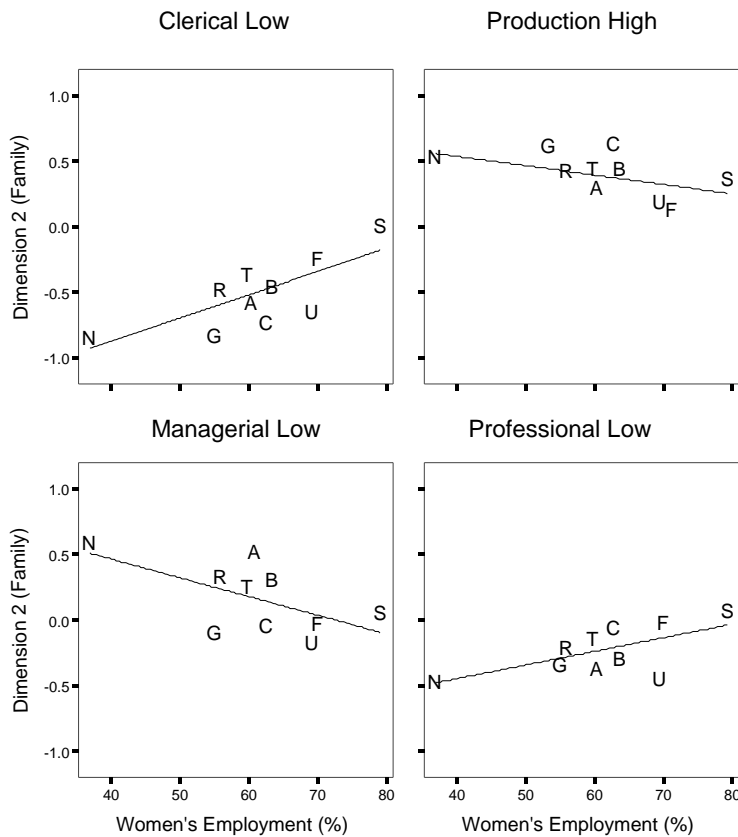
We ultimately abandoned the regression framework for several reasons. First, the regression strategy relies on estimates of occupational segregation generated from the employed. Family responsibilities have important, and gendered, implications on labor supply effects. As a consequence, regression analysis of occupation among the employed doesn't allow us to account for the different mechanisms through which family obligations influence occupational sorting (e.g., segregation into the labor market and segregation among the employed).

Second, the regression strategy is sensitive to the limitations of small sample sizes. While we have relatively large data sets, strict occupational segregation -- along gender and family lines -- in some economies (e.g., Netherlands) led to a great deal of variability in effects. Even when we pooled data across multiple survey years and analyzed the data using methods appropriate for rare-event data, relationships between family responsibilities and occupational segregation were obscured by variability in effects due to small samples sizes. Although we considered alternative MDS strategies (e.g., Bayesian MDS) none of the methods known to us could minimize the limitations we encountered.

Appendix B: Explaining Variability in Men's Family Dimension

The influence of family responsibilities on men's occupational location is more consistent across countries than is women's; thus there is less cross-national variation to explain. We did find a statistically significant correlation with women's employment (percent) and the family responsibility dimension in several low-paying occupational categories and in production-high. This correlation, however, is driven by two outliers – the Netherlands and Sweden. Removing these two countries, bringing our N to eight, only the correlation within production-high remains statistically significant, and the slope, as shown below, is very slight. Because occupational sorting (by gender, family, and class) is so strong in many countries, we are left with very small cell sizes, complicating the analyses further. For example, in Sweden of 9,016 men in our sample only 34 are in low-paying clerical occupations, and then we further classify these men by educational attainment and four aspects of family responsibility.

Figure B.1. Men's Family Responsibility Dimension by Women's Employment



Note: A = Australia, T = Austria, C = Canada, F = Finland, R = France, G = Germany, N = Netherlands, S = Sweden, B = UK, U = US.

Table B.1. Macro Correlations with Men's Family Responsibility Dimension, by Occupation

	Women's Employment (%)	Men's Household Labor Time
Professional-High	-.01	.21
Professional-Medium	-.26	-.05
Professional-Low	.67 *	.28
Managerial-High	-.01	.10
Managerial-Medium	-.38	-.50
Managerial-Low	-.67 *	-.73 *
Clerical-High	-.40	-.46
Clerical-Medium	-.20	-.54
Clerical-Low	.74 *	.26
Sales & Service-High	-.44	-.48
Sales & Service-Medium	.37	-.13
Sales & Service-Low	.39	.49
Production-High	-.70 *	-.46
Production-Medium	-.45	-.26
Production-Low	.15	.27

Table 1. Means: Women's and Men's Representation in Occupational Categories by Family and Educational Characteristics, N = 10

	Women					Men				
	Married	Young Kid	One Kid	Two+ Kids	High Educ	Married	Young Kid	One Kid	Two+ Kids	High Educ
Professional-High	.77	.66	.69	.80	2.12	1.62	1.44	1.33	1.74	3.32
Professional-Medium	1.05	.86	1.06	1.06	2.55	1.11	1.35	1.03	1.16	2.26
Professional-Low	1.15	1.20	1.30	1.24	2.37	.60	.86	.78	.61	1.36
Managerial-High	.30	.20	.28	.22	.59	2.30	1.62	1.86	2.26	3.68
Managerial-Medium	.57	.35	.62	.43	1.23	1.83	1.54	1.62	1.73	2.77
Managerial-Low	.81	.63	.83	.68	1.42	1.26	1.49	1.28	1.32	1.56
Clerical-High	1.22	.95	1.25	.98	1.37	.93	.87	.83	.96	.93
Clerical-Medium	1.49	.91	1.55	1.19	1.39	.45	.51	.44	.45	.34
Clerical-Low	1.42	1.30	1.79	1.42	1.33	.21	.29	.32	.24	.30
Sales & Service-High	.89	.74	1.02	.82	.73	1.19	1.26	1.15	1.23	1.02
Sales & Service-Medium	1.37	.82	1.46	1.18	.65	.50	.63	.60	.47	.38
Sales & Service-Low	1.36	1.25	1.73	1.64	.73	.23	.30	.47	.28	.29
Production-High	.12	.09	.13	.11	.06	2.25	2.19	2.13	2.33	.83
Production-Medium	.25	.16	.25	.22	.08	1.86	2.18	1.91	2.05	.55
Production-Low	.54	.47	.68	.54	.18	1.07	1.62	1.68	1.32	.47

Note: Representation indicates the over or under representation of a given group in a given occupation. It is calculated as $(n \text{ of group } x \text{ in occupation } y / n \text{ of group } x) / (n \text{ in occupation } y / N)$. 1 equals exact representation, less than 1 indicates under representation and greater than 1 indicates over representation. For example, in Australia 253 of 8,422 married women work in professional-high (.0300), and 1,042 of 23,960 respondents work in professional-high (.0435). Thus, married women's representation is $.0300 / .0435 = .69$. In contrast 585 of 8,097 married men work in professional-high (.0722). Thus, married men's representation is $.0722 / .0435 = 1.66$.

Table 2. Summary of Linear Regression Predicting Dimensions, by Sex

	Dimension 1		Dimension 2	
	B	SE	B	SE
Women				
Constant	2.042	.000	.043	.000
Married	-.397	.000	-.259	.000
Young Kid	-.381	.000	-.220	.000
One Kid	-.447	.000	-.353	.000
Two+ Kids	-.426	.000	-.282	.000
High Education	-.563	.000	.825	.000
Men				
Constant	2.661	.000	.538	.000
Married	-.417	.000	-.244	.000
Young Kid	-.345	.000	-.401	.000
One Kid	-.329	.000	-.334	.000
Two+ Kids	-.426	.000	-.319	.000
High Education	-.646	.000	.752	.000

Note: N = 150. R² = 1. Kruskal stress measure = .047 for women (.304 for one dimension), .035 for men (.238 for one dimension).

Table 3. Means: Women's and Men's Representation in Occupational Categories (Among Women or Men Only) by Family and Educational Characteristics, N = 10

	Women					Men				
	Married	Young Kid	One Kid	Two+ Kids	High Educ	Married	Young Kid	One Kid	Two+ Kids	High Educ
Professional-High	1.07	.89	.97	1.11	2.95	1.26	1.11	1.02	1.27	2.85
Professional-Medium	1.01	.83	1.03	1.01	2.68	1.14	1.37	1.04	1.14	2.27
Professional-Low	.91	.96	1.03	.98	2.00	.82	1.17	1.01	.90	1.87
Managerial-High	.99	.66	.90	.72	2.13	1.29	.96	1.06	1.28	2.53
Managerial-Medium	.96	.67	1.04	.76	2.35	1.21	1.10	1.09	1.16	1.94
Managerial-Low	.95	.73	.94	.79	1.76	1.09	1.25	1.05	1.11	1.39
Clerical-High	1.02	.83	1.05	.83	1.17	1.12	1.02	1.04	1.18	1.13
Clerical-Medium	.98	.61	1.02	.77	.92	.94	1.07	.90	.91	.77
Clerical-Low	.86	.84	1.12	.88	.82	.61	.86	.91	.70	.91
Sales & Service-High	.96	.79	1.08	.88	.81	1.10	1.17	1.07	1.13	.93
Sales & Service-Medium	.96	.59	1.03	.83	.48	.87	1.14	1.08	.82	.66
Sales & Service-Low	.87	.84	1.13	1.07	.48	.56	.73	1.07	.65	.68
Production-High	1.04	.82	1.13	.89	.39	1.18	1.14	1.12	1.25	.43
Production-Medium	1.03	.69	1.02	.89	.29	1.05	1.22	1.07	1.16	.31
Production-Low	.93	.82	1.17	.94	.29	.74	1.12	1.16	.92	.33

Note: Representation indicates the over or under representation of a given group in a given occupation, by gender. It is calculated as $(n \text{ of group } x \text{ in occupation } y / n \text{ of group } x) / (n \text{ in occupation } y / N)$. 1 equals exact representation, less than 1 indicates under representation and greater than 1 indicates over representation. For example, in Australia 253 of 8,422 married women work in professional-high (.0300), and 347 of 12,150 women work in professional-high (.0286). Thus, married women's representation is $.0300 / .0286 = 1.05$.

Table 4. Summary of Linear Regression Predicting Dimensions (Among Women or Men Only),
by Sex

	Dimension 1		Dimension 2	
	B	SE	B	SE
Women				
Constant	-1.274	.000	-1.450	.000
Married	.001	.000	.080	.000
Young Kid	.008	.000	.821	.000
One Kid	-.039	.000	.299	.000
Two+ Kids	.008	.000	.479	.000
High Education	.999	.000	.001	.000
Men				
Constant	-1.537	.000	-1.690	.000
Married	.139	.000	.486	.000
Young Kid	.043	.000	.597	.000
One Kid	-.003	.000	.117	.000
Two+ Kids	.104	.000	.607	.000
High Education	.984	.000	-.159	.000

Note: N = 150. R² = 1. Kruskal stress measure = .057 for women (.142 for one dimension), .069 for men (.176 for one dimension).

Table 5. Means: the Family Responsibility Dimension (Among Women or Men Only) by Occupation and Sex, N = 10

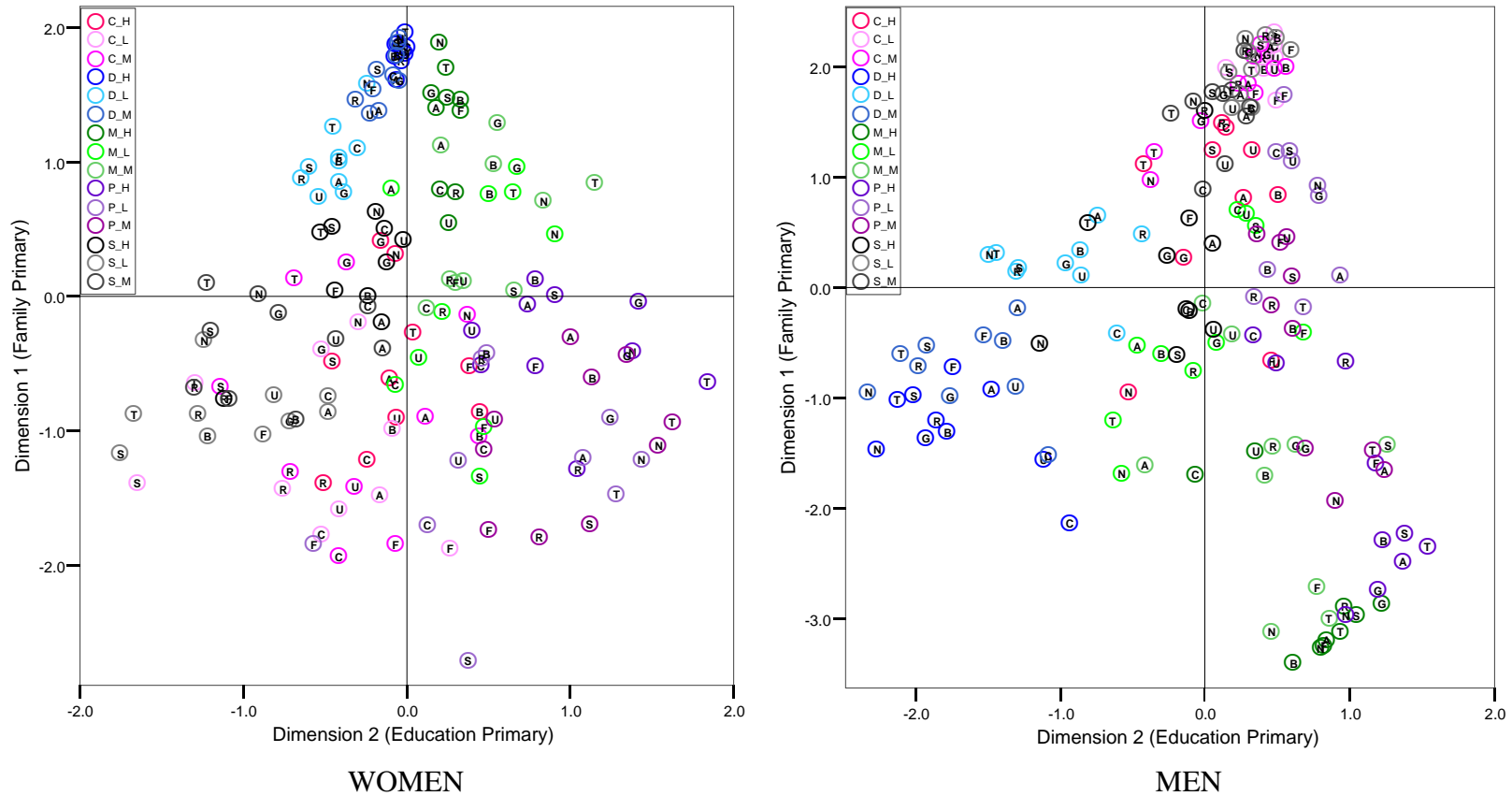
	Women			Men		
	Mean	Min	Max	Mean	Min	Max
Professional-High	.20	-.15	.77	.02	-.20	.34
Professional-Medium	.10	-.22	.75	.14	-.11	.38
Professional-Low	.19	-.40	.89	-.23	-.45	.09
Managerial-High	-.21	-.74	.32	.01	-.39	.39
Managerial-Medium	-.15	-.68	.92	.08	-.49	.35
Managerial-Low	-.12	-.70	.37	.16	-.14	.61
Clerical-High	.03	-.38	.64	.12	-.16	.49
Clerical-Medium	-.20	-.55	.20	-.05	-.80	.60
Clerical-Low	.06	-.47	.70	-.50	-.82	.03
Sales & Service-High	.02	-.33	.45	.20	.00	.65
Sales & Service-Medium	-.18	-.42	.08	-.07	-.31	.43
Sales & Service-Low	.16	-.26	.81	-.57	-.97	-.16
Production-High	.07	-.50	.85	.39	.21	.55
Production-Medium	-.07	-.41	.40	.33	.02	.56
Production-Low	.10	-.35	.73	-.02	-.31	.25

Table 6. Macro Correlations with Women's Family Responsibility Dimension, by Occupation

	Women's Employment (%)	Women's Household Labor Time
Professional-High	-.59	-.44
Professional-Medium	-.38	-.62 *
Professional-Low	.68 *	-.11
Managerial-High	.28	-.29
Managerial-Medium	.03	-.77 *
Managerial-Low	.48	-.59
Clerical-High	-.59	-.48
Clerical-Medium	.23	-.69 *
Clerical-Low	.69 *	-.20
Sales & Service-High	-.13	-.54
Sales & Service-Medium	.22	-.73 *
Sales & Service-Low	.56	.10
Production-High	-.54	.02
Production-Medium	.46	-.35
Production-Low	.53	-.26

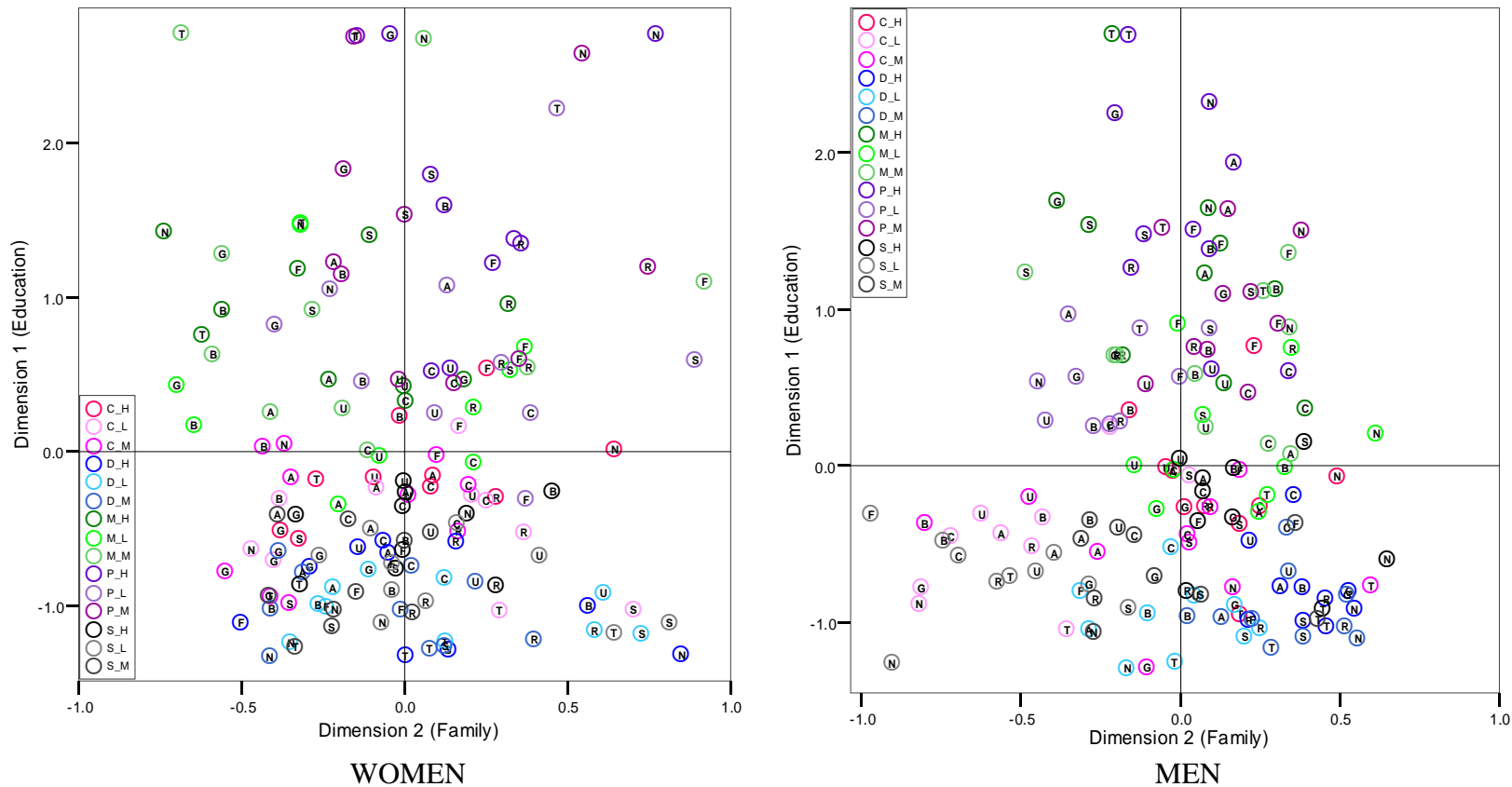
Note: * $p \leq .05$

Figure 1. MDS of Occupations, by Sex



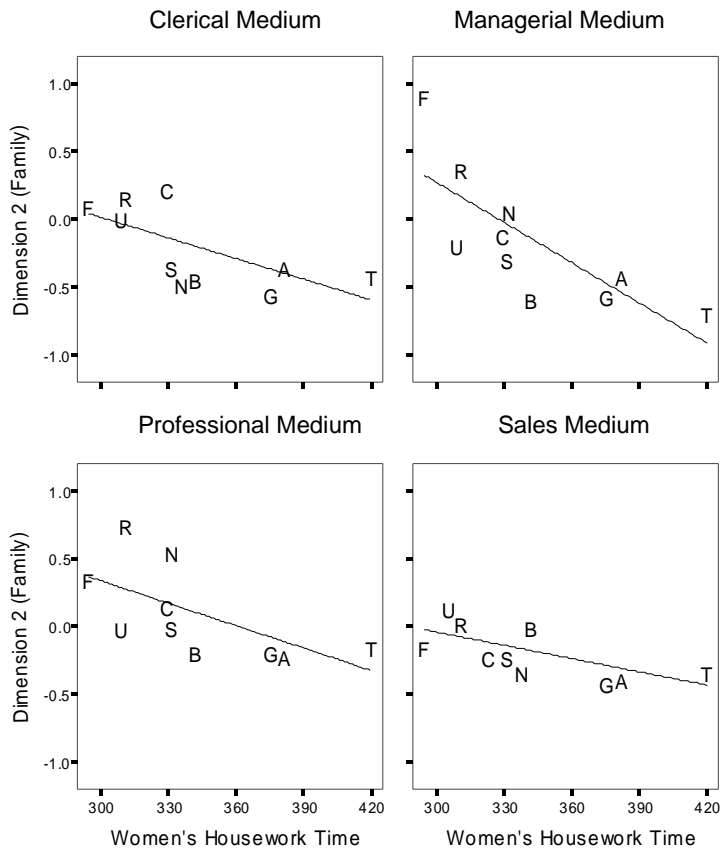
Note: Country codes within circles are A = Australia, T = Austria, C = Canada, F = Finland, R = France, G = Germany, N = Netherlands, S = Sweden, B = UK, U = US. Color codes for occupation are C = Clerical (in red/pinks), D = Production (in blues), M = Management (in greens), P = Professional (in purples), S = Sales and Service (in black/grays), H = High, M = Medium, L = Low. For example, C_H = Clerical-High.

Figure 2. MDS of Occupations (Among Women or Men Only), by Sex



Note: Country codes within circles are A = Australia, T = Austria, C = Canada, F = Finland, R = France, G = Germany, N = Netherlands, S = Sweden, B = UK, U = US. Color codes for occupation are C = Clerical (in red/pinks), D = Production (in blues), M = Management (in greens), P = Professional (in purples), S = Sales and Service (in black/grays), H = High, M = Medium, L = Low. For example, C_H = Clerical-High.

Figure 3. Women's Family Responsibility Dimension by Housework Time



WOMEN

Note: A = Australia, T = Austria, C = Canada, F = Finland, R = France, G = Germany, N = Netherlands, S = Sweden, B = UK, U = US.