

The division of labor and depressive symptoms at the couple level: Effects of equity or specialization?

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Abstract

This paper studies the effect of the division of labor within households on husbands' and wives' depressive symptoms. Economic theory argues that specialization enhances mental health and wellbeing, whereas other, more psychological theories argue that equity matters most. We analyze data on husbands and wives from two waves of the National Survey of Families and Households. By combining information on the time spent on household and paid labor, we are able to construct separate and partly independent measures of equity and specialization. We find clear evidence for the equity hypothesis. When hours spent on paid and household labor are more equally distributed between husband and wife, both report fewer depressive symptoms. Only weak and inconsistent support was found for a positive effect of specialization.

Keywords

couples, depressive symptoms, division of labor, equity, household labor, specialization

In response to the rapid increase in married women's labor force participation over the last decades, many authors have examined how "modern" and "traditional" work arrangements in marriage affect individual wellbeing (Ross, Mirowsky, & Huber, 1983; Shelton & John, 1996; Stolzenberg, 2001). Two types of study can be distinguished.

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First, there are studies focusing on the effect of the division of *household* labor on health. These studies generally show that doing household labor is associated with poorer health (Bird & Fremont, 1991; Glass & Fujimoto, 1994). In addition, equal sharing of household labor is associated with better health (Bird, 1999). Second, there are studies examining the effects of the division of *paid* labor on health. A recent meta-analysis shows that there are no adverse effects of women's employment on women's health (Klumb & Lambert, 2004). Studies either find no effect or a beneficial effect of women's work on women's health (Klumb & Lambert, 2004; Schnittker, 2007; Waldron, Weiss, & Hughes, 1998). Effects of women's employment on the mental health of the husband have also been examined but authors generally do not find that husbands are negatively affected if the wife is employed (Glass & Fujimoto, 1994; Orbuch & Custer, 1995; Rosenfield, 1992).

In this study, we address two limitations of the literature. First, we look at paid and domestic labor simultaneously. The literature that has examined the effects of equity on health has often conceptualized equity in terms of household labor only. Lennon and Rosenfield (1994) for example, examine how perceptions of fairness depend on the division of household labor, but they do not investigate how these perceptions depend on the division of paid labor. Similarly, Bird (1999) tests equity theory by regressing mental health scores on the share of housework that husbands and wives do, but she does not include paid working hours in the measures of the division of labor. We argue that household labor and paid work should be considered simultaneously. Equity exists not only in the most modern arrangement where both partners work for pay and both engage to the same extent in household labor. Equity may also exist in the most traditional arrangement where only the husband works for pay and the wife does all of the household work.

Second, by looking at paid and domestic labor simultaneously, we can separate the effects of two theoretically important concepts: specialization (or role segregation) and equity. While equity refers to a situation where the efforts of the two partners in the production process are equal, specialization refers to a situation where the two partners produce different goods. Equity can coincide with a non-specialized division of labor – the husband and wife both doing half of the paid labor and half of the household labor. Under certain assumptions, equity can also go together with specialization – for example, when the husband does 40 hours of paid work and no household labor and the wife does 40 hours of domestic work and no paid work. According to psychological theories about close relationships, it is especially equity that improves mental health (Brines, 1994; Sprecher, 1986, 2001). According to economic theories of marriage, however, it is especially specialization which is beneficial (Becker, 1991). Because the focus in the literature has often been on household labor, equity and specialization have incorrectly been regarded as each other's opposites and their effects on mental health have not been separated empirically.

We address these issues in an analysis of a large two-wave panel study of married couples in the United States. Using information reported by both partners in a couple on hours worked for pay and hours worked in household chores, we construct independent measures of specialization and equity. Subsequently, we examine how specialization and equity affect depressive symptoms of husbands and wives. Because we use

panel data, we can estimate the effects of equity and specialization on depressive symptoms while controlling for the effects of prior health, thereby minimizing (albeit not eliminating) possible biases due to selection effects.

Theory and hypotheses

Equity

The first argument about the link between the division of labor and wellbeing lies in the theory of equity (Walster, Walster, & Berscheid, 1978). This theory is based on how partners evaluate the inputs that they invest in a relationship and the outputs they receive from a relationship. Equity occurs when the outputs that a person receives, relative to the input he or she made, is equal to the output the partner receives, relative to the input the partner made. Assuming that the output of a marriage is distributed equally, this means that equity occurs if the inputs of the two partners are the same. Inputs are broadly defined and include, for example, effort and time.

Our first hypothesis is: *the more equal the division of labor in the household in terms of total hours spent on paid and household work, the fewer depressive symptoms the husband and the wife have.* There are several reasons for motivating this hypothesis. First, inequity can lead to negative emotions (Sprecher, 1986). If a person invests more time and energy in the relationship than the partner – a situation which is often called “underbenefiting” – this person tends to become frustrated and angry (Guerrero, La Valley, & Farinelli, 2008). Feelings of frustration and anger can translate into feelings of depression. If a person invests less time and energy in the relationship than the partner – a situation called “overbenefiting” – this person tends to feel guilty or ashamed (Guerrero, La Valley, & Farinelli, 2008). Feelings of guilt can make a person depressed as well (Alexander, Brewin, Vearnals, Wolff, & Leff, 1999). Hence, in a situation of inequity, both the “underbenefiting” and the “overbenefiting” spouse may be confronted with depressive symptoms.

A second reason why inequity may negatively affect mental health lies in marital conflict. Research has shown that a lack of equity is associated with lower marital satisfaction and more marital conflict (Buunk & Mutsaers, 1999; Sprecher, 2001; Wilkie, Marx, & Ratcliff, 1998). People not only feel less good about themselves in a situation of inequity, they are also more negative about the relationship. Moreover, feelings of anger and frustration will be translated in negative feelings about the partner. Equity theory also suggests that people try to restore equity in their relationship and this requires negotiation with the partner, which may give occasion to conflict. The implication for depressive symptoms is clear because it has been shown that a low degree of marital quality or marital satisfaction contributes to poorer mental health (Kiecolt-Glaser & Newton, 2001).

One assumption underlying the hypothesized effect of equity is that the rewards of the production in the household are distributed equally. Economic research suggests that this assumption is reasonable: in most Western countries, the wife’s share in consumption is between 50% and 60% (Alessie, Crossley, & Hildebrand, 2006). Another assumption is that an hour of household labor requires the same effort as an hour of paid labor. Labor is

not only a cost factor, it also yields private benefits and these benefits may be different for different types of labor. Paid work can be intrinsically rewarding, it can be a form of social integration, and it can yield individual prestige. Household labor may provide fewer of these benefits. We address this problem by looking at alternative ways of weighting paid and household labor. We estimate models in which the relative weight of household labor compared to paid labor is obtained empirically and we compare the results with a model in which the two forms of labor are weighted equally. We expect that in the effects of equity, hours spent on household labor weigh more heavily than hours spent on paid labor.

Specialization

The principle of specialization was introduced in the study of relationships between economic actors and was later applied to households and personal relationships (Becker, 1991; England & Farkas, 1986). According to Becker's economic theory of marriage, the inputs in a household are paid and domestic labor and the outputs are household utility. Utility includes consumption of durable and non-durable goods as well as leisure time. Specialization occurs when one person invests all his or her time in paid labor whereas the other person invests his or her time in unpaid labor (domestic chores, child-rearing). Theoretically, it can be shown that this way of producing output is advantageous when at least one of the partners has a comparative advantage in one of the two tasks. Although the model itself is gender-neutral, the assumptions of comparative advantages are gender-specific. Becker argues that wage discrimination in the labor market gives men a comparative advantage in paid labor while biological differences give women a comparative advantage in unpaid labor – that is, mainly in child-rearing (Becker, 1991).

The specialization model has become influential in the study of marriage and family life because it was able to link several demographic trends to the rise of women's employment over time in Western societies. Empirically, the model has been relatively successful in predicting divorce (Kalmijn, Loeve, & Manting, 2007; South, 2001), but the model is less successful in understanding why women postpone marriage (Oppenheimer, 1997).

One problem of the model is that the concept of utility is never defined or measured explicitly. Hence, empirical tests have used indirect approaches, for example by assuming that lower utility is associated with divorce or with lower chances of entering a marriage. In this paper, we look at an alternative outcome of specialization. We try to generalize the theory by looking at the consequences of specialization for the wellbeing of the couple. This leads to our second hypothesis: *the more specialization of (paid and unpaid) tasks in the household, the fewer depressive symptoms the husband and the wife have*. There are several reasons for motivating this hypothesis.

First, there is a financial argument. If persons invest their time in specific tasks, they are able to specialize, which increases the returns from those investments. The clearest example of this is paid labor, where labor market experience leads to a direct increase in wages and where part-time work and career interruptions have negative effects on wages (Waldfoegel, 1997). Hence, a situation where one spouse works 40 hours while the other has no paid work yields more household income than a situation where both spouses work 20 hours each.

A second argument is that specialization is believed to be more efficient (Becker, 1991). One reason for this is that certain time costs of work do not depend on working hours and therefore make part-time work more demanding (per hour). Examples of such fixed time costs of work are travel time, working extra hours at home, out-of-work meetings with colleagues, and worrying about work issues (Van der Lippe, Jager, & Kops, 2006). Another reason is that the so-called transaction costs are higher in non-specialized couples (England & Farkas, 1986; Seaton, 2001). In non-specialized couples, more things have to be coordinated with the partner, more monitoring of each other's efforts is needed, and more bargaining is involved. Prior evidence suggests that dual-earner couples indeed experience more time pressure and thereby more stress than single-earner couples (Goodin, Rice, Bittman, & Saunders, 2005; Van der Lippe et al., 2006).

Third, it has been argued that work patterns in couples may also affect the relationship itself. One effect is that couples spend less time together when they both participate in the labor market (Kalmijn & Bernasco, 2001). Another effect is that couples may have disagreements about each other's jobs and careers when they both work for pay (Booth, Johnson, White, & Edwards, 1984). Because there is a clear link between relationship functioning and mental health (Kiecolt-Glaser & Newton, 2001), the effect of specialization on the functioning of marriage may also be a reason why specialization affects mental health.

Methods

Data

We use data about couples from the first two waves of the *National Survey of Families and Households* (Sweet, Bumpass, & Call 1988). The first wave was collected in 1987 and 1988 and was based on a national probability sample of adults in the United States. It included a main cross-section sample of 9643 households plus a double sampling of African Americans, Puerto Ricans, Mexican Americans, single-parent families, families with stepchildren, cohabiting couples, and recently married persons ($n = 13,007$ in total). The response rate was 74%. Primary respondents and their spouses were again interviewed between 1992 and 1994. The interval between the waves is 5.8 years on average. Excluding respondents who had died, the response rate for the second wave was 82%.

From the original data, we selected respondents who participated in both waves and who were married to the same person in the two waves. As we need information about prior health, we only include those couples where both spouses were interviewed at both waves. Both partners needed to be between 25 and 60 years of age. A separate analysis for cohabiting couples was considered but there were too few cohabiting couples in the sample ($n = 172$) to do this in a convincing manner. Since issues of equity and specialization may well work differently in these couples, we decided to leave cohabiting couples out of the analyses altogether. We excluded couples with insufficient information on paid or domestic labor or depressive symptoms in the two waves (12% of the cases). This leaves us with 2566 husband-wife dyads for the analysis.

Missing values on income (11.7%), prior general happiness of husbands (13.6%) and wives (10.9%), and prior health of husbands (10.5%) and wives (6.2%) were treated by applying multiple imputation techniques. This method uses all valid variables in the model to predict missing values on the dependent variables. We used five imputed data sets to estimate the regression coefficients. All analyses were performed in STATA using the *ice* and *mim* packages (Royston, 2005).

Measures

Depressive symptoms. We use an abbreviated version of the Center for Epidemiologic Studies Depression Scale (CES-D), a commonly used measure of depressed mood that has high construct validity and internal consistency (Radloff, 1977). It is available for both spouses in the second wave and has a high reliability coefficient ($\alpha = 0.92$). Examples of items are “you were bothered by things that usually don’t bother you?” and “you felt depressed?”. The weighted answers (not at all = 0, 1–3 days = 1, 4–6 days = 2, every day = 3) were summed. The distribution of the depressive symptoms scale is skewed, with few people having very high levels of depression. Since violating normality assumptions would not bias our estimates with a large sample size, we prefer to use the measure “as is”. This also makes our results more comparable to earlier work. We perform a robustness check for all reported analyses in which we use the natural logarithm of CES-D. Where this leads to different results, we mention this in the text.

Labor. We use information provided independently by both spouses on their own paid and household hours in Wave 2. Paid labor refers to the number of hours worked for pay in a normal week. Household labor is measured by asking how much time the person spends per week on nine different household tasks (preparing meals, doing the dishes, cleaning, outdoor repairs, washing, shopping, doing the bills, car maintenance, and driving for errands). We summed the number of hours across tasks to obtain a measure of household labor. Both measures are truncated at 100 hours.

Equity. To measure equity, we start with the four inputs of husband and wife: P_h (paid hours of husband), P_w (paid hours of wife), D_h (household hours of husband), and D_w (household hours of wife). We define the total number of hours as $T_{hw} = (P_h + D_h + P_w + D_w)$. Our first and unweighted measure of equity is as follows:

$$\text{EQUITY} = 1 - |(P_h + D_h) - (P_w + D_w)| / T_{hw}$$

This is the absolute difference in the proportion of time that husband and wife spend on (any type of) labor. The difference is subtracted from 1 so that high scores denote equity. Equity varies from 0 (no equity) to 1 (full equity). To illustrate, when the husband works for pay 40 hours and does nothing in the household, whereas the wife works 10 hours per week and spends 20 hours in the household, the degree of equity is $1 - |40 - 10 - 20| / [40 + 10 + 20] = .86$.

We also develop a weighted version of equity, defined as:

$$\text{WEIGHTED EQUITY} = 1 - |(w P_h + (1 - w) D_h) - (w P_w + (1 - w) D_w)| / T^*_{hw}$$

where $0 < w < 1$ and T_{hw}^* is the weighted version of the measure of total hours. If $w = .50$, paid and household labor have the same weight. If $w < .50$, the weight of household labor is larger, which means that people regard household labor as more of an effort than paid labor. Suppose the weight of paid labor is .25, what does this imply for the illustrative case above? In this case, equity will be $1 - |.25 \times 40 - .25 \times 10 - .75 \times 20| / [.25 \times 40 + .25 \times 10 + .75 \times 20] = .72$. Equity drops in this case because household labor is given more weight.

Specialization. We measure specialization with the index of dissimilarity. In the present context, this is defined as follows:

$$\text{SPECIALIZATION} = | (P_h / (P_h + D_h)) - (P_w / (P_w + D_w)) |$$

This is the absolute difference in the proportion of time that husbands spend on household labor and the proportion of time that wives spend on household labor. Specialization ranges from 0 (full role-sharing) to 1 (full role segregation or specialization). In the case above, the degree of specialization is $| (40 / (40 + 0)) - (10 / (10 + 20)) | = .67$, showing a high degree of specialization.

Over- and underbenefiting. In an extra model, we examine if the effects of overbenefiting and underbenefiting are different. We use spline regression, a method which estimates different linear slopes for different ranges of the independent variables. In this case, we use the wife's share in household and paid labor and distinguish between two ranges: the 0 – .50 range refers to overbenefiting for the husband or underbenefiting for the wife and the .50 – 1 range refers to situations where the husband underbenefits and the wife overbenefits. For the equation of wife's depressive symptoms, wife's underbenefiting is defined as $(P_w + D_w) / T_{hw} - 0.5$ (when the wife works more hours (household and paid combined)), and wife's overbenefiting is defined as $0.5 - (P_w + D_w) / T_{hw}$ (when the wife works fewer hours). For the equation of husband's depressive symptoms, the definition is reversed.

To take possible selection effects into account, we control for indicators of health problems in Wave 1. Because the CES-D itself is not available for both spouses in Wave 1, we use two alternative measures to control for Wave 1 health, poor health and happiness. Both are positively correlated with depressive symptoms ($r = .3$ for poor health and $r = .4$ for happiness, estimated for the Wave 2 sample).

Poor health. The variable *poor health* was based on the single-item health question: "Compared to other people your age, how would you describe your health? Very poor, poor, fair, good, excellent". This frequently used health question predicts mortality in longitudinal research (Idler & Benyamini, 1997) and correlates with more objective health indicators (Ferraro & Farmer, 1999). By convention, we dichotomized the response into poor health versus fair, good, or excellent health.

Prior happiness. Happiness in life was measured with the question: "Taking things all together, how would you describe things are these days?" Respondents and spouses

Table 1. Descriptive statistics for a sample of US men and women in married couples

	Husbands			Wives		
	Mean / proportion	Standard deviation	Range	Mean / proportion	Standard deviation	Range
Depressive symptoms	6.59	6.61	0–36	8.39	7.52	0–36
Prior poor health	0.13		0–1	0.14		0–1
Prior happiness	5.57	1.20	1–7	5.67	1.21	1–7
Age	41.96	8.15	25–60	39.83	7.83	25–60
Non-white race/ethnicity	0.16		0–1	0.15		0–1
Education	13.67	2.85	2–20	13.38	2.52	0–20
Paid hours	44.62	18.10	0–100	26.02	20.29	0–100
Household hours	19.70	14.17	0–100	37.67	21.34	1–100
Perceived equity	3.18	0.48	1–5	2.80	0.53	1–5
	Couples					
			mean / proportion	standard deviation	range	
Total paid hours by both partners			70.64	27.64	0–180	
Total household hours by both partners			57.38	25.72	8–200	
Log income (\$)			10.49	0.79	0–13.8	
# children in household age <6			0.43	0.74	0–4	
# children in household age 6–13			0.56	0.79	0–4	
# children in household age 13+			0.68	0.96	0–7	
Specialization			0.37	0.29	0–1	
Equity			0.80	0.18	0–1	

Income, prior health and prior happiness are measured at Wave 1, all other variables are measured at Wave 2
N = 2566 couples.

could then report on a scale from 1, which depicted “Very unhappy” to 7, which depicted “Very happy”.

Other control variables are: respondent’s age, highest completed education, annual household income in Wave 1 (logged), number of children aged 0–5, number of children aged 6–12, and number of children aged 13 and over in the household (respondents with no children in the household are the reference category). We also control for race/ethnicity (non-white versus white) but it should be noted that the CES-D scale cannot be used very well for comparing ethnic groups (Perreira, Deeb-Sossa, Mullan Harris, & Bollen, 2005). Descriptive information on independent and dependent variables can be found in Table 1.

Models

We regress measures of depressive symptoms of husband and wife in Wave 2 on specialization and equity scores in Wave 2 while controlling for indicators of (mental) health in Wave 1. In this way, the possibly confounding effects of prior health are reduced. For example, if a husband is handicapped, he will not be able to work for pay and the wife may work more paid hours. A lack of equity will then be associated with

Table 2. Husband's and wife's average weekly hours spent on paid work (*p*) and household work (*h*) by level of equity and specialization

Equity	Specialization		Total	Highest tertile	<i>p/h</i>	Total
	Lowest tertile	<i>p/h</i>				
Lowest tertile	Husband	28/24	52	Husband	42/17	59
	Wife	23/38	60	Wife	10/35	45
	<i>n</i> = 156			<i>n</i> = 478		
Highest tertile	Husband	44/21	65	Husband	48/15	63
	Wife	41/24	65	Wife	4/59	63
	<i>n</i> = 452			<i>n</i> = 180		

high depressive symptoms of the husband, but this is due to prior health problems. We also control for the prior health of the spouse because this will affect the division of labor as well and may affect the depressive symptoms of the respondent.

We analyze outcomes for husbands and wives separately and we take into account the dependencies between the errors across the husband and wife equations by using Seemingly Unrelated Regression (Stolzenberg, 2001). This model estimates the equations for husbands and wives simultaneously while controlling for the correlation between the errors of husband and wife. We use one-sided significance tests for the effects of equity and specialization since the hypotheses about these effects are directional.

The model in which we use a weighted version of equity is estimated with nonlinear least squares – that is, *nlsur* in STATA (Royston, 1992). This model estimates the effects of equity along with the weight parameter *w*. Essentially, what the model does is to find one value for *w* for which the fit of the model is maximized. Suppose people find household labor more unpleasant than paid labor. In this case, the division of household labor would be more important for them than the division of paid labor. As a result, they would be more depressed by an unfair division of household labor than by an unfair division of paid labor. A greater weight for household labor would then show a stronger association between equity and depression. The procedure finds weight yielding the strongest effect of equity on depression. Note that the fit is maximized for *individual* outcomes, which makes it possible that husbands and wives weight the two types of labor differently.

Results

Descriptive analyses

In our sample, the correlation between equity and specialization is -0.26. This shows that the two dimensions of the division of labor can vary independently, although the relation is indeed negative. Hence, marriages with high degrees of specialization tend to be characterized by inequity. To illustrate the relationship, we present a cross-tabulation of the two dimensions in Table 2. For constructing this table, we took couples from the lowest and highest tertile on equity and on specialization. This yields a fourfold typology of couples.

In the lower right cell, there are couples with high equity and high specialization, about 7% of the cases. These represent “traditional” couples. They have a husband who works for pay more than full-time (i.e., more than 40 hours) and who does little in the household, and a wife who does not work for pay but spends much time on household labor. In the lower left cell, we have “modern” couples, representing 18% of the couples. This is a case with low specialization because both husbands and wives work for pay and both spend much time on household labor. The situation is also characterized by high equity since the total hours are more or less the same for husband and wife.

In the upper left and right cells, we have two types of couples with low equity. In the upper left cell, this is combined with low specialization since the wife works a considerable number of paid hours and the husband also works in the household. The situation is unequal, however, since the total hours of the wife are greater than the total hours of the husband. This is not only because the husband works less in the household than the wife, but also because the husband does not work for pay full-time. In the upper right cell, low equity is combined with high specialization. In these couples, the husband does mainly paid work and the wife does mainly household work. The situation is unequal, however, because even though the wife is mainly a housekeeper, she spends less time on the household than the husband spends on paid work. Examples of such couples are single-earner couples who have paid help for doing household work.

Tests of the hypotheses

In Table 3 we test our main hypotheses about equity and specialization. We start out by presenting a model which resembles the types of analyses that have been estimated in the past (Bird & Fremont, 1991; Glass & Fujimoto, 1994; Stolzenberg, 2001). Model 1 in Table 3 regresses a person’s depressive symptoms on his or her own working and household hours, as well as on his or her partner’s working and household hours. Models 2–4 in Table 3 include the two relative measures of labor division that we introduce in this paper – specialization and equity. The two relative measures are a function of the four variables that pertain to respondent’s and partner’s hours and are in that sense an alternative specification of Model 1. All models include a similar set of control variables.

To evaluate the magnitude of the effects, we calculate the maximum change in depressive symptoms for a given independent variable. This is calculated by multiplying the range of the independent variable by the coefficient (i.e., $\text{range}_x \times b_x$). The resulting change is expressed in terms of standard deviations of the dependent variable (i.e., $[\text{range}_x \times b_x] / SD_y$). By doing this, the implied change can be compared with the well known effect size for a dichotomous independent variable – that is, Cohen’s *d*. Effect sizes around .20 are considered small, around .50 moderate, and around .80 large (Cohen, 1988).

Model 1 shows a positive relation between household hours and depressive symptoms. For both men and women, doing more hours of household work is associated with more depressive symptoms. These results are consistent with earlier analyses (Bird & Fremont, 1991; Glass & Fujimoto, 1994; Rosenfield, 1992). To interpret the magnitude of the effects, we calculate the difference in depression for the maximum range of the household labor variable. The maximum effect is 3.4 points on the depression scale for

Table 3. Regression of depression on aspects of the division of household and paid labor

	Husbands				Wives			
	model 1	model 2	model 3	model 4	model 1	model 2	model 3	model 4
Age	-0.07* (0.02)	-0.07* (0.02)	-0.08* (0.02)	-0.07* (0.02)	-0.07* (0.02)	-0.06* (0.02)	-0.06* (0.02)	-0.06* (0.02)
Race/ethnicity (non-white)	0.33 (0.36)	0.57 (0.35)	0.58 (0.36)	0.58 ~ (0.35)	0.80 ~ (0.41)	0.81* (0.41)	0.81* (0.41)	0.79 ~ (0.41)
Education	-0.17* (0.06)	-0.19* (0.06)	-0.17* (0.06)	-0.19* (0.06)	-0.12 ~ (0.07)	-0.18* (0.07)	-0.18* (0.07)	-0.18* (0.07)
Prior poor health	2.99* (0.42)	2.91* (0.41)	2.83* (0.41)	2.91* (0.41)	2.92* (0.43)	3.00* (0.43)	2.99* (0.43)	2.99* (0.43)
Prior happiness	-0.90* (0.13)	-0.92* (0.13)	-0.92* (0.13)	-0.92* (0.13)	-0.87* (0.13)	-0.85* (0.13)	-0.85* (0.13)	-0.85* (0.13)
Partner's education	0.03 (0.06)	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)	-0.17* (0.06)	-0.17* (0.06)	-0.18* (0.07)	-0.17* (0.06)
Partner's prior poor health	0.19 (0.38)	0.22 (0.38)	0.24 (0.38)	0.21 (0.38)	0.78 (0.47)	0.72 (0.46)	0.75 (0.47)	0.71 (0.46)
Partner's prior happiness	0.11 (0.13)	0.12 (0.13)	0.12 (0.13)	0.12 (0.13)	-0.24 ~ (0.14)	-0.24 ~ (0.13)	-0.24 ~ (0.13)	-0.23 ~ (0.13)
Household income	-0.27 (0.18)	-0.27 (0.18)	-0.23 (0.18)	-0.27 (0.18)	-0.37 ~ (0.20)	-0.39* (0.19)	-0.40* (0.19)	-0.38* (0.19)
Children age 0-5 present	-0.12 (0.21)	-0.02 (0.20)	-0.02 (0.21)	-0.02 (0.20)	-0.39 ~ (0.24)	-0.09 (0.23)	-0.09 (0.23)	-0.09 (0.23)
Children age 6-12 present	-0.58* (0.17)	-0.50* (0.17)	-0.51* (0.17)	-0.50* (0.17)	-0.43* (0.20)	-0.20 (0.19)	-0.20 (0.19)	-0.21 (0.19)
Children age > 12 present	0.13 (0.14)	0.22 (0.14)	0.20 (0.14)	0.23 (0.14)	0.15 (0.16)	0.27 ~ (0.16)	0.28 ~ (0.16)	0.26 (0.16)
<i>Working hours</i>								
Paid hours husband	-0.03* (0.01)				0.00 (0.01)			
Household hours husband	0.03* (0.01)				0.02* (0.01)			
Paid hours wife	0.01 (0.01)				-0.01 (0.01)			
Household hours wife	0.01* (0.01)				0.03* (0.01)			
<i>Division of labor</i>								
Specialization								
Equity		-1.09* (0.46)	-0.80 ~ (0.48)	-1.21* (0.51)		-0.48 (0.53)	-0.56 (0.54)	-0.37 (0.52)
Overbenefiting		-4.86* (0.72)		-4.84* (0.71)		-2.36* (0.82)		-2.71* (0.86)
Underbenefiting			11.88* (1.66)				5.58* (2.08)	
Weight of paid work			9.81* (1.83)				4.11* (1.89)	
R squared	0.106	0.109	0.111	0.109	0.108	0.102	0.102	0.102

Unstandardized regression coefficients and (standard errors).

Correlated errors between spouses' regression equations are taken into account by seemingly unrelated regression; $N = 2566$; $\sim p < .05$ (one-tailed), $*p < .05$ (two-tailed).

husbands and 2.8 points on the scale for wives. In terms of standard deviations, this is .51 and .37 respectively. These effects are modest to small.

We now turn to the effects of paid labor. As expected, the effect on husband's depressive symptoms score is negative. In other words, the more hours husbands work for pay, the less depressed they are. The implied difference between a full-time working husband and a husband without paid work is 1.2 point on the depression scale. Additional analyses show that this mainly reflects the positive effects of being employed. When we include a binary variable for employment, the effect of husband's hours of paid work is smaller ($-.018$ vs. $-.028$) and only significant in a one-tailed test. The dummy for being employed is highly significant and negative ($b = -4.23$). For wives, we do not find a significant effect of employment on depression. There are also what we can call crossing effects – that is, an effect of the behavior or characteristics of one spouse on the depressive symptoms of the other spouse. For both husbands and wives, we observe an increase in depressive symptoms when the spouse spends more hours on household labor.

The results for prior poor health indicators are as expected. A person's poor general health in Wave 1 increases his or her depressive symptoms in Wave 2. Happiness in Wave 1 reduces depressive symptoms in Wave 2. The effects are similar for husbands and wives. There is a weak crossing effect here of husband's happiness. Husband's education is clearly associated with lower depressive symptoms for both husband and wife, whereas wife's education only affects her own depressive symptoms. After controlling for prior health, older respondents report fewer depressive symptoms in Wave 2 (note that the oldest respondents in this sample are 60 years). Finally, husbands who have children aged 6–12 living in their households report fewer depressive symptoms but no clear relationship is found for wives.

Model 2 includes the two relative measures. What are the effects of specialization and equity? We first see that specialization has a significant negative effect on the husband's depressive symptoms. The direction of the effect is in line with the hypothesis: the more specialization there is, the lower the husband's depressive symptoms. The maximum effect is 1.1 points on the depression scale and a .16 point change per standard deviation in specialization. This is a small effect. For wives, we do not find a significant effect of specialization. More importantly, in a robustness check, where we use the natural logarithm of CES-D as the outcome variable to deal with skew in the dependent variable, the effects of specialization are significant neither for men nor for women.

The results are far more supportive for the equity hypothesis. The effect of equity is negative and significant for both husbands and wives (Model 2). Hence, husbands and wives report fewer depressive symptoms when the division of labor at the couple level is more equal. The magnitude of the effect for husbands is considerable. The maximum effect is 4.86 points on the depression scale which is .73 when expressed in standard deviations of the depression scale. For wives, the effects are more modest: a maximum effect of 2.36 (.31 standard deviations of depression). These findings hold true for the robustness check for both men and women.

Our equity measure does not differentiate between couples in which the wife works substantially more hours than the husband and couples where the husband's share in total labor is larger than the wife's. Is the equity effect asymmetric? Model 3 reports the results from a spline regression model to estimate the effects of over- and

underbenefiting separately. For husbands, we see significant effects of both underbenefiting and overbenefiting. The effects are both positive showing that the link between depressive symptoms and equity confirms to a V-shaped pattern. In other words, the more unequal the division of labor, the higher the husband's depressive symptoms, and this is also the case when the division of labor is to his advantage. The effect of overbenefiting is stronger than the effect of underbenefiting according to a Wald test ($p = .01$). For wives, we see a similar V-shaped pattern. In this case, however, the difference between overbenefiting and underbenefiting is not significant ($p = .51$).

Model 4 uses a weighted version of the equity model. This model is estimated using nonlinear least squares. The results for husbands show that the weight of paid work is $w = 0.52$, which suggests that husbands regard paid and household work as equally costly in their evaluation of equity. The effect of equity does not change compared to Model 2, which is logical since the assumed weight of 0.50 is close to the estimated weight. For wives, we see that the estimated weight of paid labor is $w = 0.42$. This suggests that household work is weighted more (regarded as more costly) than paid work in calculating equity. The effect of equity increases somewhat from Model 2 to Model 4.

We also provide tests of the weight parameter w . We see that a test of $w = 0$ can be rejected for both spouses ($p < .01$). In other words, it is not correct to disregard paid labor in evaluating effects of the division of labor on depressive symptoms. We also test that $w = .50$. The results show that this hypothesis cannot be rejected ($p = .85$ and $p = .67$ for wives and husbands respectively), suggesting that equal weights for the two forms of labor are in principle correct.

Discussion

We have reexamined the link between the division of labor in marriage and depressive symptoms of couples. This relationship has been studied for almost three decades, largely in response to the growing number of married women who work for pay (Ross, Mirowsky, & Huber, 1983). Conflicts in marriage about the division of labor are often mentioned among the motives for divorce (Kitson, 1992). Moreover, such conflicts can have consequences for the individual health and wellbeing of husbands and wives, which may further put marriages under pressure (Kiecolt-Glaser & Newton, 2001). It is for these reasons that the effects of the division of labor have become a highly relevant topic of study.

Sociological and psychological theories argue that equity in the distribution of labor will be the most important aspect of the division of labor that affects health. Micro-economic theory, in contrast, emphasizes the benefits of specialization in marriage, not only for marital stability and earnings, but also for mental health. Our results show that equity has stronger effects on depressive symptoms than specialization. A more equitable distribution of labor is associated with fewer depressive symptoms of husbands and wives. The magnitude of this effect is considerable for husbands, but modest for wives. The small effects of specialization found for men are not robust against checks for skew in the distribution of depressive symptoms. We conclude that couples who specialize more, do not benefit in terms of depressive symptoms.

In a more general sense, our findings offer novel support for the notion that there are positive implications of the sex-role revolution. Declining sex-role specialization in marriage is often regarded as dysfunctional for marriage (Becker, 1991; Parsons, 1949) but such declining “gains to marriage” are typically not measured. We believe that mental health outcomes for couples provide an interesting way to look at this problem – if the gains to marriage decline, couples should be affected in their wellbeing. If this assumption is correct, our results show that role-sharing is a positive development for couples and, even more, that the disadvantages of not specializing – as is often illustrated by pointing to the hectic and stressful lives of dual-earner couples – are not so large. The finding in the literature that economic specialization in marriage increases the chances to divorce (e.g., South, 2001) is not inconsistent with the idea that specialization does *not* reduce individual wellbeing. The effect of wife’s employment on marital stability may very well run via decreasing the financial exit costs, without affecting the gains within marriage.

An important issue in the literature about equity and household labor is whether paid work requires the same effort as household work. It seems plausible to argue that paid work often brings more pleasures than household work, which justifies focusing on household labor only. We agree that paid and household cannot be treated as requiring the same effort (and yielding the same benefits), but we also argue that the solution to this problem needs to be continuous. More specifically, we argue that paid and household labor can be weighted differently and we have developed models to obtain these weights empirically. These models first show that the weight of paid labor is significantly different from 0, implying that paid labor cannot be ignored in the way depressive symptoms are affected. Second, the models show that the weight of household labor is about equal to that of paid work. There seems to be a tendency for women to weight household labor somewhat more than paid labor compared to men, but this difference is not significant.

Our approach to equity has used objective measures of the division of labor, like several other studies have done (cf., Bird 1999; Glass & Fujimoto 1994). This approach differs from another approach to equity which has used subjective measures. In this second approach, authors examine to what extent people *perceive* their marriage – or the division of labor within the marriage – as fair (e.g., Sprecher, 2001). Such studies generally find strong effects on mental health. Although in our objective approach, we also find effects of equity on depressive symptoms, the magnitude of the effect is not strong. This difference suggests that the effect of perceptions may not fully be captured by objective conditions in marriage. Some previous work on marital satisfaction has already pointed in this direction. Wilkie, Marx, and Ratcliff (1998), for example, have shown that even after controlling for the effect of the actual division of labor in marriage, there is a direct effect of perceived equity on marital satisfaction. Moreover, Wilkie et al. (1998) show that different people perceive the same division of labor differently. New research is needed that replicates such findings in a dynamic analysis of our outcome variable – that is, depressive symptoms.

An important question is why the effects of equity are stronger for men than for women. This finding seems somewhat in contrast to the belief that wives are less happy with the division of labor in the household than husbands (Ward, 1993). Employed wives

would be dissatisfied with husbands who do not help out in the household. When household and paid labor are combined, however, there are different ways in which inequity can arise. One way is that husbands do little paid labor, without compensating this with more household labor. Traditional arguments about gender role specialization suggest that such an arrangement would have an especially negative impact on husbands. Husbands who do little paid work or who are unemployed may feel that they do not meet the traditional demands of their role and this may lead to feelings of guilt and failure (Poortman, 2005). This interpretation is further supported by the fact that for men the effect of overbenefiting was stronger than the effect of underbenefiting. An alternative explanation for the strong overbenefiting effect is that our controls for prior health and general happiness are not fully capturing selection effects. We await further studies to see if this specific result can be replicated in other data.

In concluding, we suggest some further lines of research. First, our study can be improved upon by elaborating the panel character. We use controls for the general health of the two spouses in Wave 1, but we were unable to control for prior depressive symptoms of both spouses. Ideally, such measures would make it possible to directly measure changes in depressive symptoms. Second, our study can be improved by directly measuring childcare tasks. We were only able to look at household chores because the number of missing values on the childcare variables was too high. We await replications of our model with measures of childcare. Third, our data are from the 1990s. Gender roles and norms about equity may have changed over time and the weight for paid and household labor might have changed as a result. A study of more recent weights or comparisons over time would be welcome. Fourth, our line of research can be extended to other outcomes. Especially interesting would be to assess the effects of specialization and equity on marital quality and marital stability. Finally, we have introduced an empirical strategy to obtain weights for paid and household labor. This strategy can be extended to examine whether different types of paid work may count differently in the equity measure. This can be done by incorporating interaction effects of job characteristics, the weight, and the equity effect.

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