Gender Differences in Spousal Caregivers' Care and Housework: Fact or Fiction?

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Author Contributions

The statistical analysis was carried out by Dr. Laura Langner. The first draft was written by Dr. Laura Langner. Prof. Frank Furstenberg helped formulate the hypotheses and analytic plan and collaborated on the preparation of the manuscript.

Abstract

Objective

Many studies reveal a gender gap in spousal care during late life. However, this gap could be an artifact of methodological limitations (small and unrepresentative cross-sectional samples). Using a data set that overcomes these limitations, we re-examine the question of gender differences in spousal care and housework adjustment when a serious illness occurs.

Method

We use biannual waves between 2001 and 2015 of the German Socio-Economic Panel Study and growth-curve analyses. We follow couples longitudinally (identified in the household questionnaire) to analyze shifts in spousal care hours and housework plus errand hours that occur as a response to the spousal care need. We test for interactions with levels of care need and with gender.

Results

We found that men increase their care hours as much as women do, resulting in similar care hours. They also increase their housework and errand hours more than women do. Yet at lower levels of spousal care need, women still do more housework and errands because they spent more time doing housework before the illness.

Discovery

Even in a context of children's decreasing availability to care for parents, male spouses assume the required caregiving role in systems relying on a mixture of public and private care.

Keywords: spousal caregiving, longitudinal, panel data, housework, care response

Introduction

Will male spouses provide enough care when their female partners become ill late in life? Longevity in wealthy societies has increased rapidly as a result of advances in medicine and health care over the past half century. Consequently, the need for care among the elderly has dramatically increased. In an effort to meet the needs of this aging population while managing soaring public costs, public policies rely ever more heavily on (cheaper) home care, even in the most generous welfare states. Fewer children and relatives are providing the care required when older adults encounter serious illness. Declining rates of fertility, greater geographic mobility, and a convergence of life expectancy of men and women will inevitably lead to a rising demand on men to care for their ill partners later in life. It is unclear whether men will continue to relegate housework and caregiving work to women according to traditional gender roles ("doing gender") or whether, as some developmental theorists suggest, domestic and care roles can be reordered in later life (Miller & Cafasso, 1992; Neal, Ingersoll-Dayton, & Starrels, 1997; West & Zimmerman, 1987).

In previous research on this question, a number of studies suggest that many men may avoid or resist reordering gender roles when their spouse becomes ill. Prior studies on gender differences in response to a spouse's illness have serious limitations; most rely on unrepresentative samples and employ cross-sectional methods. This paper uses the longitudinal German Socio-Economic Panel Study and an analytic approach that overcomes most of the shortcomings of past research aimed at examining differences among men and women caring for an ill spouse. The initial section of this paper discusses the rising need of care and the limitations of previous literature, which has yielded a mixed set of answers to questions about gendered spousal care at older ages. We then discuss our data set and analytic strategy in more detail. The

third section of the paper presents the results of our analysis. We conclude with a brief discussion of the implications for future policy.

A Rising Need of Care

The elderly population is on the rise. In the EU-27 countries, 29.3% of the total population will be 65 years or over in 2060, compared with just 16% in 2010. Among the countries, Germany stands out as having the highest percentage (20.7%) of those 65 years and older in 2010, a proportion that will not be reached in the United States until 2030 (Ortman, Velkoff, & Hogan, 2014, p. 2). As a result, wealthy nations can expect the demand for long-term care of older people to double (Carrera, Pavolini, Ranci, & Sabbatini, 2013, pp. 24-25). State support for long-term care is still underfunded in most nations, with spending among Organization for Economic Co-operation and Development (OECD) countries and the European Union at 1.2% of gross domestic product (GDP). Germany, which spends €600 per capita annually, is in the top third of EU countries (Carrera et al., 2013, p. 32).

Most observers believe that governmental support alone, however generous, cannot meet this demand for care of the elderly population (Ranci & Pavolini, 2013, p. 307). The current reality is that regardless of welfare state support, informal care is typically still provided by relatives (Carrera et al., 2013, pp. 27, 32). This trend is likely to continue across Europe and North America, leading to reforms that attempt to increase home care and reduce institutionalized care. Cash and cash-for-care programs have been extended because they have the advantage of being a relatively low-cost way of caring for sick seniors (Ranci & Pavolini, 2013, pp. 307-308). Germany falls into the communitarian category (in which care is provided by family or other groupings, with the interests of the communities involved in home care ensured), the United Kingdom into the egalitarian category ("entitlement to a range of home care

services and societal commitment to provide such care”), and the United States into the individualistic category (seeing home care as an individual or private responsibility; Burau, Theobald, & Blank, 2007, pp. 10-11). The German approach, in contrast to that of the United States, allocates more funding for home care and less for institutional care (Colombo, Llena-Nozal, Mercier, & Tjadens, 2011, p. 48). Long-term care insurance payments in Germany are based on eligibility tests carried out by nurses and doctors of the fund’s peer review boards and are widely regarded as reliable and fair (Nadash, Doty, & von Schwanenflügel, 2017). Supplementary Table A1 outlines the definitions of the four official care levels (*Pflegestufen*).

Because of sharp declines in fertility during the late 20th century, a decrease in multigenerational households, and rising geographical mobility, children in the wealthiest nations will become less available to provide informal care. The European old-age dependency ratio will double from 23.6% in 2010 to 52.4% by 2060 (Carrera et al., 2013, p. 24). Research on England predicts that adult children’s care provision will not meet the demand from 2017 onward (Pickard, 2015). In Germany, the share of the working-age population will decrease from 66% to 56%, one of the sharpest declines among OECD countries (versus 67% to 61% in the United States and 66% to 60 % in the United Kingdom; Colombo et al., 2011, p. 64).

In light of these statistics, the question becomes, who will care for these older family members if children are less available? Fortunately, not only single-households but also couple-only households are on the rise across Europe and the United States (Abellan et al., 2017, p. 74; Tomassini, Glaser, Wolf, van Groenou, & Grundy, 2004, p. 29). At the same time, the gender gap in life expectancy is closing (Robinson et al., 2014), suggesting that many more men will be called upon to care for their partners. In Germany, 34.9% of caregivers were spouses in 2004–2006, similar to the percentage in the United Kingdom (34.1%) and close to a 16-country OECD

average (Colombo et al., 2011, p. 90). However, whether men will be willing to assume these responsibilities and provide the same level spousal of support as women remains an open question.

Men's Caregiving: What Theory Predicts

Do the highly gendered divisions of housework and care found in midlife persist when one partner gets sick (Aisenbrey, Evertsson, & Grunow, 2009; Becker, 1991; Kan, Sullivan, & Gershuny, 2011)? Economists have observed that a comparative advantage for married men on the labor market leads to couples jointly deciding to maximize their household income by using a gender-based division of labor (Becker, 1991). Men possess more economic bargaining power to delegate housework to their spouses because they are generally more advanced in their career (Blood & Wolfe, 1960; Manser & Brown, 1980). Unlike bargaining theory, which predicts that the person with lower earnings will do more housework, gender role theory contends that gender practices ("doing gender") are established early in life and maintained over time irrespective of who has the higher economic bargaining power (West & Zimmerman, 1987, p. 144). This gendered pattern of spousal care established in early life may well persist when men are no longer active in the labor market, raising the question of whether and how much men take care of their spouses when their spouses become seriously ill or disabled. According to gender theorists, childhood socialization and reinforcement via norms later in life lead to internalized stable personality traits (Miller & Cafasso, 1992). If gender differences in caregiving are in fact internalized, we would expect that older men would resist caregiving, turning to others inside or outside the family to provide care for a seriously ill spouse. Alternatively, a developmental perspective on gender suggests that domestic and caregiving roles are reordered after retirement. If this assumption is correct, we should find that in old age, equally sick spouses would receive

the same level of care irrespective of whether the partner was male or female (Miller & Cafasso, 1992; Neal et al., 1997).

Previous Findings and Limitations

Because of sampling limitations in many existing studies (sampling of the already sick, sampling of employed partners only, relying on the sick being healthy enough to respond), we cannot determine with any confidence whether men are rising to the task of caring for an ill partner. Moreover, with a single exception (Allen & Webster, 2001) all of the prior studies focusing on gender differences in spousal caregivers' care and housework hours rely on cross-sectional data. Consequently, it is impossible to tell whether the lower provision of male care reported in some studies is due to selective reporting resulting from the dropout of one partner or the other. Moreover, previous studies have not controlled for unobserved time-constant characteristics, leading to problems in the estimates of gender differences in caregiving.

A meta-analysis performed 25 years ago found that men were less likely to provide personal care, housework, and errands. The amount of care provided did not differ significantly between men and women, whereas the amount of housework did (Miller & Cafasso, 1992). However, a meta-analysis of biased studies may not overcome the problem of bias in the individual studies.

In more recent studies, findings were mixed concerning whether the *likelihood of care being provided* differed by gender. A U.S. study found an equal representation of men and women in their sample of caregivers (Reinhard, Levine, & Samis, 2014). Among cross-sectional population-based studies, the World Health Survey of 48 countries in 2002–2004 found that among those aged 60 years and older, women's odds of providing any care were significantly higher (odds 1.43) than men's (Hosseinpoor, Bergen, & Chatterji, 2013). In contrast, a study

comprising 3% of the 2001 U.K. Census found that married men and women were equally likely to care for someone affected by a limiting long-term illness. Findings suggested that among married individuals, women's higher likelihood of living with a partner or someone else in need of care explained the gender differences in care provision (Del Bono, Sala, & Hancock, 2009). The latter study, however, could not clearly link cared-for and caregiving partners.

Furthermore, it remained similarly unclear whether the *amount of care provided* was gendered. In a U.S. study of couples in which one partner was at an advanced stage of cancer, female caregivers provided twice the amount of care. However, husbands were more likely to be employed, because their wives were more likely to have breast cancer, which occurs at younger ages. Consequently, it is unclear whether the gender differences in spousal care were related to gender differences in types of disease (Allen, 1994). Neal and colleagues, in a U.S. study, found that across various tasks, men spent only a third as much time on spousal care as women did (7.4 versus 23.1 hours; Neal et al., 1997). The low frequency of care provided by men points toward biased sampling of caregivers whose partners were healthy enough to allow them to remain employed, which in turn may have elicited less of a spousal response.

Results on the *likelihood of providing housework* point more conclusively toward a persistent gender gap, yet they are equally biased. Two studies found significant gender differences in housework (Miller & Cafasso, 1992; Neal et al., 1997). Allen (1994) found that fewer men than women were supporting their spouses in housework (61% vs. 82%). Housework was twice as likely to be carried out by women than by men (Hosseinpour et al., 2013). A qualitative study in the United Kingdom found that "while men tended to feign technical incompetency, women with dementia maintained their domestic competencies (unless their condition was more severe) and additionally managed more demanding and complex tasks (such

as minding grandchildren)" (Boyle, 2013, p. 17). This finding may suggest an unmet need for household support when the woman is ill. Indeed, one study finds that women were twice as likely to report an unmet need, although the study's high frequency of breast cancer may imply very different patient-caregiver relationships for couples with ill men and those with ill women (Allen, 1994, pp. S191-S192).

Age may also play a role in the patterns of caregiving in response to illness. In the United Kingdom, the gendered pattern in care was reversed in later life, with men providing more care hours than women (age 70 and over); however, because of the cross-sectional nature of the data, it remains unclear whether this finding was due to men having died by that age (Dahlberg, Demack, & Bambra, 2007). In Spain and Sweden, male and female caregivers aged 65 to 79 years were just as likely to provide spousal care (Abellan et al., 2017, p. 79). A U.S. study that examined longitudinal changes in help at older ages provided to parents, friends, and adult children found modest gender differences. Men became significantly more involved in caring for their grandchildren in old age, closing the gender gap in care (Kahn, McGill, & Bianchi, 2011).

The amount of care involvement of male caregivers may rise with the *level of spousal impairment*. English men avoided or just contributed to housework if their partners had only moderate dementia (Boyle, 2013). In the United States, male caregivers raised their housework share significantly more at higher levels of impairment, but only by 8% (to 25% of the couples' joint housework; Allen & Webster, 2001). Although the longitudinal design of this study had the advantage of identifying changes, it relied on both partners' being healthy enough to respond. In the United States, men were slow to identify their partners' Alzheimer symptoms themselves, but once these symptoms were brought to their attention, they quickly provided support (Hayes, Zimmerman, & Boylstein, 2010). On the basis of these prior studies, we conclude that care need

not officially designated by the state and lower levels of need are likely to result in weaker responses to spousal care need by men.

Care substitution may explain men's lower involvement in care and housework. Men were found to be less likely to be sole providers of care. This finding, in turn, interacted with morbidity: At high levels of morbidity, ill women received more outside help with household tasks than men did, suggesting that outside help compensated for a lack of male household help. Yet at lower levels of morbidity, compensatory help was not sufficient to fill the gap (Allen, 1994).

Contribution of This Study

The data set used in this study, the German Socio-Economic Panel Study, overcomes many of the limitations of past research on spousal responses to health shocks. It is a nationally representative general purpose study. The onset of the disease is unpredictable and measured at the household level, allowing either spouse to be the ill partner. This is very important because prior individual-level measures (e.g., Allen & Webster, 2001) were skewed toward couples in which the sick person was healthy enough to respond to questions about his or her own condition, thereby heavily underestimating the spousal care response. The sick person's identifier can be linked to the caregiver's identifier in the data, thus identifying spousal illness and spousal care with greater precision. Additionally, the German Socio-Economic Panel is a longitudinal study, allowing us to follow individuals as they respond to the onset of illness of a spouse. Unlike previous studies, it includes a recent cohort of couples (2001–2015) and follows men and women, who are equally represented over time (Allen & Webster, 2001; Miller & Cafasso, 1992; Robinson, Bottorff, Pesut, Oliffe, & Tomlinson, 2014).

It is comparatively large for a longitudinal study: 538 couples were observed entering the need for care in the time period studied (compared with 319 individuals in Allen and Webster's [2001] study). The definition of the level of care needed is based on objective, legally defined criteria, thereby making the need of care comparable across groups. Unlike studies based on care insurance data, the sample further consists of individuals in need of care who do not fall into one of the official care need levels.

Using this data set, we examined the following research questions:

1. Are male and female spouses reacting differently in their weekly care hour adjustment in response to their partner's new need for care?
2. Are male and female spouses reacting differently in their weekly errand and housework hour adjustments in response to their partner's new need of care?
3. How do the care hour adjustment and the errand plus housework hour adjustment differ between men and women by severity of disease (measured as the care need level; see Supplementary Table A1 for definitions)?

Methods

Data and Sample

The analysis uses the German Socio-Economic Panel Study (version 32) comprising 904,748 person-years. The German Socio-Economic Panel Study is an annual household panel survey that has interviewed the same individuals since 1984. "Principally an interviewer tries to obtain a face-to-face interview with all members of a given survey household aged 16 years and over" (Haisken-DeNew & Frick, 2005, p. 21). The panel's stability (defined as the number of participating households divided by the previous wave's net sample) was 93.8% in 2015 (Gerstorf & Schupp, 2016). The data (10.5684/soep.v32) used in this publication were made

available by the German Socio-Economic Panel Study at the German Institute for Economic Research (DIW), in Berlin. We restricted the sample to the years in which the main dependent variable (care) was measured (biannually between 2001 and 2015). The analysis examined only couples in which one partner started to need care. Restricting the observation window to three waves and dropping those in care level 0 (introduced in 2015) resulted in 538 couples and 1,487 person-years. High attrition rates made later waves unusable. List wise deletion was performed, keeping those in which both spousal care status and the respective dependent variable were observed at least twice. (See Supplementary Tables A2 and A3 for further details on sample selection and missing data.)

Analysis

We were interested in how the caregiver's time investment changed over time (analysis level 1) and how this change in turn varied across individuals (analysis level 2) (Singer & Willett, 2003, p. 48). Consequently, we used a growth-curve analysis that takes account of the nested nature of the sample.

$$Y_{it} = [\pi_{0i} + \pi_{1i} (\textit{Time to Onset of Care Need}_{it} + 2)] + [\varepsilon_{it}]$$

On level 1, our model was a simple linear model of change, with Y representing the time individual i spent on care at time t (Singer & Willett, 2003, p. 51), π_{0i} representing the caregiver i 's weekly hours prior to the partner entering the disease state, and π_{1i} representing caregiver i 's slope (rate of change in caregiving hours). With only the first two time points being of interest, only a linear specification made sense. The plus two indicated that the time to entering the disease was centered at the wave prior to the one in which the partner entered the disease state. By subtracting the pre-disease levels, we were canceling out time-constant unobserved factors. No fixed effects model was used because such a model would have "impl[ied] an effect from

events that occur in the future because, at each moment except the last, the person mean of a changing explanatory variable depend[ed] on the measurements to be made at a future point in time” (Snijders & Bosker, 2012, p. 258). In the model, ε_{it} are the level 1 residuals, representing the caregiver's value of Y not predicted by the time to enter the disease.

On level 2, two submodels, one for the intercept and one for the slope, were used, as follows:

For the intercept: $\pi_{0i} = \gamma_{00} + \gamma_{01}Gender_i + \delta_{0i}$

For the slope: $\pi_{1i} = \gamma_{10} + \gamma_{11}Gender_i + \delta_{1i}$

Because we were interested in modeling the heterogeneity in the disease response, we used random effects models. We included both a random intercept (because we assumed and saw in the raw data that caregivers started at different numbers of care hours) and a random slope (because we assumed and observed in the raw data that the response to the partner's care needs varied across caregivers). A log likelihood test on the basic model confirmed that the inclusion improved the fit of the model.

Dependent Variables

The analysis examined two main time use variables of spousal care: weekly care and weekly errand plus housework hours. Each was taken from the individual-level questionnaire, which asked: “How many hours do you spend on the following activities on a typical weekday, Saturday and Sunday?” Three variables were chosen: “Care and support for persons in need of care,” “Housework (washing, cooking, cleaning),” and “Errands (shopping, trips to government agencies, etc.).” The number of weekly care hours was calculated by multiplying the typical weekday number by five and then adding the Saturday and Sunday numbers. Those who provided no care or housework/errands were included in the analysis with zero hours.

We did not use working hours as a dependent variable, because even before the onset of care need, 80% of caregivers were not employed. Supplementary Table A4 describes the dependent variables.

Independent Variable

The main independent variable was a time-changing household-level measure that was anchored around the onset of care need; this number equaled zero at time $T - 2$ (prior to the wave in which one person in the household entered the need for care) and counted the number of waves during which care was needed thereafter. Degree of impairment was measured by the government-designated care need level (*Pflegestufe*; see Supplementary Table A1 for definitions). To understand the extent to which the response to a partner's need for care differed by different levels of impairment, we examined the interaction of the slope and the intercept with the sick person's level of impairment.

Controls

The analysis controlled for differences in caretakers' characteristics at the onset of spousal illness (time T), which were likely to influence the level of support provided. We examined categorical variables including caretaker's self-rated health (divided into five categories, with 1 being low and 5 being high), whether the spouse or someone else was the main caretaker in the household, whether household help was received, education (divided into incomplete to intermediate general, vocational qualification, and tertiary education), employment status (full-time, part-time, irregular, nonemployed), and net household income tercile. We further controlled for age and age squared.

Results

Descriptive Findings

[Table 1 here]

The analytical sample had an equal distribution of male and female caregivers and a nonsignificantly different distribution of spousal care need across the two sexes (Table 1). Caregivers' self-rated health was similar for men and women. Male caregivers were slightly but insignificantly older and significantly better educated than female caregivers. Men were significantly more likely to be employed full time when the spouse was in need of care. As expected, men were significantly less likely to be sole caregivers: 86.5% of men were the main care providers, compared with 95.2% of women. Male caregivers were significantly more likely to receive outside support (29.6%), compared with female caregivers (17.7%), but the household income distribution was similar by gender. While these gender differences were fairly large, they were perhaps less pronounced than those suggested by the previous literature.

To understand whether our sample was biased with regard to health, we compared the care need levels with those of the general population (see Supplementary Table A5). The comparison showed that the sample was slightly healthier than the general population (those cared for at home) in 2015. However, four years into the study, this bias disappeared, suggesting that the initial bias may have had to do with the population sample capturing all stages of the need for care, while our sample aimed to identify the beginning of the need for care.

Care Hours

[Table 2 here]

Table 2 shows the main results of the growth-curve analysis (the full model is presented in the appendix). In models 2 and 4, we analyzed the interaction of the intercept (i.e. initial

value) and slope (i.e., the change in hours at the onset of illness) with caregiver gender and care need level. Because care need level 3 had few responses, it was dropped from the analyses. For care hours (model 1), the slope was not significantly different for male and female caregivers. As expected, for male caregivers, the shift in care hours was significantly higher when the spouse was officially categorized as needing level 2 care (the highest level of care included in the analysis) than when the spouse was only unofficially recognized as being in need of care.

To better understand the two- and three-way interactions, we visualized them. Contrary to expectations, the overall care response (slope) showed a very similar pattern between men and women when their partner became ill (Figure 1). Moreover, even before spouses were designated as being in need of care, weekly care hours were not significantly different between the sexes.

[Figure 1 here]

[Figure 2 here]

Figure 2 shows that—again contrary to expectations—among all care need levels (even when only unofficially confirmed), the change in weekly care hours did not differ significantly between male and female caregivers. Once a spouse was in need of care only a modest difference ($p < .10$) in weekly care hours was found among those whose spouses were unofficially in need of care.

In further analyses (results not shown), we focused on all those who were main caregivers and who received no household help. We observed no significant differences across all three levels of unofficial or official care need. Differentiating the analyses by the caregiver's age group (under 50 years; 50–69 years; 70 years and older) resulted in no age-related pattern of gender differences in care hours.

Housework and Errand Hours

Models 3 and 4 in Table 2 show significant gender and gender and care need interactions. Men with ill partners increased their errands and housework hours significantly ($p < .001$) more (by 4.4 hours) than their female counterparts did (Figure 3). However, this finding seemed to occur mainly because women spent 11.8 more hours than men doing housework each week in the absence of serious illness (i.e., in wave $T - 2$; $p < .001$). Consequently, once their partner was sick, female caregivers still did 7.4 hours more housework per week than male caregivers did ($p < .001$).

[Figure 3 here]

[Figure 4 here]

When we examined the caregiver's response by officially or unofficially designated care level (Figure 4), male caregivers showed a significantly steeper increase in weekly errand and housework hours, compared with that of female caregivers, across all three levels of care need (3.2 hours if the spouse was only unofficially in need of care, 6.5 hours for level 1 care need, 5.3 hours for level 2 care need). The gender gap in hours spent weekly on errands and housework that existed prior to the onset of care need (i.e., in wave $T - 2$) narrowed from 13.7 hours when no care level was officially registered to 10 hours' difference when the spouse needed level 1 care, and for spouses requiring level 2 care, the gender difference diminished to only 6.6 more hours for female caregivers. Once the partner was in need of care (i.e., in wave T), female caregivers provided 10.4 more hours of housework and errands if the spouse did not have an officially designated care need level and 3.5 more hours of housework and errands if the spouse was in level 1. At the highest level of care need (level 2), the differences in errands and housework provided after the onset of illness (i.e., in wave T) became nonsignificant.

In results not shown, even among main caregivers without household help, we observed significant gender differences in errand and housework response. The same pattern applied when the spouse was identified as being in need of care (in wave T). For errands and housework, the gender difference in response (the slope) was not significantly different for caregivers below the age of 50. The gender difference in response was most pronounced for those at ages 50 to 69 (6.24 hours greater than female caregiver's adjustment in hours), but declined again when caregivers were aged 70 or older (4.21 hours). However, the gender differences in the overall number of hours provided once the partner was ill (i.e., in wave T) were highest for those younger than 50 years and those 70 years or older.

Robustness Checks

When we totaled hours spent weekly on care, errands, and housework (Supplementary Figure A1), we found that the increase in hours did not differ significantly between the sexes. However, because of their higher initial levels of housework and errands, overall hours when the partner entered the need for care (T) were significantly higher (14.3 hours; $p < .001$) for female caregivers whose spouses did not have an officially designated care level and slightly higher (5.7 hours; $p < .10$) for those whose spouses needed level 1 care. Hence, women provided more total hours of care, errands, and housework when the spouse entered the need for care at lower levels of care need versus when the spouse entered the need for care at higher levels of need. The same pattern was observed when we restricted the sample to main caregivers without household help.

Further analyses excluded all controls to understand whether the lack of gender differences in caregivers' response to the onset of care need was driven by particular control variables; the results were similar to the preceding analysis. Furthermore, to see if the findings remained robust, we applied a first-difference model, which cancelled out any time-constant

unobserved factors by subtracting the observation in $T - 2$ (prior to the onset of care need) from that in T (when the spouse entered the need for care). The results remained the same.

Supplementary Table A3 shows that patterns of missing data were not significantly different by gender. Supplementary Figures A2 and A3 show that when interacting the care or housework/errand response with gender and the pattern of missing data, there was still no significant difference in the care response between the sexes, whereas the significant differences in housework/errands spousal response remained.

Limitations

It was impossible to determine from the data whether a second person in need of care was also living in the household. We assumed that the person with the highest need for care was reported in responses to this survey question. Because we restricted the couples to those in which the care need had just begun, it was highly unlikely that both members of a couple had entered this state within the same survey year.

In contrast to time use diaries, stylized estimates have a tendency to not show the full dispersion (instead heaping at certain values). Moreover, men have been shown to overstate their housework contribution in stylized estimates by up to 30%, as opposed to 4% overreporting by women. However, stylized estimates at least ensure that typical values, rather than unusual days, are measured (Kan & Pudney, 2008). The analysis is only generalizable to the first years of caregiving; the observation window does not capture the time after that period because of high rates of attrition. The biannual nature of the measurement means that we do not know the exact time of onset of illness; people could have been in need of care for up to two years before the time designated as their onset (T).

Institutional care was not captured in the data because a seriously ill spouse in an institution was no longer in the household (Göbel, Krause, Pischner, Sieber, & Wagner, 2008). Men were less likely to move into institutional care because they had younger partners who were able to help care for them in the home. The study is based on data from a single country, Germany, which is among the top third in GDP spending across the European Union and which, unlike the United States, financially supports home caregivers. Yet with a comparatively old population and a comparatively lower working-age population at the time of the study, it can be seen as a forerunner in dealing with demographic pressures created by an increase in the elderly population. It would be of interest to test these findings in different country contexts.

Discussion

Are women in danger of not receiving the care or housework support they need from their spouses? This paper revisits this question, overcoming the methodological limitations of past studies by using a nationally representative sample (including gender and disease severity) that is comparatively large and longitudinal in design. We were able to take account of the fact that diseases are unpredictable, we could measure the patterns of assistance prior to the occurrence of an illness and we could observe changes over time that occurred in response to the onset of illness. We measured the need for care, based on comparable official categories, at a household level.

Overall, our results show that men's response to a spouse's need for care was similar to women's response. However, their level of support and adjustment depends on the severity of impairment and differs by type of task. In contrast to previous studies, men increased their care hours as much as women did, resulting in similar care levels once their partner became ill. Men did not differ significantly from women in care hours provided when a spouse's illness was

severe (official care need levels 1 and 2). While significant differences in levels of care existed for couples in which the spouse was only unofficially designated as in need of care, these differences disappeared when we looked at main caretakers in households where no other household help was provided.

Previous studies have suggested gender differences in housework and errands. Indeed, whereas men increased their weekly housework plus errand hours more than women did at the onset of spousal care need, they started at a significantly lower levels of time investment in these two tasks. Thus, despite stronger shifts in male caregivers' weekly hours, female caregivers still did more housework and errands than male caregivers did.

We suspected that men made a sharp adjustment of housework and care hours only if the partner was officially diagnosed as being ill or in need of care. While the adjustment in reaction to the onset of illness was often stronger for male caregivers than for female caregivers, the overall gender difference in housework and chores when the partner was sick was large when the partner was not officially designated as being in need of care, and the two genders only converged fully when the partner was very ill. Similar patterns applied when housework, errand, and care hours were combined. These gendered differences could not be explained by differences in the caregivers' health, education, age, household income, outside help, or employment status.

The results of our analysis showed that even in a context of decreasing availability of children to care for aging parents, men can be expected to assume the caregiving role that is required in systems relying on a mixture of public and private care. The findings strongly indicate that gender differences in care response to an ill spouse are not as great as many studies have previously reported. Gendered behavior patterns, our results seem to suggest, can be reworked in later life. However, we should note that while caregiving hours shifted dramatically,

we found that men were less responsive to picking up household chores (i.e., increasing housework hours to the same level as a female caregiver) unless their spouse was critically ill. Possibly, men did not prioritize housework and errands as much as women did, unless their partner was very ill. Alternatively, the ill women may have continued to carry out these tasks, pursuing a gendered division of labor that had developed prior to the onset of illness. At the same time, men were somewhat more likely than women to receive help in caring for an ill partner from another household member, a relative, or a paid caregiver. Our findings clearly support a developmental perspective on gender, tempered by some evidence that gender roles may persist when it comes to housework. This finding is good news for policy makers because in the coming decades, even the most advanced welfare systems will need to rely on spousal assistance to care for aging people when illness occurs. One caveat must be noted: the findings relate to a period in which the number of couple households rose. If levels of partnership were to decline, as may be occurring in many Western nations, we will see a far larger hole in the safety net of care for the aging population.

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Table 1

Descriptive Table of Analytical Sample

	Chi-Square Test of Gender Differences (p-value)	Male Caregivers			Female Caregivers		
		M/%	SD	N	M/%	SD	N
Ill Person's Care Need Level at Time <i>T</i>	-			210			240
<i>None</i>		51.90		109	52.08		125
<i>Level 1</i>		35.71		75	33.33		80
<i>Level 2</i>		10.00		21	12.08		29
<i>Level 3</i>		2.38		5	2.50		6
Caregiver's Self-Rated Health at Time <i>T</i>	-			214			242
<i>1 low</i>		2.34		5	2.89		7
2		23.36		50	15.70		38
3		41.12		88	45.04		109
4		25.70		55	29.75		72
5 high		7.48		16	6.61		16
Caregiver's Age at Time <i>T</i>	-	70.39	11.91	214	68.65	12.53	243
Caregiver's Education	***			209			237
<i>Incomplete to intermediate</i>		60.29		126	63.07		152
<i>Vocational qualification</i>		16.75		35	25.73		62
<i>Tertiary education</i>		22.97		48	11.20		27
Employed Status at Time <i>T</i>	**			214			243
<i>Full-time</i>		12.62		27	7.82		19
<i>Part-time</i>		1.87		4	6.17		15
<i>Irregular</i>		1.40		3	3.29		8
<i>Not employed</i>		84.11		180	82.72		201
Spouse Main Caregiver at Time <i>T</i>	***	86.46		166/192	95.22		219/230
Receiving Household Help	***	29.58		63/213	17.70		43/243
Household Income Tercile at Time <i>T</i>	-			204			230
<i>Top</i>		30.88		63	30.00		69
<i>Middle</i>		29.90		61	30.87		71
<i>Bottom</i>		39.22		80	39.13		90

Note. *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32, years 2001, 2003, 2005, 2007, 2009, 2011, 2013, 2015. Everyone Who Responded Two or Three Times to Questions on Care Hours and Housework/Errand Hours and Care Need of Spouse **p* < .10. ***p* < .05. ****p* < .01. *****p* < .001.

Table 2 *Growth-Curve Analysis: Fixed Effects*

Variable	Model							
	(1)		(2)		(3)		(4)	
	Care Hours		Care Hours		Errand/ Housework Hours		Errand/ Housework Hours	
	<i>b</i>	(<i>SE</i>)	<i>b</i>	(<i>SE</i>)	<i>b</i>	(<i>SE</i>)	<i>b</i>	(<i>SE</i>)
Female Caregiver	1.541	(1.847)	2.234	(2.317)	11.792*****	(1.037)	13.663*****	(1.365)
Time to Onset of Care Need (Slope, centered at $T - 2$)	7.608*****	(1.374)	4.794***	(1.624)	2.938*****	(0.535)	2.262*** (0.703)	(0.703)
Female Caregiver*Time to Onset of Care Need (Slope)	2.072	(1.863)	1.448	(2.215)	-4.417*****	(0.735)	-3.232*****	(0.967)
Care Need at T (Ref.: Unofficially in Need of Care)								
<i>Official Care Need Level 1</i>			3.629	(2.684)			2.618*	(1.573)
<i>Official Care Need Level 2</i>			9.410**	(4.518)			8.916*****	(2.635)
Gender*Care Need at T								
<i>Female Caregiver*Official Care Need Level 1</i>			-2.763	(3.635)			-3.634*	(2.149)
<i>Female Caregiver*Official Care Need Level 2</i>			-3.299	(5.745)			-7.082**	(3.376)
Time to Onset of Care Need (Slope)*Care Need at T								
<i>Time to Onset of Care Need (Slope)*Official Care Need Level 1</i>			4.653*	(2.613)			2.052*	(1.132)
<i>Time to Onset of Care Need (Slope)*Official Care Need Level 2</i>			10.411**	(4.969)			-0.113	(2.181)
Gender * Time to Onset of Care Need (Slope)*Care Need at T								
<i>Female Caregiver*Time to Onset of Care Need (Slope)*Official Care Need Level 1</i>			0.900	(3.637)			-3.286**	(1.602)
<i>Female Caregiver* Time to Onset of Care Need (Slope)*Official Care Need Level 2</i>			-5.760	(6.115)			-2.088	(2.697)

Constant	-4.197	(18.727)	-6.597	(16.214)	-3.312	(10.393)	-3.573	(10.197)
Observations	1077		1048		1047		1021	
Couples	406		395		398		388	
df	18		24		18		26	

Note. *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in *T*, employment status in *T*, household income in *T*, age and age squared in *T*, caregiver's health in *T*, whether the spouse was the main caregiver in *T*, whether household help was received in *T* and household income tercile in *T*. Full results are presented in the appendix.
 $*p < .10$. $**p < .05$. $***p < .01$. $****p < .001$.

Male Versus Female Weekly Care Hours

Figure 1. *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in *T*, employment status in *T*, household income in *T*, age and age squared in *T*, caregiver's health in *T*, whether the spouse was the main caregiver in *T*, and whether household help was received in *T* and household income tercile in *T*. Results derived from Table 2, Model 1. *N*=406 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$ between the two sexes.

Male Versus Female Weekly Care Hours by Care Need Level

Figure 2. T represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in T, employment status in T, household income in T, age and age squared in T, caregiver's health in T, whether the spouse was the main caregiver in T, and whether household help was received in T and household income tercile in T. Results derived from Table 2, Model 2. N=395 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$ between the two sexes.

Male Versus Female Weekly Housework + Errand Hours

Figure 3. *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in *T*, employment status in *T*, household income in *T*, age and age squared in *T*, caregiver's health in *T*, whether the spouse was the main caregiver in *T*, and whether household help was received in *T* and household income tercile in *T*. Results derived from Table 2, Model 3. N=398 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$ between the two sexes.

Male Versus Female Weekly Housework + Errand Hours by Care Need Level

Figure 4. *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in *T*, employment status in *T*, household income in *T*, age and age squared in *T*, caregiver's health in *T*, whether the spouse was the main caregiver in *T*, and whether household help was received in *T* and household income tercile in *T*. Results derived from Table 2, Model 4. *N*=388 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$ between the two sexes.

Appendix

Table A1. German Official Care Need Levels (*Pflegestufen*) Before 2017 Reform

Care Need Level (<i>Pflegestufe</i>)	Definition
0	No need for activities of daily living, but may benefit from general supervision and preventive/ancillary services.
1	Need for assistance with personal hygiene, feeding, or mobility for at least two activities once a day and additional need help in household several times during the week for at least 90 minutes a day with 45 minutes accounted for basic care.
2	Need for assistance with at least two basic ADLs at least three times a day at various times and additional help with IADLs several times a week for at least 3 hours a day with 2 hours accounted for basic care.
3	Need for assistance with at least two ADLs around the clock and additional help with IADLs several times during the week for at least 5 hours per day with 4 hours accounted for basic care.

Note. ADL = activity of daily living; IADL = instrumental activity of daily living. Adapted from Nadash, P., Doty, P., & von Schwanenflügel, M. (2017). The German long-term care insurance program: Evolution and recent developments. *The Gerontologist*, 58(3), 588-597.

Table A2. Sample Selection Process

Step	Number of Observation-Years Included	Number of Couples Included
Initial sample	904,748	Not applicable
Restricted to those with data in years of dependent variable (2001–2015, biannual)	314,686	Not applicable
Restricted to households with ever partnered individuals	182,259	26,341
Restricted to households in which one partner was ever identified as ill	9,067	867
New illness episodes dropped (unclear who cared for the ill partner when the caregiver became ill)	8,911	867
Ill respondents dropped (i.e., restricted to caregivers to capture carers' hours only).	4,901	867
Nonspousal adults dropped from household	4,535	867
Restricted to new illness episodes (i.e., not including those already ill)	3,383	545
Maximum of three observations included ($T - 2$, T , $T + 2$)	1,502	545
Care need level 0 dropped (because introduced only in final	1,487	538

year of data)

Missing Data

The random-effects model for longitudinal data allows for measurements at different time points. “The model assumes that data that are available for a given subject are representative of that subject’s deviation from the average trend lines that are observed for the whole sample. The model estimates the subject’s trend across time on the basis of whatever data that subject has, augmented by the time trend that is estimated for the sample as a whole and effects of all covariates in the model” (Hedeker & Gibbons, 1997: 65). It requires – for some of the individuals - at least three observations to run. However, we have a number of cases, which are only observed for two times on the dependent variable. For the analysis, we cannot reasonably assume that the data is missing completely at random. A partner’s willingness to continue participating in the study may be related to the severity of their partner’s disease. Hence, the level of reaction is likely to reflect a conservative estimate of the true reaction.

The analyses above may have suffered from selection: It is likely that partners of very sick spouses are less likely to respond immediately because of high emotional or care burdens. This selection effect may in turn be gendered – i.e. women who provide high levels of care may be more likely to respond immediately than men who do so. Closer inspection showed that non-consecutive survey non-response were no issue (only 0.04 % of sample were affected). Hence we checked item non-response and attrition without re-entering the sample.

Since we were interested in studying how the trends over time are affected by the missingness, we excluded everyone who contributed only one observation, as they could not provide information for trends over time (Hedeker & Gibbons, 1997: 69). However, prior to excluding these cases, we tested whether the missingness pattern was significantly different by gender.

Table A3. Missing Data Pattern (M=Missing; O=Observed)

Key Independent Variable: Spouse in Need of Care [gender Chi2-test: Pr= 0.613]	Male Caretaker (N=241)	Female Caretaker (N=297)
011	34.44	31.99
010	41.49	44.78
01M	24.07	23.23
Dependent Variable 1: Weekly Care Hours [gender Chi2-test: Pr= 0.417]	Male Caretaker	Female Caretaker
OOO	60.17	54.88
OMO	0.83	0.67
OOM/OO	28.63	30.30
MOO	2.90	5.05
MMM	1.66	3.70
OMM/OM	2.07	1.01
MMO/MO	2.49	1.68
MOM	1.24	2.69
Dependent Variable 2: Weekly Errands + Housework Hours [gender Chi2-test: Pr= 0.238]	Male Caretaker	Female Caretaker
OOO	58.09	50.84
OMO	1.66	2.02
OOM/OO	29.46	30.64
MOO	2.49	5.05
MMM	2.07	4.71
OMM/OM	2.90	3.37
MMO/MO	2.90	1.68
MOM	0.41	1.68
Dependent Variable 3: Weekly Errands + Housework + Care Hours [gender Chi2-test: OR= 0.242]	Male Caretaker	Female Caretaker
OOO	57.68	50.17
OMO	1.66	1.35
OOM/OO	29.46	30.30
MOO	2.07	5.39
MMM	2.90	6.06
OMM/OM	2.07	2.02
MMO/MO	2.90	2.36
MOM	1.24	2.36

On none of the missing data patterns (for either dependent variable and for the main independent variable) could we find a significant gender effect (see chi2-test).

To understand how missing data patterns of the analytical sample used affects our findings, we fitted a model separately for those who contributed only two and those who contributed three waves (both for entering the disease and the dependent variable of interest).

Practically, we first divided individuals based on their missing data pattern both on the key independent variable of interest and on the dependent variable. Hedeker and Gibbons advise using not too small groupings and that focusing on the last wave missing rather than intermittent missingness in the data (Hedeker & Gibbons, 1997: 69). This missing data grouping was then used as a covariate in the actual model to understand if the missing data pattern affected our findings. This allows us to observe whether there was a difference in response for those who contributed only two and those who contribute three waves. We thereby follow Hedeker and Gibbon's approach – using random-effects pattern-mixture models for missing data in longitudinal studies (Hedeker & Gibbons, 1997). Results in figure A2 show that even when interacting the care response with gender and the type of missing data pattern (3 responses with exit from the care need, 3 responses staying in need for care, 2 responses only), the results remain substantively the same: There is no significant difference in the care response between the two sexes after two years.

Table A4. Dependent Variables

	Male Caregiver			Female Caregiver		
	Mean/%	Sd	N	Mean/%	Sd	N
Weekly Housework + Errands in T-2	15.98	9.25	214	29.33	11.46	243
Weekly Housework + Errands in T	21.42	11.53	210	29.53	11.79	239
Weekly Care in T-2	1.30	5.33	214	2.06	6.98	243
Weekly Care in T	19.32	24.97	212	23.66	29.67	242

Source: Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. dropping care level 0 (because the category was only introduced at end of observation window).

Table A5. Comparison of Official Care Levels (Pflegestufen) of Sample to Population

Distribution by Percentage

Care Level	Population	Sample T	Sample T+2
I	64.2	71.7	60.8
		6	3

2	28	23.1	29.1
		5	7
3	7.8	5.09	10.0
			0
<hr/>			
		weighted	
		aw=w11105	
1	64.2	73.6	63.5
		7	6
2	28	22.8	28.1
		0	1
3	7.8	3.53	8.33

Note: *T* represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. Level 0 dropped (because only introduced in latest wave). Population data from Statistisches Bundesamt, 2017 (Statistisches, 2017: 7, authors' own calculations from totals).

Table A6. (full version of Table 2)

	(1) Care Hours	(2) Care Hours* Care Need	(3) Errand/ House work Hours	(4) Errand/ House work Hours* Care Need	(5) All Unpaid Hours*Care Need
	<i>b</i> (<i>SE</i>)	<i>b</i> (<i>SE</i>)	<i>b</i> (<i>SE</i>)	<i>b</i> (<i>SE</i>)	<i>b</i> (<i>SE</i>)
Female Caregiver	1.541	2.234	11.792 ****	13.663 ****	16.105 ****
Time to Onset of Care Need (Slope)	(1.847) 7.608*** *	(2.317) 4.794* **	(1.037) 2.938* ***	(1.365) 2.262* **	(2.811) 7.119* ***
	(1.374)	(1.624)	(0.535)	(0.703)	(1.971)
Female Caregiver*Time to Onset of Care Need (Slope)	2.072 (1.863)	1.448 (2.215)	- 4.417**** (0.735)	- 3.232**** (0.967)	-1.772 (2.706)
Education T (Ref.: incomplete to intermediate general)					
<i>Vocational qualification</i>	2.275 (1.985)	3.356+ (1.731)	1.600 (1.110)	2.110+ (1.099)	5.119* (2.195)
<i>Tertiary education</i>	-0.990 (2.281)	1.317 (1.993)	-0.452 (1.279)	0.087 (1.267)	1.854 (2.520)
Employment in T(Ref.: Full-Time)					
<i>Part-time</i>	-0.632 (4.413)	0.443 (3.793)	3.336 (2.453)	3.739 (2.396)	4.527 (4.756)
<i>Irregular</i>	5.240	5.261	2.175	0.413	3.880

		(5.533)	(4.920)	(3.215)	(3.268)	(6.493)
	<i>Non-Employed</i>	5.900*	5.546*	8.929*	9.207*	14.493
			*	***	***	****
		(3.228)	(2.794)	(1.805)	(1.770)	(3.520)
HH-income Tercile in T (Ref.: Bottom)						
	<i>Mid Tercile</i>	1.511	-1.123	0.931	0.568	-0.701
		(1.969)	(1.762)	(1.104)	(1.118)	(2.227)
	<i>Top Tercile</i>	-0.578	-1.586	-0.411	-0.547	-2.420
		(2.096)	(1.811)	(1.176)	(1.151)	(2.297)
Age in T		0.362	0.340	0.454	0.395	0.683
		(0.592)	(0.511)	(0.328)	(0.322)	(0.640)
Age ² in T		-0.004	-0.003	-0.004	-0.003	-0.006
		(0.004)	(0.004)	(0.002)	(0.002)	(0.005)
Caretaker's Health in T (Ref.:1)						
	2	-0.706	0.340	-1.514	-0.708	-0.123
		(4.738)	(4.080)	(2.627)	(2.567)	(5.126)
	3	-2.448	-0.084	-0.973	-0.102	0.169
		(4.568)	(3.931)	(2.531)	(2.472)	(4.942)
	4	-0.388	-0.947	-0.487	-0.362	-0.771
		(4.678)	(4.025)	(2.594)	(2.531)	(5.061)
	5	0.130	3.044	-2.344	-2.174	0.984
		(5.519)	(4.766)	(3.043)	(2.973)	(5.961)
Spouse Main Caretaker in T		-3.116	-3.883	1.852	2.036	-2.117
		(2.797)	(2.427)	(1.560)	(1.524)	(3.014)
Household Help in T		2.153	-0.495	-	-	-3.313
				2.252**	2.699**	
		(1.980)	(1.759)	(1.107)	(1.112)	(2.211)
Care Need T (Ref.: Unofficially in Need)						

of Care)

<i>Official Care Need Level 1</i>		3.629 (2.684)		2.618* (1.573)	6.308* (3.236)
<i>Official Care Need Level 2</i>		9.410* *		8.916* ***	18.263 ****
		(4.518)		(2.635)	(5.445)
Gender*Care Need in T					
<i>Female Caretaker*Official Care Need Level 1</i>		-2.763 (3.635)		- (2.149)	-7.037 (4.444)
<i>Female Caretaker*Official Care Need Level 2</i>		-3.299 (5.745)		- (3.376)	- (6.966)
Time to Onset of Care Need (Slope)*Care Need in T					
<i>Time to Onset of Care Need (Slope)*Official Care Need Level 1</i>		4.653* (2.613)		2.052* (1.132)	6.762* (3.160)
<i>Time to Onset of Care Need (Slope)*Official Care Need Level 2</i>		10.411 **		-0.113	10.653 *
Gender*Time to Onset of Care Need (Slope)*Care Need in T		(4.969)		(2.181)	(6.003)
<i>Female Caretaker*Time to Onset of Care Need *Official Care Need Level 1</i>		0.900 (3.637)		- (1.602)	-1.567 (4.488)
<i>Female Caretaker* Time to Onset of Care Need *Official Care Need Level 2</i>		-5.760 (6.115)		-2.088 (2.697)	-8.287 (7.448)
Constant		-4.197 (18.727)	-6.597 (16.21)	-3.312 (10.39)	-3.573 (10.19)
		4)	3)	7)	3)

Variance Time to Onset of Care Need	2.287*** *	2.024* ***	0.847* *	0.801*	2.231* ***
	(0.109)	(0.137)	(0.397)	(0.432)	(0.130)
Variance Constant	1.039***	-0.125	1.780* ***	1.744* ***	0.807
	(0.332)	(1.035)	(0.116)	(0.123)	(0.520)
Covariance Time to Onset of Care Need, Constant	9.269 (1372.04 6)	8.719 (1301. 673)	0.109 (0.400)	0.070 (0.412)	8.903 (1230. 303)
Variance Residual	2.934*** *	2.877* ***	2.132* ***	2.123* ***	3.055* ***
	(0.029)	(0.029)	(0.038)	(0.038)	(0.029)
Observations	1077	1048	1047	1021	1011
Couples	406	395	398	388	384
Degrees of Freedom Expensed	18	24	18	26	26

Note. T represents the first wave of data in which the spouse was in need of care. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. *p<0.10, ** p<0.05, *** p<0.01, **** p<0.001

Male Versus Female Weekly Housework + Errand + Care Hours by Care Need

Figure A1. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. The analysis controlled for education in T , employment status in T , household income in T , age and age squared in T , caregiver's health in T , whether the spouse was the main caregiver in T , and whether household help was received in T and household income tercile in T . Results

derived from Appendix Table A6, model 5. N=384 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$ between the two sexes.

Gender Differences in Care Hour Response by Missing Data Pattern on Dependent and Independent Variable

Figure A2. Note. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. N=402 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$

Gender Differences in Weekly Housework + Errand Hour Response by Missing Data

Pattern on Dependent and Independent Variable

Figure A3. Note. Data are from the German Socio-Economic Panel Study v. 32 years 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015, including everyone who responded two or three times to the questions about care hours or errand plus housework hours and spouse's care need level. N=389 couples. * $p < .10$; ** $p < .05$, *** $p < .01$, **** $p < .001$

As figure A3 shows, the shift in errands and housework hours remains similar across missing data patterns (i.e. irrespective of whether we observed independent and dependent variable 2 or 3 times and irrespective of whether the partner exits the need for care).

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