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Chronic conditions, couple-level factors and union dissolution

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ABSTRACT

This paper examines the association between chronic illness and union dissolution by examining rich, longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Using competing-risks discrete-time event-history models on longitudinal, dyadic data, we find the risk of union dissolution to be approximately 40 percent higher when either partner reports an illness than in the absence of an illness. We then examine whether the observed associations are mediated by variations in paid work, housework, financial stress and time stress. Financial stress is the factor that contributes most to the indirect associations between dissolution and partner's health condition, but overall these factors account for only 18.5 percent of the association between chronic illness and relationship dissolution. Our results provide further insight into the factors undermining relationship stability and highlight the importance of reducing financial stress associated with chronic illness.

KEYWORDS: chronic illness; union dissolution; gender

INTRODUCTION

Health is an important aspect of the human life course, influencing a range of outcomes including educational attainment (Jackson, 2009), socio-economic status (Conti, Heckman, & Urzua, 2010), and partnership status (Waldron, Hughes, & Brooks, 1996). Health varies over time, and with the availability of longitudinal data in recent years, researchers have been able to describe its dynamics, as well as the antecedents and consequences of poor health. One example is a body of literature showing how early-life experiences are associated with different rates of physical health decline at older ages (Chandola, Ferrie, Sacker, & Marmot, 2007; Haas, 2008). Another example is research demonstrating how health trajectories are correlated with mortality (Doblhammer & Hoffmann, 2010). From the perspective of the individual, the diagnosis of a chronic illness may mark a disruption to their biography (Bury, 1983), shifting how they see themselves, and how they interact with others in their social networks. Beyond individual outcomes however, we also expect health changes to have effects on family members and family dynamics.

In the current study, we extend existing research in two ways. First, drawing on the life course concept of ‘linked lives’ (Carr, 2018), we consider outcomes for relationship stability upon the illness of a partner. The notion of ‘linked lives’ acknowledges that individuals are embedded within social groups and relationships, such as families. This is relevant to consideration of the implications of a chronic illness, as a family member’s illness likely has implications not only for individuals themselves, but may shift dynamics within families over

time (Carlsen et al., 2007; Karraker & Latham, 2015; Percheski & Meyer, 2018; Wade & Pevalin, 2004). In examining the role of illness, we also extend research on the correlates of relationship instability, which has identified several important factors contributing to relationship breakdown, including relationship history, gender divisions of labour in paid and unpaid work, and relationship quality (Amato, 2010; Cooke, 2006; Sayer et al., 2011). Though there has been some research on the association between chronic illness and union dissolution, the results have been equivocal, with some studies finding a strong association and other studies finding no or limited associations (Carlsen et al., 2007; Karraker & Latham, 2015, Wade & Pevalin, 2004). Furthermore, existing research has been limited by a focus on sub-groups of individuals, such as older adults (Karraker & Latham, 2015), parenting couples with young children (Percheski & Meyer, 2018) or individuals with a particular type of illness (Carlsen et al., 2007; Wade & Pevalin, 2004). It is therefore unclear whether we might observe this association in the general population of couples across all ages. Drawing on a national, longitudinal dataset, we address this research question in the current paper.

Second, no studies have examined the mechanisms linking chronic illness and relationship instability. Given the richness of the dataset we draw upon, with detailed information from both partners on potential mechanisms, including variations in paid work, housework and stress, we are able to empirically test whether these factors constitute important mechanisms linking the experience of a chronic illness and union dissolution. Consideration of these factors also aligns with the large body of literature that has focussed on the importance of these characteristics for relationship stability (Bittman et al., 2003; Killewald, 2016; Sayer et al., 2011), though not within the context of a partner's poor health. The focus on illness therefore provides an opportunity to further investigate mechanisms associated with union instability, and in particular the role of stress and unforeseen changes in the daily routines and lives of couples given a partner's illness. This acknowledges that chronic illness may change

how couples interact with each other, their day-to-day work and family arrangements, and levels of stress and wellbeing, which may alter their relationship stability.

GENDER, CHRONIC ILLNESS AND UNION DISSOLUTION

Research on the association between chronic illness and union dissolution has been equivocal with some studies finding a strong association and other studies finding no, or limited, associations (Carlsen et al., 2007; Karraker & Latham, 2015, Wade & Pevalin, 2004). The results in previous studies also vary according to whether the male or the female partner experiences an illness. For example, Karraker and Latham (2015) find that amongst older American couples, wife's heart disease onset (but not husbands'), is associated with a higher risk of divorce. They suggest that this may occur as the marriage market at older ages tends to privilege men, and that men may have more options for new partnerships prompting them to leave their wives. Another possibility may be that wives who are unwell may re-evaluate their situation and may be more likely to leave a marriage if they are unsatisfied with the relationship or care received from their spouse, or experience a change in outlook and priorities due to altered life timelines (Carstensen, 2006).

Drawing on British data, Wade and Pevalin (2004) report that severe mental health problems are associated with a higher subsequent likelihood of union separation. Their study included couples at all ages, but did not differentiate between husbands' and wives' mental health problems. Carlsen and colleagues (2007) draw on Danish register data, to examine whether those who were diagnosed with cancer between 1980 and 2000 were at higher risk of divorce. They find no differences in the risk of divorce, when comparing those who were diagnosed with cancer with the general population, with the exception of women who were diagnosed with cervical cancer, where they found an increased risk for divorce.

Our first research question investigates the association between the report of an illness and union dissolution in a general population of couples across all ages. We also consider potential gender differences, given documented differences in men's and women's experiences of their relationship (Bernard, 1972) ranging from differences in perceptions of the relationship and their implications for health (Boerner et al., 2014; Umberson & Williams, 2011) to differences in expectations of the union, which may in turn have implications for relationship outcomes (Waller & McLanahan, 2005). The consideration of gender differences may be especially salient in the event of an illness, as illness may render a partner unable to fulfil normative expectations with regards to their contribution to paid and unpaid labour, with potential implications for union stability.

Given the gendered patterning of the division of labour within couples (Bianchi et al., 2000; Craig & Mullan, 2010), we might also suggest that the financial impact of an illness will vary depending on whether the male or female partner falls ill (Syse, Tretli & Kravdal 2009). For instance, we would expect the association between chronic illness and union dissolution to be stronger upon the male partner's illness, given the potential impact on household finances if men are unable to maintain employment. The traditional male breadwinner model is still dominant in Australia with men more likely to be employed and working full-time than women. Recent data shows that 72% of Australian men are employed, compared with 58.9% of Australian women. Women are also more often employed on a part-time basis (45.7% compared to 16.3% among men) and undertake the bulk of unpaid care work (ABS, 2016; Craig and Mullan, 2010). As studies find a link between illness onset and labor force exits (Bound et al., 1999), we expect the financial stress and burden upon the household to be stronger upon the male partner's illness, leading to more relationship stress and changes to work and family routines. While women may reduce their paid work due to ill health, we expect this to have less impact than is the case for men, due to women's lower levels of

involvement in paid work. Women may decrease their domestic work upon falling ill, but given the relatively lower value and visibility of unpaid work, variations in levels of housework given her illness may have less impact on relationship dynamics.

POTENTIAL MECHANISMS LINKING CHRONIC ILLNESS AND UNION DISSOLUTION

Previous studies on family dynamics point to the importance of gender divisions of labour in households, as well as stress and relationship satisfaction of each partner as significant determinants of relationship stability (Killewald, 2016; Sayer et al., 2011). Our data enables consideration of these factors to investigate whether these are intervening mechanisms linking illness to union instability. Our second research question empirically tests whether couples' household arrangements for paid work and housework, or levels of financial and time stress given a partner's illness mediate the associations between the report of an illness and union instability. Doing so acknowledges the importance of "linked lives" (Carr, 2018), recognising that when one partner is diagnosed with an illness, couples likely move through the experience together. Furthermore, understanding which specific factors at the couple level drive union instability will inform knowledge about relationship dynamics in the context of a partner's illness.

For instance, chronic illness may alter existing arrangements and household patterns in important ways, including in ways that are detrimental to the lifestyles and wellbeing of both partners, which in turn may have implications for union stability. Living with a chronic illness may also disrupt within-couple exchange patterns. For example, exchange theory proposes that individuals derive rewards from being in a partnership, such as economic benefits from spousal earnings, shared living expenses and assistance in the performance of housework and care (Bittman et al., 2003; Sayer et al., 2011). The risk of union dissolution may increase as the

perceived costs of remaining in the partnership to the healthy partner begin to outweigh the benefits. Below we hypothesize how specific changes upon a partner's illness may have implications for union stability.

Employment status and hours of paid work

The role of employment has been central to understanding union stability (Killewald, 2016; van Damme & Kalmijn, 2014). We expect paid work to play more of a role in shaping couple arrangements upon the male partner's illness given gender differences in employment patterns and the persistence of the male breadwinner model in Australia (Bound et al., 1999). We expect levels of paid work to be related to the male partner's illness, including their number of work hours, as well as their partner's work hours in order to compensate for men's potential reduced earnings and financial contribution to the household. We do not however, expect couples to have as much reason or opportunity to be impacted in their work hours given the female partner's illness. In line with this expectation, one study from Norway found that women's earnings are lower after both their own and their partner's cancer, but that cancer in wives did not affect men's earnings (Syse, Tretli and Kravdal 2009).

Housework

We acknowledge that domestic labour arrangements may be affected by the illness of the female partner. Performance of housework however, may have less effect on union stability compared with involvement in paid work due to the perceived lower importance of housework for family functioning and the lack of any financial consequences, although some households may be required to outsource housework given the female partner's illness. One potential reason why housework might increase union instability however, may potentially be through the violation of gender norms, such as the male partner's higher involvement in housework. According to the gendered institutions perspective (Bittman et al., 2003; Killewald, 2016),

traditional norms around breadwinning, housework and caregiving are pervasive and ongoing. When couples violate social norms around gender divisions of labour, they may experience greater disjuncture between their arrangements and other social institutions, receive less social approval and experience stigma, leading to higher rates of relationship dissolution. Therefore, rather than the presence of a chronic illness *per se* leading to union dissolution, it may be the division of paid and unpaid labor within couples given an illness, and their deviations from cultural norms that increases the likelihood of union dissolution.

Time and financial stress

Living with a chronic illness may also be a source of stress for both partners with implications for union stability. Stress theories (Randall & Bodenmann, 2009) postulate that one partner's stress caused by situational factors, such as living with a chronic illness, could increase couple conflict. Financial stress may also derive from financial expenditures or decreases in income associated with a partner’s illness. Further, stress may stem from increased time pressure, as individuals attend to medical appointments, or undertake increased caregiving activities for their partner. These scenarios underscore the possibility that time and financial stress are potential pathways explaining the association between illness onset and union stability.

DATA

To address our research questions, our empirical study uses seventeen waves of the panel survey from the Household, Income and Labour Dynamics in Australia (HILDA) (HILDA, 2001-2017) Study. The dataset is largely representative of the Australia population, and allows examination of repeated measurements of a range of individual and household variables over time. Although HILDA is largely representative, it may not be representative of

people living in remote and sparsely populated areas, which amount to only approximately 80,000 people from the reference population according to the Australian Bureau of Statistics (Watson and Wooden 2012). Results should therefore be considered with this in mind.

Each year, the HILDA survey collects extensive information on factors relevant to this research, including marital histories, non-marital unions, union dissolution measures and a number of measures pertaining to individuals' health and socio-economic characteristics. The household structure of the HILDA survey data is particularly suited for this study because it allows us to combine information from the male and female partners to create dyadic, yearly observations of couples. The information in our analytical dataset is organized into observations that contain in the same row of data all values for female and male partners for each year. The analysis of dyadic observations enables the examination of associations between union dissolution and chronic health conditions to address empirically the aforementioned research questions using measures that are specific to each partner and by gender.

The HILDA sample consists of 41,749 individuals. To build an analytic dataset of couple-year observations, we restricted the original sample by excluding respondents and observations from respondents who (or whose partners) were younger than 18 or older than 85 years (n=9,681), were not observed in married or unmarried cohabitation, where linkage with partner's records was not possible (n=10,313), or were in same sex relationships (n=310). We then merged information on male respondents to the observations of their partner female respondents to obtain a dataset consisting of 10,746 couples and 80,494 couple-year observations. Finally, we did not use the last study wave in the analysis, as it did not contain information on union status in the subsequent year. This led to the exclusion of 286 couples and 5,601 observations. Our final analytical sample comprises 74,893 observations from

10,460 couples. The average age in our analytical sample is 48 years for men and 46 years for women.

To minimize observation loss due to item non-response, we imputed missing information on model variables (excluding the dependent variable) for the multivariate analysis. Levels of item non-response on model covariates are generally trivial. Only time pressure and housework hours displayed higher levels of missing observations –around 15%– but non-response was uncorrelated with other model covariates. We applied multiple imputations for chained equations, using information on all model covariates for the imputations, to create 20 imputed datasets using the *mice* command in Stata 16.0 (Royston & White, 2011). The imputation procedure resulted in valid imputed values for all cases with missing values.

MEASURES

The outcome of interest is union dissolution due to separation, and the unit of analysis is the union episode. We define a union episode as the lapse of time in years since union formation, including both cohabitation and marital unions, until the dissolution of a union. Union dissolution events are constructed using biographical information collected each year on the timing of union events and states. Additionally, we consider the death of one partner as a relevant competing form of union dissolution when predicting associations with health status of the partner in the multivariate analyses (see analytic strategy section). We observe that 1,159 unions end due to separation, while 555 unions end due to the death of a partner.

The main explanatory variable is the partner's chronic health condition. We use information collected yearly on responses to the following question: *Looking at* [showcard], *do you have any long-term health condition, impairment or disability (such as these) that restrict you in your everyday activities, and has lasted or is likely to last, for six months or more?* The

showcard contains up to 15 different types of chronic conditions, including arthritis, asthma, heart disease, Alzheimer's disease, dementia or any other long term condition. We build a time-varying indicator for the male partner and one for the female partner that captures the chronic health condition status reported each wave. The indicators are coded 1 if a condition was reported, and coded 0 if no condition was reported in a given survey wave. In our sample, a chronic condition was reported in 27 percent of men's and 24 percent of women's yearly observations. It is worth noting that the prevalence of health conditions in our sample increases with age. Health conditions were reported in only 17 percent of the observations of younger individuals (under age 55) and in around 45 percent of the observations of older individuals (of age 55 onwards). Over the length of their participation in the study, 42 percent of the couples did not report a health condition and 58 percent reported a health condition (both partners: 24.2 percent; only the male partner: 16.4 percent; only the female partner: 17.6 percent). Of those respondents who reported a condition, 35 percent persistently reported a health condition each wave since first report. Although the remaining 65 percent reported having no condition sometime after initially reporting a condition, many of them relapsed later.

In the multivariate analysis, we assess whether a partner's chronic condition relates to union dissolution due to the aforementioned mechanisms using variables for housework hours, employment status, paid work hours, financial stress, and time stress. We measure partners' housework as weekly housework hours derived from a question in the self-completion questionnaire that is asked of all household members. The questionnaire item reads *how many hours would you spend on each of the following activities in a typical week? […] Housework, such as preparing meals, washing dishes, cleaning house, washing clothes, ironing and sewing?* It is worth noting that some respondents may also include time spent on child care in the calculation of weekly housework hours, although they are not prompted to do so. In our sample, women do an average 18 hours of housework per week, while men do 6 hours.

Partners' employment status is measured as an indicator that captures whether respondents were in paid work the week before the interview. Male respondents were in paid work in 75 percent of their observations, while women were in paid work only in 61 percent of their observations. Partners' paid work is measured using responses to questions on weekly paid work hours to respondents who did paid work in the week before the interview. In our sample men do an average of 33 hours of paid work per week, while women do 19 hours.

Partners' financial stress is measured as an indicator that captures whether over the last 12 months, any of the following happened to the respondents because of a shortage of money: inability to pay bills on time; inability to pay the mortgage or rent on time; pawning or selling something; asking for financial help from family or friends; asking for help from welfare or community organisations; an inability to heat the home; and missing meals. In our sample 15 percent of men and 18 percent of women declare a situation of financial stress over the last 12 months.

Partners' time stress is measured using responses to a question administered yearly in the self-complete questionnaire. The question asks *how often do you feel rushed or pressed for time?* Responses were collected as a 1-5 ordinal scale – [1] Almost always, [5] Never. We assigned value 1 to original categories 1 and 2 ("Regularly rushed or pressed for time") and value 0 to original categories 3–5 ("Not regularly rushed or pressed for time"). Alternative coding of the original variable did not affect our results. In our sample 34 percent of men and 43 percent of women report regularly feeling rushed or pressed for time.

For each of these measures, we built gender-specific time-varying variables that capture their yearly values reported at the time of interview.

In multivariate analyses, we controlled for other theoretically-relevant predictors of union dissolution that could confound the associations under study. These include couple-level time-varying measures of relationship duration in years (linear and quadratic functions),

cohabitation status indicator (*ref.* married), number of biological, adopted, or step-children present in the household (two indicators for 1 and 2+ children; *ref.* no children), deflated annual household income quintile groups (*ref.* 1st quintile), and owner-occupancy of primary residence (*ref.* tenant). The inclusion of the relationship duration measure also adjusts for left truncation, as many unions were formed before they were observed in the HILDA Study (see e.g. Guo 1993).

Additional partner-specific individual-level variables include a time-constant overseas-born indicator (ref. Australian born), time-varying measures for age, a higher education level indicator (i.e. university degree; ref. lower level attainment), and a second or higher order union indicator (ref. first union). Summary statistics of model variables before multiple imputation are shown in Table S1 in the online appendices.

ANALYTIC STRATEGY

To examine whether and how a partner's health condition associates with union dissolution due to separation we use Event-History Analysis (EHA). This statistical method investigates the duration until the occurrence of an event of interest, and why certain individuals are more likely to experience the event than others. In the context of this study, EHA is advantageous in that it accounts for (i) the probability that observing a union dissolution is heavily influenced by the time since union formation, (ii) that union dissolutions may occur (right) after the end of the study observation (also known as right-censoring bias), (iii) that competing events such as death of a partner may end the union before observing relationship break-up (i.e. competing risks) and (iv) that individuals may report (and recover from) chronic conditions at different points in time (i.e. time-varying associations).

We examine union dissolution using discrete-time EHA. A discrete-time approach is particularly suitable when dates of events and measures for covariates are recorded in relatively

wide time intervals, e.g. years. Although our object of study is dissolution due to separation, we acknowledge in the analyses that the end of the union can also be due to death of a partner. We adopt a competing-risk approach that estimates the rates of each type of union dissolution event contrasting with the absence of the event. The competing-risk approach is advantageous in that it limits violation of the assumption that censoring is independent of the predictors for the event of interest, thus, reducing bias in our model estimates. Our model can be written as

$$log\left(\frac{h_i^R}{h_i^0}\right) = \alpha^R\,(t) + \beta^R x_i^R(t)$$

where h_i^R is the discrete-time sub-hazard of union dissolution of R type (R=1,2), referring to (1) separation and (2) death of one partner. The reference outcome category is no union dissolution. The discrete-time sub-hazard (from now on hazard) is a conditional probability defined as a multinomial response Y (coded 1 to 2 if a union dissolution of type R is observed and coded 0 otherwise) for each discrete-time interval *t* given that no event prior to *t* has been observed. The term $\alpha^R\,(t)$ captures relationship duration in years. Time-varying and time-constant covariates are specified in $\beta^R x_i^R(t)$. We estimate the β using the command *mlogit* for multinomial logit regression models in Stata 16.0.

Our analytic approach involves the assessment of the coefficient size and statistical significance of the estimated associations between a partner's chronic condition and union dissolution, and then, the examination of potential indirect associations.

To address the first research question we examine whether hazards of union dissolution are associated with a partner's chronic condition. To this end, we use the gender-specific measures of chronic condition status as a predictor of union dissolution. We first assess the overall associations (adjusted only by relationship duration) and the time dynamics of the association since initial report.

To address the second research question we examine whether hazards of union dissolution are indirectly associated with a partner's chronic condition through other predictors of union stability whose levels may be affected by a partner's health condition status. To this end, we fit a series of nested models that adjust for aforementioned confounders and (separately) add housework hours, employment status, paid work hours, financial stress and time stress to the multivariate model adjusted with confounders. We expect that the inclusion of these covariates induce changes in the coefficient for chronic condition status. To adequately quantify these changes we additionally use the khb approach (Karlson et al., 2012). This method allows determining the percentage change in coefficients due to the inclusion of additional covariates, accounting for the rescaling of the variance of categorical outcomes in nested non-probability models such as the ones used in this application. We calculate the contribution of housework hours, employment status, paid work hours, financial stress and time stress in our full model using the *khb* package in Stata 16.0 (Kohler et al 2011). [1]

[PLACE TABLE 1 HERE]

RESULTS

Figure 1 displays union dissolution hazards adjusted by relationship duration across couples in which a health condition has been reported, and those in which a condition has not been reported. We find that the rates of union dissolution increase after a partner's report of a health condition. The hazard is 1.54 times higher if the male partner reports a chronic conditions than otherwise, and it is 1.44 times higher if the female partner reports a chronic conditions than otherwise. Despite the difference between the hazard ratios across genders, this difference is not statistically significant using a 95% confidence interval. It is worth noting that

[1] We note that the khb method could only be conducted in a non-imputed dataset. We suspected that this could affect the results, however, we did not find substantive differences between results from our original event-history models and those from models using a non-imputed dataset.

union dissolution is even more likely when both partners report a health condition in a given year (see Fig. S1), suggesting that each partner's health condition can have additive impacts on couple dynamics.

We find some temporal patterns in the associations between health conditions and union dissolution. First, the average duration from the first report of a health condition until separation is 5 years (95% CI: 4.7 - 5.4 years; median= 4 years) for a male partner's condition, and 5.5 years (95% CI: 5.1 - 5.8 years; median= 4 years) for a female partner's condition. We note, though, that many separations occurred during the first year after a health condition was reported (and some more the few years after the first). Second, adjusting for a linear and square function of relationship duration, we find that the hazard rate of union dissolution varies only slightly since the first report of a male partner's condition (see Fig. S2 in appendices). Particularly, the hazard increases since male partner's first report until the third year, and then slightly decreases. Despite its statistical significance, over time variation is not substantive and union dissolution rates remain fairly similar over time. We do not find a substantive or statistically significant over time variation in the risk of union dissolution since first report of a female partner's condition.

[PLACE FIG. 1 AND 2 HERE]

Competing-risks models

The descriptive results above indicate that union dissolution, due to separation, is related to the health condition status of the male as well as the female partners. In the following, we address whether these associations hold in a multivariate context.[2]

[2] In this section, we will only comment on results of the coefficient of interest for the separation equation. Results relating to other coefficients in the separation equation, and coefficients in the death-of-partner equation can be consulted in Table S2 in the online appendices. Overall, a reported condition by the male partner has a more substantive impact on the death of a partner than on a separation, as the chronic health condition is more straightforwardly linked with typical mortality mechanisms. This is not the case for the female partner since her

Selected results of a discrete-time competing-risks model to examine the association between partner-specific health condition and union dissolution (separation) are presented in Table 1. In addition to the coefficients presented in the table (i.e. health condition status, employment status, paid work hours, housework hours, financial stress, and time stress for each of the partners), we adjusted for relationship duration and other control variables (i.e. type of union, household income, homeownership, number of children, age, level of education, ethnic background, and second or higher order union).

Model 1 in Table 1 add potential confounders of the association between health condition status and union dissolution. Comparison with the estimates only adjusted by partnership duration shows some variations in results when confounders are accounted for: The hazard ratios decrease, but the risk of union dissolution is still 1.40 times higher after the male partner reported a condition and 1.36 times higher after the female partner reported a condition. The coefficients are statistically significant at conventional levels. Overall, the results indicate that the additional variables considered in the model confound some of the associations and that, all else equal, dissolution risks are still heightened after the male and female partner's health conditions.

[PLACE TABLE 1 HERE]

To address research question two, we show in Table 1 models that add to Model 1 variables capturing the values of employment status and paid work hours (Model 2), housework hours (Model 3), time stress (Model 4), financial stress (Model 5), and all variables together (Model 6).

Results from models 2-5 in Table 1 show a few substantive associations between dissolution and paid work, housework, time stress or financial stress. Model 2 shows that

reported health condition is weakly associated with the outcome death of a partner. The gender difference in the results can be explained by a number of issues such as the type and severity of health condition or differences in the reporting of health conditions.

employment status of the male and female partner is associated with lower risks of dissolution, but these associations are not statistically significant at the 95 percent level. Model 2 also shows that paid work hours of the male partner are not associated with dissolution, but paid work hours of the female partner are associated with higher risks of dissolution. Model 3 shows that housework hours of the male partner are not associated with dissolution, but housework hours of the female partner are associated with lower risks of dissolution (statistically significant at the 90 percent level only). Model 4 shows that time stress of the male and female partner is associated with higher risks of dissolution, but these associations are not statistically significant at the 95 percent level. Finally, Model 5 shows substantive and statistically significant associations between male and female partner's financial stress and higher risks of union dissolution.

The inclusion of paid work, housework, financial stress or time stress in the models had a limited impact on the associations between union dissolution and partner's health condition. The associated hazard ratio of dissolution for male partner's chronic condition remains around 1.35-1.40, and the associated hazard ratio of dissolution for female partner's chronic condition remains around 1.29-1.39. Although some coefficients change when including paid work, housework, financial stress and time stress in Model 6, substantive conclusions drawn from results in prior models do not change: The hazard of dissolution is still around 1.3 times higher when the male or the female partner reported a health condition.

To adequately quantify the indirect associations between dissolution and partner's health condition (due to the mediating role of paid work, housework, financial stress or time stress), we replicate the analysis using the full specification of Model 6 in Table 1 and the khb-method. Results show that 18.5 percent of the association between dissolution and reported health condition of the male partner is indirect (due to the inclusion of the above-mentioned predictors), and that 13.4 percent of the association between dissolution and reported health

condition of the female partner is indirect. Although these indirect associations are statistically significant, overall the role of these predictors for the associations between dissolution and partner's health conditions is small. Additional results show that financial stress is the factor that most contributes to the indirect associations between dissolution and partner's health conditions. In particular, financial stress reported by the male and the female partners explains almost all the indirect association between dissolution and the male partner's health condition. Regarding the association between dissolution and female partner's health condition, we find that it is due to the financial stress of the female partner (12.4 percent) and the male partner (5 percent), as well as female partner's employment status (5 percent). Interestingly, female partner's work hours suppress the association (-11 percent), or more female work hours contributes to lower risks of union dissolution after the female partner reports a health condition. We find that other predictors are not relevant mediators of the associations.

We complete our analyses by exploring heterogeneity in the associations between union dissolution and a partner's chronic condition. We fit four additional models with interaction terms of chronic conditions with partner's age, relationship duration and type, and education. These four additional models in Table 2 account for potential heterogeneity in the study associations by including into Model 6 in Table 1 interactions of partners' health conditions with partner's age, relationship duration and partner's education. We find relevant heterogeneity in results across all these variables. The heightened risk of dissolution after the male or the female partner reported a condition levels off with their partner's age. Model 7, which includes the interaction of partner's health condition with an indicator of partner's age 55 onwards, shows that the hazard of dissolution after a male partner health condition is 40 percent lower if his partner is aged 55 or older than if his partner is younger. Similarly, the hazard of dissolution after a female partner health condition is 44 percent lower if her partner is age 55 or older than if her partner is younger. The association also weakens with relationship

duration, but only for women. Model 8 shows a higher baseline hazard ratio of dissolution for female partner's condition, but a lower hazard ratio for female partner's condition with relationship duration. We also find women's education strengthens the risk of dissolution after the male partner reports a condition. Model 9 shows a small (and not statistically significant at conventional levels) baseline hazard ratio of dissolution for male partner's condition, but a substantively higher hazard ratio for male partner's condition with female's partner higher education. In our sample unmarried cohabitation was observed in one in four couples, and we might speculate that cohabitors behave differently to married couples upon a partner's health condition. Model 10 shows that male health condition is associated with less stable marital unions, while female health condition is associated with less stable non-marital unions.

These findings suggest that different factors may mitigate or magnify the observed association. Individuals' age, which may correlate with whether it is normative to present with a chronic illness, seems to be an important factor. Relationship duration may underscore the importance of the length of the relationship, or potential stigma that might be attached to union dissolution from a long-term partner due to the partner's illness. Education may be associated with more value in the partnership market and, as it is also associated with younger than older ages, with less normative pressure to stay together. For women, education and cohabitation may associate with more resources and stronger attitudes to live independently. Although out of scope for the current study, future research that considers moderators of the association between chronic illness and union dissolution could provide further knowledge on this topic.

Robustness checks

We conducted additional analyses to test the robustness of our results. First, our main explanatory variable is based on information from a standard question on the status of any health condition from a list that includes both physical and mental health conditions. Clearly

different types of chronic illnesses will vary in terms of their likely impact on couple dynamics, particularly in relation to their level of severity and long-term prognosis. More importantly, mental health conditions could be the result of individuals anticipating a union dissolution. Unfortunately, there are no yearly measures available for specific health conditions in the dataset. However, we were able to address whether the associations are largely due to mental health conditions using information on depression and anxiety measured in waves 7, 9 and 13 of the HILDA study. Results from analyses (see Table S3 in the appendices) shows that depression and anxiety are highly and positively associated with hazards of union dissolution. At the same time, the inclusion of depression and anxiety in the models reduced the association between our general health condition measure and union dissolution. However, the associations are still substantial and statistically significant, with couples 1.27 times more likely to separate if the male partner has a health condition and 1.30 times if the female partner has a health condition.

Second, bivariate analyses showed that dissolution rates are higher in couples where the two partners experienced the onset of a chronic condition. We tested whether our results are affected by this including an indicator of the health condition of both partners in the models. Results from these models (see Table S4 in the appendices) show that the hazard of dissolution is not higher when a health condition is reported simultaneously by both partners, and that the size and statistical significance of the estimates of partner-specific health conditions are mostly unaffected by the inclusion of the condition of both partners.

DISCUSSION

This paper had two key aims: 1) To examine the association between chronic illness and union dissolution in the Australian context, drawing on data from a large longitudinal household-level dataset. 2) To test whether employment status or levels of paid work hours, housework

hours, financial stress, or time stress within couples mediate the risks of union dissolution associated with a partner's illness. In addressing these aims, we make several contributions to the existing literature. First, we established associations between the illness of either partner and higher union dissolution risks in the Australian context. We note that the risk of union dissolution is approximately 40 percent higher when either partner reports an illness than in the absence of an illness, even adjusting for a number of individual-level and couple-level factors. We note that a direct association between a partner's illness and union dissolution is not trivial given the size of the associated risk and the fact that we controlled for a number of confounders of the association.

While existing research has considered the association between illness and union dissolution in other contexts, potential variations may arise given cross-national differences in the prevalence and burden of chronic diseases, variations in patterns of marriage and divorce, as well as differences in levels and types of state support for chronically ill individuals and their families. As compared with the US for example, Australia provides universal healthcare as well as payments and allowances to primary carers of a person with a disability (Australian Department of Social Services, 2017). Despite these forms of support, our finding of an association between a partner's illness and a higher rate of union dissolution underscores the presence of an illness as a negative event with implications for family relationships.

Second, we drew on existing literature on the social determinants of divorce and the notion of linked lives to inform our second research question on couple-level factors that mediate the association between a chronic illness and union dissolution. Previous studies have noted the importance of variations in gender divisions of labour for understanding relationship stability, while the concept of linked lives highlights how a chronic illness of one partner may affect family dynamics. Specifically, we tested whether a partner's illness is associated with union dissolution due to variations in levels of paid work hours, housework, financial stress, or

time stress of either partner. This is an important contribution to the literature, as we are able to assess whether and how reported health conditions of the male or female partner might matter for union stability.

We find that the association between illness and higher union dissolution risks may be partially explained by a number of these factors, although the associations are small, with at most, 18.5% of the association found to be indirect through these factors. We also note that subjective reports of financial stress emerged as the factor that was most salient. This suggests that policies and programs that may alleviate this form of financial stress may potentially reduce the likelihood of union dissolution. Such policies and programs may potentially take a variety of forms, including reduced costs associated with medical visits, other health services or medications, or enabling those with a chronic illness increased access to sick leave or health pensions. Further research would be needed to test the efficacy of these different forms of financial support.

Findings as reported in Appendix S2 also suggest that chronic illness is much more predictive of death for male than female partners. Variation in the types and severity of diseases men and women experience, and implications for mortality might have effects for observed association with union dissolution, if deaths occur earlier than observed union dissolution. Though beyond the scope of the current study, this points to a potential future direction of research.

Limitations

While our study has made a number of contributions, it also has some limitations. We note that our results should be read with caution since it is possible that gender disparities in reporting poor health, with men less likely to report health conditions than women, is starker in our study since some of the conditions may not limit daily activities (Ladwig, Marten-Mittag, Formanek, & Dammann, 2000). In addition, we were only able to examine the impacts of

conditions reported during the study window, over the seventeen waves of available data. We do not know about prior chronic health conditions before the study survey, which limits our ability to predict health impacts on union dissolution over longer periods of the life course. Not accounting for experiences of prior conditions could lead to selection bias issues.

Despite these limitations, our study points to important future directions for research. While we do not probe the specific causality channel, our findings suggest that not only preventing transitions to chronic illnesses, but also addressing the financial stress and couple-level dynamics that derives from them, may contribute to mitigating poor quality family life. Research that considers interventions to improve the family wellbeing of the chronically ill may therefore be especially productive. Addressing the social implications of chronic diseases may also be particularly important given population ageing, whereby advanced societies continue to boast increasing life expectancy.

REFERENCES

Amato, P. R. (2010). Research on Divorce: Continuing Trends and New Developments. *Journal of Marriage and Family, 72*(3), 650-666. doi:10.1111/j.1741-3737.2010.00723.x

Australian Institute of Health and Welfare. 2011. "Chronic diseases." Retrieved from "http://www.aihw.gov.au/chronic-diseases/"

Bernard, J. (1982). *The future of marriage*: Yale University Press.

Bianchi, S. M., Milkie, M. A., Sayer, L. C., & Robinson, J. P. (2000). Is anyone doing the housework? Trends in the gender division of household labor. *Social Forces, 79*(1), 191-228. doi:10.1093/sf/79.1.191

Bittman, M., England, P., Sayer, L., Folbre, N., & Matheson, G. (2003). When does gender trump money? Bargaining and time in household work. *American Journal of Sociology, 109*(1), 186-214. doi:10.1086/378341

Bound, J., Schoenbaum, M., Stinebrickner, T. R., & Waidmann, T. J. L. E. (1999). The dynamic effects of health on the labor force transitions of older workers. *Labour Economics, 6*(2), 179-202. doi:10.1016/S0927-5371(99)00015-9

Bury, M. (1982). Chronic illness as biographical disruption. *Sociology of Health & Illness, 4*(2), 167-182. doi:10.1111/1467-9566.ep11339939

Carlsen, K., Dalton, S. O., Frederiksen, K., Diderichsen, F., & Johansen, C. J. E. J. o. C. (2007). Are cancer survivors at an increased risk for divorce? A Danish cohort study. *European Journal of Cancer, 43*(14), 2093-2099. doi:10.1016/j.ejca.2007.05.024

Carr, D. (2018). The Linked Lives Principle in Life Course Studies: Classic Approaches and Contemporary Advances. In D. F. Alwin, D. H. Felmlee, & D. A. Kreager (Eds.), *Social Networks and the Life Course: Integrating the Development of Human Lives and Social Relational Networks* (Vol. 2, pp. 41-63). Cham: Springer International Publishing.

Carstensen, L. L. (2006). The influence of a sense of time on human development. *Science, 312*(5782), 1913-1915. doi:10.1126/science.1127488

Chandola, T., Ferrie, J., Sacker, A., & Marmot, M. (2007). Social inequalities in self reported health in early old age: follow-up of prospective cohort study. *BMJ, 334*(7601), 990. doi:10.1136/bmj.39167.439792.55

Cherlin, A. J. (2010). *The marriage-go-round: The state of marriage and the family in America today*: Vintage.

Conti, G., Heckman, J., & Urzua, S. (2010). The education-health gradient. *American Economic Review, 100*(2), 234-238. doi: 10.1257/aer.100.2.234

Cooke, L. P. (2006). "Doing" gender in context: Household bargaining and risk of divorce in Germany and the United States. *American Journal of Sociology, 112*(2), 442-472. doi:10.1086/506417

Corbin, J. (1987). Accompaniments of chronic illness : Changes in body, self, biography, and biographical time. *Research in Sociology and Health Care, 6*, 249-281.

Craig, L., & Mullan, K. (2010). Parenthood, gender and work-family time in the United States, Australia, Italy, France, and Denmark. *Journal of Marriage and Family, 72*(5), 1344-1361. doi:10.1111/j.1741-3737.2010.00769.x

Doblhammer, G., & Hoffmann, R. (2009). Gender differences in trajectories of health limitations and subsequent mortality. A study based on the German Socioeconomic Panel 1995–2001 with a mortality follow-up 2002–2005. *Journals of Gerontology Series B, 65*(4), 482-491. doi:10.1093/geronb/gbp051

Guo, G. (1993). Event-history analysis for left-truncated data. *Sociological Methodology*, 23, 217-243. doi: 10.2307/271011

Haas, S. (2008). Trajectories of functional health: The 'long arm'of childhood health and socioeconomic factors. *Social Science & Medicine, 66*(4), 849-861. doi:10.1016/j.socscimed.2007.11.004

Hewitt, B., Baxter, J., & Western, M. (2005). Marriage breakdown in Australia: The social correlates of separation and divorce. *Journal of Sociology, 41*(2), 163-183. doi:10.1177/1440783305053235

Jackson, M. I. (2009). Understanding Links between Adolescent Health and Educational Attainment. *Demography, 46*(4), 671-694. doi:10.1353/dem.0.0078

Kalil, A., Haskins, R., & Chesters, J. (2012). *Investing in Children: Work, Education, and Social Policy in Two Rich Countries*: Brookings Institution Press.

Karlson, K. B., Holm, A., & Breen, R. (2010). Comparing Regression Coefficients Between Models using Logit and Probit: A New Method. *Sociological Methodology*. doi:10.1177/0081175012444861

Karraker, A., & Latham, K. (2015). In Sickness and in Health? Physical Illness as a Risk Factor for Marital Dissolution in Later Life. *Journal of Health and Social Behavior, 56*(3), 420-435. doi:doi.org/10.1177/0022146515596354

Killewalda, A. (2016). Money, Work, and Marital Stability: Assessing Change in the Gendered Determinants of Divorce. *American Sociological Review, 81*(4), 696-719. doi:10.1177/0003122416655340

Kohler, U., Karlson, K. B., & Holm, A. (2011). Comparing coefficients of nested nonlinear probability models. *Stata Journal, 11*(3), 420-438. doi:10.1177/1536867x1101100306

Ladwig, K.-H., Marten-Mittag, B., Formanek, B., & Dammann, G. (2000). Gender Differences of Symptom Reporting and Medical Health Care Utilization in the German Population. *European Journal of Epidemiology*, 511-518. doi:10.1023/A:1007629920752

Lang, F. R., & Carstensen, L. L. (2002). Time counts: future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125-139. doi:10.1037/0882-7974.17.1.125

Mathieson, C. M., & Stam, H. (1995). Reneotiating identity: cancer narratives. *Sociology of Health & Illness, 17*(3), 283-306. doi:10.1111/1467-9566.ep10933316

OECD. (2016). Marriage and divorce rates. OECD Family Database, OECD – Social Policy Division – Directorate of Employment, Labour and Social Affairs. Retrieved from: https://www.oecd.org/els/family/SF_3_1_Marriage_and_divorce_rates.pdf

OECD. (2017). Health at a glance 2017: OCED Indicators – How does Australia compare? Retrieved from: https://www.oecd.org/australia/Health-at-a-Glance-2017-Key-Findings-AUSTRALIA.pdf

Patterson, J. M. (2002). Integrating family resilience and family stress theory. *Journal of Marriage and Family, 64*(2), 349-360. doi:10.1111/j.1741-3737.2002.00349.x

Pearlin, L. I., Lieberman, M. A., Menaghan, E. G., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behaviour, 22*(4), 337-356.

Percheski, C., & Meyer, J. M. (2018). Health and Union Dissolution among Parenting Couples: Differences by Gender and Marital Status. *Journal of Health and Social Behavior, 59*(4), 569-584. doi:10.1177/0022146518808707

Randall, A. K., & Bodenmann, G. (2009). The role of stress on close relationships and marital satisfaction. *Clinical Psychology Review, 29*(2), 105-115. doi:10.1016/j.cpr.2008.10.004

Royston, P., & White, I. R. (2011). Multiple Imputation by Chained Equations (MICE): Implementation in Stata. *Journal of Statistical Software, 45*(4), 1-20. doi:10.18637/jss.v045.i04

Sayer, L. C., England, P., Allison, P. D., & Kangas, N. (2011). She Left, He Left: How Employment and Satisfaction Affect Women's and Men's Decisions to Leave Marriages. *American Journal of Sociology, 116*(6), 1982-2018. doi:10.1086/658173

Syse, A., Tretli, S., & Kravdal, O. (2009). The impact of cancer on spouses' labor earnings: a population-based study. Cancer, 115(18 Suppl), 4350-61.

Umberson, D., & Williams, K. (2005). Marital quality, health, and aging: gender equity? *The Journal of Gerontology: Series B, 60 Spec No 2*, 109-113. doi:10.1093/geronb/60.special_issue_2.s109

van Damme, M., & Kalmijn, M. (2014). The dynamic relationships between union dissolution and women's employment: A life-history analysis of 16 countries. *Social Science Research, 48*, 261-278. doi:10.1016/j.ssresearch.2014.06.009

Wade, T. J., & Pevalin, D. J. (2004). Marital transitions and mental health. *Journal of Health and Social Behaviour, 45*(2), 155-170. doi:10.1177/002214650404500203

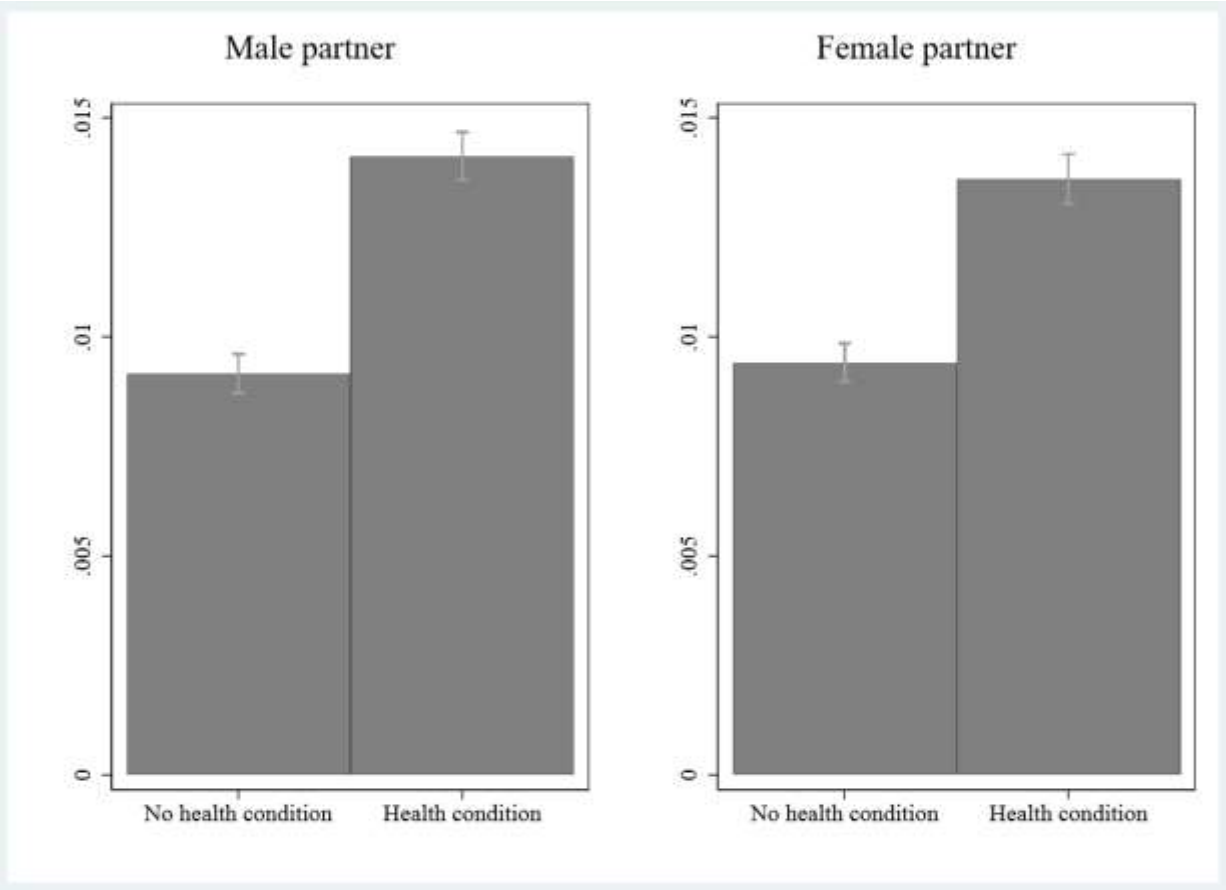
Waldron, I., Hughes, M. E., & Brooks, T. L. (1996). Marriage protection and marriage selection—prospective evidence for reciprocal effects of marital status and health. *Social Science & Medicine, 43*(1), 113-123. doi:10.1016/0277-9536(95)00347-9

Waller, M. R., & McLanahan, S. S. (2005). "His" and "Her" marriage expectations: Determinants and consequences. *Journal of Marriage and Family, 67*(1), 53-67. doi:10.1111/j.0022-2445.2005.00005.x

Watson, N., & Wooden, M. 2012. "The HILDA Survey: A Case Study in the Design and Development of a Successful Household Panel Survey." *Longitudinal and Life Course Studies*, 3(3):369-381

World Health Organization (WHO). Global status report on noncommunicable diseases 2010. Geneva: WHO, 2011.

Figure 1. Discrete-time hazards of union dissolution (separation) by health condition status and sex of the partner



Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Rates are adjusted by a linear and a square function of relationship duration and partner's health condition status. Whiskers are 95 percent confidence intervals.

Table 1. Discrete-time hazard ratios of union dissolution (separation)

	Model 1 - Base model B/(SE)	Model 2 - Work hours B/(SE)	Model 3 - Housework hour B/(SE)	Model 4 - Time stress B/(SE)	Model 5 - Financial stress B/(SE)	Model 6 - Full model B/(SE)
Health condition						
Male partner	1.40**	1.39**	1.40**	1.39**	1.35**	1.33**
	(0.10)	(0.11)	(0.10)	(0.10)	(0.10)	(0.10)
Female partner	1.36**	1.39**	1.36**	1.34**	1.29**	1.32**
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Employment status						
Male partner		0.82				0.84
		(0.13)				(0.13)
Female partner		0.83				0.84
		(0.09)				(0.10)
Paid work hours						
Male partner		1.00				1.00
		(0.00)				(0.00)
Female partner		1.01**				1.01**
		(0.00)				(0.00)
Housework hours						
Male partner			1.01			1.00
			(0.00)			(0.00)
Female partner			0.99+			1.00
			(0.00)			(0.00)
Time stress						
Male partner				1.11		1.08
				(0.08)		(0.08)
Female partner				1.11		1.02
				(0.07)		(0.07)
Financial stress						

Male partner					1.24*	1.22*
					(0.10)	(0.10)
Female partner					1.53**	1.52**
					(0.12)	(0.12)
N Observations	74893	74893	74893	74893	74893	74893
F statistic	35.44	29.51	32.09	31.98	33.62	24.36
prob>F	0.00	0.00	0.00	0.00	0.00	0.00

Significance levels: + p<.1, * p<.05, ** p<.01. Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Competing-risks discrete-time event-history analysis of union dissolution: separation and death of a partner. Coefficients for death of a partner equations have been omitted. Other variables included in the model controls for linear and quadratic functions of baseline union duration, type of union, household income quintiles, homeownership, number of children, and gender-specific age, level of education, ethnic group, and second or higher order union. Analyses were done on 20 multiple-imputed datasets; N shows original couple-year observations. Full results of this analysis can be consulted in model 1of Table S2 in the online appendices.

Table 2. Discrete-time hazard ratios of union dissolution (separation). Interactions terms

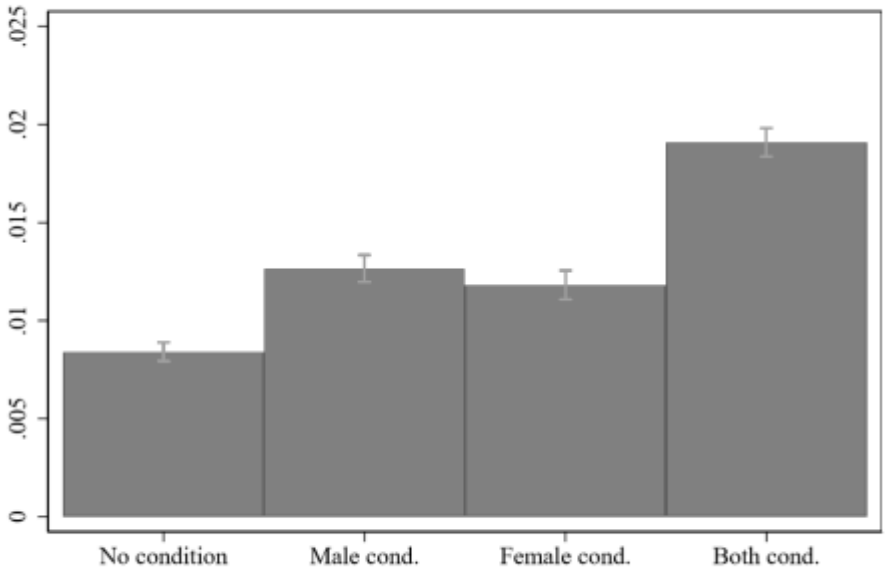
	Model 7 - Age interaction	Model 8 - Relation duration interaction	Model 9 - Education interaction	Model 10 - Cohabitation interaction
Health condition				
Male partner	1.45**	1.38**	1.19+	1.27**
	(0.12)	(0.15)	(0.10)	(0.11)
Female partner	1.45**	1.55**	1.27**	1.12
	(0.12)	(0.16)	(0.11)	(0.10)
Health condition * Age (55+)				
Male (condition) * female (age)	0.60*			
	(0.14)			
Female (condition) * female (age)	1.18			
	(0.30)			
Male (condition) * male (age)	1.00			
	(0.21)			
Female (condition) * male (age)	0.56*			
	(0.13)			
Health condition * Relationship duration				
Male (condition) * relationship duration in years		1.00		
		(0.01)		
Female (condition) * relationship duration in years		0.99*		
		(0.01)		
Health condition * Higher education				
Male (condition) * female (educ.)			1.77**	
			(0.32)	
Female (condition) * female (educ.)			0.99	

			(0.19)	
Male (condition) * male (educ.)			0.93	
			(0.19)	
Female (condition) * male (educ.)			1.24	
			(0.26)	
Health condition * Cohabiting relationship				
Male (condition) * cohabitation				1.09
				(0.18)
Female (condition) * cohabitation				1.65**
				(0.25)
N Observations	74893	74893	74893	74893
F statistic	22.09	23.20	21.74	23.30
prob>F	0.00	0.00	0.00	0.00

Significance levels: + 0.1 * 0.05 ** 0.01. Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Competing-risks discrete-time event-history analysis of union dissolution: separation and death of a partner. Coefficients for death of a partner equations have been omitted. All models include other variables in Model 6 (Full model) of Table 1. Analyses were done on 20 multiple-imputed datasets; N shows original couple-year observations.

Online appendices

Figure S1. Discrete-time hazards of union dissolution (separation) by partner-specific health condition status



Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Rates are adjusted by a linear and a square function of relationship duration and partner-specific indicators for onset of long-term conditions. Whiskers are 95 percent confidence intervals.

Figure S2. Discrete-time hazards of union dissolution (separation) since first report of a partner's health condition

Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Estimates are adjusted by a linear and a square function of relationship duration and gender-specific indicators of chronic condition status. The separation hazards for female partner's condition do not vary overtime since first report (95 percent level of statistical significance).

Table S1. Summary statistics of model covariates

	Dissolution		Partner's death		Overall sample					
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Min.	Max.	N	n
Chronic condition										
Male partner	0.29	0.46	0.70	0.46	0.27	0.44	0	1	69224	9716
Female partner	0.27	0.45	0.54	0.50	0.24	0.43	0	1	71852	9915
Couple level variables										
Relationship duration	10.92	10.26	40.13	17.15	19.59	16.23	0	68	70601	9769
Relationship duration (squared)	224.38	394.97	1904.11	1202.13	647.29	855.69	0	4624	70601	9769
Cohabiting (ref. Married)	0.28	0.45	0.06	0.24	0.21	0.41	0	1	71862	9914
One child in HH	0.19	0.39	0.07	0.25	0.15	0.36	0	1	74893	10460
Two or more children in HH	0.46	0.50	0.06	0.24	0.34	0.47	0	1	71867	9915
2nd quintile (HH income)	0.22	0.42	0.17	0.37	0.20	0.40	0	1	74893	10460
3rd quintile (HH income)	0.24	0.42	0.07	0.26	0.20	0.40	0	1	74893	10460
4th quintile (HH income)	0.20	0.40	0.07	0.25	0.20	0.40	0	1	74893	10460
5th quintile (HH income)	0.17	0.38	0.05	0.22	0.20	0.40	0	1	74893	10460
Owner-occupancy	0.67	0.47	0.84	0.37	0.76	0.43	0	1	70150	9934
Male partner variables										
Employed	0.81	0.39	0.19	0.39	0.75	0.43	0	1	69234	9717
Weekly paid work hours	36.45	21.95	7.31	17.05	32.93	22.37	0	150	69121	9714
Weekly housework hours	6.83	6.80	7.02	9.53	6.29	6.64	0	128	61442	9130
Time pressure	0.41	0.49	0.17	0.38	0.34	0.47	0	1	62711	9200
Financial pressure	0.28	0.45	0.11	0.31	0.15	0.36	0	1	70664	10398
Age	43.22	11.26	69.71	12.18	48.31	15.50	18	85	74893	10460
Overseas-born	0.22	0.42	0.35	0.48	0.25	0.43	0	1	69202	9713
High education	0.18	0.39	0.14	0.35	0.25	0.43	0	1	69234	9717
2nd or higher order partnership	0.28	0.45	0.16	0.37	0.14	0.35	0	1	74893	10460
Female partner variables										
Employed	0.66	0.47	0.17	0.38	0.61	0.49	0	1	71867	9915
Weekly paid work hours	21.95	19.27	4.89	12.16	19.34	18.93	0	144	71743	9913

Weekly housework hours	17.28	14.28	21.01	16.15	18.28	13.64	0	128	64658	9413
Time pressure	0.52	0.50	0.28	0.45	0.43	0.50	0	1	65844	9481
Financial pressure	0.34	0.47	0.13	0.34	0.18	0.38	0	1	70664	10398
Age	40.67	11.07	66.88	12.50	45.80	15.12	18	85	74893	10460
Overseas-born	0.22	0.42	0.27	0.44	0.24	0.43	0	1	71847	9912
High education	0.22	0.41	0.11	0.32	0.27	0.45	0	1	71867	9915
2nd or higher order partnership	0.26	0.44	0.17	0.37	0.14	0.34	0	1	74893	10460

Source: HILDA Survey data (2001-2017). Notes: Unweighted statistics prior to multiple imputation of data. Couples are the units of analysis. N=couple-year observations; n=couples.

Table S2. Discrete-time hazard ratios of union dissolution (separation). Full models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	S	D	S	D	S	D	S	D	S	D	S	D
Health condition												
Male partner	1.40**	2.00**	1.39**	1.92**	1.40**	2.00**	1.39**	1.99**	1.35**	1.99**	1.33**	1.90**
	(0.10)	(0.21)	(0.11)	(0.20)	(0.10)	(0.21)	(0.10)	(0.21)	(0.10)	(0.21)	(0.10)	(0.20)
Female partner	1.36**	1.19+	1.39**	1.19+	1.36**	1.18+	1.34**	1.18+	1.29**	1.18+	1.32**	1.15
	(0.10)	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)	(0.10)	(0.11)
Employment status												
Male partner			0.82	0.67							0.84	0.67
			(0.13)	(0.18)							(0.13)	(0.18)
Female partner			0.83	0.85							0.84	0.85
			(0.09)	(0.20)							(0.10)	(0.20)
Paid work hours												
Male partner			1.00	1.00							1.00	1.00
			(0.00)	(0.01)							(0.00)	(0.01)
Female partner			1.01**	1.00							1.01**	1.00
			(0.00)	(0.01)							(0.00)	(0.01)
Housework hours												
Male partner					1.01	1.00					1.00	1.00
					(0.00)	(0.01)					(0.00)	(0.01)
Female partner					1.00+	1.00					1.00	1.00
					(0.00)	(0.00)					(0.00)	(0.00)
Time stress												
Male partner							1.11	0.95			1.08	1.00
							(0.08)	(0.13)			(0.08)	(0.14)
Female partner							1.11	1.21+			1.02	1.26*
							(0.07)	(0.14)			(0.07)	(0.14)
Financial stress												
Male partner									1.24*	1.03	1.22*	1.01

									(0.10)	(0.17)	(0.10)	(0.17)
Female partner									1.53**	1.23	1.52**	1.22
									(0.12)	(0.20)	(0.12)	(0.20)
Couple level variables												
Relationship duration	0.97**	0.98	0.97**	0.98	0.97**	0.98	0.97**	0.98	0.97**	0.98	0.97**	0.98
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Relationship duration (squared)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cohabiting (ref. Married)	0.98	0.83	0.96	0.81	0.97	0.83	0.98	0.83	0.95	0.82	0.93	0.81
	(0.08)	(0.20)	(0.08)	(0.20)	(0.08)	(0.20)	(0.08)	(0.20)	(0.08)	(0.20)	(0.08)	(0.19)
One child in HH	1.41**	1.58*	1.48**	1.73**	1.43**	1.59*	1.39**	1.56*	1.33**	1.56*	1.39**	1.68**
	(0.13)	(0.31)	(0.13)	(0.34)	(0.13)	(0.31)	(0.12)	(0.30)	(0.12)	(0.30)	(0.13)	(0.33)
Two or more children in HH	1.81**	1.02	1.95**	1.10	1.86**	1.04	1.75**	0.99	1.70**	1.00	1.82**	1.05
	(0.14)	(0.23)	(0.16)	(0.25)	(0.15)	(0.23)	(0.14)	(0.22)	(0.14)	(0.22)	(0.15)	(0.24)
2nd quintile (HH income)	1.04	0.73*	1.02	0.83	1.05	0.73*	1.03	0.73*	1.08	0.74*	1.05	0.83
	(0.11)	(0.09)	(0.11)	(0.11)	(0.11)	(0.09)	(0.10)	(0.09)	(0.11)	(0.09)	(0.12)	(0.11)
3rd quintile (HH income)	1.10	0.53**	1.02	0.67*	1.10	0.53**	1.08	0.53**	1.20+	0.54**	1.10	0.68*
	(0.11)	(0.10)	(0.12)	(0.13)	(0.11)	(0.10)	(0.11)	(0.10)	(0.13)	(0.10)	(0.13)	(0.13)
4th quintile (HH income)	1.04	0.56**	0.92	0.76	1.03	0.55**	1.02	0.55**	1.17	0.57**	1.03	0.77
	(0.11)	(0.11)	(0.12)	(0.16)	(0.11)	(0.11)	(0.11)	(0.11)	(0.13)	(0.11)	(0.13)	(0.17)
5th quintile (HH income)	1.01	0.46**	0.87	0.65+	1.00	0.46**	0.98	0.45**	1.17	0.48**	1.00	0.67+
	(0.12)	(0.10)	(0.12)	(0.16)	(0.12)	(0.10)	(0.12)	(0.10)	(0.14)	(0.11)	(0.14)	(0.16)
Owner-occupancy	0.87+	0.86	0.88+	0.87	0.88+	0.86	0.87+	0.86	0.94	0.88	0.94	0.89
	(0.07)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)	(0.07)	(0.11)
Female partner variables												
Age	1.01	1.05**	1.01	1.05**	1.01	1.05**	1.01	1.06**	1.01+	1.05**	1.01+	1.05**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Overseas-born	1.07	0.72**	1.08	0.72**	1.07	0.72**	1.08	0.73*	1.08	0.73*	1.09	0.73*
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
High education	0.77**	0.90	0.75**	0.91	0.76**	0.89	0.76**	0.89	0.78**	0.90	0.75**	0.90

	(0.06)	(0.14)	(0.06)	(0.14)	(0.06)	(0.14)	(0.06)	(0.14)	(0.06)	(0.14)	(0.06)	(0.14)
2nd or higher order partnership	1.45**	0.88	1.43**	0.89	1.44**	0.88	1.45**	0.88	1.43**	0.87	1.42**	0.87
	(0.13)	(0.15)	(0.13)	(0.15)	(0.13)	(0.15)	(0.13)	(0.15)	(0.12)	(0.15)	(0.12)	(0.15)
Male partner variables												
Age	0.99+	1.05**	0.99+	1.04**	0.99+	1.05**	0.99	1.05**	0.99	1.05**	0.99	1.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Overseas-born	1.01	1.27+	1.00	1.25+	1.00	1.26+	1.01	1.26+	1.00	1.26+	1.00	1.23+
	(0.08)	(0.16)	(0.08)	(0.15)	(0.08)	(0.15)	(0.08)	(0.15)	(0.08)	(0.15)	(0.08)	(0.15)
High education	0.77**	0.99	0.80*	0.95	0.77**	0.98	0.76**	0.99	0.79**	0.99	0.81*	0.94
	(0.07)	(0.15)	(0.07)	(0.14)	(0.07)	(0.15)	(0.07)	(0.15)	(0.07)	(0.15)	(0.07)	(0.14)
2nd or higher order partnership	1.76**	0.87	1.75**	0.87	1.76**	0.87	1.77**	0.87	1.76**	0.87	1.74**	0.87
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
N (couple-years)	74893	74893	74893	74893	74893	74893						
F-statistic	35.44	29.51	32.09	31.98	33.62	24.36						
prob>F	0.00		0.00		0.00		0.00		0.00		0.00	

S= Separation, D=Death of a Partner. Significance levels: + 0.1 * 0.05 ** 0.01. Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Competing-risks discrete-time event-history analysis of union dissolution: separation and death of a partner. Analyses were done on 20 multiple-imputed datasets; N shows original couple-year observations.

Table S3. Discrete-time hazard ratios of union dissolution (separation). Robustness check for the role of mental health conditions

	Base model B/(SE)	Add mental condition B/(SE)	Full model B/(SE)
Health condition			
Male partner	1.40**	1.31**	1.27*
	(0.13)	(0.13)	(0.13)
Female partner	1.48**	1.32**	1.30**
	(0.13)	(0.12)	(0.12)
Depression and anxiety			
Male partner		1.49**	1.42**
		(0.18)	(0.18)
Female partner		1.63**	1.60**
		(0.18)	(0.18)
N Observations	49790	49790	49790
F statistic	23.23	21.74	15.20
prob>F	0.00	0.00	0.00

+ p<.1, * p<.05, ** p<.01

Source: HILDA Survey data (2007-2017). Notes: Couples are the units of analysis. Competing-risks discrete-time event-history analysis of union dissolution: separation and death of a partner. Coefficients for death of a partner equations have been omitted. Other variables included in the model controls for linear and quadratic functions of baseline union duration, type of union, household income quintiles, homeownership, number of children, and gender-specific age, level of education, ethnic group, and second or higher order union. Full model also includes the following variables for each partner: employment status, paid-work hours, housework hours, time stress and financial stress. Analyses were done on 20 multiple-imputed datasets; N shows original couple-year observations.

Table S4. Discrete-time hazard ratios of union dissolution (separation). Robustness checks for simultaneous partner's health condition

	Base model B/(SE)	Full model B/(SE)
Health condition		
Both partners	0.92	0.93
	(0.14)	(0.14)
Male partner	1.39**	1.32**
	(0.13)	(0.12)
Female partner	1.40**	1.35**
	(0.13)	(0.12)
N Observations	74893	74893
F statistic	33.26	23.42
prob>F	0.00	0.00

Significance levels: + 0.1 * 0.05 ** 0.01. Source: HILDA Survey data (2001-2017). Notes: Couples are the units of analysis. Competing-risks discrete-time event-history analysis of union dissolution: separation and death of a partner. Coefficients for death of a partner equations have been omitted. Other variables included in the model controls for linear and quadratic functions of baseline union duration, type of union, household income quintiles, homeownership, number of children, and gender-specific age, level of education, ethnic group, and second or higher order union. Full model also includes the following variables for each partner: employment status, paid-work hours, housework hours, time stress and financial stress. Analyses were done on 20 multiple-imputed datasets; N shows original couple-year observations.