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PSYCHIATRIC MORBIDITY AND SUBSEQUENT DIVORCE: A COUPLE-LEVEL REGISTER-BASED STUDY IN FINLAND

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1   ABSTRACT

2   *Purpose.* Studies that assess the role of mental health for the risk of divorce are scarce and mostly rely

3   on individual-level data, although divorce is a couple-level phenomenon. Using data on couples, we

4   examine the effects of both spouses' psychiatric morbidity on the risk of divorce, and whether socio-

5   demographic factors affect these associations.

6   *Methods.* We followed 96,222 Finnish married couples for six years using register-based data on both

7   spouses and their household. New incidence of psychiatric morbidity and subsequent divorce was

8   identified from dates of prescription medication purchases and hospital admissions, and dates of

9   registered divorce. Socio-demographic factors were measured annually for both spouses and their

10   household. The effect of incident psychiatric morbidity on divorce risk was analyzed using Cox

11   regression.

12   *Results.* Psychiatric morbidity in men increased the age-adjusted risk of divorce more than two-fold

13   and in women nearly two-fold. The risk of divorce was particularly pronounced immediately after

14   new incidence of psychiatric morbidity, before settling to a persistently high level. Psychiatric

15   morbidity in both spouses increased the risk of divorce almost three-fold. Adjustment for socio-

16   economic factors had little effect on these associations.

17   *Conclusions.* Psychiatric morbidity is a persistent risk factor of divorce. The risk is larger when both

18   spouses experience psychiatric morbidity compared to only one spouse. The findings are consistent

19   with the idea that poor relationship quality and dissatisfaction in couples suffering from mental health

20   problems have long-term consequences for marital stability. Treatment of psychiatric morbidity

21   should not focus only on the individual but on couple-level dynamics.

22   Keywords: Psychiatric morbidity; couples; divorce; marital status; Finland

23

1 INTRODUCTION

The divorced experience worse mental health and higher levels of mental distress than the married [1–8], which may either result from the adverse causal effects of divorce on mental health, or the selective effects of individuals in poor mental health or with other factors detrimental to mental health being more likely to divorce [2, 9–11]. The causal effects may either relate to the stress of going through divorce, or to the loss of protective factors associated with marriage [9, 10]. These protective factors are mainly resources at the household level, such as higher household income and better living conditions, the loss of which may also contribute to the level of stress experienced during the divorce process. Conversely, explanations based on direct selection postulate that poor mental health precedes divorce. However, selection effects may also be indirect; some factors either at the individual or at the household level – such as prior alcohol abuse - increase the risk of both poor mental health and divorce. Both of these selective explanations are often also referred to as selection out of marriage [2, 12, 13].

Previous research mostly views the adverse causal effects of divorce on mental health as the main explanatory mechanism [11, 14, 15]. However, more recent studies that examine changes in mental health before and after divorce using longitudinal data from the UK [2, 8] , Canada [12] and Finland [16] lend support for both selection and causal effects, and in the US National Comorbidity Survey mental disorders are also significant predictors of subsequent divorce [13, 17]. These previous studies on mental health and marital transitions rely on individual-level data, although divorce always takes place in a couple. If the poor health of either partner in a couple increases the risk of divorce, we are likely to underestimate the effect health has on divorce risk when we have no information on the health status of the partner. That is because we fail to identify part of the couples in poor health if we only have access to health information on one of the partners. With individual-level data it is also impossible to analyze the joint effects of both partners poor mental health on divorce risk. Furthermore, only socio-demographic characteristics of one spouse are observed, even though partner characteristics as well as household level factors are equally likely to affect the association between psychiatric morbidity and divorce risk.

1 Only a few studies have examined the effect of poor mental health on divorce risk using data from

2 both spouses [18, 19]. In both these studies couples with one spouse experiencing mental distress had

3 lower divorce risk than couples with both spouses in distress, and higher divorce risk than couples

4 with no distress. However, in the Australian sample [18]the effect of both spouses experiencing

5 mental distress was additive, whereas in the Norwegian sample [19] the divorce risk for couples with

6 two spouses suffering from mental distress was lower than expected based on the main effects of each

7 spouse. The studies also reached contradictory conclusions on whether the effect of men's or

8 women's poor mental health on divorce risk is stronger.

9 Part of the mental distress experienced immediately before divorce is likely to be attributable to

10 marital conflict and the process of going through divorce [2, 8, 16], and thus estimates on the effect of

11 mental distress on divorce risk do not accurately reflect causal effects when the time from distress to

12 divorce is short [13, 18]. Some studies have tried to overcome this by measuring mental distress up to

13 eight years before divorce [19], while others differentiate between lifetime mental disorders and those

14 with onset between survey waves [17]. As expected, estimates of the effect of psychiatric morbidity

15 on divorce risk are larger when the time gap between disorder incidence and divorce is shorter [17,

16 19]. However, evidence on the timeline for the effects of poor mental health on divorce risk remain

17 vague and it is not clear whether the risk of divorce settles to a permanently higher level at some point

18 after disease incidence.

19 Our aim is to contribute to previous literature by analyzing how psychiatric morbidity predicts the

20 probability of divorce at the couple-level. We first examine how the risk of divorce changes when

21 time since incidence of psychiatric morbidity is taken into account, and whether these changes are

22 similar for psychiatric morbidity in men and women. We then analyze if couples with both spouses

23 experiencing psychiatric morbidity have higher risk of divorce than couples with only one spouse

24 affected, and whether these effects depend on socio-demographic characteristics of both spouses.

25 Instead of survey data, our analyses rely on a unique longitudinal data set that combines information

26 from nationally representative administrative registers for both partners. The sample does not suffers

27 from attrition or misreporting bias, and includes the exact dates of union formation and dissolution, all

1 purchases of prescribed psychotropic medication, prescription reimbursement rights related to

2 psychosis, and hospital admissions with psychiatric diagnoses.

3 ## METHODS
4

5 We use register-based data on Finnish couples. The sample is derived from a two-stage random

6 sample. First, a simple random sample covering 14% of individuals aged 40 or over and living in

7 private households at the end of 1997 was drawn from population registers. Second, all household

8 members of the selected individuals were added to the sample. We included all married couples with

9 both spouses aged 40 to 64. The register-based data from Statistics Finland include dates of divorce

10 from 1998 to 2003, annual socio-demographic information from 1995 to 2003, and mortality follow-

11 up until the end of year 2003. These data were further linked to hospital records, reimbursement for

12 drug costs, and purchases of prescription medication from 1995 to 2003. The information on

13 hospitalizations is provided by the National Institute of Health and Welfare, and information on

14 medication purchases and reimbursement by the Social Insurance Institution. The data linkage was

15 done by Statistics Finland using personal identification codes (the Ethics Committee of Statistics

16 Finland's permission TK-53-373-09).

17 Psychiatric morbidity was defined as purchasing psycholeptics (ATC-codes N05) or psychoanaleptics

18 (N06, excluding anti-dementia drugs N06D), qualifying for special refund right for psychosis, or

19 being hospitalized with a psychiatric diagnosis (ICD-10 codes F20-F69, F99). We also measured age,

20 educational level, social class and main activity for both the male and the female partner. Educational

21 level was based on highest educational qualification held and classified as tertiary, intermediate, and

22 basic education or less. Social class was based on current occupation, or previous occupation if

23 currently economically inactive, and classified as upper non-manual, lower non-manual, manual and

24 other (e.g. farmers and other entrepreneurs). Main activity was based on labor market participation

25 during the last 12 months and classified as employed, unemployed, retired (mostly due to disability),

26 and other (e.g. house-wives and students).). Couple-level characteristics were measured with

27 household income, housing tenure, whether the household had resident children that were younger

1 than 18 years, and union duration (less than 5 years, 5 to 9 years, and 10 years or more). Household

2 income included all taxable income sources for all household members, was divided with the number

3 of household consumption units corresponding to the OECD equivalence scale [20] and classified

4 into quintiles at the household level. For housing tenure, owner-occupiers were separated from others.

5 ## Design, participants and statistical analyses

6

7 For the purposes of these analyses we set the baseline at 1.1.1998. We first assessed baseline

8 psychiatric morbidity for all couples — that is, for both spouses — using hospital records and

9 information on prescription medication from the years 1996 and 1997. After excluding couples with

10 baseline psychiatric morbidity, the remaining 96,222 couples were followed for new incidence of

11 psychiatric morbidity and subsequent divorce from January 1, 1998 until December 31, 2003. Divorce

12 refers to the date when either partner moves out of the common household.

13 We used Cox proportional hazards regression models to analyze how psychiatric morbidity is related

14 to the risk of divorce. The outcome variable was the time from the beginning of follow-up (January 1,

15 1998) until the date of divorce. Censoring occurred at death, bereavement, emigration or the end of

16 the follow-up (December 31, 2003). The results are presented as hazard ratios (HR). Stata software

17 was used for all the analyses.

18 We used psychiatric morbidity of both spouses as time-varying binary covariates, and analyzed both

19 individual-level effects of either the husband or the wife having psychiatric morbidity, and the couple-

20 level effects of both spouses experiencing psychiatric morbidity. The variable measuring psychiatric

21 morbidity of the husband was 0 at the beginning of the follow-up period and 1 after first incidence of

22 psychiatric morbidity. A similar variable was used for the wife's psychiatric morbidity. The

23 interaction of these two variables stands for both partner experiencing psychiatric morbidity.

24 When analyzing the effects of only one partner – either the husband or the wife – showing psychiatric

25 morbidity, we divided time since incidence of psychiatric morbidity into categories: 0 to 6 months, 6

26 to 12 months, 12 to 24 months, and 2 years or more. We thus used continuous time from the

1 beginning of follow-up until divorce as the outcome variable, and the categorical time since incidence

2 of psychiatric morbidity as a time-varying covariate [21]. Similar modelling strategy has been used

3 previously to study changes in the risk of institutionalization [22] and mortality [23] after marital

4 transitions. When analyzing the effects of both spouses with psychiatric morbidity, we used a lag of

5 six months in the date of psychiatric morbidity incidence. The longer the lag, the more confident we

6 can be on the temporal order of psychiatric morbidity and divorce, because the process of separation

7 might trigger psychiatric morbidity already before the actual date of divorce.

8 We first adjusted for the age of both the husband and the wife, both varying annually in time, and then

9 for several other individual-level and couple-level covariates. Education of both spouses was

10 measured at the end of year 1997, and social class at the end of year 1995. Time-varying main activity

11 of both spouses, household income, home-ownership, resident children, and union duration were

12 measured annually.

13 ## RESULTS
14

15 During the follow-up we observed 22,991 couples with new incidence of psychiatric morbidity. In

16 2,475 of these cases both spouses experienced psychiatric morbidity (Table 1). The number of

17 divorces in these marriages was 270. Psychiatric morbidity was more common among women than

18 men, so that in 12,849 couples only the wife experienced psychiatric morbidity, compared to 7,667

19 couples were it was the husband only. The corresponding numbers for divorce were 1,153 and 852,

20 respectively. The total number of divorces during follow-up was 7,932, and of these 5,657 occurred

21 for couples with no psychiatric morbidity.

22 <Table 1>

23 The risk of divorce was particularly pronounced immediately after the incidence of psychiatric

24 morbidity (Figure 1). After 12 months since the incidence the risk of divorce seemed to settle to a

25 persistently higher level compared to couples with no psychiatric morbidity. The effect of men's

1   morbidity on divorce risk was somewhat higher than the effect of women's morbidity at all times

2   since the incidence of morbidity.

3   <Figure 1>

4   Because the risk of divorce was particularly pronounced during the six months following new

5   incidence of psychiatric morbidity, we used a lag of six months in the date of psychiatric morbidity

6   incidence when comparing the effect of having two spouses with psychiatric morbidity instead of only

7   one spouse (Table 2). Psychiatric morbidity among both spouses increased the subsequent risk of

8   divorce almost three-fold (HR 2.98, 95% CI=2.53-3.51) compared to couples with no psychiatric

9   morbidity, whereas psychiatric morbidity of the husband increased the risk more than two-fold (HR

10   2.33, 95% CI=2.13-2.54) and psychiatric morbidity of the wife less than two-fold (HR 1.84 95%

11   CI=1.71-1.9) ($p<0.01$ for all between-group differences). The effect of both spouses having

12   psychiatric morbidity (HR 2.98 95% CI=2.53, 3.51) is less than expected based on the main effects of

13   the husband's and the wife's morbidity alone (2.33 x 1.84 = 4.23).

14   <Table 2>

15   Compared to the effect that other socio-economic and demographic factors had on the risk of divorce,

16   the effect of psychiatric morbidity was considerable. Poor socio-economic resources – being non-

17   employed, having low income, and not owning a home – all increased the risk of divorce, but less

18   than psychiatric morbidity. The risk of divorce was also considerably lower in unions of longer

19   duration. Furthermore, the association between these socio-demographic factors and the risk of

20   divorce remained nearly unchanged when the incidence of psychiatric morbidity was adjusted for, and

21   the association between psychiatric morbidity and divorce risk was robust against simultaneous

22   adjustment for all the other covariates.

23   Most couples with psychiatric morbidity were identified through psychotropic medication purchases,

24   whereas hospitalizations with psychiatric diagnoses were much less common (Table 3). The

25   association between psychiatric hospital care and divorce risk was somewhat stronger than the

26   association between psychotropic medication and divorce risk. The effect of husband's morbidity was

larger than the effect of wife's morbidity irrespective of the measure of psychiatric morbidity, and the effect of having two spouses with psychiatric morbidity was less than expected based on the main effects of the husband's and wife's morbidity for both hospitalizations and psychotropic medication purchases.

<Table 3>

DISCUSSION

Among Finnish middle-aged couples, psychiatric morbidity is a strong determinant of subsequent divorce with an approximately two-fold increase among couples with one affected spouse. Psychiatric morbidity among both spouses increases the risk of divorce even further, but less than expected based on the main effects of the husband's and the wife's morbidity alone. Morbidity of the husband increases the risk of divorce somewhat more than morbidity of the wife. Adjustment for individual-level and couple-level socio-demographic factors has little effect on these associations.

The risk of divorce is most pronounced immediately after the incidence of psychiatric morbidity. It is likely that some part of this increased risk of divorce immediately after psychiatric morbidity simply reflects the process of separation [2, 8, 24, 25]. Previous estimates on the effect of psychiatric morbidity on divorce risk are larger when the time gap between disorder incidence and divorce is shorter [17, 19]. In Finland, levels of psychotropic medication use are highest immediately before divorce, but medication prevalence is clearly elevated already five years before divorce, suggesting selective effects [16]. Because psychiatric morbidity predicts the risk of divorce at all examined times after the date of onset, and the risk seems to settle to a consistently higher level two years after the first incidence (HR of about 1.9 for men's and 1.65 for women's morbidity),psychiatric morbidity seems to increase the risk of divorce through persistent long-term strain.

Social exchange theory suggests that the probability of divorce increases when the factors binding the partners together are weak, the attractiveness of the partner decreases, or other alternatives seem more appealing than staying in the relationship [26]. The attractiveness of a partner may decline when he or

she falls ill, and illness of either partner may also lead to increased divorce risk by causing economic strain [27]. On the other hand, individuals in poor health may actually be more prone to stay in a marriage, because of the expected health gains of being with a partner become more significant [28]. Poor mental health could also be associated with higher divorce risk simply because socio-economic disadvantage increases both the risk of poor health [29, 30] and the risk of divorce[31, 32]. However, in this study the association between psychiatric morbidity and divorce appears not confounded or mediated by other individual-level or couple-level socio-demographic factors. The effect of psychiatric morbidity on divorce risk is also considerable compared to other socio-demographic determinants of divorce, and the effects of these social factors for divorce risk are also independent of psychiatric morbidity. Thus the association between psychiatric morbidity and higher divorce risk does not result from the simultaneously higher morbidity and higher divorce risk among those socio-economically disadvantaged. We also analyzed interactive effects (results not shown) to see if the association between psychiatric morbidity and divorce risk depends on socio-economic resources, and found education, social class and income to have no statistically significant interactive effect. This further supports our conclusion that psychiatric morbidity and socio-economic characteristics are fully independent risk factors of divorce. Theoretically this implies that the mechanisms linking psychiatric morbidity to increased risk of divorce are different from the mechanisms linking socio-economic disadvantage to higher divorce risk. Thus the link from psychiatric morbidity to increased divorce risk is rather explained by relationship quality and satisfaction than by economic hardship associated with socioeconomic factors [26, 27], suggesting that support measures for married individuals with psychiatric morbidity should also focus on couple-level dynamics.

The effect of husband's morbidity on divorce risk remains somewhat higher than the effect of wife's morbidity at all times since the disorder incidence. Gender-specific effects may be driven by differences in social and economic roles. Women are often thought to provide more social support, control and care for their partners than men [33–35] suggesting that women might also be more likely to be more instrumental when a couple is facing difficulties. Thus the risk of divorce could be expected to be larger if the wife falls ill than if the husband does. On the other hand, women are

1 suggested to benefit more from marriage by gaining access to their husbands' better economic

2 resources [36–38] and psychiatric morbidity among men could thus lead to higher marital distress

3 through pronounced economic losses. However, the Finnish welfare system may buffer and

4 compensate some of the most severe economic consequences of falling ill. Nevertheless, even if

5 socio-demographic factors seem to have very limited effect on the association between psychiatric

6 morbidity and divorce risk, more detailed studies on the economic consequences of psychiatric

7 morbidity and their related implications for marital quality are needed to better understand the gender

8 difference we found.

9

10 Mental disorders are more common among women than men [39], and accordingly we identify higher

11 levels of psychiatric morbidity among women than men in our data. There may be gender differences

12 in the types of disorders, with some disorders having a stronger impact on divorce risk than others.

13 Because we lack information on the actual diagnosis for which the medication has been prescribed

14 for, we cannot accurately separate between disorder types. Prevalence studies show that the risk for

15 psychotic disorders is similar among men and women [40], whereas mood and anxiety disorders are

16 more common among women than men [39–42].

17 It is thus possible that women on average experience and are treated for less severe psychiatric

18 conditions than men, which thus would have   less consequences for marital satisfaction and stability.

19 In previous research, mental distress measured with the Mental Health Inventory, presumed to

20 indicate psychiatric morbidity, was more strongly related to divorce risk among men than women in

21 an Australian sample of adults [18]. In contrast, in a Norwegian sample using the Global Mental

22 Health measure, dichotomized so that mental distress prevalence corresponded to prevalence

23 estimates for depression, the effect was larger among women than men [19]. This could imply that

24 less severe mental distress increases the risk of divorce more among women than men, whereas more

25 severe psychiatric morbidity increases the risk of divorce more among men.   However, the effect of

26 psychiatric morbidity on divorce risk remained stronger among men than among women regardless of

how morbidity was measured. Both psychotropic drug use only, which is thought to reflect less severe morbidity, as well as psychiatric hospitalizations, which mainly reflect more severe disorders are more strongly related to divorce in men than women. Thus the consequences of both more and less severe disorders on divorce risk appear to be somewhat stronger if they appear in men than in women. The prevalence of alcohol use disorders is also higher among men than women [41, 42], and also the comorbidity rates of mental disorders with alcohol use disorders may be higher among men than women [41–43]. Because alcohol abuse is suggested to increase the probability of divorce [44, 45], higher comorbidity could partly explain why the association of psychiatric morbidity and divorce is larger among men. Future studies should explore in more detail gender differences in the associations between different psychiatric disorders and divorce risk

The risk of divorce is clearly higher when both spouses experience psychiatric morbidity compared to couples with only one affected spouse. Analyses using no lag and a 12-month lag in the date of psychiatric morbidity (not shown) confirmed the robustness of this result. However, having two spouses with psychiatric morbidity does not multiply the risk of divorce, which would imply an accumulation of disadvantage, but the effect is less than the additive combination of the individual-level risks of the husband and the wife, supporting previous findings from Norway [19]. Nevertheless, it should be kept in mind that the husband's and the wife's mortality in a couple are hardly independent of each other. In fact, psychiatric morbidity of one spouse is an important predictor of morbidity of the other spouse [46]. It is thus inaccurate to expect that the effect of having two spouses with psychiatric morbidity on divorce risk could be derived directly from the main effects of the husband's and the wife's morbidity.

The health mismatch hypothesis suggests that the expected gains of remaining in the union decline for the healthy spouse when the other spouse is in poor health [26]. However, because couples with two spouses both experiencing psychiatric morbidity have higher risk of divorce than couples with only one affected spouse, it seems that psychiatric morbidity of the partner may encourage individuals to seek other alternatives even when they suffer psychiatric morbidity themselves. Although individuals in poor health are suggested to expect health gains from having a partner and thus have a higher

probability to remain married [28], these expectations might be lower when the partner is also ill, or the declining attractiveness of the ill partner [26] could cancel out the expected benefits. However, if the high risk of divorce was mainly a matter of finding better alternatives, then we would expect psychiatric morbidity to have less effect on the risk of divorce when the other resources of the partner, e.g. income, are higher. Instead socio-economic factors seem to have a very limited role in the association between psychiatric morbidity and divorce risk. We thus suggest that psychiatric morbidity among both partners further increases strain in the relationship compared to couples with only one affected spouse, having stronger implications for relationship quality and marital satisfaction.

Our measure of psychiatric morbidity is objective and based on clinical evaluation, but only captures individuals who have been treated. While the social consequences of psychiatric morbidity may depend on receiving treatment, our results clearly show that even if individuals with poor mental health are treated, their risk of divorce is still elevated years after disorder incidence. Thus it is not sufficient to focus only on treatment of the individual, but attention should be given on couple-level dynamics.

Even if our study benefits from a large longitudinal data set with no recall bias or selective attrition, it is not without limitations. Although we only included couples considered healthy at baseline, individuals may have already had past episodes of treatment, because mental disorders are usually first diagnosed at a younger age, and our sample only included couples aged 40 to 64. The association between psychiatric morbidity and divorce risk may also be different in other age groups. Among older individuals divorce is less common, whereas psychotropic medication is more common. Of Finns aged 65 or over, 25% use psychotropic medication [47], and up to 40% of those aged 75 or over do so [48]. Nevertheless, adding couples aged 65 to 74 to our sample did not have a statistically significant effect on the age-adjusted associations between psychiatric morbidity and divorce risk. The older age of the couples in this study also means that the average duration of unions is quite long.

1   Psychiatric morbidity could have a larger effect in unions of younger Finns and of shorter duration.

2   Because couple-level data on younger couples were not available, we compared the effect of

3   psychiatric morbidity on divorce risk in different age-groups using individual-level register-data on

4   Finnish adults [16]. Among 40 to 64 year-olds the association between psychiatric morbidity and risk

5   of divorce was only 9% larger than among 18 to 39 year-olds (results not shown). The association

6   between psychiatric disorders and divorce risk may also be different for non-married couples than for

7   married couples. We included only married couples, because non-marital cohabitation is not typical

8   among middle-aged Finns, and thus the number of cohabiters in our sample was small compared to

9   married couples. Additional analyses (results not shown) verified that including both married and

10   non-married couples had little effect on our results. We look forward to future studies that replicate

11   our analyses in other age groups and including both non-married and married couples.

12   There could also be differences in seeking treatment, particularly between men and women. However,

13   a previous Finnish study found no gender differences in the probability to treatment seeking among

14   depressed adults after disorder severity and perceived impairment were adjusted for [49]. There may

15   also be differences in how different types of disorders are associated with the risk of divorce, and the

16   combination of disorders within a couple may also matter. Unfortunately, our data only contained

17   information on type of medication and not the actual diagnosis it had been prescribed for. We

18   encourage future research to elaborate this topic, and to examine how different psychiatric disorders

19   are intertwined with marital quality, and how couples with psychiatric morbidity could be supported

20   to avoid adverse social consequences such as divorce. The reasons why husbands' morbidity increases

21   the risk of divorce more than wives' morbidity should also be explored further.

22

23

24   **Conflicts of interest**

25   On behalf of all authors, the corresponding author states that there is no conflict of interest.

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1 **Fig. 1** Age-adjusted hazard ratio (HR, 95% CI) of divorce by time since psychiatric morbidity

2 (PM) incidence and gender, married Finnish couples aged 40 to 64

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4

1   **Table 1.** Characteristics of the study cohort, married Finnish couples aged 40 to 64

	N	Divorces	Mean age, husband	Mean age, wife
ALL	96 222	7 932	51.4	49.5
Psychiatric morbidity				
None	72 231	5 657	51.2	49.4
Husband only	7 667	852	51.7	49.8
Wife only	12 849	1 153	51.7	49.8
Both spouses	2 475	270	52.3	50.5

Table 2. Adjusted hazard ratio of divorce (HR) by covariates, married Finnish couples aged 40 to 64

	Distribution [a] %	Model 1: Age-adjusted HR	95% CI	Model 2: Model 1 + Psychiatric morbidity HR	Model 3: All covariates HR	95% CI
Psychiatric morbidity[b]						
None	76.1	1.00		-	1.00	
Husband only	8.0	2.33	(2.13, 2.54)	-	2.17	(2.00, 2.37)
Wife only	13.4	1.84	(1.71, 1.98)	-	1.79	(1.66, 1.93)
Both spouses	2.6	2.98	(2.53, 3.51)	-	2.58	(2.19, 3.04)
Male education						
Tertiary	30.5	1.00		1.00	1.00	
Intermediary	31.4	1.06	(1.00, 1.12)	1.06	1.04	(0.97, 1.11)
Basic	38.0	1.09	(1.03, 1.15)	1.09	1.02	(0.95, 1.10)
Female education						
Tertiary	28.8	1.00		1.00	1.00	
Intermediary	35.3	0.94	(0.89, 1.00)	0.94	0.89	(0.84, 0.95)
Basic or less	35.9	1.07	(1.00, 1.12)	1.06	0.95	(0.88, 1.02)
Male social class						
Upper non-manual	21.1	1.00		1.00	1.00	
Lower non-manual	19.5	1.01	(0.94, 1.08)	1.01	0.99	(0.91, 1.06)
Manual	39.2	1.07	(1.01, 1.14)	1.07	0.96	(0.88, 1.04)
Other	20.2	0.94	(0.88, 1.01)	0.94	0.86	(0.79, 0.94)
Female social class						
Upper non-manual	14.6	1.00		1.00	1.00	
Lower non-manual	46.6	0.92	(0.86, 0.98)	0.92	0.93	(0.86, 1.00)
Manual	24.2	1.09	(1.01, 1.17)	1.09	1.01	(0.91, 1.10)
Other	14.6	0.94	(0.86, 1.02)	0.94	0.91	(0.83, 1.00)

Male main activity						
Employed	74.0	1.00		1.00	1.00	
Unemployed	7.9	1.59	(1.46, 1.73)	1.55	1.28	(1.17, 1.41)
Retired	15.1	2.03	(1.90, 2.18)	1.92	1.69	(1.58, 1.82)
Other	2.9	2.14	(1.93, 2.38)	2.11	1.80	(1.61, 2.01)
Female main activity						
Employed	74.9	1.00		1.00	1.00	
Unemployed	10.3	1.36	(1.26, 1.46)	1.34	1.10	(1.04, 1.20)
Retired	9.0	1.77	(1.65, 1.91)	1.71	1.41	(1.30, 1.52)
Other	5.8	1.40	(1.28, 1.53)	1.39	1.20	(1.09, 1.32)
Household income level						
5. quintile (highest)	20.0	1.00		1.00	1.00	
4. quintile	20.0	0.99	(0.91, 1.06)	0.99	0.96	(0.89, 1.04)
3. quintile	20.0	1.08	(1.00, 1.16)	1.08	0.99	(0.92, 1.07)
2. quintile	20.0	1.18	(1.10, 1.27)	1.18	1.00	(0.92, 1.09)
1. quintile (lowest)	20.0	1.52	(1.42, 1.62)	1.51	1.15	(1.05, 1.25)
Housing tenure						
Home-owner	88.9	1.00		1.00	1.00	
Tenant or other	11.1	1.81	(1.71, 1.92)	1.79	1.59	(1.50, 1.69)
Co-resident children under 18						
None	58.4	1.00		1.00	1.00	
At least 1	41.7	1.04	(1.71, 1.92)	1.05	1.00	(0.94, 1.06)
Union duration						
0-4 years	2.8	1.00		1.00	1.00	
5-9 years	3.3	0.73	(0.62, 0.87)	0.73	0.76	(0.65, 0.90)
10 years or more	93.9	0.38	(0.33, 0.44)	0.39	0.50	(0.43, 0.57)

[a] Psychiatric morbidity during the follow-up, other covariate distributions at baseline   [b] Date of psychiatric morbidity incidence with a 6-month lag

Table 3. Adjusted hazard ratio of divorce (HR) by measure of psychiatric morbidity, married Finnish couples aged 40 to 64[1]

	Distribution	Model 1: Age-adjusted		Model 2: All covariates	
Psychiatric hospitalization	%	HR	95% CI	HR	95% CI
None	97.7	1.00		1.00	
Husband only	0.9	3.50	(3.01, 4.07)	2.81	(2.41, 3.27)
Wife only	1.3	2.78	(2.42, 3.19)	2.18	(1.90, 2.51)
Both spouses	0.04	4.02	(1.92, 8.45)	2.27	(1.08, 4.77)
Psychotropic medication					
None	76.2	1.00		1.00	
Husband only	8.0	2.20	(2.04, 2.39)	2.02	(1.87, 2.19)
Wife only	13.3	1.82	(1.70, 1.95)	1.75	(1.63, 1.87)
Both spouses	2.6	3.03	(2.62, 3.51)	2.60	(2.24, 3.01)

[1] Note that these figures describe results that we would obtain if we only used one measure of psychiatric morbidity (hospital in-patient care or psychotropic medication) throughout the study: Unhealthy couples were excluded at baseline, and the exclusion is based on the chosen measure of psychiatric morbidity. Any individual with hospital in-patient care may also have psychotropic medication purchases and thus be identified with psychiatric morbidity based on both measures.