

# Ethnic Composition of Couples and Mutual Health Benefit Receipt: Register-based Evidence from Finland

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## Research

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# Abstract

**Background:** The literature on health dependencies among partners typically ignores diversity when it comes to partnership characteristics, which have consequences on many facets of life and may be important for the health of both parties. One salient example is the ethnic or racial composition of the couple. We extend prior work on partnerships and health by investigating how married and cohabiting partners mutually influence each other's receipt of health-related benefits, and focus on how any such correlations vary by the couple's ethnic composition.

**Methods:** We study partners' mutual receipt of sickness allowance and disability pension in ethnically endogamous and exogamous couples in Finland. The population consists of native individuals in similar socioeconomic positions but belonging to two different ethnic groups, Finnish and Swedish speakers, which differ regarding health and cultural practices related to family life. Using data from population registers (36,034 couples in 1987-2011), we estimate discrete-time hazard models for first-time benefit receipt related to partner's benefit receipt among midlife couples.

**Results:** We find evidence of mutual receipt of health benefits in both endogamous and exogamous couples, the correlation being strongest for disability pension. Partner correlation in disability pension receipt is slightly stronger in endogamous Swedish than in endogamous Finnish couples, while women in exogamous couples are slightly less sensitive to men's receipt than vice versa. These findings show that the ethnic composition of couples is important for mutual health benefit receipt.

**Conclusions:** Our findings could be explained both by collateral health effects and by rational decisions concerning mutual leisure time, income loss, and informal health care needs. The results clearly cast light on the important issue of mutual health in couples, and that associations of this kind may be heterogeneous across couples that differ in ethnic composition.

## Background

Many studies have documented that partners affect each other's health [1-8]. These say that partnered individuals, and married people in particular, are generally healthier and live longer than others, and the positive association between partnership and health is especially true for men. Health benefits may accumulate due to protective effects that enable income pooling and increase economic resources [9], which in turn provide emotional support, social networks and social control [10-11].

Mutual associations of this kind may be both health beneficial and detrimental. Partners can influence the take-up of health-related benefits and improve quality of life, but also affect health behaviors in terms of smoking, drinking, diet, and exercise [12-15]. Among the elderly, hospitalization or death have been found to increase the mortality and morbidity risks of the spouse [16-17]. Mutual relations of this kind confirm that one of the many functions of partnership is health production, and this implies that the connectedness of individuals should be considered when studying health outcomes [18-20].

The literature on health dependencies among partners typically ignores diversity when it comes to partnership characteristics, which is problematic because it obscures effect heterogeneity [21]. Different combinations of partnership characteristics, be they demographic or social, have consequences on many facets of life and may thus be important for the health of both parties. One salient example is the ethnic or racial composition of the couple. To the extent that partnerships across ethnic or racial borders have less resources, are not fully accepted socially, or are subject to discrimination, such partnerships may adversely impact health due to stress [22]. Interethnic and interracial partnerships have increased considerably in number in both the U.S. and Europe, with extant studies focusing on health, but few studies have investigated associations between partnership composition and health. Most of the literature has been concerned with how one partner's ethnicity or race affects and dominates health within the couple [23-24], while the empirical evidence on the role of the ethnic or racial composition itself has been less studied and is inconclusive [25].

In this study, we extend prior work on partnerships and health by investigating how married and cohabiting partners mutually influence each other's receipt of health-related benefits. We focus on how any such correlations vary by the couple's ethnic composition. Using longitudinal population register data from Finland, we study a person's first-time receipt of sickness allowance or disability pension as a function of the partner's receipt of the same. Both benefits are related to reduced working capacity before statutory retirement age, and they are by far the two most common health-related benefits available [26]. These two measures could reflect not only health dependencies between partners but also rational decisions concerning mutual leisure time versus economic loss within the partnership.

Finland provides an interesting case of study that contrasts the dominating U.S. literature on interracial and interethnic partnerships and health. The country can be characterized as a comprehensive welfare state with universal coverage of social and medical services, high take-up of sickness allowance and disability pension, modest social disparities and income inequality, a well-projected ageing process, and high levels of gender equality. Finland also features two ethnic groups, Finnish and Swedish speakers, which are distinguished in the population register by their unique mother tongue. Finnish speakers amount to 90 percent of the total population, and Swedish speakers make up five percent. Both groups are native and have a similar socioeconomic position, but Swedish speakers are notably healthier than Finnish speakers on objective health measures, including sickness allowance, disability pension and life expectancy [27]. Although intermarriage has been high during the past decades, the two groups can still be culturally distinct with regard to practices to family life and stability of the nuclear family [28]. Divorce and separation rates are lower in Swedish than in Finnish unions, and higher in exogamous than endogamous ones [29]. In the cohorts studied, intermarriage across other ethnic lines than the Swedish and Finnish has been very rare, and that also lies beyond the scope of this paper, as Finland has experienced foreign-born immigration only very recently. By focusing on the ethnolinguistic composition of the native couples, we contribute to the small but growing literature that addresses heterogeneity in the health impacts of partnerships, in a context that is much different from that in the United States, a subject explored in greater depth.

# Theoretical underpinnings

## *Partnership and health*

Among the explanations for why partnered individuals generally have better health than others is a strand of literature emphasizing the protective importance of social structures in which individuals live their lives [10, 30]. A greater sense of connectedness with other people, not least a partner, may foster a healthy lifestyle [7, 31]. Moreover, marriage and other close social relationships offer support as a buffer against various stressors that may be damaging to mental and physical health [11]. The marital resource model further proposes that marriage itself can improve individuals' health through access to health-protective resources, such as income pooling [7, 9, 31]. Another explanation for better health among partnered individuals is selection, in that healthy people are more likely to enter partnership and marriage and less likely to divorce [3, 32].

Within partnerships like marriage, spouses mutually influence each other's mental and physical health. A partner's health is often like that of the other, and these tend to converge over time [33]. This can be understood on the basis of ideas that integrate theories of marriage markets and health capital formation [34]. They argue that inter-spousal correlation in health status follows on assortative mating, common health behaviors, shared environmental risk factors, and the direct effects of the health of one spouse on that of the other. Assortative mating means that partners sort on certain characteristics and tend to be similar when it comes to demographic characteristics, preferences, and health-related behavior [14, 33]. Heterogamy, on the other hand, implies a difference between partners, which may lead to less health concordance compared to homogamous partnerships. According to marital resource theory, inter-spousal correlation in health may be a function of shared life events and resources, for good or bad. Thus, the presence of a partner is not necessarily protective, and partners may influence each other negatively in terms of health behavior and health [12] and thus contribute to mutual health benefit receipt.

Change in one partner's health or health-related behavior may therefore induce change in those of the spouse. Among the elderly, it is commonly found that the hospitalization or death of one spouse affects the other through increased mortality or morbidity risks, and these associations are both immediate and long-term [16-17, 35]. Among aging adults, each partner influences the other's quality of life [13] and health behaviors such as smoking, drinking, diet, and exercise [14]. Likewise, each partner also influences the disease risks faced by the other regarding, for example, diabetes, metabolic syndrome, hypertension, cancer, and depression [33, 36-38]. A previous study has also documented strong and long-term interrelations among partners in receipt of sickness allowance and disability pension [15]. Such interrelations could be explained not only by collateral health but also by strategic decisions concerning mutual leisure time and informal care needs versus income loss between partners.

Coordinated behaviors related to retirement and sickness absence may consequently also be understood from the perspective of how economists model labor supply decisions, where individuals strike an

optimal balance between the cost of foregone leisure and the benefits of increased income through paid employment. Correlations in behaviors related to retirement and sickness absence may therefore not be exclusively explained by collateral health between spouses. If married couples place greater value on leisure time spent together, withdrawals from the labor market will increase when one spouse is not working. In this case, individuals consider their own leisure time and that of the spouse as complements [39-40]. Depending on their characteristics, couples may pool resources and influence each other in their decisions to retire or to leave the labor force [41]. This would mean that the feasibility of leaving the labor force derives not only from each spouse's own resources and life-course experiences but also from those of the spouse. The quality of the relationship will presumably have a strong impact on this mutual decision. The expectation of spending more time together following sickness absence or early retirement is most likely prevalent among couples who have already established some joint activities prior to retirement and who enjoy a high-quality relationship. Thus, partners in a stable and high-quality relationship are likely to look forward to opportunities for more mutual leisure time in their retirement years and may therefore decide on early retirement. Partners whose relationships are already strained and unstable prior to retirement, on the other hand, may view continued participation in the labor force as a welcome escape from marital tensions and may be more disposed toward delaying retirement. Accordingly, relationship satisfaction seems to rank second to standard economic reasons as the strongest predictor of retirement timing [42].

## ***Ethnic composition of couples, health and mutual health benefit receipt***

Financial and psychosocial resources that improve health and protect well-being differ across population subgroups [9, 43-44], and such differentials may impact health-related decisions concerning the receipt of health benefits. The extended kin networks and social integration that a partner brings to a relationship may improve the couple's health and well-being [4, 7, 31], though this may be more limited among heterogamous couples than those that are homogamous [45]. Economic resources and wealth may also influence decisions related to retirement or receipt of sickness benefits. Incentives to leave the labor force derive not only from each spouse's own economic resources and life-course experiences but also from those of their spouse. The level of economic resources within ethnic groups may therefore contribute to any differential in this association across exogamous and endogamous couples.

The limited research on how the ethnic or racial composition of couples affects health has mainly hypothesized that exogamous partnerships will be less health-protective than endogamous ones because of less efficient communication and coordination within the couple and fewer social resources [11, 46]. Exogamy may also be less health-protective because of stress experiences that could result in psychological and physical health problems if such a partnership is not fully socially accepted or is subject to discrimination [30, 47]. Empirical evidence primarily from the U.S. is mixed, however [22-25]. Partner's race appears to dominate the mere composition in this regard, and typically distinguishes between Whites and Non-Whites. Contrary to the arguments of stress process theory, having a White

spouse is associated with better self-rated health for minorities, while intermarried Whites experience worse health [24]. This would suggest that the greater resources brought by a majority White partner to the relationship may go so far as to benefit their minority partner's health. Partners of different race or ethnicity may thus bring different economic and psychosocial resources to the partnership [11, 44, 48].

Gender may moderate the associations between relationship-related resources, stress and health. Overall, being married seems to matter more for men's health than for women's health. This is in line with gendered specialization of household labor [49], where women do more unpaid work, including caregiving, though the extent of specialization may differ across racial or ethnic groups [25]. Thus, the health impact of partner's race or ethnicity may matter more for men than for women. On the other hand, women generally experience more stress than men, which may explain why White women in interracial partnerships in the U.S. experience more psychological distress [22]. In that case, the health impact of the partnership's interracial or interethnic composition may matter more for women than for men.

## The present study

We investigate partners' mutual receipt of sickness allowance and disability pension in Finland in the period 1987-2011 among native-born couples with different ethnic characteristics. We distinguish between endogamous Finnish couples, endogamous Swedish couples, exogamous couples with a Finnish-speaking man and Swedish-speaking woman, and exogamous couples with a Swedish-speaking man and Finnish woman. The ethnic composition of the couple should be considered as a proxy for partnership context of relevance for health concordance rather than as a causal factor.

As in most other countries, endogamy is the prevailing norm for mate selection in Finland, though intermarriage has become more common, particularly in the case of Swedish speakers. In the 1950s, approximately 20 percent of the Swedish-speaking population married a Finnish speaker. This share rose until the 1980s when it leveled off, and today about 40 percent of Swedish speakers form a union with a Finnish speaker [50]. Unlike intermarriage among many other ethnic or racial groups, there are few easily discernable differences between Finnish and Swedish speakers except for their mother tongue, which is a marker for ethnic affiliation in the population register. Discrimination against and social stigma associated with this form of exogamy is therefore very limited. There are nevertheless group differences of relevance, in that Swedish speakers have better health and live longer than Finnish speakers [27, 50]. These differences in health may be partly associated with Swedish speakers having better and more extensive social networks. There are also group differences in cultural practices related to family life and the stability of the nuclear family [28, 51-52]. Finnish speakers have almost twice as high a risk of divorce and separation from their cohabiting partner compared with Swedish speakers, which could reflect lower relationship quality. In addition, exogamous unions have an elevated, or approximately ten percent higher, risk of ending in divorce or separation compared to endogamous Finnish unions [29]. As already noted, Finland has experienced foreign-born immigration only very recently. In the cohorts studied, intermarriage

across other ethnic lines than the Swedish and Finnish has therefore been very rare, and lies beyond the scope of this paper.

Based on this context and the mechanisms involved, we make the following conjectures. *First*, considering that all the study individuals are part of the same institutional setting and benefit system, we expect to find evidence for partners' mutual receipt of health benefits in both endogamous and exogamous couples. *Second*, irrespective of the couple's ethnic composition, we expect that partner concordance in benefit receipt would be stronger for disability pension than for sickness allowance, because the former indicates a more severe state of poor health. It also reflects a permanent exit from the labor market and could thereby be influenced to a greater extent by joint retirement decisions between partners. *Third*, we expect stronger cross-spousal dependence in health and benefit receipt in endogamous Swedish couples than in endogamous Finnish couples. The strength of partner correlation regarding health benefit receipt may differ by ethnic composition of the couples. Different cultural practices regarding family dynamics, such as union stability and marital satisfaction, across the ethnic groups in our study, suggest more commitment and stronger family ties among Swedish speakers than among Finnish speakers. This may be associated with higher relationship quality and more efficient communication and coordination within the couple. This would mean that Finnish partners may influence each other less than Swedish partners when it comes to health and concordant decisions about disability pension/health benefit receipt. *Fourth*, because women in general are more likely to shoulder more caregiving responsibilities and suffer from stress reactions, we expect the woman to be more sensitive to the man's benefit receipt than vice versa. *Fifth*, if the gender-specific sensitivity to partner's benefit receipt dominates the behaviors typical for each ethnic group, we expect the woman in an exogamous couple to be less sensitive to the man's benefit receipt than vice versa. For example, exogamous couples in which the man is Swedish and the woman is Finnish would then display stronger associations in cross-spousal benefit receipt than exogamous couples in which the man is Finnish and the woman is Swedish.

## Methods

### Data source

We used a large longitudinal dataset of married or cohabiting individuals in Finland. The data cover the period 1987–2011, come from various administrative records maintained by Statistics Finland, and were used with permission number TK-53-768-1. They constitute a five percent random sample of Finnish speakers and a similarly constructed 20 percent random sample of Swedish speakers. Finnish speakers amount to approximately 90 percent of the total population in Finland, and Swedish speakers amount to about 5 percent. Based on each individual's unique ethnic affiliation in the population register, we could distinguish between endogamous Finnish couples, endogamous Swedish-speaking couples, exogamous couples with a Finnish man and Swedish-speaking woman, and exogamous couples with a Swedish-speaking man and Finnish woman.

The data consist of men and women in heterosexual partnerships, in which both partners were native-born Finnish or Swedish speakers and 40–54 years old at entry into the study in 1992. In these ages, disability retirement in terms of receiving disability pension is in practice the only form of retirement. Individuals were followed over time, for twenty years at most or until they turned 65 years old. We consequently studied midlife individuals who were past core family-formation years and might have been eligible for both sickness allowance and disability pension. People with recent health problems, i.e., those who had received any sickness allowance or disability pension in the five-year period before 1992, were excluded from analysis. Individuals were right-censored when either they or their partner turned 65, at divorce or separation, or the emigration or death of either partner. The analytical sample contained 36,034 couples with individuals born in 1937–1961. In total, there were 22,348 sickness allowance recipients and 7,807 disability pension recipients.

## **Outcome measures**

The outcome variables of interest were receipt of sickness allowance and receipt of disability pension. The Social Insurance Institution of Finland (KELA) pays sickness allowance to non-retired residents aged 16–67 years in case of work incapacity due to illness. A statement from a practitioner in medicine is a precondition for the benefit. The sickness allowance is available after a specified waiting period, which is the first day of illness and the subsequent nine working days. The full benefit can be received for a maximum period of approximately one calendar year (300 working days) within two years. The amount of compensation depends on previous earnings and other benefits. The maximum level of disbursement is 70 percent up to an upper limit after which it decreases. If work incapacity persists after sick leave, one may apply for a disability pension, which generally means a permanent withdrawal from the labor market. While sickness allowance receipt reflects temporary illness, receipt of disability pension indicates permanent illness or long-term health problems to an extent that prevents the individual from working. The proportion of disability pensioners in Finland increases notably after age 50 years, while the proportion of sickness allowance recipients drops after age 55 years [27].

Thus, both health benefits are related to reduced working capacity before statutory retirement age, and are conditional on a diagnosis statement issued by a practitioner in medicine. Each benefit may mark the onset of severe health problems for some individuals, but overall, they reflect less serious health conditions than hospitalization or death. For each calendar year, we know if a person received any sickness allowance and if he or she retired due to disability. There is no information about the medical reason for sickness allowance or disability pension in the data.

## **Analytic strategy**

The probability of benefit receipt was estimated with discrete-time hazard models with time-varying control variables (cf. [15]). Since all information was at the calendar-year level, same-year occurrences, i.e., receipt during the same calendar year for both partners, could not be sequenced.

The main explanatory variable was time since the partner's first receipt of sickness allowance or disability pension. It was measured in a similar way to that of the study person (the ego). Thus, we identified the

first time a person (the ego) received sickness allowance or disability pension and related this to receipt by the partner.

Several control variables were included for the individual (the ego), the partner and the couple. For the individual and the partner, we used age, educational level, educational field, labor market status, and income quintile. For the couple we controlled for the age difference between partners, marital status, union duration, presence of children in the household, housing tenure, region of residence, and the municipality's degree of urbanization. We also controlled for observation year.

To avoid statistical complications from potential inter-spousal dependence, we estimated models separately for men and women. For the same couples, therefore, there are separate models where either the man or the woman is the study person.

## Results

Table 1 summarizes the descriptive statistics of the data by sex of the ego and ethnic composition of the couple. The category 'Finnish men with Finnish women' means that the study persons are Finnish-speaking men and their partners are Finnish-speaking women, while 'Finnish women with Finnish men' means that the study persons are Finnish-speaking women and their partners are Finnish-speaking men. Because the data concern couples, the variable distributions for men and women within ethnic configurations mirror each other.

Endogamous Finnish couples, endogamous Swedish couples, and exogamous couples do not differ much regarding demographic and socioeconomic characteristics, but do differ predominantly regarding where they live. The differences in region of residence, and the smaller variation across the types of couples studied, reflect the fact that almost all Swedish speakers in Finland live on the southern and western coastlines of the country, and within this area exogamous unions are most common in the South.

Table 1 also shows that there are notable differences in receipt of sickness allowance and disability pension by ethnic composition of the couples. For both men and women, Finnish speakers in endogamous couples have higher shares of sickness allowance and disability pension receipt than have Swedish speakers in endogamous couples. Furthermore, Finnish speakers in exogamous couples have lower shares of sickness allowance and disability pension than have Finnish speakers in endogamous Finnish couples. Similarly, Swedish speakers in exogamous couples have lower shares of sickness allowance and disability pension than have Swedish speakers in endogamous Swedish couples.

Table 2 summarizes the results for models in which we established the main explanatory variable by merging the categories for time since partner's benefit receipt into one category that includes the same and subsequent calendar years. Consequently, the estimates display the study person's risk of benefit receipt in the same or subsequent years as the partner received the benefit for the first time, as compared to the situation if the partner had not received the benefit (which is set to 1). The first column (SA vs. SA)

refers to the study person's risk of sickness allowance receipt as related to partner's receipt of sickness allowance. The second column (DP vs. DP) is the study person's risk of disability pension as related to partner's receipt of disability pension. The third (SA vs. DP) and fourth (DP vs. SA) columns refer to cross-dependency in terms of benefit types. The upper panel gives unadjusted estimates, and the lower panel estimates for models in which all control variables have been included. The taxonomy with regard to ethnic composition of the couple is the same as in the previous table. Thus, the first two rows refer to endogamous Finnish couples, where the first row shows the findings for models in which the man is the study person and the second row shows those for models in which the woman is the study person. The third and fourth rows show the findings for endogamous Swedish couples, the fifth and sixth rows for exogamous couples with a Finnish man and a Swedish woman, and the seventh and eighth rows for exogamous couples with a Swedish man and a Finnish woman.

We find ample evidence for partners' mutual benefit receipt. If the partner has received a benefit, the study person has a notably increased risk of receiving the same and to some extent even the other type of benefit. Some, but far from all, of these associations relate to socioeconomic and demographic factors, as the estimates also remain considerable when we include the control variables. Associations are stronger for the way in which disability pension receipt relates to partner's disability pension receipt, as compared to the way in which sickness allowance receipt relates to partner's sickness allowance receipt. Patterns for cross-dependency regarding benefit types are somewhat less clear, although in most instances there are positive associations. For instance, for Finnish men who live with Finnish women, the risk of receiving sickness allowance is raised by a factor of 1.28 (95% CI: 1.21–1.35) if the partner has received sickness allowance as compared to if the partner has not. For disability pension, the risk is raised by a factor of 1.71 (95% C: 1.49–1.96). If the partner has received a disability pension, the sickness allowance risk is raised by a factor of 1.32 (95% CI: 1.17–1.48). If the partner has received sickness allowance, the disability pension risk is raised by a factor of 1.37 (95% CI: 1.26–1.48).

In endogamous Swedish couples, estimates for how sickness allowance receipt relates to partner's sickness allowance receipt are the same as in endogamous Finnish couples. Estimates for how disability pension receipt relates to partner's disability pension receipt, on the other hand, are higher in endogamous Swedish couples than in endogamous Finnish couples, or 2.53 (95% CI: 1.78–3.59) for men and 2.65 (95% CI: 1.87–3.74) for women, although the confidence intervals overlap. In exogamous couples with a Swedish man and a Finnish woman, the estimates are even larger, or around 1.6 for sickness allowance receipt and 3.0-3.5 for disability pension receipt, albeit the confidence intervals are wide. In the other type of exogamous couple with a Finnish man and a Swedish woman, the estimates are smaller in size and border on being statistically significant because of the small group size.

In both endogamous Finnish couples and endogamous Swedish couples, women tend to be slightly more sensitive to partner's benefit receipt than vice versa. A Finnish woman's risk of disability pension receipt is raised by a factor of 2.07 if her Finnish partner (the man) has received a disability pension, while a Finnish man's risk of disability pension receipt is raised by a factor of 1.71 if his Finnish partner (the

woman) has received a disability pension. A similar but less distinct difference in the size of the estimates can be seen for endogamous Swedish couples (2.65 vs. 2.53).

In exogamous couples, the pattern is rather the opposite. The disability pension risk for a Swedish man in an exogamous couple is raised by a factor of 3.54 if the (Finnish) woman has received a disability pension, while that for a Finnish woman increases by a factor of 3.01 if the (Swedish) man has received a disability pension. There is a similar, but less distinct, pattern for exogamous couples consisting of Finnish men and Swedish women. Confidence intervals are nevertheless too wide to facilitate any rigorous conclusion on this point.

Because all data are on a calendar year basis, we cannot sequence partners' mutual benefit receipt if it occurred during the same calendar year. To study whether the results discussed above are sensitive to this impediment, we performed parallel analyses in which same-year occurrences were excluded, and where we thus focused on the study person's risk of benefit receipt one or more calendar years after partner's benefit receipt. The results are summarized in Table 3, showing that the overall conclusions based on these estimates do not differ considerably from those reported above.

## Discussion

Using register-based data that cover the years 1987–2011, we have studied partners' mutual receipt of sickness allowance and disability pension in Finland. We have assessed behaviors in two ethnic groups, Finnish speakers and Swedish speakers. Both are native with a similar socioeconomic position, but Swedish speakers are generally healthier and have lower divorce and separation rates. We have tested for differences in partnership resources across ethnic groups in a context where discrimination against intermarried couples should be minor, especially in relation to what has been observed for intermarried couples in the United States. The present study has contributed to the small but growing literature that addresses heterogeneity in the health implications of partnerships. We have also contributed to the research area by extending health outcomes to less severe states than mortality and morbidity, which have been studied before although almost exclusively for the United States. Additionally, we have extended the study area of partners' mutual receipt of benefits and heterogeneity in the health impacts of partnership to a context that features an egalitarian and generous welfare state in which the receipt of health benefits is generally high.

Discrete-time hazard models were estimated for individuals aged 40–65 years, with emphasis on behaviors typical for couples with a different ethnic composition. In line with theoretically based expectations, we found ample evidence for partners' mutual benefit receipt in both endogamous and exogamous couples (*Hypothesis 1*). These findings could be explained by mutual health influence between partners, as the state of health for each was often similar and tended to converge over time [33]. Inter-spousal correlation in health status follows on assortative mating, common health behaviors, shared environmental risk factors, and direct effects of the health of one spouse on the health of the other. Thus, the presence of a partner is not necessarily protective, and partners may influence each other

negatively [12], which in turn may contribute to mutual health benefit receipt as found here. Our findings may also be interpreted using economic theories, suggesting that partners' mutual benefit receipt is explained by the fact that individuals strike an optimal balance between the cost of foregone leisure and the benefits of increased income through paid employment. If married or cohabiting couples place great value on leisure time spent together, they may mutually withdraw from the labor market [39–40]. The stronger correlation we found for disability pension than for sickness allowance (*Hypothesis 2*) may relate to the fact that it reflects a permanent exit from the labor market and is thereby more strongly influenced by joint retirement decisions.

Previous research has suggested that relationship quality will strongly impact retirement decisions [41]. Empirical evidence suggests that, after traditional economic factors, marital satisfaction was the strongest predictor of retirement timing [42]. The expectation of spending more time together following sickness absence or early retirement is most likely to be prevalent among couples who have already established some joint activities prior to retirement and who enjoy a high-quality marriage. We found that endogamous Swedish couples displayed slightly stronger associations than endogamous Finnish couples (*Hypothesis 3*), indicating a higher mutual benefit receipt. Swedish speakers are known to have lower divorce and separation rates than Finnish speakers. If the relationship quality is higher in endogamous Swedish couples in the absence of divorce or separation as well, these couples might be somewhat more likely than endogamous Finnish couples to look forward to opportunities for more mutual leisure time and therefore be more likely to decide on mutual early retirement. That said, the concordance in benefit among endogamous Finnish couples might reflect to a greater extent the mirror image, i.e., the fact that lower relationship quality may enforce continued participation in the labor force as an escape from relationship tensions.

In both Swedish endogamous couples and Finnish endogamous couples, women tend to be more sensitive to the man's benefit receipt than vice versa (*Hypothesis 4*). This is presumably because women are more likely than men to shoulder caregiving responsibilities and suffer from resulting stress reactions, also within this context of a comprehensive welfare state with fairly egalitarian gender roles.

For exogamous couples, we found some support for the argument that behaviors typical for an ethnic group dominate the gender-specific sensitivity to partner's benefit receipt (*Hypothesis 5*). Cross-spousal benefit receipt for exogamous couples in which the man is Swedish and the woman is Finnish is stronger than for couples in which the man is Finnish and the woman is Swedish. Further support for this argument is that, in the case of the exogamous couples, men's response to women's take-up of disability pension is somewhat stronger than women's response to men's take-up of the same benefit. This suggests also that partners who form an exogamous couple, particularly that consisting of a Swedish man and Finnish woman, are selected on some unobservable traits.

The high-quality Finnish register data we have used display several strengths when compared to other sources of data, as we need not be concerned with issues related to non-response, selective participation, or attrition. However, there are still limitations regarding the lack of specific medical diagnoses or health

problems that could underlie the mutual receipt of benefits. Data on the length of sickness spells were also crude. Being a register-based study, we could observe neither norms, nor preferences, nor other behaviors in an explicit manner. It needs to be stressed, therefore, that our data did not allow us to separate the potential mechanisms involved.

## **Conclusions**

Our findings could be explained both by collateral health effects and by rational decisions concerning mutual leisure time, income loss, and informal health care needs. These results nevertheless clearly cast light on the important issue of mutual health in couples, and particularly on the fact that associations of this kind may be heterogeneous across couples that differ in ethnic composition. Future studies could seek to incorporate theoretical models that articulate the pathways involved and test them with the help of rigorous empirical models.

## **Declarations**

### **Ethics approval and consent to participate:**

No ethics approval or consent to participate were needed, because the study was register-based, data use was approved by Statistics Finland, and study individuals could not be identified.

### **Consent for publication:**

No consent for publication was needed, because study individuals could not be identified.

### **Availability of data and materials:**

The data were used with Statistics Finland's permission TK-53-768-12 and can be obtained from Statistics Finland, subject to service fees.

### **Competing interests:**

There were no financial or non-financial competing interest.

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## Authors' contributions:

JS prepared the data and performed the analyses. JS, MS and MR contributed in writing the manuscript. All authors read and approved the final manuscript.

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