

MARITAL STATUS, NATION MARITAL STATUS COMPOSITION, AND SELF-ASSESSED HEALTH

A multilevel test of four hypotheses in 29 European countries

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ABSTRACT: This study examines to what extent the often found association between marital status and self-assessed health is influenced by the marital composition of the country people live in. Four hypotheses explaining why the national marital status composition may be influential are derived and tested. Whereas earlier research in this field solely focused on divorce rates, this study includes six different indicators of the national marital status composition to provide a comprehensive test of our expectations. We employ data on 29 European countries (European Social Survey 2002, 2004, and 2006, $N = 97,797$). Multilevel regression analyses demonstrate that both the strength of the relationship between marital status and health, and which unmarried group is most disadvantaged, vary across European countries. Living in a country with a high proportion of married people appears to be beneficial to the health of never married persons, but detrimental for widowed people. Additionally, our findings contradict the argument that divorced, widowed, and never married persons may be best off when living in countries with high proportions of people who are in the same situation. Finally, our results show that the never married are worst off in countries with a high proportion of cohabitants. This may reflect stronger health selectivity into cohabitation in countries where cohabitation is more common. We conclude that the ways through which the marital status composition influences the association between marital status and health appear to be complex and highly dependent on the exact marital status groups that are examined.

Key words: health; marital status; Europe; multilevel analysis

1. Introduction

During the last few decades, the relationship between marital status and people's health and well-being has been the focal point of numerous studies in epidemiology and social science (cf. Gove 1973; Ross *et al.* 1990; Rogers 1995; Williams and Umberson 2004; Liu and Umberson 2008). In these studies, married persons consistently prove to be healthier than unmarried persons, with divorced people exhibiting the poorest health in most analyses, followed by widowed and never married people. However, most research on the association between marriage and health was based on findings from single country or even single community studies. As a result, it proved difficult to generalize these findings to other social settings, especially since sample composition and analytic strategies often differ markedly between studies.

Recently, a growing number of scholars have turned to investigating the association between marital status and people's health and well-being in several country contexts simultaneously. Most notably, it was suggested that the marital status composition of the country people live in influences how their health and well-being is related to their personal marital status. In a study on 16 developed countries, Hu and Goldman (1990) found that death rates among single and divorced persons relative to the married are higher as the proportion of never married or divorced people is smaller. Using happiness as an indicator of well-being, Stack and Eshleman (1998) suggested that married people are best off in countries with high divorce rates. However, in these studies, effects of the marital status composition were not adequately separated from effects of people's individual marital status. Consequently, it is unclear whether the findings from these studies truly represent contextual effects of the marital status composition. In a recent article, Kalmijn (2010) improved on these earlier studies by employing a multilevel design to examine the effect of divorce on well-being across 38 developed countries. He concluded that the disadvantaged position of divorced people as compared to the married is weaker in countries where divorce is more common.

In the present study, we build on these earlier studies on cross-national variation in the association between marital status and health by analyzing highly comparable survey data from 29 European countries. Using multilevel analyses, we are able to formally examine whether the relationship between marital status and health differs cross-nationally, by modeling cross-level interactions between individual marital status and national marital status composition. Our aim is to contribute to existing knowledge in two ways.

First, although it has been recognized that the marital status composition of the country people live in may influence the association between marital status and people's health and well-being, most studies have solely focused on the role of divorce rates. Therefore, it is still unclear how other indicators of the national marital status composition, such as the proportions of married, widowed, and never married persons, have an impact on the relationship between individual marital status and health and well-being. For instance, it has been argued that divorced persons are in poorer health when divorce is less common, because the divorced group is more selective in countries with a low proportion of divorced people: when divorce is not common, only people who are most in want of marital dissolution (e.g., because of serious marital problems, health damaging behavior, or depression) will end their marriage (Hu and Goldman 1990; Kalmijn 2010). However, it would be at least as interesting to examine the possibility of selection mechanisms in the never married group: the never married may have the poorest health relative to married persons in countries where the proportion of never married people is small, because selection of unhealthy people into the never married group may be stronger in these countries. In this study, we present a comprehensive test of four hypotheses explaining how the national marital status composition may affect the association between marital status and health, focusing on six indicators of the national marital status composition.

Second, up until now, researchers examining the association between marital status and people's health and well-being cross-nationally have either focused on mortality, or on happiness and life satisfaction. In the present study, we concentrate on people's general physical health status, using a validated self-assessment measure. Although self-assessed health is strongly related to mortality and life satisfaction (Idler and Benyamini 1997), the exact mechanisms through which the national marital status composition affects health may not be fully identical across these outcome measures. For instance, whereas life satisfaction and happiness mostly tap the absence of mental problems, and mortality reflects the consequences of serious conditions and illness, a low general physical health status may indicate health problems that are not necessarily life-threatening, but may nevertheless form a serious impediment to people's functioning in daily life (Liu and Umberson 2008). An examination of the association between marital status and people's general health status across countries may therefore add to our understanding of the various mechanisms through which the national marital status composition influences how marital status affects well-being in its multiple facets.

In sum, our focal research question is to what extent the strength and the nature of the association between marital status and self-assessed

health vary according to the national marital status composition in 29 European countries.

2. Theoretical background and hypotheses

In general, two major pathways are mentioned in the literature to explain the often found association between marital status and health. First, the social causation pathway refers to mechanisms of marriage protection. Apart from the positive health externalities of physical contact, the beneficial influence of marriage is largely of a social kind. The spouse offers social support by providing love and emotional support (love, care, and sympathy), physical help and money, help in decision-making, and information (Pearlin and Johnson 1977; Rogers 1995; Joung *et al.* 1997). Additionally, marriage affects health through social influence. By expressing norms regarding health behavior, spouses encourage health improving behavior and limit health damaging behavior (Umberson 1987). Conversely, divorce and widowhood are detrimental to people's health, by causing a loss of affection and support (cf. Gerstel *et al.* 1985). The fact that cohabiting people are generally less healthy than married people despite having a partner, has been attributed to people investing less in their relationship in terms of support if their union is not legally binding. Second, the social selection pathway concerns mechanisms that attribute the association between marital status and health to healthy people having better chances on the marriage market, and to unhealthy people having a higher risk of divorce and bereavement (Waldron *et al.* 1996). The available evidence from longitudinal studies indicates that selectivity plays a substantial role in explaining why married people are healthier than unmarried people, but also that the social causation pathways still have considerably more explanatory power (Lillard and Panis 1996; Waite and Lehrer 2003).

To understand why the strength and the nature of the relationship between marital status and health might differ between countries, the national marital status composition has so far been used as the most prominent explanatory factor. Building on findings and implications from earlier work, four main mechanisms can be distinguished to explain the influence of the national marital status composition on the relationship between marital status and health. Three of these mechanisms link marital status composition indicators to the social causation pathways as described earlier, whereas one mechanism incorporates the social selectivity pathway.

First, building on the often found health benefits of marriage for individuals, it has been argued that living among a high proportion of married persons is beneficial to people's health (Kravdal 2007). According

to this line of reasoning, the married connect individuals and social groups, thereby increasing network density and the availability of people to rely on for support and help in times of need (Waite 1995). Through social interaction and larger family and network size, living in a country with a high proportion of married persons may have a positive effect on people's health. This positive aggregate effect of marital ties would especially apply to divorced, widowed, and never married persons. After all, while married people themselves will probably experience little additional value of these compensatory support networks, support and help that is provided by married couples may be helpful to those who lack the support, social control, and help of a spouse. Our first expectation (labeled *support networks hypothesis*) therefore reads that the health gap between married and unmarried people is smaller as more people are married at the country level. Given that unmarried cohabitation has become widely accepted as a mode of living with a partner in large parts of Europe, we also examine whether a high percentage of cohabiting people reduces the health disadvantage of unmarried persons.

Second, contrary to this line of reasoning, arguments for a negative influence of a high percentage of married people on people's health have been put forward as well. At first sight, these arguments seem paradoxical, given the overwhelming evidence for a protective effect of marriage at the individual level. However, the intensity of the support and influence that people obtain from their spouse is exactly the reason why others may experience negative repercussions of living among married couples. Gerstel and Sarkisian (2006) have pointed out that married couples socialize less with neighbors and friends, and provide less emotional support and practical help to neighbors and friends as compared to the never married. These adverse effects will mostly apply to divorced, widowed, and never married persons: married people are themselves unaffected by living among a high proportion of other married couples, whereas especially unmarried people are expected to experience a negative influence from having difficulty socializing and getting help and support. In contrast with the first hypothesis and using Gerstel and Sarkisian's (2006) terminology, the *greedy marriage hypothesis* reads that the health gap between married people and unmarried people is larger as more people are married at the country level. Again, we also examine to what extent this hypothesis holds when the percentage of unmarried cohabiting people is considered.

Third, regardless of the question whether the presence of married couples is beneficial to unmarried people's health, it has been argued that unmarried persons may benefit from living among unmarried peers. For instance, Subramanian *et al.* (2008) found that the health gap between widowed and married people is smaller in neighborhoods with a high

percentage of widowed people. It appears that for widowed people, living among other widowed persons may help them to cope with their loss, and to find support and share experiences with people who are in a similar situation. The same may apply to divorced persons: in countries where divorce is more common, divorced people may encounter less normative disapproval and find consolation from others who have gone through the same experience. From this we derived the *peer group support hypothesis*, which reads that the health gap between married persons and unmarried persons is smaller as more people belong to an unmarried person's peer group at the country level (e.g., divorced people are better off when the proportion of divorced persons is higher, but they are unaffected by the proportion of widowed or never married people).

Finally, the extent to which selection of healthy people into marriage and of unhealthy persons into widowhood and divorce takes place may depend on the national marital status composition. If a country has a high proportion of married persons, health selectivity into marriage plays a stronger role: in this case, especially people who are perceived to have unfavorable characteristics (e.g., physically or psychologically) are unsuccessful on the marriage market, whereas the group who remain unmarried is more heterogeneous in countries with a low proportion of married persons. In a related way, the group of divorced people consists of a selective group of persons with health problems especially in countries where the proportion of divorced people is low. In these countries, only those whose problems are most severe (e.g., addictions have resulted in both marital problems and health problems) decide to end their marriage, whereas the group of people who get a divorce in countries where marital dissolution is common is more heterogeneous (Kalmijn 2010). With regard to widowhood, we expect that the marital status composition is less relevant in influencing health selectivity, since for most people passing away was not a deliberate choice. In sum, our fourth expectation (labeled the *selection hypothesis*) reads that the health gap between married and never married people is larger as more people are married at the country level, and that the health gap between married people and divorced people is smaller as more people are divorced at the country level. The widowed are expected to be unaffected by the national marital status composition. Again, it is also examined to what extent looking at the percentage of unmarried cohabiting people may lead to different conclusions.

To avoid spurious associations at the individual level, we control for respondent's age, gender, educational level, and parental socioeconomic status. At the national level, we control for the Gross Domestic Product (GDP) per capita and the share of government health expenses (in total health expenditure).

3. Data and method

3.1. Data

To test our hypotheses, we used individual level data from the European Social Surveys (ESS) of 2002, 2004 and 2006 (Jowell *et al.* 2003). These surveys are archived and distributed by the Norwegian Social Science Data Services (NSD). They contain information on the self-assessed health, marital status, and socioeconomic position of individuals aged 15 and over living in private households from 31 European countries. Additionally, the 2002 survey wave includes respondents from Israel, and Turkey participated in the 2004 survey wave. Because of missing information on some of our control variables, Cyprus, the Russian Federation, and Turkey could not be included in our analyses. Our sample therefore consists of respondents from 29 countries. For each country, results of face-to-face interviews with around 1,000 respondents are included in the data per survey round. Some countries only participated in one or two survey waves (for detailed information on the participating countries we refer to ESS documentation (Jowell *et al.* 2003). For France and the United Kingdom, the survey wave of 2004 could not be analyzed because of missing information on some of the control variables, and for Austria complete information on marital status was missing in the 2006 survey wave. Combining the survey rounds of 2002, 2004 and 2006 resulted in a total of 125,599 respondents. Generally, the quality of the ESS sample is found to be sufficient, the mean response rate exceeds 60 percent and the measurements are, in general, both reliable and valid.

From this sample, only people between the ages of 25 and 75 were selected. People below this age usually still live in their parental home and have not yet completed their education. People aged 75 or older were not included because they are a highly selective group of relatively healthy people, especially given that only the non-institutionalized population was included in the ESS sample. Including the oldest age group may lead to an overestimation of the health of the widowed, most notably in countries with a low life expectancy. This selection leaves 98,877 respondents for our analyses (losing 26,722 respondents: 21.3 percent of the original sample). After listwise deletion on the other individual level variables, 97,797 respondents remain available to comprise our final sample (1,080 respondents, which is only 1.1 percent of our age selected sample, could not be included because of missing values). Data on control variables at the national level were obtained from the United Nations Economic Commission for Europe (UNECE) and the World Health Organization (WHO).

3.2. Measurements

In the European Social Surveys, self-assessed health is the only health measure available. Several studies have pointed out that self-assessed health is a reliable predictor of morbidity and mortality, and that the predictive power of self-assessed health does not differ between social groups (Idler and Benyamini 1997; Huisman *et al.* 2007). By using this self-assessed health measure we follow a prominent tradition in epidemiological research. Self-assessed health was measured by directly asking respondents how their health is in general. Five answering categories were distinguished: 0 = *very bad*, 1 = *bad*, 2 = *fair*, 3 = *good*, and 4 = *very good*. Mean self-assessed health scores per country are presented in Table 1. Ukrainians appear to have the poorest self-assessed health (1.99), whereas respondents from Ireland feel most healthy on average (3.21).

Marital status was measured by distinguishing five groups. First, two groups of people with a partner were distinguished, i.e., *married* people and people who are *cohabiting* with a partner without being married. Although cohabitation is usually not considered as a separate marital status category, explicitly distinguishing this group does more justice to the popularity of this type of union in many European countries (Heuveline and Timberlake 2004). Moreover, this allows us to examine the health gap between married and cohabiting people in the European context.

Three groups of unmarried people without a partner were distinguished: *never married*, *widowed*, and *divorced or separated* people. Although the divorced and the separated are often analyzed as two distinct groups, we decided to merge them because of the small number of separated persons in our sample (less than 2 percent). The five marital status groups were included in our analyses as dummy variables. The majority of the respondents is married (62.7 percent), followed by never married (13.2 percent), cohabiting (8.8 percent), divorced or separated (8.3 percent), and widowed persons (7.1 percent).

In our analyses, we used five control variables at the individual level. Respondent's age is measured in years. Additionally, we included a squared term for age, to account for the fact that people's health generally deteriorates more rapidly as people get older. The mean respondent's age is 48.6 years. Gender differences are controlled for by coding 0 = *male* and 1 = *female*. There are slightly more women than men in our sample (54 percent). We distinguish four educational levels, which are included in our analyses as dummy variables: (a) complete or incomplete primary education or first stage of basic education, (b) lower secondary education or second stage of basic education, (c) upper secondary education, and (d) tertiary or post-tertiary education (including post-secondary, non-tertiary education). By using this general measure, comparability problems regarding the

TABLE 1. Number of respondents, mean self-assessed health, and marital status composition per country

<i>Country</i>	<i>n</i>	<i>Mean health status</i>	<i>Married (%)</i>	<i>Co-habiting (%)</i>	<i>Never married (%)</i>	<i>Divorced or separated (%)</i>	<i>Widowed (%)</i>
Austria	3,485	3.06	48.8	8.3	26.5	8.1	8.2
Belgium	4,128	2.95	53.2	9.9	23.5	7.4	6.0
Bulgaria	1,133	2.44	60.5	3.9	14.9	7.0	13.7
Czech Rep.	3,433	2.56	53.1	4.7	16.1	11.0	15.1
Denmark	3,642	3.11	55.4	14.3	17.6	6.6	6.1
Estonia	2,620	2.32	43.7	11.5	24.3	9.0	11.6
Finland	4,595	2.80	50.4	13.7	21.8	7.5	6.5
France	2,837	2.72	50.7	12.1	20.2	8.0	9.1
Germany	6,867	2.63	54.1	9.4	21.6	7.3	7.6
Greece	3,957	3.08	61.6	1.4	20.6	3.7	12.7
Hungary	3,731	2.27	52.1	7.0	19.1	8.4	13.3
Iceland	374	3.15	51.1	18.0	19.3	6.7	4.9
Ireland	4,830	3.21	54.2	4.6	28.9	3.9	8.5
Israel	1,778	2.89	57.5	1.9	27.5	6.1	7.0
Italy	993	2.73	59.7	2.8	27.6	3.2	6.7
Latvia	1,326	2.35	39.7	6.6	31.9	10.1	11.7
Luxembourg	2,345	2.77	54.8	6.4	27.6	5.3	5.9
The Netherlands	5,168	2.84	52.7	9.8	19.4	7.9	10.2
Norway	4,464	3.01	51.3	16.3	20.3	6.8	5.2
Poland	4,055	2.44	57.1	2.1	27.6	3.5	9.8
Portugal	4,527	2.36	57.7	3.0	20.3	5.3	13.7
Romania	1,634	2.34	61.3	4.0	19.7	4.3	10.6
Slovakia	2,314	2.58	56.2	4.3	26.6	4.9	8.0
Slovenia	3,318	2.50	52.2	8.4	26.6	3.8	9.0
Spain	4,059	2.66	56.4	4.8	27.1	3.5	8.2
Sweden	4,572	3.00	44.4	20.6	22.1	7.7	5.1
Switzerland	4,968	3.12	52.2	8.4	21.7	9.6	8.1

TABLE 1 (Continued)

<i>Country</i>	<i>n</i>	<i>Mean health status</i>	<i>Married (%)</i>	<i>Co-habiting (%)</i>	<i>Never married (%)</i>	<i>Divorced or separated (%)</i>	<i>Widowed (%)</i>
Ukraine	3,135	1.99	54.4	1.2	15.2	9.6	19.6
UK	3,509	2.95	47.2	8.8	21.7	10.8	11.4
Total	97,797	2.75	53.1	8.2	22.6	6.8	9.3

educational systems in various countries are avoided. Whereas 15.6 percent of respondents have reported primary or incomplete primary as their highest educational level, 31.7 percent have at least completed tertiary education.

Finally, we controlled for people's wealth, since the relationship between marital status and health may partly be caused by wealthy people being both healthier and more successful on the marriage market. However, instead of taking people's current financial situation into account, we decided to examine the financial situation during adolescence. First, most people marry at a relatively young age; therefore, parental wealth is probably more influential in finding a partner, and people's current financial situation does not give reliable information on wealth during the process of mate selection. Second, current income partly mediates the association between marital status and health, since married people are better able to benefit from economies of scale than those who are unmarried. Controlling for current income would as a result lead to an underestimation of health differences according to marital status. Therefore, we included the father's occupational position when the respondent was aged 14, which was measured by distinguishing six groups: (a) manual and service occupations, (b) technical and craft occupations, (c) clerical and intermediate occupations, (d) traditional and modern professionals, (e) managers and administrators, and (f) no known occupation. Again, these groups were included in our analyses as dummy variables. The fathers of the majority of the respondents were active in either manual and service occupations or technical and craft occupations when the respondent was aged 14 (59.4 percent), and for 15.6 percent of the respondents, no father's occupation was known. Initially, we also controlled for survey wave, but because the estimates appeared to be non-significant in all models we decided not to include this variable in our final analyses.

Information on the national marital status composition was obtained by aggregation from the individual level data from the ESS. Unfortunately, we were not able to find official population estimates on the marital status composition for all countries in our sample.¹ However, since the ESS are

1. For seven countries in our study (i.e., Austria, Estonia, Greece, Israel, Poland, Spain, and Ukraine), no population estimates were available from Eurostat (2010). Additionally, using these population estimates would completely neglect the growing popularity of cohabitation in many European countries and hamper an adequate test of our hypotheses, which mostly focus on partner ties in a broad sense rather than marital ties. Re-analyzing the models for which comparable information was available between the official population estimates and the aggregated individual data did not lead to different findings (results can be found in Appendix 1). In sum, we conclude that is neither necessary nor preferable to use official population estimates (thereby losing a quarter of the countries in our sample, as well as accuracy in testing the hypotheses) instead of aggregations from the European Social Surveys.

based on representative national samples and sample sizes per country are large, we are confident that our aggregated estimates are fairly reliable. We used this information to compute six variables at the national level: the percentage of married people, the percentage of cohabiting people, the percentage of never married people, the percentage of divorced and separated people, the percentage of widowed people, and the total percentage of people with a partner (which is the sum of the percentage of married people and the percentage of cohabiting people). These percentages were calculated for each survey wave separately. Note that we used the original sample of the ESS instead of the age selected sample for these calculations. Although we have argued that the inclusion of the oldest and youngest age groups at the individual level is problematic, there is no reason to exclude these respondents in the computation of our aggregated variables at the national level.

A detailed overview of differences in the national marital status composition across European countries is provided in Table 1. Note that the percentages in Table 1 represent pooled figures, combining all three survey waves for presentation purposes. Descriptive statistics for all individual and country-year level variables are available upon request

We accounted for two factors at the national level. First, the Gross Domestic Product (GDP) per capita was measured in US\$ divided by 1,000, at current prices and Purchasing Power Parities (PPPs). Separate values for each survey wave were collected from the United Nations Economic Commission for Europe (UNECE 2009). There is quite some variation in GDP per capita, ranging from \$6,550 in Ukraine in 2004 to \$66,164 in Luxembourg in 2004. To account for the influence of extreme cases at the upper and lower end of the welfare distribution on our estimates, we used the logarithm of the GDP per capita in our analyses. Second, differences between national health systems were taken into account by including the percentage of the total health expenditure, which is covered by government health expenditure in our models. These data were obtained from the World Health Organization (WHO 2009). The percentage of total health expenditure that is covered by the government ranges from 51.3 percent in Greece and Latvia to 90.8 percent in Luxembourg.

3.3. Statistical analysis

In order to test our hypotheses, we used linear multilevel regression analyses. Using ordinary regression analyses would be inappropriate given the nested structure of our data: individuals are hierarchically clustered within countries. This nesting of individual units within larger national units

may lead to the underestimation of standard errors of effects of national level characteristics if non-hierarchical methods are employed. As a result, in ordinary regression analyses the significance of national level effects is overestimated. Multilevel regression analyses are able to account for this clustering of individuals within countries by separating individual variance in self-assessed health from national variance in self-assessed health. Hence, hypotheses on effects of characteristics can be tested appropriately using this technique. For this reason, multilevel models are increasingly popular in cross-national research. For detailed technical information on multilevel analyses we refer to Snijders and Bosker (1999); a practical application of multilevel models in research on marital status and well-being can be found in Kalmijn (2010). We specified individuals as Level 1 units (i.e., the hierarchically lowest level of analysis), and country-year combinations as Level 2 units (the highest level). In other words, countries that are present in each wave of the European Social Surveys are included as three Level 2 units.

For each of our models, we report regression coefficients (B), standard errors (SE), Level 1 and Level 2 variance in self-assessed health unexplained by the variables in the models, and the -2 Loglikelihood, which indicates model fit. In order to examine the amount of variance in self-assessed health at the individual and country-year level before the inclusion of any predictors, we computed an empty model (which only includes variance components). This demonstrated that the Level 1 variance in self-assessed health to be explained is 0.737 and the Level 2 variance is 0.097. As a result, the intra class correlation is $0.097/(0.097 + 0.737) = 0.116$, meaning that 11.6 percent of the variation in self-assessed health is to be found at the country-year level. This underlines the observation from Table 1 that there is cross-national variation in self-assessed health. Results of a country-specific analysis of the bivariate association between marital status and self-assessed health (i.e., without any control variables) are presented in Appendix 2.

4. Results

In Table 2, results of multilevel analyses including cross-level interaction terms between individual marital status and the marital status composition indicators are presented.² Six separate models were estimated because of the correlations between some of the marital status composition indicators. To underline the importance of distinguishing marriage and cohabitation in the European context, we also present interactions between individual

2. With regard to our control variables (parameters available upon request) our findings are consistent with results from previous studies.

TABLE 2. Results of multilevel linear regression of self-assessed health on cross-level interactions

	<i>Model A</i>		<i>Model B</i>	
Constant	2.858**	(0.356)	Constant	3.171** (0.340)
Marital status ^a			Marital status ^a	
Cohabiting	-0.003	(0.174)	Cohabiting	-0.174 (0.137)
Never married	0.430	(0.242)	Never married	-0.637** (0.179)
Divorced or separated	-0.242	(0.213)	Divorced or separated	-0.319 (0.165)
Widowed	-0.826**	(0.284)	Widowed	0.513* (0.214)
% Partnered	0.011	(0.006)	% Married	0.005 (0.005)
% Partnered × cohabiting	-0.001	(0.003)	% Married × cohabiting	0.002 (0.003)
% Partnered × never married	-0.009*	(0.004)	% Married × never married	0.010** (0.003)
% Partnered × divorced	0.002	(0.003)	% Married × divorced	0.004 (0.003)
% Partnered × widowed	0.012*	(0.005)	% Married × widowed	-0.011** (0.004)
Level 1 variance (individuals)	0.626**	(0.003)	Level 1 variance (individuals)	0.626** (0.003)
Level 2 variance (country-year)	0.034**	(0.007)	Level 2 variance (country-year)	0.034** (0.007)
- 2	232,053.8		- 2	232,051.8
Loglikelihood			Loglikelihood	
	<i>Model C</i>		<i>Model D</i>	
Constant	3.479**	(0.168)	Constant	3.481** (0.201)
Marital status ^a			Marital status ^a	
Cohabiting	-0.056*	(0.028)	Cohabiting	0.000 (0.071)
Never married	0.017	(0.028)	Never married	-0.129 (0.093)
Divorced or separated	-0.095**	(0.030)	Divorced or separated	0.007 (0.080)
Widowed	-0.247**	(0.032)	Widowed	-0.015 (0.107)
% Cohabiting	0.003	(0.005)	% Never married	0.000 (0.006)
% Cohabiting × cohabiting	-0.002	(0.003)	% Never married × cohabiting	-0.003 (0.003)
% Cohabiting × never married	-0.015**	(0.003)	% Never married × never married	0.001 (0.004)
% Cohabiting × divorced	-0.002	(0.003)	% Never married × divorced	-0.005 (0.004)
% Cohabiting × widowed	0.020**	(0.003)	% Never married × widowed	-0.003 (0.005)
Level 1 variance (individuals)	0.626**	(0.003)	Level 1 variance (individuals)	0.626** (0.003)

TABLE 2 (Continued)

	<i>Model C</i>		<i>Model D</i>	
Level 2 variance (country-year)	0.036**	(0.007)	Level 2 variance (country-year)	0.035** (0.007)
– 2 Loglikelihood	232,033.6		– 2 Loglikelihood	232,063.3
	<i>Model E</i>		<i>Model F</i>	
Constant	3.508**	(0.170)	Constant	3.729** (0.216)
Marital status ^a			Marital status ^a	
Cohabiting	– 0.064**	(0.014)	Cohabiting	– 0.092* (0.036)
Never married	– 0.087**	(0.017)	Never married	– 0.258** (0.045)
Divorced or separated	– 0.107**	(0.016)	Divorced or separated	– 0.157** (0.042)
Widowed	– 0.109**	(0.021)	Widowed	0.076 (0.055)
% Divorced or separated	– 0.009	(0.009)	% Widowed	– 0.017 (0.009)
% Divorced × cohabiting	– 0.028	(0.028)	% Widowed × cohabiting	0.002 (0.004)
% Divorced × never married	– 0.118*	(0.045)	% Widowed × never married	0.017** (0.005)
% Divorced × divorced	– 0.022	(0.042)	% Widowed × divorced	0.004 (0.004)
% Divorced × widowed	0.164*	(0.062)	% Widowed × widowed	– 0.017** (0.005)
Level 1 variance (individuals)	0.626**	(0.003)	Level 1 variance (individuals)	0.626** (0.003)
Level 2 variance (country-year)	0.034**	(0.006)	Level 2 variance (country-year)	0.035** (0.007)
– 2 Loglikelihood	232,057.6		– 2 Loglikelihood	232,049.7

Note: Results are controlled for age, age squared, gender, educational level, father's occupational position, logged GDP per capita, and government health expenditure. Parameters are not shown for these variables. Standard errors are in parentheses.

^aReference category is married.

* $p < 0.05$; ** $p < 0.01$.

marital status and the total percentage of people with a partner (which is the sum of the percentage of married people and the percentage of unmarried people). Note that random slope variances were computed as well in order to achieve accurate estimates. However, for presentation purposes, and given that we are not interested in interpreting random slope variation as such, we do not present these in Table 2. The results will be discussed in the order of the hypotheses outlined in the theoretical background and hypotheses section.

In the *support networks hypothesis*, we articulated the expectation that the health gap between the married and the unmarried is smaller as more people are married or cohabiting at the national level. In Model A, the health difference between the married and the widowed indeed proves to be smaller as more people are partnered. However, contrary to this hypothesis, the health gap between the married and the never married appears to be larger as the percentage of people with a partner in a country is higher (note that the minimum percentage of people with a partner is 46.3 percent). Additionally, the health difference between married people and the other unmarried groups does not vary with the percentage of partnered people. In Model B and Model C, the percentage of people with a partner is split into the proportion of formally married people and the proportion of unmarried cohabitants. This distinction proves to be very revealing. In concordance with the support networks hypothesis, the health gap between the married and the never married appears to be significantly smaller as the percentage of married people is higher. Contrary to these expectations, however, we find that a high percentage of cohabiting people actually means a larger health difference between married and never married people. For widowed people, we observe the opposite: in conflict with the support networks hypothesis, the difference in self-assessed health between married people and widowed people is larger as the percentage of married people is higher (note that the minimum percentage of married people is 39.7 percent); on the other hand, this health gap is smaller as more people are cohabiting, supporting this hypothesis. Again, the health difference between married people and the other unmarried groups is not influenced by the marital status composition. In sum, the support networks hypothesis is faced with mixed evidence depending on which specific unmarried group and which indicator of partner ties at the national level are considered.

Being the perfect counterpart of the support networks hypothesis, this means that the *greedy marriage hypothesis* is confronted with mixed evidence as well. According to this hypothesis, the health gap between married people and unmarried people is larger as more people are married at the national level. In concordance with these expectations, the health difference between the married and the never married appears to be larger as the percentage of people with a partner is higher in Model A. However, our finding that the health gap between the married and the widowed is smaller as more people are partnered conflicts with this line of reasoning. In Model B, the health gap between married people and widowed people is indeed larger as the percentage of married people is higher, but the health difference between the married and the never married appears to be significantly smaller as the percentage of married people is higher. Model

C shows that, in line with the greedy marriage hypothesis, a high percentage of cohabiting people is related to a larger health gap between married and never married people. For widowed people, however, we find that the health disadvantage as compared to married individuals is smaller as more people are cohabiting. As with the support networks hypothesis, it strongly depends on which unmarried group is considered and which indicator of the marital status composition is examined whether the greedy marriage hypothesis is supported.

In the *peer group support hypothesis*, we expected that the health gap between married persons and unmarried persons is smaller as more people belong to an unmarried person's peer group at the national level. Model D demonstrates that the health gap between never married and married individuals is not significantly influenced by the percentage of never married peers at the national level. As can be seen in Model E, the same applies to the size of the health gap between divorced and married individuals, which is not affected by the presence of divorced peers at the national level. Finally, Model F shows that the health difference between married people and the widowed is larger rather than smaller as the percentage of widowed people at the national level is higher. Instead of offering health benefits by providing support among peers and the possibility to interact with other widowed people, a high percentage of widowed people may result in further isolation and increased scarcity of medical help and support from the non-widowed (cf. Kravdal 2007). In sum, the peer group support hypothesis is not supported at all by our results: never married and divorced persons appear to be unaffected by the proportions of never married and divorced people, and a high proportion of widowed people even appears to be detrimental rather than beneficial for widowed individuals.

Finally, the *selection hypothesis* implies that the health gap between married and never married people is larger as more people are married at the national level, and that the health gap between married people and divorced people is smaller as more people are divorced at the country level (for widowed persons, no influence of the national marital status composition was expected, since this group is unlikely to be formed through selection processes). This hypothesis is only supported to a limited extent: the fact that never married persons are worse off in countries with higher proportions of cohabitants (Model C) may point towards health selectivity into cohabitation. However, the finding that a high percentage of married people is associated with better health for never married people (Model B) opposes selectivity arguments. Moreover, contrary to the findings of Hu and Goldman (1990) and Kalmijn (2010), we do not find evidence in Model E for stronger health selectivity into divorce in countries where divorce is more common. In sum, it appears

that health selectivity into cohabitation plays a more prominent role in European societies than health selectivity into marriage and divorce.

5. Conclusion and discussion

In this study, we investigated the association between marital status and self-assessed health across 29 European countries, with a special focus on the role of the national marital status composition. We conclude that marital status is related to self-assessed health in Europe. Married people feel consistently healthiest, whereas even in the European context cohabiting people are faced with a health disadvantage. However, the strength of the relationship between marital status and health, as well as which unmarried group is most disadvantaged, appears to differ substantially between nations. Our focal research question asked to what extent the strength and the nature of the association between marital status and self-assessed health vary according to the national marital status composition. Our findings demonstrate that the national marital status composition does indeed contribute to cross-national differences in the relationship between marital status and health.

Most importantly, our findings indicate that living in countries with a high percentage of partnered individuals is neither necessarily beneficial nor inevitably detrimental to unmarried people's health. For widowed people, we find that a high percentage of married people has negative repercussions on their health, whereas a high percentage of cohabitants has positive consequences. The widowed may have difficulty in finding help and support if living among married couples, which points to negative health externalities of marriage. The fact that these difficulties do not occur with a high percentage of cohabitants may be due to cohabiting relationships being less intense and time-consuming than conjugal partnerships. For never married individuals, we find exactly the opposite: a high percentage of cohabitants is negatively associated with health for this unmarried group, whereas a high percentage of marital bonds appears to be beneficial. Whereas never married people may benefit from the support networks offered by married couples, a high percentage of cohabiting people may indicate a higher selectivity of people into the never married group. Possibly, in countries where cohabitation is less common, there is a better social infrastructure for those in the pre-marital stage. Finally, it is important to note that our findings do not at all support arguments on peer group support. This indicates that the rising divorce rates in many European countries do not necessarily lead to divorced people experiencing more support and understanding from other divorcees. On the other hand, our results suggest that health selectivity into divorce will not increase as divorce becomes more common.

The interpretation of some findings is less straightforward. Most notably, it is puzzling that the health gap between the married and the never married is smaller as the percentage of widowed people at the national level is higher. We suspect that this finding can be attributed to the high correlations between some of the marital status composition indicators. Unfortunately, this interrelatedness of national level indicators prevented us from fully separating the influences of the several marital status composition variables by simultaneous estimation in one model.

This study has meaningful implications for research on marital status and health and for research on differences between marital status groups in general. First, the results suggest that self-assessed health inequalities between married people and unmarried people vary considerably between countries. This implies that conclusions on consequences of marriage on several domains of people's life may be difficult to generalize to different populations on the basis of a single country study. Second, our results show that findings from studies on happiness (Stack and Eshleman 1998; Kalmijn 2010) and mortality (Hu and Goldman 1990) are not necessarily the same when self-assessed health is concerned. This indicates that people's marital status and the national marital status composition may influence the multiple facets of health and well-being through several distinct mechanisms. Third, in order to test general hypotheses about the influence of the national marital status composition, distinguishing five other indicators in addition to divorce rates has proved to be fruitful: our findings present a comprehensive picture of the role of the national marital status composition. Moreover, this approach has shown that none of the underlying mechanisms that have been suggested in earlier work serves as a unique explanation for the role of the marital status composition. Rather, the ways through which the marital status composition influences the association between marital status and health appear to be complex and highly dependent on the exact marital status groups that are examined.

We hope that future research will be able to deal with some limitations of the present study. First, unfortunately, our data did not allow us to distinguish people who have a partner, but are not married or cohabiting with this partner. Therefore, it is possible that the divorced, widowed, and never married groups included some people who are in a steady relationship with a partner. Because this situation is mostly prevalent among young adults at the start of a relationship, however, the fact that we have only selected respondents aged 25 and over may have considerably reduced the number of people with a partner who are not married or cohabiting in our sample. Future research should investigate to what extent these people differ in their self-assessed health from married and cohabiting persons.

Second, the national marital status composition provides only part of the explanation for cross-national differences in the strength and the nature of the relationship between marital status and health. Future research should therefore also consider the role of other explanatory factors at the national level, such as policy on family issues and welfare redistribution. Additionally, cross-national differences in culture and religiosity may explain why the divorced and cohabiting are better off in some countries than in others (Kiernan 2000). For instance, in countries with higher levels of religious involvement divorce and unmarried cohabitation may be frowned upon more than in secular societies. This study indicates that further investigation of the causes of differences in the marriage and health association between social settings may contribute to a better understanding of the mechanisms underlying this relationship.

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APPENDIX 1. Results of multilevel linear regression of self-assessed health on cross-level interactions –% married and% widowed based on population estimates (Eurostat) for 22 countries

	<i>Model B</i>		<i>Model F</i>
Constant	4.470** (0.476)	Constant	4.077** (0.308)
Marital status ^a		Marital status ^a	
Cohabiting	– 0.331 (0.159)	Cohabiting	– 0.295** (0.089)
Never married	– 0.867** (0.226)	Never married	– 0.606** (0.137)
Divorced or separated	– 0.626** (0.136)	Divorced or separated	– 0.206 (0.104)
Widowed	0.706* (0.281)	Widowed	0.277 (0.186)
% Married	– 0.026** (0.009)	% Widowed	– 0.124** (0.032)
% Married × cohabiting	0.006 (0.004)	% Widowed × cohabiting	0.036* (0.013)
% Married × never married	0.018** (0.005)	% Widowed × never married	0.078** (0.020)
% Married × divorced	.012** (0.003)	% Widowed × divorced	0.014 (0.015)

APPENDIX (*Continued*)

	<i>Model B</i>		<i>Model F</i>	
% Married × widowed	− 0.019** (0.006)	% Widowed × widowed	− 0.058* (0.028)	
Level 1 variance (individuals)	0.632** (0.003)	Level 1 variance (individuals)	0.631** (0.003)	
Level 2 variance (country-year)	0.035** (0.011)	Level 2 variance (country-year)	0.029** (0.009)	
− 2 Loglikelihood	177,841.5	− 2 Loglikelihood	177,847.6	

Note: Results are controlled for age, age squared, gender, educational level, father's occupational position, logged GDP per capita, and government health expenditure. Parameters are not

APPENDIX 2. Results of country-specific linear regression of self-assessed health on marital status (bivariate models without controls)

	<i>Austria</i>		<i>Belgium</i>		<i>Bulgaria</i>		<i>Czech Rep.</i>
Constant	3.074** (0.018)	Constant	2.958** (0.015)	Constant	2.456** (0.033)	Constant	2.636** (0.019)
Marital status ^a		Marital status ^a		Marital status ^a		Marital status ^a	
Cohabiting	0.138* (0.050)	Cohabiting	0.084* (0.041)	Cohabiting	0.352* (0.138)	Cohabiting	0.114 (0.072)
Never married	0.076* (0.039)	Never married	0.048 (0.040)	Never married	0.497** (0.105)	Never married	0.173** (0.053)
Divorced or separated	− 0.100* (0.047)	Divorced or separated	− 0.079 (0.043)	Divorced or separated	0.007 (0.100)	Divorced or separated	− 0.145** (0.046)
Widowed	− 0.579** (0.060)	Widowed	− 0.297** (0.061)	Widowed	− 0.595** (0.087)	Widowed	− 0.664** (0.046)
	<i>Denmark</i>		<i>Estonia</i>		<i>Finland</i>		<i>France</i>
Constant	3.128** (0.019)	Constant	2.335** (0.021)	Constant	2.794** (0.015)	Constant	2.725** (0.021)
Marital status ^a		Marital status ^a		Marital status ^a		Marital status ^a	
Cohabiting	0.116** (0.043)	Cohabiting	0.181** (0.048)	Cohabiting	0.198** (0.035)	Cohabiting	0.209** (0.049)
Never married	− 0.058 (0.050)	Never married	0.091 (0.048)	Never married	0.024 (0.037)	Never married	0.037 (0.047)
Divorced or separated	− 0.228** (0.057)	Divorced or separated	− 0.103* (0.051)	Divorced or separated	− 0.143** (0.042)	Divorced or separated	− 0.205** (0.055)
Widowed	− 0.383** (0.079)	Widowed	− 0.359** (0.055)	Widowed	− 0.327** (0.062)	Widowed	− 0.292** (0.067)
	<i>Germany</i>		<i>Greece</i>		<i>Hungary</i>		<i>Iceland</i>
Constant	2.611** (0.013)	Constant	3.074** (0.017)	Constant	2.292** (0.019)	Constant	3.142** (0.055)
Marital status ^a		Marital status ^a		Marital status ^a		Marital status ^a	
Cohabiting	0.182** (0.036)	Cohabiting	0.284* (0.126)	Cohabiting	0.144* (0.058)	Cohabiting	0.016 (0.120)

APPENDIX (Continued)

	<i>Germany</i>	<i>Greece</i>	<i>Hungary</i>	<i>Iceland</i>
Never married	0.187** (0.032)	Never married 0.431** (0.042)	Never married 0.376** (0.050)	Never married 0.247 (0.151)
Divorced or separated	- 0.105** (0.038)	Divorced or separated 0.103 (0.071)	Divorced or separated - 0.133** (0.050)	Divorced or separated 0.009 (0.157)
Widowed	- 0.328** (0.047)	Widowed - 0.668** (0.050)	Widowed - 0.550** (0.048)	Widowed - 0.642* (0.272)
	<i>Ireland</i>	<i>Israel</i>	<i>Italy</i>	<i>Latvia</i>
Constant Marital status ^a	3.242** (0.014)	Constant Marital status ^a 2.920** (0.027)	Constant Marital status ^a 2.658** (0.028)	Constant Marital status ^a 2.445** (0.031)
Cohabiting	0.046 (0.052)	Cohabiting 0.396* (0.157)	Cohabiting - 0.065 (0.145)	Cohabiting 0.084 (0.095)
Never married	- 0.008 (0.029)	Never married 0.375** (0.070)	Never married 0.426** (0.059)	Never married 0.214** (0.070)
Divorced or separated	- 0.247** (0.053)	Divorced or separated - 0.430** (0.085)	Divorced or separated 0.207 (0.125)	Divorced or separated - 0.213** (0.069)
Widowed	- 0.336** (0.046)	Widowed - 0.848** (0.094)	Widowed - 0.387** (0.110)	Widowed - 0.729** (0.068)
	<i>Luxembourg</i>	<i>The Netherlands</i>	<i>Norway</i>	<i>Poland</i>
Constant Marital status ^a	2.761** (0.023)	Constant Marital status ^a 2.877** (0.014)	Constant Marital status ^a 3.005** (0.017)	Constant Marital status ^a 2.484** (0.016)
Cohabiting	0.221** (0.075)	Cohabiting 0.131** (0.035)	Cohabiting 0.135** (0.036)	Cohabiting 0.182* (0.091)
Never married	0.202** (0.059)	Never married - 0.119** (0.031)	Never married 0.049 (0.041)	Never married 0.155** (0.044)
Divorced or separated	- 0.184* (0.077)	Divorced or separated - 0.177** (0.038)	Divorced or separated - 0.141** (0.049)	Divorced or separated - 0.291** (0.067)

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APPENDIX (Continued)

	<i>Luxembourg</i>		<i>The Netherlands</i>		<i>Norway</i>		<i>Poland</i>	
Widowed	-0.361** (0.092)	Widowed	-0.303** (0.042)	Widowed	-0.319** (0.076)	Widowed	-0.604** (0.049)	
	<i>Portugal</i>		<i>Romania</i>		<i>Slovakia</i>		<i>Slovenia</i>	
Constant	2.364** (0.015)	Constant	2.369** (0.026)	Constant	2.585** (0.021)	Constant	2.476** (0.019)	
Marital status ^a		Marital status ^a		Marital status ^a		Marital status ^a		
Cohabiting	0.186** (0.069)	Cohabiting	0.098 (0.119)	Cohabiting	0.315** (0.083)	Cohabiting	0.200** (0.053)	
Never married	0.278** (0.037)	Never married	0.347** (0.085)	Never married	0.282** (0.053)	Never married	0.321** (0.045)	
Divorced or separated	0.117* (0.050)	Divorced or separated	0.107 (0.102)	Divorced or separated	-0.125 (0.075)	Divorced or separated	-0.091 (0.073)	
Widowed	-0.484** (0.040)	Widowed	-0.656** (0.074)	Widowed	-0.765** (0.071)	Widowed	-0.543** (0.060)	
	<i>Spain</i>		<i>Sweden</i>		<i>Switzerland</i>		<i>Ukraine</i>	
Constant	2.647** (0.017)	Constant	2.996** (0.017)	Constant	3.136** (0.014)	Constant	2.076** (0.017)	
Marital status ^a		Marital status ^a		Marital status ^a		Marital status ^a		
Cohabiting	0.197** (0.061)	Cohabiting	0.109** (0.032)	Cohabiting	0.085* (0.038)	Cohabiting	-0.133 (0.133)	
Never married	0.188** (0.036)	Never married	0.011 (0.039)	Never married	0.047 (0.030)	Never married	0.201** (0.058)	
Divorced or separated	0.054 (0.067)	Divorced or separated	-0.166** (0.045)	Divorced or separated	-0.111** (0.034)	Divorced or separated	-0.084 (0.045)	
Widowed	-0.597** (0.058)	Widowed	-0.234** (0.079)	Widowed	-0.353** (0.048)	Widowed	-0.517** (0.038)	

APPENDIX (Continued)

	<i>United Kingdom</i>		<i>Total</i>
Constant	3.014** (0.021)	Constant	2.756** (0.004)
Marital status ^a		Marital status ^a	
Cohabiting	0.089 (0.056)	Cohabiting	0.219** (0.010)
Never married	– 0.107* (0.044)	Never married	0.170** (0.009)
Divorced or separated	– 0.265** (0.048)	Divorced or separated	– 0.127** (0.011)
Widowed	– 0.341** (0.063)	Widowed	– 0.577** (0.011)

Note: Standard errors are in parentheses.

^aReference category is married.

* $p < 0.05$; ** $p < 0.01$.