Research Article

Is there an association between marital exogamy of immigrants and nonmigrants and their mental health? A two-partners approach

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Contents

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Abstract

OBJECTIVE

We study mental health in immigrants and nonmigrants, distinguishing between people in exogamous and endogamous marriages. Our theoretical considerations are based on concepts of the economics of marriage, resources, and conflict. We test two competing hypotheses: Intermarriage may be associated with a gain effect or it may be related to a negative strain effect.

METHODS

We use SHARE data from waves 1, 2, and 4–6 (2004–2015). Our sample consists of 20,383 individuals living in nine European countries (15% migrants, 85% nonmigrants). The dependent variable is depression measured in the EURO-D scale; we applied mixed-effects linear regression models for repeated observations.

RESULTS

Overall, we found that migrants in exogamous marriages were more likely to report lower levels of depression than their counterparts in endogamous marriages, whereas nonmigrants in an exogamous marriage reported higher levels of depression. Several types of independent variables explained the total effect of the marriage type on mental health for migrants and nonmigrant men; for nonmigrant women the negative effect remained small but significant.

CONCLUSIONS

Our results support partially the hypothesis of a gain effect of a mixed marriage for mental health among immigrants, while at the same time suggesting that being in an exogamous marriage has a negative strain effect on mental health for nonmigrants.

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CONTRIBUTION
Our results suggest that the question of the costs and benefits of a mixed marriage should be investigated for migrants as well as for nonmigrants, in order to determine whether such marriages can contribute to a two-sided understanding of immigrant integration.

1. Introduction

Intermarriage, i.e., a marriage between members of different social groups, is one of the core indicators of social cohesion and intergroup relations. In classic assimilation theory an exogamous marriage between an immigrant and a nonmigrant at destination is seen as a result of the assimilation process of a migrant at destination, and also as a means to it (Gordon 1964). However, most research examines mixed marriages as the dependent variable, in that they are seen as an indicator of assimilation or integration. Relatively little is known about the scope, internal dynamics of conflict and negotiation, and social consequences of marital mixedness (Rodríguez-García 2015).

Our paper investigates how marital exogamy is related to individual life conditions. We ask whether there is an association between marriage type and the mental health of both spouses.

Our study is motivated by two perspectives. First, previous research on mixed marriages primarily looks at the migrant partner, framing questions from a wellbeing- or resource-oriented perspective for the immigrant (Chang 2016). The marriage type indicates the social networks in which each spouse – and, most likely, the couple – acts and communicates. Having access to host-country-specific social capital may bridge the social/ethnic boundaries between the respective groups to which the spouses belong (Putnam 2007). The previous literature has suggested that there is an intermarriage gain (or 'premium') effect, whereby the migrant spouse benefits from being married to a nonmigrant of the country of settlement (reflected by, e.g., employment indicators (Furtado and Song 2015) and upward social mobility (Chang 2016)). We extend this research on the role of intermarriage in migrant integration by including in the analysis the dimension of mental health.

Second, the previous literature has long viewed mixed couples from a 'problem-oriented' perspective, in line with the framing of interracial marriages in North America. In the United States this negative view results from the marginalized positions of mixed-married individuals rooted in historical and legal contexts (Bratter and Eschbach 2006). In European migrant-destination countries, exogamous marriages have only recently become the subject of a number of studies, which examine levels of

marriage stability and divorce in such couples. The results of these analyses show that, on average, exogamous marriages are less stable and are more likely to dissolve than endogamous marriages (e.g., Kalmijn, de Graaf, and Janssen 2005; Dribe and Lundh 2012; Feng et al. 2012; Smith, Maas, and Van Tubergen 2012; Milewski and Kulu 2014). In explaining this marital instability, these authors point to the cultural distance between the spouses and to heterogamy with regard to other sociodemographic traits. Yet they provide evidence of an elevated frailty risk of mixed marriages only at the couple level. The question of whether the spouses, i.e., both the migrant and the nonmigrant spouse, experience costs and benefits of such a union similarly, or not, has not been addressed. Hence, we include both spouses – the migrant and the nonmigrant – in our study. Whereas divorce risks refer to the couple as a joint unit, we use mental health as an indicator at the individual level because it can vary between the spouses within the couple and it is influenced by social health (Suls and Rothman 2004).
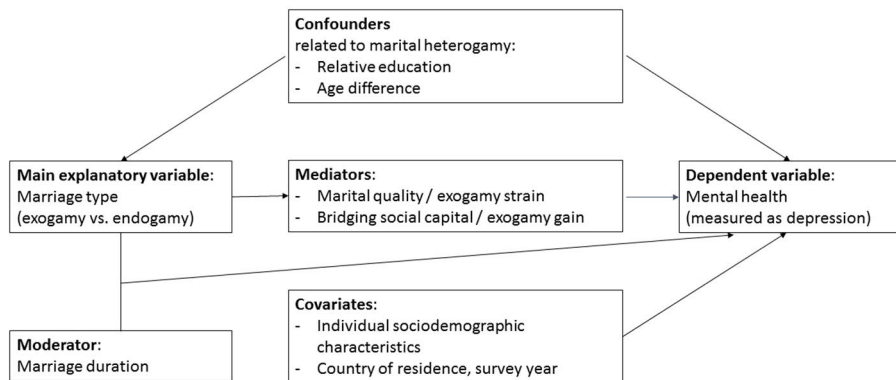
The geographical context of our study is Europe, where levels of cultural and/or ethnic heterogeneity in populations have increased since the 1950s due to continuous or growing immigration streams (Coleman 2006). Scholarly works on marriage types among immigrants in Europe have found that both the numbers and the rates of exogamous marriages have been increasing in recent decades, despite some variation between countries and migrant groups (Lanzieri 2012). We use data from five waves of the Survey of Health, Aging, and Retirement in Europe (SHARE) (2004–2015) for nine European countries. We carry out separate analyses by migrant status and sex: migrant women and men as well as nonmigrant women and men (migrants comprising persons who moved from their country of birth to another country as well as their children). The dependent variable is depression measured on the EURO-D scale; we apply mixed-effects linear regression models for repeated observations and focus on the health differentials by marriage type (within the same sex and migrant status). As the SHARE focuses on the elderly (i.e., aged 50+), this data includes mainly marriages of long duration. This offers, on one hand, the advantage of studying a part of the life course where health deteriorates in general and where marital strain may accelerate a decline in mental health (Umberson et al. 2006); on the other hand, different selection processes may operate, which must be considered in the analyses and in the interpretation of the results.

2. Background

To the best of our knowledge, the work by Chang (2016; Chang and Wallace 2016) is the only research linking marriage type and individual wellbeing. However, this work focuses solely on the specific case of female transnational marriage migrants in Asia.

Bratter and Eschbach (2006) investigate wellbeing by racial self-identification of spouses in the United States, but not by migrant status. We chose mental health as the dependent variable in our analyses because it is an individual-level indicator that may vary between the spouses in a marriage and because we wanted to investigate the interplay between marriage type and another life domain. Yet using health as the dependent variable also poses questions regarding the mechanisms which link the main explanatory and other independent variables to the outcome. In theoretical considerations on health there is no reason to assume a direct effect of the marriage type: there are always confounders, i.e., variables which influence both the main explanatory and the dependent variables, or mediators, i.e., variables lying on the causal pathway from X (i.e., marriage type) to Y (i.e., health). Other variables may moderate the effect of the main explanatory variable in the sense of an interaction effect, while others may work as covariates, exerting an effect independent from the main explanatory variable on the outcome. In this chapter we summarize the theoretical explanations which may link marriage type and mental health via the mediating role of marital quality and social resources, several confounders and moderators related to marital heterogamy, and sociodemographic covariates (Figure 1 illustrates the theoretical framing of our study). We also discuss the question of migrants' selection into a mixed marriage.

Figure 1:   Theoretical conceptionalization of the association between marriage type and mental health

Source: Adapted from Kelson (2014). https://significantlystatistical.wordpress.com/2014/12/12/confounders-mediators-moderators-and-covariates/.

2.1 Bridging interethnic social capital: The exogamy gain hypothesis

We begin our considerations by framing the exogamous marriage as a resource for the immigrant partner (Chang 2016), where social capital is seen as a mediator. To date, the literature has shown that international migration affects all domains of a person's life course, that the effects of migration are discernible even decades after the move, and that these effects appear even in subsequent migrant generations. While it is generally understood that immigrants may benefit from new opportunities in the destination country, a number of studies have shown that migration is one of the most demanding events in life, as it is often associated with loss and can disrupt the life course (Kuo 1976; Bhugra 2004; Carta et al. 2005). A number of studies have demonstrated that elderly migrants report having worse mental health than nonmigrants (Rosmond, Nilsson, and Björntorp 2000; Silveira et al. 2002; Abbott et al. 1999; Fokkema and Naderi 2013; Milewski and Doblhammer 2015) and that migrants' mental health decreases as their duration of stay increases (Wu and Schimmele 2005; Kotwal 2010).

The mental health of migrants appears to be the result of an additive disadvantage of various risk factors, whose effects may become visible particularly at older ages and/or at longer stay durations. According to the classic assimilation theory, intermarriage may enhance the integration processes (Gordon 1964). The nonmigrant spouse may be a source of host-country-specific social capital for the migrant partner, such as for language use or institutional knowledge about the healthcare system. The nonmigrant is more likely than the migrant to have family networks living close by that can provide support. In addition, the nonmigrant spouse may have broader social networks, which could mean that the migrant spouse has a better chance than migrants in an endogamous couple of making contact with members of the majority population. Social networks influence mental health (Kawachi and Berkman 2001), and weak ties are important for innovative behavior, as well as for ideational changes (Granovetter 1973). Moreover, these social contacts with majority group members may serve to bridge social capital (Putnam 2007) and facilitate the integration processes, and this may in turn be conducive to better mental health. For instance, the literature so far has reported that being in a mixed marriage has positive effects on the economic integration of migrants due to the exchange of social capital (Meng and Gregory 2005; Meng and Meurs 2009; Dribe and Nystadt 2015). Therefore, a migrant's marriage to a nonmigrant may contribute to improving the migrant's mental health, compared to those who are married to a fellow migrant.

We thus formulate our first working hypothesis regarding an intermarriage-gain effect:

Hypothesis 1: Marital exogamy is associated with better mental health for immigrants relative to their counterparts in endogamous marriages.

When examining the association between union type and other life domains, we should not neglect the possibility that intermarriage is the result, rather than a cause, of a migrant's successful integration, which occurs via opportunity structures, structural integration, and cultural adaptation (Gordon 1964). Migrants in exogamous marriages generally have comparatively high levels of labor force participation, work in higher status occupations, and have relatively high earnings (Kantarevic 2004; Nottmeyer 2010). Consequently, intermarriage could be a proxy for the tendency of intermarried migrants to be more economically integrated than other migrants, rather than a cause of their higher levels of wellbeing (Nottmeyer 2010). These dimensions of integration may have provided these migrants with opportunity structures that allowed them to meet nonmigrants in the marriage market. At the same time, these factors are conducive to higher levels of mental health, as they may, e.g., foster better socioeconomic conditions and utilization of healthcare services, or they could help migrants overcome conflicts and obstacles related to processes of adaptation and acculturation. Thus, if migrants in a mixed marriage have relatively good mental health, this may not be a causal effect of the mixed marriage, but may instead be an indicator of the migrant's own host-country-specific human and social capital. Nonetheless, we would expect to find better health among migrants in exogamous marriages than among migrants in endogamous migrant marriages. Note: Ideally, longitudinal information would allow us to separate selection into mixed marriage from a health-fostering effect of intermarriage in later life stages. Unfortunately, our data does not contain information over such a long time span.

2.2 Cultural difference: The exogamy-strain hypothesis

For both migrants and nonmigrants, marriage type and mental health can be linked by marital quality as a mediator. Marital quality depends on both spouses, but it may affect them differently. Following household economic considerations and preference theory, marital quality is higher when the degree of similarity between the spouses is higher (Becker 1981). Empirical evidence shows that marital satisfaction is lower in exogamous than in endogamous couples (Hohmann-Marriott and Amato 2008). The stress model implies that higher marital strain is correlated with lower mental health of the spouses (Umberson et al. 2006; Chapman and Guven 2016; Kalmijn 2017). Bratter and Eschbach (2006) investigate wellbeing according to the racial self-identification of spouses in the United States (but not by migrant status) and find that some, although not all, types of exogamous couples do indeed have elevated levels of psychological distress.

Exogamy is associated with having higher marital strain, i.e., than in endogamous marriages, for several reasons. First, there is the potential for conflict. Nonmigrants and migrants have different sociocultural backgrounds, they come from different

socialization environments, and they may also belong to different ethnic and/or religious groups. Therefore, it is likely that each partner in a mixed marriage has a different set of preferences, values, and norms (whereas endogamous couples are more likely to share these). Dissimilarities in preferences, values, and norms may reduce the time spent in joint activities, lead to misunderstandings between the spouses, and be a constant source of conflict (Kalmijn, de Graaf, and Janssen 2005; Zhang and van Hook 2009). Moreover, theories regarding power relations and the distribution of resources in marriages (as well as in any other social group) suggest that a high degree of similarity between the spouses coincides with more balanced power relations. This in turn affects the wellbeing of the spouses. Conversely, the potential for tension and stress is expected to be lower in homogamous couples (Straus and Yodanis 1995). In addition, exogamy with regard to migrant background may coincide with heterogamy in other traits: one of the spouses may struggle with unfamiliar power relations or a reversal of gender roles (Lievens 1999; Chang 2016).

Second, there is an exchange of social capital between the spouses. This is one of the main contributors of the health-protection effect of a marriage, partly due to its role in affecting marital quality. Marital quality is both a prerequisite for and a product of the exchange of social capital and social support between the spouses (e.g., Umberson et al. 2006). The quality of this exchange will presumably be higher as the degree of similarity between the spouses increases (Schroedter and Kalter 2008). As spouses in exogamous unions differ with respect to their migrant status – which indicates dissimilarity in language, culture, and other sociodemographic traits between the spouses – the social capital exchange may be lower than in endogamous couples.

These findings illustrate that both the migrant and the nonmigrant spouse in an exogamous marriage may experience higher marital strain, i.e., lower marital quality, which is associated with the greater degree of dissimilarity between the spouses. Therefore, our second working hypothesis postulates an exogamy-strain effect:

> *Hypothesis 2*: Being in a mixed marriage is associated with a lower level of mental health relative to being in an endogamous marriage for both migrants and nonmigrants.

2.3 Confounding and moderating effects related to marriage type

Our third working hypothesis concerns confounding effects, which are a spurious correlation between the respective trait and the main explanatory variable on the one hand and the dependent variable on the other, and moderating effects. The main confounders in our analyses are those variables that contribute to a greater degree of

heterogamy between the spouses, which – again – affects marital quality and the exchange of social capital, and thereby mental health. With respect to migrant status, exogamous marriages are known to also be heterogamous in relation to other traits, such as educational heterogamy (and particularly female hypergamy), large age difference, and religious difference (Curtis and Ellison 2002; Chan and Halpin 2002). These greater levels of dissimilarity are associated with a greater potential for conflict, which could negatively affect the quality of the marriage. It has been shown that exogamous couples have a higher risk of divorce than endogamous couples because spouses in mixed marriages tend to have other compositional traits that render their marriages unstable (Burchinal and Chancellor 1963; Bumpass and Sweet 1972; Kalmijn, de Graaf, and Janssen 2005; Feng et al. 2012; Milewski and Kulu 2014). Heterogamy is expected to be associated with lower levels of mental wellbeing, especially in cases in which the woman is older or has more education than her husband (Chang 2016).

A crucial moderator in our considerations is marriage duration. The literature indicates that the effect of marriage duration on mental health may not be continuous. The manner in which dissimilarities in relationships affect married couples and their relationship quality depends on the marriage duration, as well as on the different phases of the family life cycle. On one hand, at the beginning of a marriage the general wellbeing may be elevated because of the act of getting married in the first place (Kalmijn 2017). Singla and Holm (2012) distinguish three phases for bicultural couples: During the "honeymoon phase" the spouses see their differences as interesting, and their attitudes about the future are generally positive, although they may have to make compromises. In the "phase of family establishment" the negotiation of gender roles, parenting roles, and family and work balance makes these differences more obvious and problematic, even as the joint identity becomes more clearly defined. Beyond this phase, and as a consequence of the increasing relationship duration, the couple reaches the "reclining phase." Everyday arguments and differences do not threaten the marriage, as the joint identity has been clearly constructed in the form of shared opinions and a constructed 'we.' The model by Singla and Holm (2012) suggests that the relevance of cultural dissimilarities may decrease over time. If so, then mental health may decrease in the second phase, but increase the longer a marriage persists. On the other hand, the marriages that face unresolvable problems (which may also be associated with lower mental health) may dissolve rather quickly; the divorce risk has been shown to be higher in exogamous unions (see above). Hence, overall mental health may increase over time because it is primarily the 'successful' marriages that survive.

Thus, our third working hypothesis for migrants and nonmigrants centers on confounding and moderating variables related to heterogamy:

Hypothesis 3: When we control for confounding and moderating variables related to the heterogamy of a couple, the health differentials between exogamous and endogamous marriages may decrease or vanish.

This would indicate that heterogamy in terms of factors other than the national origin of the partners contributes to health differentials. We test this hypothesis using the age difference between the partners and their relative educational achievement, as well as the marriage duration.

2.4 Compositional differences in individual covariates

Our analyses also include covariates at the individual level (age, education), which are known to affect mental health, as well as the country of residence and the calendar period. Previous research has found wellbeing differentials among various European countries. Socioeconomic status is seen as a crucial variable in the wellbeing of elderly people in European countries, both at the individual level (Read, Grundy, and Foverskov 2016) and the macro level (Olsen and Dahl 2007). In addition, European welfare states may mediate the impact of socioeconomic status on health (Eikemo et al. 2008). Individuals living in eastern European regions (or welfare systems) have lower levels of mental health than others (Ferrari et al. 2013). Mental wellbeing has been shown to decrease with age, primarily because somatic health decreases with age (Blazer et al. 1991; Buber and Engelhardt 2008). Having a higher level of education is associated with better mental wellbeing (Buber and Engelhardt 2008).

Our working Hypothesis 4 is as follows:

Hypothesis 4: Any health differentials by marriage type may change when controlling for these covariates (compositional hypothesis).

Note that these variables have been shown to impact (mental) health especially at older ages when the variation in health increases; these variables do not account for selection into mixed marriages. One exception may be educational attainment, for which a positive correlation has been found for migrants' exogamy (González-Ferrer 2006). At the same time, higher education is associated with higher divorce risks; therefore, we perceive education in the remaining – i.e., surviving – marriages as a covariate for mental health, rather than a confounding effect.

Mental health varies fairly consistently across countries by sex, with women reporting lower mental health than men (Kiecolt-Glaser and Newton 2001). As we are primarily interested in whether the association of exogamy varies by marriage type

within sex, we do not treat sex as a covariate; instead we test our hypotheses for women and men in separate models.

2.5 Within-migrant variation

Finally, we also study within-migrant variation. First, we distinguish between the first generation and migrant descendants (Rumbaut 2004). Usually, international migration is associated with a social downward trend in the first generation. This includes educational attainment, in the sense that the educational qualifications of immigrants are, on average, lower than those of nonmigrants, or immigrants cannot utilize their education to the fullest in the labor market. This disadvantage also continues into their children's generation. Yet a general trend towards higher education has become visible among migrant descendants (Fassmann 1997; Constant and Massey 2005). Migrant descendants experience the educational system in the host country at least partially, and therefore are likely to have a better command of the host-country language than their parents; their information and utilization of the healthcare service may be facilitated. Therefore, we assume that the gain (if any) of mixed marriage may be lower in the subsequent migrant generation because migrant children may be more integrated than the first generation.

Similarly, we assume that the mental health disadvantages will be smaller for exogamous marriages in which either of the spouses is a migrant descendant, compared to mixed marriages with a first-generation migrant, because the potential for conflict will be reduced among the descendants due to their assumed higher degree of acculturation. Therefore, in our fifth hypothesis we expect that:

> *Hypothesis 5a*: The gain or strain effect (if any) of an exogamous marriage is lower among migrant descendants, i.e., the mental health of the descendants will be between that of the first generation in exogamous marriages and that of the migrants in endogamous marriages.

We also examine the cultural distance between the spouses. Cultural distance refers primarily to the dimensions of language, religion, and values. While knowledge of the language of the host country enhances an immigrant's ability to integrate and communicate with members of the host society, having shared values and beliefs also seems to be a crucial component of social and family life. According to Inglehart (1997) there are two main types of society. The first – non-Western countries – tend to be dominated by traditional family values, including strong intergenerational ties and a clear division of labor between men and women. In the second type – Western

countries – religion tends to be viewed as less important, there is more support for gender equality, and individual wellbeing is more highly regarded than collective interests (cf. Huntington 1993). Acculturative stress may increase with greater cultural distance between the societies of origin and destination, increasing the need for greater culture learning (Berry 1997). Previous research on divorce risks has shown that the higher the cultural distance the greater the risk of union dissolution (Kalmijn, de Graaf, and Janssen 2005; Dribe and Lundh 2012; Smith, Maas, and Van Tubergen 2012; Milewski and Kulu 2014).

The second part of our hypothesis on within-migrant generation is as follows:

Hypothesis 5b: The higher the cultural distance between the partners is, the lower their mental health will be (greater exogamy-strain effect).

3. Data and methods

3.1 Data and sample

The data used in this study comes from SHARE (Malter and Börsch-Supan 2015; Malter, Schuller and Börsch-Supan 2016). SHARE was designed as a longitudinal survey and was established in 2002: it currently comprises six waves. The sampling population of SHARE is women and men aged 50+ who live in private households and members of their households. For our analyses we used data from waves 1, 2, and 4–6; wave 3 was omitted because it does not contain information on health status.

A person was defined as a migrant if his/her country of birth was not the same as his/her country of residence or if either of his/her parents was an immigrant. Conversely, a nonmigrant was defined as a person who was living in his/her country of birth at the time of the survey interview. The crucial explanatory variable that defines our sample selection is the type of marriage. Based on the migrant status of both partners, exogamous marriages were defined as those in which one of the spouses belonged to the migrant group and the other one was categorized as a nonmigrant. If the spouses were both migrants and reported the same country of origin, or if both partners were nonmigrants, their partnership was defined as endogamous.[3]

In the main part of our analyses we used a joint indicator for all migrants, regardless of their age at arrival or place of birth. In the second part we accounted for heterogeneity within the migrant group. First, we distinguished by migrant generation:

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[3] The very small number of exogamous marriages in which both spouses were migrants but came from different countries was excluded from our sample; cases with missing or invalid information on the migrant status or age at immigration were excluded as well.

The first generation consisted of those who moved to the country at the age of 15 or older. Their descendants were grouped into the same category, comprising the generation 1.5 – i.e., those who migrated as children up to age 14 – and the second generation – i.e., those born at destination (Rumbaut 2004). A second variable taking into account within-migrant heterogeneity is the grouping by region of origin: We differentiated between migrants from Western and non-Western countries, based on the dividing lines between the Western tradition of the Christian religion and other religions (Huntington 1993; Inglehart 1997). Consequently, the United States, Australia, Greenland, New Zealand, and the European countries were grouped into Western regions of origin. The non-Western group included countries of origin in Asia, Africa, South America, and Oceania.

In general, the SHARE data allows us to make cross-country comparisons. European countries vary not only in terms of the mental health levels of the population but in terms of in- and outmigration histories (Foders 2004; Salt 2011), integration policies (Meuleman and Reeskens 2008; Malmusi 2015), share of immigrants in the population (Eurostat 2016), and percentage of mixed marriages. Whereas the rates of nonmigrants who are in mixed marriages differ little across countries, the mixed-marriage rates among migrants vary markedly across different destination countries, from about 21% in Latvia to 0.1% in Romania (Lanzieri 2012). In order to construct a relatively homogenous sample, we used only those countries that had a relatively long immigration history (starting with labor recruitment in the 1950s) and where the share of migrants in the total population was therefore relatively high. The nine countries selected were Austria, Belgium, Denmark, Estonia, France, Germany, Sweden, Switzerland, and the Netherlands. The share of mixed marriages in these countries was between 11% in Denmark and 24% in Estonia.

Our sample consisted of persons aged 50 to 80 who were living in the same household as a couple with a person of the opposite sex. As we needed individual information on both partners we used only those cases in which both spouses were interviewed. We excluded the few cases in which the information on a crucial variable (i.e., the dependent variable) was missing.[4]

Our sample included only married couples, about 98% of which were presumably first marriages (note: the SHARE data does not contain any explicit questions on the order of the marriage). We excluded nonmarital unions because we control for the marriage duration and we did not have information on the beginning of cohabitations.[5]

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[4] If a marriage was dissolved, either by divorce or by the death of either partner, the remaining partner was no longer included in our sample. Thus, our analyses did not contain any information about the mental health of the surviving spouse after union dissolution or death.
[5] Most of the literature on the association of marriage and health uses the distinction between the civil statuses of married and not married (we do not compare the two). One reason is the binding nature of marriage, its institutional character, and its normative scope. As we focus on persons aged 50+ and mainly on countries

Our final sample consisted of 20,383 persons in total. About 60% of these cases were observed once or twice, whereas for about 40% of the sample three to five observations were used (see Table 1). The sample included 17,141 nonmigrants (corresponding to 85% of the observations), and about 3,242 of the sample were migrants (corresponding to about 15% of the observations). Regarding the within-migrant variation, among the migrants 39% of the cases belonged to the first migrant generation, 19% migrated under the age of 15 (generation 1.5), and 42% belonged to the second generation (children of migrants born in their parents' destination country). By region of origin, 58% of the migrants were from Western countries and 42% from non-Western countries.

Table 1:   Overview of the sample

Number of observations per person	Number of persons	%	Number of observations
1	5,005	24.6	5,005
2	7,195	35.3	14,390
3	5,302	26.0	15,906
4	1,650	8.1	6,600
5	1,231	6.0	6,155
Total	20,383	100	48,056

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.

3.2 Variables

The dependent variable in our analyses was depression, as measured by the EURO-D scale. This depressive symptoms scale was developed to allow for a valid comparison of mental health between European countries, and it is based on 12 items related to depression, pessimism, feelings of guilt, irritability, wishing for death, sleep, interests, appetite, fatigue, concentration, enjoyment, or tearfulness (Castro-Costa et al. 2008).

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where nonmarital unions were less usual in the phase of family formation than today, we assume that a large number of the persons living in nonmarital unions at the time of the SHARE interviews were persons who had been divorced or widowed before entering into their current union. Indeed, about 56% of the persons living in nonmarital unions were divorced or widowed (this was less than 2% among the married). Their mental health may be negatively affected by the previous union dissolution, and these unions may be of shorter duration than the marriages in our sample. However, when we applied our sampling criteria (age range, country selection) we had a total of 4,387 observations of nonmarital cohabitations compared to 48,056 observations of marriages, which would correspond to about 8% of the entire sample. When we differentiated by union type we found about 8% nonmarital unions among endogamous unions and 10% nonmarital unions among exogamous unions. By migrant status, we found the majority of both groups married (91.8% of the migrants, 91.6% of the nonmigrants). Due to the almost equal proportions of nonmarital unions by partner type and by migrant status, we assume that the exclusion of nonmarital unions does not bias our results.

The independent variables covered the confounders related to marital heterogamy, the marriage duration as a moderator, as well as covariates at the individual and macro level (for sample statistics by migrant status and sex see Table 2; by marriage type see Table A-1 in the Appendix).

Table 2:   Descriptive overview of the sample, by sex and migrant status

Variables	Migrant women		Migrant men		Nonmigrant women		Nonmigrant men	
	N	%	N	%	N	%	N	%
Dependent variables								
Depression */*** **								
Mean / standard deviation	2.7	2.2	2.0	1.9	2.3	2.0	1.7	1.8
Independent variables								
Marriage type */*** **								
Endogamous	1,421	36.8	1,405	39.2	18,067	89.0	17,875	88.0
Exogamous	2,445	63.2	2,175	60.8	2,224	11.0	2,444	12.0
Marriage type by origin								
Endogamous / nonmigrant	na		0	0.0	18,067	89.0	17,875	88.0
Endogamous / Western	527	13.6	524	14.6	na		na	
Endogamous / non-Western	894	23.1	881	24.6	na		na	
Exogamous / Western	1,683	43.5	1,578	44.1	1,594	7.9	1,663	8.2
Exogamous / non-Western	762	19.7	597	16.7	630	3.1	781	3.8
Marriage type by immigrant generation								
Endogamous / nonmigrant	na		na		18,067	89.0	17,875	88.0
Endogamous / 1st generation)	753	19.5	752	21.0	na		na	
Endogamous / 1.5 generation)	79	2.0	73	2.0	na		na	
Endogamous / 2nd generation)	177	4.6	177	4.9	na		na	
Endogamous / between 1st and 1.5. generation	151	3.9	151	4.2	na		na	
Endogamous / between 1st and 2nd generation	165	4.3	157	4.4	na		na	
Endogamous / between 2nd and 1.5. generation	96	2.5	95	2.7	na		na	
Exogamous / 1st generation	651	16.8	45	1.3	487	2.4	697	3.4
Exogamous / 1.5 generation	492	12.7	541	15.1	541	2.7	475	2.3
Exogamous / 2nd generation	1,302	33.7	1,179	32.9	1,196	5.9	1,272	6.3
Age (years) (t-v) */ns								
Mean / standard deviation	63.2	8.0	65.0	8.0	63.5	7.9	65.0	7.9
Education */** **								
Low	396	10.2	310	8.7	2,249	11.1	1,993	9.8
Medium	2,345	60.7	2,118	59.2	12,429	61.3	11,938	58.8
High	1,083	28.0	1,124	31.4	5,548	27.3	6,319	31.1
mv	42	1.1	28	0.8	65	0.3	69	0.3
Marriage duration (years) (t-v) */° **								
Mean / standard deviation	36.1	12.3	35.4	12.2	37.0	12.0	35.8	12.2
Age difference between the spouses */*** **								
She ≥5 years younger than he	1,047	27.1	966	27.0	5,095	25.1	5,186	25.5
She ≤4 years younger or up to 1 year older than he	2,313	59.8	2137	59.7	13,117	64.6	13,087	64.4
She ≥2 years older than he	506	13.1	477	13.3	2,079	10.2	2,046	10.1
Comparative school education of the spouses **/ **								
She lower educated than he	1,213	31.4	1156	32.3	6,200	30.6	6,107	30.1
Same education	1,646	42.6	1556	43.5	9,277	45.7	9,291	45.7
She higher educated than he	959	24.8	815	22.8	4,670	23.0	4,757	23.4
mv	48	1.2	53	1.5	144	0.7	164	0.8

Table 2:   (Continued)

Variables	Migrant women N	%	Migrant men N	%	Nonmigrant women N	%	Nonmigrant men N	%
Country */*** **								
Austria	472	15.5	477	15.6	2,575	84.5	2,584	84.4
Belgium	467	13.3	482	13.5	3,044	86.7	3,096	86.5
Denmark	195	7.0	184	6.5	2,579	93.0	2,632	93.5
Estonia	1,089	31.0	941	28.9	2,427	69.0	2,313	71.1
France	392	16.3	390	16.1	2,013	83.7	2,038	83.9
Germany	423	14.9	351	12.9	2,420	85.1	2,362	87.1
Netherlands, the	155	8.6	128	7.0	1,646	91.4	1,690	93.0
Sweden	217	9.5	227	10.2	2,075	90.5	2,003	89.8
Switzerland	456	23.2	400	20.0	1,512	76.8	1,601	80.0
Wave */*** **								
1 (2004–2006)	144	3.7	142	4.0	1,149	5.7	1,225	6.0
2 (2006–2010)	219	5.7	220	6.1	1,623	8.0	1,699	8.4
4 (2010–2012)	958	24.8	872	24.4	4,389	21.6	4,478	22.0
5 (2013)	1,464	37.9	1379	38.5	7,649	37.7	7,563	37.2
6 (2015)	1,081	28.0	967	27.0	5,481	27.0	5,354	26.3
N (observations)	3,866		3,580		20,291		20,319	

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.
Note: Sig.: *** p<0,001; ** p<0,01; * p<0,05; ° p<0,1; ns = not significant; the chi2 test statistics for categorical variables and the t-test statistics for metric variables refer to the differences between migrants and nonmigrants with regard to the respective variable (for women/for men). t-v = time-varying covariate, mv = missing values, na = not applicable.

At the individual level we used age as a metric variable (mean-centered). Educational attainment was based on the ISCED framework. We combined the pre-primary, primary, and lower secondary educational levels to form the low education category; the upper secondary and post-secondary non-tertiary levels to form the medium education category; and the first and second stages of tertiary levels to form the high education category. Further covariates were the respondents' country of residence and the calendar year.

Confounding and moderating variables related to marital heterogamy were the following: The age difference between the spouses was measured in three categories (the wife was 5+ years younger than the husband, the wife was between 4+ years younger or 1 year older than the husband, the wife was 2+ years older than the husband). Comparative education captured homogamy, hypogamy, and hypergamy. Marriage duration was used as a metric variable (mean-centered). Note here that due to the age structure of the sample the majority was in a long-term marriage; the mean duration in the four groups was between about 35 and 37 years, whereas only roughly fewer than 4% of the observations had marriage durations of less than 10 years.

Overall, we are confident about the data quality of our sample drawn from SHARE. The percentages of the sample by migrant status (Eurostat 2016) and the proportion of exogamous unions (e.g., Lanzieri 2012), and the numbers of individuals who reported being depressed (e.g., Missinne and Bracke 2012) are in line with the

results in the literature. Based on the EURO-D cut-off point of ≥4, which according to the literature is indicative of a case of depression in the sense of a disabling psychiatric condition (Castro-Costa et al. 2008; Guerra et al. 2009), nearly 26% of the women in our sample felt depressed compared to 15% of the men. This pattern is in line with other literature (Kuehner 2017).

3.3 Modeling strategy

We used five survey waves with repeated observations; we accounted for the possible lack of independence of the repeated measurements by applying linear mixed effects models with a random intercept. The model estimated the mean effects of the independent variables on depression by weighing both within- and between-subject variance over the five survey waves. Thus, higher values indicate more symptoms of depression corresponding to lower mental health. As in other linear random effects regression models, the method of linear mixed effects models for repeated measures allows us to take time-invariant variables into account (Cameron and Trivedi 2009; Kohler and Kreuter 2012). Moreover, the method considers the correlation between repeated observations of the same person as well as the differences in the numbers of observations per person in an unbalanced panel (Rabe-Hesketh and Skrondal 2008). The model can be described as:

$$Y_{it} = a + bX_{it} + u_i + e_i.$$

Y_{jt} represents depression, a captures the estimated constant, X_{jt} is the observed time-dependent (calendar period, country, age, marital duration) and time-invariant (marriage type, education, age difference, comparative education) predictor, and b is the estimated parameter. The term u_i denotes the errors between persons across time, and e_i describes the errors within persons. The variation between individuals is assumed to be random and is not correlated with the dependent variable. To fit the models, we used the restricted maximum likelihood estimation (REML).

We carried out separate models by migrant status and by sex, i.e., for migrant women and men as well as for nonmigrant women and men, in order to compare individuals of the same sex and in the same group according to migrant status by their marriage type. Our modeling strategy was as follows. The zero model estimated only the effect of the marriage type (exogamous or endogamous) on depression, which corresponds to the total (brut) effect of the marriage type. The models 1 included the covariates country of residence, calendar year (survey wave), and respondents' age and education in order to account for heterogamy within the sample. The models 2 added

the confounding variables related to the marital heterogamy (i.e., differences between the partners in age and education) and the marriage duration.

In a second step we carried out the same modeling steps, further distinguishing among the migrants by migrant generation. In a third part of the analyses we repeated the same steps using an indicator for the regional origin of the migrants.

In addition, we carried out several tests for robustness, which are described at the end of the results section.

4. Results

The goal of our analyses was to compare individuals in exogamous marriages to those in endogamous marriages. Thus, our strategy of separate modeling by migrant status and by sex did not allow for comparisons within these groups. We will describe the sample now, before presenting the results. The migrant women in our sample reported the highest mean values of depression, followed by the nonmigrant women. Among men, the mean of depression was higher among migrants than among nonmigrants. The migrants in our sample were more likely than the nonmigrants to indicate that they were depressed, which corresponds to findings in the literature (Rosmond, Nilsson, and Björntorp 2000; Silveira et al. 2002; Abbott et al. 1999; Milewski and Doblhammer 2015).

The share of migrants who were in an exogamous marriage was about 63% of women and 61% of men. Among nonmigrants, 11% of women and 12% of men were in an exogamous marriage. Looking at the marriage type, both the women and the men in our sample had significantly higher mean values of depression if they were in a mixed marriage than if they were in an endogamous marriage. Regarding the independent variables, being in a mixed marriage was associated with the wife being older or better educated than the husband.

4.1 Exogamy vs. endogamy

Table 3 displays the multivariate results for the association of marriage type and depression by migrant status and sex. We first test the competing hypotheses that exogamy is associated with either a higher level of depression (due to a negative strain effect on mental health) or with a lower level of depression (due to an exogamy-gain effect on mental health), relative to being in an endogamous marriage. The total effects (Model 0) provided mixed evidence: For migrant women and migrant men, the value of depression was lower when they were in a mixed marriage compared to their

counterparts in endogamous marriages, thus suggesting an exogamy-gain effect (Hypothesis 1). By contrast, nonmigrant women and men who were in a mixed marriage had significantly higher levels of depression, indicating a negative exogamy effect on mental health (Hypothesis 2).

These overall patterns persisted when the calendar period and country of residence as well as the age and education were inserted into the Models 1. However, the effect size declined in all four groups, and the effect of the marriage type on depression remained significant only in the group of nonmigrant women. Thus, age and educational level mainly explained variation in depression, supporting the hypothesis of compositional effects (Hypothesis 4).

In the Models 2 we added the confounding variables that accounted for the heterogamy related to the age difference and the educational attainments of the spouses as well as the moderator for marriage duration. For nonmigrant women the effect remained similar in size, and significantly so. For both sexes in the migrant group and for nonmigrant men the effect sizes decreased slightly and remained insignificant. These findings partially support the heterogamy hypothesis (Hypothesis 3).

As expected, the marriage duration showed that individuals in longer marriages had a smaller number of depressive symptoms (Table 3, Models 2). In order to test how the marriage-type effect evolves over time, we used an interaction of marriage type and marriage duration coded as a categorical variable (displayed in Figure 2, results of the Models 2). We see that exogamously married persons had higher levels of depression in three of the four groups after they had been married for less than ten years. In the second decade, depression decreased slightly in exogamous unions, and a crossover occurred: Both migrant women and men in exogamous marriages showed lower depression than those in endogamous unions. By contrast, among nonmigrants, men in exogamous marriages were likely to have higher depression levels after a crossover; nonmigrant women, who showed hardly any difference in the first ten years, also exhibited higher depression in exogamous than in endogamous unions. The crossover of depression by marriage duration can also be regarded as evidence of selection by divorce. We should note, however, that due to the age structure in our sample the number of observations of marriages of short duration is rather small and the confidence intervals there are large. However, in long-term marriages (i.e., beyond the 20th year) the differences by union type were all significant.

Table 3: Determinants of depression, by sex and migrant status

	Migrant women			Migrant men			Nonmigrant women			Nonmigrant men		
	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2
Marriage type (ref. endogamous marriages)												
Exogamous marriage	−0.28 **	−0.09	−0.09	−0.28 ***	−0.10	−0.08	0.24 ***	0.17 **	0.16 **	0.12 *	0.03	0.01
Country (ref. Germany)												
Austria		−0.25	−0.26		−0.31 °	−0.32 °		−0.65 ***	−0.65 ***		−0.42 ***	−0.43 ***
Belgium		0.15	0.12		0.09	0.11		0.10	0.08		0.01	0.02
Denmark		−0.37	−0.39		−0.46 *	−0.46 *		−0.55 ***	−0.57 ***		−0.50 ***	−0.51 ***
Estonia		0.40 **	0.37 *		0.39 **	0.45 **		0.41 ***	0.38 ***		0.62 ***	0.63 ***
France		0.42 *	0.40 *		0.09	0.08		0.37 ***	0.34 ***		0.20 **	0.20 **
Netherland		−0.26	−0.26		−0.43 °	−0.43 °		−0.45 ***	−0.46 ***		−0.48 ***	−0.48 ***
Sweden		−0.52 *	−0.55 *		−0.48 *	−0.42 *		−0.51 ***	−0.55 ***		−0.44 ***	−0.46 ***
Switzerland		−0.47 *	−0.47 *		−0.53 **	−0.52 **		−0.55 ***	−0.56 ***		−0.43 ***	−0.44 ***
Wave (year) (ref. 1 (2004–2006))												
2 (2006–2010)		−0.12	−0.12		−0.03	−0.03		0.07	0.07		0.00	0.00
4 (2010–2012)		0.43 **	0.44 **		0.14	0.14		0.20 ***	0.20 ***		0.23 ***	0.23 ***
5 (2013)		0.27 °	0.28 °		0.12	0.13		0.14 **	0.15 **		0.17 ***	0.17 ***
6 (2015)		0.36 *	0.37 *		0.15	0.17		0.16 **	0.16 **		0.17 ***	0.17 ***
Age		0.0003	0.002		0.001	−0.001		0.003	0.006 °		0.004 *	0.009 **
Education (ref. medium)												
Low		0.25	0.30° °		0.51 ***	0.57 ***		0.29 ***	0.31 ***		0.32 ***	0.33 ***
High		−0.38 ***	−0.43 ***		−0.07	−0.14		−0.26 ***	−0.28 ***		−0.18 ***	−0.20 ***

Table 3: (Continued)

	Migrant women			Migrant men			Nonmigrant women			Nonmigrant men		
	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2
Marriage duration			−0.002			−0.00005			−0.003			−0.01 **
Age difference between partners (ref. she ≤4 years younger or up to 1 year older than he)												
She ≥5 years younger than he			−0.02			0.13			0.01			0.05
She ≥2 years older than he			0.25 °			−0.08			0.12 °			0.02
Comparative school education (ref. same)												
She lower educated than he			−0.05			−0.03			−0.01			0.04
She higher educated than he			0.12			−0.26 *			0.10 *			0.003
Constant	2.93 ***	2.54 ***	2.60 ***	2.19 ***	1.96 ***	1.98 ***	2.31 ***	2.38 ***	2.49 ***	1.68 ***	1.69 ***	1.85 ***
N	3,866	3,866	3,866	3,580	3,580	3,580	20,291	20,291	20,291	20,319	20,319	20,319
AIC	16344.70	16310.40	16332.90	14282.60	14270.80	14293.90	81725.10	81262.70	81288.20	76792.10	76226.00	76247.40

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.
Note: ° p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001; missing values not displayed.

Figure 2:   **Adjusted predictions with 95% Confidence Intervals**
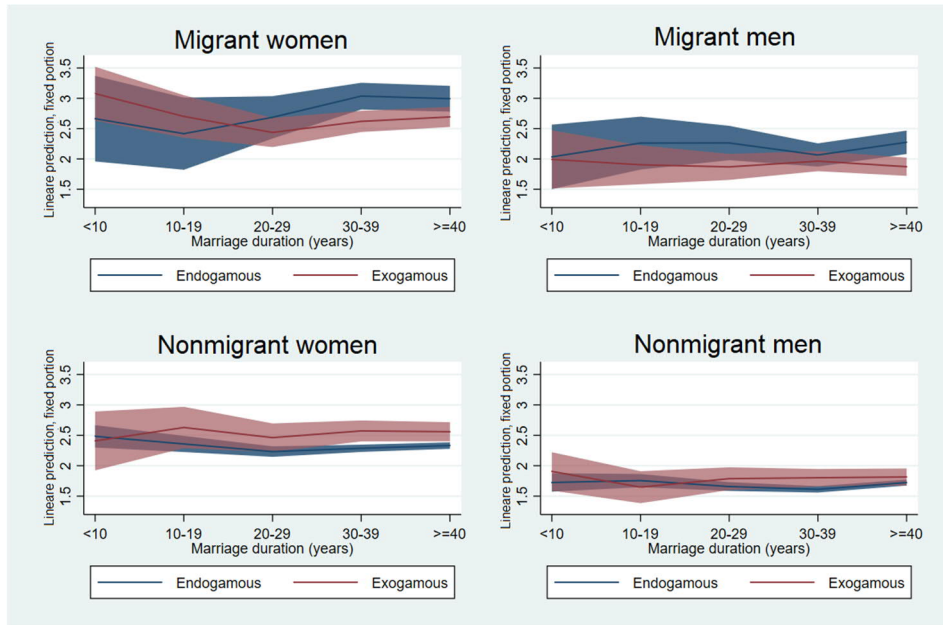
The effects of the independent variables were in line with those described in the literature, and they were similar in both direction and magnitude for all groups. Depression has increased slightly in recent years and was higher in Estonia and lower in Denmark and Sweden compared to Germany (which served as the reference category). In addition, there was also variation among the western European countries. At the individual level, those with higher education had lower values of depression. Depression hardly changed by age, which may be due to the correlation of age and marriage duration.

Regarding the confounders related to exogamy, educational heterogamy was inconsistent overall, as was the age difference between the spouses. Both traits have been shown in previous research to be risk factors of divorce; as our sample contained mostly long-term marriages, these traits may become insignificant by selection into surviving marriages.

4.2 Within-migrant variation

Next we investigated the question of within-migrant variation (see Tables 4a and 4b). The upper panel (a) shows the results of the stepwise modeling process, in which we repeated the same steps as in the analyses displayed in Table 3. We replaced the dichotomous variable of the marriage type with a variable that distinguished the migrant generations.[6] Overall, these analyses produced results similar to those for the dichotomous migrant status in section 4.1: Both migrant women and men had lower levels of depression in exogamous marriages, whereas nonmigrants had higher levels of depression when they were in a mixed marriage compared to endogamous unions, regardless of whether the migrant partner belonged to the first generation or was a migrant descendant. The sizes of these effects were similar, but the confidence levels varied due to the sample size. This is a reason for us not to exaggerate the interpretation of these findings. However, we do want to emphasize that there is not much variation by migrant generation on depression levels by union type. Also, keeping all other variables constant, nonmigrant women married to either a first- or second-generation migrant had higher levels of depression (Table 4a).

The final step was to differentiate by region of origin. Panel b in Table 4 displays the results when we distinguished the marriages by Western / non-Western origin of the migrants. Among migrants, both women and men had mental health gains mainly from an exogamous marriage when they came from Western countries. In these two groups the exogamy-effect on depression decreased when taking the covariates and confounders into account, but remained significant. By contrast, those migrants who originated from non-Western countries had elevated depression levels when they were in a mixed marriage compared to those in endogamous marriages. Among nonmigrants, women in exogamous marriages had elevated depression levels, but these were even higher in the non-Western group. For nonmigrant men, depression was elevated only in marriages with a spouse from a non-Western country, and this was explained by the independent variables.

Note: Ideally we would differentiate by migrant generation and region of origin simultaneously, but the sample size did not permit this. We want to acknowledge that this differentiation is already based on small sub-samples and that we do not want to exaggerate the interpretation of these patterns in greater detail.

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[6] The sample contained marriages between two immigrants of the same country of origin, in which the spouses belonged to different generations; due to the small numbers in each of these combinations, the inter-generational couples were grouped as 'endogamous.'

Table 4a: **Determinants of depression, by sex, migrant status, and generation of exogamously married immigrants**

	Migrant women			Migrant men			Nonmigrant women			Nonmigrant men		
	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2
Marriage type (ref. endogamous marriages)												
Exogamous (nonmigrant and 1st generation migrant)	−0.17	0.13	0.11	−0.15	0.10	0.11	0.29 *	0.32 **	0.29 *	0.08	0.10	0.04
Exogamous (nonmigrant and 1.5/2nd generation migrant)	−0.32 **	−0.16	−0.15	−0.31 ***	−0.16 °	−0.14	0.22 **	0.12 °	0.12 °	0.13 *	0.01	0.00
Constant	2.93 ***	2.55 ***	2.56 ***	2.19 ***	1.98 ***	1.98 ***	2.31 ***	2.39 ***	2.49 ***	1.68 ***	1.69 ***	1.85 ***
N (observations)	3,866	3,866	3,866	3,580	3,580	3,580	20,291	20,291	20,291	20,319	20,319	20,319

Table 4b: **Determinants of depression, by sex, migrant status, and country of origin of exogamously married immigrants**

	Migrant women			Migrant men			Nonmigrant women			Nonmigrant men		
	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2
Marriage type (ref. endogamous marriages)												
Exogamous (Western)	−0.45 ***	−0.21 °	−0.21 °	−0.47 ***	−0.28 **	−0.26 **	0.12 °	0.14 *	0.13 °	−0.07	−0.01	−0.02
Exogamous (non-Western)	0.10	0.10	0.09	0.20 °	0.20 °	0.22 °	0.52 ***	0.23 *	0.22 *	0.50***	0.13	0.10
Constant	2.93 ***	2.61 ***	2.64 ***	2.19 ***	2.08 ***	2.11 ***	2.31 ***	2.39 ***	2.49 ***	1.68 ***	1.69 ***	1.85 ***
N (observations)	3,866	3,866	3,866	3,580	3,580	3,580	20,291	20,291	20,291	20,319	20,319	20,319

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.
Note: ° p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Models 1 controlled for country, wave, age, education; Models 2 in addition controlled for educational heterogamy, age difference, and marriage duration.

4.3 Checks for robustness and further explorations

We conducted some tests to check our results for robustness. We ran the analyses for each survey wave separately using the metric dependent variable 'depression' as measured by the EURO-D scale, and also by carrying out multilevel mixed-effects logistic regression models. For the latter we used a cut-off point of 4 indicating the existence of clinical depression, which coincides with a substantial impact on daily life. Using the binary depression outcome, exogamously married migrant women were 30% less likely and migrant men 34% less likely to have depression than their counterparts in endogamous marriages (Model 0). Nonmigrant women had a 40% higher risk and nonmigrant men a 25% higher risk of depression when in an exogamous marriage.

These effects diminished when holding all other variables constant (Table A-2 in the Appendix).

We then used different subsamples, mainly in order to tackle the question of sample bias due to the different time-dependent processes related to in- and out-migration as well as union dissolution. The sample was restricted to migrants who had spent at least 10 years in the country of destination, thereby eliminating an arrival effect in regard to mental health. According to Sluzki (1979), decreased mental health shortly after immigration is expected as a consequence of the migration process and related difficulties. However, the number of observations with a stay duration of less than 10 years was very small (less than 300 observations). As the age range in our sample was rather large, we restricted the analyses to those who were aged 50 to 70 at the time of the survey interview. We restricted the sample to those who were presumably married for the first time. Basically, all these variations in the modeling procedure produced similar results (albeit with lower levels of significance due to the smaller sizes of the respective subsamples): Exogamy was associated with more symptoms of depression for nonmigrant women and men, while migrant women and men appeared less depressed.

Finally, we carried out some exploratory analyses. We were interested in the variation in the effects of exogamy by country of residence. While it was beyond the scope of this paper to make distinctions along these lines, some preliminary results using the full SHARE sample (all countries included) indicated that mental health in mixed marriages is worse when immigration is fairly recent (as is the case for eastern European countries) or when there are no policies in place to help migrants integrate (especially in countries with exclusionist or collectivistic-ethnic policies, such as Austria, Denmark, Germany, and eastern European countries (Meuleman and Reeskens 2008)). The country of residence affected both migrants and their nonmigrant spouses in mixed marriages, and the results of this exploratory analysis pointed in the same direction: gain effects for migrants and strain effects for nonmigrants.

5. Discussion

The goal of our study was to investigate whether being in a mixed marriage with respect to migrant background is associated with differences in mental health. We were especially interested in comparing individuals in exogamous couples (i.e., a marriage between a migrant and a nonmigrant) with their respective counterparts in endogamous marriages. By examining the association of being in a mixed marriage with another life domain, not only for the migrant partner but also for the nonmigrant spouse, our study represents a novel contribution to the research on the two-sided understanding of

migrant integration processes in the increasingly multicultural demographic context of contemporary Europe.

Our analysis was guided by competing working hypotheses derived from theoretical considerations regarding the economics of marriage, the mediating role of bridging interethnic social capital, and marital quality, as well as the impact of confounding and moderating variables related to marital heterogamy and other covariates controlling for compositional differences in the samples. We carried out our analyses separately for women and men due to the mental-health differentials known to exist between the sexes. Our hypotheses were formulated for both migrants and nonmigrants in a largely similar way.

Our analyses produced different results by migrant status. Migrants, both women and men, were found to be in better mental health (i.e., less depressed) when they were in a mixed marriage compared to endogamously married migrants. This finding seemed to support our working Hypothesis 1 on an exogamy-gain effect, which was based on considerations that the nonmigrant spouse may be a source of bridging interethnic social capital for the migrant partner. At the same time, this finding rejects the hypothesis of an exogamy-strain effect (Hypothesis 2) for migrants. The exogamy-gain effect was, however, mainly a brut effect in a model without further independent variables and could be explained to a large extent by further independent variables. In our working hypothesis (Hypothesis 3) regarding a heterogamy effect, we had assumed that any health differentials by marriage type would decrease when controlling for confounders – traits referring to the degree of mixedness of the spouses other than migrant background. Similarly, our working Hypothesis 4 considered the role of compositional differences between the groups. We had assumed that controlling for the covariates at the individual level, calendar period, and country of residence would shrink the effect of the marriage type on the health outcome. Our results delivered evidence for both of these hypotheses. Controlling for these variables substantially decreased the effect of the marriage type on mental health and rendered it insignificant for migrant women and men.

The manner in which the dissimilarities in relationships affect married couples and their relationship quality depends on marriage duration. We observed different effects in marriages of less than ten years, where migrant women in particular had lower mental health when they were in a mixed marriage. A crossover in longer durations suggests that divorce, i.e., selection of 'successful' marriages, plays a role here in achieving an exogamy-gain effect. Thus, being in a mixed marriage has an ambiguous meaning for migrants. When we compare our findings on mental health with other studies testing the hypothesis of an intermarriage-premium effect, they show that the assumption of an intermarriage-premium effect cannot be simply generalized to other life domains. Whereas a mixed marriage may foster socioeconomic integration, as

shown, e.g., for income (Dribe and Nystedt 2015), it may do so less for acculturation. Further research must also examine the short-term implications of mixed marriage on (mental) health.

These conclusions cannot be generalized for all migrant sub-groups, however. We also tested our working hypothesis on within-migrant variation (Hypothesis 5). For both women and men, the gain effect of the marriage type on mental health was larger when they did not belong to the first generation. This contradicts our fifth working hypothesis, in which we assumed that especially for the first generation the nonmigrant partner may serve as a resource for bridging interethnic social capital (Hypothesis 5a). Our results suggest that the difficulties related to the migration process may be more severe in the first generation. The long-term demands associated with the migration process, partnership in a mixed marriage, and a family life that may need to be organized between members of the extended family over several countries even decades after the move may overshadow the positive effects of a mixed marriage. The second aspect of within-migrant variation – the cultural distance – offers support for this explanation. By region of origin, the health benefit diminished with greater cultural distance, and a negative effect was observed for men when they came from non-Western countries compared to those from Western countries (Hypothesis 5b).

For nonmigrants, our analyses produced results that were opposite to those for migrants. Being in a mixed marriage was correlated with lower mental health for nonmigrant women and men. This supports our working Hypothesis 2, which postulated an exogamy-strain effect on mental health, and rejects Hypothesis 1, regarding an exogamy-gain effect. Another difference compared to the results for migrants was that these differences between mixed-marriage individuals and individuals in endogamous marriages remained significant after controlling for the covariates at the macro level and of the individuals, as well as for the confounders of the marital heterogamy for nonmigrant women. Thus, the hypothesis regarding the confounding role of marital heterogamy (Hypothesis 3) and the hypothesis of compositional differences (Hypothesis 4) were only partially supported in our nonmigrant groups.

Corresponding to our results on within-group variation among migrants, nonmigrants felt more depressed in mixed marriages with a spouse belonging to the first migrant generation (support for Hypothesis 5a) or when the spouse originated from a non-Western country (Hypothesis 5b). Again, these differences only remained significant among women when the macro and individual covariates and the confounding and moderating variables at the couple level were used. For mixed marriages with a spouse of the descendant generation or a spouse from a Western country, the marriage type made a smaller but significant difference to depression, and for male nonmigrants' marriages the controls explained the total effect.

Taken together, our results on migrants and nonmigrants suggest that the pairing of a migrant man and a nonmigrant woman leads to greater marital strain than a marriage between a nonmigrant man and a migrant woman. This is especially evident among exogamously married nonmigrant women and exogamously married migrant men from non-Western countries. This finding is in line with previous evidence on divorce and marriage dissolution (Dribe and Lundh 2012; Milewski and Kulu 2014). It has been argued that gender role expectations and gender role behavior may explain the differences in marriage dissolution rates. We are inclined to apply this assumption to our findings. Migrant men may not appreciate their nonmigrant wife having an advantage in terms of host-country specific social capital, especially if the men come from a country with family structures and attitudes towards gender equality that differ from those of the destination country. The power relations within a couple may be shifted against expectations, or at least for a longer time span than was anticipated after an initial reverse-role period. Our findings suggest that future research should investigate in more depth the power relations and their consequences in mixed marriages, by sex, gender role expectations, and behavior. Moreover, if a nonmigrant spouse is perceived as a source of bridging social capital, then it seems important to consider variation by gender as well. In this case, the role of the social network may come into play. For example, the processes of social control or discrimination may affect migrant women and men in mixed marriages differently.

These considerations lead us to pose several questions which could not be addressed in our study, and that we must leave to future research. First, what does it mean if we are observing negative effects of the marriage type in such long-term marriages? Can we compare marital exogamy with regard to migrant background to heterogamy in other sociodemographic characteristics (such as education), or what remains specific about exogamy with respect to migrant background? As exogamous marriages between spouses from Western and non-Western regions seem to be associated with greater risks of union dissolution (Milewski and Kulu 2014), future research should also investigate the role of religious exogamy. Migrants from non-Western countries are likely to have been raised according to Islam, and Islam prohibits the outmarriage of women. Hence, the experience of discrimination may vary by religious exogamy and sex.

Second, we may expect to see differences by reason of migration or in the order of the migration and marriage events. For example, if a marriage migrant intends to rely on the nonmigrant spouse, he or she may not experience a mismatch between expectations and reality, which may be different for a work migrant. Thus, the effect on mental health may be different for migrants who moved independently and entered a mixed marriage later. Yet coping strategies are not static, and they vary greatly between individuals (Bratter and Eschbach 2006). Hence, a challenge is to sort out which

processes explain the differences between individuals and, more importantly, between social groups. Another issue is the question of return migration. To what extent and in which direction does return migration bias our results on mental health? What role does the marriage type play for return to the country of origin? And are there differences between men and women? These are only a few of the questions that we shall leave for future research.

Third, we suggest that future research efforts investigate the variation in the effects of exogamy by country of residence. While it was beyond the scope of this paper to make distinctions along these lines, some preliminary results using the full SHARE sample indicated that mental health in mixed marriages is worse when immigration is fairly recent or when there are no policies in place to help migrants integrate, especially in countries with exclusionist or collectivistic-ethnic policies (Meuleman and Reeskens 2008). Importantly, in mixed marriages the societal climate affects both migrants and their nonmigrant spouses. This suggests that the couple may take on potential obstacles faced by migrants, as marriage represents a form of social capital that can help migrants cope with daily life, but that the nonmigrant spouse may suffer in the process of helping his or her migrant spouse. Moreover, nothing is known about any discrimination experienced by mixed marriages in Europe. Such experiences may exist – as have been observed for multiracial couples in the United States – and they may vary by societal context. Thus, our results suggest that a mixed marriage may be another step in a two-sided integration process of international migrants, but that it may not be the final one. Hence, (institutional) support networks and counseling efforts for mixed couples should not end on the day of the wedding, and research will need to track the subsequent family dynamics of both migrants and nonmigrants in mixed marriages as well as the reactions to these couples by third parties.

In sum, our results suggest that whom a person is married to is important for mental health. However, whereas the notion of an intermarriage-gain effect was usually taken for granted in the literature, our study suggests that not only the benefits but also the costs of a mixed marriage should be investigated. Moreover, in an endeavor such as this, both migrants and nonmigrants should be included in the picture in order to determine whether such marriages are a useful measurement of social cohesion and intergroup relations, and what they can contribute to immigrant integration.

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Appendix

Table A-1:   Descriptive overview of the sample, by sex and marriage type

Variables	Women Endogamous N	%	Exogamous N	%	Men Endogamous N	%	Exogamous N	%
Dependent variables								
Depression ***/***								
Mean / standard deviation	2.3	2.0	2.6	2.1	1.7	1.8	1.8	1.8
Independent variables								
Migrant status ***/***								
Nonmigrant	18,067	92.7	224	4.8	17,875	92.7	2,444	52.9
Migrant	1,421	7.3	2,445	52.4	1,405	7.3	2,175	47.1
Age (years) (t-v) ns/*								
Mean / standard deviation	63.5	7.9	63.4	7.8	64.9	7.9	65.2	7.7
Education ***/***								
Low	2,255	11.6	390	8.4	1,949	10.1	354	7.7
Medium	11,895	61.0	2,879	61.7	11,325	58.7	2,731	59.1
High	5,256	27.0	1,357	29.1	5,925	30.7	1,518	32.9
mv	82	0.4	25	0.5	81	0.4	16	0.3
Marriage duration (years) (t-v) ***/***								
Mean / standard deviation	37.2	11.9	35.7	12.4	36.0	12.1	34.7	12.6
Age difference between the spouses ***/***								
She ≥5 years younger than he	4,901	25.1	1,241	26.6	4,908	25.5	1,244	26.9
She ≤4 years younger or up to 1 year older than he	12,612	64.7	2,818	60.4	12,441	64.5	2,783	60.3
She ≥2 years older than he	1,975	10.1	610	13.1	1,931	10.0	592	12.8
Comparative school education of the spouses */*								
She lower educated than he	5,938	30.5	1,475	31.6	5,796	30.1	1,467	31.8
Same education	8,905	45.7	2,018	43.2	8,848	45.9	1,999	43.3
She higher educated than he	4,493	23.1	1,136	24.3	4,465	23.2	1,107	24.0
mv	152	0.8	40	0.9	171	0.9	46	1.0
Country ***/***								
Austria	2,435	79.9	612	20.1	2,444	79.8	617	20.2
Belgium	2,800	79.7	711	20.3	2,854	79.8	724	20.2
Denmark	2,468	89.0	306	11.0	2,501	88.8	314	11.2
Estonia	2,687	76.4	829	23.6	2,486	76.4	768	23.6
France	1,872	77.8	533	22.2	1,889	77.8	539	22.2
Germany	2,244	78.9	599	21.1	2,153	79.4	560	20.6
Netherlands	1,579	87.7	222	12.3	1,587	87.3	231	12.7
Sweden	1,961	85.6	331	14.4	1,898	85.1	332	14.9
Switzerland	1,442	73.3	526	26.7	1,467	73.3	534	26.7
Wave **/**								
1 (2004–2006)	1,085	5.6	208	4.5	1,148	6.0	219	4.7
2 (2006–2010)	1,528	7.8	314	6.7	1,587	8.2	332	7.2
4 (2010–2012)	4,266	21.9	1,081	23.2	4,267	22.1	1,083	23.4
5 (2013)	7,352	37.7	1,761	37.7	7,208	37.4	1,734	37.5
6 (2015)	5,257	27.0	1,305	28.0	5,070	26.3	1,251	27.1
N (observations)	19,488	80.7	4,669	19.3	19,280	80.7	4,619	19.3

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.
Note: Sig.: *** p<0.001; ** p<0.01; * p<0,05; ° p<0.1; ns = not significant; the chi2 test statistics for categorical variables and the t-test statistics for metric variables refer to the differences between exogamous and endogamous marriages with regard to the respective variable (for women/for men). t-v = time-varying covariate, mv = missing values.

Table A-2: Determinants of depression (binary outcome), by sex and migrant status (odds ratios)

	Migrant women			Migrant men			Nonmigrant women			Nonmigrant men		
	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2	Model 0	Model 1	Model 2
Marriage type (ref. endogamous marriages)												
Exogamous marriage	0.71 *	0.93	0.93	0.67 **	0.87	0.88	1.39 ***	1.25 *	1.24 *	1.2 °	1.08	1.05
N (obser-vations)	3,866	3,866	3,866	3,580	3,580	3,580	20,291	20,291	20,291	20,319	20,319	20,319

Source: Calculations based on SHARE, waves 1, 2, 4, 5, 6 (2004–2015), N = 48,056.
Note: Models 1 controlled for country, wave, age, education; Models 2 in addition controlled for educational heterogamy, age difference, and marriage duration.