



# Hostile attitudes toward immigrants and refugees are associated with poor self-rated health. Analysis of 21 European countries

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## ABSTRACT

**Background:** Previous studies found that individuals who harbor hostile attitudes toward immigrants & refugees tend to vote for far right nationalist parties, and that the same individuals also tend to report worse health status. We sought to test these associations using the latest data from 21 EU countries, and also whether the associations were moderated by the share of unemployed people in each region and individuals' labor situation.

**Methods:** We analyzed the second release of the 2016 European Social Survey which includes different questions about attitudes toward immigrants and refugees, as well as a rich variety of socioeconomic variables. Multilevel Poisson regression models were developed, regressing fair/poor health on attitudes towards immigrants & refugees.

**Results:** For each one point increase in favorable attitudes toward immigrants, the prevalence of fair/poor health was reduced by 2 percentage points (PR = 0.98; 95%CI: 0.96–0.99). In analyses incorporating cross-level interactions, the association was not moderated by high background unemployment rates or individual labor market attachment.

**Conclusion:** Positive attitudes toward immigrants are correlated with lower prevalence of fair/poor health in general, regardless of individuals' labor situation and the objective economic situation. Fostering empathy toward immigrants and refugees may thus promote a healthier society, especially among more prejudiced individuals.

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## 1. Introduction

Historically, anti-immigrant sentiment and ethnic prejudice increase during periods of economic recession (Cea D'Ancona, 2015) as unscrupulous politicians point the blame at immigrants and refugees. Immigrants have been variously blamed for taking away jobs (Esses et al., 2001), for crowding public schools, and for burdening social welfare and health care spending (Shannon, 2010), and other scarce resources (Kwak and Wallace, 2018). These narratives have led susceptible individuals to harbor greater anti-immigrant feelings, especially among those who feel economically abandoned, i.e. the unemployed, less

educated or older white working-class workers (Cox et al., 2017; Lancee and Pardos-Prado, 2013). Additionally, some individuals fear that immigrants are eroding their country's cultural identity (Cea D'Ancona, 2015).

However, not all immigrants are perceived in the same manner, and different attitudes have been described according to the type of immigrant. For instance, unauthorized immigrants are more negatively perceived as a threat compared to legal immigrants or refugees (Murray and Marx, 2013). Indeed, there is only a weak correlation between attitudes toward immigrants versus refugees and the factors that influence people's attitudes appear to be different (Abdelaaty and Steele, 2020). Specifically, attitudes toward immigrants depend more on individual characteristics such as occupational status or income, whereas attitudes toward refugees depend more on the ethnic diversity, the proportion of Muslims or history of terrorist incidents in a given country. Additionally, attitudes toward immigrants vary according to the nationality and

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ethnicity of immigrant groups (Gorodzeisky and Semyonov, 2016; Czymara and Schmidt-Catran, 2017). Often the variations in attitudes towards different immigrant groups reflect the history of each country, e.g. attempts to preserve white supremacy in majority white countries coupled with systemic oppression of non-white groups.

Political parties and the media play an important role in shaping the image of immigrants, refugees, asylum seekers and other perceived “outsider” groups (Crisp, 2003; Grove and Zwi, 2006). Both are powerful channels through which the polity come to believe that the movement of people brings insecurity, crime, economic problems such as decreasing wages, or higher health and social spending to the country. Indeed, immigration was one of the main worries among Europeans in 2016 according to the Standard Eurobarometer 86.<sup>1</sup> At that time, the European Union (EU) had just experienced the Syrian refugee crisis of 2015, as well as the Brexit vote, where xenophobic political tactics were employed to obtain support (Koltai et al., 2020).

Exclusionary “othering” refers to the process through which we label and identify people as being different from oneself due to their personal traits such as language, skin color, religion, etc., and implies negative consequences for the “othered” group including marginalization, social exclusion or alienation (Canales, 2000, 2010a; Weis, 1995). Negative attitudes toward immigrants and other “outsider” groups reflects this type of othering, as it is a process often based on racial and/or ethnic biases (Canales, 2000, 2010a). These attitudes may lead to “intergroup anxiety”, i.e. anxiety stemming from being exposed to ‘others’ from a different group (Stephan, 2014; Stephan and Stephan, 1985). In an experimental study involving interactions (in a laboratory setting) between Latinos and Whites, higher levels of cortisol reactivity were found among individuals who harbored prior prejudices toward the other group or were worried about being rejected by the other group (Page-Gould et al., 2008).

Negative attitudes toward immigrants and refugees may not only lead to stress and anxiety, but also to increased frequency of experiencing negative emotions such as fear, anger, and resentment (Salmela and von Scheve, 2017) which have been linked to physical and mental health problems (Staicu and Cuțov, 2010), including cardiovascular disease events (Haukkala et al., 2010).

In 2016, 22% of Europeans were at risk of depression and 11% felt tense “most of the time” (Eurofound, 2017). These figures show that mental health is an important public health issue often disregarded by political campaigns and the media, as they tend to promote protection from the refugee instead of protection of the refugee (Grove and Zwi, 2006). Indeed, 41% of Europeans perceived tensions between ethnic groups in their respective countries (Eurofound, 2017).

Studies have traditionally focused on the effects of racism on the health of those individuals who are the target of prejudice; however, less attention has been paid on the health of individuals who harbor anti-immigrant sentiments. For instance, Backhaus & colleagues (Backhaus et al., 2019) found that individuals who voted for right-wing populist parties were 40% more likely to report fair/poor health compared with traditional conservatives. Supporters of nationalist causes tend to feel themselves as “strangers” in their home country, or to believe that their country needs to be “protected” from immigrants, and also to be in favor of deporting illegal immigrants (Cox et al., 2017).

A recent descriptive study found that poor attitudes toward immigrants are associated with higher odds of reporting fair/poor SRH in general in a large dataset of 15 European countries (Pinillos-Franco and Kawachi, 2021). Previous studies have focused their attention on analyzing the emotions and attributions which underpin the attitudes toward immigrants, however, they have not analyzed whether these attitudes are related to other health outcomes such as self-rated health, a

general health indicator that encompasses both mental and physical health.

In this paper, we sought to answer the following questions: is there a correlation between individuals’ attitudes toward immigrants and refugees and their own health? Do objective economic indicators of the economic situation (i.e. unemployment rates) and individuals’ labor situation moderate this association?

## 2. Methods

We used the 2nd release of the 2016 European Social Survey (ESS) (8th round) available online at [www.europeansocialsurvey.org/](http://www.europeansocialsurvey.org/). Twenty-one European countries participated in this round: Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom. The ESS is a cross-sectional survey conducted every two years across Europe through face-to-face interviews, with the exception of Finland, Iceland, Norway, and Sweden, where interviews were done by telephone (European Social Survey, 2018). This survey involved random probability sampling and the sampling frame in each country came from residential registers. A total of 39,399 individuals completed the questionnaire aged between 15 and over living in private households.

Compared to other European surveys, this survey is more focused on measuring the attitudes and beliefs patterns towards ‘others’ of diverse populations across the European context, making it suitable for the aim of this paper. Besides, it includes a rich range of socioeconomic information which allow us to test the association between individuals’ attitudes toward immigrants & refugees and their self-rated health whilst controlling for potential confounding by socioeconomic characteristics.

The explanatory variables chosen in this study include individuals’ socioeconomic characteristics such as age, sex, nationality, employment situation, household income decile and financial strain, as well as potential mediating variables such as happiness, religiosity and individuals’ political ideology. Our main independent variable was individuals’ attitudes toward immigrants and refugees and the dependent variable was self-rated health.

### 2.1. Outcome variable

Our outcome was individuals’ self-rated health (SRH). We used SRH as it is a reliable summary indicator of general health status, and has been found to predict future events including mortality and hospitalization (Idler and Benyamini, 1997; Jylhä, 2009).

SRH is a single item asking individuals to rate their overall health by choosing five different answers: (1) very good, (2) good, (3) fair, (4) bad, and (5) very bad. We dichotomized the responses: (1) if individuals choose either fair, bad or very bad answers (hereafter ‘fair/poor SRH’), and (0) otherwise. We included “fair” response in the poor category as individuals who report fair (or worse) SRH had higher risk of subsequent health outcomes, such as mortality, compared to those individuals who report “good” or “very good” health (Nery Guimarães et al., 2012).

### 2.2. Mediators

Age, sex, nationality, educational attainment, labor situation, occupational social class, household income decile and financial strain were considered to account for individuals’ sociodemographic information. We also considered individuals’ political ideology, happiness and whether the individual feels more or less religious.

**Nationality** was considered with a dichotomous variable which takes value 1 if the individual was born in the country where the survey was conducted, and 0 otherwise.

**Educational attainment** was measured by the ISCED scale classifying and harmonizing education in nine categories: (0) Early childhood education or not completed primary education, (1) Primary education, (2)

<sup>1</sup> The survey was conducted between 3rd and 16th November 2016. 45% of interviewed individuals indicated that immigration was one of the most important issues that EU-28 was facing at that moment.

Lower secondary education, (3) Upper secondary education, (4) Post-secondary non-tertiary education, (5) Short-cycle tertiary education, (6) Bachelor's degree or equivalent, (7) Master's degree or equivalent and (8) Doctoral degree or equivalent.

**Labor situation** was divided into four categories: employee, self-employed, working for own family business, and other situation including currently enrolled in education, permanently sick or disabled, retired, doing housework, looking after children or other persons.

**Occupational social class** was divided into 9 categories according to the ISCO-08 first digit (International Standard Classification of Occupations): (0) Armed Forces, (1) Managers and Professionals, (2) Technicians and Associate Professionals, (3) Clerical support workers, (4) Services and Sales workers, (5) Skilled agricultural, Forestry and Fishery workers, (6) Craft and related Trade workers, (7) Plant and Machine Operators, and Assemblers, (8) Elementary Occupations.

**Financial strain** was assessed using two variables from the survey: "likelihood of not having sufficient money for household necessities", which takes 4 values (not at all likely, not very likely, likely, very likely) and "feeling about household income", which takes 4 values (living comfortably on present income, coping on present income, difficulties on present income, and very difficult on present income).

We included **political ideology** using the following question from the survey: In politics, people sometimes talk of "left" and "right". Where would you place yourself? with responses ranging from 0 – left – to 10 – right.

**Happiness** was assessed by the following question from the survey: How happy are you? with responses ranging from 0 (extremely unhappy) to 10 (extremely happy).

We also considered whether an individual is **feeling more or less religious** with the following question: How religious are you? with responses ranging from 0 (not at all religious) to 10 (very religious).

### 2.3. Explanatory variables

To answer our research questions, we developed novel scales to measure individuals' attitudes toward immigrants and refugees.

Attitudes toward immigrants and refugees were assessed using nine questions from the survey: whether the respondent's country should (1) allow many/few immigrants of the same race/ethnic group as the host country to come and live, (2) allow many/few immigrants from different race/ethnic groups as the host country to come and live, (3) allow many/few immigrants to come from poorer countries outside Europe, with four response categories - allow many to come and live here; allow some; allow a few; or allow none. Additionally, the following attitudes were assessed: (4) Immigration is bad vs. good for the country's economy, (5) The country's cultural life is undermined vs. enriched by immigrants, (6) Immigrants make the country a worse vs. better place to live, with responses ranging from 0 to 10, (7) Government should be generous in judging applications for refugee status, (8) Most refugee applicants are not in real fear of persecution by their own countries, and (9) Refugees should be entitled to bring close family members, with five response categories - agree strongly; agree; neither agree or disagree; disagree; or disagree strongly.

Given that there were nine questions to measure attitudes toward immigrants and refugees, we used Principal Components Analysis (PCA) to reduce the number of variables and avoid potential multicollinearity in our models. The results of the PCA indicated that the estimated scale was not unidimensional. Hence, we performed two PCAs, one including the six questions related to attitudes toward immigrants, and another just including the three questions related to attitudes toward refugees (see [Tables A and B](#) in Supplementary Material). The analyses resulted in two subscales measuring attitudes toward immigrants ("immigrant scale 1" and "immigrant scale 2") and one related to attitudes toward refugees ("refugees scale") (see [Table 1](#)). The mean, standard deviation, minimum and maximum values of each scale are shown in [Table 2](#), and the questions included in each scale were reordered from worse to better

**Table 1**  
Principal components analysis.

Immigrant scale				
Component	Eigen value	Difference	Proportion	Cumulative
Comp1	2.43	2.06	0.81	0.81
Comp2	0.37	0.18	0.12	0.93
Comp3	0.20	.	0.07	1.00
Immigrant scale 2				
Component	Eigen value	Difference	Proportion	Cumulative
Comp1	2.28	1.89	0.76	0.76
Comp2	0.39	0.06	0.13	0.89
Comp3	0.33	.	0.11	1.00
Refugees scale				
Component	Eigen value	Difference	Proportion	Cumulative
Comp1	1.50	0.51	0.50	0.50
Comp2	0.99	0.47	0.33	0.83
Comp3	0.52	.	0.17	1.00

attitudes toward immigrants or refugees, so that they can be interpreted as follows: the higher this scale, the more favorable the attitudes toward immigrants or refugees.

### 2.4. Statistical analysis

We first checked that six of the variables included in our analysis presented more than 5% missing data (see [Table C](#) in Supplementary Material), which made it advisable to use imputation techniques ([Roth and Switzer, 1995](#)). In this case, deletion techniques such as listwise or pairwise deletion reduce sample size and statistical power, and assume that data are missing completely at random, which is difficult to ascertain ([Fox-Wasylyshyn and El-Masri, 2005](#)). We thus performed multiple imputations by creating 20 datasets with Markov chain Monte Carlo method, which assumes that data are missing at random (not completely) and presents several advantages compared to deletion techniques such as robustness to violations of non-normality of the variables, uncertainty about missing values, sample size preservation and usage of all available data ([Fox-Wasylyshyn and El-Masri, 2005](#)).

Cross-sectional studies with binary outcomes frequently use logistic regression to obtain odds ratios. However, when the incidence of an outcome is common, i.e., more than 10%, the obtained odds ratios might overestimate the risk ratio when it is more than 1, or underestimate it when it is less than 1 ([Zhang and Yu, 1998](#)). In our study, we observed that the prevalence of our outcome is high (33% of individuals reported fair/poor health), therefore, it is necessary to use another methodology which directly estimates the risk ratio (in our case the 'prevalence ratio' as it is a cross-sectional study). There exist different alternatives which provide better estimates in these cases, such as Cox regression, log-binomial regression or Poisson regression, and the obtained prevalence ratios are easier to interpret compared to odd ratios ([Barros and Hirakata, 2003](#)). We decided to use the Poisson regression model as it uses a log transformed dependent variable, which produces unbiased prevalence ratios when the model is properly specified ([Chen et al., 2018](#)). Additionally, we adopted a multilevel perspective as our data was hierarchically nested in three levels: individuals, regions, and countries ([Fig. 1](#)).

We developed the following three-level multilevel Poisson model, with individuals (i) nested within regions (j) nested within countries (k):

$$\log(y_{ijk}) = \beta_0 x_{0ijk} + \beta_1 x_{1ijk} + \beta_2 x_{2jk} x_{0ijk} + \beta_3 x_{3k} x_{0ijk} + (\eta_{0k} x_{0ijk} + \mu_{0jk} x_{0ijk} + \varepsilon_{0ijk} x_{0ijk})$$

Where:

$x_{0ijk}$  is constant,  $x_{1ijk}$  are the individual predictor variables,  $x_{2jk}$  is the regional predictor variable, and  $x_{3k}$  is the country predictor variable.

$\beta_0$  is the constant term of the regression model and considers that

**Table 2**  
Descriptive statistics.

Variables	Total individuals (n = 39,399)				Unemployed (n = 2315)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Fair/poor SRH</b>	0.33	0.47	0	1	0.37	0.48	0	1
<b>Immigrants scale <sup>a</sup></b>	0.05	1.55	−2.96	2.66	0.01	1.64	−2.96	2.66
<b>Immigrants scale 2 <sup>a</sup></b>	0.05	1.49	−3.48	3.16	−0.06	1.60	−3.48	3.16
<b>Refugees scale <sup>a</sup></b>	0.03	1.23	−2.68	2.67	0.12	1.29	−2.68	2.67
<b>Age</b>	49.60	18.76	15	100	41.22	14.50	15	100
<b>Female (ref. Male)</b>	0.52	0.50	0	1	0.50	0.50	0	1
<b>Born in country</b>	0.90	0.30	0	1	0.84	0.36	0	1
<b>Occupational class (ref. Managers or Professionals)</b>								
Armed Forces	0.00	0.06	0	1	0.00	0.03	0	1
Technicians	0.13	0.34	0	1	0.08	0.28	0	1
Clerical support	0.08	0.27	0	1	0.08	0.27	0	1
Services and Sales workers	0.16	0.37	0	1	0.20	0.40	0	1
Skilled agricultural, forestry	0.03	0.16	0	1	0.02	0.13	0	1
Craft and related trades	0.11	0.31	0	1	0.13	0.33	0	1
Plant and machine operators	0.07	0.26	0	1	0.07	0.26	0	1
Elementary occupations	0.18	0.38	0	1	0.30	0.46	0	1
<b>Labor situation (ref. Employee)</b>								
Self-employed	0.11	0.31	0	1	0.06	–	–	–
Family business	0.02	0.13	0	1	0.01	–	–	–
Other situation	0.08	0.27	0	1	0.13	–	–	–
<b>Educational attainment (ref. ISCED 0)</b>								
ISCED 1	0.08	0.27	0	1	0.08	0.28	0	1
ISCED 2	0.18	0.38	0	1	0.27	0.44	0	1
ISCED 3	0.36	0.48	0	1	0.40	0.49	0	1
ISCED 4	0.06	0.25	0	1	0.05	0.22	0	1
ISCED 5	0.06	0.25	0	1	0.04	0.20	0	1
ISCED 6	0.11	0.31	0	1	0.08	0.27	0	1
ISCED 7	0.12	0.32	0	1	0.07	0.25	0	1
ISCED 8	0.01	0.11	0	1	0.00	0.07	0	1
<b>Household income (ref. 10th decile)</b>								
1st decile	0.08	0.27	0	1	0.25	0.43	0	1
2nd decile	0.09	0.28	0	1	0.13	0.34	0	1
3rd decile	0.09	0.29	0	1	0.11	0.32	0	1
4th decile	0.09	0.29	0	1	0.09	0.28	0	1
5th decile	0.09	0.29	0	1	0.07	0.25	0	1
6th decile	0.09	0.28	0	1	0.05	0.21	0	1
7th decile	0.09	0.28	0	1	0.04	0.21	0	1
8th decile	0.08	0.28	0	1	0.04	0.19	0	1
9th decile	0.06	0.24	0	1	0.02	0.14	0	1
<b>Not enough money (ref. Not at all likely)</b>								
Not very likely	0.38	0.48	0	1	0.27	0.44	0	1
Likely	0.16	0.36	0	1	0.31	0.46	0	1
Very likely	0.15	0.36	0	1	0.32	0.47	0	1
<b>Feeling income (ref. Living comfortably on present income)</b>								
Coping on present income	0.47	0.50	0	1	0.34	0.47	0	1
Difficult on present income	0.14	0.35	0	1	0.31	0.46	0	1
Very difficult on present income	0.05	0.22	0	1	0.22	0.41	0	1
<b>Happiness</b>	7.50	1.82	0	10	6.81	2.20	0	10
<b>Religious</b>	4.51	3.15	0	10	4.41	3.26	0	10
<b>Political ideology<sup>b</sup></b>	5.71	2.60	0	10	5.62	2.80	0	10

<sup>a</sup> The higher, the better attitudes toward immigrants or refugees.

<sup>b</sup> The higher, the more inclined to right-wing ideology.

individual  $i$  lives within region  $j$  belonging to country  $k$ .

$\beta_1$  is the fixed part and  $\varepsilon_{0ijk}$  the random part of level 1.

$\beta_2$  is the fixed part and  $\mu_{0jk}$  the random part of level 2.

$\beta_3$  is the fixed part and  $\eta_{0k}$  the random part of level 3.

We ran three sets of models to test the association between individuals' SRH and their attitudes toward immigrants and refugees: an empty model only including our main independent variables of interest (i.e., immigrants scales and refugees scale), model 2 adding socioeconomic variables, and model 3 including all above mentioned variables.

We also included the unemployment rate in each region (see Table D in Supplementary Material) in the fixed-part of the level 2 equation to check whether our hypothesis holds true in contexts of economic hardship. We thus performed cross-level interactions between the three scales related to attitudes toward immigrants and refugees, and the regional unemployment rate.

Additionally, we conducted two models including interactions between the three scales measuring attitudes toward immigrants/refugees x whether an individual was unemployed. Here we differentiated between those unemployed who are looking for a job and those who are not, as the former might find the presence of immigrants to be more threatening compared to those who are not competing for scarce jobs. We also conducted these same models but including the regional unemployment rate in the fixed-part of level 2 equation.

We also performed a sensitivity analysis excluding foreign-born individuals from the sample, as the respondents of the survey may themselves be immigrants, and the results were consistent (results upon request).

Additionally, we grouped countries according to whether they received a higher number of refugees (specifically during the 2015 refugee crisis) relative to economic migrants. To do so, we calculated the



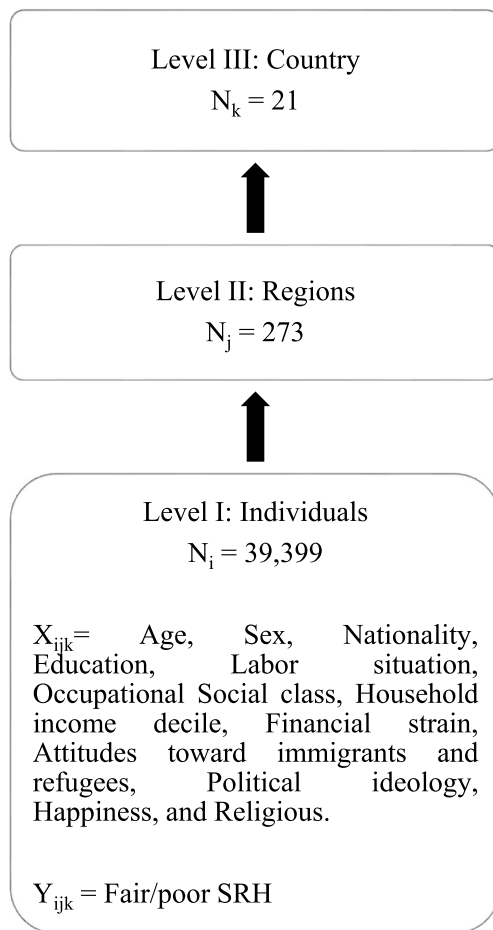


Fig. 1. Multilevel classification diagram.

number of immigrants vs. refugees as a proportion of population in 2015 using the World Bank Data. There were seven countries which received more refugees compared to the rest of the countries in the sample, viz., Austria, France, Germany, the Netherlands, Norway, Sweden and Switzerland (Table E in Supplementary material). Hence we split the countries into two groups – those which received more refugees versus the rest. We then included cross-level interactions in the full model between the three scales measuring attitudes toward immigrants & refugees x countries with a higher share of refugee population, and also conducted stratified analyses for the two groups of countries (see Table F in Supplementary Material). As a result, we did not find statistically significant differences in our estimates, indicating that it did not matter whether it is refugees or immigrants when it comes to hostile attitudes toward “outsiders” or “foreigners” being associated with fair/poor SRH.

### 3. Results

Table 2 shows the main descriptive statistics of the sample. 33% of interviewed individuals reported fair/poor health and declared a political ideology slightly inclined to the right. The average age was around 50 years old and there were more females than males in the sample (52% vs 48%). Individuals were mostly professionals or managers (24%) or occupied elementary occupations (18%), with an average level of education (upper secondary level), and actively working (79%). There were more individuals concentrated in the group of higher income (24%), thus a plurality of the sample reported having sufficient money (38%) and coping on present income (47%). The unemployed (right column of Table 2) reported poorer health compared to the total sample (37%), expressed more hostile attitudes toward immigrants, and had lower

levels of schooling. Additionally, they were more concentrated in the group of lower income (25%), so they were more likely not to have enough money and cope on present income compared to the total population.

Each one point increase in favorable attitudes towards immigrants (i. e., immigrants scale 1 and immigrants scale 2) was associated with a lower prevalence of reporting fair/poor health by 9% (PR = 0.91; 95% CI: 0.90–0.92) and 7% (PR = 0.93, 95%CI: 0.92–0.95) respectively in the empty model (Table 3). After adding socioeconomic variables in the model, the estimate was only statistically significant for “immigrants scale 2” which was attenuated to 4% (PR = 0.96; 95%CI: 0.94–0.97) (model 1), and finally to 2% (PR = 0.98; 95% CI: 0.96–0.99) after including happiness, religious and political ideology variables (model 2).

As expected, age showed a small and positive gradient for fair/poor SRH, while women showed a 6% higher prevalence of fair/poor SRH compared to men (models 1 & 2). Educational attainment was consistently protective as well as household income and absence of financial strain. Being self-employed, working for a family business and being in “other” labor situations was associated with lower prevalence of fair/poor SRH compared to being an employee.

Happiness was associated with lower prevalence of fair/poor health, whereas religiosity was associated with 1% higher prevalence of fair/poor SRH.

We also included the unemployment rate of each European region in the fixed-part of the level 2 equation as a regional predictor and performed cross-level interactions between the three scales measuring attitudes toward immigrants/refugees x the regional unemployment rate (Table 4). This was to test whether in regions with higher unemployment, attitudes toward immigrants and refugees are more strongly correlated to fair/poor SRH. We found that the association between attitudes toward immigrants and refugees and fair/poor SRH remained stable in contexts of high unemployment, i.e. none of the cross-level interactions were statistically significant (i.e. confidence intervals included the null).

We also included interactions between the three scales measuring attitudes toward immigrants/refugees x whether an individual was unemployed (Table 5). As expected, being unemployed was associated with higher prevalence of reporting fair/poor SRH, but it was not statistically significant. None of the interactions included were statistically significant (models 1 and 2), indicating that being unemployed did not moderate the correlation between hostile attitudes toward immigrants and higher prevalence of fair/poor SRH. We also performed another estimation including the unemployment rate in the fixed-part of level 2 equation (model 3) and we did not find significant results.

### 4. Discussion

We found that a favorable attitude toward immigrants was associated with lower prevalence of reporting fair/poor SRH in general. Previous studies found that individuals who voted for far-right parties tend to report poor health (Backhaus et al., 2019) and that these individuals also tend to hold hostile attitudes toward immigrants (Cox et al., 2017), which is consistent with our results. Higher background unemployment rates did not moderate this association, indicating that there is a robust correlation between hostile attitudes toward immigrants and fair/poor SRH. We did not find either any effect modification by individual unemployed status. This is in line with previous studies which found that negative attitudes toward immigrants increase more due to the conflict over values and culture rather than economic and social competition (Schneider, 2008) and that these are more related to how individuals feel about the economic situation instead of changes in objective measures of the economic situation, such as unemployment rates (Kuntz et al., 2017).

Thus, individuals holding hostile attitudes toward immigrants appear to pay a “health penalty” regardless of their labor condition and

**Table 3**

Prevalence ratio for respondents reporting fair/poor health. Attitudes towards immigrants & refugees is adjusted for socioeconomic variables, happiness, religiosity and political ideology.

Outcome: Fair/poor SRH	Empty model PR (95%CI)	Model 1 PR (95%CI)	Model 2 PR (95%CI)
<b>Immigrants scale</b>	0.91 (0.90–0.92)	0.99 (0.98–1.01)	0.99 (0.98–1.01)
<b>Immigrants scale 2</b>	0.93 (0.92–0.95)	0.96 (0.94–0.97)	0.98 (0.96–0.99)
<b>Refugees scale</b>	1.01 (1.00–1.03)	1.01 (0.99–1.02)	1.00 (0.98–1.02)
<b>Age</b>		1.03 (1.02–1.03)	1.02 (1.02–1.02)
<b>Female (ref. Male)</b>		1.06 (1.02–1.10)	1.06 (1.02–1.10)
<b>Born in country</b>		0.99 (0.93–1.06)	0.99 (0.93–1.06)
<b>Occupational class (ref. managers or professionals)</b>			
Armed Forces		1.03 (0.76–1.40)	1.02 (0.75–1.39)
Technicians		1.00 (0.94–1.07)	1.00 (0.93–1.07)
Clerical support		0.98 (0.91–1.07)	0.98 (0.90–1.06)
Services and Sales workers		1.06 (0.99–1.14)	1.06 (0.99–1.13)
Skilled agricultural, forestry		1.11 (1.00–1.24)	1.11 (1.00–1.24)
Craft and related trades		1.10 (1.02–1.18)	1.09 (1.01–1.17)
Plant and machine operators		1.13 (1.04–1.22)	1.11 (1.02–1.20)
Elementary occupations		1.13 (1.05–1.21)	1.12 (1.04–1.20)
<b>Labor situation (ref. Employee)</b>			
Self-employed		0.92 (0.86–0.97)	0.92 (0.87–0.98)
Family business		0.85 (0.74–0.97)	0.86 (0.75–0.99)
Other situation		0.88 (0.81–0.95)	0.90 (0.83–0.98)
<b>Educational attainment (ref. ISCED 0)</b>			
ISCED 1		1.04 (0.92–1.18)	1.07 (0.94–1.20)
ISCED 2		1.05 (0.93–1.18)	1.06 (0.94–1.20)
ISCED 3		0.98 (0.86–1.10)	0.99 (0.87–1.12)
ISCED 4		0.98 (0.85–1.13)	0.99 (0.86–1.14)
ISCED 5		0.90 (0.78–1.03)	0.91 (0.79–1.05)
ISCED 6		0.80 (0.69–0.92)	0.80 (0.70–0.93)
ISCED 7		0.83 (0.72–0.96)	0.83 (0.72–0.96)
ISCED 8		0.72 (0.58–0.89)	0.74 (0.59–0.92)
<b>Household income (ref. 10th decile)</b>			
1st decile		1.20 (1.13–1.29)	1.14 (1.07–1.22)
2nd decile		1.14 (1.07–1.22)	1.11 (1.03–1.18)
3rd decile		1.13 (1.06–1.21)	1.11 (1.04–1.18)
4th decile		1.12 (1.05–1.20)	1.11 (1.04–1.19)
5th decile		1.07 (1.00–1.15)	1.07 (0.99–1.14)
6th decile		1.07 (0.99–1.15)	1.06 (0.99–1.15)
7th decile		1.02 (0.94–1.10)	1.03 (0.95–1.11)
8th decile		0.94 (0.86–1.02)	0.95 (0.87–1.03)
9th decile			

**Table 3 (continued)**

Outcome: Fair/poor SRH	Empty model PR (95%CI)	Model 1 PR (95%CI)	Model 2 PR (95%CI)
		0.93 (0.84–1.03)	0.94 (0.85–1.04)
<b>Not enough money (ref. Not at all likely)</b>			
Not very likely		1.12 (1.07–1.18)	1.09 (1.04–1.15)
Likely		1.36 (1.29–1.44)	1.27 (1.20–1.35)
Very likely		1.33 (1.24–1.42)	1.22 (1.14–1.31)
<b>Feeling income (ref. Living comfortably on present income)</b>			
Coping on present income		1.26 (1.20–1.32)	1.21 (1.15–1.28)
Difficult on present income		1.52 (1.42–1.62)	1.40 (1.31–1.49)
Very difficult on present income		1.58 (1.46–1.72)	1.38 (1.27–1.50)
<b>Happiness</b>			0.90 (0.90–0.91)
<b>Religious</b>			1.01 (1.00–1.02)
<b>Political ideology</b>			0.98 (0.98–0.99)
_cons	0.32 (0.28–0.36)	0.05 (0.04–0.06)	0.13 (0.10–0.16)
Random effects			
Country	0.07 (0.03–0.11)	0.05 (0.02–0.08)	0.04 (0.02–0.07)
Region > country	0.01 (0.00–0.01)	0.00 (0.00–0.00)	0.00 (0.00–0.00)

whether there is a high unemployment rate in the country. During periods of economic hardship, populist political parties tend to take advantage of this anxiety to gain votes distorting the image of immigrants and refugees, as witnessed by the ascendancy of Brexit in 2016 (year of the survey), where one of the key factors in the success of the campaign was appealing to racism (Algan et al., 2017; Cox et al., 2017; Goldman et al., 2019; Tyson and Maniam, 2016). Although voters who already held prejudiced views of immigrants may have been merely reinforced in their views, unemployed individuals (who were often the target of these political tactics) might have been persuaded to (mis) direct their hostility and anger away from politicians toward immigrants (Billiet et al., 2014).

Promoting xenophobia has an important impact on voters who are living at or below the poverty line (Crisp, 2003). An example of this impact occurred during the early phases of the COVID-19 pandemic. Chinese people (and by extension, all Asians) have been a focus of xenophobia across the world (Shimizu, 2020), which has led to banning them entry in different countries and even in shops and other services (Rich, 2020) and, in some cases, to being physically assaulted (Li, 2020).

Our findings are also echoed by studies of the corrosive effects of ‘structural racism’ (Bailey et al., 2017), which has been found to be detrimental to both the targets of racism as well as to those who hold racist views. Regions with higher levels of structural racism present higher rates of fair/poor SRH (Bell and Owens-Young, 2020). Although racism primarily affects the physical and mental health of those individuals who are the targets of prejudice (Paradies et al., 2015), our findings suggest that anti-immigrant discourse also detrimentally affects the health of individuals who are drawn into it.

Policies and strategies are needed to promote social empathy towards immigrants & refugees as well as to foster social cohesion in all societies. Although some studies claim that ethnic diversity & immigration have negative social consequences (Putnam, 2007), more recent studies such as that of Van der Meer & Tolsma (van der Meer and Tolsma, 2014) show that these negative effects are limited to intra-neighborhood social cohesion in the US, and not to generalized trust, voluntary work and prosocial behaviors or attitudes in the

**Table 4**

Estimations including interactions between attitudes toward immigrants & refugees and regional unemployment rate.

Outcome: Fair/poor SRH	Model 1	Model 2	Model 3
	PR (95% CI)	PR (95% CI)	PR (95% CI)
<b>Immigrants scale</b>	0.99 (0.98–1.01)	0.99 (0.98–1.01)	0.99 (0.97–1.02)
<b>Immigrants scale 2</b>	0.97 (0.96–0.99)	0.96 (0.94–0.99)	0.96 (0.94–0.99)
<b>Refugees scale</b>	1.00 (0.98–1.02)	1.00 (0.98–1.02)	1.00 (0.96–1.04)
<b>Age</b>	1.02 (1.02–1.03)	1.02 (1.02–1.03)	1.02 (1.02–1.03)
<b>Gender</b>	1.07 (1.03–1.11)	1.07 (1.03–1.11)	1.07 (1.03–1.11)
<b>Born in country</b>	0.99 (0.93–1.05)	0.99 (0.92–1.05)	0.99 (0.92–1.05)
<b>Occupational class (ref. managers or professionals)</b>			
Armed Forces	1.04 (0.76–1.42)	1.04 (0.76–1.42)	1.04 (0.76–1.42)
Technicians	1.00 (0.94–1.07)	1.00 (0.94–1.07)	1.00 (0.94–1.07)
Clerical support	0.98 (0.90–1.06)	0.98 (0.90–1.06)	0.98 (0.90–1.06)
Services and Sales workers	1.07 (1.00–1.14)	1.07 (1.00–1.14)	1.07 (1.00–1.14)
Skilled agricultural, forestry	1.11 (0.99–1.24)	1.11 (0.99–1.23)	1.11 (0.99–1.23)
Craft and related trades	1.10 (1.02–1.18)	1.09 (1.02–1.18)	1.09 (1.02–1.18)
Plant and machine operators	1.11 (1.03–1.20)	1.11 (1.03–1.20)	1.11 (1.03–1.20)
Elementary occupations	1.12 (1.04–1.20)	1.12 (1.04–1.20)	1.12 (1.04–1.20)
<b>Labor situation (ref. Employee)</b>			
Self-employed	0.92 (0.87–0.98)	0.92 (0.87–0.98)	0.92 (0.87–0.98)
Family business	0.86 (0.75–0.99)	0.86 (0.75–0.99)	0.86 (0.75–0.99)
Other situation	0.91 (0.83–0.98)	0.91 (0.83–0.98)	0.91 (0.83–0.98)
<b>Educational attainment (ref. ISCED 0)</b>			
ISCED 1	1.06 (0.94–1.20)	1.06 (0.94–1.20)	1.06 (0.94–1.20)
ISCED 2	1.07 (0.94–1.21)	1.06 (0.94–1.20)	1.07 (0.94–1.21)
ISCED 3	0.99 (0.88–1.12)	0.99 (0.87–1.12)	0.99 (0.87–1.12)
ISCED 4	0.99 (0.86–1.14)	0.99 (0.86–1.14)	0.99 (0.86–1.14)
ISCED 5	0.91 (0.79–1.05)	0.91 (0.79–1.05)	0.91 (0.79–1.05)
ISCED 6	0.81 (0.70–0.93)	0.80 (0.70–0.93)	0.81 (0.70–0.93)
ISCED 7	0.83 (0.72–0.96)	0.83 (0.72–0.96)	0.83 (0.72–0.96)
ISCED 8	0.74 (0.59–0.92)	0.74 (0.59–0.92)	0.74 (0.59–0.92)
<b>Household income (ref. 10th decile)</b>			
1st decile	1.14 (1.06–1.22)	1.14 (1.06–1.22)	1.14 (1.06–1.22)
2nd decile	1.10 (1.03–1.18)	1.10 (1.03–1.18)	1.10 (1.03–1.18)
3rd decile	1.10 (1.03–1.18)	1.10 (1.03–1.18)	1.10 (1.03–1.18)
4th decile	1.11 (1.03–1.19)	1.11 (1.03–1.19)	1.11 (1.03–1.19)
5th decile	1.06 (0.99–1.14)	1.06 (0.99–1.14)	1.06 (0.99–1.14)
6th decile	1.07 (0.99–1.15)	1.07 (0.99–1.15)	1.07 (0.99–1.15)
7th decile	1.03 (0.95–1.12)	1.03 (0.95–1.12)	1.03 (0.95–1.12)
8th decile	0.95 (0.87–1.03)	0.95 (0.87–1.03)	0.95 (0.87–1.03)
9th decile	0.94 (0.85–1.04)	0.94 (0.85–1.04)	0.94 (0.85–1.04)

**Table 4 (continued)**

Outcome: Fair/poor SRH	Model 1	Model 2	Model 3
	PR (95% CI)	PR (95% CI)	PR (95% CI)
<b>Not enough money (ref. Not at all likely)</b>			
Not very likely	1.10 (1.05–1.16)	1.10 (1.05–1.16)	1.10 (1.05–1.16)
Likely	1.27 (1.20–1.35)	1.27 (1.20–1.35)	1.27 (1.20–1.35)
Very likely	1.24 (1.15–1.32)	1.24 (1.15–1.32)	1.24 (1.15–1.32)
<b>Feeling income (ref. Living comfortably on present income)</b>			
Coping on present income	1.22 (1.16–1.28)	1.22 (1.16–1.28)	1.22 (1.16–1.28)
Difficult on present income	1.39 (1.30–1.49)	1.39 (1.30–1.48)	1.39 (1.30–1.48)
Very difficult on present income	1.37 (1.25–1.49)	1.37 (1.25–1.49)	1.37 (1.25–1.49)
<b>Happiness</b>			
	0.90 (0.90–0.91)	0.90 (0.90–0.91)	0.90 (0.90–0.91)
<b>Religious</b>			
	1.01 (1.00–1.02)	1.01 (1.00–1.02)	1.01 (1.00–1.02)
<b>Political ideology</b>			
	0.98 (0.98–0.99)	0.98 (0.98–0.99)	0.98 (0.98–0.99)
<b>Unemployment rate</b>			
		1.01 (0.85–1.20)	1.01 (0.86–1.19)
<b>Cross-level interactions</b>			
Immigrants scale x Unemployment rate			1.00 (1.00–1.00)
Immigrants scale 2 x Unemployment rate		1.00 (1.00–1.00)	1.00 (1.00–1.00)
Refugees scale x Unemployment rate			1.00 (1.00–1.00)
_cons	0.12 (0.07–0.20)	0.11 (0.04–0.35)	0.11 (0.04–0.33)

Model 1: full model including regional unemployment rate in the fixed-part of level 2 equation.

Model 2: Model 1 + cross-level interaction between “immigrants scale 2” and unemployment rate.

Model 3: Model 1 + cross-level interactions between “immigrants scale”, “immigrants scale 2”, “refugees scale” and unemployment rate.

European context. The implementation of liberal policies aimed at, for example, providing access to public employment to immigrants have been shown to moderate the negative relation between social cohesion and ethnic diversity (Gundelach and Manatschal, 2017). Therefore, it is possible to avoid social divisions through the implementation of inclusive policies and political messages aimed at promoting the real possibility of living peacefully in ethnically diverse contexts.

Attitudes toward immigrants are initially developed during adolescence (Kustov et al., 2021). Therefore, investing in educational policies which promote bridging social connections, i.e. friendship between members of stigmatized and non-stigmatized groups (e.g. immigrants, homosexuals, the disabled, etc.), might be a good approach to mitigate hostile attitudes, as these types of friendships reduce prejudice and anxiety, and increase empathy and trust toward ‘others’ (Christ and Kauff, 2019; Pettigrew et al., 2011). Such an approach holds the promise of converting an exclusionary othering process into a “inclusionary” one, i.e. recognizing differences as an opportunity to grow and develop healthy relationships instead of a threat (Canales, 2010b).

Politicians are accountable for improving their societies’ health & wellbeing, and actions to prevent the erosion of social trust and cohesion in society are essential toward accomplishing this goal. The Commission of the European Communities (2009) already stated that health inequalities are avoidable, as they are influenced by the actions of several stakeholders, including governments.

Our paper has some limitations. As a cross-sectional study, we were not able to test reverse causality, i.e. the possibility that healthy people hold more favorable attitudes toward immigrants & refugees. We could not track to what extent attitudes toward immigrants and refugees might have changed over time due to the rise of far-right nationalism.

**Table 5**

Estimations including interactions between attitudes toward immigrants &amp; refugees and unemployment status.

Outcome: Fair/ poor SRH	Model 1 PR (95% CI)	Model 2 PR (95% CI)	Model 3 PR (95% CI)	Model 4 PR (95% CI)
<b>Immigrants scale</b>	0.99 (0.98–1.01)	0.99 (0.98–1.01)	0.99 (0.98–1.01)	0.99 (0.98–1.01)
<b>Immigrants scale 2</b>	0.98 (0.96–0.99)	0.98 (0.96–0.99)	0.97 (0.96–0.99)	0.97 (0.96–0.99)
<b>Refugees scale</b>	1.00 (0.98–1.02)	1.00 (0.98–1.02)	1.00 (0.98–1.02)	1.00 (0.98–1.02)
<b>Age</b>	1.02 (1.02–1.03)	1.02 (1.02–1.03)	1.02 (1.02–1.03)	1.02 (1.02–1.03)
<b>Gender</b>	1.06 (1.02–1.11)	1.06 (1.02–1.10)	1.07 (1.03–1.11)	1.07 (1.03–1.11)
<b>Born in country</b>	0.99 (0.93–1.06)	0.99 (0.93–1.06)	0.99 (0.92–1.05)	0.99 (0.93–1.05)
<b>Occupational class (ref. managers or professionals)</b>				
Armed Forces	1.02 (0.75–1.39)	1.02 (0.75–1.39)	1.04 (0.76–1.42)	1.04 (0.76–1.42)
Technicians	1.00 (0.93–1.07)	1.00 (0.93–1.07)	1.00 (0.94–1.07)	1.00 (0.94–1.07)
Clerical support	0.98 (0.90–1.06)	0.98 (0.91–1.06)	0.98 (0.90–1.06)	0.98 (0.90–1.06)
Services and Sales workers	1.06 (0.99–1.13)	1.06 (0.99–1.13)	1.07 (1.00–1.14)	1.07 (1.00–1.14)
Skilled agricultural, forestry	1.11 (1.00–1.24)	1.11 (1.00–1.24)	1.11 (0.99–1.24)	1.11 (0.99–1.23)
Craft and related trades	1.09 (1.01–1.17)	1.09 (1.01–1.17)	1.09 (1.02–1.18)	1.09 (1.02–1.18)
Plant and machine operators	1.11 (1.02–1.20)	1.11 (1.02–1.20)	1.11 (1.03–1.20)	1.11 (1.03–1.21)
Elementary occupations	1.12 (1.04–1.20)	1.12 (1.04–1.20)	1.12 (1.04–1.20)	1.12 (1.04–1.20)
<b>Labor situation (ref. Employee)</b>				
Self-employed	0.92 (0.87–0.98)	0.92 (0.87–0.98)	0.92 (0.87–0.98)	0.92 (0.87–0.98)
Family business	0.86 (0.75–0.99)	0.86 (0.75–0.99)	0.86 (0.75–0.99)	0.86 (0.75–0.99)
Other situation	0.90 (0.83–0.98)	0.90 (0.83–0.98)	0.91 (0.84–0.98)	0.91 (0.84–0.98)
<b>Educational attainment (ref. ISCED O)</b>				
ISCED 1	1.06 (0.94–1.20)	1.06 (0.94–1.20)	1.06 (0.94–1.20)	1.06 (0.94–1.20)
ISCED 2	1.06 (0.94–1.19)	1.06 (0.94–1.19)	1.06 (0.94–1.20)	1.06 (0.94–1.20)
ISCED 3	0.98 (0.87–1.11)	0.98 (0.87–1.11)	0.99 (0.87–1.12)	0.99 (0.87–1.12)
ISCED 4	0.99 (0.86–1.14)	0.99 (0.86–1.14)	0.99 (0.86–1.14)	0.99 (0.86–1.14)
ISCED 5	0.91 (0.79–1.05)	0.91 (0.79–1.05)	0.91 (0.79–1.05)	0.91 (0.79–1.05)
ISCED 6	0.80 (0.70–0.92)	0.80 (0.70–0.93)	0.80 (0.70–0.93)	0.81 (0.70–0.93)
ISCED 7	0.83 (0.72–0.96)	0.83 (0.72–0.96)	0.83 (0.72–0.96)	0.83 (0.72–0.96)
ISCED 8	0.74 (0.59–0.92)	0.74 (0.59–0.91)	0.74 (0.59–0.92)	0.73 (0.59–0.92)
<b>Household income (ref. 10th decile)</b>				
1st decile	1.14 (1.07–1.22)	1.14 (1.07–1.22)	1.14 (1.06–1.22)	1.13 (1.06–1.21)
2nd decile	1.10 (1.03–1.18)	1.10 (1.03–1.18)	1.10 (1.03–1.18)	1.10 (1.03–1.18)
3rd decile	1.11 (1.04–1.18)	1.11 (1.04–1.18)	1.10 (1.03–1.18)	1.10 (1.03–1.18)
4th decile	1.11 (1.04–1.19)	1.11 (1.04–1.19)	1.11 (1.03–1.19)	1.11 (1.04–1.19)
5th decile	1.07 (0.99–1.14)	1.07 (0.99–1.14)	1.07 (0.99–1.14)	1.07 (0.99–1.14)
6th decile	1.06 (0.99–1.15)	1.07 (0.99–1.15)	1.07 (0.99–1.15)	1.07 (0.99–1.15)
7th decile	1.03 (0.95–1.11)	1.03 (0.95–1.11)	1.03 (0.95–1.12)	1.03 (0.95–1.12)
8th decile	0.95 (0.87–1.03)	0.95 (0.87–1.03)	0.95 (0.87–1.03)	0.95 (0.87–1.03)
9th decile				

**Table 5 (continued)**

Outcome: Fair/ poor SRH	Model 1 PR (95% CI)	Model 2 PR (95% CI)	Model 3 PR (95% CI)	Model 4 PR (95% CI)
	0.94 (0.85–1.04)	0.94 (0.85–1.04)	0.94 (0.85–1.04)	0.94 (0.85–1.04)
<b>Not enough money (ref. Not at all likely)</b>				
Not very likely	1.09 (1.04–1.15)	1.09 (1.04–1.15)	1.10 (1.05–1.16)	1.10 (1.05–1.16)
Likely	1.27 (1.20–1.35)	1.27 (1.20–1.35)	1.27 (1.20–1.35)	1.27 (1.20–1.35)
Very likely	1.22 (1.14–1.31)	1.22 (1.14–1.31)	1.23 (1.15–1.32)	1.23 (1.15–1.32)
<b>Feeling income (ref. Living comfortably on present income)</b>				
Coping on present income	1.21 (1.15–1.28)	1.21 (1.15–1.28)	1.22 (1.16–1.28)	1.22 (1.16–1.28)
Difficult on present income	1.39 (1.30–1.49)	1.39 (1.30–1.49)	1.39 (1.30–1.48)	1.39 (1.30–1.48)
Very difficult on present income	1.37 (1.26–1.50)	1.38 (1.26–1.50)	1.36 (1.25–1.49)	1.36 (1.25–1.49)
<b>Happiness</b>	0.90 (0.90–0.91)	0.90 (0.90–0.91)	0.90 (0.90–0.91)	0.90 (0.90–0.91)
<b>Religious</b>	1.01 (1.00–1.02)	1.01 (1.00–1.02)	1.01 (1.00–1.02)	1.01 (1.00–1.02)
<b>Political ideology</b>	0.98 (0.98–0.99)	0.98 (0.98–0.99)	0.98 (0.98–0.99)	0.98 (0.98–0.99)
<b>Unemployed and looking for a job</b>	1.05 (0.96–1.15)		1.05 (0.96–1.15)	
<b>Unemployed and not looking for a job</b>		1.12 (0.99–1.26)		1.12 (1.00–1.27)
<b>Interactions</b>				
Immigrants scale *	1.02 (0.95–1.09)		1.02 (0.95–1.09)	
Unemployed and looking for job				
Immigrants scale 2	1.01 (0.95–1.08)		1.02 (0.95–1.09)	
* Unemployed and looking for job				
Refugees scale *	0.98 (0.91–1.07)		0.97 (0.90–1.06)	
Unemployed and looking for job				
Immigrants scale *		1.04 (0.95–1.14)		1.05 (0.95–1.15)
Unemployed and not looking for job				
Immigrants scale 2		1.00 (0.91–1.10)		1.00 (0.91–1.10)
* Unemployed and not looking for job				
Refugees scale *		1.00 (0.90–1.11)		1.00 (0.90–1.11)
Unemployed and not looking for job				
_cons	0.13 (0.10–0.16)	0.13 (0.10–0.16)	0.12 (0.07–0.21)	0.12 (0.07–0.20)

Note: Models 3 and 4 include the unemployment rate in the fixed-part of level II equation.

However, to our knowledge, this is the first study to analyze the relationship between the attitudes toward immigrants and refugees and SRH in a large dataset of 21 European countries ([European Social Survey, 2018](#)).

### Credit author statement

**Sara Pinillos-Franco:** Conceptualization, Software, Methodology, Formal analysis, Data curation, Visualization, Writing – original draft.  
**Ichiro Kawachi:** Conceptualization, Writing – review & editing, Supervision

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2022.114969>.

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