Cumulative disadvantage over the life course and depression among older adults: a cross-national perspective

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Keywords: depression, cumulative disadvantage, older adults, interactions, European countries

Abstract
The study considers the effects of accumulation of disadvantage over the life course in three key domains of life, health, socioeconomic status and adverse experiences, on later life depression, focussing on differentials between genders and across European populations. Information on 23816 persons aged 50+ has been used from wave 2 (cross-sectional material) and wave 3 (retrospective) of the Survey of Health Ageing and Retirement in Europe (SHARE). Cumulative health disadvantage seems to have the greatest relative effect for both sexes and across Europe. Males are more affected by poor health and socioeconomic adversity whereas for females, adverse experiences have a stronger effect. In several countries cumulative adverse experiences are more important compared to cumulative socioeconomic disadvantage; the first seems of greater consequence in Poland and Ireland while the latter mainly in Southern Europe. The study shows that accumulation of disadvantage over the life course significantly predicts depression across European countries.

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1. INTRODUCTION

Depression is a mental health disorder which poses a major burden on individuals, families and society as a whole (WHO 2017). Past research has shown a strong association with morbidity and mortality (Farrokhi et al. 2014). Moreover, the condition is related to a decline in quality of life (D’Alisa et al. 2006) and increased use of healthcare services (Belloni, Morgan, and Paris 2016).

1.1 Experiences over the life course and later life depression

A strong association between socioeconomic status (SES) and depression is well documented (Buber and Engelhardt 2011) but the relationship is complex as it is confounded by physical health status, which is linked both to mental health and SES (Pakpahan, Hoffmann, and Kröger 2017a). To disentangle these multilayered associations, life trajectories and paths leading from childhood to later life depression have been considered in past research. Relevant analyses have shown that low childhood SES is linked to poor childhood health which, itself, is related both directly and indirectly with poor adult health; the indirect mechanism operates through lower SES in adulthood (Luo and Waite 2005). Adverse experiences and abuse in childhood, often related to excessive parental alcohol consumption (Angelini et al. 2016), have also been linked to depression in older ages (Dvir et al. 2014). Moreover, past analyses have shown that abused children are more likely to have grown up in families of lower SES status (Pelton 1994) dealing with issues of economic hardship (McLoyd 1990). Hence, past studies confirm the far-reaching effects of childhood socioeconomic status, health and adverse experiences to adult and later life health (Pakpahan, Hoffmann, and Kröger 2017b).

Facing adversity in adulthood, including, among others hunger, poor health, unemployment, stress, financial strain and bereavement, seem to be partly accountable for later life mental health disorders (Halmdienst and Winter-Ebmer 2014; Crowe and Butterworth 2016). Further, concurrent circumstances in older age, financial hardship (Gallagher et al. 2013) as well as illnesses such as coronary heart disease, arthritis and chronic lung disease, disability and physical symptoms (Steptoe, Deaton, and Stone 2015) have been associated with depression. Individuals dealing with adversity are considered more disadvantaged and tend to display greater vulnerability and to experience poorer health (Birch, Jerrett, and Eyles 2000).

Accumulation of unfavourable events and circumstances over the life course seems to have a strong impact on depression in later life. In fact, the cumulative disadvantage theory suggests that as adversity cumulates over the life course, early life inequalities tend to widen later on (Ferraro and Kelley-Moore 2003; Seabrook and Avison 2012). The underlying mechanisms include exposure to stressors and potential vulnerability; it is hypothesised that exposure differentiates across socioeconomic groups, as does the impact of stressors (Thoits 2010; Seabrook and Avison 2012). Stressors can be roughly categorised into three groups: acute changes (such as bereavement, job loss etc.); chronic strain due to ongoing hardship; traumas induced by extreme threats (such as violence). To fully capture the effects of stressors on mental health outcomes, these should be measured in a comprehensive manner across the life course, taking into account all different types (Thoits 2010). Hence, it is possible to assess inequality and differentiations not only in the short term but in the long term as well.
1.2 Disparities across Europe
Levels of depression differentiate across Europe; past analyses indicate a lower prevalence in Northern/Western regions compared to Central/Eastern and Southern regions (Van de Velde et al. 2010; Huijts et al. 2017). Further, it has been shown that mental health problems, often starting in childhood and adolescence, shape health inequalities across European countries (Ravens-Sieberer et al. 2008; Hughes et al. 2016; Gavalas 2018) which tend to widen in adulthood and later life, due to differences in the standards of living, welfare systems, working conditions and risky health behaviours such as alcohol consumption (Ravens-Sieberer et al. 2008; European Commission 2010; Van de Velde et al. 2010).

1.3 Aims
Though the importance of childhood circumstances for later life depression has been documented before, this has not been examined in a comprehensive manner, considering cumulative disadvantage over the life course in health, SES and adverse experiences, as well as their interactions. The present paper aims to fill in this gap, assessing the relative impact of all the above-mentioned factors, emphasising: a. differentials between European populations and b. disparities between genders. It is expected that in countries characterised by a lower disposable income (Southern/Eastern European countries) (Eurostat 2014), greater socioeconomic inequality and less equitable welfare systems, cumulative socioeconomic disadvantage may be of greater consequence. Regarding gender differentials, cumulative disadvantage in all domains is expected to have a stronger effect on later life depression among women, who exhibit a greater vulnerability in adversity compared to men (Van de Velde et al. 2010; Buber and Engelhardt 2011).

2. METHODS

2.1 Data
Data are derived from the Survey of Health Ageing and Retirement in Europe (SHARE), a multidisciplinary and cross-national database including information on health, demographic and socioeconomic characteristics of persons aged 50 or higher from several European countries (Börsch-Supan et al. 2013). More specifically, cross-sectional data from the second wave of the survey, carried out in 2006-2007, was combined with retrospective information from SHARELIFE (wave 3), carried out in 2008-2009. The respondents participating at both waves were 25,008 persons; the sample, following the requirement of complete data concerning the variables of interest, are 23,816 persons, covering 14 countries: Greece, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Austria, Switzerland, Belgium, Czech Republic, Poland and Ireland. As the individuals excluded from the analysis represent less than 5% of the overall sample, the analysis was carried out without applying an imputation technique for the missing data (Jakobsen et al. 2017). Nevertheless, the characteristics of these persons and possible biases introduced in the analysis due to their exclusion are discussed in the section about the limitations of the study.

2.1.1 Dependent variable
Depression in SHARE is based on the EURO-D scale (Beekman, Copeland, and Prince 1999; Prince et al., 1999a, 1999b; Börsch-Supan and Jurges, 2005) which includes 12 items: depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue,
concentration, enjoyment and tearfulness. It was introduced and validated by Prince et al. (1999a) and has been used widely by researchers as an indicator of depression (Börsch-Supan and Jurges 2005). The outcome variable in the present study is in binary form, comparing respondents reporting 4 or more depressive symptoms to those reporting 0-3 symptoms (no depression: reference category). This cut-off point has been validated psychometrically against several clinically relevant indicators at the EURODEP study (Dewey and Prince 2005) and has been suggested as appropriate for measuring depression by several analyses (Castro-Costa et al. 2007).

2.1.2 Independent variables

The independent variables refer to three distinct points in time: a. childhood, which deals with circumstances at age 10 or events occurring up to age 15, b. adulthood, which reflects circumstances after age 15 but well before the interview, and c. later life, which refers to concurrent conditions or to the year preceding the interview. To comprehensively measure disadvantage, variables pertaining to three domains of life are considered: health, SES and adverse experiences. For each period of life, binary indicators pertaining to the three aforementioned domains were first created. These are outlined below:

**Childhood Predictors.** Health is represented by childhood self-perceived health (SPH) in two categories: less than very good (=1) and very good or excellent (=0). This covariate has been shown by other researchers to be appropriate (Angelini et al. 2016; Pakpahan, Hoffmann, and Kröger 2017a; Arpino, Gümä, and Julià 2018). Childhood SES includes the number of books the respondent had access to at age 10, as it reflects the educational attainment of the parents (Cavapozzi, Garrouste, and Paccagnela 2011; Van Bergen et al. 2017). The variable included in the models distinguishes persons who had access to none or very few books from those who had access to at least ten books. Adverse experiences are represented by whether the respondent’s parents drank heavily at age 10 (Angelini et al. 2016; Verropoulou and Zakynthinou 2016).

**Adulthood predictors.** In this instance, health is represented by an indicator of whether the respondent had experienced in the past a period of poor health as self-perceived health is not provided for that period. SES is based on educational attainment divided into two categories (0-9 years versus at least ten years) and an indicator of whether the respondent had experienced a period of financial hardship. Indicators of financial hardship have been shown to reflect SES in past analyses (Conklin et al. 2013; Amlaev 2015). Adverse experiences are also based on two indicators, a variable stating whether the respondent had experienced a period of stress and another showing whether he/she had ever experienced a period of hunger (Halmdienst and Winter-Ebmer 2014).

**Later life predictors.** Concurrent health status is represented by self-perceived health (SPH), contrasting persons with less than very good health (=1) to those with very good or excellent health (=0). Though it might be argued that SPH in later life may be affected by mental health status, it encompasses several aspects of physical health and predicts mortality even when controlling for morbidity indicators (Verropoulou 2014) while it has been found a strong predictor of mental health and depression in several analyses (Aziz and Steffens 2013; Padayachey, Ramlall, and Chipps 2017). SES is represented by a variable denoting whether the household was able to make ends meet the year preceding the survey with great or some difficulty (=1) versus fairly easily or easily (=0). Adverse experiences are
represented by a binary indicator on whether the respondent lived in a registered partnership or as married (=0) and whether the respondent was divorced, widowed, never married or married but not living with the spouse (=1); past analyses suggest that subjective wellbeing in 45 European countries exhibits higher levels among partnered persons (married and cohabiting) compared to unpartnered ones (single, divorced and widowed) (Verbakel 2012).

Measuring adversity over the life course. Cumulative disadvantage in each domain of interest (health, SES and negative events/adverse experiences) was derived by summing up the abovementioned variables referring to that specific domain. Hence, three composite variables were produced, denoting the number of negative events but not the period these might have occurred. Cumulative Health Disadvantage (CHD) ranges from 0 to 3 (0 = no health problem across the life course, 1 = one health problem at any period of life, 2 = two health problems and 3 = three health problems). Similarly, Cumulative Socioeconomic Disadvantage (CSD) and Cumulative Adverse Experiences Disadvantage (CAD) denote the number of respective disadvantages in a scale of 0 to 4.

2.2 Statistical analysis

Binary logistic regression models, including both main effects and interactions between the cumulative disadvantage variables, have been used. The estimates derived are based on unweighted data, which is consistent with most past studies; additionally, according to Gelman (2007) it is doubtful whether estimated coefficients are more accurate in regression models using weighted data. Models control for age of the respondent (in years) while those including both sexes control also for gender. The models were run for the total sample, by sex and by country of residence, separately, using SPSS 20. Analysis by country of residence refers to both males and females as sample sizes were small. Maps were constructed using GeoDa.

3. RESULTS

Table 1 shows descriptive statistics regarding the variables of interest by sex and country of residence. In total, there are 23,816 persons in the sample (44.4% males and 55.6% females). Median age of men is slightly higher, 65 years, compared to 64 years for women. Regarding depression by country for the total sample, Poland has the highest percentage (48.1%) while Spain, Italy and France seem to have fairly high levels, ranging from 30.2% to 32.2%. Depression affects the least Denmark (15.7%), Switzerland (15.5%) and Sweden (14.8%). Depression is more widespread among women; percentages on average are double those for men and this holds for most European countries. The lowest depression levels for males are observed in Sweden (7.4%) and Greece (9.2%) while for females in Denmark (19.9%) and Switzerland (19.6%). Figure 1 highlights the countries that exhibit above average depression for both sexes.

Table 2 shows the mean number of cumulative health (CHD), socioeconomic status (CSD) and adverse experience disadvantages (CAD) reported by the respondents for the total sample, by sex and by country of residence. Regarding genders, women report on average more health disadvantages compared to men (0.86 versus 0.76 out of a total of 3), greater socioeconomic disadvantage (1.63 compared to 1.48 out of a total of 4) and more adverse experiences (1.03 versus 0.82 out of a total of 4). CHD across European countries exhibits differentiations; higher levels are observed in Poland, Spain, Germany and France with mean
values of 0.9-1.1 whereas the lowest in Greece and Ireland (0.5-0.6). Highest levels of CSD are reported by respondents in Poland, Greece, Spain and Italy (2.2-2.4) whereas the lowest levels are observed in Sweden, Germany, the Netherlands and Switzerland (1.0-1.1). Finally, regarding adverse experiences, the highest levels are found in France and Austria (around 1.2) and the lowest in Greece and the Czech Republic (0.7-0.8).

Figure 1. Countries by whether depression levels are above the mean (both sexes)
Table 1. Descriptive Statistics for the total sample, males, females and country of residence.

<table>
<thead>
<tr>
<th>Country</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median age</td>
<td>Depression (%)</td>
<td>Sample size (N)</td>
</tr>
<tr>
<td>Austria</td>
<td>67</td>
<td>12.5</td>
<td>304</td>
</tr>
<tr>
<td>Germany</td>
<td>66</td>
<td>11.5</td>
<td>775</td>
</tr>
<tr>
<td>Sweden</td>
<td>67</td>
<td>7.4</td>
<td>715</td>
</tr>
<tr>
<td>Netherlands</td>
<td>64</td>
<td>11.8</td>
<td>822</td>
</tr>
<tr>
<td>Spain</td>
<td>67</td>
<td>17.7</td>
<td>751</td>
</tr>
<tr>
<td>Italy</td>
<td>67</td>
<td>20.5</td>
<td>1034</td>
</tr>
<tr>
<td>France</td>
<td>65</td>
<td>18.0</td>
<td>812</td>
</tr>
<tr>
<td>Denmark</td>
<td>64</td>
<td>10.6</td>
<td>864</td>
</tr>
<tr>
<td>Greece</td>
<td>65</td>
<td>9.2</td>
<td>1141</td>
</tr>
<tr>
<td>Switzerland</td>
<td>65</td>
<td>10.0</td>
<td>510</td>
</tr>
<tr>
<td>Belgium</td>
<td>65</td>
<td>16.8</td>
<td>1127</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>64</td>
<td>11.2</td>
<td>685</td>
</tr>
<tr>
<td>Poland</td>
<td>63</td>
<td>35.1</td>
<td>699</td>
</tr>
<tr>
<td>Ireland</td>
<td>65</td>
<td>14.2</td>
<td>275</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>14.9</td>
<td>10514</td>
</tr>
</tbody>
</table>

Table 3 presents estimates of the relative effects of cumulative disadvantage on depression (main effects and interactions) for the total sample, by sex and by country of residence. All types of disadvantage for the overall sample are significant predictors of later life depression. CHD seems to have the greatest relative effect (Odds Ratio - OR - 2.193); further, CAD seems to have a greater impact compared to CSD (ORs 1.420 and 1.293, respectively). Regarding genders, health for males (OR 2.594) is of greater consequence than for females (OR 2.012). Further, each additional socioeconomic disadvantage increases relative chances of depression by 42.4% for men while for women only by 29.3%. By contrast, adverse experiences affect women to a greater extent (OR 1.462) compared to men (OR 1.318). Main effects for these models are significant at the 1% level and indicate that, for each domain separately, as disadvantage accumulates, chances of depression increase. Regarding interactions between cumulative disadvantage variables, only the interaction between health and socioeconomic disadvantage is significant for men whereas the interaction between health and adverse experiences disadvantage is significant for women. More specifically, for males, as CHD increases, the relative effect of CSD becomes less pronounced. Similarly, for females, as CHD increases the relative effect of CAD becomes less pronounced.
Table 2. Means for cumulative disadvantage variables for the total sample, males, females and country of residence.

<table>
<thead>
<tr>
<th>country of residence</th>
<th>CHD</th>
<th>CSD</th>
<th>CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>0.93</td>
<td>1.82</td>
<td>1.15</td>
</tr>
<tr>
<td>Germany</td>
<td>0.99</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.79</td>
<td>1.03</td>
<td>0.91</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.78</td>
<td>1.09</td>
<td>0.86</td>
</tr>
<tr>
<td>Spain</td>
<td>1.01</td>
<td>2.24</td>
<td>0.82</td>
</tr>
<tr>
<td>Italy</td>
<td>0.86</td>
<td>2.38</td>
<td>0.89</td>
</tr>
<tr>
<td>France</td>
<td>0.94</td>
<td>1.53</td>
<td>1.23</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.71</td>
<td>0.87</td>
<td>0.93</td>
</tr>
<tr>
<td>Greece</td>
<td>0.49</td>
<td>2.21</td>
<td>0.72</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.71</td>
<td>1.10</td>
<td>1.05</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.77</td>
<td>1.39</td>
<td>1.07</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.82</td>
<td>1.13</td>
<td>0.81</td>
</tr>
<tr>
<td>Poland</td>
<td>1.14</td>
<td>2.25</td>
<td>0.91</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.56</td>
<td>1.16</td>
<td>0.97</td>
</tr>
<tr>
<td>Males</td>
<td>0.76</td>
<td>1.48</td>
<td>0.82</td>
</tr>
<tr>
<td>Females</td>
<td>0.86</td>
<td>1.63</td>
<td>1.03</td>
</tr>
<tr>
<td>Total</td>
<td>0.82</td>
<td>1.56</td>
<td>0.94</td>
</tr>
</tbody>
</table>

CHD: Cumulative Health Disadvantage (ranges from 0 to 3)
CSD: Cumulative Socioeconomic Status Disadvantage (ranges from 0 to 4)
CAD: Cumulative Adverse Experiences Disadvantage (ranges from 0 to 4)

Figures 2, 3 and 4 depict the significance of the findings (main effects) regarding CHD, CSD and CAD across European countries. CHD is significant for all countries except from Austria (Figure 2) and ORs are very high compared to CSD and CAD (Table 3). Ireland presents the highest relative effect (OR 3.241). Other countries where cumulative health disadvantage has a strong effect on depression are Belgium (OR 2.862), Germany (OR 2.707) and the Netherlands (OR 2.525). By contrast, the least effect of health on depression is observed in Poland, France and Spain (ORs 1.574-1.679). CSD (see Figure 3) seems of greater importance in Germany, Switzerland, Greece, Italy and Spain (ORs 1.249-1.477) while it is borderline significant or non-significant in the remaining countries. CAD (see Figure 4) seems more important in Ireland, Poland, the Netherlands and Greece (ORs 1.674-2.036) but it is not significant for Austria, Spain, Italy and France.
Table 3. Odds ratios, 95% confidence intervals (in parentheses) for cumulative disadvantages (main effects and interactions) and classification percentages: males, females and country of residence

<table>
<thead>
<tr>
<th>Main effects</th>
<th>Interactions</th>
<th>CHD*</th>
<th>CSD*</th>
<th>CAD</th>
<th>CHD<em>CSD</em></th>
<th>CAD</th>
<th>CSD*CAD</th>
<th>Classification Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHD*</td>
<td></td>
<td>1.096</td>
<td>1.418*</td>
<td>1.346</td>
<td>1.217*</td>
<td>1.175</td>
<td>0.796**</td>
<td><strong>81.9</strong></td>
</tr>
<tr>
<td>(0.597 2.010)</td>
<td></td>
<td>(0.969 2.075)</td>
<td>(0.768 2.356)</td>
<td>(0.972 1.523)</td>
<td>(0.920 1.501)</td>
<td>(0.646 0.980)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSD*</td>
<td></td>
<td>2.077***</td>
<td>1.421***</td>
<td>1.381*</td>
<td>0.959</td>
<td>0.921</td>
<td>0.945</td>
<td><strong>82.7</strong></td>
</tr>
<tr>
<td>(1.972 3.717)</td>
<td></td>
<td>(1.063 1.953)</td>
<td>(0.943 2.024)</td>
<td>(0.820 1.211)</td>
<td>(0.763 1.112)</td>
<td>(0.806 1.108)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td></td>
<td>2.327***</td>
<td>1.067</td>
<td>0.980</td>
<td>0.984</td>
<td>0.980</td>
<td>0.980</td>
<td><strong>85.6</strong></td>
</tr>
<tr>
<td>(1.630 3.232)</td>
<td></td>
<td>(0.757 1.503)</td>
<td>(0.982 2.171)</td>
<td>(0.765 1.248)</td>
<td>(0.681 1.291)</td>
<td>(0.673 1.269)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHD*CAD</td>
<td></td>
<td>2.193***</td>
<td>0.959</td>
<td>0.882</td>
<td>0.882</td>
<td>0.980</td>
<td>0.980</td>
<td><strong>83.3</strong></td>
</tr>
<tr>
<td>(1.876 3.398)</td>
<td></td>
<td>(1.252 2.356)</td>
<td>(0.841 1.093)</td>
<td>(0.728 1.068)</td>
<td>(0.681 1.025)</td>
<td>(0.673 1.269)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSD*CAD</td>
<td></td>
<td>1.679***</td>
<td>0.838</td>
<td>1.010</td>
<td>1.059</td>
<td>1.160**</td>
<td>1.160**</td>
<td><strong>73.6</strong></td>
</tr>
<tr>
<td>(1.179 2.393)</td>
<td></td>
<td>(1.018 1.531)</td>
<td>(0.546 1.287)</td>
<td>(0.891 1.144)</td>
<td>(0.890 1.260)</td>
<td>(0.900 1.335)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td></td>
<td>2.322***</td>
<td>1.193</td>
<td>0.979</td>
<td>0.979</td>
<td>0.979</td>
<td>1.062</td>
<td><strong>72.4</strong></td>
</tr>
<tr>
<td>(1.618 3.051)</td>
<td></td>
<td>(1.083 1.526)</td>
<td>(0.836 1.702)</td>
<td>(0.881 1.087)</td>
<td>(0.776 1.043)</td>
<td>(0.946 1.193)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notes:</strong> Models control for age and gender; * p-value&lt;0.10 ** p-value&lt;0.05 *** p-value&lt;0.01</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

* CHD: Cumulative Health Disadvantage (ranges from 0 to 3)
* CSD: Cumulative Socioeconomic Status Disadvantage (ranges from 0 to 4)
* CAD: Cumulative Adverse Experiences Disadvantage (ranges from 0 to 4)
* CHD*CSD: Interaction of Cumulative Health Disadvantage and Cumulative Socioeconomic Status Disadvantage
* CHD*CAD: Interaction of Cumulative Health Disadvantage and Cumulative Adverse Experiences Disadvantage
* CSD*CAD: Interaction of Cumulative Socioeconomic Status Disadvantage and Cumulative Adverse Experiences Disadvantage
* Classification Percentage: males, females and country of residence
Figure 2. Significance of cumulative health disadvantage across countries
Figure 3. Significance of cumulative socioeconomic disadvantage across countries
Figure 4. Significance of cumulative adverse experiences disadvantage across countries
For all countries, except for Austria and Poland, cumulative health disadvantage seems to have a greater effect on depression, compared to the other types of disadvantage. Further, for several countries cumulative adverse experiences seem to have a greater effect compared to socioeconomic disadvantage; exceptions are Austria, Germany, Spain, Italy and France. In fact, socioeconomic disadvantage is an important predictor of later life depression only in Southern European countries, Germany and Switzerland. Interaction effects are non-significant in most cases. For Poland and Austria, however, there is a significant interaction between cumulative health and cumulative socioeconomic disadvantage. The coefficients imply that for a given level of CSD, an increase in CHD results to an increase in the logodds of later life depression by 1.158 for Poland and by 1.217 for Austria.

The classification percentages show the proportion of cases of depression predicted accurately by the models and range from 67% (Poland) to 86% (Sweden); for most countries it is well above 70%, implying that the models are quite accurate.

4. DISCUSSION

The importance of childhood and adulthood circumstances in depression in older ages has been extensively studied (Zimmer et al. 2016; Pakpahan et al. 2017a, b) but the present study is the first to consider the relative effects of health, SES and adverse experiences over the life course on later life depression across European populations, in a holistic manner, taking into account childhood, adulthood and later life circumstances as well as their interactions. Information on 23,816 respondents has been used from wave 2 (cross-sectional material) and wave 3 (retrospective material) of the SHARE study to construct indicators representing accumulation of disadvantage pertaining to the above-mentioned domains of life, to assess differentials between countries and between genders.

The descriptive findings indicate that depression levels are higher among women in all countries, which is consistent with other studies (Hankin 2002; Van de Velde, Bracke, and Leveque 2010; WHO 2017) supporting that depression is more prevalent among women both in adulthood and later life (Van de Velde et al. 2010). Further, women exhibit on average a greater number of disadvantages compared to men in all three domains of life. Similar findings have been reported before (Zender and Olshansky 2009; McLean et al. 2011; St Clair et al. 2015). The regression analysis implies for both sexes that a higher number of disadvantages in any domain of life (health, SES or adverse experiences) is related to higher chances of depression. However, cumulative health and socioeconomic disadvantages are of more consequence among men whereas adverse experiences are more important among women. Past findings support that SES may have a stronger effect among men (Banyard, Williams and Siegel 2001; Back and Lee 2011; Phillips and Hamberg 2015) whereas adverse experiences may be more important among women (Flores and Kalwij 2014; Almuneef et al. 2017). The present study shows that this also holds when considering disadvantage cumulatively. Further, there is an interrelation between health and socioeconomic status for men whereas, among women, there is an interdependence of health and adverse experiences.

Regarding prevalence of depression across Europe, Polish people exhibit higher levels as do Southern Europeans, except for Greeks. On the other hand, Scandinavian countries seem to have the lowest levels. Fairly similar findings based on ESS data (Hujjits et al. 2017) and other studies (Ploubidis and Grundy 2009; WHO 2014) have been reported before.
present study also indicates that cumulative health disadvantage is the most important factor predicting later life depression in all European countries, except for Austria. Further, cumulative adverse experiences disadvantage seems to have a greater effect compared to cumulative socioeconomic disadvantage in several countries, while it is of great consequence in Poland and Ireland. It has been suggested that child maltreatment is more widespread in Eastern Europe and that, coupled with socioeconomic distress, increase the risk of depression (Sethi et al. 2013).

Cumulative socioeconomic disadvantage was found of consequence mainly in Southern European countries, Germany and Switzerland, implying that in these countries there is a greater socioeconomic inequality in depression. Greater SES inequality in general health in Southern Europe compared to other European regions has been suggested before (Eikemo et al. 2008). Such differentials may be partly attributable to lower standards of living in Southern Europe compared to the more affluent Western/Northern European countries as well as to the specificities of the respective health care and welfare systems (Eikemo et al. 2008; Eurostat 2014). Finally, in most countries, the interactions between the different types of disadvantage do not exhibit an association with depression, signifying that the effects of the different types of cumulative disadvantage on depression are largely independent of each other.

Some limitations of the study should be taken into account when considering the findings. First, all measures are self-reported and thus, they may be subject to misreporting. Further, retrospective material may be affected by recall errors. Second, the present analysis does not consider biological and hereditary factors predisposing to depression, as SHARE data does not provide such information. Further analyses should attempt to include such factors in order to derive a more accurate assessment of the relative effects of cumulative disadvantage on depression in older ages. Third, around 5% of the respondents were excluded from the analysis due to non-response in the variables of interest. These persons are on average slightly older, include slightly more females, have somewhat worse mental health and are slightly more disadvantaged compared to the sample used in the study regarding adverse experiences whereas they are more severely disadvantaged regarding cumulative health and cumulative SES. Hence, their exclusion from the analysis may have led to a slight underestimation of the effect of adversity on later life depression. Fourth, findings and associations may be affected, up to a point, by the choice of variables used to construct the indicators of cumulative disadvantage as well as by the assumption that, within each indicator, all variables have an equal weight. Nevertheless, the choice of the components of the cumulative disadvantage indicators in the present study is supported by past analyses (Halmdienst and Winter-Ebmer 2014; Crowe and Butterworth 2016). Fifth, though the constructed indicators measure cumulative disadvantage, they do not account for the timing of the events; that would be worth examining in future research.

5. CONCLUSIONS

All three types of cumulative disadvantage included in the analysis have a strong and, to a great extent, independent effect on later life depression. Further, a greater number of disadvantages is related to higher chances of depression for both genders and across European populations. Hence, past as well as present adversity in health, SES and adverse experiences do play a part in depression.
Policies to alleviate the burden of depression should address the greater vulnerability of women while also considering differentials and specificities across European populations. Though poor health over the life course is important in nearly all European countries, the greater effect of socioeconomic adversity in Southern Europe and of adverse experiences in Poland should be considered and be dealt with by appropriate measures.

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COMPETING INTERESTS

None declared.

ETHICAL APPROVAL

Not required. This article is based on publicly available data, disseminated through www.share-project.org and does not involve human subjects.

INFORMED CONSENT

Not applicable.

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