

The Long Shadow of Migration: How Mobility Biographies Shape Mental Health Among Older Adults in Europe*

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Abstract: This paper examines how mobility biographies shape mental health in later life. Moving beyond the conventional migrant/non-migrant binary, we reconstruct complete internal, return, and international migration histories for individuals aged 50 and older across 20 European countries, linking retrospective life-history data from SHARE to repeated measures of depressive symptoms (Waves 4-9). Our results reveal three sets of findings. First, international migrants face a substantial and persistent mental health penalty, roughly five times greater than the modest disadvantage observed among internal migrants, while return migrants are statistically indistinguishable from stayers. Second, the cumulative toll of repeated mobility depends on migration type: each additional cross-border episode is associated with markedly worse mental health, while repeated internal moves carry limited consequences. Third, international migration in midlife is associated with progressively worse outcomes in later life, whereas the timing of internal moves bears no discernible association with mental health. These findings underscore the importance of treating migration not as a single event but as a cumulative biographical process, the mental health consequences of which unfold – and compound – across the life course.

Keywords: Migration and health • Internal migration • International migration • Return migration • Depressive symptoms • Life course • SHARE

1 Introduction

Migration research has long documented a paradox: although immigrants often underperform natives on socioeconomic outcomes upon arrival, they tend to report more favourable health indicators, what has been called a *Healthy Immigrant Effect* (Feliciano 2020; Goldman et al. 2014; Gubernskaya 2015). Over time, however, immigrants' health outcomes typically converge towards those of the native

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population, or even fall below them, a pattern described as *Unhealthy Assimilation Hypothesis* (Acevedo-Garcia et al. 2010; Dorsett et al. 2019). While these frameworks have generated a substantial body of research, empirical findings remain inconclusive, particularly with respect to mental health.

Several factors contribute to this inconsistency. First, much of the literature remains Anglo-centric, whereas studies conducted in European contexts often report weaker or less persistent evidence of a healthy immigrant advantage (Brunori 2024; Ferrara et al. 2024; Markides/Rote 2019; Maskileyson et al. 2019). Second, disentangling health selection from causal effects of migration remains methodologically challenging. Data limitations – in particular the scarcity of longitudinal life course information – restrict the ability to reconstruct mobility trajectories (Vidal/Lersch 2021). Moreover, research designs frequently compare migrants with host-country natives rather than with origin-country counterparts, thereby conflating migration effects with compositional differences (Guveli et al. 2017). In response, binational research designs linking origin and destination countries, as well as country-of-origin comparisons between return migrants and individuals without international migration experience (commonly labelled “stayers”), have become more prevalent (Barbiano Di Belgiojoso et al. 2024; Constant/Milewski 2021; Feliciano 2020; Ro/Fleischer 2014; Van Den Broek 2024).

While these developments represent important progress, we argue that prevailing approaches remain analytically restrictive. Most origin-based comparisons rely on the simplifying assumption that stayers constitute a homogeneous and immobile reference group. Yet individuals classified as stayers frequently experience internal mobility within national borders, exposing them to distinct selection processes (Bernard/Perales 2022; Lopez Blanco 2025) and to health risks associated with internal migration (Lu/Qin 2014; Paglino et al. 2025). Moreover, migration is typically operationalised as a single transition rather than as a process unfolding across multiple stages of the life course. Such single event-based approaches overlook the cumulative and interconnected nature of spatial mobility (Bernard/Vidal 2020, 2023; Hugo 2016; Skeldon 2006). Because life stages are causally linked, health outcomes in later life may reflect mobility-related exposures accumulated over decades (Holman/Walker 2021; Loi/Hale 2019).

This paper moves beyond the migrant/non-migrant dichotomy by shifting the focus to four forms of spatial (im)mobility: internal migration (moves across NUTS-2 regions within the country of birth), return migration (individuals who migrated internationally and subsequently returned), international migrants (individuals who migrated internationally at some point and remained abroad) and stayers (individuals who remained in their NUTS-2 region of birth). By integrating internal, international and return migration within a unified framework, we respond to longstanding calls to bridge these de facto subfields of migration research (Ellis 2012; King/Skelton 2010). Importantly, we also argue that the health consequences of mobility depend not only on migration type but also on its timing and frequency. When migration occurs and how often individuals move may leave distinct – and potentially cumulative (Dannefer 2003) – imprints on mental health. These dimensions may also interact with migration type: for example, repeated moves may carry different psychosocial

implications for internal migrants compared with individuals with international migration experience.

We test these arguments using longitudinal data from the Survey of Health, Ageing and Retirement in Europe (SHARE), reconstructing complete mobility histories for individuals aged 50 and older across 20 European countries and linking them to repeated measures of mental health. Focusing on older adults is analytically advantageous for two reasons. By later life, migration trajectories have largely stabilised, allowing us to assess their cumulative rather than transitory consequences. And critically, the mechanisms we theorise – i.e. erosion of social networks (*Umberson/Karas Montez* 2010), exposure to psychosocial stressors (*Krieger* 2014; *Wallace et al.* 2016) – are precisely those mechanisms whose effects compound over time, becoming most visible at this stage of the life course.

These same mechanisms also motivate our choice of outcome. Each mechanism operates most directly through mental well-being rather than physical health, making depressive symptoms the health dimension most closely aligned with our explanatory framework. Empirically, mental health captures the psychosocial strains of migration that accumulate across the life course and become particularly salient in later life (*Gubernskaya* 2015; *Markides/Rote* 2019). Focusing on depressive symptoms thus allows us to target the outcome where the theoretical signal should be strongest, while also contributing to a field in which evidence regarding the mental health consequences of mobility on older adults remains comparatively scarce.

2 Literature review, theoretical framework and hypotheses

2.1 Migration and health: an old tale of selection versus causation

The relationship between migration and health is structured by a longstanding analytical tension, namely whether observed health differences reflect either selection processes or the health consequences of migration itself. Selection refers to the systematic ways in which migrants differ from a non-migrant population prior to migration.

Several forms of positive selection are theoretically plausible. First, healthier individuals are more likely to migrate, as poor health can constrain mobility (*Chiswick et al.* 2008). Second, selection may operate through socioeconomic status (SES). Migrants who appear disadvantaged relative to natives at destination may originate from comparatively advantaged positions in their countries of origin (*Ichou/Wallace* 2019). Apparent disadvantages at arrival may therefore reflect temporary “status downgrading” during adjustment and assimilation, followed by upward mobility (*Chiswick* 1978; *Dustmann* 1996). In this scenario, a deterioration in health over time may partly represent a statistical artifact: as migrants’ socioeconomic position improves, their relative health appears to decline. Third, migrants may have access to health-promoting resources, including strong kinship networks, community cohesion, and lifestyle practices conducive to well-being (*Abraído-Lanza et al.* 2016;

Perreira/Ornelas 2011). Such resources may generate initial health advantages that erode with social assimilation.

Importantly, selection is not confined to the moment of departure. Migration is often a sequential process, particularly in contexts of return, temporary, or circular mobility (*Wahba* 2015). Post-migration selection may operate through return migration: less healthy migrants are disproportionately likely to return to their country of origin, a dynamic commonly referred to as the salmon bias (*Diaz et al.* 2016; *Dunlavy et al.* 2022; *Lu/Qin* 2014; *Paglino et al.* 2025). Observed health profiles at destination country may therefore reflect both entry and exit selection mechanisms.

Beyond selection, migration may exert independent effects on health. Regardless of the extent of initial health advantage, migrants are frequently exposed to structural and psychosocial stressors that contribute to deteriorating health over time. Labour market segmentation, precarious employment, unemployment, and hazardous work environments increase morbidity risks (*Bhattacharya et al.* 2004; *Brand* 2015; *Braveman et al.* 2010; *Loi/Hale* 2019). Migrants may also face discrimination, status loss, and acculturative stress (*Engzell/Ichou* 2020; *Krieger* 2014; *Wallace et al.* 2016). Acculturation processes can also involve the adoption of risk behaviours and the erosion of protective social networks (*Delavari et al.* 2013; *Jass/Massey* 2004; *Umberson/Karas Montez* 2010). These mechanisms unfold within institutional contexts that condition access to welfare and healthcare and vary across welfare regimes (*Gil-González et al.* 2015).

2.2 Migration Type, Life Course Dimensions, and Mental Health

Direct comparisons between internal and international migrants are uncommon. Although research on internal migration and health has expanded in recent years, studies that explicitly contrast the two within a common analytical framework remain scarce (*Ahlin et al.* 2026; *Holz* 2022). This comparison is crucial, as the mechanisms of selection and exposure are likely to operate differently across these two forms of mobility.

Both internal and international migrants tend to be positively selected in terms of age, education, and socioeconomic status (*Bernard/Perales* 2022; *del Rey Poveda* 2007; *King/Skeldon* 2010; *Lopez Blanco* 2025). Because health is closely associated with these characteristics (*Cutler et al.* 2011), and because healthier individuals are better positioned to undertake and benefit from migration (*Prinz et al.* 2018), both forms of mobility entail positive health selection, though the strength of this selection likely differs. International migration within Europe involves larger wage and opportunity differentials (*Milanovic* 2013), but also substantially higher financial, administrative, and psychosocial costs, including greater exposure to discrimination and acculturative stress (*Berry et al.* 1987). Internal migration disrupts social networks and requires adaptation to new local environments (*Lu/Qin* 2014; *Paglino et al.* 2025; *Zhihao/Yiwei* 2021), yet it typically unfolds within shared institutional, linguistic, and cultural contexts. The combination of greater expected gains and higher barriers to entry suggests stronger positive selection among international migrants.

This initial selection advantage, however, is not permanent. It erodes as migrants assimilate into destination-country lifestyles, lose health-protective cultural resources, and accumulate exposure to structural disadvantages (Acevedo-Garcia *et al.* 2010). Crucially, the same cross-border conditions that generate stronger selection – cultural barriers, institutional exclusion, acculturative stress – also constitute a more demanding set of chronic stressors. The initial selection premium is likely to have largely dissipated, while the cumulative burden of migration-related stress has compounded, net of socioeconomic gains associated with migration (e.g. higher income or accumulated wealth).

Beyond migration type, the mental health consequences of migration may also vary depending on how mobility unfolds across the life course. Two biographical dimensions are particularly relevant: frequency and timing.

First, the frequency of migration events captures cumulative disruption. Each move entails the reconfiguration of social ties, adaptation to new environments, and periods of uncertainty. Repeated mobility reduces the time available for stable social re-embedding, thereby limiting the accumulation of health-protective relationships (Wu *et al.* 2024). From a cumulative disadvantage perspective, more frequent migration should be associated with worse mental health in later life, regardless of migration type.

Second, timing captures the point at which exposure begins. Beyond cumulative exposure, the life stage at which migration occurs shapes mental health through distinct mechanisms. Childhood and early adulthood have been widely recognised as sensitive developmental periods during which disruptive experiences can generate long-term psychological consequences (McLaughlin 2020). Experiencing international migration during these formative years may disrupt identity formation, peer socialisation, and the development of coping resources in ways that have lasting consequences for adult mental health. On the other hand, migration later in the life course – particularly from the mid-30s onwards – entails the uprooting of already consolidated social networks, established community ties, and familiar institutional environments. These losses may be especially difficult to compensate for at older ages, when opportunities for building new relationships are more constrained and the psychosocial costs of adaptation are higher (Wrzus *et al.* 2013). These two mechanisms suggest a U-shaped relationship between age at first international migration and later-life mental health, with the most favourable outcomes among those who migrated in early adulthood – old enough to have developed basic coping resources, yet young enough to rebuild social ties in the destination context. For internal migration, where cultural and institutional continuity is preserved, timing effects are expected to be considerably weaker.

Based on these considerations, we formulate four hypotheses:

H1 (Later-life migration penalty)

Individuals with both internal and international migration experience will report worse mental health in later life than stayers.

*H2 (Differentiated penalty by migration type)**Mental health disadvantages in later life will be greater for international and return migrants than for internal migrants.**H3 (Migration frequency)**A greater number of migration episodes will be associated with worse later-life mental health.**H4a (Migration timing – international migrants)**The association between age at first international migration and later-life mental health will follow a non-linear pattern, with worse outcomes among those who migrated in early childhood and those who migrated in midlife.**H4b (Migration timing – internal migrants)**Timing of internal migration will be weakly associated or not associated with later-life mental health.***3 Data and methods****3.1 Data overview**

This study uses data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a longitudinal and cross-national survey of individuals aged 50 and above that provides harmonised information on health, socioeconomic conditions, and social networks across European countries (Börsch-Supan *et al.* 2013). We pool Waves 4 through 9 (2011–2022). Wave 4 marks the starting point because it was the first to include the social networks module, which is central to our analysis of social ties mechanisms. As this module was not administered in Waves 5, 7, and 9, we carry forward network information from the most recent available wave. This strategy assumes that core network composition among older adults is relatively stable between adjacent survey waves, changing primarily in response to discrete life events such as widowhood or residential relocation rather than through gradual drift (Cornwell/Schafer 2016).

To reconstruct complete migration trajectories, we combine panel data with retrospective life-history information from the SHARELIFE modules administered in Waves 3 and 7 (Börsch-Supan 2020). These life-history grids record all residential episodes lasting longer than six months, including start and end dates, country, NUTS-2 region, and settlement type. When both SHARELIFE modules are available for the same respondent, we retain the more recent one (Wave 7), which benefits from a longer recall window and more detailed coding of later-life episodes. This structure enables the reconstruction of internal and international migration histories across respondents' life courses.

The construction of mobility histories proceeds in several steps. First, we assemble the complete sequence of residential episodes recorded in the SHARELIFE

grids (up to 30 episodes per respondent), extracting start and end years, country, and NUTS-2 region for each spell. Second, we apply historical harmonisation rules for respondents interviewed in countries that experienced border changes during the observation period.¹ Third, for each episode we derive an indicator of four types of migration: (1) no move; (2) internal migration, defined as crossing NUTS-2 regional boundaries within the same country; (3) international migration; and (4) return migration, defined as re-entry into the origin country following a period abroad. Fourth, because many respondents accumulate multiple mobility events over the life course (Bernard/Vidal 2023) – for instance, several internal moves before an international departure, or internal relocation following return – we apply a hierarchical classification rule that prioritises international migration over internal migration. Respondents interviewed in a country other than their country of birth are classified as international migrants; those interviewed in their country of birth after an international episode are classified as return migrants.

We restrict the biographical window to moves occurring up to age 50, reflecting the left censoring structure of SHARE and our focus on later-life outcomes. Respondents must be born in participating SHARE countries, ensuring that stayers, international migrants and return migrants are compared within shared national contexts. Individuals born in non-participating countries are excluded due to the absence of a comparable stayer reference group. We also exclude Israel, whose distinct institutional and migration context – shaped by large-scale return migration of diasporic populations – limits comparability with European cases. We further restrict the sample to birth cohorts 1945-1965 so as to avoid confounding influences related to World War II, ensure sufficiently long exposure windows, and avoid including cohorts with too few observations for reliable estimation.

Dependent variable: Mental Health

We measure mental health using the EURO-D scale (Prince *et al.* 1999), a harmonised 12-item index of depressive symptoms developed specifically for cross-national research on late-life depression in Europe. Each item is binary, coded 1 if the symptom is present and 0 otherwise; the scale score is the simple sum across items, ranging from 0 (no symptoms) to 12 (all symptoms present). Higher scores indicate worse mental health. The twelve items cover depressed mood, pessimism, suicidality, guilt, sleep disturbance, loss of interest, irritability, appetite loss, fatigue, concentration problems, reduced enjoyment, and tearfulness (see Appendix Table A1 for the full item list and wording). To limit the influence of extreme values in the upper tail of the distribution, we top-code the scale at 4 – the threshold conventionally used to identify clinical caseness (Castro-Costa *et al.* 2007).

¹ Specifically, residential episodes in the territories of the former Czechoslovakia (before 1993), Yugoslavia (before 1992), and the Soviet Union (before 1991) are recoded to the respondent's current country of interview when the respondent was born in a successor state. This ensures that pre-dissolution residence in a shared polity is not misclassified as international migration.

Main independent variable: Migration Category

Our central explanatory variable is the four-category mobility typology described above: (1) stayers; (2) interregional internal migrants; (3) return migrants; and (4) international migrants. In the second part of the analysis, we restrict the sample to respondents with at least one qualifying migration episode and further characterise their mobility histories along two biographical dimensions. First, we consider the age at first migration of the respondent's predominant mobility type; for example, if an individual is classified as an international migrant, we calculate the age at the first international migration event, disregarding previous internal migration events. Second, we count the total number of qualifying migration transitions within the biographical window.

Mediators and control variables

We include variables that may simultaneously confound and mediate the relationship between migration and mental health. Because some of these factors – such as socioeconomic status or social networks – may themselves be shaped by migration, we do not interpret their inclusion as identifying causal pathways. Rather, we assess whether their progressive inclusion attenuates the estimated migration coefficients, which would be consistent with mediation.

The first set captures family structure and residential context. We explore marital status (married, never married, divorced, or widowed), number of children (0 to 4 or more), and area of residence (big city, suburbs or outskirts, large town, small town, or rural area). The second set captures socioeconomic status. We control for education (measured using ISCED-97, collapsed into low (0-2), medium (3-4), and high (5-6) education), PPP-adjusted household income, and PPP-adjusted household wealth. Both income and wealth are transformed using the inverse hyperbolic sine (asinh), which approximates a logarithmic transformation for large values while accommodating zero and negative values, a common feature of wealth distributions. SHARE provides five multiply-imputed values for income and wealth (Franzese 2023); we retain this structure, combining estimates according to Rubin's rules (1987) and incorporating both within-imputation and between-imputation variability in standard errors. For social networks,² we operationalise two dimensions. Geographical proximity measures the average distance to named network members, recoded into ordered categories ranging from "same household" to "more than 500 km away". Emotional closeness captures average perceived closeness to network members, recoded into a four-point ordinal scale.

² SHARE's social network module uses a name generator approach. Respondents are asked to list up to six people with whom they most often discussed important things over the past 12 months, plus one additional person important to them for any other reason. For each nominated alter, information is collected on role relation, residential proximity, frequency of contact, and emotional closeness, among other characteristics. The network composition thus reflects the respondent's own subjective appraisal of their significant ties.

All models additionally adjust for age (linear and quadratic), gender, wave fixed effects, and country of origin. Countries are grouped into five regional clusters: German-speaking (Austria, Germany, Switzerland), Nordic (Denmark, Finland, Sweden), Western (Belgium, France, Luxembourg, the Netherlands), Southern (Cyprus, Greece, Italy, Malta, Portugal, Spain), and Eastern/post-socialist (Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Hungary, Slovakia, Slovenia). We also control for social origins through the number of books at home when the respondent was ten years old and the occupation of the main breadwinner.³ Table 1 shows the descriptive statistics of all variables.

3.2 Methods

We estimate the following regression model:

$$Mental\ Health_{ijt} = \beta_0 + \beta_1 Migration_{ij} + \beta_k \sum_k X_{ij(t),k} + \pi_j + \theta_t + \varepsilon_{ijt} \quad (1)$$

where $Mental\ Health_{ijt}$ is the EURO-D score of individual i , born in regional cluster j , at wave t . $Migration_{ij}$ measures type of migration exposure, π_j and θ_t are fixed effects for regional cluster of origin and survey wave, and $X_{ij(t),k}$ is the vector of mediator and control variables. We examine mental health differences using a stepwise inclusion of mediating channels, which are potentially endogenous to migration. The baseline model (Model 1) includes only pre-treatment controls: gender, age and age squared, indicators of family socioeconomic origins (parental occupation and number of books at home at age 10), regional cluster fixed effects, and wave fixed effects. Model 2 adds current living arrangements: marital status, number of children, and type of residential area. Model 3 introduces socioeconomic mediators: education, PPP-adjusted household income, and PPP-adjusted household wealth. Model 4 incorporates the social network mediators: emotional closeness and geographical proximity of network members.

In the second step, we restrict the sample to individuals with at least one migration episode and examine how the biographical dimensions of mobility – timing and frequency – are associated with mental health. We estimate models that include interaction terms between migration type and each biographical dimension, allowing the slope to differ across mobility categories. All models are estimated as pooled OLS regressions on the top-coded EURO-D scale. The pooled specification exploits repeated observations over time. We also clustered standard errors at the individual level in order to account for the unbalanced panel structure of the data.

³ We acknowledge that social origins are not strictly pre-treatment controls, as migration during childhood may alter parental occupations and access to books. However, robustness checks restricting the sample to migration events occurring after age 10 yield substantively identical results.

Tab. 1: Descriptive statistics by migration type

	Stayers Mean (SD) / %	Internal migrant Mean (SD) / %	Return migrant Mean (SD) / %	International migrant Mean (SD) / %
<i>Dependent variable</i>				
EURO-D score	1.87 (1.51)	1.93 (1.50)	1.83 (1.47)	2.23 (1.46)
<i>Demographics</i>				
Age	63.72 (5.71)	64.04 (5.77)	64.14 (5.81)	63.37 (5.98)
Female (%)	56.67	56.85	61.29	58.34
<i>Social origins</i>				
<i>Books at home (%)</i>				
0-10 books	39.38	28.34	28.06	32.55
11-25 (one shelf)	25.37	23.40	17.78	24.05
26-100 (one bookcase)	24.17	28.29	28.12	24.26
101-200 (two bookcases)	6.36	10.09	11.63	8.19
200+ (more than two)	4.72	9.88	14.40	10.95
<i>Parental occupation (%)</i>				
Professional/managerial	16.10	23.53	25.84	25.74
White collar	12.69	13.34	13.21	13.88
Skilled manual	46.60	42.36	43.58	37.72
Semi-skilled/unskilled manual	24.61	20.77	17.37	22.66
<i>Region of origin</i>				
<i>Region of origin (%)</i>				
German-speaking	19.95	18.91	24.00	27.62
Nordic	8.77	17.86	26.65	7.19
Western	16.67	12.93	21.91	13.24
Southern	19.97	11.66	16.98	27.10
Eastern	34.64	38.64	10.46	24.85

Tab. 1: Continuation

	Stayers Mean (SD) / %	Internal migrant Mean (SD) / %	Return migrant Mean (SD) / %	International migrant Mean (SD) / %
<i>Living arrangements</i>				
<i>Marital status (%)</i>				
Married/partnered	77.18	74.40	71.57	71.34
Never married	5.43	5.34	7.82	4.30
Divorced	8.23	11.23	13.35	16.58
Widowed	9.16	9.03	7.26	7.78
<i>Number of children (%)</i>				
0	8.31	7.48	12.92	7.68
1	17.72	16.95	16.43	22.52
2	45.56	44.40	42.89	40.94
3	18.94	19.99	15.14	19.96
4+	9.47	11.18	12.62	8.90
<i>Area of residence (%)</i>				
Big city	11.62	15.20	17.35	15.05
Suburbs/outskirts	9.82	9.63	13.91	14.23
Large town	14.99	17.80	12.55	15.86
Small town	24.85	25.50	26.22	22.11
Rural/village	38.73	31.87	29.97	32.75
<i>Socioeconomic status</i>				
<i>Education (%)</i>				
ISCED 0–2 (primary or less)	34.64	24.71	27.14	30.19
ISCED 3–4 (secondary)	48.62	45.67	34.71	38.49
ISCED 5–6 (tertiary)	16.74	29.62	38.15	31.32
Income (asinh)	10.02 (0.82)	10.11 (0.81)	10.32 (0.84)	10.40 (0.77)
Wealth (asinh)	10.73 (3.84)	10.52 (4.41)	10.88 (4.54)	10.17 (5.05)

Tab. 1: Continuation

	Stayers Mean (SD) / %	Internal migrant Mean (SD) / %	Return migrant Mean (SD) / %	International migrant Mean (SD) / %
<i>Social network</i>				
<i>Closeness to alters (%)</i>				
Not very close	0.56	0.59	0.80	0.82
Somewhat close	9.51	11.72	12.31	12.90
Very close	52.38	56.28	56.68	59.67
Extremely close	37.55	31.41	30.22	26.61
<i>Proximity to alters (%)</i>				
Same household	24.78	21.17	19.38	16.17
Same building	13.86	10.09	8.06	6.65
Less than 1 km	23.05	18.92	19.20	19.24
1-5 km	23.31	24.04	25.54	26.71
5-25 km	10.87	16.91	17.17	19.45
More than 25 km	4.13	8.88	10.65	11.77
Age at first migration	-	18.97 (9.53)	22.04 (8.84)	20.13 (11)
Migration frequency		4.36 (2.61)	6.56 (3.35)	4.37 (2.89)
N (person-wave observations)	146,484	71,088	9,750	5,862
N (persons)	20,597	9,716	1,370	840

Note: Means and standard deviations (in parentheses) reported for continuous variables; percentages reported for categorical variables.
Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

4 Results

Table 2 presents the main results from our sequential OLS models. In Model 1, which includes only pre-treatment controls, both internal and international migrants report significantly worse mental health in later life compared with stayers, although the magnitude differs strikingly. The increment for internal migrants is modest (0.076), while the coefficient for international migrants is nearly five times larger (0.372). To put this in perspective, only gender – with women scoring 0.53 points higher on the EURO-D scale – carries greater explanatory weight among the controls. Return migrants, by contrast, show no discernible penalty (0.005, non-significant), indicating that those who migrated internationally but eventually came back to their country of origin do not carry the same disadvantage as those who stayed abroad. The remaining controls behave as expected: age follows a non-linear pattern, greater childhood cultural capital (books at home) is protective, and respondents from more disadvantaged social origins report worse mental health. Across regional clusters, Nordic countries exhibit the best mental health outcomes, followed by the German-speaking region, while Western, Southern, and Eastern/post-socialist countries show progressively higher depressive symptomatology.

Family structure matters considerably for later-life mental health. In Model 2, marital status emerges as a particularly strong predictor: being divorced (0.271), widowed (0.285), or never married (0.132) are all associated with elevated depressive symptoms relative to being married or having a partner. Having four or more children also carries a penalty (0.152), possibly reflecting accumulated caregiving demands or financial strain. Interestingly, big city residents report better mental health than those people living in suburbs, large towns, or rural areas, a pattern that may reflect better access to services and social infrastructure in urban cores. With the inclusion of living arrangements, the international migrant penalty weakens slightly from 0.372 to 0.346, suggesting that part of the link between migration and mental health operates through differences in family composition and residential sorting.

Model 3 introduces socioeconomic mediators – education, income, and wealth – and two findings stand out. First, the socioeconomic gradient is clear: tertiary education (–0.164), higher income (–0.090), and greater wealth (–0.033) are all significantly protective. Second, and more unexpectedly, the international migration coefficient *increases* slightly to 0.375 after adjusting for SES. This points to a suppression effect: international migrants in our sample tend to have somewhat higher socioeconomic resources (as shown in Table 1), which mask part of their mental health disadvantage. Once we account for these resources, the underlying penalty becomes more visible. The internal migration coefficient follows a similar, albeit weaker, pattern (rising to 0.082). Meanwhile, the effect of parental social origins is fully absorbed by adult SES, with the semi-skilled/unskilled manual coefficient dropping to non-significance, thus indicating that childhood disadvantage reaches later-life mental health primarily through adult socioeconomic attainment.

Social networks emerge as the most potent mediating channel. In Model 4, emotional closeness shows a strong dose-response relationship: compared with those reporting low closeness, being very close (–0.331) or extremely close (–0.502)

Tab. 2: Migration type and later-life depressive symptoms: Sequential OLS models (EURO-D scale)

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
<i>Migration type (ref.: Stayers)</i>				
Internal migration	0.076** (0.024)	0.071** (0.023)	0.082*** (0.023)	0.058* (0.023)
Return migrant	0.005 (0.051)	-0.003 (0.051)	0.006 (0.051)	-0.011 (0.050)
International migrant	0.372*** (0.065)	0.346*** (0.065)	0.375*** (0.064)	0.328*** (0.064)
Female	0.530*** (0.021)	0.500*** (0.021)	0.490*** (0.021)	0.483*** (0.021)
Age	-0.132*** (0.031)	-0.131*** (0.031)	-0.106** (0.030)	-0.107*** (0.030)
Age ²	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
<i>Books at home (ref.: 0-10 books)</i>				
One shelf (11-25)	-0.191*** (0.028)	-0.186*** (0.028)	-0.144*** (0.028)	-0.136*** (0.028)
One bookcase (26-100)	-0.217** (0.028)	-0.212*** (0.029)	-0.141*** (0.029)	-0.137 *** (0.029)
Two bookcases (101-200)	-0.259*** (0.042)	-0.259*** (0.042)	-0.174*** (0.043)	-0.168*** (0.043)
More than two bookcases	-0.125** (0.046)	-0.137** (0.046)	-0.041 (0.046)	-0.037 (0.046)
<i>Parental occupation (ref.: Professional/managerial)</i>				
White collar	0.010 (0.037)	0.018 (0.037)	0.005 (0.036)	0.003 (0.036)
Skilled manual	-0.002 (0.029)	-0.001 (0.029)	-0.029 (0.029)	-0.029 (0.029)
Semi-skilled/unskilled manual	0.087** (0.033)	0.081* (0.033)	0.037 (0.033)	0.042 (0.033)
<i>Region of origin (ref.: German-speaking)</i>				
Nordic	-0.092* (0.038)	-0.082* (0.038)	-0.063+ (0.038)	-0.085* (0.038)
Western	0.216*** (0.035)	0.217*** (0.035)	0.240*** (0.035)	0.221*** (0.035)
Southern	0.174*** (0.035)	0.209*** (0.036)	0.135*** (0.037)	0.164*** (0.037)
Eastern	0.251*** (0.030)	0.264*** (0.030)	0.147*** (0.032)	0.177*** (0.032)

Tab. 2: Continuation

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
<i>Marital status (ref.: Married/partnered)</i>				
Never married	-	0.132* (0.054)	0.077 (0.052)	0.005 (0.052)
Divorced	-	0.271*** (0.036)	0.212*** (0.036)	0.136*** (0.037)
Widowed	-	0.285*** (0.037)	0.251*** (0.037)	0.199*** (0.038)
<i>Number of children (ref.: 0)</i>				
1 child	-	0.039 (0.047)	0.030 (0.046)	0.049 (0.045)
2 children	-	-0.047 (0.044)	-0.055 (0.043)	-0.031 (0.043)
3 children	-	-0.004 (0.047)	-0.034 (0.046)	-0.007 (0.046)
4+ children	-	0.152** (0.052)	0.076 (0.051)	0.107* (0.051)
<i>Area of residence (ref.: City centre)</i>				
Suburbs/outskirts	-	0.147*** (0.041)	0.130** (0.041)	0.138** (0.040)
Large town	-	0.087* (0.037)	0.076* (0.037)	0.078* (0.037)
Small town	-	0.003 (0.035)	-0.006 (0.035)	0.002 (0.035)
Rural/village	-	0.076* (0.034)	0.070* (0.034)	0.067* (0.034)
<i>Education (ref.: ISCED 0-2)</i>				
ISCED 3-4 (secondary)	-	-	-0.044† (0.026)	-0.061* (0.026)
ISCED 5-6 (tertiary)	-	-	-0.164*** (0.033)	-0.190*** (0.033)
Income (asinh)	-	-	-0.090*** (0.013)	-0.094*** (0.013)
Wealth (asinh)	-	-	-0.033*** (0.002)	-0.033*** (0.002)
<i>Closeness to alters (ref.: Not very close)</i>				
Somewhat close	-	-	-	-0.110 (0.114)
Very close	-	-	-	-0.331** (0.112)
Extremely close	-	-	-	-0.502*** (0.112)

Tab. 2: Continuation

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
<i>Proximity to alters (ref.: Same household)</i>				
Same building	-	-	-	0.006 (0.032)
Less than 1 km	-	-	-	0.009 (0.028)
1-5 km	-	-	-	0.102*** (0.029)
5-25 km	-	-	-	0.137*** (0.034)
+ 25 km	-	-	-	0.166*** (0.046)
Wave fixed effects	Yes	Yes	Yes	Yes
N (person-waves)	32,523	32,523	32,523	32,523

Note: Coefficients from pooled OLS regression with multiple imputation ($M = 5$). Cluster-robust standard errors at the individual level in parentheses. All models include wave fixed effects and region of origin fixed effects. Model 1: pre-treatment controls (demographics, social origins). Model 2: + living arrangements (marital status, children, area). Model 3: + SES mediators (education, income, wealth). Model 4: + network mediators (closeness and proximity to social alters). Dependent variable: EURO-D depression scale (higher scores = more depressive symptoms). Reference category for migration type: stayers and short-distance internal migrants.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

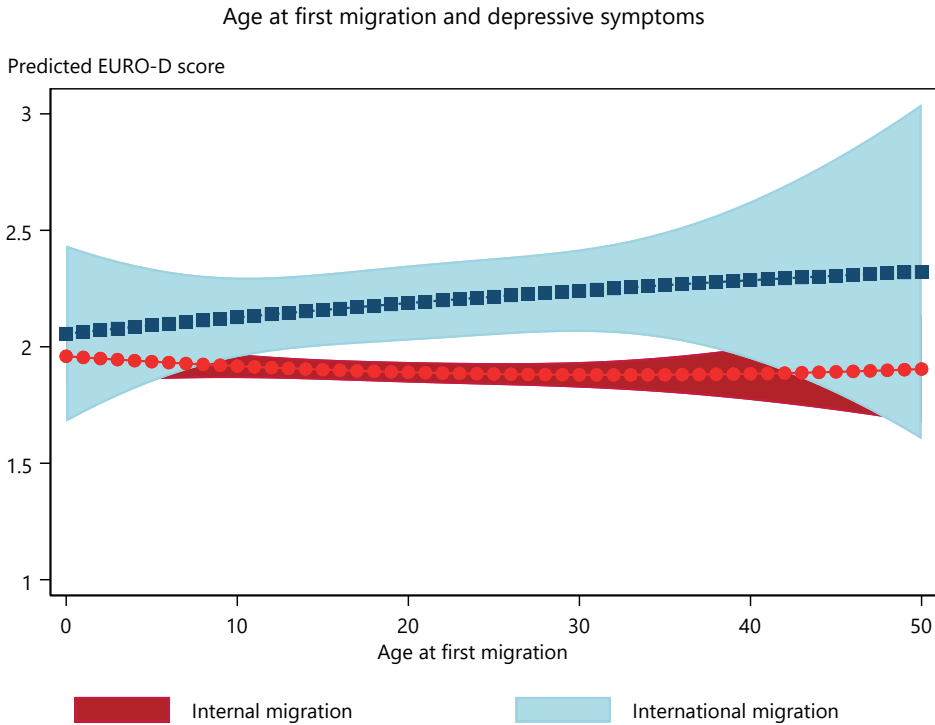
Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

to one's network members is substantially protective. Geographic proximity tells the complementary story – living farther from one's ties is associated with worse mental health, with a clear gradient from 1-5 km (0.102) to more than 25 km (0.166). With these network variables in the model, the international migration coefficient drops to 0.328, its lowest value across all specifications, and the internal migration coefficient weakens to 0.058.

Time and frequency

The main models establish that both internal and international migration carry a persistent mental health penalty in later life. But do all migration biographies carry equal weight? We now examine whether the timing and frequency of moves condition this penalty. Figures 1 and 2 present predicted EURO-D scores from models interacting migration type with (a) age at first migration and (b) number of migration episodes. Because return migrants do not exhibit significant interaction effects, the figures display internal and international migrants only for parsimony.

Fig. 1: Predicted depressive symptoms by age at first migration and migration type



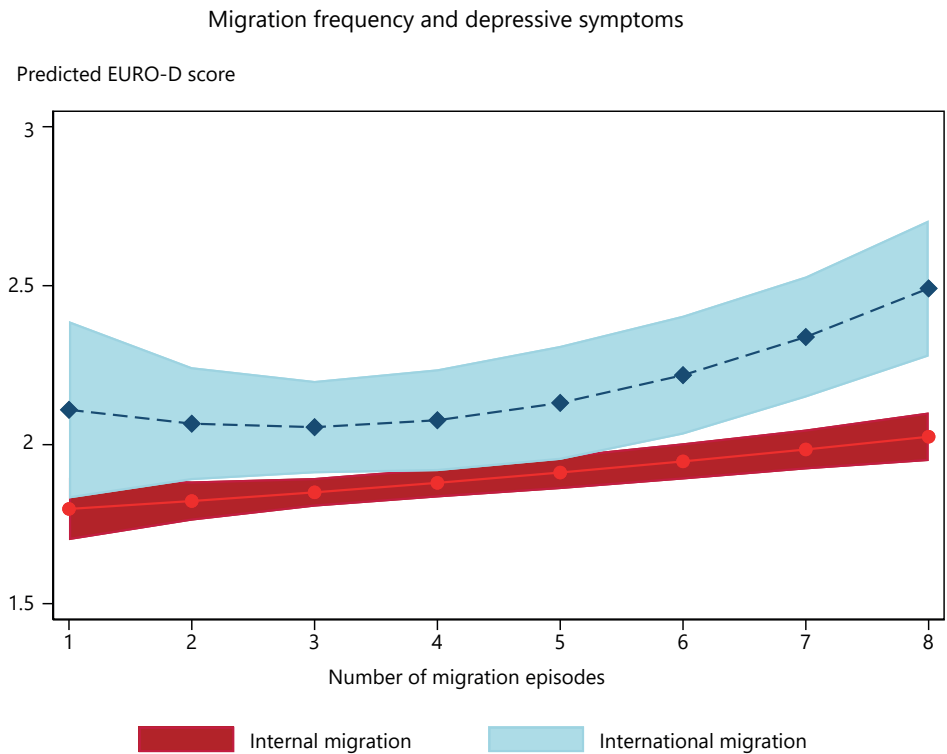
Note: Predicted EURO-D scores from pooled OLS regression with multiple imputation ($M = 5$), based on models interacting migration type with age at first migration. Cluster-robust standard errors at the individual level. All models include wave fixed effects, region of origin fixed effects, and the full covariate set (demographics, social origins, living arrangements, SES mediators, and network mediators). Shaded areas represent 95% confidence intervals. Return migrants are excluded from the figure as interaction effects were not statistically significant; their omission also improves visual clarity. Higher values indicate more depressive symptoms.

Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

Figure 1 plots predicted depressive symptoms by age at first migration. The two trajectories tell clearly different stories. For internal migrants, predicted EURO-D scores remain remarkably stable, hovering around 1.9 regardless of whether the first move occurred in childhood, early adulthood, or midlife. The timing of an internal move, it appears, has little bearing on its long-term mental health consequences.

For international migrants, the picture is different. The predicted curve drifts steadily upwards with age at first migration, tracing a gradient of roughly 0.3 points from early adulthood to the late thirties. The overall interaction does not reach conventional significance – the small international migrant sample limits statistical power – but pairwise comparisons from marginal predictions confirm that the gap between the two groups is statistically reliable across much of the adult range,

Fig. 2: Predicted depressive symptoms by number of migration episodes and migration type



Note: Predicted EURO-D scores from pooled OLS regression with multiple imputation ($M = 5$), based on models interacting migration type with number of migration episodes. Cluster-robust standard errors at the individual level. All models include wave fixed effects, region of origin fixed effects, and the full covariate set (demographics, social origins, living arrangements, SES mediators, and network mediators). Shaded areas represent 95% confidence intervals. Return migrants are excluded from the figure as interaction effects were not statistically significant; their omission also improves visual clarity. Higher values indicate more depressive symptoms. Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

roughly from early adolescence through the late thirties, where confidence intervals are narrowest. At the youngest ages, predicted scores are somewhat elevated relative to the trough around age 20, hinting at a possible early-childhood vulnerability, but the wide confidence intervals in this region preclude firm conclusions.

This pattern aligns with the right arm of the U-shaped vulnerability proposed in H4a: international migration undertaken in midlife – when social ties, occupational positions, and institutional attachments are already consolidated – appears associated with progressively worse later-life mental health. The evidence for the left arm, childhood vulnerability, is more equivocal. For internal migrants, the absence of any timing gradient confirms that cultural and institutional continuity attenuates the biographical sensitivity of the move (H4b).

Figure 2 turns to cumulative exposure. Here the statistical evidence is considerably stronger: the interaction between international migration and number of episodes is significant (Appendix Table A3), confirming that the frequency gradient differs across migration types.

Among internal migrants, predicted depressive symptoms increase gently with additional moves – from approximately 1.79 for a single episode to 2.01 for eight episodes, a modest increment of 0.22 points. For international migrants, however, the pattern is stronger. Each additional cross-border episode adds substantially to the predicted EURO-D score, which rises from approximately 1.85 for a single move to 2.50 for eight episodes. The divergence is monotonic and accelerating: at one episode, the difference between international and internal migrants is negligible; by four episodes, the gap reaches 0.24 points and confidence intervals no longer overlap; at eight episodes, it approaches half a point on the EURO-D scale – comparable in magnitude to the gender differential. That international migrants with a single episode resemble internal migrants in their mental health, while those with multiple episodes show substantially worse outcomes, suggests that the international migration penalty is driven less by one-time dislocation than by the compounding of repeated cross-border disruptions. In such cases, each successive move renews exposure to administrative barriers, cultural readjustment, and geographic separation from existing ties. These findings confirm H3, while the interaction results qualify it: cumulative disruption operates most forcefully when moves cross cultural and institutional boundaries, whereas the frequency gradient remains modest for internal migrants and is unlikely to reach clinical relevance.

5 Conclusions

This paper has examined how distinct forms of spatial mobility – internal migration, international migration, and return migration – are associated with mental health in later life, and whether these associations vary based on the timing and frequency of moves across the life course. Drawing on retrospective life-history data from SHARE linked to repeated measures of depressive symptoms across 20 European countries, we provide consistent evidence that migration type and the way in which mobility unfolds across the life course jointly structure mental health inequalities in older adulthood.

Overall, both internal and international migrants report significantly worse mental health than stayers, even after adjusting for family structure and residential sorting, socioeconomic resources, and social network characteristics. This finding suggests that research on the (un)healthy migrant paradox should not remain compartmentalised along the traditional divide between internal and international migration scholarship. Comparative and binational studies should explicitly recognise that internal migrants constitute a distinct population relative to stayers, and that internal mobility leaves a detectable, albeit modest, imprint on later-life depressive symptoms.

Perhaps the most provocative result from a theoretical perspective, however, is the null finding for return migration. We anticipated that return migrants might exhibit even poorer mental health, consistent with cumulative exposure to international mobility compounded by health-selective return. Our analyses do not support this expectation: across all model specifications, return migrants are statistically indistinguishable from stayers.

This null result warrants careful interpretation and may be accounted for by several non-mutually exclusive mechanisms. One possibility is that return migration operates as a form of health restoration. By re-establishing proximity to origin-country networks, familiar institutions, and cultural environments, returnees may recover social and psychological resources that have been eroded during their time abroad. On this reading, the penalty observed for international migrants reflects the ongoing condition of geographic displacement rather than the migration event itself; return migration effectively terminates this condition. Relatedly, the absence of a residual penalty among returnees is consistent with a recency interpretation: the mental health consequences of international migration may not constitute a permanent biographical scar but may instead weaken over time once individuals are re-embedded in their origin context.

An alternative explanation is positive selection into return. Among those who emigrated, individuals who successfully organised a return may have had stronger ties to the country of origin, greater financial resources, or better underlying health. The possibility of selective return has long been recognised (*Cassarino* 2004), and given the institutional context of intra-European mobility, it merits particular attention. For the cohorts studied here (born 1945-1965), return migration within Europe was often a planned life course transition – particularly among Southern European guest workers in Germany, Switzerland, and the Nordic countries – and was frequently undertaken for the purposes of retiring, reuniting with family, or reintegrating into familiar social environments. This experience differs in qualitative terms from involuntary or health-driven return. The null finding may therefore reflect the historically specific and largely planned nature of return within the European guest worker system and should not be generalised to contexts in which return is forced or precarious. Finally, it is plausible that “salmon bias” dynamics are less salient for mental health than for other health outcomes, and that return in this context is linked more closely to retirement transitions than to a deterioration in health. Disentangling restoration from selection will require prospective data with pre-migration mental health measures.

The life course analyses provide strong support for H3 and partial support for H4. The interaction between migration type and number of episodes is both statistically significant and substantively large: each additional international migration episode is associated with a markedly greater increase in depressive symptoms than each additional internal move. International migrants with a single episode resemble internal migrants, but those with multiple cross-border moves exhibit considerably worse outcomes. This pattern indicates that cumulative disadvantage depends not only on the number of moves but also on the type of boundary being crossed. Life course frameworks of cumulative disadvantage thus need to distinguish between

different forms of mobility rather than treat residential moves as interchangeable units of disruption. Evidence on timing is more nuanced. While H4 predicted a U-shaped association between age at first international migration and later-life mental health, support is stronger for midlife vulnerability than for childhood exposure. International migrants who first moved in their thirties and forties show progressively worse outcomes, consistent with network disruption mechanisms. Although the overall interaction does not reach conventional significance levels, pairwise comparisons indicate a persistent gap between internal and international migrants across much of adulthood. The flat timing profile among internal migrants further underscores the fact that it is the cultural and institutional discontinuity of cross-border mobility, and not relocation per se, that generates timing-dependent risk.

Several limitations merit consideration. First, the design is observational and does not permit causal identification. Despite adjusting for pre-migration characteristics (including social origins and childhood cultural capital) and adopting a transparent stepwise modelling strategy, unobserved confounding – particularly health-related selection into migration – cannot be ruled out. The absence of pre-migration mental health measures, a common constraint in SHARE-based migration research, implies that our estimates reflect associations rather than causal effects.

Second, the social network module was not fielded in every SHARE wave, requiring us to carry forward information from the most recent available observation. If networks deteriorated strongly between waves, this strategy would attenuate estimates of network disruption and thus yield conservative estimates of mediation through social ties.

Third, age at first migration and cumulative duration abroad are mechanically correlated in our data: earlier migrants have necessarily spent more years outside the origin country. We cannot fully disentangle developmental timing effects from cumulative exposure effects, even though these correspond to theoretically distinct mechanisms.

Fourth, our analysis centres on individual migration biographies and does not capture the relational contexts in which moves were embedded. Migrants who left partners or children behind may have experienced compounded distress from prolonged family separation, whereas those who migrated with family members may have been buffered against network disruption. Incorporating co-migration and transnational family dynamics would deepen understanding of these mechanisms.

Fifth, our migration typology relies on a hierarchical classification that assigns each respondent a single predominant migration type. While analytically necessary, this approach obscures hybrid trajectories, such as individuals who experienced substantial internal mobility alongside a brief international episode. Any resulting bias is likely conservative, as individuals are classified into the most disruptive category.

Sixth, the sample is restricted to individuals aged 50 and older who were born in countries participating in SHARE and who migrated within Europe. Focusing on older adults offers analytic leverage: by later life, initial health selection advantages are likely to have attenuated, making cumulative exposure effects more detectable.

However, this design is less informative about short-term health dynamics around the time of migration. The restriction to intra-European mobility is equally consequential. Extra-European migrants, who may face additional barriers related to racialisation, legal status, and cultural distance, will likely exhibit different selectivity profiles and exposure contexts; our findings should not be generalised to those populations without further evidence.

Finally, although our models incorporate region of origin fixed effects to account for baseline mental health differences, we lack sufficient statistical power to test whether migration penalties vary systematically across origin contexts (e.g. Eastern versus Southern Europe). Addressing such heterogeneity will require larger migrant samples.

To sum up, these findings argue for a reframing of migration in life course health research, switching from a single event whose consequences fade with time to a cumulative biographical process whose imprint depends on the institutional and cultural distance crossed, the frequency of those crossings, and the developmental moment at which they occurred. Internal and international moves leave traces of markedly different magnitudes, a heterogeneity that the migrant/non-migrant binary obscures. As an increasing share of Europe's older population carries a complex mobility biography into later life, recognising that diversity will be essential for understanding contemporary health inequalities at older ages.

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Appendix

Dependent Variable

Tab. A1: EURO-D Scale: Items and Response Coding

Item	Survey question (SHARE)	Coded 1 if...
Depressed mood	In the last month, have you been sad or depressed?	Yes
Pessimism	What are your hopes for the future?	No hopes mentioned
Suicidality	In the last month, have you felt that you would rather be dead?	Any suicidal feelings or wish to be dead
Guilt	Do you tend to blame yourself or feel guilty about anything?	Obvious excessive guilt or self-blame
Sleep	Have you had trouble sleeping recently?	Trouble sleeping or recent change in pattern
Interest	In the last month, what is your interest in things?	Less interest than usual
Irritability	Have you been irritable recently?	Yes
Appetite	What has your appetite been like?	Diminution in desire for food
Fatigue	In the last month, have you had too little energy to do the things you wanted to do?	Yes
Concentration	How is your concentration? Can you concentrate on a television programme, film, radio programme, or something You read?	Difficulty concentrating
Enjoyment	What have you enjoyed doing recently?	Fails to mention any enjoyable activity
Tearfulness	In the last month, have you cried at all?	Yes

Note: The scale score is the sum of all 12 items (range 0-12).

Source: *Prince et al.* (1999); SHARE gv health module.

Tab. A2: Migration timing and later-life depressive symptoms: OLS interaction model (EURO-D scale)

	Coefficient	(SE)
<i>Migration type and timing interactions</i>		
Age at first migration	-0.005	(0.006)
Age at first migration ²	0.000	(0.000)
<i>Migration type (ref.: Internal)</i>		
Return migration	-0.048	(0.235)
International	0.097	(0.202)
<i>Migration type × Age at first migration</i>		
Return migration	0.004	(0.019)
International	0.012	(0.020)
<i>Migration type × Age at first migration²</i>		
Return migration	-0.000	(0.000)
International	-0.000	(0.000)
<i>Demographics</i>		
Female	0.479***	(0.035)
Age	-0.100*	(0.049)
Age ²	0.001*	(0.000)
<i>Social origins</i>		
<i>Books at home (ref.: 0-10 books)</i>		
One shelf (11-25)	-0.099*	(0.050)
One bookcase (26-100)	-0.162**	(0.050)
Two bookcases (101-200)	-0.190**	(0.066)
More than two bookcases	-0.040	(0.069)
<i>Parental occupation (ref.: Professional/managerial)</i>		
White collar	0.040	(0.056)
Skilled manual	-0.067	(0.046)
Semi/unskilled manual	0.046	(0.056)
<i>Socioeconomic mediators</i>		
<i>Education (ref.: ISCED 0-2)</i>		
ISCED 3-4	-0.001	(0.047)
ISCED 5-6	-0.158**	(0.054)
Income (asinh)	-0.069**	(0.022)
Wealth (asinh)	-0.031***	(0.004)
<i>Living arrangements</i>		
<i>Marital status (ref.: Married/partnered)</i>		
Never married	-0.035	(0.079)
Divorced	0.133*	(0.056)
Widowed	0.223***	(0.062)

Tab. A2: Continuation

	Coefficient	(SE)
<i>Number of children (ref.: 0)</i>		
1 child	0.067	(0.072)
2 children	0.005	(0.066)
3 children	-0.027	(0.072)
4+ children	0.091	(0.079)
<i>Area of residence (ref.: City centre)</i>		
Suburbs/outskirts	0.028	(0.065)
Large town	0.027	(0.058)
Small town	0.055	(0.055)
Rural/village	0.127*	(0.054)
<i>Social network mediators</i>		
<i>Emotional closeness (ref.: Not very close)</i>		
Somewhat close	-0.223	(0.167)
Very close	-0.442**	(0.163)
Extremely close	-0.590***	(0.164)
<i>Proximity to alters (ref.: Same household)</i>		
Same building	0.055	(0.059)
Less than 1 km	-0.006	(0.049)
1-5 km	0.083†	(0.048)
5-25 km	0.075	(0.053)
25-100 km	0.146*	(0.065)
<i>Fixed effects</i>		
<i>Region of origin (ref.: German-speaking)</i>		
Nordic	-0.036	(0.058)
Western	0.322***	(0.058)
Southern	0.122†	(0.066)
Eastern	0.245***	(0.054)
Wave fixed effects	Yes	
Constant	6.314***	(1.556)
N (person-waves)	11,895	
R ²	0.083	

Notes: Coefficients from pooled OLS regression. Cluster-robust standard errors at the individual level in parentheses. The model includes a quadratic specification of age at first migration, interacted with migration type (internal migration, return migration and international migration). Sample restricted to individuals with at least one migration episode. Dependent variable: EURO-D depression scale, top-coded at 4 (higher scores = more depressive symptoms).

† p < .10, * p < .05, ** p < .01, *** p < .001

Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

Tab. A3: Migration frequency and later-life depressive symptoms: OLS interaction model (EURO-D scale)

	Coefficient	(SE)
<i>Migration type, frequency, and timing interactions</i>		
Migration frequency	0.047**	(0.017)
<i>Migration type (ref.: Internal migration)</i>		
<i>Migration type (ref.: Internal)</i>		
Return migration	0.203	(0.351)
International	-0.527†	(0.282)
<i>Migration type × Frequency</i>		
Interregional internal	-0.038	(0.053)
International	0.142**	(0.051)
Age at first migration	0.003	(0.004)
Frequency × Age at first migration	-0.001	(0.001)
<i>Migration type × Age at first migration</i>		
Interregional internal	-0.007	(0.014)
International	0.027*	(0.012)
<i>Migration type × Frequency × Age at first migration</i>		
Interregional internal	0.001	(0.002)
International	-0.004†	(0.002)
<i>Demographics</i>		
Female	0.486***	(0.035)
Age	-0.102*	(0.049)
Age ²	0.001*	(0.000)
<i>Social origins</i>		
<i>Books at home (ref.: 0-10 books)</i>		
One shelf (11-25)	-0.104*	(0.050)
One bookcase (26-100)	-0.160**	(0.050)
Two bookcases (101-200)	-0.196**	(0.066)
More than two bookcases	-0.038	(0.069)
<i>Parental occupation (ref.: Professional/managerial)</i>		
White collar	0.046	(0.056)
Skilled manual	-0.062	(0.046)
Semi/unskilled manual	0.051	(0.056)
<i>Socioeconomic mediators</i>		
<i>Education (ref.: ISCED 0-2)</i>		
ISCED 3-4	-0.005	(0.047)
ISCED 5-6	-0.172**	(0.054)
Income (asinh)	-0.071**	(0.022)
Wealth (asinh)	-0.031***	(0.004)
<i>Living arrangements</i>		
<i>Marital status (ref.: Married/partnered)</i>		
Never married	-0.026	(0.078)
Divorced	0.119*	(0.056)
Widowed	0.224***	(0.062)

Tab. A3: Continuation

	Coefficient	(SE)
<i>Number of children (ref.: 0)</i>		
1 child	0.063	(0.072)
2 children	-0.002	(0.066)
3 children	-0.033	(0.072)
4+ children	0.068	(0.079)
<i>Area of residence (ref.: City centre)</i>		
Suburbs/outskirts	0.025	(0.065)
Large town	0.024	(0.058)
Small town	0.054	(0.054)
Rural/village	0.127*	(0.054)
<i>Social network mediators</i>		
<i>Emotional closeness (ref.: Not very close)</i>		
Somewhat close	-0.228	(0.166)
Very close	-0.443**	(0.162)
Extremely close	-0.583***	(0.163)
<i>Proximity to alters (ref.: Same household)</i>		
Same building	0.057	(0.059)
Less than 1 km	-0.005	(0.049)
1-5 km	0.075	(0.048)
5-25 km	0.062	(0.053)
25-100 km	0.129*	(0.065)
<i>Fixed effects</i>		
<i>Region of origin (ref.: German-speaking)</i>		
Nordic	-0.095	(0.059)
Western	0.297***	(0.059)
Southern	0.141*	(0.066)
Eastern	0.283***	(0.054)
Wave fixed effects	Yes	
Constant	6.156***	(1.557)
N (person-waves)	11,895	
R ²	0.087	

Notes: Coefficients from pooled OLS regression. Cluster-robust standard errors at the individual level in parentheses. The model includes migration frequency interacted with migration type (internal migration, return migration and international migration), controlling for age at first migration and its interactions with migration type and frequency. Sample restricted to individuals with at least one migration episode. Dependent variable: EURO-D depression scale, top-coded at 4 (higher scores = more depressive symptoms). Marginal predictions from this model are displayed in Figure 2.

† p < .10, * p < .05, ** p < .01, *** p < .001

Source: SHARE Waves 4-9, SHARELIFE Waves 3 and 7.

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