

Special Issue: Aging Alone? International Perspectives on Social Integration and Isolation

## Is Living Alone “Aging Alone”? Solitary Living, Network Types, and Well-Being

Maja Djundeva, PhD,<sup>1,\*</sup> Pearl A. Dykstra, PhD,<sup>1,\*</sup> and Tineke Fokkema, PhD<sup>1,2</sup>

<sup>1</sup>Department of Public Administration and Sociology, Erasmus School of Social and Behavioural Sciences, Erasmus University Rotterdam. <sup>2</sup>Netherlands Interdisciplinary Demographic Institute, University of Groningen, The Hague, the Netherlands.

Address correspondence to: Maja Djundeva, PhD, Department of Public Administration and Sociology, Erasmus School of Social and Behavioural Sciences, Erasmus University Rotterdam, 3062 PA Rotterdam, the Netherlands. E-mail: [djundeva@essb.eur.nl](mailto:djundeva@essb.eur.nl)

Received: April 14, 2018; Editorial Decision Date: September 30, 2018

**Decision Editor:** Deborah Carr, PhD

### Abstract

**Objectives:** When identifying older adults who may be at risk of being without necessary supports, policy makers and scholars tend to focus on those living alone, neglecting differences within that group. We examine how their social networks contribute to subjective well-being, why some of them fare better and compare their well-being to older adults coresiding with others.

**Method:** Data are from the fourth wave of the Survey of Health and Retirement in Europe ( $N = 53,383$ ). A network typology for older people living alone ( $N = 10,047$ ) is constructed using a latent class analysis. Using ordinary least squares (OLS) regressions, we examined differences in subjective well-being (life satisfaction, satisfaction with social network, depression) by network type, adding adults coresiding with others ( $N = 43,336$ ) as comparison group.

**Results:** We find four social network types among older adults living alone. The likelihood of having “restricted” and “child-based” networks is greater in Eastern and Southern European countries, whereas the likelihood of having “friend-oriented” networks is greater in Western and Northern European countries. Across countries, only those with “restricted” networks tend to have the poorest well-being. Those with “diverse” networks have even better well-being than coresiding older adults.

**Discussion:** Our study shows the importance of drawing distinctions within the group of older adults living alone. Most (two thirds) are not vulnerable and at risk, but fare just as well or even better than peers who coreside with others. Country-level factors shape the opportunities to build satisfactory networks, but subjective well-being depends more strongly on individual resources, including social networks, than country-level factors.

**Keywords:** Cross-country comparative study, Depression, Diversity in aging, Health outcomes, Social networks

Declines in marriage and childbearing, rising divorce and separation rates, as well as increasing life expectancy have contributed to changes over the past decades in the living arrangements of older adults across European countries (Isengard & Szydlik, 2012; Tomassini, Glaser, Wolf, Broese van Groenou, & Grundy, 2004). In the noninstitutionalized population aged 60 years and over, the proportion living alone increased between 1990 and 2010 from 24% to 27%, the proportion living with only a spouse increased

from 42% to 49%, whereas the proportion living with children dropped from 28% to 20% (United Nations, 2017). In the context of rapid population aging, living alone in late life has caught the attention of policy makers and scholars, being considered the living arrangement with various social- and health-related disadvantages (Grundy, 2006; Reher & Requena, 2018; Shaw, Fors, Fritzell, Lennartsoon, & Agahi, 2018; United Nations, 2017). In 2010, older women were more likely than their male peers to live alone

(given women's higher likelihood of widowhood), and persons aged 80 years or older were more likely than those aged 60–79 years to live alone (given the increasing likelihood with increasing age of losing the spouse by death and the increasing likelihood of children's departure from the parental home). In Northern and Western Europe, nearly one in three older adults lived alone in 2010; the share living alone in Southern and Eastern Europe was lower, at around one in four (United Nations, 2017).

Previous research has consistently portrayed adults living alone as a vulnerable group with low well-being. Compared to older persons living with a partner, those living alone tend to be more lonely (de Jong Gierveld, Dykstra, & Schenk, 2012; Victor et al., 2002; Yeh & Lo, 2004) and experience greater functional loss (Puts, Lips, & Deeg, 2005), and with regard to income, particularly women living alone are more at risk of poverty (Winqvist, 2002). Among older adults living alone, women also report less satisfaction with life (Gaymu & Springer, 2010), which the authors attribute to their relative disadvantage in terms of health and socioeconomic status. Stressing the availability of support, Margolis and Verdery (2017) find that aging without kin is more common among those who live alone, whereas Soares and colleagues (2010) point out that those living in large households experience better quality of life than those living in small households or alone.

Nonetheless, living alone does not in itself indicate an absence of family and other sources of support. Older people living alone tend to rely on children, siblings, and other kin as well as nonkin (friends, neighbors) for contact and support (Larsson & Silverstein, 2004; Victor, Scambler, Bond, & Bowling, 2000). Moreover, living alone might be a matter of degree. Adult family members might not be living together, but nevertheless quite close: in the same building, street, or neighborhood. Over five decades ago, Rosenmayr and Köckeis (1963) introduced the term "intimacy at a distance" to describe aging parents and adults who live geographically close, but not in the same household. As some persons living alone are never married and do not have children, they are more likely to rely on other relatives (siblings and other kin) as well as nonkin (friends, neighbors) for contact and support (Victor et al., 2000).

Rather than contrast the social networks of older adults living alone to those living with others, which is the approach typically taken, we focus on network differences *within* the group of older adults living alone by developing a typology. In doing so, we acknowledge that living alone covers a diverse set of life histories. Some might never have left the parental home and are currently living alone because they outlived their parents, and their siblings live elsewhere. Others might have left home to live on their own and might never have shared a household with another adult. Yet others might be living alone on account of widowhood and no longer having children at home. The diversity in life histories contributes to differences in the size and composition of the social networks of older adults

living alone. In addition, to find out whether some older adults who live alone fare better than others and comparable to older adults who do not live alone, we examine how their social networks contribute to subjective well-being (life satisfaction, satisfaction with social network, and depression), and include a comparison group of older adults who coreside with others.

We use data from the fourth wave of the Survey of Health, Ageing, and Retirement in Europe (SHARE) which cover 16 European countries. By covering four macroregions (i.e. Northern, Western, Southern, and Eastern European countries), we fill a gap in the literature on comparative studies on social networks among older adults, which has rarely included Eastern European countries (with the exception of Litwin & Stoeckel, 2014).

## Literature Review

### Social Network Types

Social network types provide a way to take into account the complexity of the interpersonal environment in late life, and to provide insight into vulnerabilities during conditions of frailty (Fiori, Antonucci, & Cortina, 2006; Wenger, 1991). Key features of network types are the diversity of ties composing the network (family, friends, neighbors, professional helpers), geographic distance to network members, and the frequency of contacts. Four core typologies have emerged in recent studies (Shiovitz-Ezra & Litwin, 2012): "diverse" (a variety of sources of support), "family-focused," "friend-focused," and "restricted" (few sources of support and little interaction with network members). Note that variations are also evident, depending on whether or not participation in leisure, religious, and community activities is considered. Most of the studies have been carried out in single countries: Germany (Fiori, Smith, & Antonucci, 2007); the United States (Fiori et al., 2006; Litwin & Shiovitz-Ezra, 2006, 2010, 2011; Shiovitz-Ezra & Litwin, 2012), China (Li & Zhang, 2015), and Mexico (Dobova (Dubova), Pérez-Cuevas, Espinosa-Alarcón, & Flores-Hernández, 2010). The study of Fiori, Antonucci, and Akiyama (2008) is based on data from both the United States and Japan, whereas Litwin and Stoeckel (2013) include data from 16 European countries in their analysis. Previous studies on network types have focused on the general population of older adults; none have singled out older adults living alone. Given the robustness of the four core network types in earlier work, we expect to also find them among older adults living alone.

To assess the validity of the typology, we examine whether sociodemographic characteristics, which are known correlates of the engagement in personal relationships, differentiate the types in theoretically meaningful ways. The crucial role of health status for social embedding has been repeatedly emphasized (Li & Zhang, 2015). Marital status and gender are also key differentiators. With regard to marital status, the never-married are most likely

to have “friend-focused” networks, whereas the widowed are most likely to have “family-focused” networks. Due to the disengagement from active roles (e.g., retirement), which predominantly applies to men (Davidson, Daly, & Arber, 2003), next to women’s more active kin-keeping roles in later life, men are more likely have “restricted” networks. Following earlier work (Fiori et al., 2007, 2008; Litwin, 2010), we expect an increasing likelihood of being embedded in “family-focused” and “restricted” networks with increasing age, an increasing likelihood of being in “friend-focused” networks with higher levels of education, and a greater likelihood of being part of “family-focused” networks among those who live in rural areas.

Consistent with earlier cross-national studies (Dykstra & Fokkema, 2011; Litwin & Stoeckel, 2014) the four network types are likely to emerge in each of the regions under investigation, but their distributions will differ. We argue that variations in the distributions of network types depend on (a) public policies, (b) economic development, and (c) cultural climate. Note that these factors do not vary independently across countries, but are tightly linked (Pfau-Effinger, 2005). Given that the necessity to rely on family members for support is greater in Southern and Eastern European countries where public provisions are less generous (Dykstra, 2018) we expect a higher likelihood of “family-focused” networks in these countries. The same expectation follows from the notion that Europe can be divided into more individualistic Northern and Western European countries, which can be traced to the Reformation, and more famililistic Southern and Eastern European countries, which can be traced to Catholic and Islamic influences (Reher, 1998).

Societies with higher levels of economic development tend to have higher levels of individualism (Inglehart, 1997), which are conducive to engaging in social ties outside the immediate family (Conkova, Fokkema, & Dykstra, 2018). Given that the gross domestic product per capita is higher in Northern and Western European countries than in Southern and Eastern European countries (Eurostat, 2017), we expect a higher likelihood of “diverse” and “friend-focused” networks in the first set of countries than in the second set. The same expectation follows from the notion that the accumulation of trust in a society is crucial for forming close ties outside the immediate family (Aassve, Sironi, & Bassi, 2013). Countries with authoritarian legacies and unstable transitional contexts such as those in Eastern Europe are not conducive for the emergence of trust (Letki, 2018), but in Northern and Western European countries where levels of trust are generally higher, one would expect a higher likelihood of “diverse” and “friend-based” networks.

### Social Network Types and Subjective Well-Being

Social networks have been defined as the web of social relationships that surround an individual and the characteristics of those ties (Fischer, 1982; Fischer et al., 1977; Laumann, 1973; Mitchell, 1969). By assessing actual

ties between network members, one can empirically test whether community exists and whether that community is defined on the basis of neighborhood, kinship, friendship, or other characteristics. The size, density, boundedness, and homogeneity are considered the most important network characteristics, and the frequency of contact and multiplicity, duration, and reciprocity as main features related to network structure (Berkman, Glass, Brissette, & Seeman, 2000). Although measures vary across studies, recent use of confidant networks is based on the early works of Hirsch’s (1979) and Stokes’ (1985) Social Network List that provide estimates of size, composition, and density.

Social networks affect well-being through several pathways (Berkman et al., 2000). The first is through social support, which involves behavioral exchanges that are intended as helpful and are perceived as such (Thompson & Heller, 1990). Second, networks provide opportunities for companionship and social engagement (Windriver, 1993). Shared leisure activities serve as a source of pleasure and stimulation, whereas the participation in meaningful community activities brings social recognition and feelings of belonging (Victor, Scambler, Bowing & Bond, 2005). Social control is a third mechanism that operates directly on health when network members deliberately attempt to change a person’s health behavior (Lewis & Rook, 1999; Rook, Thuras, & Lewis, 1990; Umberson, 1992). Fourth, relationships provide access to resources that transcend an individual’s means. To be part of a network is to have access to other people’s connections, information, money, and time.

Previous research has shown that network types correlate with psychosocial outcomes among older adults, such as depressive symptomatology (Fiori et al., 2006), anxiety, loneliness and depression (Litwin & Shiovitz-Ezra, 2006, 2010), and mental well-being (Litwin & Stoeckel, 2013). Our expectation is that among older adults living alone *only* those with “restricted” social networks are worse off compared to (a) older adults who live with others, and (b) counterparts embedded in other types of networks. The reasoning is that those in “restricted” networks lack the relationship provisions of support, companionship, social control, and access to resources that help to promote subjective well-being.

There is evidence that the association between living alone and subjective well-being differs between European regions. More specifically, among older people living alone, levels of loneliness are higher in Greece than in Finland (Jylhä & Jokela, 1990) and higher in Italy compared to the Netherlands (de Jong Gierveld & van Tilburg, 1999). Several possible explanations have been suggested, such as a greater stigma attached to living alone in Southern European countries, and greater expectations about community and family in Southern European countries (Dykstra, 2009). Following this reasoning, we expect that older adults living alone with “restricted” social networks are even worse off compared to (a) older adults who

coreside with others, and (b) counterparts embedded in other types of networks in the more famililistic countries of Southern and Eastern Europe than the more individualistic countries of Northern and Western Europe.

### Data and Methods

This study uses data from the fourth wave of SHARE (Survey of Health, Ageing, and Retirement in Europe, version 6.0.0) collected in 2010/2011 (Malter & Börsch-Supan, 2013). SHARE is a representative longitudinal survey of the population aged 50+ in a country and a balanced representation of various regions within Europe. The fourth wave contains a social network module and encompasses Eastern European countries not present in previous (Estonia and Slovenia) and subsequent (Hungary) waves. The data pertain to a total of 58,489 respondents over 50 (at the time of interview) in residential households in 16 European countries (Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, Czech Republic, Poland, Hungary, Portugal, Slovenia, and Estonia). The analytical sample is restricted to community-dwelling older adults, consisting of 53,383 respondents: 43,336 persons who coreside with others (predominantly with partner and children; 82.3%) and 10,047 (17.7%) persons who live

alone; those who had a partner ( $n = 167$ ) but lived apart were excluded.

First, we constructed a network typology for older people living alone using a latent class analysis (LCA; Table 1). Second, in a multinomial logistic regression using countries as fixed effects, we investigated how sociodemographic characteristics are related to the probability to have a certain social network type (Table 2). The sample size for this analysis is 9,904 due to missing data on at least one of the sociodemographic characteristics. Last, in ordinary least squares (OLS) regressions, we examined differences in subjective well-being (life satisfaction, satisfaction with social network, depression) by network type, adding older adults coresiding with others as a comparison group. We estimated fixed effects for each country using Germany as a reference category (Table 3), and analyzed each of the countries separately (see Supplementary Figures 1–3 in the Supplementary Material).

### Social Network Typology

To generate the names of social network members, the respondents listed a maximum of seven persons with whom they most often discussed important things over the last 12 months (Litwin, Stoeckel, Roll, Shiovitz-Ezra, & Kotte,

**Table 1.** Descriptive Statistics and Probabilities of Social Network Indicators Across Latent Classes ( $N = 10,047$ )

Indicator		Class 1	Class 2	Class 3	Class 4
		Restricted	Diverse	Child based	Friend oriented
Prevalence in %		34.30	14.40	29.24	22.06
Child in SN	No	<b>1.000</b>	0.094	0.000	<b>0.509</b>
	Yes	0.000	<b>0.906</b>	<b>1.000</b>	<b>0.491</b>
Grandchild in SN	No	<b>0.977</b>	<b>0.756</b>	<b>0.961</b>	<b>0.994</b>
	Yes	0.023	<b>0.244</b>	0.039	0.006
Sibling in SN	No	<b>0.798</b>	<b>0.736</b>	<b>0.944</b>	<b>0.582</b>
	Yes	0.202	0.264	0.056	<b>0.418</b>
Parent in SN	No	<b>0.942</b>	<b>0.948</b>	<b>0.991</b>	<b>0.867</b>
	Yes	0.058	0.052	0.009	0.133
Friend in SN	No	<b>0.648</b>	<b>0.535</b>	<b>0.869</b>	0.193
	Yes	<b>0.352</b>	<b>0.465</b>	0.131	<b>0.807</b>
Formal helper in SN	No	<b>0.974</b>	<b>0.954</b>	<b>0.993</b>	<b>0.952</b>
	Yes	0.026	0.046	0.007	0.048
Other in SN	No	<b>0.834</b>	<b>0.706</b>	<b>0.944</b>	<b>0.753</b>
	Yes	0.166	<b>0.294</b>	0.056	0.247
Size of SN	Low	<b>1.000</b>	0.000	<b>0.896</b>	0.000
	Medium	0.000	<b>0.340</b>	0.100	<b>0.516</b>
	High	0.000	<b>0.659</b>	0.004	<b>0.484</b>
SN members in 5 km	Low	<b>0.883</b>	<b>0.262</b>	<b>0.805</b>	<b>0.491</b>
	Medium	0.117	<b>0.244</b>	0.195	<b>0.275</b>
	High	0.009	<b>0.493</b>	0.000	<b>0.234</b>
Daily contact <sup>a</sup>	Low	<b>0.966</b>	<b>0.555</b>	<b>0.881</b>	<b>0.896</b>
	High	0.034	<b>0.445</b>	0.119	0.104

Note. Numbers printed in bold highlight the most frequently observed category of a social network indicator in a class. SN = social network.

<sup>a</sup>Indicator distributes binomially when transformed to tertiles.

2013). Ten indicators served as input for the construction of the network typology. Network size is the number of persons listed in response to the name generating question (0–7).

**Table 2.** Multinomial Logistic Regression of Social Network Type (Reference Category: Restricted Network)

	Diverse	Child based	Friend oriented
Age of respondent	0.015*** (0.004)	0.020*** (0.003)	-0.024*** (0.003)
Gender (ref: Male)			
Female	0.894*** (0.086)	0.641*** (0.066)	0.550*** (0.065)
Education (ref: Low)			
Intermediate	0.126 (0.087)	-0.017 (0.070)	0.477*** (0.082)
High	0.062 (0.117)	-0.336*** (0.099)	0.937*** (0.096)
Employment (ref: No paid job)			
Paid job	0.036 (0.122)	0.048 (0.100)	-0.098 (0.088)
Marital status (ref: Never married)			
Divorced	2.241*** (0.155)	2.074*** (0.111)	0.368*** (0.077)
Widowed	2.359*** (0.154)	2.233*** (0.110)	0.530*** (0.076)
Functional limitations	-0.001 (0.018)	-0.023 (0.015)	-0.039* (0.019)
Self-rated health	0.096** (0.037)	0.029 (0.030)	0.120*** (0.031)
Area (ref: Urban)			
Rural area	0.100 (0.073)	0.192** (0.060)	-0.056 (0.062)
Unknown	-0.126 (0.170)	0.061 (0.131)	-0.423** (0.144)

Note. Un-exponentiated b coefficients. Standard errors in parentheses;  $N = 9,904$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ ; estimated fixed effects for each country; coefficients omitted from table.

Frequency of contact is the number of network members with which the respondent has daily contact, either face-to-face, over the phone, through E-mail or text messages (0–7). Proximity is the number of social network members who live within a radius of 5 km (0–7). Following Ellwardt, Aartsen, and van Tilburg (2017), we recoded these three variables into “1 = low,” “2 = medium,” and “3 = high” using tertiles for the LCA. Composition captures the degree to which the social network is defined on the basis of ascribed ties such as kin, or ties based on choice such as friends. The seven indicators are whether children, grandchildren, parents, siblings, friends, formal helpers, and others are part of individual’s social network. They were used dichotomously in the LCA (1 = no, 2 = yes).

The main advantage of LCA is that it appropriately combines the different network characteristics dimensions of interest in our study in one typology: the size of the overall network, the extent to which it is based on kin versus non-kin, and the contact and proximity of network ties. LCA has been used in other studies to successfully model social networks of older adults (Fiori et al., 2006, 2007). It results in a latent categorical variable that describes qualitative differences between classes. Groups of respondents with a certain network type are treated as mutually exclusive and exhaustive; respondents within the same class have similar social networks, whereas respondents of different classes have dissimilar social networks. We performed several LCAs with different numbers of possible classes, and identified the optimal number of classes based on model fit, parsimoniousness, and interpretability of the classes (see Supplementary Table 1 and technical notes on LCA in Supplementary Material).

Sociodemographic characteristics included age, gender, education, employment status, self-rated health, limitations with activities with daily living, marital status, and level of urbanism of the geographic area. See the Supplementary Material for the coding of these variables.

**Table 3.** OLS Regressions of Subjective Well-Being

	Model 1	Model 2	Model 3
	Life satisfaction	Satisfaction with social network	Depressive mood
Living arrangements and social network types (ref: coresiding with others)			
Restricted	-0.396*** (0.035)	-0.794*** (0.031)	0.152*** (0.043)
Diverse	0.100* (0.048)	0.297*** (0.041)	-0.085 (0.058)
Child based	-0.109** (0.037)	0.182*** (0.032)	-0.030 (0.045)
Friend oriented	-0.129** (0.037)	-0.001 (0.032)	-0.002 (0.045)
R <sup>2</sup>	.236	.054	.277
N	53,383	53,383	53,383

Notes: Coefficients omitted for control variables: age, gender, education, employment, functional limitations, self-rated health, marital status, area, and country. \* $p < .05$ . \*\* $p < 0.01$ . \*\*\* $p < .001$ .



### Subjective Well-Being

Three measures capture subjective well-being: life satisfaction, satisfaction with social network, and depression. Life satisfaction is a concept frequently used to measure subjective well-being in late life (Pinquart & Sørensen, 2000). It is measured on a 10-point scale (1 = not satisfied, 10 = very satisfied) as answer to the question “How satisfied are you with life?”. Satisfaction with social network is less commonly used than life satisfaction, but studies have similar measures to capture satisfaction with personal relationships (Lansford, Sherman, & Antonucci, 1998). In SHARE, respondents were asked “Overall, how satisfied are you with the [relationship that you have with the person ‘y’ we have just talked about]” for each network member on a 10-point scale ranging from not satisfied (=1) to very satisfied (=10). We used the average score for all network members to measure satisfaction with overall network. Last, depression was measured using the EURO-D scale, which was constructed by harmonizing five depression measures into a 12-item scale (1 = not depressed; 12 = very depressed). Satisfactory cross-country equivalence of the EURO-D in SHARE has been established in prior studies (Castro-Costa et al., 2008). Cronbach’s  $\alpha$  was 0.73 for the sample of respondents living alone, and 0.72 for the overall sample.

### Results

#### Social Network Types Among Older Adults Living Alone

Correlations between the 10 social network indicators were mostly low to moderate, supporting the construction of a latent typology rather than a unidimensional scale. The series of unconditional LCA revealed four classes, as the model fit improved vastly until that number. Model fit (Bayesian information criterion = 4547.2) and relative entropy (0.86) were satisfactory in the four-class solution as compared to solutions with more classes. Fit statistics for models with up to five classes are presented in Supplementary Table 1. We assigned respondents to the class corresponding with their maximum probability, that is, their best-fitting class according to the LCA. The maximum probabilities for belonging to a class were high ( $p \geq .91$ ), implying low uncertainty in the assignment of respondents to a class.

The prevalence and distribution of the 10 social network indicators across respondents in the four classes, are presented in Table 1. Class prevalence (i.e., class size) was distributed rather unevenly, ranging from 14.4% to 34.3%. All social network variables except having parent and formal helper differed significantly in their distribution across classes, perhaps because receiving formal support was generally low in the overall sample. Our interpretation of the four network types (classes) unfolded four major dimensions, (a) supportive–unsupportive, (b)

diverse–uniform, (c) kin versus nonkin based, and (d) close versus distant.

Almost a third of those living alone (34.3%) had the highest probability to have what we named a “restricted” social network, characterized by a low number of both kin and nonkin membership, as well as a low intensity of contact with close kin and nonkin, and few geographically close social network members. In short, an outstanding feature of this social network type is a low likelihood for all social network indicators. The second group (14.4%) had the highest probability to have what resembled the opposite of the previous type. This group was characterized by a large network size including both kin and nonkin. In addition, respondents placed in this group had a higher probability to have daily contact with social network members, of which a considerable number live nearby. We labeled the second type “diverse.” The third group (29.2%) represented the respondents with the highest probability to rely solely on children for social contact, thus we named it “child-based.” Respondents placed in this group tended to have small social networks with few members living nearby, as well as infrequent contact with social network members. The last “friend-oriented” group (22.1%) captured the respondents with the highest probability not to nominate kin, but to include friends in their social networks. In comparison with the “diverse” group, respondents were less likely to have members living nearby, to have daily contact with network members, and to have a large network.

Those with “restricted” networks in the sample of older adults living alone are of particular interest as they might lack the resources to reach an adequate level of well-being. A cross-country distribution of the network types (Figure 1) revealed a pattern suggesting that older adults living alone with the highest probability of being part of “restricted” networks were more prevalent in Eastern and Southern European countries, compared to Northern and Western European countries. Slovenia (51.4%), as well as countries such as Italy and Poland tended to have large proportions (around 40%) of older adults living alone with a

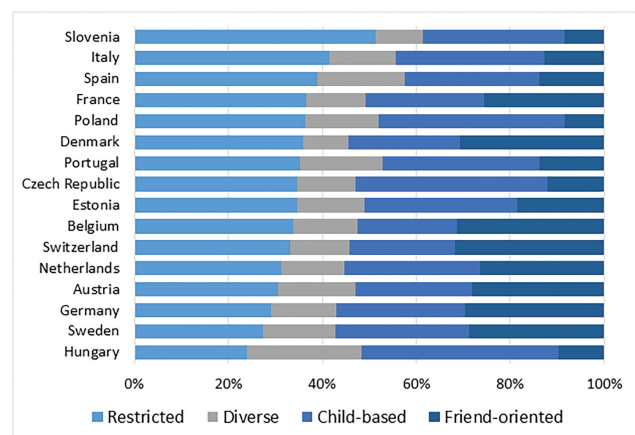


Figure 1. Living arrangements and social networks.

high likelihood of having “restricted” networks. Among the Northern and Western countries, France was the only one with a high prevalence of “restricted” networks among those living alone. In Eastern European countries, older adults living alone were also more likely to have “child-based” networks, as large proportions (around 40%) were found in Hungary, Czech Republic, and Poland. In contrast, older adults living alone with a high probability of being part of “friend-oriented” networks were most numerous (around 30%) in Western (Switzerland, Belgium, Netherlands) and Northern European countries (Denmark and Sweden). No clear regional pattern emerged for the likelihood that older adults living alone had “diverse” networks. The prevalence was highest in Hungary, Spain, Austria, and Portugal.

### Sociodemographic Predictors of Social Network Types and Living Arrangements

Table 2 presents the results from a multinomial logistic regression, where respondents living alone who had the highest probability to have “restricted” networks served as the reference category.

Marital status is the key differentiator between the four social network types. We interpret all the positive coefficients for the associations between marital status and network type as evidence that the never-married were most likely to have “restricted” networks. Respondents in the “restricted” group were significantly less likely to be divorced or widowed compared to those with other types of networks. Contrary to expectations, the widowed were not most likely to have “family-focused” networks, or in this study “child-based” networks, but equally likely to have “diverse” networks. We found support for the expectation that respondents in “restricted” networks were more likely to be men, compared to the rest of older adults living alone, and to have more functional limitations and worse self-rated health compared to counterparts with different social networks. Compared to respondents with “restricted” networks, those embedded in “child-based” and “diverse” networks were more likely to be older, whereas those in “friend-oriented” networks were more likely to be younger. Those in “friend-oriented” networks also had a higher probability to be higher educated, which is consistent with expectations. Finally, the likelihood of being part of “child-based” networks was greater among those who live in rural areas. We checked whether the sociodemographic determinants of the probability to belong to a certain social network type differed by country, but found no evidence for cross-country variations (results not shown, available upon request).

### Social Network Types, Coresiding With Others, and Subjective Well-Being

Table 3 presents the results from the OLS models predicting life satisfaction, social network satisfaction, and depressive

mood controlled for the same predictors as in previous analyses. With regard to life satisfaction, not all respondents living alone were less satisfied with their life compared to persons who live with others. Older adults living alone who had the highest probability to have “restricted,” “child-based,” or “friend-oriented” social networks were less satisfied with life whereas those living alone with “diverse” networks were more satisfied with life compared to those living with others.

The results for social network satisfaction and depressive mood for the “restricted” group were similar to those for general life satisfaction. Those with high probability to have “restricted” networks among the living alone group were less satisfied with their social networks and more depressed compared to respondents who coreside with other people. Conversely, respondents living alone with “diverse” or “child-based” networks were more satisfied with their social network compared to respondents who coreside with others. Table 3 also shows that older adults in “child-based” networks were more satisfied with their social networks than adults embedded in “friend-oriented” networks. In addition, marital status, despite being the most important predictor of social networks among older adults living alone, was not to be a key factor for subjective well-being (see [Supplementary Material](#)).

We fitted the models from Table 3 separately for each country using age and gender as controls (tables omitted). Afterwards we plotted linear marginal effects with 95% confidence intervals by country in order to inspect differences in the associations between social network types, coresiding with others, and well-being. The combined plots for each outcome (presented in [Supplementary Material](#)) revealed that in each country the “restricted” group were less satisfied with life ([Supplementary Figure 1](#)), less satisfied with their social network ([Supplementary Figure 2](#)), and more depressed ([Supplementary Figure 3](#)) in relation to the respondents who coreside with others, and to respondents who have a high probability of having “diverse” networks.

### Conclusion

This study investigated social network types among older adults living alone in 16 European countries covering four macro-regions (i.e. Northern, Western, Southern, and Eastern European countries). To understand whether some older adults who live alone fare better than others and comparable to older adults coresiding with others, we examined their social networks and links with subjective well-being (life satisfaction, satisfaction with social network, and depression).

The social network types that emerged in our study resemble the four core types found in previous research among general populations of older adults (Fiori et al., 2006; Litwin & Shiovitz-Ezra, 2006, 2010, 2011). However, instead of broad family-based networks, we found that adults living alone are more likely to have family-restricted, in this study named “child-based,” networks. Another notable difference

with past studies is that the “friend-oriented” network type was more likely than any of the others to also include close ties to horizontal kin. In the general population of older adults in Europe, less than 5% are part of “restricted” networks (Litwin & Stoeckel, 2014). We reveal that among those living alone, the proportion in “restricted networks” is close to 35%.

Consistent with expectations, the “core” network types emerged across countries, but their relative distribution differed. Thus our results suggest that not only individual characteristics but also country-level factors shape the opportunities for individuals to create and sustain social networks. For example, “restricted” and “child-based” networks were found in contexts that not only have higher old-age poverty (Megyeri, 2016), but also have higher levels of familialism (Kalmijn & Saraceno, 2008) and lack of generalized trust (Conkova et al., 2018; Letki, 2018). Respondents with high probabilities to have “restricted” and “child-based” networks were more common in Eastern and Southern European countries. Conversely, larger proportions of respondents with high probabilities to have “friend-oriented” networks resided in the more generous welfare states with greater economic security for older adults in general, and higher trust in institutions. The cross-regional differences in social networks among those living alone that we observe are consistent with previous research that showed aggregate-level measures of individualization to be higher in Northern and Western European countries (Inglehart, 1997) where social engagements reflect individual choice, shared voluntary activities, social and political trust, over and above ties based on kin (Mair, 2013).

Among older adults living alone, and compared to their peers coresiding with others, those with “restricted” networks tended to have the poorest well-being. On the opposite side, those with “diverse” networks tended to have even better well-being outcomes than coresiding older adults. Moreover, marital status, despite being the most important predictor of social networks among the older adults living alone, was not a key factor for subjective well-being. Even after controlling for marital status, the relationships between social networks and well-being showed that relationships with both kin and nonkin contribute to better well-being. This is not surprising as a growing body of literature has documented the importance of friendship ties in late life, next to family ties, and the contribution to well-being of relationships that derive from personal choice (Conkova et al., 2018; Litwin & Shiovitz-Ezra, 2010, 2011).

There were hardly any country differences in the association between social network types and well-being outcomes. The cross-country persistence of these associations is remarkable, and in contrast with previous research showing, for example, that living alone is associated with higher levels of loneliness in Mediterranean countries than in non-Mediterranean countries (de Jong Gierveld & van Tilburg, 1999; Jylhä & Jokela, 1990) and that receipt of money from adult children is associated with more depressive feelings in

Mediterranean countries than in non-Mediterranean countries (Litwin, 2010). The disparities might be attributable to the fact that we used network types rather than single indicators of social ties.

Our study underscores the importance of drawing distinctions within the group of older adults living alone. Most (two thirds) are not vulnerable and at risk, but fare just as well or even better than peers who coreside with others. Thus, there is a large group of older adults who live alone and manage to have sufficiently large and multifocal networks. Among those with a higher probability of having “restricted” networks, older men living alone are overrepresented. Future research and policy efforts should devote attention to the burgeoning group of older men who live alone in their later years given that they are more likely to be lonely (Pinquart, 2003). As suggested by Davidson and colleagues (2003), agencies seeking to reduce single older men’s susceptibility to social isolation need to be sensitive to men’s preferences for organizational and community activities, which are the outcome of lifelong socialization. Older men, regardless of their social class background, do not wish to be passive clients. Rather, they are most likely to be interested in “active” pursuits involving some form of physical exercise, or in “useful” pursuits geared toward improving people’s welfare.

## Supplementary Material

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

## Funding

This work is funded by the European Research Council (ERC) (Advanced Grant No 324211), Families in Context.

## Acknowledgments

This article uses data from SHARE Wave 4 release 6.0.0, as of March 31, 2017 (doi: 10.6103/SHARE.w4.600). The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), and FP7 (SHARE-PREP: N 211909, SHARE-LEAP: N 227822, SHARE M4: N 261982). Additional funding from the German Ministry of Education and Research, Max Planck Society for the Advancement of Science, U.S. National Institute on Aging (U01-AG09740-13S2, P01-AG005842, P01-AG08291, P30-AG12815, R21-AG025169, Y1-AG-4553-01, IAG-BSR06-11, OGH4\_04-064, HHSN271201300071C), and from various national funding sources is gratefully acknowledged (see [www.share-project.org](http://www.share-project.org)).

## Author Contributions

M. Djundeva, P. A. Dykstra, and T. Fokkema planned the study and contributed to writing the article. M. Djundeva performed all statistical analyses.



## References

- Aassve, A., Sironi, M., & Bassi, V. (2013). Explaining attitudes towards demographic behaviour. *European Sociological Review*, *29*, 316–333. doi:10.1093/esr/jcr069
- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine* (1982), *51*, 843–857. doi:10.1016/S0277-9536(00)00065-4
- Castro-Costa, E., Dewey, M., Stewart, R., Banerjee, S., Huppert, F., Mendonca-Lima, C.,...Prince, M. (2008). Ascertaining late-life depressive symptoms in Europe: An evaluation of the survey version of the EURO-D scale in 10 nations. The SHARE project. *International Journal of Methods in Psychiatric Research*, *17*, 12–29. doi:10.1002/mpr.236
- Conkova, N., Fokkema, T., & Dykstra, P. A. (2018). Non-kin ties as a source of support in Europe: understanding the role of cultural context. *European Societies*, *20*, 131–156. doi:10.1080/14616696.2017.1405058
- de Jong Gierveld, J., Dykstra, P. A., & Schenk, N. (2012). Living arrangements, intergenerational support types and older adult loneliness in Eastern and Western Europe. *Demographic Research*, *27*, 167–200. doi:10.4054/DemRes.2012.27.7
- de Jong Gierveld, J., & van Tilburg, T. (1999). Living arrangements of older adults in the Netherlands and Italy: Coresidence values and behaviour and their consequences for loneliness. *Journal of Cross-Cultural Gerontology*, *14*, 1–24. doi:10.1023/A:10060082
- Davidson, K., Daly, T., & Arber, S. (2003). Older men, social integration and organisational activities. *Social Policy and Society*, *2*, 81–89. doi:10.1017/S1474746403001118
- Dubova (Dubova), S. V., Pérez-Cuevas, R., Espinosa-Alarcón, P., & Flores-Hernández, S. (2010). Social network types and functional dependency in older adults in Mexico. *BMC Public Health*, *10*, 104. doi:10.1186/1471-2458-10-104
- Dykstra, P. A. (2009). Older adult loneliness: Myths and realities. *European Journal of Ageing*, *6*, 91–100. doi:10.1007/s10433-009-0110-3
- Dykstra, P. A. (2018). Cross-national perspectives on intergenerational family relations: The influence of public policy arrangements. *Innovation in Aging*, *2*, 1–8. doi:10.1093/geroni/igx032
- Dykstra, P. A., & Fokkema, T. (2011). Relationships between parents and their adult children: A West European typology of late-life families. *Ageing & Society*, *31*, 545–569. doi:10.1017/S0144686X10001108
- Ellwardt, L., Aartsen, M., & van Tilburg, T. (2017). Types of non-kin networks and their association with survival in late adulthood: A latent class approach. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *72*, 694–705. doi:10.1093/geronb/gbw142
- Eurostat. (2017). *GDP per capita, consumption per capita and price level indices*. Retrieved from [http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP\\_per\\_capita,\\_consumption\\_per\\_capita\\_and\\_price\\_level\\_indices](http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_per_capita,_consumption_per_capita_and_price_level_indices) (Accessed March 17, 2018).
- Fiori, K. L., Antonucci, T. C., & Akiyama, H. (2008). Profiles of social relations among older adults: a cross-cultural approach. *Ageing & Society*, *28*, 203–231. doi:10.1017/S0144686X07006472
- Fiori, K. L., Antonucci, T. C., & Cortina, K. S. (2006). Social network typologies and mental health among older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *61*, P25–P32. doi:10.1093/geronb/61.1.P25
- Fiori, K. L., Smith, J., & Antonucci, T. C. (2007). Social network types among older adults: A multidimensional approach. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *62*, P322–P330. doi:10.1093/geronb/62.6.P322
- Fischer, C. S. (1982). *To dwell among friends: personal networks in town and city*. Chicago, IL: University of Chicago Press.
- Fischer, C. S., Jackson, R. M., Steuve, C. A., Gerson, K., Jones, L. M., & Baldassare, M. (1977). *Networks and places*. New York, NY: Free Press.
- Gaymu, J., & Springer, S. (2010). Living conditions and life satisfaction of older Europeans living alone: A gender and cross-country analysis. *Ageing & Society*, *30*, 1153–1175. doi:10.1017/S0144686X10000231
- Grundy, E. (2006). Ageing and vulnerable elderly people: European perspectives. *Ageing & Society*, *26*, 105–134. doi: 10.1017/S0144686X05004484
- Hirsch, B. (1979). Psychological dimensions of social networks: A multimethod analysis. *American Journal of Community Psychology*, *7*, 263–276.
- Inglehart, R. (1997). *Modernization and postmodernization: cultural, economic, and political change in 43 societies*. Princeton, NJ: Princeton University Press.
- Isengard, B., & Szydlik, M. (2012). Living apart (or) together? Co-residence of elderly parents and their adult children in Europe. *Research on Aging*, *34*, 449–474. doi:10.1177/0164027511428455
- Jylhä, M., & Jokela, J. (1990). Individual experiences as cultural – a cross-cultural study on loneliness among the elderly. *Ageing & Society*, *10*, 295–315. doi:10.1017/S0144686X00008308
- Kalmijn, M., & Saraceno, C. (2008). A comparative perspective on intergenerational support—Responsiveness to parental needs in individualistic and familialistic countries. *European Societies*, *10*, 479–508. doi:10.1080/14616690701744364
- Lansford, J. E., Sherman, A. M., & Antonucci, T. C. (1998). Satisfaction with social networks: An examination of socioemotional selectivity theory across cohorts. *Psychology and Aging*, *13*, 544–552. doi:10.1037/0882-7974.13.4.544
- Larsson, K., & Silverstein, M. (2004). The effects of marital and parental status on informal support and service utilization: A study of older Swedes living alone. *Journal of Aging Studies*, *18*, 231–244. doi:10.1016/j.jaging.2004.01.001
- Laumann, E. O. (1973). *Bonds of Pluralism*. New York, NY: Wiley.
- Letki, N. (2018). Trust in newly democratic regimes. In E. M. Uslaner (Ed.), *The Oxford handbook of social and political trust* (pp. 335–356). Oxford, UK: Oxford University Press. doi: 10.1093/oxfordhb/9780190274801.013.28
- Lewis, M. A., & Rook, K. S. (1999). Social control in personal relationships: impact on health behaviors and psychological distress. *Health Psychology*, *18*, 63–71. doi:10.1037/0278-6133.18.1.63
- Li, T., & Zhang, Y. (2015). Social network types and the health of older adults: exploring reciprocal associations. *Social Science & Medicine* (1982), *130*, 59–68. doi:10.1016/j.socscimed.2015.02.007
- Litwin, H. (2010). Social networks and well-being: A comparison of older people in Mediterranean and non-Mediterranean countries. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *65*, 599–608. doi:10.1093/geronb/gbp104

- Litwin, H., & Shiovitz-Ezra, S. (2006). Network type and mortality risk in later life. *The Gerontologist*, *46*, 735–743. doi:10.1093/geront/46.6.735
- Litwin, H., & Shiovitz-Ezra, S. (2010). Social network type and subjective well-being in a national sample of older Americans. *The Gerontologist*, *51*, 379–388. doi:10.1093/geront/gnq094
- Litwin, H., & Shiovitz-Ezra, S. (2011). The association of background and network type among older Americans: is “who you are” related to “who you are with”? *Research on Aging*, *33*, 735–759. doi:10.1177/0164027511409441
- Litwin, H., & Stoeckel, K. J. (2014). Confidant network types and well-being among older Europeans. *The Gerontologist*, *54*, 762–772. doi:10.1093/geront/gnt056
- Litwin, H., Stoeckel, K., Roll, A., Shiovitz-Ezra, S., & Kotte, M. (2013). Social network measurement in SHARE wave four. In F. Malter & A. Börsch-Supan (Eds.), *SHARE wave 4: innovations & methodology* (pp. 18–38). Munich, Germany: MEA, Max Planck Institute for Social Law and Social Policy.
- Mair, C. A. (2013). European older adults’ social activity networks in national context: A cross-national exploration of national cultural, policy, and economic characteristics. In C. Phellas (Ed.), *Aging in European Societies* (pp. 61–81). Boston, MA: Springer. doi:10.1007/978-1-4419-8345-9\_5
- Malter, F., & Börsch-Supan, A. (Eds.) (2013). *SHARE wave 4: innovations & methodology*. Munich, Germany: MEA, Max Planck Institute for Social Law and Social Policy.
- Margolis, R., & Verdery, A. M. (2017). Older adults without close kin in the United States. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *72*, 688–693. doi:10.1093/geronb/gbx068
- Megyeri, E. (2016). Altersarmut und Wohneigentum in der EU-Eine Analyse mit EU-SILC 2014 Daten. Retrieved from <https://www.cesifo-group.de/DocDL/dice-report-2016-1-zaidi-antczak-march.pdf> (Accessed March 2017, 2018).
- Mitchell, J. C. (1969). *The concept and use of social networks*. Manchester, UK: Manchester University Press.
- Pfau-Effinger, B. (2005). Culture and welfare state policies: Reflections on a complex interrelation. *Journal of Social Policy*, *34*, 3–20. doi:10.1017/S0047279404008232
- Pinquart, M. (2003). Loneliness in married, widowed, divorced, and never-married older adults. *Journal of Social and Personal Relationships*, *20*, 31–53. doi:10.1177/02654075030201002
- Pinquart, M., & Sörensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: a meta-analysis. *Psychology and Aging*, *15*, 187–224. doi:10.1037/0882-7974.15.2.187
- Puts, M. T., Lips, P., & Deeg, D. J. (2005). Static and dynamic measures of frailty predicted decline in performance-based and self-reported physical functioning. *Journal of Clinical Epidemiology*, *58*, 1188–1198. doi:10.1016/j.jclinepi.2005.03.008
- Reher, D. S. (1998). Family ties in Western Europe: Persistent contrasts. *Population and Development Review*, *24*, 203–234. doi:10.2307/2807972
- Reher, D., & Requena, M. (2018). Living alone in later life: A global perspective. *Population and Development Review*. doi:10.1111/padr.12149
- Rook, K. S., Thuras, P. D., & Lewis, M. A. (1990). Social control, health risk taking, and psychological distress among the elderly. *Psychology and Aging*, *5*, 327–334. doi:10.1037/0882-7974.5.3.327
- Rosenmayr, L., & Köckeis, E. (1963). Propositions for a sociological theory of aging and the family. *International Social Science Journal*, *15*, 410–426.
- Shaw, B. A., Fors, S., Fritzell, J., Lennartsson, C., & Agahi, N. (2018). Who lives alone during old age? Trends in the social and functional disadvantages of Sweden’s solitary living older adults. *Research on Aging*, *40*, 815–838. doi:10.1177/0164027517747120
- Shiovitz-Ezra, S., & Litwin, H. (2012). Social network type and health-related behaviors: Evidence from an American national survey. *Social Science & Medicine* (1982), *75*, 901–904. doi:10.1016/j.socscimed.2012.04.031
- Soares, J. F., Barros, H., Torres-Gonzales, F., Ioannidi-Kapoulou, E., Lamura, G., Lindert, J., ... Stankunas, M. (2010). *Abuse and health among elderly in Europe*. Kaunas, Lithuania: EAHC. doi:10.1016/j.ypped.2014.01.008
- Stokes, J. P. (1985). The relation of social network and individual difference variables to loneliness. *Journal of Personality and Social Psychology*, *48*, 981–990. doi:10.1037/0022-3514.48.4.981
- Thompson, M. G., & Heller, K. (1990). Facets of support related to well-being: Quantitative social isolation and perceived family support in a sample of elderly women. *Psychology and Aging*, *5*, 535–544. doi:10.1037/0882-7974.5.4.535
- Tomassini, C., Glaser, K., Wolf, D. A., Broese van Groenou, M. I., & Grundy, E. (2004). Living arrangements among older people: An overview of trends in Europe and the USA. *Population Trends*, *115*, 24–35.
- Umberson, D. (1992). Gender, marital status and the social control of health behavior. *Social Science & Medicine* (1982), *34*, 907–917. doi:10.1016/0277-9536(92)90259-5
- United Nations. (2017). *Living arrangements of older persons: a report on an expanded international dataset*. New York, NY: Department of Economic and Social Affairs, Population Division (ST/ESA/SER.A/407).
- Victor, C., Scambler, S., Bond, J., & Bowling, A. (2000). Being alone in later life: Loneliness, social isolation and living alone. *Reviews in Clinical Gerontology*, *10*, 407–417. doi:10.1017/S0959259800104101
- Victor, C. R., Scambler, S. J., Bowling, A. N. N., & Bond, J. (2005). The prevalence of, and risk factors for, loneliness in later life: A survey of older people in Great Britain. *Ageing & Society*, *25*, 357–375. doi:10.1017/S0144686X04003332
- Victor, C. R., Scambler, S. J., Shah, S., Cook, D. G., Harris, T., Rink, E., & de Wilde, S. (2002). Has loneliness amongst older people increased? An investigation into variations between cohorts. *Ageing & Society*, *22*, 585–597. doi:10.1017/S0144686X02008784
- Wenger, G. C. (1991). A network typology: From theory to practice. *Journal of Aging Studies*, *5*, 147–162. doi:10.1080/13607869757001
- Windriver, W. (1993). Social isolation: Unit-based activities for impaired elders. *Journal of Gerontological Nursing*, *19*, 15–21. doi:10.3928/0098-9134-19930301-05
- Winqvist, K. (2002). Women and men beyond retirement. *Statistics in focus. Population and social conditions. Theme 3–21*. Luxembourg: Eurostat.
- Yeh, S. C., & Lo, S. K. (2004). Living alone, social support, and feeling lonely among the elderly. *Social Behavior and Personality: An International Journal*, *32*, 129–138. doi:10.2224/sbp.2004.32.2.129