



Social network changes among older Europeans: the role of gender

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Abstract

This study examined changes in the social networks of older Europeans. It utilizes the framework of the socioemotional selectivity theory and the convoy model to explore the social networks' changes over time, as well as the turnover of specific social network members. Furthermore, the study analyzed gender as a predictor of these transformations. The inquiry focused on older adults aged 65+ who participated in the fourth and sixth waves of the Survey of Health, Ageing, and Retirement in Europe ($n = 13,938$). The findings reveal a general trend of network expansion over time, with addition of new members and a higher proportion of family ties. These trends mask considerable individual variability in change trajectories, however. A series of OLS and Poisson regressions revealed that women were more likely to report network growth via addition of new social network members, and lower family involvement. These findings underscore the dynamic nature of older Europeans' interpersonal milieu. They also underscore the role of gender in social network transformations and show that the dynamics of older Europeans' personal networks differ for men and women.

Keywords Social networks · SHARE · Longitudinal · Health · Gender

Introduction

The social networks of older people are closely linked to the aging process, due to the involvement of networks in late life domains such as well-being, cognitive function, physical health and mortality (Andrew 2005; Litwin 2007; La Fleur and Salthouse 2016; Tomini et al. 2016). As the enquiry into social relationships, in general, and social networks, in particular, expands, more attention is being paid to their dynamic nature and the transformations they undergo as individuals age (van Tilburg 1998; Snijders and Doreian 2010; Cornwell et al. 2014). Such attention is warranted due to the associations of social network changes with older adults' health and well-being. For example, network shrinkage has been linked to depressive symptoms (Houtjes et al. 2014), whereas the addition of new close members to one's social milieu was found to be associated with improved health (Cornwell and Laumann 2015).

Theoretical framework

The dynamics of social network change in late life can be explained by two prominent contemporary theories. First, the socioemotional selectivity theory (SST) contends that as people age they become more aware of the limited time that remains, causing them to prioritize emotion regulation goals. Consequently, they tend to emphasize emotional aspects of relationships and focus on close relationships, while actively pruning the relatively peripheral ties (Carstensen 2006; Lang and Carstensen 2002). Longitudinal studies generally support this notion by showing that social networks shrink over time (Barnes et al. 2004; Conway et al. 2013). Specifically, older adults have been shown to exclude the less meaningful, peripheral acquaintances (English and Carstensen 2014).

Some studies challenge this assertion, however. For example, a Dutch study identified stability of the network over time (van Tilburg 1998) and a study in the USA pointed to network growth (Cornwell et al. 2014). Therefore, the premise of the SST regarding the reduction in the social network needs to be further examined. Moreover, while the SST expects networks to become less frequently contacted in older age (Carstensen et al. 2003), this has not always been shown. Frequency of contact was found, variously, to remain stable (Martire et al. 1999), decrease (van Tilburg

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1998), or change only in relation to some network members (Shaw et al. 2007; Kalmijn 2012).

The second theory related to social network change is the convoy model (Kahn and Antonucci 1980). It conceptualizes social relationships as a collection of people who surround individuals during the life course, move with them over time and are available as resources of support in times of need. According to the theory, convoys are dynamic and lifelong, changing in some ways and remaining the same in others. The closest relationships, such as spouse, family, and close friends remain relatively stable over the life course. More distant relationships, on the other hand, such as friends, neighbors and co-workers, are more likely to change with changing life circumstances (Antonucci et al. 2014). In accordance with that premise, studies find a decline in the presence of non-family members over time among the older population (van Tilburg 1998; Barnes et al. 2004; Conway et al. 2013).

The convoy model also describes the internal dynamics of the social networks and maintains that they experience change as well as stability (Kahn and Antonucci 1980). Thus, while SST stresses the trimming of social connections, the convoy model acknowledges that ties can also be strengthened or newly formed in old age. Research utilizing such a perspective demonstrates that networks do not simply “shrink” or “grow”, but instead experience considerable internal turnover (Feld et al. 2007). Many social network members, or “confidants” as they are often termed, enter the network while others leave it (van Tilburg 1998). The current study therefore will go beyond examination of general changes in the network size of older Europeans, and examine the extent to which their networks are characterized by losses and gains of confidants.

Gender and social network change

Social network change patterns can significantly differ among different individuals, insofar as older adults are a quite heterogeneous population (Krause 1999; Shaw et al. 2007). According to the convoy model, such individual variability can be explained by personal and contextual characteristics, particularly gender (Antonucci et al. 2011). Given the longer life expectancy of women and their greater chances of remaining without a spouse (Barford et al. 2006), it is important to understand the changes in their sources of social support as they grow older. Women are typically portrayed as having larger, more supportive, and less familial social networks (Liebler and Sandefur 2002; Antonucci et al. 2004; Santini et al. 2016). Their lifelong association with social resources may lead to enhancements of the gender gap in older ages, as indicated by studies which showed that women experience improved contact and emotional support over time

(Fischer and Beresford 2015) and maintain more friendship ties (Stevens and Van Tilburg 2011). However, the link with gender has not been consistently found (Martire et al. 1999; Shaw et al. 2007), calling for a need to look deeper into these associations. Furthermore, it is unclear what pattern of internal turnover characterizes women. Their social world may undergo less shrinkage, compared to men, due to the addition of new ties. However, such a trend may also reflect less confidant loss over time and better maintenance of existing close relationships. The current endeavor will examine women’s networks’ internal dynamics alongside their overall network transformation.

The understanding of social network changes among older Europeans is still relatively underdeveloped, for a number of reasons. First, such changes have not been explored in a longitudinal multi-national European sample. The current study does this for the first time using SHARE data, providing new insights into the dynamics of late-life social relationships in contemporary Europe. Such an inquiry is particularly valuable since changes in older adults’ social relationships have been mostly examined in American samples. Moreover, some social network characteristics differ across countries, while others are more universal and are similar in different national contexts (Ajrouch et al. 2017). Adding a European perspective to this line of research will allow a greater understanding of which network characteristics are similar to those found in other regions.

Secondly, gender patterns in social networks around the world are quite similar, and examining them in a European context adds to the literature. Third, studies rarely consider the changes at the individual social network member or confidant level while also taking into account the characteristics of the network as a whole. The current study will present such an account of older Europeans’ social networks through direct identification of confidants by means of a name generator, an approach used thus far in only a few large longitudinal surveys of the older population (van Tilburg 1998; Cornwell et al. 2014). Finally, directly identifying close social network members of older Europeans will present a more accurate picture of their close ties, as they perceive them.

The current analysis explores changes in the interpersonal milieu of older Europeans. Toward this end, it examines a range of social network characteristics using a large panel sample that was drawn from the Survey of Health, Ageing and Retirement in Europe (SHARE). The inquiry probes selected important aspects of the social network, looking at newly derived indicators of social network change in a harmonized European database. In addition, the investigation scrutinizes gender as a predictor of social network changes. As such, the current analysis provides a new and comprehensive assessment of the state of connectedness among older people in Europe.

The study examines three main hypotheses. In accordance with SST, we posit that the social networks of older Europeans will become smaller from baseline to follow-up, less frequently contacted and closer emotionally (H_1). In accordance with the convoy model, we hypothesize that the social networks of older Europeans will become more familial from baseline to follow-up (H_{2a}). We also assume that the networks will reflect both stability and internal turnover (H_{2b}). Finally, we presuppose that the changes in the social networks will vary by gender. Specifically, women's social networks will become larger, less familial and closer emotionally compared to those of men (H_{3a}). Women will also report less lost confidants and more new confidants, compared to men (H_{3b}).

Methods

The current study is based on data from the Survey of Health, Aging and Retirement in Europe (SHARE), a biennial panel survey of community dwelling adults aged 50 and older and their spouses of any age. It is based upon a probability sample of the population aged 50 and older in each country (Börsch-Supan et al. 2013). The current analysis uses data from the fourteen countries that participated in both the fourth and sixth waves of data, collected in 2011 and 2015: Austria, Germany, Sweden, Spain, Italy, France, Denmark, Switzerland, Belgium, Czech Republic, Poland, Portugal, Slovenia and Estonia.

The current analytical sample includes respondents who participated in the two waves of data collection and were 65 years or older at baseline (2011). Some 28,650 respondents over the age of 65 answered the survey in 2011, with 16,860 of them participating again 4 years later. Attrition analysis was conducted by a simple logistic regression which used respondents' characteristics in 2011 to predict attrition in 2015. Those who dropped out between the waves were significantly older ($p < .05$), more likely to be male, to have secondary education and to have a partner. They also tended to report poorer physical and cognitive health, although they did not differ in regard to their mental health. We adjusted for this attrition by using weights, as will be explained in more detail later. The final analytic sample numbered 13,938 respondents who participated in both waves, had a social network in both waves and had full data on all of the study variables.

Study variables

Dependent variables

The outcome variables were based on a name generating inventory for the compilation of social networks that was

introduced in Wave 4 (2011) and measured again in Wave 6 (2015) (Litwin et al. 2013). The name generator probe explains that "Most people discuss with others the good or bad things that happen to them, problems they are having, or important concerns they may have." They are then asked "Looking back over the last 12 months, who are the people with whom you most often discussed important things?" Respondents can name up to six such persons or "confidants". They are also given the possibility of naming another one additional person who is important "for any other reason." Respondents are then asked to provide additional information about these confidants, such as role relationship, contact frequency and emotional closeness. The size of the network was measured by summing the number of persons named (0–7). The proportion of family members in the network was calculated by summing the number of family members in the network, divided by the total of named confidants. Contact frequency was measured as the mean contact frequency with network members. It was assessed by asking "During the past 12 months, how often did you have contact with (confidant's name) either personally, by phone or mail?" The responses ranged from "Daily" (7) to "Never" (1). Emotional closeness was probed by asking respondents "How close do you feel to (confidant's name)?" with answers ranging from "Not very close" (1) to "Extremely close" (4). The score on this measure was the average rate of emotional closeness with confidants. The outcome variables in the regression analyses were the change scores of each of these social network indicators, calculated by subtracting the 2015 score from the 2011 score.

SHARE detects changes at the level of specific confidants by asking respondents to match their confidants from the respective Waves. Following the identification of the 2015 roster (i.e., the list of persons named), respondents were shown a list of their 2011 social network members, by name and role relationship. They were also shown a list with the names of the roster that was just reported and were asked to indicate next to each of the people named in 2015 the number they were assigned in the 2011 roster. Those who were not matched were coded as either "lost," if they appeared in 2011 and not in 2015, or "new," if they were mentioned in 2015 and were not linked to previously mentioned confidants. For the analyses we summed the occurrences of the "lost" and "new" confidants, respectively, creating new variables for the counts of lost social network members, new members and those with no change.

Independent variables

Gender was the predictor variable of interest. The analyses also controlled for socioeconomic background, health status and country of residence, all measured at baseline (2011), and all of which have been found to be variously related to

social connectedness. Age was considered as a continuous variable. Marital status was divided into three categories: having a partner (being married/in a registered partnership), not having a partner (never married/divorced/widowed) and becoming newly widowed since baseline. The education variable was based on the International Standard Classification of Education (ISCED) and divided the respondents into three categories: elementary schooling or less (ISCED-97 score = 0–2), secondary education (ISCED-97 score = 3) and post-secondary education (ISCED-97 score = 4–6). Financial adequacy was measured using a question about the extent to which the respondent's household is able to make ends meet. This measure represents the personal evaluation of one's financial capacity, and it has been found to be an effective and robust relative income indicator, allowing cross-national comparison of countries in which incomes have differing purchasing power (Litwin and Sapir 2009). Its four response options range from "with great difficulty" (1) to "easily" (4).

The analysis also controlled for cognitive and physical health, depressive symptoms and well-being (quality of life). Cognitive health was based on a composite score of two measures that are sensitive to cognitive aging: verbal recall and fluency (Prull et al. 2000). In the verbal recall task, the interviewer reads out 10 words and the respondent is asked to recall as many of them immediately and again after 10 min. The immediate and delayed recall scores are summed to create a general recall score, ranging from 0 to 20. In the verbal fluency test, the participants were asked to name as many animals as they could in 1 min, without repetitions or proper nouns. Due to outliers in a small number of cases, scores above 45 were recoded as 45 (Clark et al. 2009). The composite cognition score was created by averaging the standardized recall and fluency scores (Adam et al. 2013).

Physical health was measured using a subjective and an objective measure. Self-rated health was a single subjective item asking respondents to rate their health, with five possible responses that ranged from "poor" (1) to "excellent" (5). Objective physical health was measured by the number of mobility, arm function and fine motor limitations (0–10).

Depressive symptoms were measured using the Euro-D depression scale, which was developed in order to measure late life depressive symptoms across European countries and has been shown to have good validity and internal consistency (Castro-Costa et al. 2008). It is based on 12 questions, each describing a symptom possibly experienced in the past month. Responses are summed, producing a scale that ranges from 0 to 12 depressive symptoms. In our sample the Euro-D had a reliability of $\alpha = .71$.

Well-being, or quality of life, was measured using the CASP-12 scale (Knesebeck et al. 2007). The scale is made up of 12 items reflecting four subscales measuring control,

autonomy, self-realization and pleasure, each consisting of 3 items experienced "often" (1) to "never" (4). The total scale has a range of 12–48, such that higher scores reflect a better state of well-being ($\alpha = .81$). A minimum of 10 completed items was required for calculation of the Euro-D and CASP, such that scores with 10–11 complete items were interpolated by dividing the sum score by the number of completed items and then multiplying that value by 12 (Palgi et al. 2015).

Statistical analysis

Data analysis was conducted using STATA 13 (StataCorp 2013) and R version 3.3.2 (R Core Team 2016). The analysis focused, first, on descriptive data regarding the background characteristics of the sample. This was followed by examination of the changes in the social networks. This involved consideration of each of the respective network characteristics in each wave, as well as the difference between them and a *t* test for the significance of that difference. The network characteristics examined were social network size, the proportion of kin relationships, mean contact frequency and mean emotional closeness. The analysis also looked at the proportion of respondents who experienced a decrease, an increase or no change in each of the respective network characteristics.

The final stage of the inquiry consisted of a series of regression analyses that examined the role of gender in relation to the changes in the respective characteristics of the networks. Most of the procedures used were OLS regressions that predicted changes in each of the four social network indicators: social network size, proportion of kin, frequency of contact and emotional closeness with the network. Poisson regressions were used to consider the role of gender in relation to the number of new and lost confidants, both of which are count measures. Each regression predicted the respective effect of gender on the outcome variable, controlling for age, marital status, education, financial adequacy, global cognition score, self-rated health, mobility impairments, Euro-D, CASP and country of residence. Where relevant, the analysis also controlled for the baseline measure of the predicted social network variable (i.e., when predicting change in the proportion of kin, we controlled for the proportion of kin at baseline) and baseline social network size.

Weighted data

The analyses apply the weights provided by SHARE in Wave 4 to adjust for respondents' differential probabilities of participating. As described previously, some respondents were lost between the waves due to attrition, and those respondents differed in their characteristics compared to the remaining sample. We adjusted for this non-random attrition by using the method proposed by Cornwell et al. (2014) (see

also Cornwell and Laumann 2015), and created a variable for each of the respondents from 2011 that indicated whether they participated again in 2015. We then predicted this variable in a logistic regression, using selected sociodemographic and health variables as predictors. From the regression, we derived a predicted probability that each of these respondents will participate again in 2015, and multiplied the inverse of that probability with the baseline weights. Thus, these weights gave greater emphasis to respondents who were less likely to return to the survey, and allowed us to adjust for attrition and selection bias.

Results

Table 1 depicts the background characteristics of the study sample. The sample was aged 74 on average and had a majority of women. More than half of the sample had elementary education, and about two-thirds were married or in a registered partnership. They had 2.8 depressive symptoms on average (range 0–12) and a mean quality of life score of 36 (range 12–48). Respondents rated their health as 2.5 on a score from 1 (poor) to 5 (excellent), thereby rating their health as ranging between “Fair” and “Good.” They also indicated that they suffered from 2.3 mobility limitations, had a mean recall score of 7.7 (range 0–20) and a fluency score of 16.9 (range 0–45). They claimed that their household was able to make ends meet “Fairly easily”.

Table 1 Descriptive background characteristics of the sample in Wave 4 (weighted)

Characteristic	Mean (SD)/%	Range
Age	74.08 (0.12)	65–98
<i>Gender</i>		
Men	43.69%	
Women	56.31%	
<i>Education</i>		
Elementary education	54.14%	
Secondary education	27.71%	
Post-secondary education	18.15%	
<i>Marital status</i>		
No partner	36.44%	
Has partner	60.24%	
Became widowed	3.32%	
Financial adequacy	2.77 (0.02)	1–4
Depressive symptoms	2.79 (0.04)	0–12
Quality of life	36.14 (0.11)	12–48
Recall score	7.73 (0.06)	0–20
Fluency score	16.87 (0.11)	0–45
Self-perceived health	2.52 (0.02)	1–5
Mobility limitations	2.29 (0.05)	0–10

Table 2 provides an overview of the social networks between 2011 and 2015. It shows that older Europeans’ social networks grew in size across the waves and had more new confidants added to them in comparison to losing confidants. Almost half of the network members reported in Wave 4 or 6 were mentioned only in one wave. Moreover, the social networks consisted of a larger share of kin relationships over the study period. The social networks showed stability in the interaction with confidants and in the emotional aspects of their relationship.

A deeper look into the changes is presented in Table 3, which divides the changes in the different social network characteristics into three categories: respondents who experienced decrease, those who did not experience change and those who experienced an increase. This analysis shows a more complex picture, of inter-individual variability in the experience of social network changes. For example, 37% of respondents reported larger social networks over time, while 32% did not experience any change and 31% reported smaller social networks. These results indicate that a considerable proportion of respondents experienced different change patterns in regard to their social networks.

Regression analyses

The regression analyses are displayed in Table 4. These analyses predicted the changes in older Europeans’ social networks across 4 years, using gender as a predictor. Table 4 first shows the association of gender with changes

Table 2 Mean comparison of each social network characteristic in Wave 4 and Wave 6 (weighted)

	Wave 4	Wave 6	Difference	<i>T</i> test
Social network size	2.56	2.68	0.12	4.32***
Proportion kin	80.39	81.54	1.15	2.00*
Mean contact frequency	6.11	6.13	0.03	1.22
Mean emotional closeness	3.18	3.17	–0.01	–0.49
Number of confidants mentioned only in one wave ^a	1.11	1.23	0.12	4.29***

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

^aWave 4—lost confidants, Wave 6—new confidants

Table 3 Proportion of respondents reporting social network changes (weighted)

	Decrease	No change	Increase
Social network size	30.95	32.00	37.05
Proportion kin	21.37	57.35	21.29
Mean contact frequency	36.96	26.08	36.96
Mean emotional closeness	37.04	25.39	37.57

Table 4 Regression models using gender to predict change in social networks (weighted)

Dependent variable	<i>B</i> (SE)	Beta	IRR (SE)
Social network size change	0.171 (0.050)	0.048***	
Proportion kin change	− 2.219 (1.038)	− 0.033*	
Contact frequency change	0.013 (0.042)	0.005	
Emotional closeness change	0.001 (0.024)	0.001	
Lost confidants			0.956 (0.029)
New confidants			1.083* (0.037)

N = 13,938; gender used as the predictor (men = 0, women = 1); controlled for age, education, marital status, financial adequacy, cognition score, depressive symptoms, quality of life, self-perceived health, mobility limitations, country and baseline dependent variable (baseline social network size in the Poisson models)

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

in the network at the respondent level, using OLS regressions. The analyses control for the sociodemographic and health variables indicated earlier. The results show that social network size grew for women, while the proportion of kin relationships in the social network declined among women. Gender was unrelated to the change in the frequency of interaction and emotional closeness of the social network. Table 4 also displays the results of Poisson regressions predicting the number of lost and new confidants. As may be seen, social network members were more likely to be added by women, while gender was not related to the number of lost confidants.

Inter-relationship of the network indicators

We should note that we also checked the potential associations between the respective network indicators and their effects. Toward that end, we first conducted weighted Pearson correlations of the social network change indicators and found some degree of association. For example, an increase in network size was related to a decline in the other network indicators. Therefore, in separate analyses (not shown), we added the baseline social network indicators to the regression models. They had few effects on the social network change indicators—higher emotional closeness at baseline predicted higher kin proportion, while improved emotional closeness was predicted by a larger social network and higher contact frequency at baseline. More importantly, the trend for the associations with gender was similar to the analyses that were reported above without controlling for the baseline social network indicators.

Discussion

The current study examined the changes that occurred in the social networks of older Europeans over a 4-year period. It aimed to provide a comprehensive outlook on the change patterns in old age, while taking into account different characteristics of the network. The inquiry sought to clarify whether the social networks of older Europeans present trends similar to those predicted by the SST and the convoy model, specifically whether they become smaller, emotionally closer and more familial, while experiencing internal turnover of confidants. Finally, the study explored the role of gender as a precursor to the changes of social relationships in late life.

Negating the first part of Hypothesis 1, which predicted network shrinkage, the present inquiry revealed a general trend of network expansion over time. That is, more individuals reported network growth than those reporting network declines or no change. This growth was driven by greater additions of new confidants over lost confidants, indicating an ability to make up for lost relationships and to expand the scope of one's close ties. Hence, our expectation of finding network shrinkage was rejected.

However, this same finding enables us to make an important distinction between changes within close networks, as opposed to those in wider social networks (Antonucci et al. 2004; Wrzus et al. 2013). Most inventories derive networks that are composed of both close and peripheral ties. The current study, in contrast, focused exclusively on the very close social networks, identified as the most important persons in the lives of respondents (Litwin and Stoeckel 2014). The addition of ties to the close personal network may reflect the growing emphasis on the more emotionally meaningful ties, that is suggested by the SST (English and Carstensen 2014). In accordance with this notion, some of these newly added ties may actually be prior peripheral relationships that simply grew in importance (Zettel and Rook 2004). To summarize this point thus far, our findings emphasize the need to distinguish between the changes that occur in close personal networks and those that occur in social networks in general.

The other aspects of Hypothesis 1 were also not confirmed. A trend of stability was seen among the networks' interaction and emotional qualities. Thus, even though older Europeans expanded their networks, they managed to retain similar levels of interaction and quality, and did not accept weaker additions. Such stability can match the framework of the SST when noting, as previously stated, that the current study maps the core networks, and these can be expected to remain relatively stable (English and Carstensen 2014). Furthermore, this relative stability can suggest some selectivity being practiced by older

Europeans. That is, it is possible that they were active in maintaining a stable level of closeness and contact with their social environment, despite changes in other characteristics of the network. These findings strengthen the notion of old age as a period of maintaining and even strengthening a supportive social environment, at least in regard to the very close social environment (Cornwell and Laumann 2015).

The second hypothesis was supported by the study's findings. Hypothesis 2a was supported by an observed increase in the proportion of kin involvement. This supports the notion that the aforementioned expansion reflected older Europeans' growing emphasis on familial ties. Although this increase was not large in scope, it indicates a tendency among the older population. This tendency may be the result of different life events which require tightening the relationship with family members (Antonucci et al. 2011). It shows the importance of considering the composition of the network separately from its emotional qualities, as these may differ in the transformation they undergo, and not to assume that more familial networks are closer emotionally.

Hypothesis 2b predicted internal turnover in the networks and this too was confirmed. This attests to the dynamic nature of older Europeans' social networks, as stressed by the convoy model (Antonucci et al. 2014). Their close social milieu is shown to experience continuity alongside change, possibly as the convoy adapts to older individuals' life course developments (Antonucci et al. 2011). The changes within the network appear to be relatively large in scope, as about half of the social network members were reported only in one wave. This finding also emphasizes the importance of understanding the processes of losing and gaining confidants which can be masked by the relative stability shown in summary measures.

The need to look beyond summary measures of social network changes was also highlighted by the differential change patterns of social relationships that were observed, indicating inter-individual variability in the experience of social network transitions in old age (Dannefer and Sell 1988; Nelson and Dannefer 1992). These results suggest that even though the summary trends of social networks are informative, they may not be representative of the experience of all older Europeans. Moreover, they may conceal different subtrajectories experienced by different persons (Krause 1999).

The third hypothesis posited associations between gender and the respective network outcomes. The findings confirmed, in accordance with hypothesis 3a, that women experienced greater relative growth in their close networks. This supports the convoy model's contention that men and women differ in the nature of their social relations (Antonucci et al. 2014). A possible explanation is their greater access to social resources, perhaps due to their lifelong accumulated ties and

practiced social skills (Fischer and Beresford 2015). Furthermore, these social resources seem to be outside the family scope, thereby diversifying the potential types of support which are available to women. Our findings also show the mechanism behind women's network growth—they are not necessarily better at maintaining their close ties, in contrast to the first part of Hypothesis 3b, as they did not differ from men in the number of lost confidants. Instead, confirming the second part of Hypothesis 3b, they are more prone to create new close ties (or, alternatively, strengthen peripheral ties and add them to their close social milieu). Such a tendency can further diversify their sources of support and possibly lead to positive health outcomes (Cornwell and Laumann 2015).

Overall, these findings emphasize the gendered nature of social experiences in late life, as identified by the convoy model (Ajrouch et al. 2005). Women seem to continue their lifelong advantage in social support resources, with networks that become larger and more diversified (Fischer and Beresford 2015). These patterns also build on the SST by emphasizing that the age-related focus on emotionally meaningful relationships may manifest differently for men and women. Women may be more inclined to enlarge their close circle, and wish to include close friends among these meaningful ties, whereas men may prefer more familial and well-known ties.

A limitation of longitudinal studies is the attrition of respondents over time, due to frailty, mortality and other causes. Indeed, our analysis revealed that respondents who dropped out between the waves were older and less healthy. We dealt with this bias by adjusting the sample, using longitudinal weights that put more emphasis on people who were less likely to participate in the follow-up measurement. This procedure adjusted the estimates such that they reflect a sample in which all baseline respondents participated in the follow-up measurement (Cornwell and Laumann 2015). Another possible shortcoming of the current study is its span of two time points over a period of 4 years. While this can provide some understanding of changes in social networks, the analysis would have benefited from additional waves of data collection that can allow, for example, detecting patterns of nonlinear change over time. SHARE is currently limited to two waves of social network data. Thus, future research is warranted to expand the current findings by looking at longer periods of social changes among older Europeans. Lastly, our findings revealed some associations between the social network indicators. Although this may impact our results, additional analyses showed the same trend for gender after taking these associations into account, thereby underscoring the robustness of the reported findings. Nevertheless, future research may be warranted to study the inter-relationships between different aspects of the social networks over time.

To sum, the current endeavor sought to better understand social network changes among older Europeans. It presented a comprehensive overview of social networks by taking into account their characteristics, as well as the turnover of social network members. The study found that older Europeans undergo dynamic processes of change and transformation in their social milieu. The close personal networks of older Europeans were found to expand over time, due to the addition of new members, while also becoming more familial. This pattern, however, masked considerable individual variability in change trajectories, some of which was accounted for by gender. Women's social networks grew and became less family oriented, and they tended to add more new confidants. Thus, the dynamics of older Europeans' social networks differ for men and women.

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