Article

Impact of Retirement on Quality of Life: Role of Changes in Social Network Involvement

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Abstract

Ageing populations foreground understanding how retirement affects quality of life. The inconclusive findings on retirement's quality of life impacts encourage further analyses of this association's complexity. Using waves 4 (2011) and 6 (2015) of the Survey of Health, Ageing and Retirement in Europe (N = 9249) and conditional change multilevel mixed-effects linear regressions, this study investigates how changes in three measures of social network involvement (size of close social network, frequency of contact with one's close social network, and emotional closeness with one's close social network) moderate how retirement is associated with quality of life. Our findings show that increased social network involvement concurrent with entry into retirement predicts a more beneficial retirement transition. These results are interpreted through role theory. Consequently, this study encourages societal and clinical attention to retirees' social network involvement. It also recommends further study of the nuances that affect how retirement is associated with quality of life.

Keywords

quality of life, well-being, retirement, social networks, role theory

Introduction

Recent demographic trends foreground understanding the complexities in how retirement transitions affect quality of life and well-being. First, populations in all high-income countries are ageing (Kudo et al., 2015; Macia et al., 2019), raising proportions of retirees (Yoshino et al., 2019). Second, promotions of active ageing are key policy priorities in several countries (e.g., Moreira et al., 2020; Rojo-Pérez et al., 2021; Zhang et al., 2022). Central among them are encouragements of social relationships, which mitigate sentiments of isolation and loneliness (Franke et al., 2022; Lam et al., 2023), to which older persons' health is vulnerable (Moreno-Tamayo et al., 2022; Nordin et al., 2023). Furthermore, older persons' poorer health and chronic conditions lead to substantial healthcare burdens and costs (Chen et al., 2023). Consequently, a pressing research need is comprehending the determinants of how retirement transitions are associated with quality of life. On this topic, scholarship has produced inconclusive results. While some studies found no significant effects (e.g., Abolhassani & Alessie, 2013; Fonseca et al., 2015; Kesavayuth et al., 2016; Merz, 2022), others found positive effects (e.g., Akbari, 2022; Gorry et al., 2018; Horner, 2014), and still others revealed negative impacts (e.g., Bonsang & Klein, 2012; Sohier et al., 2021). Among these studies finding positive effects, Akbari (2022) addressed the endogeneity between retirement and quality of life through fixed-effects panel modelling and a regression discontinuity design based on three retirement ages relevant for social security payments. Gorry et al. (2018) and Horner (2014) instead addressed this endogeneity through instrumental variables based on social security and pension policies and programs. Both of these studies finding negative effects (Bonsang & Klein, 2012; Sohier et al., 2021) addressed this endogeneity through fixed-effects panel modelling. This suggests that studies that more extensively addressed endogeneity concerns have tended to find positive effects of retirement, while those with more limited endogeneity adjustments have often found negative impacts. In their examination of these inconclusive findings, Ugwu et al. (2024) argued for this association's complexity and retirement's multifaceted nature. Accordingly, they recommended holistic policies surrounding retirement that are attentive to older adults' mental well-being and social integration. Instead of focusing on the main effect of retirement's association with quality of life and well-being, the present

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study elucidates some of this relationship's complexities through asking:

-how do changes in social network involvement concurrent with retirement moderate retirement transitions' associations with quality of life and well-being?

The literature review that follows analyses existing scholarship that suggests answers to this question. This begins with discussion of how social relationships and activities benefit older adults' quality of life. Next, we present role theory, its predictions for social network involvement through the retirement process, and its relevance for our empirical investigation. This section concludes with presentations of our study's novel contributions to the retirement literature and its guiding hypotheses.

Literature Review

The Importance of Later Life Social Relationships and Activities

Scholarship on the importance of social relationships and activities for older age quality of life supports the postulate that social network involvement is relevant to how retirement affects quality of life. Social relationships benefit older persons' health and quality of life through the emotional and instrumental support, and the physically and cognitively invigorating interactions they provide (Cornwell et al., 2008; Rook, 2009). Social connectedness further advantages older adults' quality of life through supporting their generativity, based on contributing to subsequent generations' development, success, and well-being (Narushima, 2005; Serrat et al., 2017). More generally, greater extents of activity forestall the decrements in cognitive, physical, and mental health that often co-occur with the process of ageing (Litwin & Stoeckel, 2016) (as emphasised by the activity theory of ageing, Teles & Ribeiro, 2019; Zheng et al., 2022). Consequently, as older persons transition into retirement, increased engagements with their social networks can serve as replacements for their earlier employment activities (see the discussion of role theory below).

Important for later life social activity, the socioemotional selectivity theory of ageing suggests that reduced time horizons in later life lead older adults to value emotional well-being in the present moment over future socioeconomic success (Carstensen, 1992). This leads to a prioritization of close and emotionally satisfying social ties over weaker and more expansive social connections (Carstensen, 1992). Accordingly, the present study addresses three important measures of close social network involvement. The first is the size of one's close social network, including people with whom one most often discusses important matters. Larger close social networks provide more extensive and diverse information, resources, and forms of social support, which benefit older adults' quality of life (Harasemiw et al., 2018; Litwin, 2001; Litwin & Shiovitz-Ezra, 2011). The second is the total frequency of contact with one's close social network members. This character of social connectedness provides social, cognitive, and physical activity, thus advantaging older persons' quality of life (see the activity theory of ageing, Teles & Ribeiro, 2019; Zheng et al., 2022). The third is the total emotional closeness across one's close social network, which potently affects meaning and purpose in life (Bakhshandeh Bavarsad & Stephens, 2024; Bodner et al., 2014; Stavrova & Luhmann, 2016).

Scholarship has shown that older adults benefit in their health and quality of life from a wide variety of dyadic social relationships. Mpofu et al. (2024) found that while support from both spouses/partners and children significantly advantage older persons' life satisfaction, the former effect is stronger. Stocker et al. (2020) revealed how older adults' well-being benefits from emotional warmth between siblings, with reduced loneliness mediating a substantial part of this relationship. Blieszner et al. (2019) discussed how friendship relationships contribute to older persons' quality of life, with emphasis on how they help maintain social connectedness under common circumstances in later life of loss of other social ties, including with colleagues due to retirement. Concerning relationships with neighbours, Greenfield and Reyes (2015) found advantages for eudaimonic well-being. Additionally, Seifert and König (2019) revealed that European nations showing better life satisfaction tend to also evince stronger supportive relationships between neighbours. All these types of relationships can potentially create strong social ties.

Relevant to the present study, these types of relationships also potentially change through the retirement transition. Pfund et al. (2022) found that transitioning to retirement raises one's exchanged social support with friends and romantic partners. King (2020) revealed that among men, retirement is associated with reduced interpersonal interactions with children, while the opposite holds among women. In concordance with the socioemotional selectivity theory of aging, Comi et al. (2022) found that with retirement, stronger social connections (e.g., family members) tend to replace weaker social ties (such as what is common between friends, neighbours, and coworkers). While no effect was found upon the size of one's close social network, one's maintained ties rose in intensity (Comi et al., 2022).

The Relevance of Role Theory to Social Network Involvement in Retirement

The retirement transition involves the shedding of the important social role of worker. Anglin et al. (2022) emphasised how beyond constituting sets of expected behaviours based on peoples' locations within structural and cultural systems, roles affect how individuals view and ascribe meanings to their own lives. Moreover, feelings of attachment to meaningful

activities, groups, organizations, and roles improve quality of life through producing sentiments of mattering (Allen et al., 2021; Lambert et al., 2013). Pertinent to this study, the role of worker commonly engenders satisfaction derived from one's meaningful contributions to other persons' well-being and one's broader society (Chang & Yen, 2011). Furthermore, the role of worker produces sentiments of autonomy, independence, empowerment, and generativity (Hagler et al., 2015).

Thus, it is plausible that replacing the role of worker with other roles after retirement could serve as a means of maintaining and enhancing quality of life. In fact, some scholarship on later life suggests processes of role substitution. One study emphasising substitutions in social roles investigated how older persons prepare for retirement by planning bridge employment, leisure involvements, and social activities (Eismann et al., 2019). Another study revealed trade-offs in the associations between later life employment and social relationships with family members, friends, and neighbours (Lancee & Radl, 2012). A further investigation highlighted the roles of grandparent and great grandparent as substitutes for other social roles that older persons have lost (Macfarlane et al., 2019). Scholarship identifying relationships with family members and friends as important and meaningful social roles (e.g., Eismann et al., 2019; Koenig & Eagly, 2014; Lancee & Radl, 2012) suggests that retirees might be motivated to replace the role of worker with deeper and more frequent interactions with close social ties. The present study contributes to this literature through analysing how such substitutions during the retirement transition predict changes in quality of life.

The Present Study's Original Contributions and Hypothesis

This study extends these bodies of scholarship through assessing whether changes in social network involvement concomitant to the retirement process help determine how the retirement transition is associated with quality of life and well-being. In essence, this study thereby combines the literature on the benefits of social relationships in later life with the scholarship on the importance of social roles, including how social roles evidence processes of substitution. Accordingly, we hypothesise:

-changes towards increased social network involvement are more beneficial for the quality of life and well-being of those who transition into retirement than of those who continue working.

Methods

Dataset and Sample

Our empirical investigation is based the Survey of Health, Ageing and Retirement in Europe's (SHARE) 4th (2011) and 6th (2015) waves (see Börsch-Supan, 2022a; 2022b). The SHARE's longitudinal panel data span several nations of Europe and Israel, and is based on adults of at least 50 years of age. The variables included focus on health and well-being, diverse aspects of socioeconomic status, living conditions, formal and informal social participation, and employment circumstances and transitions. The first wave took place in 2004 and spanned 11 European countries. Ensuing waves took place approximately once every two years and extended to additional European nations. While Börsch-Supan et al. (2013) explain key aspects of the SHARE, Bergmann et al. (2019) detail the SHARE's rates of response and retention.

We employed waves 4 and 6 because they each include the required social networks module. While waves 8 (October 2019 to September 2020) and 9 (2022) also include a social networks module, they both took place during the COVID-19 pandemic. The pandemic placed substantial restraints on formal and informal social activities, and generally involved sources of variability in quality of life, workforce transitions, and social connectedness that are not among our foci. Furthermore, given the analytical approach we used, only two waves could be included.

The criteria for inclusion in this study's sample were that respondents took part in both waves 4 and 6, were working for pay at wave 4 (and were thus "at risk" of retirement by wave 6), and were 50–80 years of age at wave 4. We applied this age restriction since working respondents older than 80 years of age are too exceptional a group. Accordingly, the complete sample included 9249 respondents. These respondents resided in the following 14 countries, without exclusion of any countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Italy, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland.

Variables

Dependent Variable. This study's outcome was the wave 6 CASP index for quality of life and well-being, which incorporates four features: control, autonomy, self-realization, and pleasure (explained in detail in Oliver et al. (2021)). The 12 composite items include three assessments per feature, among which are how often do you feel/think:

-that what happens to you is out of your control? (control)
-that you can do the things that you want to do? (autonomy)
-that life is full of opportunities? (self-realization)
-that your life has meaning? (pleasure)

Respondents answered each question on a Likert scale from 1 = "never" to 4 = "often". Negative items were reverse coded. To create this index, all 12 composite items' Likert scale scores were added. Accordingly, this index spans from 12 to 48, with a Cronbach's alpha of 0.82, indicating good internal reliability.

Notably, scholarship addressing the present study's topics has employed many conceptually similar and overlapping

measures, including mental health, well-being, happiness, life satisfaction, and quality of life. The present analysis employs the CASP index for quality of life and well-being because it comprises a broad, nuanced, detailed, and more complete and holistic subjective evaluation of one's life.

Independent Variable. Our central predictor was a categorical variable based on having continued working (reference category (ref.)), retired, or undergone other workforce exits between waves 4 and 6. We focused on the difference between those who retired and those who continued working. While we included those undergoing other workforce exits to ensure complete analyses, they will not be our focus in discussing our findings.

Moderating Variables. Our moderating variables were three measures of change in social network involvement between waves 4 and 6. These variables included size of close social network, total frequency of contact with one's close social network, and total emotional closeness with one's close social network. The following are the base questions, each asked at both waves 4 and 6.

-"Looking back over the last 12 months, who are the people with whom you most often discussed important things?", followed by, "Are there any more (persons with whom you often discuss things that are important to you)?"

Respondents could mention up to 7 close social network members at each wave.

And pertaining to each close social network member mentioned at each wave:

-"During the past twelve months, how often did you have contact with {close social network member} either personally, by phone or mail?"
1) = "daily" to 7 = "never" (reverse coded: 1 = "never" to 7 = "daily").
-"How close do you feel to {close social network member}?"
1) = "not very close" to 4 = "extremely close".

Concerning the latter two questions, scores across all close social network members were added, separately at each wave. At each wave, we assigned respondents with no close social network members scores of 0 on all three measures. We calculated the three change scores by subtracting the respective wave 4 scores from the respective wave 6 scores.

Control Variables. Each model controlled for the CASP index at wave 4. Additionally, each model controlled for the wave 4 value of its moderating variable's measure of social network involvement. Our models based on change in frequency of contact with one's close social network and change in emotional closeness with one's close social network further controlled for size of close social network at both waves 4 and 6. The rationales for these control variables are explained in the analysis section below.

We controlled for several possibly confounding sociodemographic variables. These included self-rated general health at wave 4, based on poor (ref.), fair, good, very good, and excellent. They also included gender (ref. = men) and age (in years) at wave 4. Further controlled was wave 4 marital/relationship status, based on married and living together with spouse (ref.), registered partnership, married and living separated from spouse, never married, divorced, and widowed. An additional control variable was wave 4 parental status, based on no children (ref.), one child, two children, and three or more children.

Two possibly confounding socioeconomic variables from wave 4 were controlled. One was extent of education, constructed from the International Standard Classification of Education (ISCED) levels, which include:

Level 0–Pre-primary education
Level 1–Primary education or first stage of basic education
Level 2–Lower secondary or second stage of basic education
Level 3–(Upper) secondary education
Level 4–Post-secondary non-tertiary education
Level 5–First stage of tertiary education
Level 6–Second stage of tertiary education

(United Nations Educational, Scientific and Cultural Organization, 2006). To ensure adequate cell sizes, ISCED levels 0 and 1 were combined (ref.). We also combined those reporting "other" or "still in school" with those missing data in this variable, creating an additional "undetermined" category for those who cannot be ascribed a specific amount of education. This avoided the removal of respondents from our sample due to missing data in "education". This category included enough respondents (n = 150) to be studied within our regression models.

Total household income (in euros) was also controlled after being natural logarithm transformed, to reduce right skewness. Before natural logarithm transformation, we converted values of zero to 0.01. There were no negative values.

Analysis. Our empirical results are mainly based on multilevel mixed-effects linear regressions. Each model included a random intercept for country of residence at wave 4 (no respondents changed nations between waves 4 and 6), thereby addressing the nested structure of the data, accounting for unobserved heterogeneity at the national level, and adjusting for correlations among respondents residing in the same countries.

As each model controlled for the CASP index at wave 4, these models were furthermore conditional change models. Within such models, the outcome denotes change through

time in the relevant variable, decreasing the possibility that reverse causation is driving our findings. Additionally, employing conditional change models permitted adjustment for wave 4 values of each regression's social network involvement-based moderating variable, something that fixed-effects panel models cannot do. This is important for this study since initial extents of social network involvement likely affected changes in social network involvement through time. In fact, some recent studies have employed conditional change modelling and stated how this strategy helps adjust for floor and ceiling effects (e.g., Pop-Eleches et al., 2022; van Solinge et al., 2023; Vanajan et al., 2022). Accordingly, isolating the moderating effects of these changes through time requires adjustment for initial values.

Additionally, our models focused on change in frequency of contact with one's close social network and change in emotional closeness with one's close social network controlled for sizes of close social networks at both waves 4 and 6. Through doing so, we assessed the main and interactive effects of rising total frequency of contact with one's close social network and rising total emotional closeness with one's close social network net of the effects of sizes of close social networks at both waves. We thus isolated the formers' additional contributions to quality of life and well-being, beyond the impacts of sizes of close social networks.

This study's analyses were based on three sets of two regressions. Each of the three sets was based on one of above three moderating variables. Within each set, while the first model included only main effects, the second model added the interaction term between the workforce transition variable and the respective measure of change in social network involvement. Since the central interaction findings were substantively identical with and without inclusion of the less central control variables (i.e., self-rated general health, gender, age, education, household income, marital/relationship status, and parental status), each regression included all of the control variables.

Notably, within the interaction models, we investigated entering retirement or undergoing other exits from employment in interaction with continuous measures of change in social network involvement. Accordingly, each main effect of the former two transitions denotes how this transition affected the CASP index when the corresponding change in social network involvement was zero. Moreover, each main effect of change in social network involvement denotes how this change affected the CASP index for those continuing to work between waves 4 and 6.

To further illustrate the magnitudes of this study's central interaction findings, we constructed three graphs, one for each of the moderating social network involvement variables. These graphs were based on predictive margins, estimated using Stata's "margins" command. In each case, the CASP index is on the *y*-axis, the continuous moderating variable is on the *x*-axis, and three lines are presented: one for those who continued working, one for those who retired, and one for those who underwent other exits from paid employment.

To prevent biases based on differential probabilities of selection into the sample and nonresponse, all models were weighted with the wave 6 calibrated cross-sectional individual weights. Since in no models were there 5% or more missing data within any one variable (the highest amount being 3.67% within the wave 4 CASP index) and since all models included a total of missing data of less than 10% (the highest total amount being 8.51% in the models based on change in emotional closeness with one's close social network), we dealt with missing data through listwise deletion. All analyses employed Stata version 18 (Stata Corp, College Station, TX).

Supplementary Analyses. Because of potential conceptual and statistical overlaps with the CASP index at wave 6, changes in self-rated general health between waves 4 and 6 were only controlled within supplementary analyses.

Further supplementary analyses employed measures of changes through time in mean frequencies of contact and mean emotional closeness across respondents' close social networks as moderating variables, without sizes of close social networks at waves 4 and 6 controlled. These analyses were supplementary since these mean scores can incorporate both positive and negative elements, as larger social networks potentially reduce respondents' mean frequencies of contact and mean emotional closeness scores.

Results

Table 1 documents this study's descriptive statistics. The mean value of the CASP index at wave 6 was relatively high (39.2). While 28.8% of participants entered retirement, 8.8% of the sample exited paid work for other reasons. There were on average increases in size of close social network (0.14), frequency of contact with one's close social network (0.76), and emotional closeness with one's close social network (0.74). At wave 4, the average value of the CASP index was also relatively high (38.9). Furthermore, at wave 4, average size of close social network was 2.7, average frequency of contact with one's close social network was 15.9, and average closeness with one's close social network was 8.5.

The modal category of self-rated general health was good (39.2%). While 2.9% of the sample declared poor health, 11.6% claimed excellent health. Most of the sample was composed of women (52.8%). The average age at wave 4 was 57.3 years. The average total household income was 50,834.96 euros. The two most prevalent categories of education were upper secondary (37.5%) and first stage of tertiary (30.3%). The most prevalent categories of marital/relationship status were married and living together with spouse (70.8%) and divorced (12.7%). The model category for parental status was two children (44.6%). The two most prevalent countries of residence were Estonia (17.7%) and Switzerland (11.9%).

Table 1. Descriptive Statistics (*N* = 9249).

Variables	Mean/Proportion (%) (*N*)	Standard deviation
Dependent variable – wave 6		
CASP index for quality of life and well-being (12–48)	39.20	5.43
Independent variable – between waves 4 and 6		
Retirement status		
Continued working	62.19% (*N* = 5752)	
Retired	28.76% (*N* = 2660)	
Other workforce exits	8.76% (*N* = 810)	
Missing	0.29% (*N* = 27)	
Moderating variables – changes between waves 4 and 6		
Change in size of close social network (−7 – 7)	0.14	1.85
Change in frequency of contact with close social network (−45 to 41)	0.76	10.38
Change in emotional closeness with close social network (−24–26)	0.74	5.87
Control variables – wave 4		
CASP index for quality of life and well-being (12–48)	38.88	5.45
Size of close social network (0–7)	2.70	1.65
Frequency of contact with close social network (0–49)	15.89	9.21
Emotional closeness with close social network (0–28)	8.49	5.28
Self-rated health		
Poor	2.93% (*N* = 271)	
Fair	20.23% (*N* = 1871)	
Good	39.19% (*N* = 3625)	
Very good	26.01% (*N* = 2406)	
Excellent	11.55% (*N* = 1068)	
Missing	0.09% (*N* = 8)	
Gender		
Men	47.23% (*N* = 4368)	
Women	52.77% (*N* = 4881)	
Age (in years)	57.29	4.89
Total household income (in euros)	50,834.96	89,695.46
Logged total household income (in euros)	10.27	0.98
Education		
ISCED-97 0-1: Pre-primary or primary	8.44% (*N* = 781)	
ISCED-97 2: Lower secondary	13.73% (*N* = 1270)	
ISCED-97 3: Upper secondary	37.49% (*N* = 3467)	
ISCED-97 4: Post-secondary non-tertiary	7.04% (*N* = 651)	
ISCED-97 5: First stage of tertiary	30.33% (*N* = 2805)	
ISCED-97 6: Second stage of tertiary	1.35% (*N* = 125)	
Still in school, other, or missing	1.62% (*N* = 150)	
Marital/Relationship status		
Married and living together with spouse	70.79% (*N* = 6547)	
Registered partnership	2.21% (*N* = 204)	
Married, living separated from spouse	1.69% (*N* = 156)	
Never married	7.62% (*N* = 705)	
Divorced	12.69% (*N* = 1174)	
Widowed	4.62% (*N* = 427)	
Missing	0.39% (*N* = 36)	
Parental status		
No children	9.36% (*N* = 866)	
One child	16.63% (*N* = 1538)	
Two children	44.64% (*N* = 4129)	
Three or more children	29.37% (*N* = 2716)	

(continued)

Table 1. (continued)

Variables	Mean/Proportion (%) (*N*)	Standard deviation
Countries – same in both waves 4 and 6		
Austria	7.11% (*N* = 658)	
Belgium	10.41% (*N* = 963)	
Czech Republic	8.63% (*N* = 798)	
Denmark	8.29% (*N* = 767)	
Estonia	17.65% (*N* = 1632)	
France	9.20% (*N* = 851)	
Germany	2.90% (*N* = 268)	
Italy	4.87% (*N* = 450)	
Poland	1.90% (*N* = 176)	
Portugal	3.70% (*N* = 342)	
Slovenia	3.59% (*N* = 332)	
Spain	5.49% (*N* = 508)	
Sweden	4.39% (*N* = 406)	
Switzerland	11.87% (*N* = 1098)	

Table 2 reports the results of the six central regressions. While no models included a significant main effect for retirement, all models showed other exits from employment significantly negatively affecting the wave 6 CASP index score when compared with those who continued working. Furthermore, in all models a higher wave 4 CASP index score significantly predicted a higher wave 6 CASP index score. In the models focused on change in frequency of contact with one's close social network and change in emotional closeness with one's close social network, size of close social network at wave 6 was significantly negatively associated with the CASP index score at wave 6.

Concerning the three models with main effects only, while change in size of close social network had a marginally significant positive coefficient (coeff.: 0.127, $p < .10$), both change in frequency of contact with one's close social network (0.116, $p < .001$) and change in emotional closeness with one's close social network (0.323, $p < .001$) had significant positive coefficients. Within the main effects model focused on size of close social network, a higher wave 4 size of close social network significantly predicted a higher wave 6 CASP index score (coeff.: 0.305, $p < .001$). In none of the models focused on the other two measures of social network involvement did wave 4 size of close social network significantly predict the wave 6 CASP index score. Within the main effects model focused on frequency of contact with one's close social network, higher wave 4 values of this social network involvement variable significantly predicted higher wave 6 CASP index scores (coeff.: 0.124, $p < .001$). Similarly, the main effects model focused on emotional closeness with one's close social network shows wave 4 values of this social network involvement variable being significantly associated with higher wave 6 CASP index scores (coeff.: 0.308, $p < .001$).

All three measures of change in social network involvement moderated the effects of retirement towards higher wave 6 CASP index scores:

-change in size of close social network (interaction coeff.: 0.240, $p < .001$)
-change in frequency of contact with one's close social network (interaction coeff.: 0.034, $p < .01$)
-change in emotional closeness with one's close social network (interaction coeff.: 0.059, $p < .05$)

Notably, these interaction findings are of moderate magnitudes. A one standard deviation increase in change in size of close social network raised in the positive direction the effect of retirement upon the CASP index by 8.18% of a standard deviation in the latter. The corresponding amounts were 6.50% for change in frequency of contact with one's close social network and 6.38% for change in emotional closeness with one's close social network.

Figures 1–3 graphically illustrate the magnitudes of these three significant moderation effects. Notably, while in all three cases the 95% confidence intervals of continuing work and retirement overlap, the steepness of the two slopes are statistically significantly different. All three figures show steeper rises in the wave 6 CASP index score with increasing social network involvement among those who retired than among those who continued working. In all three figures, at lower extents of change in social network involvement, those who continued working show higher wave 6 CASP index scores than those who retired. However, after a certain extent of change in social network involvement towards the positive direction, those who retired show higher wave 6 CASP index scores than those who continued working.

The interactive effect displayed in Figure 1 is of considerable magnitude. From −7 to +7 in change in size of close social network, continuing workers go from 38.68 to 39.70 in the CASP index at wave 6. This is a change of 1.02. Contrastingly, from −7 to +7 in change in size of close social network, retirees go from 36.97 to 41.35 in the wave 6 CASP

Table 2. Coefficients From 6 Multilevel Mixed-Effects Linear Regressions of Changes in the CASP Index Predicted by the Independent and Moderating Variables.

Models	Network size-main effects only	Network size-interaction	Freq. of network contact-main effects only	Freq. of network contact-interaction	Emotional closeness with network-main effects only	Emotional closeness with network-interaction
Variables						
Retirement status (ref. Continued working)Retired	0.031 [0.232]	−0.026 [0.234]	0.062 [0.244]	0.021 [0.246]	0.007 [0.232]	−0.043 [0.239]
Other workforce exits	−1.454** [0.552]	−1.453** [0.492]	−1.403** [0.497]	−1.410** [0.462]	−1.419** [0.464]	−1.439*** [0.428]
-Change in network size	0.127˙ [0.067]	0.072 [0.053]				
-Retired x change in network size		0.240*** [0.072]				
Other workforce exits x change in network Size		−0.018 [0.270]				
-Change in frequency of network contact			0.116*** [0.027]	0.110*** [0.031]		
-Retired x change in frequency of network Contact				0.034** [0.011]		
Other workforce exits x change in frequency of Network contact				0.001 [0.034]		
-Change in emotional closeness with network					0.323*** [0.073]	0.306*** [0.084]
-Retired x change in emotional closeness with Network						0.059* [0.027]
Other workforce exits x change in emotional Closeness with network						0.024 [0.060]
-CASP W4	0.427*** [0.041]	0.426*** [0.041]	0.421*** [0.041]	0.421*** [0.042]	0.414*** [0.041]	0.414*** [0.042]
-Network size W4	0.305*** [0.079]	0.305*** [0.083]	0.120 [0.215]	0.119 [0.216]	0.193 [0.311]	0.209 [0.317]
-Frequency of network contact W4			0.124*** [0.024]	0.126*** [0.025]		
-Emotional closeness with network W4					0.308*** [0.072]	0.302*** [0.073]
-Network size W6			−0.516** [0.187]	−0.527** [0.192]	−0.874** [0.277]	−0.874** [0.290]
-Self-rated health W4 (ref. Poor) fair	0.720** [0.225]	0.740*** [0.219]	0.659* [0.265]	0.686** [0.252]	0.773*** [0.233]	0.786*** [0.230]
Good	1.470*** [0.290]	1.468*** [0.289]	1.439*** [0.338]	1.447*** [0.335]	1.530*** [0.311]	1.524*** [0.312]
Very good	1.852*** [0.445]	1.856*** [0.461]	1.889*** [0.421]	1.901*** [0.434]	1.955*** [0.465]	1.957*** [0.469]
Excellent	2.467*** [0.704]	2.478*** [0.712]	2.385*** [0.638]	2.404*** [0.647]	2.460*** [0.678]	2.461*** [0.681]
-Women (ref. Men)	−0.392* [0.164]	−0.398* [0.162]	−0.405** [0.155]	−0.413** [0.153]	−0.423* [0.166]	−0.424** [0.162]
-Age (in years)	0.079*** [0.023]	0.080*** [0.022]	0.077*** [0.022]	0.078*** [0.022]	0.085*** [0.020]	0.087*** [0.020]
-Education (ref. ISCED 0-1: Pre-primary or primary)						
ISCED 2: Lower secondary	−0.057 [0.224]	−0.078 [0.236]	−0.123 [0.222]	−0.140 [0.231]	−0.194 [0.209]	−0.200 [0.213]
SCED 3: Upper secondary	0.834*** [0.252]	0.810*** [0.233]	0.858*** [0.260]	0.837*** [0.248]	0.850** [0.285]	0.838** [0.267]
ISCED 4: Post-secondary non-tertiary	0.452 [0.450]	0.445 [0.438]	0.450 [0.464]	0.445 [0.453]	0.417 [0.471]	0.426 [0.455]
ISCED 5: First stage of tertiary	0.885*** [0.175]	0.864*** [0.155]	0.977*** [0.197]	0.955*** [0.177]	0.929*** [0.211]	0.924*** [0.185]
ISCED 6: Second stage of tertiary	0.316 [0.289]	0.308 [0.273]	0.415 [0.293]	0.400 [0.286]	0.280 [0.290]	0.282 [0.269]

(continued)

Table 2. (continued)

Models	Network size-main effects only	Network size-interaction	Freq. of network contact-main effects only	Freq. of network contact-interaction	Emotional closeness with network-main effects only	Emotional closeness with network-interaction
Still in school, other, or missing	1.044^ [0.602]	0.987 [0.654]	0.917 [0.692]	0.870 [0.742]	1.031 [0.669]	1.001 [0.712]
-Logged total household income (in euros)	0.415* [0.165]	0.416* [0.168]	0.381* [0.154]	0.381* [0.154]	0.354* [0.144]	0.353* [0.145]
-Marital/Relationship status (ref. Married and living Together with spouse)						
Registered partnership	−2.300** [0.855]	−2.283** [0.861]	−2.596* [1.059]	−2.585* [1.063]	−2.517* [1.038]	−2.512* [1.037]
Married, living separated from spouse	−1.450** [0.561]	−1.419** [0.538]	−1.356* [0.595]	−1.334* [0.579]	−1.229* [0.512]	−1.194* [0.500]
Never married	−0.126 [0.485]	−0.105 [0.476]	0.039 [0.443]	0.063 [0.444]	0.055 [0.490]	0.070 [0.483]
Divorced	−0.115 [0.336]	−0.100 [0.342]	0.037 [0.340]	0.051 [0.346]	0.015 [0.345]	0.031 [0.351]
Widowed	−0.242 [0.570]	−0.223 [0.566]	−0.253 [0.562]	−0.238 [0.556]	−0.213 [0.563]	−0.208 [0.558]
-Parental status (ref. No children)						
One child	0.511 [0.396]	0.530 [0.409]	0.436 [0.349]	0.459 [0.358]	0.447 [0.361]	0.465 [0.365]
Two children	−0.214 [0.409]	−0.210 [0.418]	−0.313 [0.400]	−0.311 [0.404]	−0.354 [0.419]	−0.347 [0.421]
Three or more children	−0.314 [0.536]	−0.305 [0.534]	−0.380 [0.483]	−0.377 [0.478]	−0.464 [0.512]	−0.457 [0.507]
-Constant	11.376*** [2.704]	11.310*** [2.720]	11.972*** [2.584]	11.943*** [2.600]	12.129*** [2.480]	12.075*** [2.498]
Random intercept variance						
Constant	−0.358 [0.228]	−0.360 [0.228]	−0.252 [0.187]	−0.250 [0.187]	−0.247 [0.180]	−0.250 [0.180]
Level 1 residuals variance						
Constant	1.497*** [0.029]	1.496*** [0.029]	1.497*** [0.031]	1.496*** [0.031]	1.492*** [0.030]	1.491*** [0.030]
Observations	8561	8561	8468	8468	8462	8462

Robust standard errors in brackets. Two-tailed tests ^ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

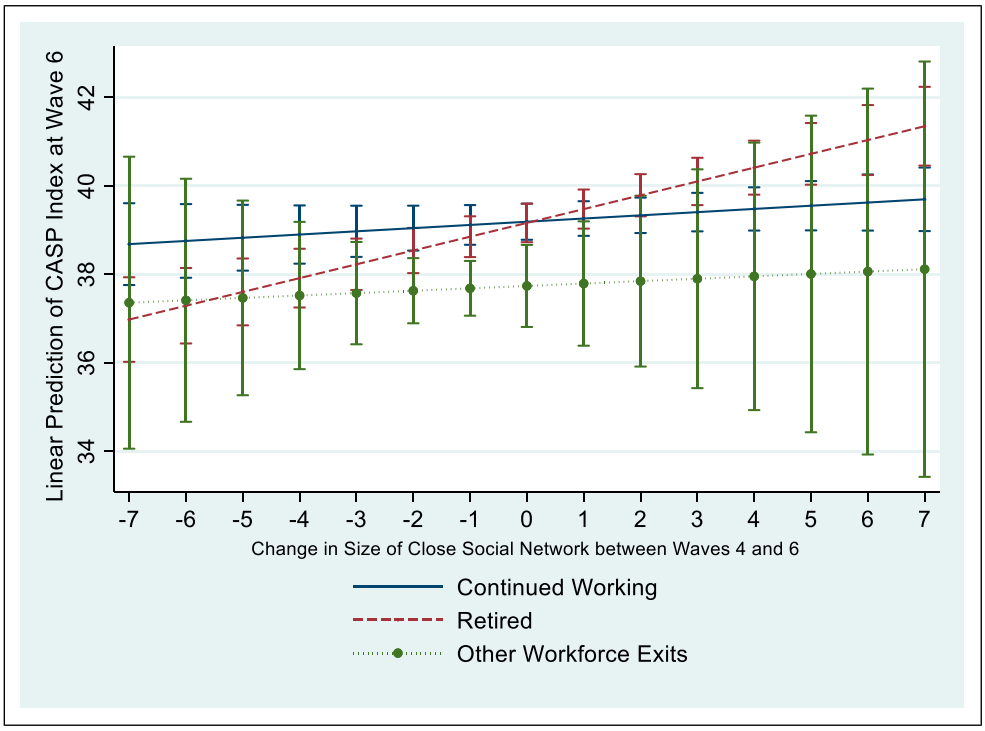

Figure 1. Prediction of the CASP index for quality of life and well-being based on retirement status and change in size of close social network, with 95% confidence intervals.

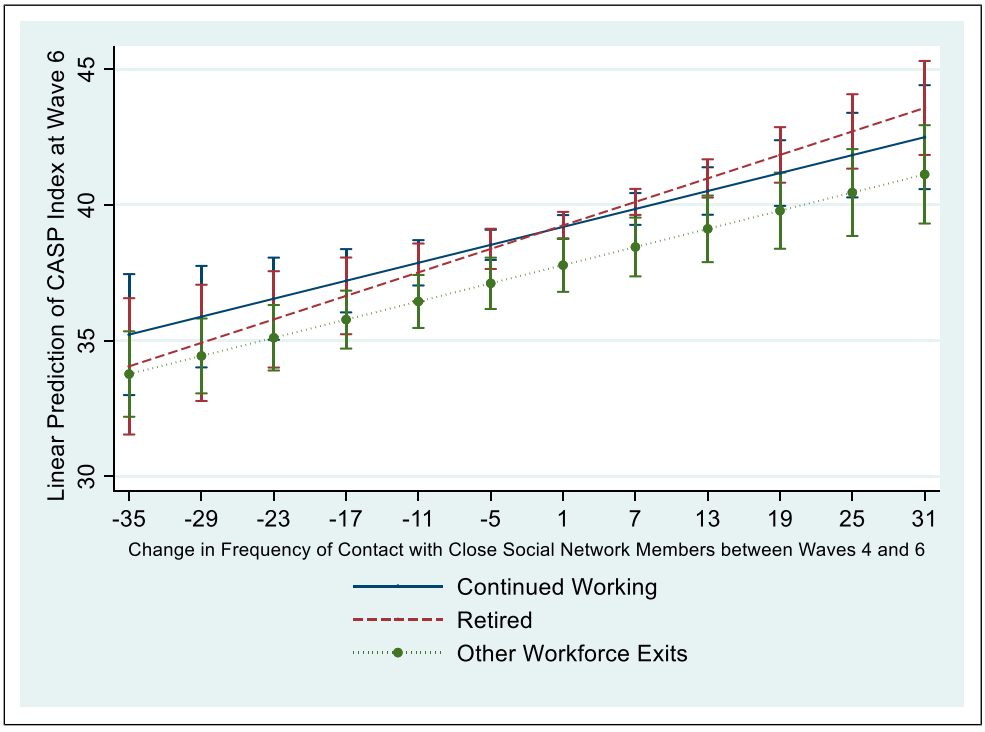

Figure 2. Prediction of the CASP Index for quality of life and well-being based on retirement status and change in frequency of contact with close social network members, with 95% confidence intervals.

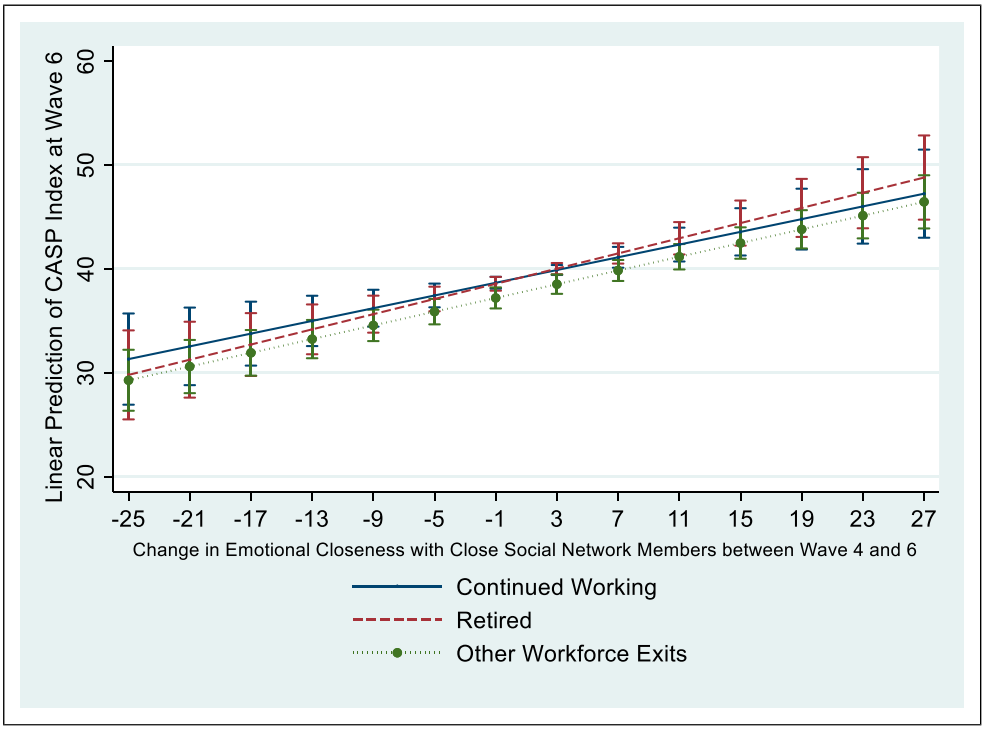

Figure 3. Prediction of the CASP index for quality of life and well-being based on retirement status and change in emotional closeness with close social network members, with 95% confidence intervals.

index. This constitutes a change of 4.38. Accordingly, the slope for retirees is well over four times steeper than that for continuing workers. Meanwhile, Figures 2 and 3 display slopes for retirees that are slightly steeper than those for continuing workers.

Notably, when there were no changes in social network involvement, other exits from paid employment were generally associated with lower wave 6 CASP index scores than continuing to work. Changes in social network involvement insignificantly moderated how other exits from paid employment were associated with wave 6 CASP index scores, when compared with those continuing to work.

Supplementary Results

Controlling for changes in self-rated general health between waves 4 and 6 reduced our interaction terms to non-significance (results not shown). Neither mean frequency of contact with one's close social network nor mean emotional closeness with one's close social network significantly interacted with entry into retirement in affecting wave 6 CASP index scores (results not shown).

Discussion

All three moderation effects support our hypothesis that retirees benefit more from changes towards increased social network involvement than do those who continue working. Our results thus confirm our proposition that many retirees will be motivated to replace the valued social role of worker with deeper engagements in their roles as close family members and friends. These findings thus correspond with scholarship about how relationships with relatives and friends constitute substantial and meaningful social roles (e.g., Eismann et al., 2019; Koenig & Eagly, 2014; Lancee & Radl, 2012) and about how social roles evidence processes of substitution (e.g., Eismann et al., 2019; Lancee & Radl, 2012; Macfarlane et al., 2019). These results suggest that synchronous changes in social network involvement are prominent determinants of how retirement is associated with quality of life.

Increased interactions and emotional closeness within a larger social network might furnish more extensive and varied types of social support, resources, and information (Litwin, 2001; Litwin & Shiovitz-Ezra, 2011). Moreover, they might promote life meaning and purpose, and a positive self-identity (Bakhshandeh Bavarsad & Stephens, 2024; Bodner et al., 2014; Stavrova & Luhmann, 2016). These benefits might be especially advantageous as replacements for the work role among those entering retirement. Additionally, increased involvement with close social network members might help preserve salubrious extents of activity among those exiting employment activities (see the activity theory of ageing, Teles & Ribeiro, 2019; Zheng et al., 2022).

Notably, our strongest interaction finding is between retirement and change in size of close social network. The

counterparts for change in frequency of contact with one's close social network and change in emotional closeness with one's close social network, after controlling for size of close social network at waves 4 and 6, are of smaller magnitudes. Accordingly, acquiring new close social ties substantially substitutes for the lost social role of worker. Beyond this, increasing frequency of contact and emotional closeness with one's close social network members make two smaller, but nonetheless significant, further contributions to quality of life during the retirement transition.

As such, this study's statistically significant interaction findings suggest that changes in social network involvement help to determine whether retirement is beneficial or detrimental to quality of life. Notably, the models containing only main effects reveal no significant impact of retirement upon quality of life. Furthermore, the models with interaction terms show that when social network involvement does not change, transition to retirement is insignificantly associated with quality of life. We addressed endogeneity between retirement and subsequent quality of life based on earlier circumstances provoking retirement through controlling for quality of life and self-rated general health preceding the retirement transition. This helps explain our null main effect findings for retirement and our insignificant findings for retirement in the absence of changes in social network involvement. While retirement concurrent with decreasing social network involvement predicts declining quality of life, retirement under circumstances of rising social network involvement is associated with improved quality of life. We thus address Ugwu et al.'s (2024) suggestion for more nuanced and holistic analyses of how retirement is associated with quality of life. Furthermore, through finding that increased social network involvement generally improves quality of life, our study concurs with scholarship emphasising the benefits of social relationships and activities (e.g., Cornwell et al., 2008; Farrell et al., 2022; Perry et al., 2022; Rook, 2009).

The moderate quantitative magnitudes of this study's findings were expected. For one, every aspect of one's life can conceivably affect one's quality of life and well-being. We thus should not anticipate a limited set of variables to have dramatic impacts upon quality of life. Second, our central variables are all based on changes through time. The effects of changes through time are expected to be of lower quantitative magnitudes than those of static associations. Third, we assessed changes over an only four-year timeframe. Furthermore, respondents' retirements could have occurred anytime within this timeframe. This restricted timeframe placed limits on the quantitative magnitudes of this study's findings.

Perhaps surprisingly, within the models focused on change in frequency of contact with one's close social network and change in emotional closeness with one's close social network, a higher wave 6 size of close social network significantly predicted a lower CASP index at wave 6. This might be because after adjusting for frequency of contact and emotional closeness with network members, further social ties marked by fewer interactions and less emotional fulfillment represent social responsibilities without commensurate personal benefits.

Our unique methodology permits our original contributions regarding how changes in social network involvement accompanying the retirement process help predict how this process is associated with quality of life and well-being. First, our moderation analyses extend earlier scholarship's predominant focus on how social connectedness mediates between retirement and health-related quality of life, including cognitive and mental health (e.g., Hanemann, 2017; Henning et al., 2021; Pilehvari et al., 2023). Second, we analysed how changes in social network involvement concurrent with retirement transitions are determinants of those transitions' quality of life outcomes. We thus expand beyond the prevailing focus on moderation by static assessments of social support and participation soon before retirement (e.g., Hansson et al., 2018; Heybroek et al., 2015), which cannot address processes of social role substitution. Third, through comparing those entering retirement with those continuing to work, we expand earlier evidence on social connectedness' quality of life benefits only within already retired samples (e.g., Hawash & Khalil, 2017; Joo et al., 2023). The latter research does examine the importance of retirees' social connectedness. However, it cannot answer how changes in social connectedness affect how retirement transitions, in comparison with continuing to work, are associated with quality of life. Fourth, our examination of moderation by changes in three central measures of social network involvement extends previous research focused more narrowly on moderation by social support (Dave et al., 2008; Hansson et al., 2018; Kettlewell & Lam, 2022) and extents of interactions with family and friends (Heybroek et al., 2015).

Concerns With Alternative Causal Directions

One of this study's limitations is that its models present alternative causal pathways. Retirement (Hanemann, 2017; Henning et al., 2021; Pilehvari et al., 2023) and changes in mental health (Schwartz & Litwin, 2019) can affect social networks. Additionally, social network involvement can affect retirement (Lancee & Radl, 2012). Furthermore, changes in mental health and health behaviours, including those potentially caused by stressful life occurrences, can affect retirement (Böckerman et al., 2016; Olesen et al., 2012). However, this study's focus is on moderation of the association of retirement with quality of life by changes in social network involvement, rather than such main effects.

Beyond retirement interacting with changes in social network involvement in affecting quality of life (the moderation effect here emphasised), this study's models present the further possibilities that retirement might interact with changes in quality of life in affecting social network involvement, and that changes in quality of life might interact with changes in social network involvement in affecting

retirement. However, these two alternative possibilities remain concordant with our central claim that retirement is a more positive experience when social network involvement has concurrently increased. Retirement moderated by social network involvement in affecting quality of life presents the direct process of social role substitution we emphasise. Retirement moderated by quality of life in affecting social network involvement suggests that retirees are motivated to make retirement a salubrious experience by increasing their social network involvement. This makes productive use of the time and energy liberated by exiting employment. Retirees experiencing increasing quality of life are likely more capable of increasing their social network involvement to maintain active living postretirement, which further reinforces their quality of life. Moderation of social network involvement by quality of life in affecting retirement implies a process within which retirement is a more attractive option. Older persons experiencing rising quality of life and increasing social network involvement might feel more capable of dedicating themselves to their close family members and friends. They might also feel greater responsibility for doing so. Exiting employment might free up time and energy for engaging such responsibilities, which might raise retirement's attractiveness. Accordingly, these two alternative moderation processes also support our central argument.

Further Limitations and Future Research Paths

Our findings that controlling for changes in self-rated general health between waves 4 and 6 reduced our interaction results to non-significance suggest that health changes may be among the drivers of our observed associations. This nuance in our findings suggests numerous paths for future research. Future studies might repeat our analyses employing dynamic general measures of health instead of quality of life, assessing to what extents the results are similar to or different from those of the present study. Future investigations might unravel to what extents general measures of quality of life overlap with self-rated general health. In what ways are these measures similar and how do they differ? To what extents are they mutually influential through time?

Another limitation is that we did not study respondents' reasons for retirement. This study's moderation effects might operate differently for respondents who voluntarily retired and respondents who were pressured into retirement, because of declining health, need to care for a close relative, a late career involuntary job loss, etc. If voluntary retirees are more likely to view retirement as a pleasant opportunity for raised involvements in non-work endeavours, including engagements with one's close social network, they might benefit more than involuntary retirees do from these increased involvements. Future research should address this heterogeneity. Relatedly, future research should consider whether a retirement transition was "on time", early, or late, vis-à-vis what the social norm is or what is expected within one's country. By affecting one's perceptions of one's own retirement, this timing might affect how one replaces the work role with new commitments, and the quality of life outcomes of one's retirement (see Fisher et al., 2016).

We also did not consider the employment statuses and social network involvements of respondents' partners or spouses. Retirement decisions are commonly negotiated within couples (García-Miralles & Leganza, 2024). Relationships within couples potently affect quality of life (Kiecolt-Glaser & Wilson, 2017). Furthermore, members of couples substantially affect each other's social network activities (Cohn-Schwartz et al., 2021) and the health and well-being outcomes of each other's social network involvements (Ermer & Proulx, 2020). Accordingly, future research should further consider relationship status, and the employment statuses and social network involvements of respondents' partners.

Future research should delve further into the complexities of mean measures of social connectedness across respondents' close social networks, which can incorporate both positive and negative elements. These complexities are increased when we consider changes through time. An older person who loses some social contacts due to, for example, deaths of relatives and friends, will find time and energy freed up for spending more time and becoming emotionally closer with her remaining social ties. Thorough understandings of these complexities might help elucidate why our interaction findings for mean frequency of contact with one's close social network and mean emotional closeness with one's close social network did not reach statistical significance. Important questions include, when is an increase in mean social connectedness a negative development instead of a positive development? What factors help determine when an increase in mean social connectedness denotes a positive versus a negative change? Future research might also delve further into which measures of change in social connectedness are especially pertinent to those entering retirement and why they are thus important.

Notably, our conditional change modelling and further controls for self-rated general health at wave 4 help adjust for conditions related to retirement that might be correlated with both changes in social network involvement and quality of life. Still, we cannot rule out non-causal explanations for our results. Changes in social network involvement might still proxy other conditions related to retirement that are associated with quality of life and well-being. Future research might extend this study through using pension eligibility ages as an instrumental variable for retirement. Coe and Zamarro (2011) effectively used pension eligibility ages to instrument retirement employing SHARE data. However, Coe and Zamarro (2011) employed only the first wave of the SHARE, based in 2004. Our study would present the further complications that some European nations' retirement policies changed between 2011 and 2015, and that we cannot ascertain exactly when from 2011 to 2015 respondents retired. Still, future research should address these complications and repeat our analyses

with instrumentation of retirement through pension eligibility ages. This research might permit stronger causal statements concerning how retirement interacts with social network involvement in affecting quality of life. This research might also allow more definitive policy recommendations.

Conclusion

This study suggests that the retirement process foregrounds transitions in social roles, including those of worker and close social connection. This includes the possibility that the latter two social roles reflect substitution processes as workers retire. Changes in social network involvement accompanying retirement are important predictors of how retirement is associated with quality of life. Accordingly, family members, friends, clinicians, and the broader society should be attentive to retirees' social network involvements. Furthermore, under circumstances of population ageing, the health benefits for retirees concomitant to this attentiveness will reduce healthcare costs.

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