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Sense of belonging to the community in continuing care retirement communities and adult day care centers: The role of the social network

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Abstract

Aim: This study examined the contribution of the social network to one's sense of belonging to the community (SCB) in two different long-term care settings: Continuing care retirement communities (CCRCs) and adult day care centers (ADCCs).

Methods: Overall, 245 respondents participated in both waves of the study that were spaced about 1 year apart.

Results: Results show that constraint in the social network (e.g., being socially invested in a single group of interconnected ties) is particularly detrimental for CCRC residents, but not for ADCC participants. Betweenness, defined as the number of shortest paths that pass through the focal person, was not significantly related to SCB. In addition, the size of the egocentric network, obtained through a name generator of a list of all potentially meaningful individuals identified by respondents, was directly correlated with SCB at follow-up.

Conclusions: The findings are discussed in light of differences between the two long-term care settings and the different social network indicators examined in this study.

KEYWORDS
adult day care center, brokerage, continuing care retirement community, egocentric, long-term care, social network, sociocentric

1 | INTRODUCTION

The present study was conducted in two long-term care settings of older adults: Continuing care retirement communities (CCRCs) and adult day care centers (ADCCs) to examine whether the relationship between sense of community belonging (SCB) and the social network differs across these two settings. The two settings selected for this study are quite different from each other. CCRCs provide a round-the-clock residential option to older adults who are independent in their activities of daily living at least when they first enter the facility. ADCCs, on the contrary, provide services for several hours per day, several days per week. ADCCs cater to individuals who are dependent in their activities of daily living. The two settings also differ in terms of the funding source, as in Israel, where this study takes place, CCRCs are privately funded, whereas ADCCs are funded through the Long-Term Care Insurance Law (Ayalon, 2018). Hence, the association between SCB and the social network may also vary across these two settings.

A common feature of these two settings, however, is the fact that they both aim to alleviate social isolation and loneliness by offering opportunities for social interaction (Ayalon, 2018). Nevertheless, results concerning the effectiveness of these settings in actually alleviating loneliness are mixed. A systematic review of loneliness in long-term care settings (which may also include nursing homes or assisted living facilities) has found very high levels of loneliness among older adults (Elias, 2018). Consistently, a study that compared loneliness among older adults who participated in ADCCs and older adults who did not participate has found no differences between the two groups. That study concluded that ADCCs are therefore, ineffective in alleviating loneliness (Iecovich & Biderman, 2012). A different study comparing loneliness in ADCCs and CCRCs has found higher levels of loneliness (Ayalon, 2018), as well as sparser networks and lower social reciprocity in ADCCs (Ayalon, Yahav, & Lesser, 2018). CCRC residents on the contrary, have generally reported substantial social benefits associated with their relocation into the CCRC (Ayalon & Greed, 2015).

1.1 | Sense of community belonging (SCB)

In light of the important social role potentially played by long-term care settings, the present study aims to assess the temporal relationship between SCB and one's social network in CCRCs and ADCCs. The term community has been used in various contexts to define a psychological state (Crowe, 2010), but also a geographic space (French et al., 2014), a social institution (Zhou, 2005), or a political process (Anderson, 2009). The present paper is focused on the psychological aspects of the community, which are reflected in people's perceived sense of coming together as a group or a collective (GarcÍa, Giuliani, & Wiesenfeld, 1999). An early definition described SCB as the feeling that one is part of the group (Sarason, 1974). A more elaborated definition, has operationalized SCB along four dimensions, including membership, influence, integration, and fulfillment of needs (McMillan & Chavis, 1986).

According to McMillan and Chavis (1986), community membership represents a sense of belonging to or being part of the group. Influence can be bidirectional as the members may influence and be influenced by the community. Integration and need satisfaction represent the fact that in order for the community to maintain a positive sense, it needs to be rewarding to its individual members. Finally, shared emotional connections represent the bond between the members of the community, which depends on the frequency with which individuals interact.

SCB is important because of its effects on our health and wellbeing (Davidson & Cotter, 1991; Hystad & Carpiano, 2010; Shields, 2008). Specifically, research conducted with 941 Hong Kong Chinese, who were randomly recruited from 18 districts has found that SCB was negatively associated with daily hassles and positively associated with social support and quality of life (Mak, Cheung, & Law, 2009). A different study that validated a brief sense of community scale has found that higher levels of SCB were associated with greater psychological empowerment, better mental health, and reduced depression (Peterson, Speer, & McMillan, 2008). Another study found no association between depression and suicide ideation among those individuals who had a high SCB, but an

association was present among those who experienced low levels of SCB. This potentially demonstrates the protective effects of SCB (McLaren, Gomez, Bailey, & van der Horst, 2007).

SCB is thought to be important for the aging process of older adults as it potentially ensures that people age well (Nolan, 2011). Moreover, research has shown that SCB is associated with reasons for living among older adults (Kissane & McLaren, 2006). When two different living arrangements were compared, a residential care facility and the community, the authors found that SCB played a protective role against the experience of loneliness in both settings (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011). Studies have emphasized environmental characteristics, such as the presence of green parks or the opportunity to walk outdoors, as facilitators of a SCB among older adults (Francis, Giles-Corti, Wood, & Knuiman, 2012; Toohey, McCormack, Doyle-Baker, Adams, & Rock, 2013). Others, on the contrary, have underlined individual characteristics which contribute to SCB, arguing that one's personality style is particularly important (Lounsbury, Loveland, & Gibson, 2003).

Although informative, the majority of these studies have examined community-dwelling older adults and none has evaluated SCB in two different long-term care settings. This is unfortunate, given the fact that two of the major components of SCB consist of its geographical boundaries and/or relational aspects (Obst, Smith, & Zinkiewicz, 2002). Both components are relevant to the two settings examined in this study: Both CCRCs and ADCCs have clear geographic boundaries, which are age-segregated, as they allow only people over a certain age to participate (Ayalon, 2018). Relationally too, both settings aim to create a sense of common community, with the CCRC even using the term "community" as part of its name.

The absence of research on SCB in CCRCs is particularly surprising in light of the fact that one of the "pull" factors for older adults who transition to a CCRC is the opportunity to meet new friends, whereas a major "push" factor is the limited opportunities for social interaction in one's original community of residence (Bekhet, Zauszniewski, & Nakhla, 2009; Krout, Moen, Holmes, Oggins, & Bowen, 2002). Similar to the case of CCRCs, there is research to demonstrate the existence of friendships and cliques in ADCCs (Salari, Brown, & Eaton, 2006; Williams & Roberts, 1995), but SCB has not yet been addressed.

1.2 | The relationship between SCB and the social network

To date, the majority of research has examined primarily micro-level variables, at the individual level, such as socioeconomic status, age, gender, or ethnicity as predictors of SCB (Crowe, 2010). However, the term community reflects a collective or a group that should be examined at the meso-level, as SCB reflects not only the individual members who are part of the community, but also the ties between them (Neal, 2015). This is why the present study evaluates the relationship between SCB and the social network.

Social network analysis is an approach that takes into account the relationships between individuals as well as the characteristics of the individuals who make up the network (Scott, 1988). SCB and the social network represent different aspects of older adults' social capital (Carpiano & Hystad, 2011), which is broadly defined as the advantages that are ingrained in social interactions (Burt, 2001; Lochner, Kawachi, & Kennedy, 1999). These two concepts differ as SCB is defined by the following four components, namely, membership, influence, fulfillment of needs, and shared emotional connection to the community (McMillan & Chavis, 1986), whereas the social network is described by the members who make up the network and the ties that connect them. There are two different approaches to social network: (a) The egocentric network is focused on the ego, the focal person and his or her ties (alters) and (b) the sociocentric network approach examines the relationships within a defined group by querying both ego and alters (Marsden, 2002). In this study, we rely on both approaches to identify potential predictors of SCB.

In his seminal work on the power of structural holes versus network closure, Burt (2001 , 2002, 2015) argues that structural holes, which represent situations in which an ego (e.g., a focal person) connects between otherwise-distinct networks denote a more substantial form of social capital than network closure, which is a situation in

which all network members are cohesively tied to each other. This is because being in a bridging position between otherwise, structural holes allows to connect between two separate nonredundant networks that are dependent on the ego to serve as a broker. A brokerage position allows for innovation and openness as network members are highly dependent on the ego, but ego exerts a substantial amount of freedom. Highly cohesive networks, on the contrary, may allow for high levels of trust to develop, but there is a tendency for conformity of ideas and constraints put forth by the power of the network. Because network members share similar information, the ego's contribution may be redundant and his or her opportunities become constrained by the norms imposed by the network (Burt, 2001, 2002, 2015). A study conducted among students has shown that closeness (how close the focal person is to alters) and degree (overall number of ties) are positively associated with sense of community, whereas betweenness (the number of times a focal person lies on the shortest path between alters) is negatively associated with SCB (Dawson, 2008). However, to date, these potential forms of social capital have not been examined against SCB in long-term care settings for older adults

1.3 | The present study

As this study occurred in two different types of long-term care settings, I had the opportunity to examine the association between SCB and the social network in each of these settings. In the analysis, I examined two sociocentric network properties of potential relation to SCB, as they are both thought to represent indicators of social capital (Borgatti, Jones, & Everett, 1998). The first is betweenness. Betweenness represents the number of times a focal person lies between alters (individuals connected to the focal person). This is considered to be a measure of social capital, as individuals who capture this position have the power to exploit information and control. The second property examined is called constraint. This property represents the extent to which the ego has redundant ties with a closely cohesive network. In contrast to betweenness, it is expected that the more constraint one is, the less likely this person is to report a strong SCB. This is because constraint represents a situation in which the ego is controlled and easily sanctioned by the network (Borgatti et al., 1998).

2 | METHODS

2.1 | The procedure

The study was supported by a grant from the Israel Science Foundation (537-16). The study was approved by the ethics committee of Bar Ilan university. Before embarking on the study, we obtained the permission of the long-term care administrator to contact study participants. All participants receiving information about the study and signed an informed consent before participation.

We employed the following eligibility criteria: (a) The older adult belongs to one of the ADCCs or CCRCs that participated in the study; (b) the older adult speaks Hebrew or English, and (c) the older adult is physically and cognitively able to participate in this study based on the report provided by the social worker in charge of the respective ADCC or CCRC. All individuals in the respective ADCCs or CCRCs were invited to participate in the study if they met these eligibility criteria. Interviews were conducted in a face to face format by trained research assistants. Each interview lasted about one and a half hours. All participants signed an informed consent before participating in the study.

The same procedure was employed across the two waves of data collection that were spaced about 1 year apart. In the second wave, we also included people who did not participate in wave 1 of data collection, provided they met our inclusion criteria and gave their consent to participate in the study.

We specifically selected CCRCs and ADCCs of varied geographic locations and sizes. The smallest ADCC consisted of 75 participants, whereas the largest had 135 participants. Three ADCCs were located in the center of

the country and one in the South. The smallest CCRC had 40 residents, whereas the largest one included 299 residents. Two of the CCRCs were located in Jerusalem and one in the center of the country. A fourth CCRC, located in the center of the country terminated its participation after the completion of wave one. Data from this CCRC are not included in the analyses. The main analyses consist of data from 245 respondents (141 ADCC participants and 104 CCRC residents) who completed the interviews in waves 1 and 2 (collected between 2016–2018; spread about 1 year apart).

3 | MEASURES

All measures were back translated to Hebrew by bilingual Hebrew–English speakers.

3.1 | The dependent variable

3.1.1 | Sense of community index (McMillan & Chavis, 1986)

This is a 12-item true/false measure. This measure was modified with the relevant CCRC/ADCC as a community of reference. Example questions address, Membership, "very few of my neighbors know me," Influence, "I have no influence over what this CCRC looks like," Fulfillment of Needs, "I think this CCRC is a good place for me to live in," and Shared Emotional Connection, "It is very important to me to live in this particular CCRC." Selected items were recoded so that a higher score would indicate a greater SCB (range, 0–12). Cronbach's α was .8 in past research (Perkins, Florin, Rich, Wandersman, & Chavis, 1990).

3.2 | Independent variables

3.2.1 | The sociocentric network

Each respondent received a list of names of all individuals receiving services in the respective ADCC or CCRC. All names appeared on the list, unrelated to whether or not these individuals participated in the present study. Once the respondent identified a person X as familiar, the following question was introduced: "Please indicate how likely are you to share your thoughts and secrets with the following person." This question is used to construct a social network of intimate social ties in the long-term care setting. The question was rated on a 5-point scale and dichotomized in this study to represent stronger likelihood (4–5) versus low likelihood of sharing thoughts and secrets (1–3). This way, a directed link was portrayed only between individuals who reported ties at a level of 4 or higher. For instance, if resident A ranks the probability of sharing thoughts and secrets with resident B as 4 or 5, there is a directed link that goes from A to B. But, if A ranks the probability of sharing thoughts and secrets as 3 or lower or does not rank it at all, there is no link from A to B. A link from B to A could still be present, provided B ranks the probability of sharing thoughts and secrets with A as 4 or higher. We constructed two indicators of social capital: Betweenness reflects the number of shortest paths that pass through the focal person, whereas constraint represents the degree to which an ego is invested in a single group of interconnected alters (Burt, 2015).

3.2.2 | The egocentric network

We used a name generator to obtain a list of all potentially meaningful individuals identified by respondents: "From time to time, people discuss with others things that matter to them. Whom can you share good news, bad news, concerns you may have, or speak about things which are very important to you?" No limit was imposed on the number of possible alters. We calculated a sum score of all individuals listed by respondent as significant as an indicator of the overall size of the network.

3.2.3 | Covariates

Several sociodemographic variables, such as age (Nolan, 2011), gender (Brutsaert & van Houtte, 2002), and education, as an indicator of socioeconomic status (Stewart et al., 2009) were included in the analysis as covariates. These individual level sociodemographic variables were selected in light of their associations with SCB in past research.

3.3 | Statistical analysis

We first examined the statistical properties of each study variable and the correlations between the study variables. This was followed by a hierarchical regression analysis. In the first step of the analysis, we examined only the network variables: These properties consist of constraint, betweenness, and the overall size of the egocentric network. In the second step, we included covariates: Age, gender, and education. In the final model, we examined possible interactions between long-term care setting type and social network indicators. Only significant interactions were maintained at this stage. The interaction effect was graphed to improve the interpretation of the findings. In all three models, we controlled for baseline levels of SCB and for the type of setting. Analysis was conducted using R version 3.6.1 (R Core Team, 2017) and the sociocentric social network properties were derived using the igraph package (Csardi & Nepusz, 2006).

4 | RESULTS

4.1 | Sample and procedure

Table 1 presents the sociodemographic characteristics of the sample. SCB was significantly higher among ADCC participants than among CCRC residents, in both waves. In addition, ADCC participants had lower levels of education compared with CCRC residents. SCB remained consistent over the two waves among ADCC participants, $t(134) = -0.91$, $p = .37$ and among CCRC residents, $t(95) = -0.70$, $p = .48$.

In ADCCs, 3.36 ties were cited in the egocentric network. Of these ties, 2.8 were family members (83%), 0.4 were friends (12%), and the remaining ties (5%) were neighbors and health service providers. In CCRCs, the egocentric network consisted of 3.62 ties. Of the ties listed in the egocentric network, the majority were family

TABLE 1 Sample characteristics in adult day care centers (ADCCs) and continuing care retirement communities (CCRCs; N = 245)

Variable	Total sample		ADCC		CCRC		t/χ^2 (df)
	M/%	SD	M/%	SD	M/%	SD	
Sense of community (baseline)	8.61	1.96	9.11	1.75	7.94	2.04	−4.78 (239)**
Sense of community (follow-up)	8.88	1.94	9.29	1.67	8.30	2.14	−3.98 (235)**
Age (years)	83.58	7.09	82.93	6.62	84.45	7.62	1.63 (233)
Women	75%		70%		81%		3.52 (1)
Education	10.59	5.08	8.42	4.75	13.38	4.04	8.61 (241)**
Constraint	0.56	0.30	0.57	0.30	0.54	0.29	−0.09 (192)
Betweenness	0.33	0.89	0.35	0.83	0.30	0.97	−0.49 (245)
Egocentric network	3.48	2.42	3.36	2.40	3.62	2.46	0.83 (244)

Note: M and SD are used to represent mean and standard deviation, respectively. % are used to represent percentage. Constraint represents the degree to which an ego is invested in a single group of interconnected alters. Betweenness reflects the number of shortest paths that go through an ego. An egocentric network represents a network in which the ego is queried about his or her ties, but not the alters.
**$p < .01$.

TABLE 2 Sample characteristics and correlation matrix of study variables ($N = 245$)

Variable	1	2	3	4	5	6	7
1. Sense of community (baseline)							
2. Sense of community (follow-up)	0.49**						
3. Age (years)	−0.02	−0.10					
4. Women (men-reference)	0.10	0.13*	−0.02				
5. Education (years)	−0.11	−0.04	−0.11	−0.06			
6. Constraint	−0.12	−0.23**	0.09	−0.12	−0.14*		
7. Betweenness	0.14*	0.14*	0.04	0.10	0.11	−0.43**	
8. Egocentric network	0.06	0.16*	−0.05	0.11	−0.01	−0.07	0.11

Note: Constraint represents the degree to which an ego is invested in a single group of interconnected alters. Betweenness reflects the number of shortest paths that go through an ego. An egocentric network represents a network in which the ego is queried about his or her ties, but not the alters.
*$p < 0.05$.
**$p < 0.01$.

members (2; 56%), 1.4 were friends (39%), and the remaining ties (roughly 5%) were with neighbors and health service providers.

Table 2 summarizes the correlations between study variables. There was a significant correlation between SCB in wave one and two. There also were significant correlations between SCB in wave one and two and betweenness measured in wave 1. Constraint was negatively associated with follow-up SCB. The size of the egocentric network was positively related with follow-up SCB. Constraint was negatively related to level of education and there was a negative correlation between constraint and betweenness.

Table 3 summarizes the hierarchical regression analysis. All network variables, SCB at baseline and setting were entered in the first model. SCB at baseline was a significant predictor, so that those who were high at baseline also

TABLE 3 OLS regressions of SCB at follow-up

Predictor	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
(Intercept)	–	–	5.48**	–	–	4.83**	–	–	4.44*
Sense of community (baseline)	0.42	0.07	0.42**	0.41	0.07	0.43**	0.41	0.07	0.42***
Constraint	−0.18	0.07	−1.13**	−0.13	0.07	−0.84	−0.03	0.09	−0.21
Betweenness	0.01	0.07	0.02	0.01	0.07	0.01	−0.00	0.07	−0.00
Egocentric network	0.19	0.06	0.15**	0.19	0.07	0.14**	0.19	0.07	0.15**
ADCC-reference	−0.13	0.07	−0.48*	−0.16	0.08	−0.63*	0.07	0.14	0.27
Age	–	–	–	−0.02	0.07	−0.00	−0.02	0.07	−0.00
Men-ref. group	–	–	–	0.10	0.07	0.43	0.11	0.07	0.48
Education	–	–	–	0.04	0.08	0.02	0.06	0.08	0.02
Constraint setting	–	–	–	–	–	–	−0.29	0.15	−1.75*
R^2	–	0.309**	–	–	0.306**	–	–	0.323**	–

Note: Constraint represents the degree to which an ego is invested in a single group of interconnected alters. Betweenness reflects the number of shortest paths that go through an ego. An egocentric network represents a network in which the ego is queried about his or her ties, but not the alters.
Abbreviation: B, standardized regression coefficient; SE, standard error of B; β, unstandardized regression weights.
*$p < .05$.
**$p < .01$.
***$p < .001$.

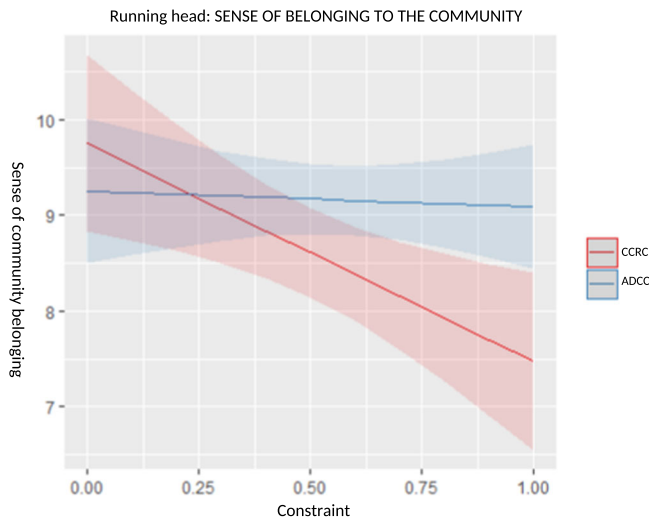Running head: SENSE OF BELONGING TO THE COMMUNITY

FIGURE 1 The relationship between constraint and sense of community belonging in adult day care centers (ADCCs) and continuing care retirement communities (CCRCs)

were higher at follow-up. Constraint was negatively correlated, suggesting that those individuals that were "redundant" in their own network due to its high levels of cohesion, reported a lower SCB. A higher egocentric network (which consisted primarily of non-long-term care setting members) was associated with a higher SCB. Finally, belonging to an ADCC was associated with higher levels of SCB.

In model 2, age, gender, and education were entered as covariates into the ordinary least square regression model. SCB at baseline, the overall size of the egocentric network and the long-term care setting were significant predictors of SCB at follow-up. Finally, in model 3, we tested interactions between the three social network variables and the type of long-term care setting. Only significant interactions remained in this final model. SCB at baseline was a significant predictor of SCB at follow-up. In addition, the overall size of the egocentric network was a significant predictor of SCB at follow-up. There also was a significant interaction between constraint and the type of long-term care setting. This interaction suggests that as constraint levels increase, overall SCB decreases in CCRCs, $B(SE) = -0.31(0.11)$ $\beta = -1.96$, $p < .01$ but not in ADCCs, $B(SE) = -0.03(0.09)$ $\beta = -.21$, $p = ns$. This interaction is presented in Figure 1. The interaction accounted for 2% of the variability in SCB at follow-up.

5 | DISCUSSION

This study evaluated the moderating role of the type of long-term care setting in the relationship between one's social network and SCB. Although both ADCCs and CCRCs represent settings, which are specifically geared towards enhancing and even replacing to some degree the original local communities of older adults (Ayalon, 2018), to date, there has been no research on SCB and its potential association with one's social network in these long-term care settings. This is particularly unfortunate in light of past research which has consistently documented the positive effects of SCB on one's health and mental health (Kitchen, Williams, & Chowhan, 2012).

A major finding concerns the differential effects of constraint on SCB. Being constrained by a very cohesive network was associated with a lower sense of belonging to the CCRC community. This association was not significant in the case of ADCC participants. Possibly, the CCRC represents a more comprehensive setting, in which older people live, eat, and interact with each other. In such a setting (Goffman, 1961), social relations with other members play a major role. ADCCs, on the contrary, serve older adults only for several hours per day, several times

per week. Possibly, in this type of setting, one's standing in the community is of lesser importance, as it represents only one of multiple opportunities for networking.

The negative association between constraint and SCB is consistent with Burt's (2001, 2015) prediction concerning the disadvantages inherited in being part of a highly cohesive group. In such a network, it is possible that information and benefits flow easily. However, the group may exert a strong power over its members, who have very little room for innovation and deviation from its strongly imposed norms. Having a small cohesive network within the CCRC setting, is likely to be counter-productive as it prevents people from fully benefiting from their membership in the larger CCRC community. This finding is partially consistent with past research conducted in a CCRC in the United States that has found that better health was associated with less constraint and higher levels of integration among residents (Schafer, 2013).

The egocentric network, which represents outgoing ties to a variety of individuals, including those who are not part of the long-term care setting, was associated with SCB, unrelated to whether or not one belonged to an ADCC or a CCRC. Most of the egocentric network was composed of family members and only a minority were friends and neighbours. Hence, even though this network does not necessarily capture ties within the long-term care setting, it does capture a general sense of satisfaction with one's relationships, which possibly radiates to the long-term care setting's SCB. This finding possibly attests to the fact that social relationships outside the long-term care setting still play a major role in residents' lives (Ayalon & Green, 2013).

Despite its strengths, this study has several limitations that should be noted. First, we relied on a nonrepresentative sample of ADCCs and CCRCs, which were purposively selected to represent diversity in geographic location and size. Moreover, given the characteristics of our sample, many of our participants were sick, died, or transitioned outside the long-term care setting over the 1-year period of this study. Nonetheless, this study pays attention to a neglected topic that has received little attention, thus far, namely, older adults' SCB in long-term care institutions that are specifically geared to enhance or replace one's original local community of residence (Ayalon et al., 2018). As expected, our findings show that the social network plays a role in people's SCB. The local network, confined to the long-term care setting, plays a role only in CCRCs, which are more comprehensive in their approach. Specifically, older adults who had higher levels of constraint reported lower levels of SCB, as they potentially were highly dependent on a small segment within the larger CCRC social network. In ADCCs, on the contrary, the local long-term care network plays no role, possibly because the ADCC is a partial solution for several hours per day, several days per week. Finally, this study points to the important role played by relationships outside the long-term care setting (e.g., egocentric network) in determining older adults' SCB. Interestingly, the egocentric network is composed primarily of family members, yet, still relates to one's SCB to the long-term care community.

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