Social Relations and Resident Health in Assisted Living: An Application of the Convoy Model

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Purpose: This article, based on analysis of data from a mixed methods study, builds on a growing body of assisted living (AL) research focusing on the link between residents’ social relationships and health. A key aim of this analysis, which uses the social convoy model as a conceptual and methodological framework, was to examine the relative importance of coresident relationships and other network ties to residents’ subjective well-being.

Design and Methods: We analyzed data from structured face-to-face interviews and social network mapping conducted with 192 AL residents in 9 AL facilities in Georgia.

Results: Having a higher proportion of family ties in one’s network was the single most important predictor of well-being, whereas possessing some ties to coresidents and nonfamily members outside AL also had a positive effect. Findings showed that relationships among coresidents generally were important although not emotionally close. Having more close ties was associated with lower well-being, suggesting that not all close ties are beneficial. The majority (84%) of residents’ closet ties were with family members.

Implications: Findings illuminate the crucial role families play in residents’ overall health and well-being and demonstrate the importance of helping residents develop and maintain a range of network ties, including “weak” ties with coresidents and nonfamily outside AL.

Key Words: Assisted living, Social relationships, Social convoy model, Social networks, Mixed methods

Assisted living (AL) is among the fastest growing and most popular types of senior housing in the United States (Metlife Mature Market Institute, 2011). Designed and marketed as a social model of care, AL provides protective oversight and assistance with care to older adults with activity limitations in a community-based setting that is vastly preferred by older people and their families over more expensive and institutional nursing home care (Ball et al., 2004; Edelman, Guihan, Bryant, & Munroe, 2006). In addition to providing needed assistance with basic activities of daily living (ADLs) and instrumental activities of daily living (IADLs), an important emphasis of the AL philosophy of care is on addressing residents’ social and emotional needs.

The move to AL is associated with multiple losses, including declining health and function and the accompanying loss of independence, as well as numerous social losses, such as the loss of a spouse and longtime friends (Mead, Eckert, Zimmerman, & Schumacher, 2005; Perkins, Ball, Whittington, & Hollingsworth, 2012). Along with
need for instrumental care, the desire to alleviate loneliness and isolation often contributes to moving decisions (Ball et al., 2005; Ball, Perkins, Hollingsworth, Whittington, & King, 2009). AL creates new opportunities for social interaction and companionship that can help fill these voids (Ball et al., 2005; Eckert, Carder, Morgan, Frankowski, & Roth, 2009; Kemp, Ball, Hollingsworth, & Perkins, 2012).

Some evidence indicates that residents’ new ties with coresidents may be more important to their overall well-being than preexisting ties with family and others outside the facility (Burge & Street, 2010; Street & Burge, 2012). Ethnographic research (Ball et al., 2005; Kemp et al., 2012; Perkins et al., 2012) shows that that the quality of coresident ties varies widely; friendships typically develop among residents who share similar histories, cultural and socioeconomic backgrounds, life experiences, interests, and abilities. Helping or “neighboring” relationships are common but generally superficial and characterized by cordial interaction and friendly courtesies, such as pushing wheelchairs and reminding about meals (Kemp et al., 2012). Adversarial relationships also develop within this congregate care setting and often are related to personality clashes and other individual- and group-level differences (e.g., differences in race, class, and functional ability) (Ball et al., 2005; Kemp et al., 2012; Perkins et al., 2012). Cliques and gossip, other common aspects of group life, can create alliances but also be divisive and cause conflict (Perkins et al., 2012).

Within the social context of AL, stigma associated with disability and decline, especially relating to cognitive impairment, is among key relationship barriers (Dobbs et al., 2008; Perkins et al., 2012; Shippee, 2009). Health problems and functional impairment also limit some residents’ interest and ability to interact with coresidents (Kemp et al., 2012). Fears about future placement in a nursing home or dementia unit contribute to the stigma associated with decline and functional impairment in AL and is among major barriers that limit development, and in some cases maintenance, of potentially beneficial ties among residents (Perkins et al., 2012; Shippee, 2009).

Though family ties remain central for many AL residents, not all residents have family support. Even when support is significant, family members typically are available on a weekly basis at most (Gaugler, 2007). Some residents develop fulfilling relationships with staff (Ball, Lepore, Perkins, Hollingsworth, & Sweatman, 2009) but staff, like others outside AL, have competing demands.

Interaction with friends and other nonfamily members in the wider community remains important for many residents and can be crucial to their ability to adapt to facility life (Perkins et al., 2012), including their capacity to form new relationships with coresidents (Burge & Street, 2010). Street and Burge (2012), however, find community ties to be negatively associated with residents’ temporal perceptions of well-being, suggesting that they possibly represent painful reminders of former lives. Regardless of their influence, interactions with people in the wider community typically becomes less frequent after the move to AL and in some cases may end as a result of residents’ relocation (Street & Burge, 2012).

Within the shared living environment of AL, social interaction with fellow residents is inescapable. Successfully navigating these relationships and developing meaningful ties has important implications for residents’ health and overall well-being, especially for those who lack external ties. Dissatisfaction with social contacts and low levels of perceived social support are significantly associated with depression in AL residents (Cummings & Cockerham, 2004), a risk factor for increased morbidity and mortality (Peters et al., 2010). Conversely, other findings show that residents who establish positive relationships inside AL adapt better to facility life, feel more at home in this setting, and report higher levels of subjective well-being (Street, Burge, Quadagno, & Barrett, 2007; Street & Burge, 2012).

A primary aim of this mixed methods study is to address questions raised by previous research, providing new information that can inform strategies to maximize AL residents’ capacity for meaningful relationships and improve their quality of life. Consistent with the World Health Organization’s (1948) definition, we define health broadly to include physical and mental health, as well as social well-being. A key focus is on learning whether differences exist in well-being among residents who include coresidents in their social networks versus those who exclude them and, among these groups, exploring the nature and meaning of coresident ties. Also of particular interest are perceptions residents have regarding the closeness and adequacy of their network and the effect that these cognitions have on well-being. Given the relationship barriers we have identified and our focus on potential group differences, we...
define “network adequacy” in terms of residents’ perceived need for additional network members. Identifying sources of variation across and within these groups will contribute to a better understanding of how to achieve optimal levels of social integration among residents. No known research has investigated differences that may exist among residents who include coresidents in their networks versus those who exclude coresidents. Although our own and other research indicates that AL residents’ relationships with one another are centrally important to their health and overall well-being, data are limited and inconclusive.

**Conceptual Framework**

Kahn and Antonucci’s (1980) social convoy model is the basic theoretical framework underpinning this study. We do not test this model in its entirety; instead, we use it as a conceptual lens for describing and interpreting the composition and perceived closeness and adequacy of residents’ social networks and the effect that these factors have on well-being. This model, combined with previous findings, also serve as a sensitizing framework (Charmaz, 2006) and starting point for our qualitative analysis, which focuses on the meaning and nature of coresident relationships.

The term “social convoy” denotes a dynamic grouping of network members that surround an individual over time and provide different types of support necessary for health and overall well-being (Kahn & Antonucci, 1980). Rooted in the life-span perspective, the convoy model takes into account that people continue to develop as they age and form emotional attachments that fluctuate over time in response to life transitions and age-related changes and needs (Antonucci & Akiyama, 1987). This developmental view of social support recognizes that although some network members may be lost over time, recruitment of new members also may occur, particularly in times of need (Kahn and Antonucci, 1980). Life course transitions, such as retirement, relocation, and the loss of a spouse or other close ties, mean that older adults generally have smaller, less active, and less diverse networks compared with younger adults (Antonucci & Akiyama, 1987). Some evidence indicates that older adults with larger networks and a higher proportion of family ties are at lower risk for depression (Antonnuci, Fuhrer, & Dartigues, 1997); those who lack meaningful ties with family or other close nonfamily ties may be particularly vulnerable to adverse health effects (Antonucci & Akiyama, 1987).

Heuristically, Kahn and Antonucci (1980) conceptualized the convoy model as consisting of relationships that individuals organize hierarchically as very close, somewhat close, and less close. Based on the value individuals attribute to their closest ties, Kahn and Antonucci (1980) posit that their existence and proportion are key predictors of well-being, although they acknowledge that the outcome may not always be positive (e.g., in the case of inadequate support). Although individuals’ social convoys typically consist of a variety of relationships, ties perceived as “very close” generally include more family (Ajrouch, Blandon, & Antonucci, 2005). Characteristics of the individual (e.g., race, age, and education level) and the situation (e.g., characteristics of one’s living arrangement) shape the types of relationships individuals need or desire, as well as their ability to develop and maintain supportive relationships. These individual and situational characteristics also affect well-being (Antonucci, Langfahl, & Akiyama, 2004).

Although families typically comprise at least half of older adults’ networks and represent most of their closest ties (Ajrouch et al., 2005; Antonucci, 1994), research consistently shows that older people’s subjective well-being more often is related to ties with friends than with family (Antonucci & Akiyama, 1995). Antonucci and Akiyama (1995) explain this seemingly contradictory finding by hypothesizing that although family members provide valued support, family relationships are obligatory, whereas support from friends is generally optional. Other scholars hypothesize that affective support exchanged freely among aging friends may also help older adults maintain a positive sense of self as they become more dependent on family for instrumental support (see, e.g., Siebert, Mutran, & Reitzes, 1999).

The move into AL constitutes a major life course transition that simultaneously heightens the need for supportive relations and alters existing social networks (Burge & Street, 2010; Shippee, 2009). Once in AL, age-related changes, particularly those affecting health, are likely to continue altering the composition of, and need for, social support networks (Antonucci & Akiyama, 1987; Ball et al., 2004). Residents may be separated from longtime friends, and busy family members may be unable to meet all of residents’ social and emotional needs (Street & Burge, 2012; Tompkins, Ihara, Cusick, &
As a result, supportive relationships with coresidents may be especially important. We have, however, identified certain barriers that may limit development or maintenance of these relationships. Not known is what effect a lack of coresident ties or the perceived need for additional network ties might have on well-being. This study addresses these and other important questions.

Based on the convoy model and existing literature, we use quantitative and qualitative analytical techniques to investigate five primary research questions: (a) What are the characteristics of residents’ social networks and how do these properties vary with regard to inclusion or exclusion of coresidents?; (b) Among residents who include coresidents in their social networks versus those who do not, what is the nature and meaning of these relationships and what factors shape these ties?; (c) Are coresident ties important to residents’ subjective well-being and if so, how important is this relationship relative to family and community ties?; (d) Who do residents name as their closest (inner circle) ties and are these ties more important to well-being compared with other network ties?; and (e) Do residents indicate a desire for additional network members, and, if so, how does this need relate to well-being?

Design and Methods

This cross-sectional descriptive study uses data from a 3-year (2008–2011) NIA-funded mixed methods study of residents’ social relationships in AL. Data we report here come from face-to-face structured interviews that included open- and closed-ended questions and social network mapping. The Institutional Review Board at Georgia State University approved our procedures.

Setting and Participants

We used maximum variation sampling to purposively select eight facilities in urban and suburban areas of metropolitan Atlanta for in-depth study, seeking variation in ownership, size, fee level, location, and resident profile. In the final study year, we added a ninth facility to increase our number of structured interviews. Six homes were corporately owned; two were family owned, and one was owned by a nonprofit foundation. The smallest facility had a capacity of 18 residents; others ranged in size from 42 to 100 residents. Fee ranges varied across homes, with a median low of $2,616 and median high of $4,000. Eight facilities housed majority White resident populations; one housed African Americans only. Three facilities had larger (30%–40%) male populations than typically reported in AL, and in one, 99% of residents were Jewish. Facilities had been in operation from 1 to 23 years. We limited the study to AL residents but included homes with varying care levels because we wanted to understand the influence of transitions on relationships over time. Five facilities had separate dementia care units; one was located on a campus with two buildings housing independent seniors. The longest tenure facility, originally built as an independent senior residence, housed AL residents on two of the five floors; all residents shared a dining room and common spaces.

Table 1 provides descriptive characteristics of sample residents. We included all residents in structured interviews who were mentally and physically capable and willing to participate and had lived in a home or AL section for at least 3 months. We based our assessment of mental competence on information from facility administrators. By design, the sample is slightly more men (28%) and non-White (16%) than typically reported but is generally comparable to the predominately White, female, and elderly national population (Caffrey et al., 2012).

Of the 200 interview participants (8–41 per facility), 192 completed all survey items and 51 (0–13 per facility) declined participation. Primary
reasons for nonresponse or incomplete surveys included lack of interest, privacy concerns, health problems, and time commitment. Interviews took on average 60 min.

Social Network Mapping

Consistent with our conceptual framework, we used Antonucci’s (1986) hierarchical network mapping technique to assess residents’ social networks. We presented residents with a diagram that included three concentric circles with the word “You” in the center and asked them to view each circle as representing different levels of closeness. We then asked residents to include in the inner circles those individuals to whom they felt so close that it was hard to imagine life without. In the middle circle, we asked them to place people to whom they still felt close but who were not as important as those placed in the inner circle. Finally, we asked residents to include in the outer circle people not yet mentioned but who were still important enough to place in their networks. Residents’ total network size and the size of each circle (inner, middle, and outer) had possible combined values ranging from 1 to 20. Next, we surveyed residents about network members, including relationship to them, types of support (ADLs, IADLs, and emotional) given and received, and perceptions about support quality and network adequacy. For this analysis, we grouped network members into four categories: coresidents, AL staff, family members, and nonfamily members in the wider community (see Table 2). Because we were most interested in coresident relationships, following network mapping, we queried residents about their decisions to include or exclude coresidents from their networks. We asked those who included coresidents to discuss what led to relationship development using the following probe:

- I notice you listed quite a few residents as being important to you in your social network. Could you talk a little bit about how these relationships came about?

We asked those who did not include coresidents to describe the nature of their coresident relationships using the following probe:

- In talking about people who are most important to you now, you did not name other residents who live here. Could you talk a little about what kind of relationships you have with other residents?

Measures Used in Multivariate Analysis

Subjective Well-Being.—Our outcome variable of interest in multivariate analysis was subjective well-being measured through a single item, “Overall, how satisfied are you with your life as a whole?” Response options included four ordered categories: 1 = very dissatisfied; 2 = dissatisfied; 3 = satisfied; and 4 = very satisfied. Because the

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Full sample (n = 192)</th>
<th>Includes residents (n = 56)</th>
<th>Excludes residents (n = 136)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of social network</td>
<td>9.15 (5.01)</td>
<td>11.63 (5.45)</td>
<td>8.13 (4.60)**</td>
</tr>
<tr>
<td>Size of inner circle</td>
<td>4.83 (2.94)</td>
<td>5.95 (3.07)</td>
<td>4.38 (2.77)**</td>
</tr>
<tr>
<td>Size of middle circle</td>
<td>3.00 (2.83)</td>
<td>3.70 (2.31)</td>
<td>2.71 (2.62)**</td>
</tr>
<tr>
<td>Size of outer circle</td>
<td>1.27 (2.01)</td>
<td>1.96 (2.29)</td>
<td>1.00 (1.81)**</td>
</tr>
<tr>
<td>Family in social network (%)</td>
<td>66.21 (27.65)</td>
<td>49.70 (19.26)</td>
<td>73.00 (27.77)**</td>
</tr>
<tr>
<td>Nonfamily community members in social network (%)</td>
<td>21.91 (23.41)</td>
<td>17.32 (16.24)</td>
<td>23.80 (25.60)</td>
</tr>
<tr>
<td>AL staff in social network (%)</td>
<td>5.24 (11.97)</td>
<td>10.51 (15.41)</td>
<td>3.07 (9.47)**</td>
</tr>
<tr>
<td>Residents in social network (%)</td>
<td>6.51 (12.79)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Family in inner circle (%)</td>
<td>83.95 (27.40)</td>
<td>77.04 (29.14)</td>
<td>86.80 (26.24)</td>
</tr>
<tr>
<td>Nonfamily community members in inner circle (%)</td>
<td>9.39 (20.21)</td>
<td>8.65 (15.18)</td>
<td>10.46 (21.98)</td>
</tr>
<tr>
<td>AL staff in inner circle (%)</td>
<td>2.58 (11.21)</td>
<td>5.34 (17.41)</td>
<td>1.45 (7.05)</td>
</tr>
<tr>
<td>Residents in inner circle (%)</td>
<td>2.10 (8.08)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Notes: p values are for t-test statistics for means with Bonferroni correction for multiple comparisons.
*p < .005. ** p < .0001.
frequency of “very dissatisfied” and “dissatisfied” responses was low, we recoded this measure into three categories (1 = dissatisfied, 2 = fairly satisfied, and 3 = very satisfied) to be consistent with a measure used by Antonucci, Akiyama, and Lansford (1998) as an outcome variable in an early investigation of the influence of social network properties on well-being among older married adults and children. In ordered logistic regression (the method we used for multivariate analysis), simulation studies show that collapsing categories consisting of small numbers of responses leaves slope parameters unchanged and, if the assumption of proportional odds is met, can improve asymptotic approximations used in analysis (Murad, Fleischman, Sadetzki, Geyer, & Freedman, 2003).

**Network Composition.**—Based on our research questions and the relatively modest sample size, we selected a small number of theoretically relevant predictors to retain adequate power for multivariate analysis. These included three measures of network composition. First, we derived the proportion of family ties by dividing the number of family network members by network size. Next, we assessed whether networks included coresident ties as 0 (does not include) and 1 (includes). Similarly, we calculated nonfamily in the wider community as 0 (does not include) and 1 (includes).

**Proportion of Close Ties.**—We derived this measure by dividing the number of network members in the inner circle (closest ties) by total network size.

**Network Adequacy.**—We assessed residents’ perceptions regarding network adequacy through a single item (“Would you like to have additional people in your personal network?,” coded 0 = no and 1 = yes).

**Personal and Situational Characteristics.**—These variables included gender (0 = male and 1 = female), age (in years), education level, facility tenure (time lived in AL measured in months), and functional and self-perceived health. We used a five-level education variable as a proxy for continuous years of education (1 = less than high school, 2 = high school graduate, 3 = some college, 4 = college graduate, 5 = post graduate). We measured functional health using seven ADL items (need assistance eating, dressing/undressing, grooming, walking, getting in/out of bed, bathing/showering, and getting to the bathroom on time) and seven IADL items (need assistance using the telephone, getting to places outside the facility, shopping, doing laundry, taking medicine, managing money, and getting to meals) derived from the Older Americans Resources and Services (OARS) Multidimensional Assessment Questionnaire (Duke University Center for the Study of Aging and Human Development, 1978). We scored responses on a 3-point scale, ranging from 1 “requires total assistance” to 3 “requires no assistance,” with higher scores indicating higher functional ability (Cronbach’s $\alpha = 0.88$). To assess self-perceived health, we used a well-established one-item measure: “How would you rate your health at the present time?” (excellent = 4 to poor = 1).

**Analytic Strategy**

Researchers studying the complex relationship between social relationships and health have called for multidimensional as opposed to unidimensional approaches (see, e.g., Antonucci, 1985; Walker, Wasserman, & Wellman, 1998). In this analysis, we quantitatively and qualitatively examined characteristics of residents and their networks and examined predictors of subjective well-being. To address Research Question 1 and provide context for the analysis that follows, we first examined characteristics of residents’ social networks and used t tests to investigate group differences among residents who included coresidents in their networks versus those who excluded coresidents (Table 2).

To address Research Questions 3 through 5, we used ordered logistic regression to examine the importance of four types of predictors hypothesized to influence residents’ subjective well-being (a proxy measure for overall health): (a) personal and situational characteristics (gender, race, age, education level, facility tenure, functional health, and self-perceived health); (b) network composition (proportion family ties, coresident ties, and nonfamily in the wider community); (c) proportion of close ties (proportion of network in the inner circle); and (d) network adequacy (desire for additional network members). Ordered logistic regression accounts for the ordinal level of a dependent variable and overcomes some of the problems associated with ordinary least squared (OLS) regression when the distribution of scores on a health outcome are highly nonnormal or when the majority of respondents’ scores fall at the bottom or the top of a scale (i.e., floor and ceiling effects) (Murad et al., 2003). We used the Brant test to
examine the assumption of proportional odds and the results were nonsignificant (χ² = 14.21, p = .288), indicating that this assumption was fulfilled.

Prior to multivariate analysis, we computed Pearson correlations and used the variance inflation factor (VIF) test to rule out multicollinearity. Only one pair of predictors showed a correlation more than .4 (proportion of family ties and non-family community ties, r = .61). The mean VIF was 1.28, with a range from 1.07 to 2.14. To evaluate how much of the total variance in subjective well-being was accounted for by membership in a specific facility, we calculated the design effect (1 + (average cluster size − 1) × intraclass correlation coefficient (ICC)). Given an ICC of .01 and a harmonic mean of within facility sample size equal to 16, findings showed that the design effect was approximately 1.15, which is below the threshold of 2.0, indicating that clustering in the data did not need to be accounted for during estimation (Muthen & Satorra, 1995). We used STATA 11.0 (StataCorp, 2009) for all statistical analyses.

In order to address Research Question 2 regarding the nature and meaning of coresident relationships and to facilitate and enhance interpretation of the quantitative findings, we analyzed textual data from two opened questions (see Social Network Mapping section). To conduct this analysis, we performed a thematic analysis using constant comparative procedures consistent with the grounded theory method (Corbin & Strauss, 2008). We sorted the data by residents who included residents in their social networks versus those who excluded them and conducted both within-group and cross-group analysis. We began by conducting line-by-line open coding to identify emerging conceptual categories, which included in vivo codes (i.e., categories labeled verbatim by residents), such as “outsider,” and “not a mixer.” We organized open codes in terms of their properties and dimensions and linked categories in terms of context, conditions, consequences, relationships, and meaning to construct four major themes that we present in the results, a technique known as axial coding. These procedures included linking emergent concepts to emerging findings from ongoing qualitative analysis of ethnographic and in-depth interview data collected in the larger study (see Kemp et al., 2012), as well as quantitative findings we present here. Our team approach to data collection and analysis together with triangulation of findings contributed to the rigor of the analysis and enhanced credibility of the results.

**Results**

**Characteristics of Residents’ Social Networks**

Table 2 presents means and standard deviations of residents’ network characteristics for the total sample, then by resident inclusion. Significance tests are based on comparisons of the final two columns. These results address Research Question 1, investigating the characteristics of residents’ social networks and how network properties vary with regard to inclusion or exclusion of coresidents.

The number of people in residents’ networks ranged from 1 to 20, with an average of about 9. Only 29% of residents interviewed included coresidents in their networks. Almost all (99%) residents included family in their networks, and family represented 66% of all network members (range = 0–19, SD = 3.27). About 22% were nonfamily members from the community (range = 0–14, SD = 2.85), approximately 7% were coresidents (range = 0–10, SD = 1.53), and 5% were AL staff (range = 0–7, SD = 1.56).

Numbers of people in residents’ inner circle ranged from 0 to 19, with an average of about 5. Overall, residents placed fewer people in their middle (range = 0–10, SD = 2.83) and outer (range = 0–11, SD = 2.01) circles. About 84% of people in residents’ inner circle were family members. Only about 7% of residents who included coresidents in their networks placed them in their inner circle (range = 0–3, SD = 0.41). Most placed them in their middle (range = 0–6, SD = 1.00) and outer (range = 0–8, SD = 0.99) circles, indicating that coresident ties were important but not as emotionally close.

In general, t tests established that residents who included coresidents in their social networks had larger and more diverse networks, compared with residents who did not, and their networks contained more inner circle members and AL staff yet included significantly fewer family members. Supplementary analyses (not shown) showed no significant differences in these groups regarding gender, race, age, education level, facility tenure, or functional health.

**Findings From Multivariate Analysis**

To address Research Questions 3 through 5 that pertained to relative importance of various network variables, we used ordered logistic regression. Table 3 summarizes findings from this analysis. Findings showed that six individual predictors had a significant (p < .05) association with residents’ subjective well-being after controlling for other
effects in the model. Fully standardized logistic regression coefficients (not shown in Table 3) that adjust for differences in measurement units between variables showed that having a higher proportion of family ties ($\beta = 0.44$, $p < .001$) was the single most important predictor of subjective well-being, even more so than self-perceived health ($\beta = 0.34$, $p < .001$), a variable that has consistently shown to be among the most powerful predictors of morbidity and mortality (see, e.g., Idler & Benyamini, 1997). After self-perceived health, the next strongest predictor of well-being was desire for additional network members ($\beta = -0.25$, $p < .001$), followed by nonfamily community ties ($\beta = 0.20$, $p < .05$), coresident ties ($\beta = 0.16$, $p < .05$), and proportion of close ties ($\beta = -0.15$, $p < .05$).

As might be expected, residents who reported higher levels of self-perceived health and no need for additional network members scored significantly higher on subjective well-being. Although having a higher proportion of family ties was the most important predictor of well-being, results also suggest that having some ties to other residents and nonfamily members in the wider community are important factors in residents’ overall well-being. Having more inner circle members was associated with lower well-being, indicating that having more close ties may not be an advantage, a finding that at first seems contradictory. Findings reported subsequently provide some additional insight into these results.

Findings from Thematic Analysis

Of 192 residents who completed structured interviews and network mapping, 179 (93%), answered one of two follow-up open-ended questions depending on whether they included or excluded coresidents from their networks (see Social Network Mapping section). Text from open-ended responses ranged from 1 to 18 lines, with an average of 4. Four major interrelated themes emerged: (a) peripheral “friends,” (b) relational boundaries, (c) lines of commonality and difference, and (d) social time. These results address Research Question 2 and provide additional context for the interpretation of the quantitative findings.

Peripheral “Friends.”—Previously reported findings (Kemp et al., 2012) that used the full range of

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal and situational characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-0.33</td>
<td>(0.36)</td>
<td>0.72</td>
<td>0.36–1.44</td>
</tr>
<tr>
<td>White</td>
<td>0.19</td>
<td>(0.44)</td>
<td>1.21</td>
<td>0.52–2.85</td>
</tr>
<tr>
<td>Age (years)</td>
<td>-0.00</td>
<td>(0.02)</td>
<td>0.99</td>
<td>0.95–1.03</td>
</tr>
<tr>
<td>Education level$^a$</td>
<td>0.05</td>
<td>(0.13)</td>
<td>1.05</td>
<td>0.81–1.37</td>
</tr>
<tr>
<td>Facility tenure (months)</td>
<td>0.06</td>
<td>(0.06)</td>
<td>1.06</td>
<td>0.94–1.21</td>
</tr>
<tr>
<td>Functional health$^b$</td>
<td>0.04</td>
<td>(0.03)</td>
<td>1.04</td>
<td>0.98–1.11</td>
</tr>
<tr>
<td>Self-perceived health$^c$</td>
<td>0.95***</td>
<td>(0.22)</td>
<td>2.58</td>
<td>1.69–3.96</td>
</tr>
<tr>
<td>Network composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of family ties</td>
<td>0.03***</td>
<td>(0.01)</td>
<td>1.04</td>
<td>1.02–1.05</td>
</tr>
<tr>
<td>Coresident ties$^d$</td>
<td>0.79*</td>
<td>(0.40)</td>
<td>2.20</td>
<td>1.01–4.77</td>
</tr>
<tr>
<td>Nonfamily community ties$^e$</td>
<td>0.89*</td>
<td>(0.43)</td>
<td>2.44</td>
<td>1.04–5.71</td>
</tr>
<tr>
<td>Proportion of close ties</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion network in inner circle</td>
<td>-1.27*</td>
<td>(0.65)</td>
<td>0.28</td>
<td>0.08–0.99</td>
</tr>
<tr>
<td>Network adequacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for additional network members$^f$</td>
<td>-1.34***</td>
<td>(0.42)</td>
<td>0.26</td>
<td>0.12–0.59</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-143.912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McFadden’s pseudo $R^2$</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: $^a$Measured on a scale of 1–5; 1 = less than high school, 2 = high school graduate, 3 = some college, 4 = college graduate, and 5 = post graduate.

$^b$Measured on a scale of 1–3; 1 = requires total assistance, 2 = requires some assistance, and 3 = requires no assistance.

$^c$Measured on a scale of 1–4; 1 = poor, 2 = fair, 3 = good, and 4 = excellent.

$^d$Measured 1 = coresident ties and 0 = no coresident ties.

$^e$Measured 1 = nonfamily community ties and 0 = no non-family community ties.

$^f$Measured 1 = desire for additional network members and 0 = no desire for additional network members.

*p < .05. **p < .01. ***p < .001.
qualitative data collected from three of nine study homes showed that resident relationships varied widely along a continuum from close friend to stranger and even enemy. Consistent with previous findings, analysis of open-ended data shows that many coresident relationships are not particularly close. Descriptive statistics (Table 2) support these results showing that less than one third (29%) of residents include coresidents in their networks and few of these residents include coresidents in their inner circle. Analysis presented here provides additional insight, including showing notable similarities among residents who include coresidents in their social networks and those who do not. Interestingly, we find that many residents use the word “friend” to define these peripheral or “weak” ties. The following statements by residents who include coresidents in their social networks are illustrative:

I got to know them sitting in the parlor and at meals. I speak, hug, say “hello.” They are friends just to say “hello.” We talk some.

This outer group (residents in the outer circle) is acquaintances. I feel closer to them than [than others in the facility].

Well, I just sit with them (at meals) and we just talk. I don’t visit them at all [in their rooms]. We never have too much to talk about.

Our findings show that residents who include coresidents in their networks also tend to be selective and include as few as two coresidents on average (see Table 2). One such resident stated: “I don’t have use for anyone here, with a few exceptions.”

Relational Boundaries.—Consistent with research by Shippee (2009) and our own previous research (Perkins et al., 2012) a recurring theme is establishing boundaries. One resident stated, “I try not to get too close.” Across groups, several indicated setting boundaries with regard to the sharing of personal information. One resident stated, “I have some friends but not people in whom I confide.” Another said, “We all enjoy getting together, but I have never told them (coresidents) about my divorce.” Several residents indicated setting boundaries to avoid becoming the subject of gossip. One stated, “You don’t really talk to people you meet here about personal things. They just gossip about [the facility] and other residents.” Others distance themselves to avoid costly social obligations: “These are all people who are needy.” Many draw emotional boundaries. In reference to death and decline, which are common in AL, one resident stated, “Death and pain are hard to accept. I keep my distance from people.” Some residents set boundaries based on supportive relationships they have with family:

I am not close to anyone. I speak and am friendly. I think it is because I have so much family. I don’t have any strong ties. I keep up with my four kids and that’s a lot.

Lines of Commonality and Difference.—Consistent with our previous research (Kemp et al., 2012; Perkins et al., 2012), we found that residents often formed bonds along lines of commonality based on race, class, gender, health, functional ability, culture (e.g., southern culture), place (regional or community ties), religion, and even age. A 92-year-old resident describes why he did not include coresidents in his network: “They are all old, over 90, a bunch of old people.” Differences, particularly in the case of residents with significant functional impairments, limited some residents’ opportunities for social interaction and contributed to feelings of isolation: “I wish I had more people to interact with.” Referring to facility cliques, one resident lamented, “People here are not sociable. They do not talk to me.” Another resident who was self-conscious about being incontinent indicated that her perceived lack of social desirability led to her isolation: “I don’t have any [friends] because I’m very unattractive. I’m physically unattractive.”

Social Time.—Another recurring theme is that relationships take time to build. We use the sociological concept of “social time,” (see Sorokin & Merton, 1937) to refer to repeated patterns and frequency of social interactions over time, as well as residents’ perceptions regarding amount of time needed to establish close ties. Some residents who included residents in their networks indicated that their “social career” (Kemp et al., 2012) included having a previous history with coresidents prior to moving to AL. One resident who did not include his “friend” in his network referred to time as factor: “He has only been a friend of mine just three months.” Similarly, another said he did not include one of his “best friends” in his network because he was “only a friend for seven months.” In line with previous research (Kemp et al., 2012), findings show that frequency of contact, such as eating three meals a day together can promote familiarity
and even break down certain boundaries that exist. We discuss implications of these findings and our other findings in the following section.

Discussion

Guided by the social convoy model and previous research, this investigation uses a mixed methods approach to investigate the link between social relationships in AL and residents’ subjective well-being, a proxy measure of overall health. A key focus is on the importance of coresident ties and whether or not differences exist among residents who include coresidents in their social network versus those who do not. Results show that less than one third (29%) of residents include coresidents in their networks. Residents who do include coresident partners are selective and tend to limit those ties to one or two peripheral “friends” with whom they can pass time, relationships that may ease the monotony that often characterizes facility life (Ball et al., 2000). Findings indicate that residents generally invest most of their emotional capital in established ties with family. These results are consistent with the convoy model and changes in patterns of social relations hypothesized to occur over time, as losses in network members occur with advancing age and one’s network increasingly consists of a higher proportion of family and other familiar ties (Ajrouch et al., 2005; Antonucci, 1994). Findings also are consistent with tenets of socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999; Carstensen, Fung, & Charles, 2003), which proposes that older adults and others who perceive their future as limited (e.g., individuals facing terminal illness) will selectively narrow their interactions and focus on familiar long-term relationships, whereas limiting their involvement in peripheral or novel relationships that may be emotionally risky or less emotionally fulfilling. Qualitative findings, including residents’ tendencies to set “relational boundaries” and the concept of “social time,” provide further support for this theory and its predictions that older adults’ perceptions about time and their motivations to maximize emotional well-being and minimize emotional risks will shape their selection of social partners.

In contrast to other recent findings (Street & Burge, 2012; Street et al., 2007), results from multivariate analysis show that family ties, our single most important predictor of well-being, may be more important to residents’ well-being than either coresident ties or community ties. These inconsistent findings may relate to differences in measurement and warrant further investigation. Notably, findings show that having some ties to coresident and nonfamily members outside AL also is important to residents’ well-being.

We also find that having more “close” ties is not necessarily beneficial to overall health and well-being. In relation to findings from open-ended questions, these findings suggest that having more peripheral ties (people in the middle and outer circles) and a lower proportion of close ties (inner circle members—people for whom one cannot imagine life without) may be advantageous. The majority of residents’ closest ties (inner circle members) are family members. Although family ties are clearly important to well-being, our findings suggest that some of these “close” ties may constitute a source of stress (Antonucci et al., 1998). Other research provides insight and shows that after moving to AL, many residents are unable to maintain continuity in family relationships, which can negatively affect well-being (Tompkins et al., 2012). These researchers find that many residents often yearn for more emotional involvement from busy family members, yet do not want to burden them by requesting additional support. Some research indicates that AL residents’ family members do experience significant burden (Port et al., 2005). Future research should investigate further why having more “close” ties, the majority of which are with family, has a negative association with well-being.

Almost one fourth (22%) of residents report a need for additional network members and this desire is significantly associated with lower well-being. Although results suggest that residents tend to invest most of their emotional resources in ties with family, this finding supports findings from open-ended questions showing that many residents are interested in developing new relationships in AL. As access to external relationships narrows, ability to develop new ties inside AL may be an important adaptive strategy to maintain emotional well-being (Carstensen et al., 1999, 2003). Previous research shows that in addition to residents AL staff can be an important source of support, especially in the absence of family (Ball et al., 2005). In this study, t tests showed that residents who included coresidents in their social network also were significantly more likely to include staff, compared with residents who excluded coresident partners. Future research also should delve further into the importance of staff–resident relationships.
Several key variables found to be important in qualitative analysis reported on here and elsewhere (see Kemp et al., 2012), such as race, gender, education level, and functional health, were not significant predictors of well-being in multivariate analysis. Although these variables may be important in shaping residents’ relationships, findings from multivariate analysis suggest that, in addition to self-perceived health, other factors, such as social network composition, proportion of close ties, and perceived adequacy of network ties, may be more salient to residents’ overall health and well-being. A key finding from other analysis we report here is the importance of “weak” or peripheral “friendships” that develop among coresidents. Previous research suggests that ties external to AL enhance residents’ ability to develop these relationships (see, e.g., Street & Burge, 2010). Taken together, these findings have important implications for successful adaption transition to facility life and call for more in-depth analysis.

Although AL can provide needed care and social engagement to residents, previous research (Dobbs et al., 2008; Perkins et al., 2012), identifies negative aspects of the AL social environment, such as cliques and stigma associated with decline and functional impairment, that can threaten residents’ self-concept and negatively affect well-being. Findings presented here support earlier findings (Perkins et al., 2012) showing that in response to such threats, residents may engage in protective strategies, such as social distancing and social isolation, that contribute to negative characteristics of the social environment and are harmful to well-being. Particularly in the absence of supportive family and community ties, these factors pose serious health risks and require intervention. Some strategies might include fostering helping behaviors that residents find meaningful and reduce boundaries formed by functional impairment, as well as designing more effective activity programs that promote frequent and meaningful social interaction.

Peripheral “friends” we have identified among AL residents are consistent with the concept of “consequential strangers,” (Fingerman, 2009; Blau & Fingerman, 2010), a term coined to describe social convoy members who, along the continuum of social relations, fall somewhere between intimate ties and complete strangers. Unlike complete strangers, “consequential strangers,” represent community ties (e.g., in AL) who on the surface may seem inconsequential but, in fact, matter (Blau & Fingerman, 2010).

Although the current cross-sectional descriptive study makes important theoretical, methodological, and empirical contributions, it is not without some limitation. In theory, the convoy model focuses on relationships over time, an aspect of residents’ social network not captured in the current analysis. Because of the cross-sectional design, this study also cannot infer causality. Another limitation is our small sample of nine purposively selected facilities located in the metropolitan area of one southern state in the United States, which limits the generalizability of the results. Although descriptive characteristics indicate that our sample is generally comparable to the national profile of AL residents, our findings may reflect the experience of healthier residents (those willing and able to be interviewed). Thus, the experience of others who are more at risk due to poor health or social isolation may not be fully reflected here.

Based on our research questions and the given modest sample size, we selected a small number of theoretically relevant predictors to retain adequate power for our multivariate analysis. In future research, it may be important to include other variables, including ones that more directly measure the constructs of interest. Another limitation is our single-item measure of well-being, which may lack precision and be subject to influences that are unaccounted for, such as social desirability bias or mood on the day of the interview (Street & Burge, 2012). Our previous research (Ball et al., 2005; Kemp et al., 2012; Perkins et al., 2012) and that of others (Street et al., 2007; Street & Burge, 2012) shows that various facility- and community-level factors may influence resident well-being. An additional limitation in multivariate analysis is inability to control for some of these factors.

Combined with emerging findings from ongoing grounded theory analysis, which includes multilevel data collected over time (see Kemp et al., 2012), the larger project begins to address some of these limitations. Although some caution must be used in interpreting descriptions presented here, this research, together with other recent findings (see, e.g., Street & Burge, 2012; Street et al., 2007), contributes to mounting evidence showing the important impact that coresident relationships have on residents’ health and highlights the importance of peripheral ties, which we find are common in AL and may seem inconsequential on the surface. This study also sheds further light on the crucial role of families in AL residents’ overall health and well-being, findings that also call for future study.
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