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Assessment of Multiple Constructs of Social Integration for Older Adults Living in Nursing Homes

Abstract

A variety of terms and measures have been used in the literature to denote being socially integrated, and many studies of older adults focus on only social networks or social support and often only include those living in the community. The purpose of this study was to assess multiple constructs of social integration (i.e., social networks, social capital, social support, and social engagement) for older adults in nursing homes. Data were collected from 140 older adults at 30 nursing homes in Kansas. We interviewed older adults' in-person using a survey questionnaire, and used multilevel confirmatory factor analysis to analyze the data. The final model that included the four constructs had acceptable fit ($\chi 2 = 174.71$; df =112; $p < .01$; CFI = .93; RMSEA = .06; SRMR-W = .06; SRMR-B = .12). The results showed that the proposed model was supported at the individual-level. At the between-level, social networks and social support were supported. Study results have methodological and practice/policy implications for the study of older adults in long term care settings. In particular, this study contributes to understanding how to operationally define and differentiate social integration variables in studies of older adults, particularly when study data is hierarchical.

Key words: Social networks, social support, social engagement, social capital, nursing homes

Due to high rates of inactivity and a limited number of social relationships, nursing home residents are at high risk for loneliness and isolation (Abbott, Bettger, Hampton, & Kohler, 2015; Casey, Low, Jeon, & Brodaty, 2016; Ice, 2002). However, being socially connected to others and socially integrated into communities can have positive effects on individual health and well-being (Berkman & Glass, 2000; Drageset, Eide, Dysvik, Furnes, & Hauge, 2015; Putnam, 2000). *Social integration* is a broad term that refers to the degree to which an individual is connected to others and to the community (Hooyman & Kiyak, 2011). Understanding multiple aspects of a person's social world, including the size of social networks, frequency of contacts, membership in voluntary and religious organizations, and social participation, can help to determine an individual's level of social integration (Berkman & Glass, 2000).

Various terms and measures have been used in the literature to denote being socially integrated. Many studies of social integration have focused only on older adults living in the community (see Holt-Lunstad, Smith & Layton, 2010) or only on one or two aspects of social integration of nursing home residents, such as social networks and/or social support (e.g. Abott & Pachucki, 2016; Casey et al., 2016). For example, the Lubben Social Network Scale (LSNS-6) is a widely-used, valid and reliable measure that simultaneously assesses social networks and social support and screens for isolation among older adults; however, this measure does not differentiate social networks from social support and was designed for older adults living in the community (Lubben et al., 2006). A more holistic understanding of social integration of nursing home residents is needed in order for social workers to identify opportunities to increase the social integration of residents.

The purpose of this study was to examine the measurement structure of social networks, social capital, social support, and social engagement of older adults in nursing homes. The intent of this research is to help distinguish these variables from one another, help eliminate confusion in the literature about how to define and measure the variables, and help establish consistency in how various researchers discuss and measures these variables. This work can help guide future research efforts to develop, implement, and replicate interventions to increase the social integration of nursing home residents. This paper is part of a larger study presented in Leedahl, Chapin, and Little (2017) that examined relationships between social integration, cultural change practices, the role of social workers and physical and mental health for older adults living in nursing homes.

Social Integration for Older Adults Living in Nursing Homes

Nursing home residents face significant barriers to social integration because "historically nursing homes have been cut off from the wider world by both institutional walls and societal segregation" (Anderson & Dabelko-Schoeny, 2010, p. 274; Goffman, 1961). According to Victor, Scambler, and Bond (2009), older adults living in facility settings and those who struggle with mobility often experience a sense of geographical social isolation, and social workers working in long term care help to ensure quality of life by providing psychosocial care for consumers through physical, psychological, and social interventions as well as family support, with the goal of promoting optimal levels of psychological, physical, and social functioning. Increasing the social integration of older adults who utilize long-term care services, who are some of the most vulnerable in their communities, is of vital importance for social workers in working to fulfill their commitment to enhance human well-being and help meet the basic human needs of all people (NASW, 2008). A clearer understanding of the concepts related to social

integration (social networks, social capital, social support, and social engagement) in long-term care facilities can help social workers and administrators to develop more targeted programs and interventions.

In the following segment, we review information related to four key concepts of social integration (i.e., social networks, social capital, social support, and social engagement), how each concept is connected to health outcomes, and why each concept is important when assessing nursing home residents.

Social Networks

Berkman and colleagues (2000) introduced a model for social network theory, and in doing so, discussed that studies often used the terms *social networks*, *social support*, *social ties*, and *social integration* interchangeably, which can be confusing. To help clarify terms, Berkman and Glass (2000) conceptually defined social networks as a "web of social relationships that surround an individual and the characteristics of those ties" (p. 847). Further, in a review by Smith and Christakis (2008), social network research is recognized as broad and as studying webs of social relations in contrast to the more common, social support research, which assesses the quality of a person's social relations. Operationally, research studies often use numbers of close friends and relatives, marital status, or affiliation or membership in religious and voluntary associations to measure one's social network (e.g., Berkman, 1995; Cohen, 1988; House, Landis, & Umberson, 1988). Research shows that social networks positively influence cognitive and emotional states, including self-esteem, social competence, self-efficacy, depression, and affect (Smith & Christakis, 2008). For nursing home residents, research suggests that 1) having a large social network is associated with a higher quality of life, particularly for residents with dementia (Abbott & Pachucki, 2016), 2) non-familial friendship networks have been associated with an

increased risk of social isolation for nursing home residents (Casey et al., 2016), and 3) the quality of the social network is also important for the well-being of residents (Bergland & Kirkevold, 2006; Casey et al., 2016).

Social Capital

Social capital is a sociological concept, analogous to economic capital, referring to the value of social networks for influencing the productivity of individuals and groups and creating an economic gain. According to Putnam (1995), "social capital refers to features of social organization, such as networks, norms, and social trust that facilitate coordination and communication for mutual benefit" (p. 67). More recently, Ferlander (2007) defined social capital using structural and cognitive aspects (i.e., social networks, norms of reciprocity, and trust), stating that social networks are the core element, but that the networks break down without reciprocal norms and trust. The most common measurement indicators for social capital, particularly for health studies, have been membership in voluntary associations and generalized social trust (Ferlander, 2007). Research suggests that social capital is linked to better outcomes related to morbidity/mortality, self-rated health, mental health, and health behaviors, such as reduced smoking, increased physical activity, better diet, less disease, and improved survival when ill (Ferlander, 2007; Forsman, Herberts, Nyqvist, Wahlbeck, & Schierenbeck, 2012; Forsman, Nyqvist, & Wahlbeck, 2011). For older adults, particularly those in long term care settings, social capital can help older adults access emotional and practical support. Similarly, for nursing home residents, Leedahl and colleagues (2015) found that greater social capital was associated with increased mental health and functional health and well-being for nursing home residents.

Social Support

One of the most commonly used social integration terms is social support. Social support consists of emotional, social, physical, and financial resources as well as other types of care provided by others (Berkman & Glass, 2000). Callaghan and Morrisey (1993) conceptually defined social support as "an exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the well-being of the recipient" (p. 203). As such, social support is considered the primary pathway by which social networks influence physical and mental health status (Berkman, Glass, Brissette, & Seeman, 2000). Social support often encompasses the qualitative aspects of social relations and generally includes emotional, instrumental, appraisal, and informational support (Berkman & Glass, 2000). Specific measures of social support can include structural features (size and composition of network), frequency of interactions, content and quality of support, and perceptions of adequacy (Siebert, Mutran, & Reitzes, 1999). Having adequate social support has been shown to increase positive outcomes for older adults specifically in the areas of long term care, health, community participation, security, and sustained independent living (Antonucci & Akiyama, 1987; Drageset et al., 2015; World Health Organizations, 2002). Research suggests that both giving and receiving social support is important for the well-being of older adults (Thomas, 2009). In a study of nursing home residents with cancer, Drageset et al. (2015) found that social support that reinforces self-esteem and worth can reduce loneliness.

Social Engagement

Social engagement refers to the enactment of potential ties in real life activities within the communities in which people live and is defined as "performance of meaningful social roles for either leisure or productive activity" (Glass, Mendes de Leon, Bassuk, & Berkman, 2006, p.

606). Social engagement has been conceptualized to include productive activities (i.e., activities that generate goods or services for an economic value, such as preparing meals, completing volunteer work, or having paid employment) and social or leisure activities (i.e., activities that involve talking with others or taking part in activities with others that are enjoyable, such as going to a movie or playing cards). Measures of social engagement often include a single summary index that encompasses multiple aspects of engagement without differentiating between the different aspects (i.e., productive versus social) (Mendes de Leon, Glass, & Berkman, 2003). Social engagement has been shown to influence health, namely mortality, disability, and health care expenditures (Kiely & Flacker, 2003; Mendes de Leon et al., 2003). Research suggests that residents enjoy both structured activities and unstructured socializing (Forsam, et al., 2012; Nakrem, Vinsnes, Harkless, Paulesen, & Seim, 2013; Roberts & Bower, 2015). For nursing home residents, low social engagement at admission, limitations in physical and cognitive functioning, and vision or communication difficulties can lead to low engagement overtime (Bliss et al., 2015).

In conclusion, the terms *social networks*, *social capital, social support,* and *social engagement,* each have distinct features related to social integration, yet all relate to one another with some overlapping definitions. Additionally, each of these concepts has been shown to predict or influence various physical and mental health outcomes in multiple studies that include comparison groups and longitudinal design, and each are important when assessing social integration for nursing home residents.

Research Questions

This study works to fill a gap in the literature by helping to conceptualize and operationalize these multiple aspects of social integration (i.e., social capital, social networks,

social support, and social engagement), using well-defined definitions and operational measures, for studying the lives of older adults. In this study, we build on the measurement literature related to assessing various aspects of the social worlds of older adults by asking two specific questions:

1. Do the data support the proposed multilevel model differentiating the multiple constructs and indicators of social integration for older adults in nursing homes?
2. Which indicators (i.e., measures) explained the most meaning (i.e., had the highest factor loadings and R^2 values) for each of the latent variables?

This could help differentiate these variables and determine what particular aspects of social integration could be targeted in interventions for improving physical and mental health of older adults in nursing homes.

Methods

Data & Sample

This study utilized a two-stage, multilevel random sampling technique to obtain a sample of 140 older adult residents from 30 nursing homes in Kansas during 2011-2012. Using random sampling, nursing homes were recruited through letters and follow-up phone calls. If administrators agreed to participate, we then contacted the social service director who assisted us with identifying nursing home residents who could participate in the study. Residents were also identified using random sampling. To do this, the social service director was provided a list of the four inclusion criteria (i.e., 65 years of age or older, lived in the nursing home for at least four months, did not have a legal guardian, did not have moderate to severe cognitive impairment), identified residents who were eligible, gave them identification (ID) numbers (#s), and then worked with us to randomly select participants. Informed consent was obtained from

every resident included in the study, and extra precautions were taken to ensure residents consented to participation prior to interviewers entering the nursing home. Survey data were collected through in-person interviews, and three trained interviewers conducted the interviews; each resident was provided $20 cash or a gift card. We used a planned missing data design as described by Graham, Taylor, Olchowski, & Cumsille (2006) to ensure we could use the full set of questionnaire items while also reducing respondent burden and keeping the interviews to no longer than one hour. The approach involved collecting cross-sectional data and analyzing it at the individual-level (i.e., within-level) and group-level (i.e., between-level). See Leedahl (2017) if interested in the full details of the sampling, data collection, and missing data procedures used to gather data in this IRB-approved study.

Measures

The survey forms were developed using multiple standardized measures for this study. We first pilot tested the questions to ensure respondents could answer the questions without difficulty and to verify that interviews would last no more than one hour. This also provided us with an opportunity to assess our measures for construct validity, as we intentionally asked nursing home staff and residents about the questions as they related to the study concepts. Based on these conversations, some slight wording changes and examples were added to the measures to ensure construct validity. Interviewers asked participants questions from the survey, and recorded responses. The latent variables for this study included *social networks*, *social capital, social support, and social engagement*. See Table 1 for a summary of the latent variables used in this study along with their conceptual definitions and indicators.

Social networks. *Social network* characteristics (i.e., size, frequency of contact, proximity) were measured using the concentric circle (i.e., egocentric network) approach

(Antonucci & Akiyama, 1987; Ashida & Heaney, 2008). Following the interview, interviewers calculated totals for: size = number of total people (size); proximity = number of people within the nursing home & within 1-hour drive; and frequency = number of people with at least once a week contact. As previous research has shown the importance of within facility relationships for nursing home residents (Chou, Boldy, & Lee, 2002; McGilton & Boscart, 2007), the count of within facility network members was used to enhance the proximity measure for this population.

Social capital. *Social capital* was measured using three indicators: social groups, norms of reciprocity, and trust, based on a study by Narayan and Cassidy (2001). For social groups, residents were asked: how many groups or organizations do you belong to? We encouraged them to name religious/professional/community groups, social clubs, resident groups, or just groups of people who they got together or corresponded with regularly. For norms of reciprocity, residents were asked one question about whether they think people mostly look out for themselves or try to be helpful, and one question about whether they think people try to take advantage of others or be fair. Trust was assessed using ten Likert scale questions about how much trust they had for different groups of people (e.g., people in your community, residents in the facility, staff in the facility, people in your family, local government, judges/police). Previous research has shown these measures to be largely stable and consistent across data sets and demonstrably reliable and valid, particularly for community-dwelling older adults (Norstrand & Xu, 2012). In this study, internal consistency for social capital was quite high ($\alpha = .79$).

Social support. *Social support* was measured using a modified version of the Krause and Markides (1990) version of the widely used Inventory of Socially Supportive Behaviors (ISSB) (Barrera, Sandler, & Ramsay, 1981). The Krause and Markides (1990) version uses Likert scale questions to generate subscale scores for informational, tangible, emotional, and provided

support. In previous research, reported internal consistency estimates ranged from 0.67 to 0.83 (Krause & Shaw, 2002). In this study, questions tailored to those only living in the community were eliminated. For the tangible support questions, we eliminated five of the nine questions because they did not pertain to those living in a nursing home. The five questions asked about people providing them with a place to stay, watching over possessions while they were away, providing a place to stay overnight, and looking after a family member while being away. For the provided support questions, we eliminated a question about other people depending on the person for transportation. In this study, internal consistency for social support was high ($\alpha = .92$).

Social engagement. *Social engagement* was measured using Likert scale questions about participation in various social activities within and outside the nursing home. The questions tapped into whether or not residents participated as well as the frequency of participation. The questions were derived from previous work (e.g., Glass et al., 2006; Jang, Mortimer, Haley, & Borenstein Graves, 2004; Mitchell & Kemp, 2000) and tailored to include activities pertinent to nursing homes. Based on the literature and conversations with nursing home social services staff, we identified three indicators: productive/civic, formal activities, and socializing. These indicators assessed the prevalence and importance of productive/civic engagement for older adults in nursing homes and differentiated between informal socializing (i.e., having conversations) versus participating in more formal activities facilitated by nursing home staff that involved mental stimulation and active involvement (e.g., playing a game, singing, doing art work). We screened the item responses to ensure they conformed to the expected pattern. Internal consistency for social engagement in this study was acceptable ($\alpha = .65$).

Covariates

The covariates for the study included: activities of daily living (ADLs), cognitive status, socioeconomic status (SES), and self-reported health status. The Katz Index of Independence in Activities of Daily Living was used to assess ADLs (Wallace & Shelkey, 2008). Inclusion criteria eliminated those with moderate to severe cognitive impairments. However, to control for mild cognitive impairment, a simplified and non-invasive test called the 6 Item Cognitive Impairment Test (6CIT) was used (Brook & Bullock, 1999). Years of education was collected as a proxy for socioeconomic status (SES) (Lee, Paultre, & Mosca, 2005). Finally, self-reported health status was measured by asking the question, "In general, would you say your health is excellent, very good, good, fair, or poor."

Data Analysis

This study utilized multilevel confirmatory factor analysis (MCFA) to analyze the data. Prior to conducting MCFA analysis, a number of steps were performed, including data assessment and cleaning (before and after data imputation) and missing data analysis using multiple imputation. We used a combination of *SPSS Statistics* version 20 and *Mplus* version 7 for quantitative analyses. CFA is a statistical technique used to assess measures and test relationships between measures and latent variables, and researchers must have a priori knowledge (e.g., past research, theory) about the indicators and latent variables and their patterns of relationships (Brown, 2006). The value of the standardized factor loadings of each indicator on the latent variables is used to interpret latent variables in CFA. Indicators with the highest standardized factor loadings, or correlation, with the factor explain the meaning of the latent variables.

Because the data for this study have a hierarchical structure, meaning the residents are nested within nursing homes, we analyzed the data using multilevel analysis in order to account

for the between group influence. As discussed by Heck (2001), fitting multilevel data structures requires multiple steps to work including: a) fitting the single-level confirmatory factor analysis (CFA) model; b) examining the intraclass correlation coefficients to determine if data should be examined at multiple levels; c) fitting the MCFA model. This study followed these steps to answer the research questions.

The intraclass correlation coefficient (ICC) is a statistical measure of the proportion of variance among groups, and higher values indicate that the independence of errors is violated and that grouping matters and should not be ignored in analyses (Tabachnick & Fidell, 2007). When ICCs are less than 0.05, there is little need to perform multilevel analyses. When the ICCs are considered high (range of .10 to .25), this suggests considerable similarities across groups (Heck, 2001). We examined ICCs for each indicator to identify which latent variables should be included in the between-level model.

As stated by Brown (2006), "often a CFA model will need to be revised… to improve the fit of the model" (p. 157). In this study, we were able to determine acceptable model fit for the measurement model using established statistical techniques discussed in the literature. To fit the final MCFA model, we included three correlated residuals to help improve model fit based on our assessment of modifications indices provided by *Mplus*. Because the various questions for the sub-scales and scales used in the study had different metrics (e.g., 0-5 Likert scales vs. 0-3 Likert scales), after analyzing descriptive statistics, we standardized all variables by scaling them between 0 and 1 to ensure they were on a similar metric. Finally, because the histograms indicated some concerns regarding normality for the social networks variable, we used robust maximum likelihood estimation rather than transforming the indicators, as this would have made the data harder to interpret (Yuan, Chan, & Bentler, 2000).

Fit Statistics

In this study, model fit was evaluated by examining the model chi-square ($\chi 2$), the normed chi-square ($\chi 2$ /df), the root mean square of approximation (RMSEA), comparative fix index (CFI), and the standardized root mean square residual (SRMR) (Kline, 2005). The literature suggests looking at multiple fit indices to determine overall fit of the model, rather than relying on one statistic in making decisions because each of these fit indices have their inherent limitations. $\chi 2$ by itself is often not helpful, particularly in complicated models with small sample and cluster sizes, because it is somewhat unrealistic to expect a model to be "perfect population fit." When sample sizes are not large, it can be helpful to examine the normed chi-square, calculated by dividing the $\chi 2$ value by the degrees of freedom (*df*). The "rule of thumb" is that a ratio of less than 2.0 indicates a good-fitting model, though values of 3.0 or 5.0 can indicate reasonable fit (Kline, 2005). RMSEA values less than or equal to .05 indicate close approximate fit, values between .05 and .08 indicate acceptable or reasonable error of approximation, and values over .10 suggest poor fit (Browne & Cudeck, 1993; Kline, 2005). SRMR values less than .10 are considered acceptable model fit (Kline, 2005). CFI values greater than roughly .90 indicate acceptable model fit (Kline, 2005).

Results

Resident Demographics

The mean age for the entire sample was 83.07 (*SD* = 9.02). The sample was 74.3% female and 25.7% male, and most participants identified as White (92.7%). See Table 2 for a summary of basic descriptive information for the nursing home resident participants.

Nursing Home Demographics

For the 30 nursing homes that participated in the study, the mean number of licensed beds (bed size) was 106.63, and ranged rather considerably from 46 to 269 beds. The average bed size in Kansas at the time was 82. The mean number of deficiencies for participating nursing facilities was 12.5. For Medicare Star Ratings, which are based on health inspection, staffing, and quality measures ratings, at the time of the study, 13.3% were rated much above average, 30% above average, 13.3% average, 30% below average, and 13.3% far below average. Most nursing homes (83%) were located in semi-urban or urban counties, though 15% of nursing homes were located in rural counties. Most nursing homes (93.3%) accepted Medicaid residents, and most (66.7%) were for-profit nursing homes, with 33.3% being either nonprofit or government-owned. Over half (56.7%) were affiliated with large chains, and most (76.7%) were not Continuing Care Retirement Communities (CCRCs). Table 3 includes descriptive statistics for participating nursing homes.

Multilevel Confirmatory Factor Analysis Model (Research Question 1)

In this study, the ICCs ranged from 0.04-0.24, with most indicators having small effect sizes. This suggests a need to examine the data using multilevel analyses for some variables but that group level variance may be difficult to detect for certain variables. Because the indicators for social groups, norms of reciprocity, trust, productive/civic, socializing, and activity participation had ICCs lower than 0.10, we determined that these variables would not have enough group-level variance for testing them on the between-level model. Therefore, only social networks and social support were included as latent variables for the between-level model because the indicators for size, frequency, proximity, informational, tangible, emotional, and provided had ICCs above 0.10.

For the within-level model, the only measurement modification made involved the social capital construct. Specifically, the parameter estimate for the social groups indicator of social capital was not significant and did not highly correlate with the other indicators (trust and norms of reciprocity). Therefore, we included social groups as an observed variable in the model rather than as an indicator of social capital (Brown, 2006). See Figure 1 for pictorial representation of the final MCFA model.

The final MCFA model had overall acceptable fit based on *χ2/df,* RMSEA, and SRMR ($\chi 2 = 174.71$, df =112, $p < .01$; $\chi 2/df = 1.56$; CFI = .93; RMSEA = .06; SRMR-W = .06; SRMR-B = .12). Considering the complexity of the model and its *χ2/df*, CFI, RMSEA, and SRMR scores, the final model appears to offer a reasonably close fit to the data. Therefore, the constructs and indicators are supported as proposed, with one modification made to the social capital construct. See Table 4 for the relationships between indicators and their respective constructs. The amount of variance in each indicator that was accounted for by its latent construct (i.e., standardized loadings) ranged from 0.50 to 0.96. Some of these values are lower than the ideal standardized factor loadings of .70 or higher, but all values are higher than the cut-off value of .30. Floyd and Widaman (1995) recommend removing indicators if the standardized factor loadings fall below .30. The influence of the covariates on each of the social integration constructs was non-significant[1], thus activities of daily living, cognitive status, and socioeconomic status did not explain a significant amount of the variance in these constructs.

[1] SES had a potential linear dependency with the social support and social engagement latent variables; therefore, SES was not controlled for on these selected constructs.

Best Indicators for Each Latent Variable (Research Question 2)

We examined the factor loadings to determine which indicator had the greatest amount of variance accounted for by each of the latent variables, basically working to identify "how good" each indicator is at measuring the latent variable. For the social network latent variable, social networks explained 85.8% of the variance in proximity, 79.1% of the variance in frequency, and 67.8% of the variance in size. Therefore, proximity was the best indicator of social networks for older adults living in nursing homes in this study. For the latent variable social capital, social capital explained 78.3% of the variance in social trust and explained 25.3% of the variance in norms of reciprocity; therefore, social trust was the much better indicator of social capital in this sample. For social support, social support explained 91.4% of the variance in emotional support, 40.5% of the variance in provided support, 36.2% of the variance in tangible support, and 33.8% of the variance in informational support. This shows that emotional support was the best indicator of social support. In examining the social engagement latent variable, social engagement explained the greatest amount of variance in participating in activities (58.6%) compared to 32.3% of the variance in socializing, and 29.2% of the variance in productive/civic activities. Activity participation was the best indicator for social engagement in this sample. Comrey and Lee (1992) suggest interpreting indicators such that more than 50% overlapping variance is considered excellent, 40% very good, 30% good, 20% fair, and 10% poor. Therefore, in this study, proximity, frequency of contact, size of network, social trust, emotional support and participating in nursing home activities all fell within the excellent category of having more than 50% overlapping variance.

Discussion

The final model had acceptable fit based on the fit statistics, the significance of the factor loadings, and assessment of measurement error. The results showed that the proposed model that included all constructs was supported at the individual-level, with a modification needed for the social capital construct. At the between-level, social networks and social support were supported, showing that social networks and social support varied based on nursing home in this study whereas social engagement and social capital only had individual-level variation. Similar to previous studies of social networks showing that social relationships with others are an important component of quality of life for those living in nursing homes, but that new friendships can be difficult to develop (Casey et al., 2016), results from our study suggest that some nursing homes are better than others in helping residents to grow their social networks. While other studies of social networks of nursing home residents have explored the size, frequency of contact, reciprocation, and density (e.g., Abbott & Pachucki, 2016), our study focused on proximity, frequency, and size. Our results indicate that proximity is particularly important for nursing home residents, meaning it is important for residents to have family and friends close by who can visit on a regular basis and to gain new relationships with staff and residents when living in a nursing home. For those who do not have family or friends close by, building new relationships with residents and staff (or even family members of other residents) within the nursing home is particularly important.

Consistent with previous work on social support (e.g. Casey et al., 2016), our results suggest that it is not only the size of the networks that matter, but also the quality of the support received. In this study, emotional support was particularly important for measuring social support among nursing home residents, more so than informational, tangible, or provided

support. Interestingly, Malench (2004) conducted a study about activities performed by family members of those in nursing homes. The most common activity reported was bringing gifts, and importantly, facilities with social workers were more likely to offer family supports and to distribute newsletters indicating facility events in order to encourage family participation. Based on the results of this study as related to social work practice, social workers could aid families in providing emotional support and taking part in meaningful activities with their family members. For example, social workers could help educate family members about strategies to help cope with challenges that often arise from moving a loved one to a nursing home. As family involvement tends to decrease the longer a person stays in the nursing home (Yamamotot-Mitani, Aneshensel, & Lvey-Storms, 2002), social workers can collaborate with family members to identify barriers to continued visits and possible solutions. In addition, social workers could work with family members to design programs and activities that could be taught or led by the family members. For example, a family member who enjoyed photography could work with their loved one and other residents to take pictures and create an art exhibit.

In addition, similar to work by Forsman et al. (2011), our results indicated that trust is an important aspect of a resident's social capital. Qualitative studies (e.g. Nakrem et al., 2013; Roberts & Bowers, 2015) suggest that residents enjoy participating in both structured and unstructured social activities. Our results support these findings and indicate that participating in structured activities, such as group-led art activities, group-led exercise groups, and planned intergenerational activities (e.g., children's musical offerings, children or young adults coming to the nursing home as part of daycare/school activities or volunteer work) may be particularly important for the well-being of nursing home residents compared to unstructured activities, such as spontaneous conversations.

Regarding social engagement, this study found that socializing, nursing home activity participation, and participation in productive/civic activities all contributed to the overall measurement of social engagement in this study, but that level of nursing home activity participation was the best indicator of social engagement. According to Casey et al. (2016), most residents attend activities with the assistance of staff members. Therefore, ensuring that nursing home staff have time to help residents attend and appreciate activities is important to ensuring social engagement for residents. Recognizing the ongoing struggles within nursing homes to maintain an adequate, competent direct care workforce (Lehning & Austin, 2010), further developing volunteer models, such as the "super" volunteer model championed by Falkowski (2016), may be a viable solution for supporting social engagement among residents. Trained volunteers could help to provide support to direct care staff and provide assistance with non-technical tasks, such as identifying meaningful social engagement activities for each resident. The importance of this work is also underscored by findings of a recent large-scale study commissioned by the Centers for Medicare and Medicaid Services in which 160 residents in 40 nursing homes were interviewed about quality of life issues (Allen, 2011). Residents listed "choice of activities" and "activities that amount to something," such as activities that produce or teach something; activities using skills from residents' former work; religious activities; and activities that contribute to the nursing home, as priorities for ensuring dignity. Interestingly, residents rarely mentioned participating in activities as a way to just 'keep busy' or just to socialize, stating instead that they "wanted a variety of activities, including those that are not childish, require thinking (such as word games), are gender-specific, produce something useful, relate to previous work of residents, allow for socializing with visitors and participating in community events, and are physically active" (p. 54). Lastly, researchers noted that these ideas

were relevant to both interviewable and non-interviewable residents, stating that non-interviewable residents appeared “happier” and “less agitated” in homes with many individualized planned activities for them.

This study also makes an important contribution to measurement literature on the various *social* variables. By testing multiple constructs of social integration (i.e., social networks, social capital, social support, and social engagement) with multiple indicators for each construct in one study, rather than focusing on one construct or even one indicator of a construct, this work helps to distinguish these variables from one another. This helps to eliminate confusion in the literature about how to operationally define the variables and to establish consistency in how various researchers define and measure these variables. Further work is also needed to identify better measures for social engagement and social capital and in general to identify the best measures for assessing overall social integration.

In order to account for individual variation and experience, it is important to assess multiple aspects of social integration for all older adults, particularly those in nursing homes. For example, some older adults have multiple family members who are available on a daily basis and visit regularly, others may have one friend from church who stops by once a week to play a game of cards, and some may prefer being alone but find they enjoy the daily encounters with staff in whom they trust. In all of these examples, the older adults may be socially integrated, but without testing multiple aspects of social integration, one might have greater tendency to state that older adults are isolated when they are not. Future research could analyze data using data techniques, such as latent class analysis, to establish potential groups of residents to target for interventions based on assessment of multiple aspects of social integration. Additionally, studies that assess social integration among older adults should account for the hierarchical

nature/between-level variance of data because, as this study shows, social networks and social support varied significantly between nursing homes.

Limitations

There are a number of recognized limitations in this study. First, this was cross-sectional data, so therefore we were not able to assess differences over time. Regarding validity and reliability of measures of social support and social engagement, we note there is further research needed. For the social support measure, we modified the Krause and Markides (1990) version of the ISSB to ensure it was appropriate for older adult living in nursing homes using strategies recommended by Stewart, Thrasher, Goldberg, and Shea (2012). However, we did not follow a more extensive scale development protocol due to time and resource limitations. For the social engagement, there needs to be additional research to further establish a valid and reliable measure for assessing social engagement for older adults, including those living in nursing homes. A strength of the study was that there were multiple interviewers who conducted the resident interviews, and all interviewers received training, practiced the interviews prior to conducting the study, and discussed questions and strategies for potential follow-up questions. However, the study did not assess inter-rater reliability. Regarding sampling, the study sample was limited to Kansas, so this does limit the generalizability for the resident and the nursing home samples. However, every attempt was made to ensure random sampling at both the nursing home-level and the resident-level, so certainly some strong comparisons can be made to other areas that have similar geographic or population characteristics.

Related to the older adult sample, it is recognized that this sample included older adults with relatively high cognitive functioning, which is potentially only 25% of older adults in nursing homes (Kaye, Harrington & LaPlante, 2010). This level of cognitive functioning was

needed in order to ensure older adults could answer the questions, but this does provide limitations. Nursing home residents with more severe cognitive impairments tend to report having a lower quality of life and fewer opportunities to participate in meaningful activities (Abrahamson, Clark, Perkisn, & Arling, 2012; Naylor et al., 2016). Further research is needed to both identify the concepts of social integration that are most relevant to nursing home residents with severe cognitive impairment and to develop interventions specifically for this population. Finally, we were unable to control for socioeconomic status on all constructs due to potential linear dependency issues. Therefore, this finding suggests that future work is needed to better understand the influence of socioeconomic status on various aspects of social integration for older adults living in nursing homes, as this may be a targeting factor for intervention work.

Conclusion

This study's findings provide important building blocks to support our work to measure social integration, and ultimately to improve social integration for nursing facility residents. Clear definitions and tested models facilitate the involvement of both researchers and social work practitioners in this vital effort. This work also points to the need for more attention to the impact of varying nursing home environments on social engagement and social integration, to understanding the influence of SES, and to developing nursing home staff who recognize the influence social integration has on residents' health, are trained in strategies to promote social integration, and have sufficient time to implement those strategies.

References

Abbott, K.M., Bettger, J.P., Hampton, K.N., & Kohler, H.P. (2015). The feasibility of measuring social networks among older adults in assisted living and dementia special care units. *Dementia, 14*(2), 199-219.

Abbott, K. M., & Pachucki, M. C. (2016). Associations between social network characteristics, cognitive function, and quality of life among residents in a dementia special care unit: A pilot study. *Dementia, 16*(8), 1004-1019.

Abrahamson, K., Clark, D., Perkins, A., & Arling, G. (2012). Does cognitive impairment influence quality of life among nursing home residents?. *The Gerontologist*, *52*(5), 632-640.

Allen, J.E. (2011). *Nursing home federal requirements, Guidelines to surveyors and survey protocols.* New York, NY: Springer Publishing Company.

Anderson, K.A., & Dabelko-Schoeny, H. (2010). Civic engagement for nursing home residents: A call for social work action. *Journal of Gerontological Social Work, 53(3),* 270-282.

Antonucci, T.C., & Akiyama, H. (1987). Social networks in adult life and a preliminary examination of the convoy model. *Journal of Gerontology, 42(5),* 519-527.

Ashida, S., & Heaney. C.A. (2008). Differential associations of social support and social connectedness with structural features of social networks and the health status of older adults. *Journal of Aging and Health, 20(7),* 872-893.

Barrera, M., Sandler, I.N., & Ramsay, T.B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology, 9,* 435-447.

Berkman, L.F. (1995). The role of social relations in health promotion. *Psychosomatic Medicine, 57*, 245-254.

Berkman, L.F., & Glass, T. (2000). Social integration, social networks, social support, and health. In L.F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 174-190). New York: Oxford University Press.

Berkman, L.F., Glass, T., Brissette, I., & Seeman, T.E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine, 51,* 843-857.

Bergland, Å., & Kirkevold, M. (2006). Thriving–a useful theoretical perspective to capture the experience of well-being among frail elderly in nursing homes?. *Journal of Advanced Nursing*, *36*(3), 426-432.

Bliss, D., Harms, S., Eberly, L. E., Savik, K., Gurvich, O., Mueller, C., ... & Virnig, B. (2015). Social engagement after nursing home admission: Racial and ethnic disparities and risk factors. *Journal of Applied Gerontology*, 0733464815617285.

Brooke, P. & Bullock, R. (1999). Validation of a 6 item cognitive impairment test with a view to primary care usage. *International Journal of Geriatric Psychiatry, 11,* 936-403.

Brown, T.A. (2006). *Confirmatory factor analysis for applied research.* New York, NY: Guilford.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. Bollen & J. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Callaghan, P., & Morrissey, J. (1993). Social support and health: A review. *Journal of Advanced Nursing, 18,* 203-210.

Casey, A. N. S., Low, L. F., Jeon, Y. H., & Brodaty, H. (2016). Residents perceptions of friendship and positive social networks within a nursing home. *The Gerontologist, 56*(5), 855-867.

Chou, S., Boldy, D.P., & Lee, A.H. (2002). Resident satisfaction and its components in residential aged care. *The Gerontologist, 42(2),* 188-198.

Cohen, S. (1988). Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology Medicine, 38,* 300-314.

Comrey, A.L., & Lee, H.B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Drageset, J., Eide, G. E., Dysvik, E., Furnes, B., & Hauge, S. (2015). Loneliness, loss, and social support among cognitively intact older people with cancer, living in nursing homes–a mixed-methods study. *Clinical Interventions in Aging*, *10,* 1529-1536.

Falkowski, P. (2016). Creating the "super" volunteer: Expanding the role of volunteers [Webinar]. In American Society of Aging's Lifetime Education and Renewal Network. Retrieved http://www.asaging.org/web-seminars/creating-super-volunteer-expanding-role-volunteers

Ferlander, S. (2007). The importance of different forms of social capital for health. *Acta Sociologica, 50(2),* 115-128.

Floyd, F.J., & Widaman, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7(3),* 286-299.

Forsman, A.K., Herberts, C., Nyqvist, F., Wahlbeck, K., & Schierenbeck, I. (2012). Understanding the role of social capital for mental wellbeing among older adults. *Ageing & Society*, *33*(5), 804-825.

Forsman, A. K., Nyqvist, F., & Wahlbeck, K. (2011). Cognitive components of social capital and mental health status among older adults: A population-based cross-sectional study. *Scandinavian Journal of Social Medicine, 39*(7), 757-765.

Glass, T.A., Mendes de Leon, C.F., Bassuk, S.S., & Berkman, L.F. (2006). Social engagement and depressive symptoms in late life. *Journal of Aging and Health, 18(4),* 604-628.

Goffman, E. (1961). *Asylums.* London, England: Penguin Books.

Heck, R.H. (2001). Multilevel modeling with SEM. In G.A. Marcoulides & R.E. Schumaker (Eds.), *New developments and techniques in structural equation modeling* (pp. 89-127). Mahwah, NJ: Lawrence Erlbaum Associates.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine, 7*(7), e1000316.

Hooyman, N.R., & Kiyak, H.A. (2011). *Social gerontology, A multidisciplinary perspective* (9th ed.). Boston, MA: Allyn & Bacon.

House, J.S., Landis, K.R., & Umberson, D. (1988). Social relationships and health. *Science, 241,* 540-545.

Ice, G. H. (2002). Daily life in a nursing home: Has it changed in 25 years? *Journal of Aging Studies, 16,* 345-359.

Jang, Y., Mortimer, J.A., Haley, W.E., & Borenstein Graves, A.R. (2004). The role of social engagement in life satisfaction: Its significance among older individuals with disease and disability. *Journal of Applied Gerontology, 23(3),* 266-278.

Kaye, H.S., Harrington, C., & LaPlante, M.P. (2010). Long-term care: Who gets it, who provides it, who pays, and how much? *Health Affairs, 29(1),* 11-21.

Kiely, D. K., & Flacker, J. M. (2003). The protective effect of social engagement on 1-year mortality in a long-stay nursing home population. *Journal of Clinical Epidemiology*, *56*(5), 472-478.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.

Krause, N., & Markides, K.S. (1990). Measuring social support among older adults. *International Journal of Aging and Human Development, 30(1),* 37-53.

Krause, N., & Shaw, B. (2002). Welfare participation and social support in late life. *Psychology and Aging, 17(2),* 260-270.

Lee, J.R., Paultre, F., & Mosca, L. (2005). The association between educational level and risk of cardiovascular disease fatality among women with cardiovascular disease. *Women's Health Issues, 15(2),* 80-88.

Leedahl, S.N. (2017). Successfully collecting quantitative data from random samples of nursing homes & residents. *SAGE Research Methods Cases, 1-17.*

Leedahl, S.N., Chapin, R.K., & Little, T.D. (2015). Multilevel examination of facility characteristics, social integration, and health for older adults living in nursing homes. *Journals of Gerontology Series B: Social Sciences, 70B(1),* 111-122.

Lehning, A.J., & Austin, M.J. (2010). Long-term care in the United States: Policy themes and promising practices. *Journal of Gerontological Social Work, 53*, 43-63.

Lubben, J., Blozik, E., Gillman, G., Iliffe, S., von Renteln Kruse, W., Beck, J., & Stuck, A.E. (2006). Performance of an abbreviated version of the Lubben Social Network Scale among three European community-dwelling older adult populations. *The Gerontologist, 46*(4), 503-513.

Malench, S.S. (2004). Family and social work roles in the long-term care facility. *Journal of Gerontological Social Work, 43(1),* 49-60.

McGilton, K.S., & Boscart, V.M. (2007). Close care provider-resident relationships in long-term care environments. *Journal of Clinical Nursing, 16*, 2149-2157.

Mendes de Leon, C.F., Glass, T.A., & Berkman, L.F. (2003). Social engagement and disability in a community population of older adults. *American Journal of Epidemiology, 157(7*), 633-642.

Mitchell, J.M., & Kemp, B.J. (2000). Quality of life in assisted living homes: A multi-dimension analysis. *Journal of Gerontology: Psychological Sciences, 55B(2),* P117-P127.

Nakrem, S., Vinsnes, A. G., Harkless, G. E., Paulsen, B., & Seim, A. (2013). Ambiguities: Residents' experience of 'nursing home as my home.' *International Journal of Older People Nursing*, *8*(3), 216-225.

Narayan, D., & Cassidy, M.F. (2001). A dimensional approach to measuring social capital: Development and validation of a social capital inventory. *Current Sociology, 49*, 59-102.

National Association of Social Workers. (2008). *Code of ethics of the National Association of Social Workers*. Washington, DC: NASW Press. Retrieved July 22, 2017 from http://www.socialworkers.org/pubs/code/code.asp

Naylor, M. D., Hirschman, K. B., Hanlon, A. L., Abbott, K. M., Bowles, K. H., Foust, J., ... & Zubritsky, C. (2016). Factors associated with changes in perceived quality of life among elderly recipients of long-term services and supports. *Journal of the American Medical Directors Association*, *17*(1), 44-52.

Norstrand, J.A., & Xu, Q. (2011). Social capital and health outcomes among older adults in China: The urban-rural dimension. *The Gerontologist, 52(3),* 325-334.

Putnam, R.D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy, 6.1,* 65-78.

Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Simon and Schuster.

Roberts, T., & Bowers, B. (2015). How nursing home residents develop relationships with peers and staff: A grounded theory study. *International Journal of Nursing Studies*, *52*(1), 57-67.

Siebert, D.C., Mutran, E.J., & Reitzes, D.C. (1999). Friendship and social support: The importance of role identity to older adults. *Social Work, 44(6),* 522-533.

Smith, K.P., & Christakis, N.A. (2008). Social networks and health. *Annual Review of Sociology, 34*, 405-429.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

Thomas, P. A. (2009). Is it better to give or to receive? Social support and the well-being of older adults. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *65*(3), 351-357.

Victor, C., Scambler, S., & Bond, J. (2009). *The social world of older people, Understanding loneliness and social isolation in later life.* New York, NY: McGraw-Hill.

Wallace, M., & Shelkey, M. (2008). Monitoring functional status in hospitalized older adults, The Katz Index of Independence in Activities of Daily Living can help nurses detect subtle changes in health and prevent functional decline. *American Journal of Nursing, 108(4),* 64-71.

Yuan, K.H., Chan, W., & Bentler, P.M. (2000). Robust transformation with applications to

structural equation modeling. *British Journal of Mathematical and Statistical Psychology, 53,* 31-50.

World Health Organization. (2002). *Active ageing: A policy framework*. Geneva, Switzerland: Author.

Yamamoto-Mitani, N., Aneshensel, C. S., & Levy-Storms, L., (2002). Patterns of family visiting with institutionalized elders: The case of dementia. *Journal of Gerontology: Social Sciences, 57B,* S234-S246.