

# Does Social Interaction Matter Psychological Well-Being in Persons With Dementia?

American Journal of Alzheimer's Disease & Other Dementias®  
2017, Vol. 32(4) 207-212  
© The Author(s) 2017  
Reprints and permission:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1533317517704301  
journals.sagepub.com/home/aja



Kyung Hee Lee, PhD, RN, MPH, GNP<sup>1</sup>,  
Marie Boltz, PhD, RN, GNP-BC<sup>2</sup>, Hana Lee, PhD<sup>3</sup>,  
and Donna L. Algase, PhD, RN<sup>4</sup>

## Abstract

**Background:** Social interaction between residents and staff is an important factor influencing sense of well-being. This study examined the relationship between staff–resident interactions and psychological well-being of persons with dementia. **Methods:** A total of 831 observations of 110 persons with dementia in 17 nursing homes and 6 assisted living facilities were included. Psychological well-being was measured by observed displays of positive and negative emotional expressions. Social interaction was determined by the type of social interaction (ie, verbal interaction, nonverbal interaction, and both verbal and nonverbal interactions) and the quality of interaction (ie, positive, negative, and neutral). **Results:** Verbal or both verbal and nonverbal interactions showed significant relationship with positive and negative emotional expressions. Positive interaction was significantly associated with more positive emotional expression, whereas negative interaction was not. **Conclusion:** Staff–resident interactions are important to promote the psychological well-being of persons with dementia in residential care.

## Keywords

social interaction, staff–resident interactions, psychological well-being, emotional expression, dementia, nursing home

## Introduction

Psychological well-being, which is described simply as “how good a person feels” is a subjective domain of quality of life (QOL) in late life.<sup>1</sup> Dementia-specific literature reports that decline in cognitive function is associated with diminished psychological well-being.<sup>2,3</sup> A considerable amount of research supports a positive relationship between social engagement and psychological well-being of older adults in general.<sup>4-6</sup> Active social interaction may help maintain psychological well-being in older adults, by acting as a buffer in stressful circumstance.<sup>7</sup> However, additional studies using rigorous methods are needed to make sure if this relationship is significant among persons with dementia.

## Conceptual Model for QOL

A hierarchical model of QOL posits psychological well-being as the central indicator of QOL for persons with dementia.<sup>1</sup> Further, the model views 3 domains play an important role influencing psychological well-being: personal factors related to dementia (eg, cognitive function), personal factors not related to dementia (eg, comorbidity, mobility), and the environment (eg, social environment) as a catalyst.<sup>1</sup> A salient dimension of the social environment is social engagement,

considered to be the person’s ability to take advantage of opportunities for social interaction.<sup>8</sup>

Lack of social engagement is associated with cognitive and physical impairments in nursing home residents, in general.<sup>9-11</sup> Specifically, low social interaction is associated with negative health outcomes such as functional decline,<sup>12</sup> and higher depression and mortality rates.<sup>13,14</sup> Among nursing home residents with dementia, the limitations on social engagement created by physical and cognitive impairment, as well as environmental obstacles, are associated with psychological distress and behavioral problems as well.<sup>8</sup> An international study suggested that nursing home residents with cognitive impairment were the least actively engaged group among nursing home residents.<sup>9</sup>

<sup>1</sup> College of Nursing, Yonsei University, Seoul, Republic of Korea

<sup>2</sup> College of Nursing, Pennsylvania State University, University Park, PA, USA

<sup>3</sup> Department of Biostatistics School of Public Health, Brown University, Providence, RI, USA

<sup>4</sup> School of Nursing, University of Michigan, Ann Arbor, MI, USA

## Corresponding Author:

Kyung Hee Lee, PhD, RN, MPH, GNP, College of Nursing, Yonsei University, 50-1 Yonsei-Ro, Seodaemun-Gu, Seoul 03722, Republic of Korea.  
Email: kyungheelee@yuhs.ac

Although nursing home residents with dementia are at higher risk of engaging in low social interaction and well-being, little attention has been given to the association between social interaction and psychological well-being in this group. Previous research showed that maintaining verbal and nonverbal communications among persons with dementia helps them to remain as socially and functionally independent.<sup>15</sup> There is evidence that increased frequency<sup>16</sup> and quality<sup>16,17</sup> of staff–resident interactions may increase resident well-being. However, we lack an understanding of this relationship in persons with dementia. The purpose of this study was to examine the relationship between staff–resident interactions and psychological well-being of persons with dementia using observation of emotional expression, during daytime hours, to answer 2 specific questions:

1. How do observed displays of emotional expression change by the type of social interaction (ie, verbal, nonverbal, and both verbal and nonverbal) after controlling for personal factors?
2. How do observed displays of emotional expression change by the quality of social interaction (ie, positive, negative, and neutral) after controlling for personal factors?

## Methods

The data for this secondary analysis were taken from a multi-site descriptive study that evaluated background and proximal factors of the phenomenon of wandering.<sup>18</sup> The parent study used descriptive study design with repeated measures nested within subjects.

## Sample

In the parent study, 185 persons with dementia were recruited from 17 nursing homes and 6 assisted living facilities in Michigan and Pennsylvania after obtaining the institutional review board approval from the university and each participating institution. A random cluster sampling was used in each facility. Detailed sampling method and inclusion criteria have been published elsewhere.<sup>19</sup> Briefly, inclusion criteria for the parent study consisted of age 65 years or older, English-speaking, Mini Mental State Examination (MMSE) score  $<24/30$ , *Diagnostic and Statistical Manual of Mental Disorders-IV* criteria for dementia met, adequate vision and hearing to support normal communication, and not wheelchair-bound. This present study only included data from those observations that were able to measure social interaction between nursing staff and residents (ie, observations contained a resident with one or more nursing staff). Thus, 110 participants with 831 observations were included.

## Procedure

Following written consent from legal proxies, participants who met the inclusion criteria were randomly assigned to twelve 20-minute observation periods on 2 nonconsecutive days,

according to preestablished randomization schedule. All observations proceeded once per hour between 8 AM and 8 PM and were videotaped. Together, scheduled observations covered all periods from 8 AM to 8 PM. After completing 16 hours of practice, trained research assistants coded videotapes of participants' emotional expressions and social interaction between participant and staff. An inter- and intra-rater agreement among coders was established at greater than 95% using training videotapes before the coding begun. Reliability was reassessed throughout the study by sampling 10% of the videotapes and retraining coders.

## Measures

We selected measures from our parent study data that were conceptually congruent with the hierarchic model of QOL persons with dementia.

**Psychological well-being.** We used the Observable Displays of Affect Scale (ODAS) to code observed displays of emotional expression as an indicator of psychological well-being. The ODAS was designed to code videotaped emotional expressions in persons with cognitive impairment; it contains 34 behaviors including 6 subscales (facial displays, vocalizations, and body movement/posture by positive, and negative quality).<sup>20</sup> The specific description for each behavior was provided to coders. The higher number of ODAS scores indicates more emotional expression.

**Social interaction.** Social interaction between nursing staff and nursing home residents was determined by frequencies in the following behavior categories observed from videotapes: (1) verbal interaction (eg, conversation, greeting, and commanding), (2) nonverbal interaction (eg, touching, hugging, and smiling), and (3) verbal and nonverbal interactions (ie, verbal and nonverbal together). Additionally, the quality of social interaction (ie, positive, negative, and neutral) was coded. Convergent validity was assessed using correlation between positive social interaction and engagement subscale of the Ambiance Scale that we used to measure environmental engagement.<sup>21</sup> Correlation coefficient between the 2 variables showed a significant weak positive relationship ( $r = .14, P < .001$ ).

**Personal factors.** Cognitive function was included as a dementia-related personal factor; the number of comorbidities and mobility were included as nondementia-related personal factors. Cognitive function was assessed by the MMSE,<sup>22</sup> and the number of comorbidities was assessed using the Cumulative Illness Rating Scale-Geriatric (CIRS-G).<sup>23</sup> Participants who were too impaired to complete the MMSE were assigned a score of  $-1$  as had been done in the parent study. The MMSE scores were categorized as mild (17-23), moderate (11-16), and severe or untestable ( $-1$ -10) to examine the severity of cognitive impairment. The CIRS-G is a comorbidity index based on physician or nurse practitioner ratings of presence and severity

of chronic medical condition for 14 organ systems. Inter-rater reliability for CIRS-G total score was reported from .78 to .88,<sup>23</sup> and validity of the scale was established in a study of institutionalized elders by examining its associations with mortality, hospitalization, medication usage, and laboratory findings.<sup>24</sup> Mobility was dichotomized as independent or receiving assistance from another.

**Time of day.** Time of day recorded the time when an observation was made.

### Analysis

Primary outcome measures (ie, positive and negative emotional expressions) had nonnormal distributions (skewed to the right). We took the Box-Cox transformation of the outcomes and used each of them as a sole-dependent variable in various analysis models. As the Box-Cox transformations were based on monotonic functions that preserved the orders in the original observations, we used model coefficients themselves to interpret the effect of covariates on increase or decrease in emotional expressions. The univariate mixed models were employed to allow for individual variations in emotional expressions that were repeatedly measured over time. First, we examined the effect of presence of social interaction by creating a binary variable (yes/no) representing the existence of any social interactions. Then the effect of different types of social interactions—verbal, nonverbal, both verbal and nonverbal—was further examined, and finally, the effect of quality of social interactions—positive, neutral, and negative—was assessed. We started from exploring marginal associations between social interactions (type and quality) and the outcomes without adjusting for potential confounders. Based on literature review, we controlled for MMSE score, comorbidity, mobility, and time of day in the adjusted models. In particular, we controlled for the time variable (ie, time of day) to reflect change over time in emotional expression.

### Results

Table 1 contains sample characteristics. Among 110 participants, 73% were females with an average age of 84 years. More than 55% of participants had severe cognitive impairment and were in a nursing home. Mean social interaction frequency was 2.56 per 20-minute time interval with nonmissing social interaction.

#### Associations between Presence of Social Interactions (Any vs None) and Emotional Expressions

The presence of social interactions was significantly associated with more positive emotional expression before and after controlling for potential confounders (MMSE, number of comorbidity, mobility, and time of day). Marginal (unadjusted) effect of presence of social interactions on positive emotional expression was 2.95 ( $P < .01$ ) and adjusted effect was 2.90 ( $P < .01$ ).

**Table 1.** Sample Characteristics of 110 Participants With Dementia.<sup>a</sup>

Variables	Mean (SD) or Median (IQR) <sup>b</sup>	n (%)
Age	84 (6.88)	
Caucasian		77 (70.00)
Female		80 (72.73)
Education		
< High school		20 (20.91)
High school		40 (36.36)
> High school		26 (23.64)
Nursing home		80 (72.73)
MMSE total score	9 (0-13)	
MMSE		
Mild		16 (14.55)
Moderate		23 (20.91)
Severe or untestable		64 (58.18)
CIRS-G score	0.71 (0.24)	
Independent mobility		68 (61.82)

Abbreviations: CIRS-G, Cumulative Illness Rating Scale-Geriatric; MMSE, Mini-Mental Status Examination.

<sup>a</sup>Mean and standard deviation are reported for variables whose distribution is symmetric; Median and interquartile range are reported for variables whose distribution is skewed.

<sup>b</sup>Interquartile range: 25% to 75% quartiles.

The effect of presence of social interactions on negative emotional expression was not significant at 0.05 level, before and after controlling for the confounders.

#### Associations Between Types of Social Interaction (Verbal, Nonverbal, and Both Verbal and Nonverbal) and Emotional Expressions

We found that verbal interaction was highly associated with increase in positive emotional expression after controlling for the confounders ( $P < .01$ ). Although nonverbal interaction alone did not show significant relationship with positive emotional expression, together with verbal interaction, it was shown to be beneficial to increase positive emotional expression ( $P < .01$ ). Magnitude of the effect of the verbal + nonverbal interaction was greater than that of the verbal interaction only (0.75 vs 0.54). Except time of day, none of confounders were associated with positive emotional expressions (Table 2).

We observed similar associations between social interactions and negative emotional expression. Although verbal interaction alone was only marginally associated with negative emotional expression ( $P = 0.06$ ), verbal and nonverbal interactions were still highly associated with increase in negative emotional expression ( $P = .01$ ; Table 2). The higher MMSE scores were significantly associated with less negative emotional expression ( $P = .02$ ).

#### Associations between Quality of Social Interaction and Emotional Expressions

We further investigated the effect of quality of social interactions on each emotional expression (Table 3). Our analyses

**Table 2.** Associations Between Type of Social Interaction and Emotional Expressions.

Variables	Positive Emotional Expression			Negative Emotional Expression		
	Coeff	95% CI	P Value	Coeff	95% CI	P Value
Verbal	0.54	0.31 to 0.76	.00	0.13	−0.01 to 0.28	.06
Nonverbal	0.07	−0.34 to 0.48	.73	−0.03	−0.29 to 0.22	.79
Verbal + nonverbal	0.75	0.54 to 0.97	.00	0.17	0.04 to 0.31	.01
MMSE	0.06	−0.03 to 0.14	.19	−0.06	−0.11 to −0.01	.02
CIRS-G	1.47	−1.14 to 4.09	.27	0.06	−1.40 to 1.51	.94
Mobility	0.50	−0.78 to 1.79	.44	0.32	−0.39 to 1.03	.38
Time of day	0.20	0.09 to 0.32	.00	−0.01	−0.08 to 0.07	.84

Abbreviations: CI, confidence interval; CIRS-G, Cumulative Illness Rating Scale-Geriatric; Coeff, coefficient; MMSE, Mini-Mental Status Examination.

**Table 3.** Associations Between Quality of Social Interaction and Emotional Expressions.

Variables	Positive Emotional Expression			Negative Emotional Expression		
	Coeff	95% CI	P Value	Coeff	95% CI	P Value
Positive interaction	0.53	0.23 to 0.83	.00	−0.05	−0.24 to 0.14	.60
Neutral interaction	0.54	0.39 to 0.70	.00	0.15	0.06 to 0.25	.00
Negative interaction	0.54	−0.33 to 1.41	.23	0.63	0.09 to 1.17	.02
MMSE	0.06	−0.03 to 0.14	.20	−0.06	−0.10 to −0.01	.02
CIRS-G	1.68	−0.93 to 4.28	.21	0.18	−1.24 to 1.60	.80
Mobility	0.56	−0.74 to 1.85	.40	−0.02	−0.38 to 0.34	.92
Time of day	0.19	0.08 to 0.31	.00	−0.01	−0.08 to 0.06	.80

Abbreviations: CI, confidence interval; CIRS-G, Cumulative Illness Rating Scale-Geriatric; Coeff, coefficient; MMSE, Mini-Mental Status Examination.

identified that positive and neutral interactions were significantly associated with increase in positive emotional expression whereas negative interaction was not, adjusting for confounders. Among confounders, only time of day was associated with positive emotional expression implying that the outcome might change over time. Neutral and negative interactions were shown to have significant impact on increase in negative emotional expression, whereas no significant relationship with positive interaction was found. Higher MMSE score was also associated with lower negative emotional expression.

## Discussion

This study provides empirical support for the hierarchic model of QOL specifically in dementia. Previous studies reported social interaction was more effective than nonsocial interaction for positive affect such as pleasure as well as social objects (eg, a real dog, a life-like baby doll, and a respite video) were positively associated with longer engagement.<sup>26,27</sup> However, to the best of our knowledge, this is the first study that illustrates the contribution of caregiving-related, social interaction type, and quality to the psychological well-being in nursing home or assisted living facility residents with dementia based on repeated observations. Findings suggest the importance of staff education and performance evaluations that include the ability to interact in a therapeutic manner with persons with dementia.

Dementia experts have long encouraged caregivers to utilize nonverbal communication to supplement verbal

communication.<sup>25</sup> Our findings provide evidence that this strategy is more influential than 1 type of communication alone, in supporting a positive social milieu in residents with varying levels of cognitive impairment and comorbidity. Conversely, the findings that suggest combined nonverbal and verbal communication elicited negative emotional expressions underscore the need to educate caregivers of the significant impact of their words and accompanying gestures, body language, and physical cues upon the emotional well-being of the person with dementia.

Nursing home residents have identified the quality of their relationship with staff as an important determinant of quality.<sup>28</sup> Accordingly, the findings that indicate positive interactions are associated with positive emotional well-being in residents demonstrate the need to evaluate the quality of staff–resident interactions as a salient measure of quality in the nursing home setting. Residents with higher degrees of cognitive impairment demonstrated more negative emotional expression. This may be attributed to limitations in staff ability to communicate with residents with more impaired cognition and suggest the need to evaluate staff interactions with residents across the continuum of cognitive ability.

Social interaction appears to be an important process measure to be included in quality improvement programs and should ideally be measured across the various care interactions in the nursing home setting. Such efforts are aligned with the principles of person-centered care that emphasize the dignity, compassion, and respect of the resident.<sup>29</sup>

## Limitations

This secondary analysis was limited by issues of measurement and data collection. In this study, the coding scheme was not explicit, and the duration of social interaction was not measured. We also did not consider the contribution of additional sources of interaction (with residents, families, and others), as well as the potential confounding influence of the nursing home environment and other resident characteristics upon psychological well-being, important considerations for future research. We only included residents who had adequate vision and hearing for normal communication but sensory impairment including hearing loss may contribute to lower degree of social interaction. The influence of positive interaction over time, and the influence of resident symptoms such as pain and fatigue, and attention level in persons with dementia upon resident well-being warrant future investigation.

## Conclusion

Despite limitations, the study offers important evidence that staff interaction with residents plays an important role in promoting the psychological well-being of persons with dementia. Findings underscore the need to attend not only to the quantity of nursing home staff but also to their ability to effectively interact with residents with dementia, as well as the organizational support to promote positive interactions. Future research that focuses on the development of an instrument that measures the nature and quantity of staff–resident interactions is also warranted to promote the uptake and sustainability of interventions that promote a dementia-friendly social environment.

## Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Data for this project were obtained with support from the National Institute of Nursing Research (R01 NR04569, PI: Donna L. Algase).

## References

1. Jonker C, Gerritsen DL, Bosboom PR, Van Der Steen JT. A model for quality of life measures in patients with dementia: Lawton's next step. *Dement Geriatr Cogn Disord*. 2004;18(2):159-164.
2. Wilson RS, Boyle PA, Segawa E, et al. The influence of cognitive decline on well-being in old age. *Psychol Aging*. 2013;28(2):304-313.
3. Llewellyn DJ, Lang IA, Langa KM, Huppert FA. Cognitive function and psychological well-being: findings from a population-based cohort. *Age Ageing*. 2008;37(6):685-689.
4. Ha JH. The effects of positive and negative support from children on widowed older adults' psychological adjustment: a longitudinal analysis. *Gerontologist*. 2010;50(4):471-481.
5. Mechakra-Tahiri S, Zunzunegui MV, Prévaille M, Dubé M. Social relationships and depression among people 65 years and over living in rural and urban areas of Quebec. *Int J Geriatr Psychiatry*. 2009;24(11):1226-1236.
6. Merz EM, Huxhold O. Wellbeing depends on social relationship characteristics: comparing different types and providers of support to older adults. *Ageing Soc*. 2010;30(05):843-857.
7. Tesch S, Whitbourne SK, Nehrke MF. Friendship, social interaction and subjective well-being of older men in an institutional setting. *Int J Aging Human Dev*. 1981;13(4):317-327.
8. Mor V, Branco K, Fleishman J, et al. The Structure of social engagement among nursing home residents. *J Gerontol B Psychol Sci Soc Sci*. 1995;50B(1):P1-P8.
9. Schroll M, Jónsson PV, Mor V, Berg K, Sherwood S. An international study of social engagement among nursing home residents. *Age Ageing*. 1997;26(suppl 2):55-59.
10. Chen YL, Ryden MB, Feldt K, Savik K. The relationship between social interaction and characteristics of aggressive, cognitively impaired nursing home residents. *Am J Alzheimers Dis*. 2000;15(1):10-17.
11. Resnick HE, Fries BE, Verbrugge LM. Windows to their world: the effect of sensory impairments on social engagement and activity time in nursing home residents. *J Gerontol B Psychol Sci Soc Sci*. 1997;52(3): S135-S144.
12. Kolanowski AM, Litaker M. Social interaction, premorbid personality, and agitation in nursing home residents with dementia. *Arch Psychiatr Nurs*. 2006;20(1):12-20.
13. Kiely DK, Simon SE, Jones RN, Morris JN. The protective effect of social engagement on mortality in long-term care. *J Am Geriatr Soc*. 2000;48(11):1367-1372.
14. Glass TA, De Leon CFM, Bassuk SS, Berkman LF. Social engagement and depressive symptoms in late life: longitudinal findings. *J Aging Health*. 2006;18(4):604-628.
15. Kelley MF. Social interaction among people with dementia. *J Gerontol Nurs*. 1997;23(4):16-20.
16. Custers AF, Kuin Y, Riksen-Walraven M, Westerhof GJ. Need support and wellbeing during morning care activities: an observational study on resident–staff interaction in nursing homes. *Ageing Soc*. 2011;31(8):1425-1442.
17. Willemse BM, Downs M, Arnold L, Smit D, de Lange J, Pot AM. Staff-resident interactions in long-term care for people with dementia: the role of meeting psychological needs in achieving residents' well-being. *Aging Ment Health*. 2015;19(5):444-452.
18. Algase DL, Antonakos C, Yao L, Beattie ER, Hong GR, Beel-Bates CA. Are wandering and physically nonaggressive agitation equivalent? *Am J Geriatr Psychiatry*. 2008;16(4):293-299.
19. Algase DL, Antonakos CL, Beattie E, Beel-Bates CA, Yao L. New parameters for daytime wandering. *Res Gerontol Nurs*. 2009;2(1):58-68.
20. Vogelpohl TS, Beck CK. Affective responses to behavioral interventions. *Semin Clin Neuropsychiatry*. 1997;2(2):102-112.
21. Algase DL, Yao L, Hong GR, Beattie ERA, Beck C, Whall AF. Initial psychometrics of the ambiance scale: a tool to study person-environment interaction in dementia. *Aging Ment Health*. 2007;11(3):266-272.

22. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12(3):189-198.
23. Miller MD, Paradis CF, Houck PR, et al. Rating chronic medical illness burden in geropsychiatric practice and research: application of the Cumulative Illness Rating Scale. *Psychiatry Res.* 1992; 41(3):237-248.
24. Parmelee PA, Thuras PD, Katz IR, Lawton MP. Validation of the Cumulative Illness Rating Scale in a geriatric residential population. *J Am Geriatr Soc.* 1995;43(2):130-137.
25. Eggenberger E, Heimerl K, Bennett MI. Communication skills training in dementia care: a systematic review of effectiveness, training content, and didactic methods in different care settings. *Int Psychogeriatr.* 2013;25(3):345-358.
26. Cohen-Mansfield J, Thein K, Dakheel-Ali M, Regier NG, Marx MS. The value of social attributes of stimuli for promoting engagement in persons with dementia. *J Nerv Ment Dis.* 2010; 198(8):586-592.
27. Cohen-Mansfield J, Marx MS, Thein K, Dakheel-Ali M. The impact of stimuli on affect in persons with dementia. *J Clin Psychiatry.* 2011;72(4):480-486.
28. Hertzberg A, Ekman SL. 'We, not them and us?' Views on the relationships and interactions between staff and relatives of older people permanently living in nursing homes. *J Adv Nurs.* 2000; 31(3):614-622.
29. Health Foundation. Person-centred care made simple. 2014. <http://www.health.org.uk/sites/health/files/PersonCentredCareMadeSimple.pdf>. Accessed April 4, 2017.