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Person-Centered Communication for Nursing Home Residents with Dementia: Four Communication Analysis Methods

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Abstract

Person-centered communication recognizes the individual as a person and responds to the individual's feelings, preferences and needs. This secondary analysis tested four interdisciplinary strategies to measure changes in person-centered communication used by nursing home staff following an intervention. Thirty-nine nursing assistants were recruited from eleven nursing homes and participated in the three-session Changing Talk communication training. Video recordings were collected at baseline, immediately post-intervention, and at 3-month follow-up. Staff communication was analyzed using behavioral, psycholinguistic, and emotional tone coding of elderspeak communication and content analysis of communication topics. Sign rank test was used to compare post-intervention changes for each measure of communication. Post-intervention improvements in communication occurred for each measure; however, the changes were statistically significant only for behavioral and psycholinguistic measures. Methods and results for each communication measure were compared. Implications for future research and use of measures of person-centered communication as a tool to improve care are discussed.

Keywords

Dementia; Person-centered Communication; Nursing Home; Communication Analysis

Changing the culture of nursing homes (NHs) away from their institutional roots to person-centered care is the predominant trend but remains a challenge in today's long-term care settings (Miller, Lepore, Lima, Shield, & Tyler, 2014; Miller, Looze, et al., 2014; Savundranayagam, Sibalija, & Scotchmer, 2016). Communication plays a critical role in person-centered care because it is essential for understanding and responding to the individual's needs in the caregiving process (Savundranayagam et al., 2016). Communication that recognizes and affirms the individual is a key aspect of person-centered care (Buron, 2008). With growing populations suffering from dementia, communication that

supports human needs, including identity, attachment, occupation, and inclusion, is even more critical (Kitwood & Bredin, 1992).

While more attention has been focused on person-centered care, consensus on person-centered communication has not been established. Kasch and Dine (1988) suggest that person-centered communication enables the caregiver to gather information from the patient, prompt the patient's self-disclosure, and provide empathetic acknowledgement. Person-centered communication also accommodates individual beliefs, intentions, and roles while bridging individual differences and unique qualities (Kasch & Dine, 1988). In the context of dementia care, person-centered communication recognizes the individual as a person, validating and responding to the individual's feelings, negotiating with their preferences and needs, collaborating with the individual and facilitating goal accomplishment by providing support through filling in the missing steps (Kitwood, 1997; Ryan, Martin, & Beaman, 2005).

In previous studies, observational checklists using key aspects of communication have been employed to evaluate person-centered communication (Sprangers et al., 2015). However, there is no established method to operationalize or measure person-centered communication (Edvardsson & Innes, 2010). Current measures are limited by the lack of conceptual frameworks and definitions, reliance on patient outcomes as proxy measures (such as agitation or other behavioral symptoms of dementia), divergent perspectives (staff versus person with dementia), and limitations related to usability and credibility (Edvardsson & Innes, 2010).

Purpose

The purposes of this study were to 1) use four different communication analysis methods to evaluate changes in NH staff communication with individuals with dementia after communication training, and 2) discuss the differences and implications of the four methods in evaluating person-centered communication. These analysis methods included 1) computer-assisted behavioral analysis of elderspeak (Williams, 2009; Williams et al., 2016), 2) psycholinguistic analysis of elderspeak (Williams, 2006; Williams, Kemper & Hummert, 2003), 3) content analysis of person-centered topics (Williams et al., 2011; Williams, Ilten & Bower, 2005), and 4) emotional tone analysis of affective qualities of communication (Williams et al., 2011; Williams, Boyle, Herman, Coleman & Hummert, 2012).

Two of the measures evaluate the use of elderspeak, considered non-person-centered communication because it is based on stereotypes of older adults and fails to individualize communication based on an older adult's abilities and uniqueness (Ryan, Hummert, & Boich, 1995). Behavioral analysis comprehensively evaluates multiple verbal and nonverbal features of elderspeak, while psycholinguistic analysis focuses on two of the key verbal features of elderspeak (use of diminutives and collective pronoun substitutions). Content analysis evaluates person-centered communication based on communication topics (task-oriented, person-centered, or superficial). The final measure, emotional tone analysis, evaluates the emotional component of the communication for controlling and person-centered tones.

Design and Methods

This is a secondary analysis of video recordings collected as part of a parent study, approved by the University Institutional Review Board. The parent study is a randomized controlled trial testing the effects of the Changing Talk (CHAT) intervention in reducing behavioral symptoms of residents with dementia. The CHAT communication training program teaches staff to increase person-centered communication, primarily through reducing elderspeak (patronizing talk that is similar to baby talk) (Williams, et al., 2004). The parent study used behavioral coding to demonstrate that reduced staff elderspeak predicted lower behavioral symptoms in NH residents with dementia. Changes in staff elderspeak use were predicted by the staff baseline elderspeak use as well as by the CHAT intervention (Williams et al., 2016).

Thirteen NHs participated in the parent study on a rolling basis during 2011–2014. NHs matched on similar characteristics were randomly assigned to intervention or wait-list control groups. Residents with dementia and certified nursing assistants (CNAs) and registered nurses (RNs) were recruited on a dyad basis from each NH. Resident inclusion criteria were a diagnosis of Alzheimer's disease or other dementia, long stay status, behavioral symptoms, intact hearing, and surrogate decision maker consent. Residents and surrogate decision makers were not compensated for participation.

Staff inclusion criteria were age 18 or greater, English speaking, permanent NH employee, and provision of direct care for a participating resident at least twice weekly in the past month. While video data were collected from all initially enrolled participants, the final analysis of the parent study only included video recordings of 1) residents with resistive behaviors and 2) staff using elderspeak at least 10% of the time with the resident. Staff provided informed consent and received a \$10 honorarium for each day of video recording.

Present Study

This analysis used video recordings of the CNA caregiving process with residents on two days during morning care at baseline, post-intervention, and 3-month follow-up. CNAs who attended at least 2 of the 3 CHAT training sessions were included regardless of their baseline use of elderspeak. A pre-post-follow-up repeated measures design was used to compare CNA communication using four measures of person-centered communication. To reduce potential confounding factors due to staff role differences, one RN represented in the sample (and 10 videos for that staff person) were eliminated from this analysis. The goal was to focus specifically on those CNAs who have the least preparation but the most interaction with NH residents.

Intervention

The CHAT intervention alerts staff to elderspeak communication and its negative messages and provides practice in more effective communication. CHAT has been previously replicated in eight NHs (Williams, 2006; Williams et al., 2003) where it successfully reduced elderspeak resulting in communication that naïve individuals rated as more respectful, less controlling, and highly caring. Effect sizes ranged from $\eta^2 = .35$ to $.62$ for reducing component features of elderspeak communication with maintained effects over 2

months. Interpersonal (versus task-focused) communication also increased (Williams et al., 2005).

The three 1-hour CHAT sessions were provided in on-site group sessions, one per week over a three-week period in each NH. Each session was offered multiple times to accommodate staff scheduling. CNA-resident dyads were video recorded before and after the intervention to evaluate changes in staff communication and responses of residents with dementia. Session one introduces effective versus ineffective communication. Participants identify communication issues in video vignettes. Session two focuses on elderspeak and its identification and negative effects, using video recordings as examples. The final session teaches positive communication strategies based on individual assessment. Participants critique videos and correct transcripts by eliminating elderspeak.

Data Reduction

Video footage was reviewed to identify interactions for each CNA-resident dyad that met these criteria: (1) quality adequate to understand and transcribe; (2) CNA and resident visible; (3) only consented participants included, and 4) duration of 1–10 minutes. Clips over 10 minutes were truncated (the first ten minutes of the recording was used). The first 10 minutes of ADL care have been established as representative of verbal behaviors ($r = .80-.93$) in complete interactions (Caris-Verhallen et al., 1998), and used in dementia research (Beck et al., 2002).

The number of recordings of each dyad at each interval varied from one to ten. On average, two randomly selected clips were used for each dyad at each time interval for the behavioral, psycholinguistic, and topic analyses. One clip at each time was used for the emotional tone analysis. Where applicable, multiple staff in conversation with one resident was separated and analyzed individually. The secondary analysis evaluated changes in the measures of each CNA's communication across the three time points. Recorded CNA communication was measured and analyzed using four strategies: 1) behavioral analysis of elderspeak, 2) psycholinguistic analysis of elderspeak, 3) content analysis of person-centered topics, and 4) emotional tone analysis for controlling and person-centered tones.

Measures

Behavioral Analysis of Elderspeak—Behavioral analysis of elderspeak was conducted using video samples and a computerized coding software. Each video clip was coded for CNA communication behaviors (normal, elderspeak, or silence) using established protocols developed based on the literature (Hummert & Ryan, 1996; Williams et al., 2009). Operational definitions for CNA elderspeak communication included verbal features (such as diminutives and collective pronoun substitutions) as well as nonverbal prosody (exaggerated voice intonation, high pitch, shouting, exaggerated punctuation), proxemics (crouching to wheelchair or bed level, crossing arms, placing hands on hips), and gaze (looking away) (Ryan, et al., 1994; Ryan, et al., 1995).

The Noldus Observer XT10 Video Pro software program (Noldus Information Technology, Leesburg, VA, USA) was used to continually code each frame of video second-by-second

using our established coding scheme (Williams et al., 2009). A computer key corresponding to each communication behavior state (normal, elderspeak, or silence) is pressed when it occurs in the video. Duration is tabulated by the length of time that the behavior state remains active (until the key corresponding to the alternate, mutually exclusive behavior state is pressed). The proportion of time in each communication state was computed and converted to percentage that was analyzed in this study.

Prior to the coding, extensive training was provided to research assistants using established training materials until coding both occurrences and absences of the identified behaviors reached 90% agreement between coders on recordings not included in the analysis. After coding, a standard 90% agreement was used for coding 10% of actual video samples to reassure inter-rater reliability. Continuous monitoring and retraining were used to assure reliable coding throughout the study. Potential expectation bias was controlled by blinding coders to time of assessments (pre or post-intervention) for each video clip (Polit & Beck, 2007).

Psycholinguistic Analysis of Elderspeak—Psycholinguistics is grounded in education and philosophy and focuses on coding and encoding in cognitive and linguistics processes used in generating grammatically correct and meaningful sentences (Osgood, Diebold, & Sebeok, 1965). This approach has been used in child language development and cognitive aging research (Kemper, 1990; Kemper, Anagnopoulos, Lyons, & Heberlein, 1994; Rosenberg, 2014).

Psycholinguistic analysis was conducted by manually analyzing communication. The first step in psycholinguistic analysis is transcription of communication and segmentation into utterances or statements. The Start-Stop[®] Universal Transcription program, Version 12 (HTH Engineering Inc., Tarpon Springs, FL, USA), a computer assisted software that allows replaying of video segments facilitated transcription. Transcriptionists were graduate research assistants majoring in speech therapy who were trained until reliability of 90% agreement for words and segmenting into utterances was achieved. The next step involved identifying two key verbal features of elderspeak using bracketing in the transcript.

A number of features of elderspeak can be quantified using psycholinguistic analysis. We selected diminutives and collective pronoun substitutions because each provides a negative message to older adults, is easily self-monitored, and was emphasized in the CHAT training. Diminutives are inappropriately intimate terms of endearment for health care provider – patient interactions such as “honey,” “dearie,” and “sweetie.” Collective pronoun substitutions involve using a plural “we” pronoun when an individual pronoun is indicated. For example, “Are we ready for our bath?” provides a subtle message that the older adult cannot act without help. The Systematic Analysis of Language Transcripts (SALT) program, Version 15 (Salt Software LLC, Madison, WI, USA), was used to tabulate counts of diminutives and collective pronoun substitutions in ratio to the total utterances (individual statements) in transcripts for each staff.

Content analysis of Person-Centered Topics—Content analysis is an established method for identifying topics or themes in written text that has been used in communication,

psychology, sociology and health care disciplines (Hsieh & Shannon, 2005). NH communication has traditionally focused on tasks in comparison to interpersonal topics (Sprangers et al., 2015). The literature describes several strategies for including person-centered topics, including incorporating biographical knowledge during care (McKeown, Clarke, Ingleton, Ryan, & Repper, 2010). Another strategy for person-centered care is to prioritize the experience of the individual person rather than completing the task at hand (Edvardsson & Innes, 2010). In this way, it becomes more important to make a care interaction, such as dressing, a pleasant experience rather than to merely accomplish the task at hand (Sloane et al., 2004).

Based on operational definitions of topics developed in our prior research, we coded each staff sentence or utterance in the transcripts as task-oriented, person-centered, or superficial (Williams et al., 2011; Williams et al., 2005). Task-related conversation focuses on the care of the resident. Person-centered communication includes subjects specifically to the resident's past, family, or life. Superficial conversation is not focused towards a specific resident, like talking about the weather. Research assistants were trained using operational definitions of each topic on practice transcripts and group discussion of disagreements until inter-rater reliability reached 90% or greater. The number of statements in each category was totaled for each observation.

Emotional Tone Analysis for Controlling and Person-Centered Tones—Prior research has determined that NH communication is imbalanced in underlying messages of care, respect, and control (Hummert, Shaner, Garstka, & Henry, 1998). Accordingly, the Emotional Tone Rating Scale was developed to evaluate differences in these affective qualities (Williams et al., 2012). Two factors, person-centeredness and control have emerged from scale use. Emotional tone was evaluated by listening to audio recordings and rating them using the abbreviated Emotional Tone Rating Scale. The use of the scale with audio recordings has been established as reliable and valid in prior research (Sims et al., 2013; Williams, Herman & Bontempo, 2013).

The scale consists of eight descriptors that are used to rate communication capturing both controlling tone and person-centered tone. Directive, bossy, domineering, and controlling are descriptors for the control dimension. Respectful, supportive, polite, and caring reflect the person-centered dimension. Naïve raters listened to one randomly selected audio clip for each CNA at baseline, post-intervention, and follow-up. The rater indicates the degree that the communication fits each descriptor on a 1–5 scale with higher score indicating a stronger message). Each rater completed six, hour-long sessions. Each session included 24 randomly presented clips.

Our past research demonstrated high inter-rater reliability for the scale (Williams et al., 2012). Two factors explained 84.8% of the variance with loading coefficient alpha of .94 to .98. Person-centered and controlling communication were negatively correlated ($p = -.64$) and demonstrated good ranges, standard deviations, and high item-total correlations. High agreement between raters occurred without training and significant changes in emotional tone occurred (increased person-centeredness and decreased control) after the CHAT

training (Author et al, 2003; Author et al., 2006). NH staff communication rated as more controlling was associated with increased behavioral symptoms (Williams et al., 2009).

Analyses

For each video observation, we utilized: (1) the percentage of time the CNA used elderspeak (behavioral analysis of elderspeak), (2) the number of diminutives and collective pronoun substitutions per 100 utterances (psycholinguistic analysis of elderspeak), (3) the number of task-oriented, person-centered, or superficial communications per 100 utterances (content analysis for communication topic), and (4) scores on the controlling and person-centered dimensions of the Emotional Tone Rating Scale (emotional tone analysis). To keep the focus on CNA communication, we averaged measurements for each CNA across dyads at each time interval (baseline, post-intervention at 1 month, and follow-up at 3 months).

Metrics for communication were compared between baseline and post-intervention and between baseline and follow-up using the sign test, a non-parametric statistic appropriate when data are not normally distributed (Conover, 1999). The non-parametric test statistic was selected because the distributions of the selected measures were negatively or positively skewed and not corrected by transformation. For some measures, ceiling or floor effects were observed. For example, the percentage of CNAs using superficial communication less than 5 times in 100 utterances was 77% at baseline, 71% post-intervention, and 84% at follow-up. The sign test evaluated whether median changes in measures of communication were different from zero. As a measure of effect size, exact confidence intervals were constructed around median changes.

Results

A total of 465 video clips were included in the analysis involving 83 dyads, composed of combinations of 39 CNAs and 49 residents. The 11 NHs ranged in size from 43 to 163 beds (Mean = 83 beds) and included for-profit and non-profit ownership. Approximately half of the NHs had at least one special care unit devoted to care for residents with dementia. There were 39 CNA participants at baseline, 38 at post-intervention, and 32 at follow-up (with exception of emotional tone analysis for which data were available for 31 CNA participants at follow-up). The CNAs ranged in age from 20 to 69 years ($M = 36$, $SD = 12.5$). Their experience as a CNA ranged from 0.25 to 10.3 years ($M = 11.8$, $SD = 10.3$), and they worked in their current NH for an average of 4.8 years ($SD = 6.2$). Additional demographic summary for the 39 CNA participants is shown in Table 1. Residents included in the video recordings ($N=49$) had a mean age of 85, ranging from 63 to 104 years, and were all Caucasian (100%), primarily non-Hispanic (98%) and female (67%). Table 2 displays descriptive statistics for measures of communication over time, along with p-values for the differences between baseline and post-intervention and baseline and follow-up.

Behavioral Analysis of Elderspeak

Mean percent time CNAs used elderspeak decreased from 28.5 ($SD = 20.9$) at baseline to 19.6 ($SD = 21.2$) post-intervention (median change = -7.6 , 96.6% CI $[-13.7, -1.7]$, $p = .$

001, $n = 38$) and 22.9 (SD = 23.8) at follow-up (median change = -6.3 , 98.0% CI $[-11.0, -2.1]$, $p = .002$, $n = 32$).

Psycholinguistic Analysis of Elderspeak

Mean diminutives per 100 utterances decreased from 2.6 (SD = 2.5) at baseline to 1.1 (SD = 1.4) post-intervention (median change = -1.0 , 96.6% CI $[-2.3, 0.0]$, $p = .001$, $n = 38$) and 1.7 (SD = 2.1) at follow-up (median change = -0.2 , 98.0% CI $[-1.7, 0.0]$, $p = .11$, $n = 32$). Mean collective pronoun substitutions per 100 utterances decreased from 5.1 (SD = 4.8) at baseline to 3.3 (SD = 3.4) post-intervention (median change = -1.2 , 96.6% CI $[-3.0, 0.0]$, $p = .06$, $n = 38$) and 4.4 (SD = 4.4) at follow-up (median change = -1.0 , 98.0% CI $[-2.6, 0.0]$, $p = .06$, $n = 32$).

Content Analysis of Person-Centered Topics

Mean changes in communication topics were in expected directions, but median changes were not statistically significant. Mean task-oriented communications per 100 utterances decreased from 87.2 (SD = 11.3) at baseline to 80.6 (SD = 18.7) post-intervention (median change = -7.1 , 96.6% CI $[-11.8, 0.0]$, $p = .12$, $n = 38$) and 83.1 (SD = 23.5) at follow-up (median change = 3.1 , 98.0% CI $[-7.4, 9.0]$, $p = .58$, $n = 32$). Mean person-centered communications per 100 utterances increased from 8.8 (SD = 10.2) at baseline to 14.8 (SD = 16.2) post-intervention (median change = 2.8 , 96.6% CI $[0.0, 6.3]$, $p = .15$, $n = 38$) and 11.6 (SD = 21.0) at follow-up (median change = 0.0 , 98.0% CI $[-7.7, 6.5]$, $p = 1.0$, $n = 32$). Mean superficial communications per 100 utterances increased from 4.0 at baseline to 4.6 (SD = 12.0) post-intervention (median change = 0.0 , 96.6% CI $[0.0, 0.0]$, $p = 1.0$, $n = 38$) and 5.4 (SD = 14.3) at follow-up (median change = 0.0 , 98.0% CI $[-1.2, 0.7]$, $p = 1.0$, $n = 32$).

Emotional Tone Analysis for Controlling and Person-Centered Tone

For this analysis, there were available 2,880 ratings of 143 unique video clips. For one of the 20 raters, all 144 ratings were excluded because they did not show variability. Thirty-eight ratings of clips by different raters were eliminated from final analysis because they had scores of 1 on all 8 dimensions, indicating that the rater was not discriminating between negative and positive emotional tone. Thus, the final sample included 2,698 ratings of 143 clips (93.7% of the original ratings). Next, for each clip, we averaged ratings on control and person-centered dimensions of emotional tone across raters. Finally, we calculated means for each CNA across dyads at baseline, post-intervention, and follow-up.

Mean changes in emotional ratings were in expected directions, but median changes were not statistically significant. Mean control dimension item ratings decreased from 2.19 (SD = 0.61) at baseline to 2.06 (SD = 0.42) post-intervention (median change = -0.07 , 96.6% CI $[-0.38, 0.18]$, $p = .63$, $n = 38$) and 1.99 (SD = 0.33) at follow-up (median change = -0.09 , 97.1% CI $[-0.26, 0.07]$, $p = .20$, $n = 31$). Mean person dimension ratings increased from 3.52 (SD = 0.50) at baseline to 3.57 (SD = 0.46) post-intervention (median change = -0.03 , 96.6% CI $[-0.13, 0.24]$, $p = .87$, $n = 38$) and 3.71 (SD = 0.47) at follow-up (median change = 0.08 , 97.1% CI $[-0.01, 0.43]$, $p = .15$, $n = 31$).

Discussion

Findings of the behavioral and psycholinguistic analyses revealed that after CHAT training, CNA communication had significantly less elderspeak use. This supports the premise that improving staff communication is possible after a brief educational training. Specifically, behavioral analysis found a significant decrease in elderspeak immediately after the intervention and at follow-up. Findings were not as pronounced in psycholinguistic data. Use of diminutives was significantly reduced from baseline to post-intervention, but not from baseline to follow-up. It was anticipated that the strongest effect would occur immediately after training with a reduction in this effect over time. This finding suggests that a booster on diminutives use may be needed to maintain effects over time.

The decreases in collective pronoun substitutions approached significance for both immediately post intervention and follow-up ($p=.06$). These less than significant results may be partially explained by low occurrence of diminutives and collective pronoun substitutions at baseline with only 2.6% and 5.1% of all utterances, respectively. The occurrence of diminutives and collective pronoun substitutions were much lower than the overall elderspeak (28.5% of time, on average, at baseline) measured by behavioral analysis. This suggests that these two features may not be the most prominent indicators of elderspeak. Because behavioral analysis captures elderspeak more comprehensively, it is considered a more valid measure than psycholinguistic analysis.

In contrast, the intervention did not improve other aspects of person-centered communication (no significant changes were found in communication tone and topics). This disagrees with previous findings where changes in these metrics were significant (Williams, 2006; Williams et al., 2005; Williams et al., 2003) and may be due to the small sample and use of conservative nonparametric statistics. Alternatively, these aspects of communication may be more difficult to change and may have received inadequate emphasis in the CHAT program. In this study we included CNA participants who attended at least 2 of the 3 sessions. Mandatory attendance at all sessions may assure that all staff person receives complete training content and additional content focusing on communication tone and topics may be needed. Increasing person-centered topics may be difficult for busy CNAs with heavy work assignments who must accomplish care tasks. Emotional tone is an abstract construct that may be harder for staff to understand and change and more challenging for coders to detect and comprehend.

Communication analysis can be conducted via direct observation or video observation. Although other investigators have used checklists of direct observation to evaluate communication (Sprangers et al., 2015), video observation allows for repeated review and comparative analyses, which are great strengths for comprehensive communication analysis. Albeit, video-recorded data requires extensive consenting of participants and privacy and confidentiality assurances. Archiving video data also requires large and secure storage. In contrast, direct observation (without recording) is easier to implement, although it does not permit the use of a variety of analysis strategies and repeated review. The four approaches of communication analysis used in this study capture different aspects of person-centered

communication with inter-coder reliability of at least 90% of agreement. Each analysis strategy is complex in their own ways and has advantages and disadvantages.

In this study, computer-assisted behavioral analysis of elderspeak of videos was the most comprehensive approach and provided the highest level of detail, integrating components of each of the other approaches. It captures verbal and non-verbal features of communication and provides the full picture of communication strategies and interaction context. The use of video observation and computer-assisted analysis facilitate a more complex and precise analysis and allow to measure the duration of communication behaviors of interest. Sequential analysis is also possible to determine time relationships between two variables (Williams et al., 2009).

However, behavioral analysis is also the most costly and time-intensive approach as it requires the purchase of software and development of a customized program to code behavior states and events specific to the research questions. Advanced expertise is needed to manage programming and data reduction. The behavioral coding requires more training and work to establish inter-coder reliability. This approach may only be feasible for larger-scale studies with adequate funding and resources. Behavior analysis via direct observation and/or paper-pencil coding may serve as an alternative behavioral analysis approach for small-scale pilot studies.

Psycholinguistic analysis requires transcripts of communication and training of research assistants in transcription and utterance segmentation conventions and to identify elderspeak markers. Training required time, review, and computation of agreement between coders, discussion of disagreements, and continued monitoring and retraining. In this study, psycholinguistic analysis of diminutives and collective pronoun substitutions was used as an alternative measure of elderspeak. While inter-rater reliability can be accomplished, findings suggest that psycholinguistic analysis is less sensitive than behavioral analysis of elderspeak. Future studies can explore other verbal indicators of elderspeak or person-centered communication.

Content analysis for communication topic also requires transcription of communication. Research assistants require similar training as psycholinguistic analysis. Using transcripts for content analysis is cost-effective and its reliability was established in this study. Using transcripts along with video observation may improve the understanding of the communication context.

Emotional tone analysis uses audio recordings but requires no training and minimal work for analysis. Using audio recordings, instead of videos, reduces risks to privacy for research subjects, and may facilitate recruitment in vulnerable populations. Emotional tone analysis evaluates both verbal and some nonverbal aspects (i.e. voice pitch and volume) of contextually complex communication. While emotional tone analysis showed inconsistencies for some raters in the present study, we still believe that this measure is reliable and valuable for future research. This measure showed high inter-rater reliability in a previous study, which indicates that even untrained raters can understand the scale descriptors (Author et al., 2012). The rating quality issue we encountered in this study is

addressable for future research. In past studies, the emotional tone ratings were limited to one or two hours for each rater. In the current study each rater participated in six hours of ratings, thus fatigue may have occurred. Limiting the amount of time of rating at each sitting and monitoring the rating quality during the study may be needed. In addition, more stringent selection criteria for raters may be needed to assure their commitment and concentration on the emotional tone rating task and by periodic reinforcement of the importance of their careful attention to ratings.

Person-centered communication is a critical part of person-centered care that is often overlooked and seldom included in training for CNA staff who provide the majority of direct resident care. This study demonstrated that a brief educational program can increase person-centered communication and reduce elderspeak, as confirmed by behavioral and psycholinguistic analysis. Future research should be expanded to include NHs with geographic, racial, and ethnic diversity and take into account the complexity in evaluating person-centered communication and educating staff in its use. A conceptual framework for understanding person-centered communication as one aspect of person-centered care is needed (Edvardsson & Innes, 2010; Sprangers et al., 2015).

Dementia care workers report that individual attributes, organizational support, and the physical environment all contribute to successful communication with persons with dementia, in addition to communication strategies (Stanyon, Griffiths, Thomas, & Gordon, 2016). A 2014 systematic review found a number of person-centered care interventions, but few that were evidence-based (Fossey et al., 2014). Our analyses of recorded CNA-resident interactions provide evidence of the effectiveness of person-centered communication interventions.

The measurement approaches used in this study may be more useful for research purposes than for clinical practice due to time and resource demands for enrolling and consenting participants, collecting data, and conducting the detailed analyses. Training that emphasizes limited aspects of communication that busy staff can self-monitor during their busy workday is most efficient and effective. In our research recordings, staff notably caught themselves using diminutive terms such as “honey” and “sweetie” and these may be the easiest for staff to self-monitor and limit in practice. Psycholinguistic analysis could potentially be conducted using automated voice-to-text transcription of a limited set of key words such as diminutives. The authors are currently working to validate a natural language processing program that identifies diminutive use in recorded conversations (specific words used and frequencies). Periodic self-monitoring by NH staff may be used as a booster for CHAT training in the future.

The complexity of interpretation required for the other analyses makes easy usage of automation in practice unlikely. To overcome this limitation, vigorous testing of intervention effects, using measures such as the ones used in this study, could be used to establish effectiveness, eliminating the need to analyze communication outcomes in each practice setting. Other outcomes that occur in response to enhanced communication (i.e. documentation of reduced behavioral symptoms or psychotropic medication use to control behaviors) could also be measured.

Because CNAs have most opportunities for resident communication but are provided with limited education about communication with older adults, including those with dementia, educating them about verbal and nonverbal aspects of elderspeak and the need for communication on an interpersonal level is critical. As leaders, nurses can educate the direct care staff that they supervise to raise awareness of communication. Nurses can also serve as role models for person-centered communication. NHs should be encouraged to include communication as part of mandatory continuing education for staff of all levels. Awareness of the impact of communication on resident behavior and quality of life may increase communication self-awareness and motivate staff to communicate more effectively.

Effects of the CHAT intervention were maintained 1-month post-intervention; however, by 3-months, most measures trended toward baseline. Future research should use communication analysis to further identify the duration of effect for CHAT and other communication training programs. Re-training and booster sessions may be needed to maintain intervention effects over time. Part of the CHAT program includes providing CNAs the opportunity to listen to brief recordings of their own communication with residents. CNAs report that this is an eye opening experience. Periodic recording and feedback, if provided in a nonjudgmental manner, may be an effective booster. Training NH staff is complicated by high staff turnover rates. An asynchronous format for training may help to overcome this challenge.

A majority of CHAT training focused on reducing elderspeak in communication (and this was the exclusive focus of the psycholinguistic and behavioral analysis strategies). Reducing negative aspects of elderspeak alone results in improved person-centered communication, but may not in itself achieve holistic person-centered communication. However, limiting the focus on select aspects of communication (diminutives) may be the most feasible and effective for busy staff.

Our findings suggest that analyses of communication behaviors, psycholinguistics, content, and emotional tone are all useful measures for person-centered communication. Since each strategy captures different aspects of communication, they cannot replace each other. Based on this comparison of four different communication analyses, behavioral analysis provided the most sensitive measure and should be considered the state-of-the-science measure for person-centered communication. Depending on the research question, data collection limitations, and what aspect of person-centered communication is of interest, these measurement strategies may be used selectively or in combination to answer research questions and to enhance and evaluate person-centered care.

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Table 1

Staff Demographic Information

Variable	<i>n</i>	%
Gender		
Male	7	17.9
Female	32	82.1
Race		
White	29	74.4
African American	8	20.5
Asian	1	2.6
Native American	1	2.6
Ethnicity		
Non-Hispanic	31	79.5
Hispanic	8	20.5
Education		
High School	20	51.3
College	19	48.7

Table 2

Descriptive Statistics for Measures of Communication over Time

Measure	Baseline (N=39)		1 month (N=38)		3 month (N=32)		<i>p^a</i>	<i>p^b</i>
	M ± SD	Range	M ± SD	Range	M ± SD	Range		
Behavioral analysis								
Elderspeak (% time)	28.5 ± 20.9	0.0–77.2	19.6 ± 21.2	0.0–71.2	22.9 ± 23.8	0.0–80.0	.001	.002
Psycholinguistic analysis								
Diminutives (per 100)	2.6 ± 2.5	0.0–9.6	1.1 ± 1.4	0.0–5.6	1.7 ± 2.1	0.0–6.8	.001	.11
Collective pronoun substitutions (per 100)	5.1 ± 4.8	0.0–20.0	3.3 ± 3.4	0.0–13.0	4.4 ± 4.4	0.0–19.4	.06	.06
Content analysis								
Task-oriented (per 100)	87.2 ± 11.3	63.6–100.0	80.6 ± 18.7	28.6–100	83.1 ± 23.5	0.0–100.0	.12	.58
Person-centered (per 100)	8.8 ± 10.2	0.0–36.4	14.8 ± 16.2	0.0–55.6	11.6 ± 21.0	0.0–100.0	.15	1.0
Superficial (per 100)	4.0 ± 7.6	0.0–31.3	4.6 ± 12.0	0.0–71.4	5.4 ± 14.3	0.0–70.0	1.0	1.0
Emotional tone analysis ^c								
Control dimension (1–5)	2.19 ± 0.61	1.43–3.80	2.06 ± 0.42	1.38–3.05	1.99 ± 0.33	1.45–2.56	.63	.20
Person dimension (1–5)	3.52 ± 0.50	2.34–4.70	3.57 ± 0.46	2.70–4.49	3.71 ± 0.47	2.87–4.36	.87	.15

Note.

^a p = p-value for the difference between baseline and post-intervention (1 month);^b p = p-value for the difference between baseline and follow-up (3 month);^c N = 31 for the follow-up (emotional tone data).