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Psychometric Analysis of the Emotional Tone Rating Scale: A Measure of Person-Centered Communication

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Abstract

Psychometric analysis of the Emotional Tone Rating Scale (ETRS) was completed using ratings of naïve listeners who evaluated staff-resident communication in three nursing homes. Interrater consistency was high with ICC (2, 1) for agreement = 0.95 and consistency = 0.95. Factor analysis revealed two factors—person-centered communication and controlling communication—that explained 84.8% of the variance. Person-centered communication included seven descriptors (items) with loadings ranging from 0.84 to 0.98 and a coefficient alpha of 0.98. Controlling communication included five items that loaded from −0.63 to .99 with a coefficient alpha of 0.94. These factors were negatively correlated p = −.64 and demonstrated good ranges, standard deviations, and high item-total correlations. Person-centered communication correlated with higher resident engagement in conversation in contrast to controlling communication. The ETRS provides a measure of person-centered communication that can be used to evaluate interactions between nursing staff and older adults who reside in long term care settings.

Keywords

communication; measurement; nursing home; person-centered care

INTRODUCTION

The Emotional Tone Rating Scale (ETRS) is a communication rating tool designed to measure the underlying affective qualities of communication with older adults. Based on the Communication Predicament of Aging model (Ryan, Hummert, & Boich, 1995), the scale uses common descriptors to quantify three dimensions of messages that are frequently imbalanced in communication between younger and older persons: care, respect, and control (Hummert & Ryan, 1996). This instrument provides a reliable and sensitive measure of person-centered communication, a critical component of person-centered long-term care for

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older adults (Boron, 2008). In this paper we report the psychometric analysis and discuss potential uses of the ETRS to measure person-centered communication in care for older adults.

Person-Centered Communication and Long-Term Care

Long-term care for older adults has begun to transition from an institutional medical model of care based on organizational, staff, and regulatory needs to a person-centered or social model of care that reflects the patient's values, needs, and preferences and involves patients in their own care (Kansas Advocates for Better Care, 2008; Koloroutis, 2004). Culture-change approaches such as the Eden Alternative and Wellspring that propose person-centered care have gained popularity, and person-centered care has been identified as especially critical for care of persons with dementia who struggle to maintain a sense of personhood despite cognitive decline (Buron, 2008; Kitwood & Bredin, 1992; Penrod et al., 2007).

Reliable and valid measures of person-centered care are essential to evaluate the process of improving long-term care and enabling measurement of enhanced care outcomes (McCormack, 2004). Although a number of interventions are designed to make care more person-centered, few measures of person-centered care exist. Currently available measures are relatively new and are based on diverse conceptual frameworks and definitions of person-centered care with different perspectives and intended uses (Edvardsson & Innes, 2010). For example, a variety of terms are used to describe this concept including person-centered, person-directed, relationship-based, or individualized care and definitions also vary. White and colleagues identified institutional level characteristics of person-centered care including personhood, comfort care, autonomy, knowing the person, support for relationships, and environmental support (White, Newton-Curtas, & Lyons, 2008). Buron (2008) described three levels of person-centered nursing home care for persons with dementia including biological, individual, and sociological. McCormack (2004) provided a person-centered care framework that includes being in relation, being in a social world, being in place, and being with self. In addition to the diverse definitions and conceptual frameworks for person-centered care, measures have only recently been developed and have been used on a limited basis. Thus psychometric properties and credibility for measures of person-centered care have not been reported (Edvardsson & Innes, 2010).

Communication has been identified as a key component of high-quality person-centered care by the Institute of Medicine (Committee on Quality of Health Care in America, 2001) as well as in research focused on long-term care (Chappell, Reid, & Gish, 2007). Communication is an integral part of nursing care, reflecting quantitative and qualitative aspects of interpersonal interaction between the nurse and the care recipient. Because person-centered care is reflected in nurse-patient interactions and because measuring communication limits attention to a conceptually-defined and observable aspect of person-centered care, communication provides a valuable approach to measurement (Curyto, Van Haitsma, & Vriesman, 2008; Epstein et al., 2005).

Nursing Home Communication

Frequent barriers to person-centered communication with older adults, especially those residing in long-term care settings, include: (1) limited opportunities for communication, with interactions predominantly focused on care tasks rather than person-centered topics (Iwasiw & Olson, 1995; Williams, Ilten, & Bowers, 2005); and (2) patronizing and infantilizing "elderspeak" that provides messages of incompetence to older adults and includes talk that encourages dependency (Baltes & Wahl, 1996; Williams, 2011). Many of the barriers to effective nursing home (NH) communication that support the personhood of

residents stem from the institutional history of long-term care in which care providers have power over dependent care recipients and there is a lack of reciprocity in relationships (Lanceley, 1985). Communication that fails to support autonomy and well-being of older adults leads to outcomes that are incongruent with quality care including increased dependency and resistiveness to care (Herman & Williams, 2009; Williams & Herman, 2011; Williams et al., 2009).

Conceptual Framework

A key feature of the ETRS measure is its theoretical foundation in Communication Accommodation Theory, which describes how speakers universally accommodate, or modify, their speech to match that of communication partners or to minimize differences between themselves and their communication partners (Giles, Coupland, & Coupland, 1991). The Communication Predicament of Aging conceptual framework explains how speech accommodation applies in intergenerational communication (Ryan, Hummert, & Boich, 1995). According to this model, younger speakers' age stereotypes prompt speech accommodations to meet the presumed cognitive and communication needs of older adults. These accommodations include simplification and clarification strategies (e.g., using simple vocabulary and speaking slowly) that diverge from the characteristics of usual adult-to-adult communication, resulting in a *patronizing* emotional tone. Audible elderspeak markers include altered voice pitch, intonation, volume, and exaggerated pronunciations (Kemper & Harden, 1999). Other nonverbal features include modified eye contact, proxemics, facial expressions and touch (Ryan, Hummert & Boich, 1995).

This patronizing communication or elderspeak directed to older and frail adults, such as those residing in long-term care, typically reflects an imbalance in the affective dimensions of care, respect, and control (Hummert & Ryan, 1996). Use of overly caring and directive messages that lack respect are common in nursing homes (Williams, 2006; Williams, Kemper & Hummert, 2003); which may be caused by the dilemma experienced by staff who are trying to provide humanistic care for residents while meeting task demands inherent in their jobs (Hummert & Ryan, 1996). While such messages may derive from staff efforts to communicate effectively, their patronizing emotional tone can challenge the self-concept and personhood of residents, contributing to a negative feedback cycle with potentially harmful consequences for residents' physical and psychological well-being (Ryan et al., 1986).

Measuring Emotional Tone

Patronizing communication can be classified as overly nurturing, reflecting high care and low control, or directive, reflecting high control and little caring (Hummert, Shaner, Garstka, & Henry, 1998). An integration of strategies was used to develop and pilot test an emotional tone evaluation scale in research exploring staff-resident communication in NHs (Williams 2001). That research and other studies demonstrate that emotional tone can be readily assessed by judges who observe and rate interactions (Hummert & Ryan, 1996; Hummert, et al., 1998; McKenzie, 1997; E. B. Ryan, Bourhis, & Knops, 1991). A set of 12 adjectives, reflecting care, respect, and control, was developed so that naïve judges could rate staff-resident communication using a five-point Likert-type scale indicating to what degree the staff communication fit the 12 descriptors (1 = not at all; 5 = very; see Appendix).

The 12 items (see Appendix) reflect the three theoretically-based dimensions of differing emotional tone: caring (nurturing, caring, warm, and supportive); respect (polite, affirming, respectful, and patronizing [reverse coded]); and control (dominating, controlling, bossy, and directive). Other studies of emotional tone in intergenerational communication have included third-party ratings of staff and resident satisfaction with communication encounters

(Hummert & Ryan, 1996), evaluation of paralinguistic and linguistic features (Kemper, Ferrell, Harden, Finter-Urczyk, & Billington, 1998; Kemper, Vandeputte, Rice, Cheung, & Gubarchuk, 1995), and ratings of the characteristics of recipients of messages (Morgan, 1998).

In a pilot study of the ETRS, a set of 1-minute video recordings of NH staff communicating with residents in public areas of a NH were played for 12 university graduate students, faculty, and staff. After observing each recording twice, participants rated the staff person's communication using the ETRS. ETRS ratings were consistent among coders (Cronbach's alpha for care = .91, respect = .85, and control = .90). ETRS ratings also validated predetermined classification of each video clip by predominant quality (affirming, controlling, or nurturing) (Williams, 2000).

The ETRS demonstrated sensitivity to changes in the emotional tone of NH staff communication when used to evaluate the effectiveness of a nursing home staff educational program to reduce elderspeak (infantilizing) communication (Williams et al., 2003). Twenty raters, recruited by posting signs in university buildings, each evaluated a total of 60 audio recordings of staff-resident communication collected using wireless microphones during 2-hour periods of routine care. Inter-rater consistency was high (Cronbach's alpha for care = .93, control = .92, and respect = .70). Comparison of ETRS ratings between communication recorded before and after staff attended a 3-hour educational session aimed at reducing elderspeak communication revealed changes in the emotional tone of communication following training. Post-training communication was rated as more respectful, less controlling, and equally as caring, also corresponding to reductions in established markers of elderspeak such as terms of endearment (Williams et al., 2003). A replication study supported these results (Williams, 2006). Here we report a psychometric evaluation of the ETRS to provide evidence of the value of the ETRS as a measure of emotional tone reflecting person-centeredness in NH communication.

DESIGN AND METHODS

This study assessed the psychometric properties of the ETRS using factor analysis and correlation analysis. Internal reliability was examined using interclass correlation coefficients and item-scale correlations (Streiner & Norman, 2003). To assess construct validity, measures of resident participation in communication were drawn from the replication study. We hypothesized that dimensions of the ETRS associated with person-centered communication would be positively correlated with higher levels of resident participation in communication.

Setting and Sample

As reported in Williams (2006), the ETRS was used to rate audio-recorded samples of conversations between staff-resident dyads at baseline, and then immediately and 2-months post-intervention. The staff-resident communication recordings were collected in three nursing homes within 1 hour of a Midwestern metropolitan area. The facilities were selected to include a rural, suburban, and urban nursing home. Following approval of the Institutional Review Board for the protection of human subjects, direct care staff (N=38) and residents (N=60) consented to participate. Rates of participation were 50% for staff and 31% for residents. We posit that the relatively low resident participation rates were due to difficulty contacting residents' surrogate decision makers and to a reluctance to participate in video recordings of personal care in individuals with disabilities and dementia.

Staff participants were primarily nursing assistants (N=26) but also included registered and licensed nurses and activity and housekeeping staff. The mean age for staff was 41. Ninety-

two percent were female. Twenty care staff were Caucasian, and the remainder were African American. Their experience averaged 9.5 years as care staff with 4 years in the current facility. Resident participants included in recordings were 80% female, 92% Caucasian, and 63% with a diagnosis of dementia.

Staff-resident conversations were recorded during typical daily care, resulting in a set of 526 recorded conversations of which 105 conversations were then randomly selected for rating with the ETRS in this study. These 105 conversations constitute the sample for psychometric evaluation, a size deemed adequate following guidelines provided by Sapnas and Zeller (2002) and Tabachnik and Fidell (2001).

Raters

Twenty-five raters were recruited to complete the ETRS for each of the 105 recordings. The raters were recruited from a university medical center campus using signs posted in public areas. The volunteer raters ranged in age from 18 to 47 years with educational levels from high school to doctoral education. Seventy-eight percent were female. Per IRB approval, each rater completed human subjects protections training prior to working with the communication recordings. Raters received a $30 honorarium.

Measures and Procedures

Demographic information was collected from staff and resident participants as well as from the participants who rated conversations using the ETRS.

ETRS—Raters were told that they were to evaluate the examples of nursing home staff communication with residents using the ETRS. No training or definitions for the scale descriptors were provided, and the recordings were presented in random order. Each rater spent three 1-hour sessions to complete the scoring of all the conversations. Recordings were presented and ratings were collected using a computer in a quiet room, and each rater worked independently.

Preliminary analysis revealed that the scores of two of the raters were inconsistent with those of the other raters. Thus these two raters were determined to be outliers, and their data were removed from the sample. The inter-rater reliabilities for the remaining 23 raters were high with ICC (2, 1) for agreement = 0.95 and for consistency = 0.95.

Psycholinguistic measures—Replication study measures of resident participation in communication were used to establish construct validity. These measures included proportion of nursing home resident utterances (statements) compared with their staff communication partners.

RESULTS

Dimensionality of the ETRS was assessed with a Principal Axis factor analysis using a Promax rotation. Evaluation of the correlation matrix indicated relationships among the items. The Kaiser-Meyer-Olkin statistic of sampling adequacy KMO (0.91) and the Bartlett's test of sphericity ($P < 0.001$) verified that the correlation matrix was factorable (Stevens, 2002). Based on the Scree test, both a one-factor and two-factor solution were considered. The one-factor model explained 69.5% of the variance whereas the two-factor model explained 84.8% of the variance. The two-factor model was selected because of better conceptual fit.

Within the two-factor model, factor one, labeled "person-centered," had an eigenvalue of 8.60, explained 70.74% of the variance, and included seven items: affirming, supportive, caring, nurturing, polite, respectful, and warm. The loadings ranged from .842 (warm) to .978 (affirming). The second factor, named "control-centered," had an eigenvalue of 1.86, explained 14.06% of the variance, and included five items: dominating, controlling, directive, bossy, and patronizing. The loadings ranged from −.628 (patronizing) to .985 (dominating). A third factor had an eigenvalue of 0.66, and therefore was not considered.

The factors in the two-factor model were negatively correlated (p = −0.64). Both demonstrated good ranges, standard deviations, and high item-total correlations, which are displayed in Table 1. Person-centered factor descriptors were highly inter-correlated with correlations ranging from .715 to .966, see Table 2. The subscale alpha was .98. Descriptors in the control-centered factor, with the exception of patronizing, were also highly inter-correlated with correlations ranging from .765 to .972. The subscale alpha was .94.

The concurrent validity of the ETRS was evaluated by examining the correlations of the two factors with the resident engagement in conversations (number, length, and proportion of resident utterances). Person-centered was positively correlated with the number ($r = .309$, $p < .01$, N= 101), length ($r = .208$, $p < .05$, N = 101), and proportion of resident utterances ($r = .229$, $p < .05$, N = 101), indicating that ratings of person-centered emotional tone are associated with increased resident communication. The control-centered factor was negatively correlated with the number ($r = −.257$, $p < .01$, N= 101), length, ($r = −.231$, $p < .05$, N = 101), and proportion of resident utterances ($r = −.353$, $p < .001$, N = 101), indicating that communication rated as highly controlling is associated with reduced levels of resident communication. Four of the 105 conversations analyzed did not contain resident utterances and were excluded from the analysis as there was no resident engagement.

The validity of the individual items was also evaluated by examining the correlation of each item with the proportion of staff utterances. As seen in Table 3, the proportion of staff utterances was negatively correlated with the person-centered subscale items and was positively correlated with the control-centered subscale items.

DISCUSSION

We propose the ETRS as a measure of person-centered communication that reflects person-centered care (Buron, 2008). Although the term person-centered care is used frequently, its conceptual grounding and meaning varies, confounding its measurement (Edvardson & Innes, 2010). Measurement of this concept is important for the evaluation of the growing body of interventions designed to improve health care by increasing the person focus in both research and clinical settings (Edvardsson & Innes, 2010; Hudson, Fortin, Haggerty, Lambert & Poitras, 2011; Yayadevappa & Chhatre, 2011). Person-centered care is currently measured indirectly, relying on proxy and self-report outcome measures or newly developed tools that lack widespread use and psychometric evaluation (Edvardsson & Innes, 2010). The ETRS provides a direct measure of person-centered communication that is brief and can be completed by untrained and unbiased observers that is readily applicable in both research and clinical practice relating to care of older adults.

The strong conceptual grounding of the ETRS in Communication Accommodation Theory (Giles et al., 1991) and the Communication Predicament of Aging model (Ryan et al., 1986) led to its focus on imbalances of care, respect, and control. Psychometric analysis confirmed that the ETRS provides a sensitive and reliable measure for quantifying these affective qualities of interpersonal communication in our sample of NH staff and resident communication. Thus, the ETRS is a useful measure to quantify person-centered care in

evidence-based NH research, filling a gap by providing a directly observable outcome measure that overcomes limitations and bias in staff-report measures (Levy-Storms, 2008). The strength of the ETRS is its targeted focus on the affective dimensions of communication that are specifically at issue in intergenerational communication and for residents of NHs (Curyto et al., 2008).

One underappreciated value of completing psychometric analysis is that measurement tools may be strengthened by understanding underlying factor structures. In this case, psychometric analysis revealed that the ETRS may be streamlined from three to two dimensions: The two-factor solution explained a high level of variance (85%) in communication, in comparison to the three identified dimensions of emotional tone that we have focused on in our research. Selected descriptors from the seven-item person-centered factor could be dropped to reduce rater burden in completing the ETRS, while maintaining internal consistency. The control-centered factor explained an additional 14% of variance in the communication samples, and the two factors were clearly dichotomous.

The two factors were also differentially associated with resident engagement in communication, further establishing the construct validity of the ETRS in our sample. As expected, higher levels of person-centered communication were positively related to resident engagement, while controlling communication was negatively related to engagement. The magnitude of the correlations with resident engagement were similar for the two factors, albeit in opposite directions.

This was not the case for the correlations of the factor descriptors with the proportion of staff utterances. The controlling factor descriptors were more strongly correlated with staff utterances than were the person-centered factor descriptors, even though the person-centered factor accounted for more variance than the controlling factor in the factor analysis. This may reflect the characteristics of controlling or directive communication. When staff are directing residents in care related activities, there is little turn taking or opportunity for the resident to communicate. Therefore the proportion of staff utterances is consistently higher. This result may provide a useful direction for helping staff to increase person-centered communication through increasing their ability to recognize controlling tone as a first step to reducing the use of controlling emotional tone (Carpiac-Clever, 2007; Levy-Storms, 2008).

This study also demonstrates that naïve raters can apply the ETRS and achieve high levels of inter-rater agreement with minimal training. The scale descriptors, with the exception of *patronizing*, were understood by raters as evidenced by their agreement. Future research using the two-factor model should evauate whether patronizing should be reverse coded and also determine the best fit for this item as part of the person-centered versus control subscale. Because the ETRS is readily comprehensible, it could easily be used in a variety of populations. For example, the ETRS could be useful for educating staff to self-monitor their own communication with residents to promote person-centered care.

The ETRS is sensitive for measuring emotional tone in both audio and video recordings of communication. A recent analysis reported elsewhere found very high correlations between ETRS ratings for sets of audio- and video-recorded versions of staff-resident communication using separate groups of raters (Williams, Herman, & Nowak, 2011).

Sensitivity to within-person changes in communication is an additional strength of the ETRS with respect to measuring person-centered care. We have verified measurable changes in the emotional tone of NH staff communication following a three-session communication training program (Williams, 2006; Williams et al., 2003). Changes in ETRS ratings also correspond to psycholinguistic measures of elderspeak and to resident participation in communication with staff. More recent research has also established that communication

reflecting an imbalance in dimensions of care, respect, and control as measured by the ETRS is associated with negative outcomes including increased resistiveness to nursing care (Williams & Herman, 2011).

The ETRS has been used to evaluate communication in NH and assisted living settings (Williams, 2011). Future research testing its utility in clinic, home, and community settings where older adults receive health care is warranted. A limitation of the ETRS is its exclusive focus on the interpersonal level, without regard to organizational factors relating to person-centered care (Edvardsson & Innes, 2010; White et al., 2008).

Improving the emotional tone of NH communication through appropriately balancing the dimensions of care, respect, and control may provide an effective and efficient approach to improving person-centered care. Communication with a high level of respect that allows older adults to maintain control may affirm their value and self-direction (Lancely, 1985, Baltes & Wahl, 1996). Avoiding overly caring communication may also support self-care for the growing population of older adults. To the extent that attention to these dimensions of emotional tone promote person-centered communication by staff, the ETRS can be employed to reduce elderspeak and prevent the negative outcomes for residents predicted by the Communication Predicament of Aging Model (e.g., isolation, depression, and learned helplessness), contributing to improved quality of life and mental health outcomes for older adults living in long term care settings.

Acknowledgments

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APPENDIX: EMOTIONAL TONE RATING SCALE

Please rate the communication of the nursing staff for the following. The staff person's communication was:

	Not At All				Very
Nurturing	1	2	3	4	5
Directive	1	2	3	4	5
Affirming	1	2	3	4	5
Respectful	1	2	3	4	5
Patronizing	1	2	3	4	5
Supportive	1	2	3	4	5
Polite	1	2	3	4	5
Bossy	1	2	3	4	5
Caring	1	2	3	4	5
Dominating	1	2	3	4	5
Warm	1	2	3	4	5
Controlling	1	2	3	4	5

Table 1

Descriptive statistics and correlations for the ETRS and subscales.

Item	M (SD)	Min-Max	Item-Total r	Alpha if deleted
Person-Centered				
1. Nurturing	3.4 (.6)	1.48–4.35	.954	.974
3. Affirming	2.9 (.3)	1.65–3.65	.825	.984
4. Respectful	3.5 (.5)	1.79–4.60	.941	.974
6. Supportive	3.4 (.5)	1.57–4.43	.969	.972
7. Polite	3.6 (.5)	1.61–4.52	.963	.973
9. Caring	3.6 (.5)	1.61–4.34	.964	.973
11. Warm	3.5 (.5)	1.57–4.48	.876	.979
Subscale Alpha = .98				
Control-Centered				
2. Directive	2.5 (.4)	1.57–4.17	.739	.947
5. Patronizing	2.0 (.4)	2.02–4.74	.645	.962
8. Bossy	1.7 (.5)	1.09–4.39	.919	.915
10. Dominating	1.8 (.5)	1.17–4.13	.966	.906
12. Controlling	1.8 (.5)	1.13–4.43	.966	.906
Subscale Alpha = .94				

Table 2

Correlation Matrix for ETRS Descriptives.

Item	1	3	4	6	7	9	11	2	5	8	10	12
Person Centered												
1. Nurturing	-	.803	.896	.946	.929	.966	.853	.375	.382	.669	.635	.644
3. Affirming		-	.804	.815	.812	.811	.715	.165	.317	.467	.410	.447
4. Respectful			-	.924	.962	.904	.844	.405	.621	.694	.711	.714
6. Supportive				-	.941	.957	.884	.381	.433	.672	.641	.657
7. Polite					-	.939	.851	.384	.505	.707	.684	.694
9. Caring						-	8.58	.393	.370	.675	.642	.655
11. Warm							-	.449	.371	.579	.590	.591
Control Centered												
2. Directive								-	.428	.765	.765	.768
5. Patronizing									-	.591	.718	.692
8. Bossy										-	.942	.963
10. Dominating											-	9.72
12. Controling												-

Note. Person Centered descriptives are labeled 1, 3, 4, 6, 7, 9, & 11 and Control Centered descriptive are labeled 2, 5, 8, 10, & 12.

Table 3

Item validity correlations of proportion of staff utterances with ETRS items (N = 101).

Item	Staff Utterances	*p* value
Nurturing	−.141	.158
Affirming	−.364	.000
Respectful	−.317	.001
Supportive	−.170	.089
Polite	−.222	.026
Caring	−.159	.112
Warm	−.184	.066
Directive	.320	.001
Bossy	.283	.004
Dominating	.370	.000
Controlling	.368	.000
Patronizing	.414	.000