

# Assisting Cognitively Impaired Nursing Home Residents With Bathing: Effects of Two Bathing Interventions on Caregiving

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**Purpose:** When cognitively impaired nursing home residents exhibit agitated and aggressive behaviors during bathing, nursing home caregivers are in a unique position to improve residents' experience. This report addresses whether certified nursing assistants (CNAs) who received training in a person-centered approach with showering and with the towel bath showed improved caregiving behaviors (gentleness and verbal support) and experienced greater preparedness (confidence and ease) and less distress (hassles) when assisting residents with bathing. **Design and Methods:** We used a crossover design and randomized 15 nursing homes into two treatment groups and a control group of 5 facilities each. In one treatment group, CNAs received person-centered training, first with showering for 6 weeks (Time 1) and then with the towel bath for 6 weeks (Time 2). We reversed the treatment order in the other

treatment group. Control group CNAs used usual showering procedures without person-centered training. We collected observational and self-report data at baseline and at the end of Time 1 and Time 2 on five caregiving outcomes. We analyzed data from 37 CNAs assisting 69 residents by using  $3 \times 2$  repeated measures analyses of variance to compare the three groups on change from baseline. **Results:** Compared with the control group, treatment groups significantly improved in the use of gentleness and verbal support and in the perception of ease. **Implications:** A person-centered approach with showering and with the towel bath improved not only how care is given to residents who become agitated and aggressive during bathing but also how CNAs perceive their experience when bathing these residents.

**Key Words:** Long-term care, cognitive impairment, personal care

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Assisting cognitively impaired residents with bathing can be arduous and distressing for nursing home staff when the residents exhibit agitated and aggressive behaviors (Miller, 1997; Namazi & Johnson, 1996). Bathing is among the most intimate activities with which residents receive assistance even early on in their decline (Rogers et al., 1999). Our previous studies found that a significant portion of residents exhibit aggressive behavior during bathing. In one facility, over a 4-week period, staff observed that 41% of residents became physically or verbally aggressive at least one fourth of the time during bathing, and 16% did so at least three fourths of the time of during bathing (Hoeffler, Rader, McKenzie, Lavelle, & Stewart, 1997). Furthermore, staff surveyed in 71 facilities reported 20% of residents as difficult to bathe, usually because of resistive or

aggressive behaviors (Sloane, Honn, et al., 1995). In both studies, the majority of residents who exhibited these behaviors had dementia.

The literature suggests that staff's caregiving approach and responsiveness to residents' needs are associated with residents' agitated and aggressive behaviors during bathing. Although earlier reports conceptualized such behaviors as "dysfunctional" and "disruptive," increasingly they are seen as primary means of communicating needs when language abilities fail and as self-protective when caregivers' attempts to help are misinterpreted or cause pain and distress (Algase et al., 1996; Talerico & Evans, 2000). Results of several observational studies support this view. Bridges-Parlet, Knopman, & Thompson (1994) found that physically aggressive behavior often was displayed in response to a caregiver demand during personal care and subsided when the interaction with staff ceased. These researchers concluded that aggressive behavior was a self-protective response occurring when cognitively impaired residents felt threatened and misinterpreted caregivers' actions as harmful rather than helpful. Burgener, Jirovec, Murrell, and Barton (1992) observed that, during personal care situations including bathing, rigid and tense caregiver behaviors were associated with rigid, tense, and agitated elder behaviors; relaxed and smiling caregiver behaviors, and allowing the resident to perform some tasks, were associated with elders' calm and functional behaviors. These researchers concluded that cognitively impaired residents respond to a positive social caregiving approach and become calmer when caregivers address their need for more control. Kovach and Meyer-Arnold's (1996) study also supports the influence of caregiver responsiveness to cognitively impaired residents' needs during bathing. When caregivers used engaged communication (e.g., social conversation; verbal acknowledgment of likes or dislikes and need for comfort or control; reassuring, comforting phrases; and compliments), elders were more likely to exhibit calm behavior. When caregivers used nonengaged communication (e.g., talking to others, making degrading comments or jokes), silence, and rushed, task-oriented behavior, elders were more likely to exhibit agitated and aggressive behaviors.

### *Intervention Studies*

A small number of intervention studies have addressed the reducing of agitated and aggressive behaviors of cognitively impaired nursing home residents during bathing. Five studies focused on measuring the effect of interventions on resident outcomes. Briefly, in two studies, staff were taught behavioral strategies, emphasizing the influence of their actions on resident responses, to address problematic behavior during bathing; the outcomes were decreases in disruptive behavior (Boehm, Whall, Cosgrove, Locke, & Schlenk, 1995) and in

anxiety and irritability (Mickus et al., 2002). Three studies targeted making the bathing environment more comforting and pleasurable. In one of them, agitated behavior was significantly reduced when a nontraditional bed bath using warm, moist washcloths and a nonrinse soap solution was given (Dunn, Thiru-Chelvam, & Beck, 2002). The other two found that the playing of familiar music during bathing produced a positive effect on aggressive behavior (Clark, Lipe, & Billrey, 1998; Thomas, Heitman, & Alexander, 1997).

Four studies, including one by us, measured changes in staff as well as resident outcomes. Using pretest-post-test single-group or interrupted time series designs, researchers evaluated psychosocial interventions introduced to staff in a single nursing home. The interventions emphasized person-centered, goal-directed approaches focused on identifying residents' needs and individualizing care to address behavioral symptoms. Outcomes included more positive staff perceptions toward caring for residents who exhibited aggressive behavior (Feldt & Ryden, 1992), willingness to try new approaches (Hagen & Sayers, 1995), and increased knowledge and use of individualized, respectful approaches (Maxfield, Lewis, & Cannon, 1996). Staff also reported significant decreases in resident aggressive behavior.

In our study, we used a pretest-post-test design in which 10 residents served as their own controls to pilot the effectiveness of a person-centered bathing approach (Hoeffler et al., 1997). Our primary aim was to change the psychosocial environment (i.e., interpersonal context and interactions with the resident) in which bathing occurred. The approach emphasized shifting the perspective from a task-focused one (i.e., bathing procedures and mechanics) to a person-focused one (i.e., attending to the perspective and unmet needs of the resident), and from using routine care to using personalized care. During bedside consultation, a clinical nurse specialist worked directly with a nursing assistant for 2 to 4 weeks during three to eight baths to develop effective strategies and an individualized bathing care plan. We found significant reductions in residents' verbal and physical aggressive behaviors and distress. Altering the form of bathing by using a gentle, in-bed towel bath procedure was particularly effective in reducing the aggressive behavior of some residents.

Nursing assistants also experienced more positive outcomes. Using methods recommended by Lipsey (1990) to gauge the magnitude of intervention effects, we computed standardized effect size (ES) values for the pretest-post-test change. With the use of the new bathing approaches, staff rated their bathing experience as significantly improved; it was more quickly done (ES = 1.64) and staff felt less frustrated (ES = 1.12), less challenged (ES = 1.22), and less frightened (ES = 1.22).

## Purpose and Rationale

In summary, studies consistently report that cognitively impaired residents exhibit agitated and aggressive behaviors during bathing, and that these behaviors are particularly troublesome to staff. Intervention studies to date support that targeting the interpersonal context in which bathing occurs and making bathing more pleasurable appear to be effective in reducing agitated and aggressive behaviors and improving some staff outcomes. Unfortunately, these studies have been conducted in single facilities, often with small samples.

Our purpose in this study was to test the efficacy of two bathing interventions, a person-centered approach applied with both showering and the towel bath, compared with standard bathing care. In a previous article, we reported that both interventions significantly reduced agitation, aggression, and discomfort in cognitively impaired treatment group residents compared with control group residents (Sloane et al., 2004). The question addressed in this report is whether the care given to these residents also changed. Specifically, did the two bathing interventions also improve caregiving behavior during bathing and preparedness for assisting these residents while reducing distress? We hypothesized that the person-centered approach with either showering or the towel bath would show positive changes compared with standard bathing care.

## Methods

The study was a randomized controlled trial with baseline = 3 weeks, Time 1 (T1) = 6 weeks, and Time 2 (T2) = 6 weeks. Using a crossover design, we randomized 15 nursing homes in two states that met criteria for participation into two treatment groups and a control group of 5 facilities each. After receiving bedside training and consultation, certified nursing assistants (CNAs) who participated in the study implemented the two bathing interventions in the treatment facilities with consented residents, but in two different orders. In one treatment group, CNAs received training in a person-centered approach, first with showering for 6 weeks and then with the towel bath for 6 weeks. We reversed the showering-first, towel-bath-second order (S1 → TB2) in the other treatment group (TB1 → S2). In the control group, CNAs used their usual procedures to shower consented residents during T1 and T2. We collected observational data of CNAs assisting residents with bathing and self-report ratings of their experience with each resident at baseline and during the last 2 weeks of T1 and T2 in all facilities. For this report, we analyzed data from 37 CNAs assisting a total of 69 residents with bathing.

## Settings and Sample

**Nursing Homes.**—We used systematic strategies to obtain representative samples of 15 facilities, residents, and CNAs. In Oregon, we stratified facilities with at least 75 beds into three groups by county population density and ownership. We contacted facilities in good standing with the state regulatory agency until 9 agreed: 5 from urban, 2 from rural, and 2 from mixed areas; 6 were for-profit and 3 were nonprofit facilities. Because fewer minorities reside in Oregon, we placed greater emphasis on recruiting minority residents in North Carolina. A nursing home ombudsman ranked facilities within a six-county region that, in her estimation, had a high portion of African-American residents and were administratively stable. We contacted facilities in rank order until 6 agreed: 3 from urban, 2 from rural, and 1 from mixed areas; all were for-profit facilities.

Overall, we approached 28 homes about participation. Some facilities declined or had inadequate numbers of eligible subjects. Participating facilities signed single-project assurances regarding compliance with federal guidelines for human subjects. The 10 treatment and 5 control group facilities did not differ on size, proprietary status, percentage of Medicaid recipients, or percentage of residents identified by staff as difficult to bathe.

**Nursing Assistants.**—Because we wanted to use facility CNAs to implement the intervention and we recognized the possibility of CNA turnover during the study, we asked the Director of Nursing in each facility to identify at least 3 CNAs for possible participation on the basis of interest and availability to assist with bathing. Research staff met with these CNAs to explain the study and obtain written informed consent. A lead CNA and 2 to 3 backup CNAs who could assist with bathing or assume responsibility if the lead CNA was unavailable were designated in each facility. Of 48 CNAs who agreed to participate, 37 were actually involved in bathing residents during the study.

Table 1 shows the characteristics of the 37 CNAs. Generally, they were middle-aged women of diverse ethnic backgrounds, who were high school graduates and career CNAs. Over half had some postsecondary education, reflecting that community colleges provide much of the required CNA training in Oregon. CNAs in treatment ( $n = 24$ ) and control ( $n = 13$ ) groups did not differ on age, race, gender, or years worked in the facility.

**Residents.**—Eligibility criteria were as follows: being 55 years of age or older; requiring assistance with bathing; having Alzheimer's disease or related dementia; having moderate to severe cognitive impairment; frequently exhibiting agitated or aggressive behaviors during bathing; and being able to be showered. Exclusion criteria were as follows: having

**Table 1. Characteristics of Certified Nursing Assistants (CNAs) (N = 37) Who Assisted Residents with Bathing**

	Mean (SD)	Median	Range
Age	37.5 (8.1)	36.0	21.0–59.0
Years as CNA	7.9 (6.4)	6.0	1.0–33.0
Hours of dementia training	6.2 (6.8)	4.0	0.5–30.0
	Number (Percent)		
Ethnicity			
White		15 (40.5)	
African American		15 (40.5)	
Latino		2 (5.4)	
Asian		2 (5.4)	
Native American		1 (2.7)	
Other		2 (5.4)	
Female Gender		35 (94.6)	
Native English Speaker		33 (89.2)	
Education			
9–11 years		4 (10.8)	
HS graduate		11 (29.7)	
Some post-secondary		22 (59.5)	

Huntington's, AIDS, or alcohol-related dementia; having a primary diagnosis of psychotic disorder; speaking a primary language other than English; being acutely ill; and being anticipated to die or be discharged within 6 months. We obtained consent from a family member or legal guardian for 96 of 156 potential subjects who met eligibility criteria. Of these, 9 were lost to the study prior to baseline data collection. Consented residents had to display a minimum of three agitated (e.g., resisting care, hollering) or aggressive (e.g., hitting, grabbing) behaviors in at least two of three baseline baths videotaped by research staff with residents' assent. Fourteen residents failed to meet this criterion, leaving 73 residents as subjects after baseline. Of these, we omitted 4 from analyses because of missing data that resulted from unanticipated events (e.g., acute illness) during intervention periods. Residents in treatment and control groups did not differ on age, race, education, length of stay, cognitive impairment, or agitated and aggressive behaviors at baseline; however, more women were in the treatment group (95.7%) than in the control group (73.9%). On average, residents were old ( $M = 86.3$ ;  $SD = 7.8$ ), severely cognitively impaired (Mini-Mental State Examination score,  $M = 2.2$ ;  $SD = 3.0$ ), and resided in the facility for 3 years ( $M = 3.4$ ;  $SD = 2.4$ ). Most residents were White (88.6%); half had at least a high school education (56.7%). Residents in both groups were observed to exhibit agitated or aggressive behaviors an average of 38% of the time during baseline baths.

### Interventions

The two bathing interventions introduced in treatment facilities were a person-centered approach

with showering and with the towel bath, described in detail elsewhere (Barrick, Rader, Hoeffler, & Sloane, 2002; Rader et al., 2006; Sloane et al., 2004). Briefly, this approach focuses on personalizing care to meet residents' needs; accommodating to residents' preferences; attending to the relationship and interaction with the resident; using effective communication and interpersonal skills; and adapting the physical environment and bathing procedures to decrease distress and discomfort. Showering is a common method used to bathe individuals with dementia. The towel bath is a nontraditional in-bed method using no-rinse soap solution, warmed bath blankets, and warmed wet bath towels to cleanse with gentle massage.

An interventionist (a clinical nurse specialist in Oregon, and a psychologist in North Carolina) introduced the interventions to the CNAs in treatment facilities. During 2 days per week in the first 4 weeks of T1, the interventionist (a) presented information in short didactic sessions (dementia and behavioral symptoms; person-centered approaches to bathing; behavioral assessment and problem-solving); (b) reviewed with CNAs at least one videotape per resident whom they assisted with bathing; and (c) coached CNAs on person-centered approaches with showering or the towel bath. CNAs bathed residents without the interventionist present during the last 2 weeks when data were collected. Except for didactic sessions, the process was repeated during T2 with whichever bathing method (showering or towel bath) had not been introduced in the prior period. In all facilities, after data collection was completed, the interventionists and CNAs finalized individualized bathing care plans for residents and conducted facilitywide inservice sessions on interventions used in the study.

### Measures

We measured five caregiving outcomes: gentleness and verbal support, representing behavior; confidence and ease, representing preparedness; and hassles, representing distress.

**Gentleness and Verbal Support.**—The Caregiver Bathing Behavior Rating Scale (CBBRS) is a paper-and-pencil measure used by observers to rate overall CNA caregiving behaviors for an entire bath. The CBBRS Gentleness scale contains four items (uses calm voice; speaks respectfully; hurries through bath, which is reverse coded; gently touches). The CBBRS Verbal Support scale also contains four items (praises resident; expresses concern or interest; speaks directly to resident; prepares resident for the task). Scoring options are never (1), almost never (2), occasionally (3), often (4), almost always (5), and always (6).

We converted a total of 487 videotapes of CNAs assisting residents during bathing to digital files and

assigned random codes for anonymous ratings. We trained three research assistants (RAs), naïve to study design and hypotheses, to rate the videotapes. Each rater watched a videotaped bath and then rated caregiving behavior by completing the CBBRS. Interrater agreement (intraclass correlation coefficient) was .86 for gentleness and .85 for verbal support. Cronbach's alpha was  $\alpha = 0.84$  for gentleness and  $\alpha = 0.74$  for verbal support.

**Confidence and Ease.**—Using a self-report questionnaire, adapted from the Care Effectiveness Scale (Archbold et al., 1995), CNAs rated how prepared they felt when assisting each resident with bathing. We derived two scales on the basis of theoretical importance and factor analysis. The Confidence Scale contains six items (confident in ability with bathing; felt comfortable with things getting done; felt prepared to take care of the resident; felt was doing a good job; felt self-assured; felt confident in ability to care for the resident). The Ease Scale contains three items (had easy time doing bath; caring for resident was pleasurable; bathing went smoothly). Scoring options are not at all (1), a little (2), some (3), quite a bit (4), and a great deal (5). Cronbach's alpha was  $\alpha = 0.94$  for confidence and  $\alpha = 0.87$  for ease.

**Hassles.**—CNAs used the Hassles During Bathing Scale, adapted from a behavioral subscale in Kinney and Stephens' Caregiving Hassles Scale (Kinney & Stephens, 1989), to rate how big a hassle specific behaviors were for them when assisting each resident with bathing. The Hassles Scale contains eight items (e.g., resident: criticizing or complaining; yelling or swearing; hitting or punching). Scoring options are not a hassle (0), a small hassle (1), a medium hassle (2), and a big hassle (3). Cronbach's alpha was 0.91.

### Data-Collection Procedures

Research staff gathered background and descriptive information on nursing homes, CNAs, and residents.

**Videotaping.**—RAs videotaped CNAs assisting residents during three baseline baths, each a week apart. At the end of T1 and T2, they returned to videotape CNAs assisting residents during two baths—one in Week 5 and one in Week 6. Using a hand-held camera and staying at the periphery, RAs videotaped a bath, with resident's assent, beginning when the CNA invited a resident to bathe and ending when the resident was dried. Care was taken to preserve the privacy of residents by remaining as unobtrusive as possible.

**Self-Report Measures.**—For each resident they assisted, CNAs rated caregiving preparedness and

distress three times (i.e., following the last bath in baseline, T1, and T2). For scale scores to be derived, at least 75% of the items had to be answered, with the exception of the three-item Ease Scale, for which we used a 66% rule.

### Analysis

Because the focus of the study was on changing the care given to residents, we conducted our primary analysis at the resident level. In essence, CNAs delivered the intervention and control conditions to residents, and it was in relation to these residents that caregiving experiences were rated. Moreover, we anticipated that different CNAs would assist with bathing and indeed this was the case. Sometimes only one CNA assisted a resident with bathing, and sometimes two CNAs worked together. Further, sometimes the same CNA assisted a resident across baseline, T1, and T2, and sometimes different CNAs did so. For example, backup CNAs were videotaped assisting residents in at least one data-collection period instead of the lead CNA in 5 of the 15 facilities. Thus, we averaged ratings on observational and self-report measures across CNA scores for each resident ( $N = 69$ ) for each study period (baseline, T1, and T2).

We used SPSS Version 12.0 (SPSS, Inc., 2004) to analyze data. We examined the five measures for baseline differences between groups and to assess for carryover and period effects in the crossover design (Wallenstein & Fisher, 1977). We found no baseline differences. Because we found a carryover effect ( $p < .05$ ) for verbal support and period effects ( $p < .05$ ) for ease and hassles, we retained mean change scores on all outcomes for the two treatment groups ( $S1 \rightarrow TB2$ ;  $TB1 \rightarrow S2$ ) for use in the final analyses. Although collapsing data across the two treatment groups for each intervention would simplify the analysis, such an approach would obscure the period and carryover effects found on three of the five outcomes.

Because we hypothesized that the person-centered approach with either showering or the towel bath would show positive changes compared with the control group, we report one-tailed  $p$  values with Bonferroni adjustment for  $S1 \rightarrow TB2$  and  $TB1 \rightarrow S2$  to control comparisons. We derived change scores ( $T1 - \text{baseline}$ ,  $T2 - \text{baseline}$ ) on caregiving measures. We tested hypotheses related to change in caregiving outcomes by using  $3 \times 2$  (Groups  $\times$  Time) repeated measures analysis of variance (RM ANOVA) to compare the mean change from baseline in the three groups ( $S1 \rightarrow TB2$ ,  $TB1 \rightarrow S2$ , and control group) across T1 and T2. We computed standardized ES values.

To confirm the results of the RM ANOVA in which the caregiving outcomes per resident ( $N = 69$ ) serve as the unit of the analysis, we conducted a second analysis at the facility level. In this scenario,

**Table 2. Means and (Standard Deviations) in S1→TB2 ( $n = 24$ ) and TB1→S2 ( $n = 22$ ) Treatment Groups and Control Group ( $n = 23$ ) During Shower (S) and Towel Bath (TB) Conditions on Caregiving Measures<sup>a</sup>**

Group	Pre-intervention	Post-intervention	Post-intervention
	Baseline $M$ ( $SD$ )	Time 1 $M$ ( $SD$ )	Time 2 $M$ ( $SD$ )
<b>Gentleness</b>			
S1→TB2	4.44 (1.09)	S: 4.97 (0.90)	TB: 4.80 (1.03)
TB1→S2	4.53 (0.72)	TB: 5.13 (0.67)	S: 5.24 (0.57)
Control	4.17 (0.89)	3.91 (1.12)	3.78 (1.19)
<b>Verbal support</b>			
S1→TB2	2.61 (0.76)	S: 3.31 (0.64)	TB: 3.13 (0.66)
TB1→S2	2.81 (0.43)	TB: 3.00 (0.52)	S: 3.18 (0.39)
Control	2.73 (0.50)	2.63 (0.54)	2.76 (0.58)
<b>Confidence</b>			
S1→TB2	4.45 (0.72)	S: 4.58 (0.49)	TB: 4.65 (0.53)
TB1→S2	4.14 (0.68)	TB: 4.53 (0.50)	S: 4.71 (0.35)
Control	4.42 (0.52)	4.38 (0.80)	4.41 (0.57)
<b>Ease</b>			
S1→TB2	3.38 (1.51)	S: 4.24 (0.86)	TB: 4.48 (0.78)
TB1→S2	3.26 (1.07)	TB: 3.89 (0.70)	S: 4.21 (0.58)
Control	3.89 (0.60)	3.67 (0.80)	4.17 (0.64)
<b>Hassles</b>			
S1→TB2	0.59 (0.80)	S: 0.19 (0.27)	TB: 0.11 (0.18)
TB1→S2	0.77 (0.67)	TB: 0.52 (0.68)	S: 0.16 (0.24)
Control	0.43 (0.50)	0.41 (0.52)	0.26 (0.38)

<sup>a</sup>The sample size  $n$  represents the number of residents bathed in each group.

we further collapsed all scores across residents in each facility ( $N = 15$ ). We compared treatment ( $n = 10$ ) and control ( $n = 5$ ) facilities on caregiving outcomes during showering and towel bath conditions by using a  $2 \times 2$  RM ANOVA (Treatment vs Control  $\times$  Showering vs Towel Bath) and by using the computed value of the Mann-Whitney test ( $U$ ). We computed standardized ES values.

## Results

We found improvement as a result of the bathing interventions on gentleness, verbal support, confi-

**Table 3. Summary of F Tests for  $3 \times 2$  Repeated Measures ANOVA comparing Mean Change on Caregiving Outcomes due to Group (S1→TB2,  $n = 24$ ; TB1→S2,  $n = 22$ ; Control,  $n = 23$ ) and Time (T1 and T2)**

Outcome	F Test for Group df = 2, 66	F Test for Time df = 1, 66	F Test for Group $\times$ Time df = 2, 66
Gentleness	16.22**	0.22	0.50
Verbal support	12.00**	0.33	2.58 <sup>a</sup>
Confidence	3.72*	2.08	0.52
Ease	6.12**	15.15**	1.20
Hassles	2.62 <sup>a</sup>	10.48**	1.90

\* $p < .05$ ; \*\* $p < .01$ ; <sup>a</sup> $p = .09$ .

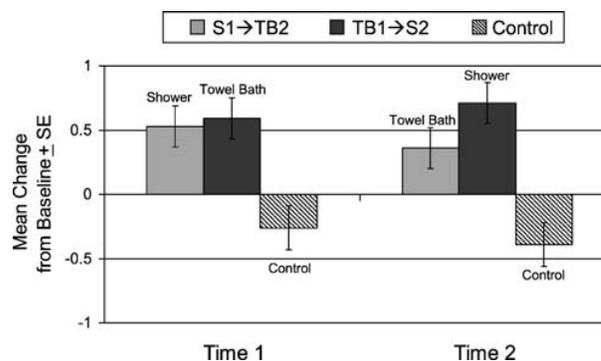


Figure 1. Mean Change from Baseline on Gentleness for S1→TB2, TB1→S2, and Control at Time 1 and Time 2.

dence and ease, but not on hassles. See Table 2 for means and standard deviations and Table 3 for results of the  $3 \times 2$  RM ANOVAs. Figures 1 through 4 display the mean changes of the treatment and control groups at T1 and T2. As shown in Table 3, we found a significant main effect for time for ease and hassles, with increased ease and decreased hassles occurring from T1 to T2 for the sample as a whole. We found no significant interaction effects between treatment group and time.

Using planned comparisons with the Bonferroni correction ( $p = .05$ ), we found more improvement for both treatment groups (S1 → TB2 and TB1 → S2) than for the control group on three of the caregiving outcomes (gentleness, verbal support, and ease). However, only in the TB1 → S2 group was improvement in confidence significantly greater than that in the control group.

Standardized ES values in Table 4 mirror these findings. For gentleness, verbal support, and ease, there were large ES values ranging from 0.68 to 1.38. For confidence, ES values for the TB1 → S2 group were 0.60 and 0.90 at T1 and T2, respectively, whereas the nonsignificant ES values for the S1 → TB2 group were 0.26 and 0.35. Nonsignificant ES values for hassles ranged between  $-0.44$  and  $-0.69$ .

In facility-level analyses (RM ANOVA) comparing the 10 treatment facilities with the 5 control

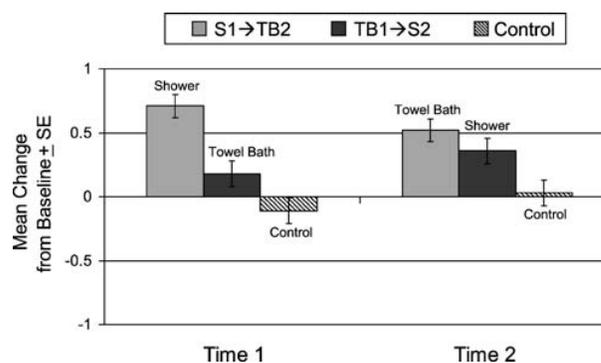


Figure 2. Mean Change from Baseline on Verbal Support for S1→TB2, TB1→S2, and Control at Time 1 and Time 2.

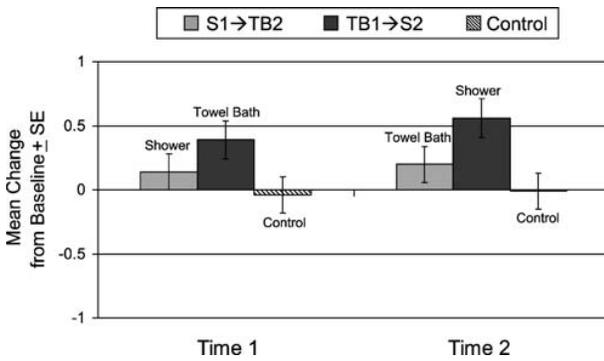


Figure 3. Mean Change from Baseline on Confidence for S1→TB2, TB1→S2, and Control at Time 1 and Time 2.

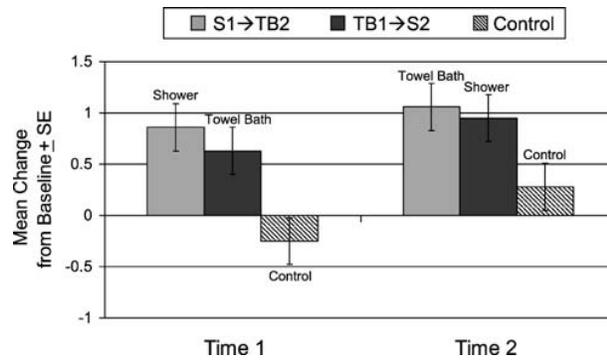


Figure 4. Mean Change from Baseline on Ease for S1→TB2, TB1→S2, and Control at Time 1 and Time 2.

facilities, we found significant treatment improvements during showering and towel bath conditions on gentleness ( $p < .01$ ) and ease ( $p < .05$ ). However, treatment facilities were not significantly improved, compared with control facilities, on verbal support ( $p = .064$  during showering and  $p = .109$  during the towel bath), confidence ( $p = .197$  during showering and  $p = .189$  during the towel bath), or hassles ( $p = .140$  during showering and  $p = .132$  during the towel bath). Using the Mann–Whitney  $U$  tests, we found very similar results. Effect sizes at the facility level comparing treatment and control were large. For showering and the towel bath, respectively, ES values were as follows: gentleness, 1.77, 2.82; verbal support, 1.11, 0.93; confidence, 0.74, 0.76; ease, 1.29, 1.48; and hassles, 0.86, 0.88.

## Discussion

Compared with standard bathing care, a person-centered approach improved how CNAs give care to residents who become agitated and aggressive during bathing. It also increased the ease that CNAs experience while assisting residents with bathing.

### Changes in Caregiving Behavior

The use of gentleness when assisting residents with bathing increased for both intervention groups, whereas its use decreased slightly for the control group over time (see Figure 1). A similar though less dramatic pattern of differences between groups in verbal support over time was evident; mean change from baseline shows improvement at both time periods for treatment groups but minimal change for the control group (see Figure 2). Table 2 shows that average gentleness ratings approached a level of 5 (almost always) for the treatment groups compared with a level of 4 (often) for the control group, whereas the average verbal support ratings improved to a level of 3 (occasionally) for the treatment groups compared with a level of 2 (almost never) for the

control group. In general, compared with gentle behavior, lower levels of verbally supportive behavior were evident at all study periods. Nonetheless, the findings are encouraging, especially given the large ES values of both person-centered bathing interventions for gentleness and verbal support.

Overall, person-centered approaches resulted in more positive observed caregiving behavior when CNAs assisted residents with bathing. The slightly less robust findings for verbal support suggest that verbal skills may be more difficult to learn and apply than nonverbal approaches, especially when new bathing methods are introduced, and may require practice and reinforcement to be implemented consistently.

### Changes in Caregiving Preparedness and Distress

For both treatment conditions compared with the control group, CNAs experienced increased feelings of ease in bathing residents and, for the TB1 → S2 group, increased feelings of confidence (see Figures 3 and 4). Table 2 shows that confidence was rated at high levels (quite a bit) on average for all groups at baseline, but only the average ratings of the TB1 → S2 treatment showed some improvement over time, approaching the level of a great deal by T2. Table 2 also shows average ratings at moderate levels of ease (some) for all groups at baseline with an improvement for all groups to higher levels (quite a bit) by T2. However, the change from baseline was clearly greater for both treatment groups at both T1 and T2 than it was for the control group.

Thus, CNAs' perceptions of being prepared to assist cognitively impaired residents who become aggressive during bathing showed improvement over time for the treatment groups, although the effect of the interventions was clearly stronger for ease than for confidence. The high level of confidence ratings suggests that a ceiling effect on this measure may have impeded detecting a consistent improvement over time for both treatment groups compared with

**Table 4. Standardized Effect Sizes (ES) Comparing Mean Change in Treatment (S1→TB2, *n* = 24; TB1→S2, *n* = 22) and Control (C, *n* = 23) Groups During Shower and Towel Bath Conditions on Caregiving Measures**

Measures	Time 1		Time 2	
	S1→TB2 versus C Shower vs. Control	TB1→S2 versus C Towel Bath vs. Control	S1→TB2 versus C Towel Bath vs. Control	TB1→S2 versus C Shower vs. Control
Gentleness	0.95	0.95	0.95	1.32
Verbal Support	1.38	0.68	0.86	0.71
Confidence	0.26	0.60	0.35	0.90
Ease	1.09	1.10	0.73	0.68
Hassles	-0.64	-0.44	-0.46	-0.69

the control group. Perhaps the CNAs participating in the study felt confident about their bathing skills because of previous experience assisting cognitively impaired residents with bathing, or social desirability influenced their ratings. Although the groups were not significantly different at baseline, a lower baseline level on confidence for TB1→S2 and a higher baseline level on ease for the control group may have contributed to the pattern of results.

Despite moderate ES values showing greater declines in hassles for both treatment groups than for the control group, these treatment–control differences were not significant. Table 2 shows that overall average ratings on hassles were low for all groups (not at all to a small hassle), with little room for improvement over time. Several explanations are plausible. It may be that not all eight resident behaviors on the scale occurred frequently enough in a specific bath to be rated as a hassle. Similarly, CNAs may not have perceived these behaviors as hassles, even when they did occur, because of previous experience with cognitively impaired residents with aggressive behaviors during bathing. Social desirability may also have affected their self-report on this measure. Nonetheless, results on CNA preparedness and distress are encouraging because we believe that CNAs who experience greater confidence and ease and fewer hassles are more likely to implement and maintain person-centered bathing interventions.

### *Methodological Issues and Limitations*

Because the focus of the study was on improving resident outcomes during bathing by using facility CNAs to implement person-centered care, the design precluded using CNAs as the unit of analysis. It was CNA behaviors and experiences in relation to each of the residents in the study that was of interest. Thus we conducted the primary analysis for this report at the resident level, and we collapsed observational and self-report ratings across CNAs for each resident in treatment and control groups at baseline, T1, and T2. The limitation of this approach is that error may be introduced because we used different CNA ratings to obtain the mean scores on

each outcome. However, the process of averaging across the ratings in itself mitigates error variance and increases reliability. Moreover, the confirmatory analysis at the facility level collapses ratings for residents in each facility randomly assigned to treatment or control groups. Although the confirmatory analysis was somewhat supportive of the findings, especially in terms of the large ES values found, the small number of facilities in each group most likely affected *p* values.

Other methodological issues include the choice to videotape CNA–resident interactions during bathing. To mitigate “best behavior” responses or anxiety during videotaping, we introduced CNAs to this method before it was used during data collection. Moreover, residents were always asked for assent to videotape each time during data collection. Overall, they seemed to be unaware of being videotaped and focused instead on what was happening to them during bathing. Another issue was that most CNAs who participated in the study were “career CNAs” interested in improving care for residents in their facility, and thus may not be representative of all CNAs employed in nursing homes. Moreover, their experience may have contributed to ratings near the ceiling and floor on measures for confidence and hassles. The narrow range for improvement made it difficult for us to detect significant change.

With these methodological limitations, the study also included several strengths. The use of 15 nursing homes in two states improves generalizability over previous research. Further, the crossover design and videotaping are design advantages. Moreover, the clinical relevance was improved by having facility CNAs implement the person-centered bathing approach.

### *Implications for Research and Practice*

CNAs who implemented the interventions constantly demonstrated the ability to be creative and innovative problem solvers when given the opportunity and support. However, because this was an efficacy trial, we made no attempt to address sustainability of the interventions beyond the study.

Anecdotal data suggest that some CNAs who participated felt empowered by the experience and assumed a role of bathing consultant in their facilities after the study was completed. In one facility in which organizational support for change in bathing practices was explicit, these CNAs were successful in revamping care plans for all residents on special care units to incorporate person-centered bathing interventions. Studies are needed that address organizational factors (Barrick et al., 2002) supportive of person-centered bathing approaches with traditional methods such as the shower and promising methods such as the towel bath.

Moreover, although a key element of the person-centered approach is individualizing the bathing experience, all residents received showering and the towel bath because of the crossover design, even though one method may have been a better fit with the preferences and needs of specific residents. Thus, future research should also focus on measuring the effects of customized approaches for assisting residents with bathing, given that this study lends support for the efficacy of a person-centered approach with both bathing methods.

A recent Institute of Medicine report (2001) highlights the importance of nursing assistants to the quality of care that residents receive because they comprise the majority of personnel in nursing homes, spend the most time with residents, and provide the most direct care to them. The report emphasizes the substantial difference that education and training of nursing assistants makes in the care and comfort of residents as well as in their own morale. Nursing assistants specifically identified effective communication and care of residents with dementia, depression, and aggressive behavior as critical areas for training. Consistent with this report, the results of our study reinforce that education of even experienced CNAs in person-centered approaches can improve their performance and experience when they are assisting cognitively impaired residents who exhibit agitated and aggressive behavior during bathing.

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