Residents with dementia are the least likely to be engaged in the nursing home and often spend most of their time doing nothing at all. However, resident participation in meaningful activities is important to promote both physical and psychological health. Tailoring activities to individual functional abilities and personality preferences improves both the time and level of participation. This pilot study used an analysis of covariance procedure to test the relationship between the personality trait of agreeableness and engagement when activities are ideally tailored to ability and interest. No significant difference was found between the high and low agreeableness groups, indicating that residents were more engaged when activities were individually tailored, regardless of their agreeableness level. Although low agreeableness may pose a challenge when implementing activities for people with dementia, the results of this study suggest that tailoring activities to functional ability and interest may overcome the effects.

Nikki L. Hill, MS, RN; Ann Kolanowski, PhD, RN, FAAN; and Esra Kürüm, MS
The frequent lack of engagement in social or recreational activities among nursing home residents, particularly those with dementia, is a troubling reality. Several studies indicate that these residents spend the majority of their time uninvolved with people or their environment in any meaningful way. An international study that measured social engagement in almost 400,000 nursing home residents in five countries demonstrated a consistent overall finding: Residents with cognitive impairment were the least actively engaged (Schroll, Jónsson, Mor, Berg, & Sherwood, 1997). Nursing home residents have been found to have little interaction with others and spend most of their time doing nothing (Kolanowski & Litaker, 2006; Logsdon, 2000). Chung (2004) found that residents with dementia were engaged in therapeutic and leisure activities only 10% of the time, with most of their time engaged in passive or negative activities. Although the Omnibus Budget Reconciliation Act of 1987 mandated nursing homes to provide activities that meet the interests of each resident, a significant proportion of nursing home residents are not engaged in any activity for the majority of the day.

A number of factors have been associated with activity engagement in the nursing home: cognitive and physical function of the resident and the quality of the activity program, for example (Zimmerman et al., 2003). The importance of personality traits in the prescription of activities has been recognized (Kolanowski & Richards, 2002). In several studies, when activities were matched to functional ability as well as to the personality traits of extraversion and openness, residents were engaged for a longer period of time and participated to a greater degree than when activities were matched only to the resident’s functional ability (Kolanowski, Buettner, Costa, & Litaker, 2001; Kolanowski, Litaker, & Baumann, 2002; Kolanowski, Litaker, & Buettner, 2005).

Considering that the personality trait of agreeableness describes one’s tendency toward cooperation versus competition, an individual’s level of agreeableness may influence his or her preferences for interaction and engagement in activities. Additionally, a relationship between low agreeableness and aggressive behavior in individuals with dementia has been identified (Archer et al., 2007; Whall et al., 2008). The tendency toward aggression in those residents who display low agreeableness behaviors could negatively influence activity involvement. However, the trait of agreeableness has not been considered when selecting activity interventions for nursing home residents with dementia. The purpose of this pilot study was to answer the research question: Is there a difference in activity engagement between residents who are more agreeable and those who are less agreeable when activities are implemented under ideal conditions (i.e., tailored to the resident’s functional abilities and style of interest)?

**Both the physical and psychological health of people with dementia are affected by engagement—improved by its presence and worsened by its absence.**

**ENGAGEMENT IN NURSING HOME RESIDENTS WITH DEMENTIA**

Residents with dementia have unique challenges and limitations regarding engagement because cognitive deficits negatively affect their ability to participate in activities and socialize with others (Kolanowski, Buettner, Litaker, & Yu, 2006; Schroll et al., 1997; Zimmerman et al., 2003). Whereas higher levels of cognitive ability are associated with higher levels of engagement (Schroll et al., 1997), decreased cognitive function is related to decreased social interactions and participation in activities (Albert et al., 1996; Chen, Ryden, Feldt, & Savik, 2000; Dobbs et al., 2005). Residents with dementia also have fewer visitors or telephone calls and are more likely to be socially withdrawn (Zimmerman et al., 2003). In one study, 37% of individuals with severe cognitive impairment were observed to have participated in no activities at all over the course of 1 week (Voelkl, Fries, & Galecki, 1995).

The kind of activities to which people with dementia are routinely exposed is a problem for promoting engagement as well. Many of the activities available to residents, such as watching television or listening to music, evoke only passive participation (Wood, Harris, Snider, & Patchel, 2005). Activity programs are consistently available but are often not effective in engaging residents with dementia. An examination of recreational activity availability and use in 107 long-term care residents with dementia found that almost 45% received few or no activities during a 2-week period, another 20% received only occasional activities, and 12% received daily activities that were inappropriate for their needs and interests (Buettner & Fitzsimmons, 2003).

Participation in meaningful activities is an important contributor to resident quality of life in a nursing home (González-Salvador et al., 2000; Mitchell & Kemp, 2000). Both the physical and psychological health of people with dementia are affected by engagement—improved by its presence and worsened by its absence (Butler, Forrest, & Greengross, 2004; Chung, 2004; Jenkins, Pienta, & Horgas, 2002; Volicer et al., 1999). Social engagement is also associated with lower mortality...
rates among long-term care residents (Kiely, Simon, Jones, & Morris, 2000). Multiple studies have shown that an inability to engage an individual with dementia can lead to behavioral symptoms, depression, and functional decline (Baum, 1995; Dobbs et al., 2005; Volicer et al., 1999). Behaviors such as agitation often result in an individual being excluded from activity programs (Buettner, 1988), thus perpetuating a cycle of inadequate engagement for resident well-being. Therefore, improving activity engagement has the potential to improve quality of life as well as decrease challenging behaviors associated with dementia.

Engagement exists on a continuum between active and passive. An actively involved individual is physically or verbally engaging in the steps of an activity, whereas a passively involved individual is paying attention to the activity or others participating in it, or commenting on the activity without directly engaging in it (Kovach & Magliocco, 1998). Active activities are related to physical and psychological well-being, whereas passive activities are not related to health-related quality of life (Jenkins et al., 2002). Individuals with dementia who have less functional ability are particularly at risk, as they demonstrate a tendency to be more passively, rather than actively, engaged in activities (Chung, 2004). Because a higher level of engagement directly affects quality of life, striving for engagement alone is not enough; active engagement should be the goal.

**PERSONALITY AND ACTIVITY ENGAGEMENT**

Determining meaningful activities for an individual requires consideration of personal functional ability and preferences. Residents with dementia describe the most meaningful activities as those that address their psychological and social needs (Harmer & Orrell, 2008). Therefore, selecting activities solely on the basis of physical and cognitive function is insufficient. Customizing activities according to factors such as premorbid personality, life history, premorbid likes or dislikes, and current preferences results in an increased level of engagement (Kolanowski et al., 2001; Volicer et al., 1999). Activity interventions that are individually tailored to consider both the personality style and functional ability of people with dementia have been shown to increase participation as well as decrease passivity (Kolanowski & Buettner, 2008; Kolanowski et al., 2005).

Personality is the means by which individuals organize their mental world and perceive the world around them. It is both stable over time and consistent from one situation to the next (Chatterjee, Strauss, Smyth, & Whitehouse, 1992; Siegler et al., 1991; Storandt & VandenBos, 1989). The five-factor model of personality describes the five major dimensions or domains of human personality: neuroticism, extraversion, openness, agreeableness, and conscientiousness (Costa & McCrae, 1992). *Agreeableness* describes an individual’s preferences for interpersonal interactions including their tendency toward cooperation versus competition and compassion versus antagonism. It includes the facets of trust in others, straightforwardness, altruism, compliance, modesty, and tendermindedness. Individuals who are high on the trait of agreeableness are described as honest and trusting, sincere, concerned with the well-being of others, and humble; they tend to forgive and forget and display sympathy for others. Conversely, individuals who are low on the trait of agreeableness tend to be skeptical and suspicious, manipulative, and self-centered; they prefer to compete with others and may be aggressive (Piedmont, 1998). These descriptions are an example of the dichotomous extremes of agreeableness; in reality, individuals fall anywhere along this continuum.

Findings related to the effect of agreeableness on group dynamics support its consideration in activity participation and success. Kichuk and Wiesner (1997) found that groups that performed a task successfully were more likely to have members with higher agreeableness scores than groups that did not succeed in the task. Those who score high on agreeableness prefer to cooperate with others rather than compete with them in a team environment (Hogan & Holland, 2003; Koole, Jager, van den Berg, Vlek, & Hofstee, 2001; LePine & Van Dyne, 2001), and high agreeableness scores among group members promote group cohesion and conflict resolution (Barrick, Stewart, Neubert, & Mount, 1998).

The trait of agreeableness has been found to remain relatively stable throughout adulthood and moderate stages of dementia (Chatterjee et al., 1992; Dawson, Welsh-Bohmer, & Siegler, 2000; Siegler, Dawson, & Welsh, 1994). Caregiver ratings of pre- and postmorbid personality in individuals with moderate-stage dementia have demonstrated significant correlations in most aspects of personality (Siegler et al., 1991). This indicates rank order stability: Although the group as a whole changed, individuals who scored highest on agreeableness remained high on that trait after the onset of dementia. Therefore, individuals who were very agreeable earlier in life will continue to be so later in life, even in the presence of dementia. Both premorbid aggression levels and low premorbid agreeableness have been found to significantly predict aggressive behavior in people with dementia (Hamel et al., 1990; Kolanowski, Strand, & Whall, 1997; Ryden, 1988; Whall et al., 2008). Considering the challenge aggressive behavior poses to caregivers (Leonard, Tinetti, Allore, & Drickamer, 2006; Sloane et al., 2004; Talerico, Evans, & Strumpf, 2002), the impact of low agreeableness on the successful implementation of activity interventions may be significant.

The persistence of agreeableness over time and through moderate stages of dementia, as well as its influence on interaction preferences and aggressive behavior, supports investigation of the relationship between agreeableness and engagement in activities. Given
the literature, we hypothesized that long-term care facility residents who have a higher degree of agreeableness would be more likely to actively participate and engage for longer periods of time in activities specifically tailored to their functional abilities and style of interest than residents who were less agreeable.

METHOD
Research Design
This exploratory study was a secondary analysis of a dataset constructed to test the effectiveness of recreational activities derived from the Need-Driven Compromised Behavior (NDB) model for reducing the behavioral symptoms of dementia. The methods used to address the original research questions are described in detail elsewhere (Kolanowski et al., 2005).

A crossover experimental design was used with repeated measures of the dependent variables. Participants were videotaped during their participation in prescribed activities, and these videotapes were coded using instruments that measure engagement behaviors. The research protocol for the current study was exempt from the institutional review board because it was determined to be non-human research, as data were de-identified according to the safe harbor regulations of the university Office of Research Protections.

Sample and Setting
The parent study was conducted in central and northeastern Pennsylvania. Recruitment began in April 2002, and follow up ended in July 2003. Thirty-one participants were recruited from four long-term care facilities. Inclusion criteria were as follows: spoke English; diagnosed with dementia per Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision, criteria (American Psychiatric Association, 2000); a Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) score of 26 or less; a willing informant able to reliably provide personality and other data; a stable dosage of any psychoactive drug from pre-baseline through final observation; and the exhibition of behavioral symptoms of dementia. The identification of any behavioral symptom using the Cohen-Mansfield Agitation Inventory (Cohen-Mansfield, Marx, & Rosenthal, 1989) or the Passivity in Dementia Scale (Colling, 2000) was considered adequate for inclusion in the study. Exclusion criteria were as follows: a history of psychiatric problems, alcoholism, Parkinson’s disease diagnosis, stroke, Hachinski score greater than four (Hachinski et al., 1975); an average score for both extraversion and openness on the NEO Five-Factor Inventory (NEO-FFI) (Costa & McCrae, 1992); a new psychoactive medication within the past 30 days; or an acute illness. Individuals with average t-test scores on both extraversion and openness were excluded. Approximately 10% of the general population falls into this group (Costa & McCrae, 1992), and these individuals cannot be accurately placed into a style of interest category necessary for the development of the tailored intervention tested in the parent study. See Kolanowski et al. (2005) for a complete description of the intervention protocol. Of the individuals excluded in the parent study, none were excluded because of this criterion. The Psychogeriatric Dependency Rating Scale (PGDRS) was used to assess physical functioning in the areas of hearing, vision, speech, mobility, dressing, personal hygiene, and toileting (Wilkinson & Graham-White, 1980).

Descriptive statistics of the sample are presented in Table 1. The sample reflects the general nursing home population (Jones, 2002): Participants were primarily older White women with moderate to severe cognitive and physical impairments.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
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<tbody>
<tr>
<td>Caucasian race, n (%)</td>
<td>31 (100)</td>
</tr>
<tr>
<td>Gender, n (%)</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>24 (77)</td>
</tr>
<tr>
<td>Men</td>
<td>7 (23)</td>
</tr>
<tr>
<td>Mean age in years (SD)</td>
<td>82.61 (7.70)</td>
</tr>
<tr>
<td>Education in years (SD)</td>
<td>11.03 (2.52)</td>
</tr>
<tr>
<td>Mental status*</td>
<td>8.70 (7.24)</td>
</tr>
<tr>
<td>Physical function*</td>
<td>16.19 (6.79)</td>
</tr>
</tbody>
</table>

*Assessed using Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975). Values range from 0 to 30, with higher values indicating greater cognitive ability.

\*Assessed using Psychogeriatric Dependency Rating Scale (Wilkinson & Graham-White, 1980). Values range from 0 to 34, with higher scores indicating greater functional impairment.
The dependent variable was engagement and consisted of two measures: time on task and level of participation. Videotapes of each activity session were reviewed and scored on the engagement measures by video raters trained by the principal investigator. Time on task was measured as the time in minutes and seconds the resident participated in the activity; therefore, task measurement times ranged from 0 seconds the resident participated in the activity or when 20 minutes each day for 12 consecutive days. To ensure the treatment was implemented correctly by the interventionist, treatment fidelity checks were performed by the principal investigator.

Data Analysis
To standardize scores for comparison to data from other samples, agreeableness scores were converted to t-test scores with a mean of 50 and a standard deviation of 5. These scores were used in the analyses. Descriptive statistics were calculated for all study variables. The correlation coefficient between the two dependent variables, level of participation and time on task, was 0.705, which indicates that analyses on level of participation and time on task, respectively, would provide similar results. Because the continuous variable, time on task, provides more information, analysis was constructed on this variable only. During the study, the time on task values for each participant were measured repeatedly for 12 days. Therefore, an analysis of covariance (ANCOVA) model with MMSE and PGDRS (Wilkinson & Graham-White, 1980) scores as covariates and level of participation and time on task, as dependent variables. The correlation coefficient statistics were calculated for all study variables. Descriptive were used in the analyses. Descriptive statistics were calculated for all study variables. The correlation coefficient between the two dependent variables, level of participation and time on task, was 0.705, which indicates that analyses on level of participation and time on task, respectively, would provide similar results. Because the continuous variable, time on task, provides more information, analysis was constructed on this variable only. During the study, the time on task values for each participant were measured repeatedly for 12 days. Therefore, an analysis of covariance (ANCOVA) model with MMSE and PGDRS (Wilkinson & Graham-White, 1980) scores as covariates and day as a random factor was first fitted to test the hypothesis that no difference existed in time on task values among days. This ANCOVA procedure satisfied the equal variance assumption (i.e., the variance of data in each rank group was the same), but it failed to satisfy the normality assumption (i.e., the residuals were not [approximately] normally distributed). However, it has been shown that non-normal residuals in an ANCOVA procedure with a sufficiently large sample do not affect the results (Arnold, 1981). A sec-

<p>| TABLE 2 | DESCRIPTIVE STATISTICS OF MAJOR STUDY VARIABLES (N = 31) |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>95% Confidence Interval</th>
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<tr>
<td>Agreeableness t-test scores</td>
<td>48.82 (11.94)</td>
<td>44.44 to 53.19</td>
</tr>
<tr>
<td>Level of participation</td>
<td>2.55 (0.60)</td>
<td>2.33 to 2.76</td>
</tr>
<tr>
<td>Time on task (minutes)</td>
<td>16.44 (3.99)</td>
<td>14.98 to 17.91</td>
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Ratings were based on the following scale: 0 (indicates an individual who is dozing with eyes closed); 1 (null score when the resident is awake but not engaged in the activity), 2 (represents passive engagement in the activity), and 3 (indicates an individual who is actively engaged). Video raters were trained on the proper identification of each rating, and interrater reliability for level of participation was measured to be 0.83.

Procedures
Data were collected during baseline and three treatment conditions. Treatments consisted of a variety of activities that were personalized for each resident. The data used in this study were from the treatment condition in which activities were tailored to each resident’s cognitive abilities and physical functioning (functional ability), as well as style of interest. Style of interest was identified by the resident’s NEO-FFI scores on extraversion (preference for social interaction) and openness (preference for novelty) (Costa & McCrae, 1992). On the basis of these scores, individuals were placed into one of four style-of-interest categories, which describe preferences in activities such as group versus one-on-one situations or new versus familiar environments.

Activities were implemented by research assistants, blinded to condition match, who had completed a 2-day training session to prepare them for working as interventionists. Treatments were implemented for up to 20 minutes each day for 12 consecutive days. To ensure the treatment was implemented correctly by the interventionist, treatment fidelity checks were performed by the principal investigator.

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KEYPOINTS


1. Tailoring meaningful activities for nursing home residents with dementia results in increased engagement, thereby positively influencing physical and psychological health.

2. Although the personality trait of agreeableness influences interpersonal interaction preferences, there was no difference in activity engagement between residents who scored high on agreeableness and those who scored low when interventions were matched to interest and functional ability.

3. Individually tailored activities for residents with dementia that are based on function as well as the personality traits of openness and extraversion (style of interest) may overcome the potentially negative effects of low agreeableness.

RESULTS

Descriptive statistics for agreeableness and engagement scores for the sample are presented in Table 2. Overall, participants’ t-test scores for agreeableness were average and reflect what is found in the general population, although the range was quite variable. On average, participants engaged in their tailored activities for slightly more than 16 minutes and were primarily actively engaged throughout the session.

The p value of the ANCOVA test for a day effect was 0.4494, which indicates there is no evidence to support a significant difference in time on task values for each day at the 0.05 level. Therefore, the mean time on task for each participant across days was determined to be appropriate for use as the response variable. The second ANCOVA with MMSE and PGDRS scores as covariates and mean time on task as the response variable resulted in a p value of 0.7417 for the rank factor of agreeableness (high agreeableness versus low agreeableness groups). Therefore, using a 0.05 level of significance, it was concluded that no difference exists in time on task values between individuals who are high on the trait of agreeableness and those who are low on this trait.

DISCUSSION

Agreeableness is a personality trait that reflects an individual’s preference for the quality and quantity of interpersonal interactions (Piedmont, 1998). Considering the potential impact of agreeableness on activity preferences, examining its effect on engagement in nursing home residents with dementia was expected to reveal differences in engagement tendencies even when activities were tailored to functional ability and interest. This exploratory hypothesis was not supported; several factors may explain the findings.

First, the lack of association between agreeableness and engagement in activities may indicate that matching activities to style of interest and functional ability is sufficient to maximize resident engagement. This finding has been replicated in several studies (Cohen-Mansfield, Dakheel-Ali, & Marx, 2009; Kolanowski et al., 2001, 2005). When individuals are presented with activities they intrinsically enjoy and are able to actively participate in, factors that have the potential to influence negative outcomes, such as disruptive behaviors or tendencies toward competition or antagonism, may lose their importance. This information is important because nursing home residents who display behaviors that are difficult to manage are often excluded from activity programs (Buettner, 1988; Voelkl et al., 1995).

Second, several limitations, most notably the small sample, must be considered. A power analysis was not conducted for this secondary analysis; therefore, the study may not have been adequately powered to test the hypothesis. Additionally, activities were matched to the personality traits of extraversion and openness. Although residents with low extraversion scores received individual rather than group activities, some residents with low agreeableness and higher than average extraversion scores were given group types of activities. Indeed, 11 of the 31 participants (35.5%) were categorized as having high extraversion and low agreeableness. Individuals who are less agreeable have been found to rate participation in groups more negatively (Bolin & Neuman, 2006). Therefore, the limitations of a secondary analysis in which activities were not designed to specifically investigate the impact of agreeableness may have influenced the results. Finally, participants were limited to a maximum participation time of 20 minutes. Those who participated for the maximum time could have actually participated much longer if given the opportunity. Therefore, variability in this measurement was limited and a ceiling effect may have influenced the differences measured between groups, yielding nothing significant.
Individualizing activities for nursing home residents requires a commitment of both time and resources. Determining the method that is most therapeutic while minimizing cost is essential to ensure these interventions are translated into practice. Therefore, tailoring activities to the personality traits that are most effective in promoting engagement is essential for successfully implementing best practice in long-term care facilities. This study found that agreeableness was not a contributing factor to engagement when activities were tailored to functional ability and the personality traits of extraversion and openness. Any additional benefit of further individualizing activities to consider the personality trait of agreeableness in addition to those of extraversion and openness may be insignificant. Although low premorbid agreeableness is associated with aggression in people with dementia (Whall et al., 2008), agreeableness was not found to influence engagement when activities were tailored to functional ability, extraversion, and openness. Therefore, this analysis supports the possibility that such activities may overcome the effects of low agreeableness.

CONCLUSION AND IMPLICATIONS

Our findings are important for nurses and other health care professionals working with residents with dementia, as person-centered care is an increasing focus in long-term facilities. Providing activities that meet the individual needs of each resident and maximize their participation is essential. Personality is an important factor to consider, but the findings of this study suggest that some personality traits may have less of an impact if any, on engagement when activities are personalized for other factors. Although tailoring activities on the basis of extraversion and openness was found to increase engagement in the parent study, the trait of agreeableness had no significant impact in the current analysis. Understanding the impact of premorbid personality on engagement tendencies is important for nurses to provide person-centered and effective nursing care.

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