Nursing Home Residents with Severe Cognitive Impairments: Predictors of Participation in Activity Groups

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Much concern has been voiced over the provision of activity services to older adults with dementia who reside in nursing homes (Weaverdyck, 1991a, 1991b; Zgola, 1987). Previous research examining the predictors of residents' time in activities found that in a sample of 3008 nursing home residents, those with severe cognitive impairments spent significantly less time in activities than other residents (Voelkl, Fries, & Galecki, 1995). In order to understand better the predictors of activity participation among residents with cognitive loss, data from the Health Care Financing Administration's Multistate Nursing Home Case-Mix and Quality Demonstration Project were analyzed. Among 1210 nursing home residents with severe cognitive impairments, measures of resource use, location preferences, sense of involvement in the facility, and type of nursing home unit predicted whether or not a resident participated in activity services. Implications for service delivery and future research are discussed.

KEY WORDS: *Older Adults, Cognitive Impairment, Resident Characteristics, Nursing Homes, Activity Programs*

In recent years, there has been an increased call for research studies designed to enhance our understanding of quality of life among nursing home residents with cognitive impairments (Lawton, 1994; Whitehouse & Rabins, 1994). Activity programs are thought to be an integral aspect of all residents' quality of life (Bachner & Cornelius, 1978; Lawton, 1985; Martin & Smith, 1993; U. S. Congress, 1987). The Omnibus Budget Reconciliation Act of 1987 (OBRA) mandates that all nursing homes provide ". . . activities designed to meet the interests and the physical, mental, and psychosocial well-being of each resident . . ." (U.S. Congress, 1987). Little information, however, has been available on residents' participation in activity programs. Many questions exist about whether all residents receive activity services as mandated by OBRA or whether residents with specific functional abilities are more likely to participate than others.

In order to understand better who receives activity services, data from a Health Care Financing Administration Project were used in an earlier study to examine the resident characteristics that served as significant predictors of time in activities (Voelkl, Fries, & Galecki, 1995). The results of this initial study indicated that resource use, cognitive abilities, depression, activity preferences, sense of initiative/involvement, location preferences, gender, and a facility indicator, were each statistically significant in predicting time in activities among a sample of 3008 nursing home residents. Residents receiving high amounts of nursing staff time spent little time in activities, in comparison to others. Those residents with severe cognitive impairments had the lowest level of time in activities. Residents who were not depressed and those with a high sense of involvement in the facility had high levels of time in activities in comparison to other residents. Residents with a preference for the day area had high levels of time in activities in comparison to residents with preferences for their own room or no preference. Lastly, women were found to spend a greater amount of time in activities than men.

Of particular concern was the finding that residents with severe cognitive impairments spent little time in activities. Among Certified Therapeutic Recreation Specialists (CTRSs), much concern has been voiced regarding the provision of services for this specific group of nursing home residents (Buettner, 1988; Riddick & Keller, 1991; Weiss, 1989; Weiss & Kronberg, 1986). This concern appears to stem from the recognition that many of these residents have few opportunities to participate in activities. Several of the behaviors associated with severe cognitive loss (e.g., wandering, inappropriate social behavior) and the physical decline related to the later stages of dementia (Mace, 1990; Zgola, 1987; 1990) make it difficult to include residents with severe cognitive impairments in many of the large group activities that are typically provided in nursing home facilities. However, OBRA regulations mandate activity services be provided for all residents (U.S. Congress, 1987) and the findings of several empirical studies have substantiated the positive impact of recreation interventions on the functioning of older adults with cognitive impairments (e.g., Buettner, 1988; Wolfe, 1983). Thus, it is imperative that therapeutic recreation specialists understand better the activity participation of residents with severe cognitive impairments.

For CTRSs to serve better residents with severe cognitive impairments, it is important to delineate clearly the predictors of residents' participation in activity programs. This information may be used to develop activity interventions addressing the needs and interests of underserved residents. For instance, older adults with cognitive impairments who display inappropriate social behavior may be significantly less likely to receive activity services than those residents displaying appropriate social behavior. If inappropriate social behavior is found to pre-

dict participation patterns in activity groups, CTRSs could utilize this information to improve service delivery both by monitoring the involvement of those residents who display this characteristic and by developing specialized programs targeted at increasing their participation and potentially addressing the problem behavior. Therefore, the purpose of the current study was to examine the predictors of the activity participation of residents with severe cognitive impairments.

Background

Predictors of Residents' Participation in Activity Groups

Lawton (1983) developed an activity model which focuses specifically on the antecedents and consequences of older adults' participation in activities. Activity is defined as ". . . the occurrence of a specified objectively measurable behavior . . ." (p. 51). The antecedents to activity participation include personal characteristics, competence, preferences, and the environment. Satisfaction, personal meaning of activities, and psychological well-being comprise several of the consequences. In our previous investigation of predictors of time in activities among a sample of 3008 nursing home residents (Voelkl, Fries, & Galecki, 1995), the conceptualization of the study was based on Lawton's model. With the addition of predictors germane to individuals with cognitive impairments, the Lawton model also provides an excellent conceptual foundation for the present study. In this section each of the antecedents of activity participation identified by Lawton (1983) are discussed. Finally, the research questions developed for the present study are presented.

Personal Characteristics. In Lawton's activity model (1983), age, gender, socio-economic status, and education are identified as the personal characteristics that influence activity involvement. Previous reviews of the literature addressing the leisure behavior of older adults residing in the community substantiate the role of personal characteristics in predicting activity participation among older adults (Cutler & Hendricks, 1990; Mobily, 1992). Although there has been much discussion among therapeutic recreation professionals as to the personal characteristics that appear to influence nursing home residents' participation in activity groups (Greenblatt, 1988), empirical data have not been available. There is the belief, however, that few men have had the opportunity to develop activity interests (Greenblatt, 1988).

Personal Competence. Activities of daily living (ADLs), health, and depression are several of the competence variables hypothesized as influencing activity involvement among older adults (Lawton, 1983). The little empirical evidence available regarding the role of functional status in predicting activity participation among nursing home residents indicates that those residents who are dependent in functional abilities participate at lower levels than those independent in functional abilities (Gottesman & Bourestom, 1974; Voelkl, Fries, & Galecki, 1995). Information is not available, however, as to the role of functional abilities in predicting the activity participation of residents with cognitive impairments. It seems likely that dependence in functional abilities will predict little to no activity participation among residents with cognitive impairment. It seems equally plausible, however, that the cognitive impairment outweighs the physical impairment in such a manner that functional abilities are not significant predictors among residents with cognitive impairments. Perhaps, the inability to concentrate or understand verbal instructions prevents residents from participating in the typical menu of activity groups (e.g., bingo, discussion groups, reminiscence groups, exercise programs), rather than dependence in functional abilities.

A number of studies have documented the high prevalence rate of depression among older adults with cognitive impairments (Lazarus, Newton, Cohler, Lesser, & Schweon,

1987; Reifler, Larson, & Hanley, 1982; Rovner, Broadhead, Spencer, Carson, & Folstein, 1989). Although empirical data are not available regarding the effect of depression and severe cognitive impairments on an older adults' activity participation, Teri (1994) suggests that older adults with dementia respond to depression in the same manner as individuals without cognitive impairments, by decreasing involvement in pleasurable activities.

Numerous health care professionals have documented the difficult behaviors associated with cognitive impairments (Cohen-Mansfield, 1986; Mace, 1990; Patterson & Whitehouse, 1990; Teri, Larson, & Reifler, 1988). For instance, Teri and her colleagues have reported that the frequency of select behavioral problems, including wandering and agitation, increases with the severity of the cognitive impairment. Another behavioral problem, restlessness, maintained high prevalence regardless of the severity of cognitive dysfunction. Many of the difficult behaviors associated with cognitive impairments (e.g., wandering, agitation) may preclude a resident from participating in the activity groups typically offered in nursing home settings (Mace, 1990; Weiss & Kronberg, 1986).

Preferences. Lawton's (1983) activity model proposes that as preferences become more developed, older adults spend more time in the activity. Earlier work (Voelkl, Fries, & Galecki, 1995) found that the range of activity preferences and sense of involvement in the facility to be significant predictors among residents of nursing homes. However, given the physical and cognitive decline associated with cognitive impairments, it seems possible that these variables may not serve as significant predictors. For example, although the preferences may be sustained over the course of the cognitive impairment, the limitations imposed by these impairments may preclude involvement in preferred activities (Lawton, 1994). Preferences for the location of activities are also

thought to be related to activity participation (Lawton, 1983); residents who prefer their own rooms may naturally miss participation in activities since a majority of groups occur in day areas.

Environment. The nursing home environment is typically viewed as potentially limiting residents' involvement in some activities (Lawton, 1983; Parmalee & Lawton, 1990). However, placement on a special care unit is one environmental variable that may have a positive influence on the activity participation of nursing home residents. Special care units typically provide activity interventions designed to enhance the day-to-day functioning of residents with cognitive impairments (Berg, et al., 1991; Ohta & Ohta, 1988). Given this focus on activity programming, it seems possible that residents on special care units may be more likely to receive activity services than residents on general units.

Research Questions. Stemming from Lawton's activity model and relevant literature, the present study was designed to examine the effectiveness of the following variables in predicting the participation of older adults with cognitive impairments in activity groups:

- Does gender predict participation in activity groups?

- Does level of physical independence, according to "case-mix" categories that are based on one's medical condition and ADL function, predict participation in activity groups?

- Does depression predict participation in activity groups?

- Do problem behaviors (i.e., wandering, verbally abusive behavior, physically abusive behavior, socially inappropriate behavior) serve as significant predictors of participation in activity groups?

- Does the number of activity preferences and degree of involvement in the

facility predict participation in activity groups?

- Does location preference (i.e., no preference, own room, day room, both own and day room) predict participation in activity groups?
- Does placement on a special care unit rather than a general unit, predict participation in activity groups?

Methods

Sample

The sample for this study was taken from the Health Care Financing Administration's Multistate Nursing Home Case-Mix and Quality Demonstration. Four states, including Kansas, Maine, Mississippi, and South Dakota, were part of the Demonstration Project. Three additional states, Nebraska, New York, and Texas, were not part of the original Project but provided equivalent data collected in a manner consistent with protocols. The nursing homes that were identified as having an acceptable level of care using data from the Medicare/Medicaid Automated Certification System were invited to participate in each of the seven states (Fries, Schneider, Foley, Gavazzi, Burke, & Cornelius, 1994). In each of the nursing homes that participated in the Project, data were collected on all of the residents and staff on two units. Three of the states for which activity data were most complete, with the fewest errors, and in need of the least amount of cleaning, were selected for the present study. The sample consisted of 3008 older adults who resided in 89 nursing homes located in Maine, Nebraska, and Texas.

For the purposes of the present study, a subsample of 1210 residents with severe and very severe cognitive loss was identified using the Cognitive Performance Scale (Morris, Fries, Mehr, Hawes, Phillips, Mor, & Lipsitz, 1994). The Cognitive Performance Scale uses five items from the Resident As-

sessment Instrument to measure levels of cognitive functioning: short-term memory, cognitive skills for decision making, coma or persistent vegetative state, making self understood, and an ADL performance indicator of eating. With seven levels of cognitive performance (i.e., intact, borderline intact, mild impairment, moderate impairment, moderately severe impairment, severe impairment, very-severe impairment), the CPS has been found to be very effective in predicting scores from the Mini-Mental Status Exam and Test for Severe Impairment.

Measures

The dependent variable was participation in activity groups. This variable was measured directly as part of the larger data collection of all facility care staff time. One staff member from each facility received training on the data collection process and served as a resource for all facility staff. The Activity Coordinator in each facility was responsible for the collection of activity data. For one week, data were recorded on each activity group, including duration and residents participating. These data allowed us to classify residents into two groups, those who participated in activity groups (i.e., >1 minute per week) and those who did not participate (i., 0 minutes per week).

The independent variables included measures of resource use, depression, problem behaviors, activity preferences, sense of involvement, location preferences, and type of unit. The variable of the State in which the nursing home was located was used to adjust for possible differences between facilities. The data for all of the independent measures, except for the type of unit and State variables, were gathered through the use of the Resident Status Measure (RSM), a preliminary version but close twin to the National Resident Assessment Instrument (RAI) (see Morris, Hawes, Fries, Phillips, Mor, Katz, Murphy, Drugovich, & Friedlob, 1990, for information on the development and reliability of the RAI). A 10% reassessment re-

Table 1.

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Descriptive Statistics

Categorical Variables	%
Activity Participation (n = 1210) — Participates	68.3
Gender (n = 1205) — Females	76.2
Resource Utilization Groups (n = 1209)	
Rehabilitation/Extensive Services	3.1
Special Care	18.7
Clinically Complex	28.3
Impaired Cognitive/Behavioral Problems	15.1
Reduced Physical Functions	33.9
Depression (n = 1210)	10.2
Wandering (n = 1153)	13.4
Verbally Abusive (n = 1148)	18.6
Physically Abusive (n = 1148)	19.2
Socially Inappropriate (n = 1151)	23.3
Location Preferences (n = 1210)	
No preference	38.3
Own Room Preference	20.1
Day Room Preference	19.8
Day and Own Room Preferences	21.8
Type of Care Unit (n = 1196)	
General Unit	93.7
Special Care Unit	6.3
State (n = 1078)	
State #1	43.8
State #2	28.8
State #3	27.4

Continuous Variables	Mean (SEM)	Range
Activity Repertoire (n = 1210)	1.3 (0.04)	0–9
Sense of Involvement (n = 1210)	.6 (0.03)	0–6

ported elsewhere showed excellent reliability (Fries, Schneider, Foley, Gavazzi, Burke, & Cornelius, 1994). The measurement of each variable will be reviewed in this section, with descriptive statistics presented in Table 1.

Gender. Data on gender was recorded under the "Identification Information" section of the RSM.

Resource Utilization Group—Version III (RUG-III). RUG-III is a hierarchical case-mix classification system for nursing home residents (Fries, Schneider, Foley, Gavazzi, Burke, & Cornelius, 1994). Based on functional and medical status, residents are hierarchically classified into a category that is clinically relevant and predictive of their nursing and therapy staff costs. Based on their characteristics, this system classifies residents into seven broad categories, including (1) Rehabilitation, (2) Extensive Ser-

vices, (3) Special Care, (4) Clinically Complex, (5) Impaired Cognition, (6) Behavioral Problems, and (7) Reduced Physical Function (see Appendix), which are further split into a total of 44 mutually exclusive groups. Given the purpose of these splits and the sample size of this study, this level of detail was considered inappropriate. Therefore, only 5 major categories were used: (1) combining Rehabilitation and Extensive Services, 2 categories with very high resource use and time spent in care or therapies, (2) Special Care, (3) Clinically Complex, (4) combining Impaired Cognition and Behavioral Problems, 2 categories with very similar types of residents, the second of which is relatively rare, and (5) Reduced Physical Function.[1] The RUG-III system is used here to identify the spectrum of physical and medical characteristics of residents. The percentage of subjects meeting the criteria for each group is provided in Table 1.

Depression. Items from the "Diagnoses" and the "Mood and Behavior Patterns" sections of RSM were used to identify residents as depressed or non-depressed. Residents were identified as depressed if they displayed a persistently sad or anxious mood and at least two of the following: weight loss, early morning unpleasant mood or awake less than eight hours per day, agitated or withdrawn, distressed, thoughts of death or suicide. Residents were also identified as depressed if they displayed at least one of the behaviors from the previous list and had a diagnosis of depres-

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[1] Residents are classified into categories that are hierarchical in relation to staff resources and cost. If a resident qualifies for more than one category, he or she is placed in the category related to the most intensive resource use. Given the hierarchical nature of the system, a resident is screened initially for placement in the Rehabilitation category (highest level of resource use). If the resident does not meet the criteria of a category (e.g., Rehabilitation), he or she is then evaluated for placement in the next category (e.g., Extensive Services) in the hierarchy of lessening resource use and cost (Fries, Schneider, Foley, Gavazzi, Burke, & Cornelius, 1994).

sion. Among a large sample of nursing home residents this measure of depression was found to identify accurately 73% of the residents with a diagnosis of depression (Fries, Mehr, Schneider, Foley, & Burke, 1993).

Problem Behaviors. Problem behaviors are recorded in the "Mood and Behavior Patterns" section of the RSM. Based on a dichotomous format, behaviors are recorded for wandering (i.e., moved with no rational purpose, seemingly oblivious to needs or safety), verbally abusive (i.e., others were threatened, screamed at, cursed at), physically abusive (i.e., others were hit, shoved, scratched, sexually abused), and socially inappropriate behavior (i.e., socially inappropriate, disruptive behavior). A resident was deemed to have a behavior problem if it was exhibited at least daily. Although these variables are used to classify residents into the RUG-III Behavioral Problems Category, they are conditions manifested by residents in other categories as well.

Activity Repertoire. Individual activity preferences are recorded in the "Activities Pursuit Patterns" section of the RSM. Based on a dichotomous format, preferences are recorded for "cards/other games," "crafts/arts," "fitness/sports," "music," "reading/writing," "spiritual/religious," "trips/shopping," "going outdoors," and "watch TV." For the purposes of the present study, the number of preferences was counted to represent each residents' activity repertoire. Scores ranged from 0 (i.e., no preferences) to 9 (i.e., expressed preference for all indicated activities).

Sense of Initiative/Involvement. This construct is represented by a summary score of six items from the "Psychosocial Well-Being" section of the RSM. The items include "at ease interacting with others," "at ease doing planned or structured activities," "at ease doing self-initiated activities," "establishes own goals," "pursues involvement in life of the facility," and "accepts invitations into most group activities." Sense of initiative/involvement scores ranged from 0 (i.e., no involvement) to 6 (i.e., full involvement).

Previous analyses have reported the alpha reliability for these items to range from .57 to .72 depending on the functioning (ADLs) and cognitive abilities of residents (Mor, 1994).

Location Preferences. Data on preferred activity settings are recorded under the "Activities Pursuit Patterns" section of the RSM. Two items with a yes-no format, "own room" and "day/activities room," were combined into a four category exhaustive classification of residents' preferred activity settings. The four categories included (1) no preference for own room or day room, (2) own room preference only, (3) day room preference only, and (4) own room and day room preference.

Type of Unit. Data on the type of unit, either special care unit for older adults with dementia or general unit, were recorded as part of the general information.

State. Because the only data detailing environmental characteristics described the type of unit on which the resident resided, the identifier of the State in which the nursing home was located was used to adjust in part for possible differences between facilities' environment.

Results

The mean age of the cognitively impaired residents was 82.8 years (SEM = 0.34). Three-quarters of the sample was female (76.2%). Over the course of one week, approximately one-third of the sample (31.7%) spent no time and approximately two-thirds (68.3%) spent time in structured activity programs.

Predicting Participation in Activity Groups

Descriptive statistics and logistic regression were used to report the data and examine the predictors of the dichotomous dependent variable of participation in activity programs. Table 2 presents the results of the logistic regression analysis. The effective sample size was 1128. The Hosmer-Lemeshow Goodness-of-fit statistic resulted in a chi-square of 6.60, df = 8, p = 0.58, which indicates that the model fit the data quite well (Hosmer & Lemeshow, 1989).

The findings indicate that residents who met the criteria of the RUGs categories of Rehabilitation/Extensive Services and Special Care were half as likely to participate in activity groups (odds ratios of .50 and .54) when compared to residents in the Reduced Physical Functions category. Those residents falling in the categories of Clinically Complex and Impaired Cognition/Behavioral Problems did not significantly differ from those in the Reduced Physical Functions category. With each unit of increase on residents' scores on the Sense of Involvement subscale, they were on the average 1.3 times more likely to participate in activity groups. In regard to location preferences, those residents who had no location preference and those with a preference for their own rooms were correspondingly 0.58 and 0.23 as likely to participate in activity groups as compared to residents who preferred both their own and the day room. Those preferring the day room did not significantly differ from those who preferred both their own and the day room. Lastly, both variables used to control for possible differences between facilities (i.e., type of unit and State) were found to predict participation in activity groups. Residents on special care units (odds ratio of 2.97) were about three times more likely to participate in activity groups than those residents on general units. The State variable was not included in Table 2 since this was used as a covariate to adjust for possible differences between facilities rather than for direct interpretation.

Discussion

In this section the findings will be discussed to further understanding of the participation patterns among older adults with cognitive loss and to consider the implications for therapeutic recreation practice. For example, it was found that residents falling into the RUGs categories associated with high

Table 2.

Logistic Regression Results: Predictors of Participation in Activities

Independent Variable	Odds Ratio	95% Confidence Interval
DICHOTOMOUS VARIABLES		
Socially Inappropriate	0.74	0.51–1.09
Depression	1.03	0.65–1.63
Gender	1.06	0.76–1.47
Verbal Abuse	1.18	0.73–1.91
Wandering	1.22	0.71–2.10
Physical Abuse	1.28	0.80–2.05
Special Care Unit	2.97**	1.21–7.27
CATEGORICAL VARIABLES		
Resource Utilization Groups		
Rehabilitation/Extensive Services	0.50*	0.24–1.06
Special Care	0.54**	0.36–0.80
Clinically Complex	0.77	0.54–1.09
Impaired Cognition/Behavioral Problems	1.23	0.72–2.11
Reduced Physical Functions[†]	1.00	-----
Location Preferences		
Location — No preference	0.58**	0.38–0.90
Location — Own Room	0.29**	0.19–0.46
Location — Day Room	1.40	0.83–2.35
Location — Own & Day Room[†]	1.00	-----
CONTINUOUS VARIABLES		
Activity Repertoire	1.05	0.92–1.20
Sense of Involvement	1.34**	1.10–1.63

Note: ** Significant at .05. * Significant at .10. [†] Reference category.

resource use (i.e., Rehabilitation-Extensive Services and Special Care) were less likely to participate in activity programs in comparison to residents in the relatively less resource intensive category of Reduced Physical Functions. Time in rehabilitation therapies may preclude participation in activity programs or the medical problems associated with high resource use may leave residents with little energy or capabilities for activity participation. It also seems possible that those residents with a medical status related to high resource use need to ask to be transported to activity groups, but may be unable to ask for assistance with transportation due to cognitive impairments.

Several preference variables were significant predictors of participation in activity groups. For instance, the findings indicated that residents with higher scores on the sense of involvement subscale were significantly more likely to participate in activity programs. While these findings substantiate the important of residents' sense of involvement in the facility in relation to activity participation, questions remain regarding the causal direction of this relationship and effective means of enhancing residents' sense of involvement.

The significance of location preferences as a predictor led us to consider the effect of the location of activity implementation on residents' participation. Those residents who preferred either the day room or both the day room and their own room were more likely to participate in activity groups than other residents. Preferences for the day room may be related to spending time in public areas where activities are frequently conducted and result in increased opportunities to participate in activity programs.

The significant effect of both of the environment variables in predicting participation should not go unnoticed. Residents on special care units were significantly more likely to participate in activity groups than residents on general units. This finding is certainly consistent with the fact that many special care units include a focus on activities designed to enhance the functioning of residents (Ohta & Ohta, 1988). Although not shown, the State in which the nursing home was located also served as a significant predictor of participation. Further work is needed to clarify the potential association between State policies and regulations, service delivery of activities, and the participation of residents in activity services.

Other variables, representing problem behaviors, including wandering, verbally abusive behavior, physically abusive behavior, and socially inappropriate/disruptive behavior, were not significant predictors of participation in therapeutic activities. These variables are frequently linked to patient management issues and discussed as potential barriers to participation (Beisgen, 1989; Mace, 1990; Zgola, 1987, 1990). Our findings, however, indicate that these problem behaviors were not a barrier to participation in activity programs with those with cognitive impairments. Possibly, the resident care plans for the participants in the present study were developed to utilize activity programs to manage problem behaviors. At least one study reported that residents displaying problem behaviors are less likely to engage in

these behaviors while participating in activity programs (Rabinovich & Cohen-Mansfield, 1992). However, the dependent variable was limited to participation in activity programs, with no indication of the quality of participation or the length of time spent in any one group activity. Therefore, although problem behaviors were not significant predictors of activity participation, some residents identified as participators may have only engaged in the group activity for several minutes because of problem behaviors.

Comparing the current findings to those of our previous study that represented the full range of cognitive abilities (Voelkl, Fries, & Galecki, 1995), it was noted that several predictor variables (i.e., gender, depression, activity repertoire) significant for the entire sample were not significant in predicting participation among the subsample of residents with severe cognitive impairments. Perhaps among residents with severe cognitive impairments, cognitive impairment may be related to activity participation in such a manner that few additional variables act as significant predictors.

Implications for Service Delivery

A strength of the present study is that the measures of residents' characteristics came from a preliminary version of the RAI, which is currently in use in virtually all nursing homes. Therefore, several of the measures predicting activity participation are readily available to staff. This allows staff to monitor the participation of residents possessing characteristics that predict no participation. Based on the present findings, staff should monitor residents with characteristics related to high resource use, those with low sense of initiative/involvement, and those preferring their own rooms or having no location preference. In particular, the participation patterns of those residents with cognitive impairments on general units should be monitored.

The findings also point to several areas in need of innovative, specialized program-

ming. For instance, the findings indicate a need for CTRSs to design therapeutic activity interventions that may be implemented on an individual level in residents' rooms. This may facilitate participation among residents who prefer their own rooms and/or those who receive high resource allocation in terms of nursing care. Activities should also be designed to facilitate residents' sense of initiative/involvement in the facility. For example, leisure education programs may be designed to instruct nurse aides and family members on how to assist residents with the utilization of recreation resources in the nursing home or how to provide the residents with choices as to the activity groups in which they will participate. Another option may be the design of lounges on each unit that provide opportunities for solitary or group engagement in sensory stimulation activities (Buettner, 1994; McGrowder-Lin & Bhatt, 1988).

Directions for Future Research

The findings of the present study point to a number of issues in need of further research. First, investigators should keep in mind that the environmental variables (i.e., special care unit and State) were significant predictors of residents' participation in activity groups. Future studies need to be designed to identify characteristics of nursing home facilities that strongly influence residents' activity participation. The variables examined may include the number of activity staff, the training and education of activity staff, and the types of programs offered. There is also a need for research examining how alterations in environmental variables may influence the time in or quality of residents' activity participation.

Future studies may incorporate measures of one-to-one activity participation. Perhaps a more comprehensive measure of activity would help researchers understand the various types of activity involvement among residents. For instance, residents falling in resource-intensive RUG-III groups may be more likely to participate in one-to-one interventions and less likely to participate in group interventions than residents in less resource intense categories. Future studies designed to assess the subjective aspect of residents' activity participation are also needed. The present study only provided data on participation without information on residents' perceptions. Work is currently being conducted on the development of observational methods measuring affect of older adults with dementia (Lawton, 1994). Such a measure is promising in terms of allowing investigators to incorporate the measurement of residents' subjective experience when examining activity participation.

Lastly, future studies need to be designed to examine the efficacy of activity interventions with older adults with cognitive impairments. Based on the present findings and keeping with OBRA regulations (U.S. Congress, 1987), CTRSs need to determine if interventions ensure that all residents receive their needed level of activity services. Furthermore, CTRSs should evaluate the outcomes of these interventions in regards to residents' functional abilities, health status, and quality of life (Carter, Van Andel, & Robb, 1994).

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Appendix
Modified RUG-III Hierarchy Categories*

REHABILITATION/EXTENSIVE SERVICES
  Time in physical, occupational, or speech therapy
  OR
  ADL Index score of at least 7[†]
  Meet at least one of the following criteria:
    Parenteral feeding
    Suctioning
    Tracheostomy
    Ventilator/Respirator

SPECIAL CARE
    ADL Index score of at least 7[†]
    Meet at least one of the following criteria:
        Burns, coma, fever (with vomiting, weight loss, pneumonia, or dehydration),
            multiple sclerosis, pressure ulcers of stage 3 or 4, quadriplegia, septicemia,
            intravenous medications, radiation treatment, tube feeding.
CLINICALLY COMPLEX
    Meet at least one of the following criteria:
        Aphasia, aspirations, cerebral palsy, dehydration, hemiplegia, internal bleeding,
            pneumonia, stasis ulcer, terminal illness, urinary tract infection, chemotherapy,
            dialysis, four or more physician visits per month, respiratory or oxygen therapy,
            transfusions, wound care other than pressure ulcer care.
    OR
    Meet the criteria of Extensive Services or Special Care but have a RUG-III ADL Index
        Score of 4 to 6[†]
IMPAIRED COGNITION/BEHAVIORAL PROBLEMS
    RUG-III ADL Index Score of 4 to 10[†]
    Display cognitive impairment in three of the following dimensions:
        decision making (not independent)
        orientation (any problem recalling current season, location of own room, staff names
            or faces, or that he/she is in a nursing home)
        short term memory
    OR
    RUG-III ADL Index Score of 4 to 10[†]
    Display daily problems with inappropriate behavior, physical abuse, verbal abuse,
        wandering OR with hallucinations.
REDUCED PHYSICAL FUNCTIONS
    Do not meet conditions of any earlier categories, including those who would meet the
        criteria for the impaired Cognition or Behavior
    Problems categories but have a RUG-III ADL Index of more than 10[†]

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    * The complete RUG-III system has many more splits, for full details see Fries, Schneider, Foley, Gavazzi, Burke, & Cornelius, 1994.
    [†] ADL Index scores range from 4 to 18, with 4 representing the highest level of independence and 18 representing total dependence.