Research Article

Valued Activities among Individuals with and without Cognitive Impairments: Findings from the National Health and Aging Trends Study

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Abstract

Purpose of the study: Using the National Health and Aging Trends Study (NHATS), we examined activity preferences and participation among individuals with and without cognitive impairments.

Design and methods: Respondents were classified as having *No Dementia* ($n = 5,264$), *Possible Dementia* ($n = 893$), or *Probable Dementia* ($n = 518$). Respondents rated importance of and actual participation (yes/no) in four activities (visiting friends/family, religious services, clubs/classes, going out for enjoyment). We also examined whether transportation or health limited participation.

Results: Overall, visiting friends/family was most important (64.03%); although relative importance of activities varied with cognitive status. Compared to cognitively healthy individuals, those with possible and probable dementia were less likely to indicate activities were important and engage in valued activities ($ps < .0001$). Additionally, poor health limited participation in activities for those cognitively intact or with possible dementia; this was not true for those with probable dementia. Transportation difficulty limited going out for enjoyment for a greater percentage of those with cognitive impairment than those without impairment.

Implications: Regardless of cognitive level, older adults highly value activities; however, actual participation may decrease with greater impairment in cognitive and physical health and with transportation challenges. Developing tailored interventions for specific populations to achieve desired activity goals is needed.

Keywords: Activity, Engagement, Dementia, Cognitive Impairment, Aging

Growing evidence suggests that continued participation in leisure activities is associated with positive health outcomes in later life. Leisure activities, which are distinct from functional activities of daily living, vary widely and may include those that are inherently socially and cognitively engaging, such as visiting friends and family, and participation in clubs, classes, or other organized activities (Adams, Leibbrandt, & Moon, 2011). For cognitively healthy older adults, participation in leisure activities may offer protective

benefits from age-related physical and cognitive decline (e.g., James, Boyle, Buchman, Barnes, & Bennett, 2011; Haslam, Cruwys, Milne, Kan, & Haslam, 2015; Kåreholt, Lennartsson, Gatz, & Parker, 2011), including reducing the risk of dementia (e.g., Kuiper et al., 2015; Sörman, Sundström, Rönnlund, Adolfsson, & Nilsson, 2014), improving well-being (Adams et al., 2011), and promoting longevity (Holt-Lunstad & Smith, 2012; Paganini-Hill, Kawas, & Corrada, 2011). For older adults with cognitive

impairments and dementia, remaining actively engaged may also provide important benefits, including reducing depression (Teri, Logsdon, Uomoto, & McCurry, 1997; Vernooij-Dassen, Vasse, Zuidema, Cohen-Mansfield, & Moyle, 2010) and neuropsychiatric symptoms (Gitlin et al., 2009; Gitlin, Kales, & Lyketsos, 2012), and improving overall well-being (Trahan, Kuo, Carlson, & Gitlin, 2014).

Although the exact mechanisms are unclear, engaging in leisure activities may build neural connections through complex interactions, initiate or reinforce social relationships, influence self-esteem, provide a sense of mastery and control, reduce depressive symptoms, and increase feelings of happiness (e.g., Adams et al., 2011; Flatt & Hughes, 2013; Newman, Tay, & Diener, 2014), all of which may have beneficial effects on health and well-being. Moreover, the relationships between leisure activities and health and well-being may be reciprocal such that changes in cognitive functioning may result in changes in the level and type of activity participation (Small, Dixon, McArdle, & Grimm, 2012). Accordingly, cognitively healthier individuals may be better positioned and more likely to take advantage of opportunities for engagement; whereas individuals with cognitive impairments may withdraw from participation because of difficulty initiating, planning, or organizing an activity or frustration if difficulties arise when performing familiar or novel activities.

Most studies examining participation in leisure activities in older adulthood have been conducted with cognitively healthy populations. This research suggests some lifespan continuity in the leisure activities in which adults participate; however, there are also differences (Agahi, Ahacic, & Parker, 2006; Strain, Grabusic, Searle, & Dunn, 2002; Szanton et al., 2015). For instance, with increased age there is a greater tendency to participate in socially oriented activities that engender pleasure such as socializing with friends, or participating in organized activities, or religious services (Bryant, Corbett, & Kutner, 2001; Pressman et al., 2009), perhaps reflecting developmental shifts in goals, motivations, and priorities (Carstensen, 2006). Most likely, individual differences other than age, such as personality, education, cognitive and physical health status, and opportunity (see Fernández-Mayoralas et al., 2015; Mannell & Kleiber, 1997) also contribute to activity selection and maintenance.

Similarly, despite cognitive limitations (and popular belief), individuals with dementia also appear to maintain some continuity in activity patterns and express a continued desire to seek out opportunities for meaningful engagement (Genoe & Dupuis, 2014; Johnson, Whitlatch, & Menne, 2014; Menne, Johnson, Whitlatch, & Schwartz, 2012). For instance, Menne and colleagues (2012) asked individuals with dementia ($N = 216$) to self-report the types of activities that they currently enjoyed doing. The five most frequently reported activities included: socializing (e.g., visiting with family and friends, going to senior centers; 19.77%), TV/music/radio (13.90%), exercise/recreation (11.69%), cognitive activities (e.g., reading, writing, doing puzzles; 10.28%), and housework/chores (6.21%).

Likewise, Phinney, Chaudhury, and O'Connor (2007) found that individuals with dementia continued to value and engage in their favorite leisure activities (e.g., handicrafts, playing piano, crossword puzzles, going on long walks), as well as household chores and social activities. Individuals reported that involvement in activities brought enjoyment and pleasure, a sense of autonomy and identity, and helped them feel connected to the larger community (Genoe & Dupuis, 2014; Phinney et al., 2007).

Although individuals with and without cognitive impairments find enjoyment, satisfaction, and purpose in life through continued participation in meaningful activities, intrinsic factors (e.g., health, motivation) and extrinsic barriers (e.g., transportation, lack of opportunities, lack of time) may impact participation (Dahan-Oliel, Mazer, Gélinas, Dobbs & Lefebvre, 2010; Innes, Page, & Cutler, 2015; Levasseur et al., 2015; Nimrod & Shrira, 2014). With increased age, individuals may be faced with greater limitations and, as a result, have to reduce or cease participation in activities that are most important to them (e.g., McGuire & Norman, 2005).

There is no doubt that activities differ vastly in terms of their meaning to individuals. However, most studies examining the relationship between activity participation and health, in both cognitively healthy and cognitively impaired populations, focus on whether an activity was performed (yes/no) or the extent of time spent performing an activity (e.g., frequency, duration). Few studies consider whether an activity holds value or importance to the person. Further, among the handful of studies that have examined activity preferences, this work has not considered the potential discrepancy between the attributed value and the actual level of participation in specific activities, compared activity preferences for older adults with cognitive impairment to those without, nor examined whether barriers to activity participation are the same or different for these groups. Lastly, existing studies have been limited by use of convenience sampling, restricted geographic bounds, and lack of racial and ethnic diversity in samples.

The present study overcomes the limitations of previous investigations by using the National Health and Aging Trends Study (NHATS), a large nationally representative sample, examining the value of leisure activities for three cognitive status groups (no dementia, possible dementia, probable dementia), comparing valued activities to actual participation, and exploring two common potential barriers to activity participation, transportation and health. Four leisure activities available in the NHATS data set were considered: visiting with friends and family, attending religious services, participating in clubs, classes, or other organized activities, and going out for enjoyment.

Methods

Data for this study were collected as part of the NHATS, a nationally representative sample of Medicare beneficiaries ages 65 and older ($N = 8,245$). The overarching goal

of NHATS was to collect detailed information on participants' physical and cognitive capacity, the extent of participation in daily activities, living arrangements, economic status, and well-being. Detailed information regarding the study design has been described elsewhere (see [Montaquila, Freedman, Edwards, & Kasper, 2012](#)). Briefly, all individuals enrolled in Medicare were included in the NHATS sampling frame, representing 96% of the U.S. Medicare population; this excluded 4% of older adults not eligible for Medicare (i.e., never qualified for Social Security benefits, delay enrollment while covered by employer-based benefits) ([Kasper & Freedman, 2014](#)). A stratified, three-stage design was implemented to select specific cases, first drawing from counties or groups of counties, then from ZIP codes, and finally from Medicare beneficiaries enrolled as of September 30, 2010 ([Montaquila et al., 2012](#)).

Sample

For purposes of the present analyses, NHATS respondents were excluded if they lived in a nursing home or other residential facility or relied on a proxy respondent to answer the survey questions. Of the initial 8,245 NHATS respondents, a total of 6,675 individuals were eligible for inclusion in the current analyses and classified into three groups—*No Dementia* ($n = 5,264$), *Possible Dementia* ($n = 893$), and *Probable Dementia* ($n = 518$) according to the NHATS dementia classification scheme ([Kasper, Freedman, & Spillman, 2013](#)). Briefly, performance on the AD8 dementia screening interview (eight-item) was used to assess changes in memory, temporal orientation, and executive function and distinguish individuals with probable or possible dementia from those with no evidence of dementia ([Kasper et al., 2013](#)). Individuals were classified as having *probable dementia* if they reported that a doctor told them that they had dementia or Alzheimer's disease and demonstrated impairment (defined as scores ≤ 1.5 SDs from the mean) in at least two of the three assessed cognitive domains; *possible dementia* was indicated by impairment in any one cognitive domain ([Kasper et al., 2013](#)). Thus, we are using the distinction between possible and probable dementia as a proxy of severity, with those categorized as probable dementia having more severe cognitive impairment than those categorized as possible dementia as intended and defined by NHATS.

Measures

Demographic variables included age (65–69, 70–74, 75–79, 80–84, 85–89, and 90+ years), sex, race/ethnicity (White non-Hispanic, Black/African-American non-Hispanic, Hispanic, and Other), education (less than high school, high school/General Educational Development, some college, and equivalent of a bachelor's degree or greater), and living arrangement (alone vs. with others). Respondents were also asked to rate their *general health status* on a 5-point scale (1 = excellent to 5 = poor).

Valued activities, participation, and barriers. Respondents were asked to indicate the importance of participating in four elective activities selected in the NHATS survey to capture participation in leisure activities, extending beyond participation in self-care and instrumental or household activities ([Freedman, 2009](#); [Jette, 2009](#)). The four activities included: visiting in person with friends and family, attending religious services, participating in clubs, classes, or other organized activities, and going out for enjoyment (e.g., dinner, see a movie, play, or concert) (1 = very important, 2 = somewhat important, 3 = not so important). For this study, we considered activities rated as "very important" to be of greatest personal value to the individual.

Respondents were also asked if they ever participated in the four activities in the last month (yes/no). For each of the four activities, respondents were asked whether difficulty in health or transportation kept them from participating in the activity (yes/no).

Statistical Analyses

We first examined the percentage of responses for valued activities (i.e., those reported as being very important) across the three categories of cognitive status (no dementia, possible dementia, probable dementia). If any of the four activities (visiting with friends and family, attending religious services, participating in clubs/classes, and going out for enjoyment) were rated as very important, we also examined whether the activity was performed in the last month (yes/no) and, if not performed, whether health limitations or difficulty with transportation limited participation in the activity.

In addition to examining whether health limitations interfered with activity participation (on yes/no scale), we also conducted subsequent analyses using a more sensitive measure of general health status (ratings made on a 5-point scale from Excellent to Poor) and included data from all respondents who rated the activity as very important (regardless of actual participation) to increase our ability to detect reliable effects. Specifically, within-group, logistic regression models were applied to estimate the effects of self-rated health status on the odds of participating in each of the four activities for each level of cognitive function. Final models adjusted for five factors previously found to be associated with activity participation: age, sex, race/ethnicity, education, and living arrangement.

For analyses, NHATS survey weights were included to generalize to the national sample and adjust for the survey design features of NHATS. All analyses were performed using Stata 13.1 (Stata Corp, College Station, TX).

Results

Sample Demographic Characteristics

Overall, respondents ($N = 6,675$) aged 65 to above 90 years, were 55.8% female ($n = 3,725$), 81.1% White, Non-Hispanic ($n = 5,413$), and 21.4% had less than a high school

education ($n = 1,428$) (Table 1). In addition, approximately 72% reported living with others ($n = 4,813$) and 77% of respondents rated their health as excellent, very good, or good ($n = 5,140$) (Table 1). When demographic characteristics were compared across levels of cognitive status, significant differences were found between each of the three groups for age, sex, racial composition, education, and self-rated health ($ps < .05$), with a few exceptions. Specifically, across the three groups (from no dementia to possible to probable dementia), the percentage of individuals at the oldest ages (over 80 years) increased, as well as the percentage of individuals with less than a high school education and those reporting fair or poor health. Although overall group differences were found for sex and racial composition, when specific cognitive groups were compared, there were no differences in the percentage of females between individuals without dementia and those with possible dementia, as well as in racial composition between those with possible or probable dementia ($ps > .05$). There were no differences between any of the groups in terms of living arrangement (alone vs. with others) ($p > .05$; Table 1).

Attributed Value for Each of the Four Activities

We examined the level of importance assigned to four activities (i.e., visiting friends and family, attending religious services, participating in clubs/classes, and going out for enjoyment) within the varying levels of cognitive status (Table 2). Overall, compared to other activity categories, visiting with friends or family held the most importance in people's lives (64.03%), followed by attending religious services (52.96%), going out for enjoyment (47.01%), and participation in clubs, classes, or other organized activities (30.14%) (Table 2). However, there were clear differences between the three cognitive groups. Specifically, a higher percentage of those without cognitive impairment attributed importance to visiting with friends and family (66.09%); participation in clubs/classes (32.69%); and going out for enjoyment (49.23%) ($ps < .05$; Table 2); whereas, those with possible dementia reported slightly lower percentages (visiting [55.25%]; clubs/classes [17.84%]; going out [39.07%]); and those with probable dementia attributed the lowest percentages of importance to each of these activities (visiting [50.02%]; clubs/classes [15.50%]; going out [28.90%]) (ps

Table 1. Demographic Characteristics for Total Sample and by Cognitive Status

Characteristic	Total sample ($N = 6,675$)	No dementia ($n = 5,264$)	Possible dementia ($n = 893$)	Probable dementia ($n = 518$)
Age, %**				
65–69	30.2	33.3	15.4	11.1
70–74	26.2	27.3	23.5	14.2
75–79	19.4	19.1	20.6	21.9
80–84	14.2	12.6	20.6	24.8
85–89	7.4	5.9	14.3	17.3
90+	2.7	1.8	5.6	10.8
Sex, %**				
Female	55.8	56.5	49.8	57.1
Race/ethnicity, %**				
White, Non-Hispanic	81.1	83.8	69.2	64.3
Black, Non-Hispanic	8.0	7.3	11.3	12.3
Hispanic	6.7	5.4	12.4	16.1
Other	4.1	3.5	7.3	7.4
Education, %**				
<High school	21.4	17.1	39.7	51.7
High school/GED	27.1	27.7	24.2	23.7
Some college	26.6	28.3	19.1	16.1
≥Bachelor's	24.9	27.0	17.0	8.4
Living arrangement, %				
With others	72.1	72.7	68.2	72.5
Alone	27.9	27.4	31.8	27.5
Self-rated health, %**				
Excellent	15.5	16.9	9.7	4.9
Very good	30.5	32.3	24.4	15.1
Good	30.6	30.7	28.7	32.8
Fair	17.6	15.5	27.4	30.2
Poor	5.9	4.6	9.9	17.1

Note: ** $p < .001$.

Table 2. Importance of Activities and Performance in the Past Month for Total Sample and by Cognitive Status

	Activity is very important, %					Very important but not done in past month, %				
	Total sample	No dementia	Possible dementia	Probable dementia	p-Value	Total sample	No dementia	Possible dementia	Probable dementia	p-Value
Visit with friends or family	64.03 (N = 6,675)	66.09 (n = 5,264)	55.25 (n = 893)	50.02 (n = 518)	<.0001	5.64 (N = 4,137)	4.61 (n = 3,395)	10.03 (n = 484)	16.86 (n = 258)	<.0001
Attend religious services	52.96 (N = 6,675)	52.68 (n = 5,264)	53.71 (n = 893)	55.79 (n = 518)	.5139	12.26 (N = 3,841)	10.52 (n = 3,014)	18.30 (n = 517)	25.87 (n = 310)	<.0001
Participate in clubs/classes	30.14 (N = 6,675)	32.69 (n = 5,264)	17.84 (n = 893)	15.50 (n = 518)	<.0001	16.66 (N = 1,928)	14.94 (n = 1,693)	24.27 (n = 153)	54.50 (n = 82)	<.0001
Go out for enjoyment	47.01 (N = 6,675)	49.23 (n = 5,264)	39.07 (n = 893)	28.90 (n = 518)	<.0001	5.66 (N = 2,948)	4.84 (n = 2,470)	9.28 (n = 326)	17.40 (n = 152)	<.0001

Notes: Full sample was used to examine the importance of each of the four activities (first five columns). The discrepancy between importance and performance was examined using only those who endorsed the activity as being very important (last five columns). Sample sizes differ across groups and activities (for discrepancy between importance and performance). The numbers in parentheses represent the sample size used in analysis.

< .0001; Table 2). Conversely, cognitively healthy individuals (52.68%), as well as those with possible (53.71%) and probable dementia (55.79%) rated importance of attending religious services similarly ($p > .05$; Table 2).

Actual Participation in Each of the Four-Valued Activities

Next, for those indicating an activity was highly valued (i.e., rated as “very important”), we examined actual participation (yes/no) in the activity in the past month. Overall, most respondents did not participate in clubs/classes over the past month (16.66%), followed by attending religious services (12.26%), going out for enjoyment (5.66%), and visiting in person with friends and family (5.64%) (Table 2). In addition, a greater percentage of individuals classified as having possible or probable dementia reported that they did not engage in the four-valued activities during the past month compared to those without cognitive impairment ($ps < .0001$; Table 2). Group differences were also found between those with possible and probable dementia, with a higher percentage of those in the probable dementia group reporting no engagement compared to the possible dementia group ($ps < .0001$; Table 2).

Transportation and Health as Barriers to Participation in Valued Activity

As prior studies have cited transportation and health among the most frequently reported reasons for not participating in activity; we examined whether these factors were associated to nonparticipation for those individuals who highly valued activity participation (i.e., rated as “very important”), but did not perform the activity in the past month.

Transportation

A significant difference was found among the three cognitive groups concerning the role of transportation as a reason for limited participation for one of the four activities: going out for enjoyment. However, this was not the case for visiting friends/family, attending religious services, and participating in clubs/classes (Table 3). Specifically, significant differences were found between cognitively healthy individuals (4.73%) and those with probable dementia (23.15%) ($ps < .01$) for going out; no differences were found between cognitively healthy individuals and those with possible dementia or between the possible and probable dementia categories ($ps > .05$).

Health

Significant differences were found among the three cognitive groups concerning the role of health as a reason for limited participation for two activities: attending religious service and participation in clubs/classes (Table 3). Specifically, for these two activities, both cognitively healthy older adults (32.54% for religious services; 21.96% for clubs/classes)

Table 4. Logistic Regression Analysis of Activity Participation and Self-rated Health by Total Sample and Cognitive Sample

	Total sample		No dementia		Possible dementia		Probable dementia	
	Odds ratio	95% CI ^a	Odds ratio	95% CI ^a	Odds ratio	95% CI ^a	Odds ratio	95% CI ^a
Visit with friends or family								
Excellent	1.0 (ref)		1.0 (ref)		1.0 (ref)		1.0 (ref)	
Very good	1.18	(0.69, 2.04)	1.19	(0.63, 2.25)	1.84	(0.56, 6.09)	0.93	(0.10, 8.56)
Good	0.87	(0.52, 1.46)	0.82	(0.45, 1.49)	1.67	(0.49, 5.73)	0.87	(0.12, 6.46)
Fair	0.53	(0.30, 0.95)	0.50	(0.27, 0.94)	0.95	(0.28, 3.26)	0.97	(0.11, 8.98)
Poor	0.25	(0.14, 0.45)	0.23	(0.12, 0.46)	0.60	(0.12, 2.98)	0.27	(0.03, 2.15)
	(N = 4,137)		(n = 3,395)		(n = 484)		(n = 258)	
Attend religious services								
Excellent	1.0 (ref)		1.0 (ref)		1.0 (ref)		1.0 (ref)	
Very good	0.84	(0.54, 1.32)	0.83	(0.50, 1.38)	0.64	(0.15, 2.81)	2.13	(0.29, 15.33)
Good	0.66	(0.47, 0.94)	0.64	(0.43, 0.95)	0.71	(0.16, 3.12)	1.29	(0.18, 9.16)
Fair	0.40	(0.28, 0.58)	0.40	(0.25, 0.61)	0.45	(0.14, 1.49)	0.75	(0.11, 4.96)
Poor	0.14	(0.09, 0.22)	0.12	(0.07, 0.20)	0.19	(0.06, 0.58)	0.32	(0.05, 2.12)
	(N = 3,841)		(n = 3,014)		(n = 517)		(n = 310)	
Participate in clubs/classes								
Excellent	1.0 (ref)		1.0 (ref)		1.0 (ref)		1.0 (ref)	
Very good	0.87	(0.58, 1.31)	0.77	(0.48, 1.23)	4.69	(1.02, 21.63)	3.87	(0.29, 50.75)
Good	0.46	(0.32, 0.65)	0.42	(0.27, 0.66)	1.22	(0.27, 5.46)	3.79	(0.20, 70.35)
Fair	0.42	(0.24, 0.74)	0.40	(0.21, 0.77)	1.40	(0.32, 6.08)	2.33	(0.21, 25.30)
Poor	0.14	(0.07, 0.28)	0.16	(0.08, 0.34)	0.78	(0.08, 7.33)	0.18	(0.01, 3.75)
	(N = 1,928)		(n = 1,693)		(n = 153)		(n = 82)	
Go out for enjoyment								
Excellent	1.0 (ref)		1.0 (ref)		1.0 (ref)		1.0 (ref)	
Very good	1.32	(0.75, 2.32)	1.47	(0.80, 2.69)	1.55	(0.40, 6.06)	1.03	(0.07, 14.60)
Good	0.88	(0.55, 1.41)	0.73	(0.43, 1.25)	1.97	(0.53, 7.32)	8.27	(0.46, 148.24)
Fair	0.64	(0.35, 1.19)	0.57	(0.30, 1.11)	1.11	(0.31, 3.97)	1.18	(0.08, 17.40)
Poor	0.21	(0.11, 0.41)	0.20	(0.09, 0.46)	0.27	(0.06, 1.27)	0.43	(0.02, 7.73)
	(N = 2,948)		(n = 2,470)		(n = 326)		(n = 152)	

Notes: Only those who endorsed the activity as being very important were included in analyses. Sample sizes differ across groups and activities. The numbers in parentheses represent the sample size used in analysis. CI = confidence interval.

^aBolded confidence intervals indicate significance ($p < .05$).

possible or probable dementia were less likely to perform personally valued activities over the past month compared with the cognitively intact group. Differences were also found between those with possible or probable dementia with a slightly higher percentage in the latter group reporting lack of engagement. Specifically, among individuals who rated visiting friends and family as important, approximately 5% of cognitively healthy individuals did not perform this activity in the past month, compared with approximately 10% of individuals with possible dementia and 17% with probable dementia. Similar patterns were found for the other activities, with percentages across the three cognitive groups ranging from 10.52 to 25.87% for attending religious services, 14.94–54.50% for participating in clubs, classes, and other organizations, and 4.84–17.40% for going out for enjoyment.

As to barriers to participation, compared to cognitively healthy individuals, individuals with probable cognitive impairments were more likely to endorse transportation as a reason for limiting participation in going out for enjoyment;

no differences were found between any of the groups for visiting friends/family, attending religious services, or participation in clubs, classes, or other organized activity. These latter activities may not be heavily influenced by transportation if friends and family visit with the cognitively impaired individual in their own home or offer to drive the individual to religious services or other organizations. A study by [Curl and colleagues \(2013\)](#) found that social engagement was not immediately compromised by older adults transition from driver to nondriver status; however, engagement in productive activities (e.g., paid work, volunteering) was negatively impacted. Therefore, transportation may be a significant barrier for engaging in activities that may only be of interest to the individual but which do not rely on having friends and family in attendance, such as going out for enjoyment. For this activity, individuals with greater cognitive impairments may not have the cognitive resources necessary to organize transportation to continue participation in valued activities or do not want to burden family and friends by asking for their assistance.

Similarly, a greater percentage of individuals endorsed health-related problems as limiting activity participation in the past month (yes/no) for attending religious services and participating in clubs/classes. It appears that while activity may be continued if friends and family visit with the individual in their own home, activities that require leaving the home may be reduced or discontinued because of health reasons.

Using self-ratings of health status (from Excellent to Poor), we found that cognitively healthy individuals in worse physical health were less likely to participate in most activities compared with those in excellent health with the same cognitive status. Our findings also revealed that individuals with possible dementia in worse physical health were less likely to attend religious services compared with those who rated their health as excellent; this group was also more likely to participate in clubs/classes if they rated their health as very good. Finally, there was no evidence that those with probable dementia were less likely to participate in activities with poor health. Thus, it appears that health effects activity participation differently for each cognitive group. Although the exact reason for differential findings in activity participation across the three cognitive groups cannot be determined in the context of the present study, it may be that those with the most severe impairments are unable to perform activities because of associated cognitive demands and, therefore, decrease participation regardless of health status. Once goals are no longer attainable (because of cognitive losses), goal disengagement may become a necessary and successful means of adaptation, in which existing resources are allocated in such a way to avoid further losses and maintain health and well-being (Heckhausen, Wrosch, & Schulz, 2010). Alternately, those with cognitive impairment and poor health may experience double jeopardy—poor health may contribute to decreasing cognitive abilities to participate in activity. With this said, it is important to note that although individuals with probable dementia were less likely to participate in all four-valued activities compared with cognitively healthy individuals and those with possible dementia, a large percentage of individuals with probable dementia indicated that they performed valued activities in the past month. Longitudinal research examining activity patterns is necessary to more fully appreciate the complex associations among activity engagement, physical health, and cognitive status over time.

Consistent with previous research, our findings suggest that individuals with cognitive impairments continue to participate in meaningful activity (e.g., Genoe & Dupuis, 2014; Menne et al., 2012; Phinney et al., 2007); albeit to a lesser extent than their cognitively healthy counterparts (Johnson et al., 2014). We also show that this may reflect both intrinsic (e.g., health) and extrinsic or societal barriers (e.g., transportation) to participation or the lack of opportunities for meaningful engagement rather than disinterest. Moreover, lower rates of participation in valued activity in

this population may reflect cognitive difficulties in initiating and adhering to an activity schedule.

Our findings have important practical implications. Given the importance of activity engagement to health and well-being, activity professionals and practitioners should assess individual preferences for activity, even among those with cognitive impairment, and facilitate participation in preferred activities by addressing both internal (e.g., health) and extrinsic barriers (e.g., transportation) to participation. For instance, if transportation poses difficulty for visiting with friends and family, a practitioner may suggest alternate forms of transportation (e.g., bus, taxi) or suggest that family members visit the individual within their residence. Providing structured activities that are specifically tailored according to a person's level of skill, ability, and interests, as well as to environmental demands, may help to reduce the gap between valuing and participating in an activity. Greater levels of engagement may, in turn, result in broader health benefits (Gitlin et al., 2009; Kolanowski, Buettner, Costa, & Litaker, 2001; Trahan et al., 2014).

This study has several important strengths, including a large, population-based sample, with varying levels of cognitive status. However, results must be interpreted alongside several limitations. First, only a few items were included that tapped into the level of importance or value associated with specific activities. These four activities (visiting friends/family, attending religious services, participating in clubs/classes, going out for enjoyment) may not reflect activities that individuals hold most important in their lives. Likewise, the limited number of items excludes many activities that older adults, regardless of cognitive status, enjoy and frequently perform, such as reading, exercise, and television watching (Menne et al., 2012; Parisi, 2010; Parisi et al., 2012; Szanton et al., 2015). Additionally, as respondents were only asked to indicate whether (yes/no) they participated in each of the four activities during the past month, we do not know how often they participated or the extent of engagement with these activities, which may be differentially related to positive health outcomes (Matz-Costa, Besen, Boone James, & Pitt-Catsouphes, 2012). Similarly, respondents were asked whether (yes/no) health or transportation limited participation in the four listed activities, which failed to capture other reasons for ceasing participation.

Second, our findings rely on self-reported survey assessments. To the extent that cognitive limitations impact the ability to accurately respond to such questions, the endorsement of value or participation in activities, barriers to participation, or current health status may be over or underestimated. Nevertheless, previous research has demonstrated that individuals with cognitive impairments can reliably communicate preferences for specific activities (Menne et al., 2012; Van Haitsma et al., 2012) and barriers to participation (Innes et al., 2015), although more work needs to be conducted with community samples to assess the stability of leisure activity ratings over time (Van

Haitsma et al., 2014). Further research combining subjective and objective measures of activity in diverse populations is warranted, which may be especially beneficial in more cognitively impaired populations where accurate accounts of activity participation may be more problematic. However, this analysis removed from the sample those who did not respond for themselves (i.e., relied on proxy respondents). Therefore, those categorized as having probable dementia in the present sample are not as severely impaired as respondents who were excluded from the analysis and may be able to provide more accurate estimates of activity value and participation. Related to this point, we classified individuals into three groups—*No Dementia*, *Possible Dementia*, and *Probable Dementia*—according to the NHATS dementia classification scheme (Kasper et al., 2013). This approach relied on performance-based cognitive measures and did not include a validated, medical diagnosis to determine severity of cognitive impairment. There is the possibility that individuals may have been misclassified, thus under- or overestimating our findings. Lastly, given the cross-sectional nature of our analyses, we cannot draw any conclusions about stability or change in the attributed value or actual participation in these activities over time and with disease severity. Our study offers a snapshot of activity participation at one time point.

In summary, older adults without and with cognitive impairments highly value participation in activities; however, actual participation in these specific activities appears to decrease as cognitive and physical health worsens. Given the present findings, as well as a growing body of evidence demonstrating beneficial effects of remaining actively engaged in later life for both cognitively healthy (James, Boyle, Buchman, Barnes, & Bennett, 2011; Paganini-Hill et al., 2011) and cognitively impaired populations (Gitlin, et al. 2009), creating opportunities and reducing barriers for meaningful engagement is of utmost importance. Further, understanding activity preferences and participation patterns will aid in the development of tailored interventions for specific populations to achieve desired activity goals and, in turn, serve to maintain (or perhaps improve) the cognitive and physical health of an aging population.

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