Cognitive, Visual, Auditory, and Emotional Factors That Affect Participation in Older Adults

Monica S. Perlmutter, Anjali Bhorade, Mae Gordon, Holly H. Hollingsworth, M. Carolyn Baum

KEY WORDS
- cognition disorders
- depression
- hearing disorders
- home care services
- human activities
- mass screening
- vision disorders

OBJECTIVE. To determine whether changes in hearing, cognition, depression, and vision affect daily life participation and whether screening tests that identify problems could be used in the home.

METHOD. Interviewers assessed presence of medical conditions, social class, distance acuity, cognition, hearing, depression, and participation using valid screening tools. Participation scores were subgrouped according to negative or positive results. Multiple regression analysis determined association of screening tests with participation.

RESULTS. Eighty-eight older adults, ages 62–90, participated. Positive screening tests were found in 43% of participants for distance acuity, 9% for cognitive problems, 8% for depression, and 15% for hearing loss. Relationships were found among age, cognition, depression, and vision and participation.

CONCLUSION. Mild levels of decreased vision, depression, and decreased cognition are associated with lower participation. These conditions can be screened by occupational therapists and managed to help older adults remain active and maintain their health.


A common fear people have as they age is losing the ability to participate in necessary and desired activities. Many older adults remain active in their family and community lives. At the same time, a growing population of older adults will need to use social services and medical systems to manage their chronic diseases and resulting disabilities (Beck & Stuck, 1996; Fried & Guralnik, 1997). Older adults are the fastest growing segment of the U.S. population today. It has been reported that as many as 40% of people ≥ age 65 experience difficulty performing their usual activities (Rubin, Roche, Prasada-Rao, & Fried, 1994). Manton, Corder, and Stallard (1997) estimated that by 2050, the number of older people with one or more disabilities will triple; this poses a major challenge for older adults, their families, and society.

Everyday instrumental, leisure, and social activities help people sustain their health as they engage in activities that allow them to remain involved with their families, communities, and society (Glass, Seeman, Herzog, Kahn, & Berkman, 1995; Marsiske, Klumb, & Baltes, 1997; Wilson et al., 2002). As the number of older adults increases, it is vital that society anticipate the resources needed to support older adults’ performance. Understanding the difference between successful and unsuccessful aging and how the normal conditions of aging can be managed to retain older adults in a successful state will be important (Rowe & Kahn, 1997). We must also increase our efforts to understand the psychological, physiological, social, and environmental factors associated with the decline in engagement in activity and occupational performance. We chose to address participation, which is defined by the World Health Organization...
(2001) as involvement in a life situation. With this understanding, it will be possible to design programs and services to maximize older adults’ participation in family and community life.

Depression and the loss of vision, hearing, and cognitive abilities are common in older adults. Reidy et al. (1998) conducted a community-based study and found that bilateral vision impairment occurs in 30% of adults ≥ age 65. Several common eye conditions, such as macular degeneration, glaucoma, and cataract, may result in vision loss significant enough to affect older people’s occupational performance. Of community-dwelling older adults, 8% have macular degeneration (Reidy et al., 1998), which causes central vision loss and affects activities such as reading, shopping, community mobility, and participation in leisure activities (Lamoureux, Hassell, & Keeffe, 2004). Open-angle glaucoma, which primarily affects peripheral vision, occurs in 3% to 8% of older adults living in the community (Campbell, Crews, Moriarty, Azck, & Blackman, 1999; Reidy et al., 1998). Approximately 20.5 million (17.2%) of Americans ≥ age 40 have cataracts in one or both eyes, with the total number expected to increase to 30.1 million by 2020 (Eye Diseases Prevalence Research Group, 2004). Cataracts can be managed with surgery, but if left untreated they can cause blurred vision, difficulty with color recognition, problems with glare, and loss of contrast sensitivity (Colby, 2008).

Hearing loss is another common chronic condition and has been reported at a level of 33.2% to 87% of older adults living in the community (Campbell et al., 1999; Cruickshanks et al., 1998; Keller, Morton, Thomas, & Potter, 1999; Strawbridge, Wallhagen, Seema, & Kaplan, 2000). Hearing loss has the potential to disrupt communication with others (Hooymann & Kiyak, 2005) and to affect participation in activities such as talking on the telephone (Stuck et al., 1999). To compensate for a single sensory impairment, elders will depend on their intact senses. Unfortunately, older adults with dual sensory impairments have more difficulty compensating. Dual sensory losses have been found in 8.6% of older adults (Campbell et al., 1999), and another study (Bergman & Rosenhall, 2001) found that 23% of people ≥ age 81 have some degree of dual sensory impairment.

Even in the absence of neurological disease, older adults may experience a variety of age-related central nervous system changes that have the potential to cause cognitive decline (Foster, Perlmuter, & Baum, 2008). Decreased executive functioning is thought to occur as a result of loss of frontal cortex (Grigsby, Kaye, & Robbins, 1995). Other changes in the brain result in changes in neurotransmitter functioning and synapse structure that manifest as increased reaction time and slowed processing of information (Hooymann & Kiyak, 2005). In addition, chronic illness has been linked to cognitive decline among older adults; this accelerated cognitive loss is one of the key risk factors for decreased occupational performance among community-residing elders (Stuck et al., 1999).

The aging process can involve many stressful events; one’s ability to alleviate stress, learn from experience, and obtain a sense of meaning and fulfillment greatly influences psychological well-being in older adulthood (Foster et al., 2008). Psychological disorders are common among community-dwelling older adults, ranging from 15% to 25% (Hooymann & Kiyak, 2005). Depression alone or in combination with other chronic diseases can lead to a shortened active life expectancy (Reynolds, Haley, & Kozlenko, 2008). Lack of identification and treatment of psychological conditions is a key related issue and is problematic for many reasons. For example, some symptoms of depression, such as changes in sleeping and eating patterns and loss of interest in activities, may be associated with normal aging (Hooymann & Kiyak, 2005). Another factor is that mental health services may not be covered by Medicare or Medicaid (Norris, Molinari, & Rosowsky, 1998); therefore, older adults seek treatment by primary care physicians, who may be more likely to prescribe medication than to recommend psychosocial approaches to therapy (Wetherall, 1998). Given the prevalence of these impairments, it is imperative that occupational therapists identify problems that threaten older adults’ occupational performance.

The objective of this descriptive pilot study was to answer the following research questions:

1. What are the influences on participation of common conditions faced by older adults, such as depression and changes in hearing, cognition, and vision?
2. Can screening tests that identify problems, such as depression and changes in hearing, cognition, and vision, be used in the home?

Method

Participants and Recruitment

The institutional review board of Washington University School of Medicine approved the protocol. Ninety-six community-dwelling adults were recruited from three sources. A systematic proportional sample of community-dwelling elders was recruited from the 2000, 2001, and 2002 membership lists of the Older Adults Services and Information System (OASIS), an arts-, humanity-,
and health-oriented volunteer organization. Every fifth name on the list of OASIS members residing in three target zip code areas in metropolitan St. Louis was selected from each yearly membership list. To be included, the participants had to live in the community, be ≥ age 55, and be willing to participate. Selected members were mailed an invitation to participate in the study and were contacted by telephone. We attempted to contact 636 people (96, Year 1; 386, Year 2; and 154, Year 3). We were unable to contact a high proportion of the target sample because of out-of-date contact information and people not being at home. A total of 81 people were contacted by telephone, 74 of whom signed a consent form and completed the assessment. We selected a sample of 20 people recently discharged to home from the stroke service at Barnes–Jewish Hospital, St. Louis, Missouri; 14 were included. To enrich the sample with people managing a visual condition, we enrolled 8 patients diagnosed with age-related macular degeneration. These participants were living independently in the community and were recruited consecutively by ophthalmologists at the Barnes Retina Institute.

Measures

Participants completed a comprehensive assessment battery that included screening tools to capture cognition, depression, audition, and a standardized measure of distance acuity as well as a measure of participation to determine the older adults’ current level of engagement in instrumental, leisure, and social activities. The Person–Environment–Occupational Performance (PEOP) Measurement Model (Baum & Christiansen, 2005) provided the rationale for the selection of the measurements of the sensory, affective, and cognitive problems faced by older adults in the context of their everyday lives. Data from environment and occupation measures were also collected and will be the focus of future articles. Specific variables include cognition, hearing, vision, depression, and activity participation. Measures used to describe the sample and to collect data for each variable are described briefly; psychometric properties and scoring information are included in Table 1.

We used a modified version of the Physical Health portion of the Older Adult Resources and Services (OARS; Fillenbaum, 1988) Multidimensional Functional Assessment Questionnaire and Services Supplement to gather information regarding the study participants’ medical conditions. The Hollingshead Index of Social Position was used to measure social class and further describe the sample (Hollingshead & Redlich, 1957).

To screen for memory and concentration deficits, we used the Short Blessed Test (or Short Orientation–Memory–Concentration Test; Blessed, Tomlinson, & Roth, 1968; Katzman et al., 1983). The Hearing Screening Test assesses the capacity for hearing a combination of high- and low-pitched sounds used in everyday conversation without the benefit of lip reading (Scheuerle, 2000).

We tested binocular distance visual acuity with the Early Treatment of Diabetic Retinopathy Study (ETDRS) chart developed by Ferris, Kasoff, Bresnick, and Bailey (1982) to standardize the measurement of distance visual acuity. Rather than testing each eye individually, we tested binocular vision to better reflect functional vision (Azen et al., 2002). Visual acuity was tested initially with the participants’ usual distance correction under ambient household lighting and again under standardized lighting similar to an ophthalmic clinical setting. Standard lighting levels were achieved with the use of a gooseneck-style floor lamp. Household lighting was measured with the Luna-Pro digital light meter (Model No. 4022; Gossen GmbH, Erlangen, Germany).

We used the Geriatric Depression Scale–Short Form (Alden, Austin, & Sturgeon, 1989; Sheikh & Yesavage, 1986), a 15-item version of a 30-item scale, to assess presence of depression. The Activity Card Sort (ACS; Baum, 1995; Baum & Edwards, 2008) assesses an individual’s participation in instrumental, leisure, and social activities and provides a profile of the extent to which activities relevant to the individual have been retained, given up, or performed less often.

Procedure

Occupational therapy graduate students participated in a 1-wk training course to learn to conduct interviews and functional testing. The occupational therapy students also had 2 additional days of training on the vision measures by Anne Coleman, Department of Ophthalmology, University of California, Los Angeles, who provided instruction and supervision as the students tested normal volunteers from Washington University and community volunteers. In-house training at the university was followed by a day of training in the St. Louis community, which consisted of performing the battery of assessments with older adults in their own homes. Interrater reliability was established for the vision measure on the sample of Washington University community volunteers (intraclass correlation coefficient = .92). Older adults who gave verbal consent by telephone for study participation were scheduled for a home visit. After verbal consent, potential participants received letters that confirmed the date and time of appointment and included contact information for research staff and photographs of the evaluators.

During the home visit, study participation was described, and written consent was obtained by the
Table 1. Measures Used to Assess Participation, Vision, Depression, Hearing, Social Class, Health Conditions, and Cognition

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Purpose and Psychometrics</th>
<th>Scoring</th>
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</thead>
<tbody>
<tr>
<td>ACS (Baum, 1995; Baum &amp; Edwards, 2008)</td>
<td>Assesses an individual’s participation in instrumental, leisure, and social activities. The content, construct, and predictive validity have been established (Katz, Karpin, Lak, Furman, &amp; Hartman-Maeir, 2003; Sachs &amp; Josman, 2003). The ACS has high internal consistency for instrumental activities of daily living and social activities and moderate internal consistency for low and high physical leisure activities (Katz et al., 2003).</td>
<td>Yields a profile of activities that have been retained or given up or are now being done with less frequency since age 60. A total score of 80 is possible with a range of 0–80.</td>
</tr>
<tr>
<td>ETDRS chart (Ferris et al., 1982; Lovie-Kitchin, 1988)</td>
<td>Measure of distance visual acuity. Test–retest reliability is .98; concurrent validities with the Flom, Snellen, and illiterate E charts are .91, .94, and .96, respectively.</td>
<td>Positive screening value of 20/40 or worse is indicative of declining visual function (Salive et al., 1994).</td>
</tr>
<tr>
<td>Geriatric Depression Scale–Short Form (Alden et al., 1989; Brink et al., 1989; Sheikh &amp; Yesavage, 1986)</td>
<td>Study participants answer 15 yes–no questions about feelings, interests, activities, and hopes. Reliability, validity, and sensitivity–specificity studies have been conducted on the original 30-item version (Sheikh &amp; Yesavage, 1986), and the short form distinguishes depressed from nondepressed study participants ($r = .84$, $p &lt; .001$).</td>
<td>Range of possible scores is 0–15. A score of ≥5 indicates possible depression.</td>
</tr>
<tr>
<td>Hearing Screening Test (Scheuerle, 2000)</td>
<td>Assesses capacity for hearing a combination of high- and low-pitched sounds used in everyday conversation without the benefit of lip reading.</td>
<td>Score of ≤4 on a scale ranging from 0 (worst) to 5 (best) is indicative of possible hearing loss.</td>
</tr>
<tr>
<td>Hollingshead Index of Social Position (Hollingshead &amp; Redlich, 1957)</td>
<td>Uses self-reported information regarding the head of household’s occupation and the participant’s level of education to determine position on social class scale.</td>
<td>Social class scale ranges from 1–5, with 5 being the highest.</td>
</tr>
<tr>
<td>OARS Multidimensional Functional Assessment Questionnaire and Services Supplement–Physical Health (Fillenbaum, 1988; Fillenbaum &amp; Smyer, 1981)</td>
<td>Gathers information regarding medical conditions of the study participants. Concurrent validity, Spearman rank-order correlation coefficient = 0.82; interrater reliability, complete agreement for 74% of items; intraclass correlation coefficient = 0.66.</td>
<td>Participants indicate conditions they have and the degree to which the conditions bother them.</td>
</tr>
<tr>
<td>Short Blessed Test (or Short Orientation–Memory–Concentration Test; Blessed et al., 1968; Katzman et al., 1983)</td>
<td>Consists of six items assessing memory, orientation, and concentration and is a reliable and valid screening tool for detection of dementia in community and long-term care populations. Concurrent validity was established with the Mental Status Questionnaire ($r = .945$).</td>
<td>Range of possible scores is 0–28; the higher the score is, the greater is the cognitive impairment. A score of ≥8 is considered indicative of possible cognitive impairment.</td>
</tr>
</tbody>
</table>

Note. ACS = Activity Card Sort; ETDRS = Early Treatment of Diabetic Retinopathy Study; OARS = Older Adult Resources and Services.

evaluator. Demographic information was collected, and the assessments were administered. Trained occupational therapy graduate students collected data for this pilot study over a period of 3 years as part of their master’s degree projects. To understand the impact of these mild impairments, 8 study participants of the original 96 were excluded from the analysis dataset because they had significant vision loss; more than two positive screening values on cognitive, depressive, or auditory tests; or both.

Data Analysis

We calculated descriptive statistics including means, standard deviations, and range of scores for each demographic and outcome variable. Correlation coefficients were used to calculate relationships between variables. Student’s paired t tests were conducted to compare activity participation for negative and positive findings for vision, cognition, depression, hearing, and age. To measure the magnitude of the standardized differences of participation, we also computed an effect size for vision, cognition, depression, hearing, and age differences. A multiple regression analysis was performed to assess the contribution of vision, cognition, depression, hearing, gender, and age to the variability of participation.

Results

The participants ranged in age from 62 to 90 yr; the mean age was 74.3 (Table 2). The participants were primarily female (64%); self-identified White (96%); and married (58%) and represented a uniform distribution of social status.

Table 3 reports the means, standard deviations, and ranges for the ETDRS distance acuity chart, Short Blessed Test, Geriatric Depression Scale, Hearing Screening Test, and age. In addition, mean activity participation scores, as measured by the ACS, are stratified by classification on the screening tests as negative or positive. A participant could screen positive on more than one test, so...
the total number of participants with positive screening tests is >100%. Of 88 participants, 35 had a positive screening value for one impairment, and 9 had a positive screening value for two impairments.

Of the participants, 40% (n = 35) had a positive vision screening score, yet only 15% (n = 13) self-reported on the Physical Health portion of the OARS that their vision was limited on the basis of their eye exam. Binocular distance visual acuity was assessed with the participant’s usual correction (95% wore glasses). The mean distance visual acuity value was 52.0 or approximately 20/25 distance equivalent. Among the 35 participants with a positive screening value of ≤20/40 for binocular distance visual acuity tested under ambient household light, the mean ACS score was 38.4 (standard deviation [SD] = 10.8) compared with 48.8 (SD = 10.7) among those with a normal screening value for vision (p < .0001). We computed a moderate effect size correlation of .43 for this difference.

Few participants had a positive auditory screening, but 15% (n = 13) could not repeat all of the sounds when tested. Among the 13 participants with a positive screening value for hearing, the mean ACS score was 44.5 (SD = 7.5) compared with 44.5 (SD = 12.5) among participants with a negative screening value (p = .80), showing no difference. A small effect size correlation for this difference was computed to be .03.

In the sample of older adults, only 9% (n = 8) had cognitive limitations when tested, whereas 25% (n = 22) indicated on the modified Duke Medical Index that they had memory problems. Among the 8 participants with a positive screening value for cognition, the mean ACS score was 38.7 (SD = 13.4) compared with 45.3 (SD = 11.6) for those with a normal screening value (p = .14). The small effect size correlation for this difference was .16.

Table 3. Comparison of Mean Activity Participation Scores Stratified by Screening Status and Age

<table>
<thead>
<tr>
<th>Measure</th>
<th>n (%)</th>
<th>M (SD), Range</th>
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<tbody>
<tr>
<td>Early Treatment of Diabetic Retinopathy Study (binocular distance acuity)</td>
<td></td>
<td></td>
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<tr>
<td>Negative (better than 20/40)</td>
<td>53 (60)</td>
<td>52.0 (8.4)</td>
</tr>
<tr>
<td>Positive (≤20/40 or worse)</td>
<td>35 (40)</td>
<td>48.8 (10.7)</td>
</tr>
<tr>
<td>t(86) = -4.44, p &lt; .0001, r = .43</td>
<td></td>
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<tr>
<td>Short Blessed Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative (&lt;8)</td>
<td>80 (91)</td>
<td>45.3 (11.6)</td>
</tr>
<tr>
<td>Positive (≥8)</td>
<td>8 (9)</td>
<td>38.7 (13.4)</td>
</tr>
<tr>
<td>t(86) = 1.49, p = .14, r = .16</td>
<td></td>
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<tr>
<td>Geriatric Depression Scale</td>
<td></td>
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<tr>
<td>Negative (&lt;5)</td>
<td>81 (92)</td>
<td>45.3 (11.9)</td>
</tr>
<tr>
<td>Positive (≥5)</td>
<td>7 (8)</td>
<td>37.4 (9.1)</td>
</tr>
<tr>
<td>t(86) = 1.70, p = .09, r = .18</td>
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<tr>
<td>Hearing Screening Test</td>
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<tr>
<td>Negative (5)</td>
<td>75 (85)</td>
<td>44.5 (12.5)</td>
</tr>
<tr>
<td>Positive (≤4)</td>
<td>13 (15)</td>
<td>44.5 (7.5)</td>
</tr>
<tr>
<td>t(86) = -2.6, p = .001, r = .03</td>
<td></td>
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<tr>
<td>Age</td>
<td></td>
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<tr>
<td>Younger (&lt;75 years)</td>
<td>48 (55)</td>
<td>48.8 (11.4)</td>
</tr>
<tr>
<td>Older (≥75 years)</td>
<td>40 (45)</td>
<td>39.7 (10.6)</td>
</tr>
<tr>
<td>t(86) = 3.33, p = .001, r = .34</td>
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Note. N = 88. M = mean; SD = standard deviation; r = effect size correlation.
Table 4. Pearson Correlation Coefficients of Key Variables (N = 88)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<tbody>
<tr>
<td>1. Gender</td>
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<tr>
<td>2. Age</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Hearing screening test</td>
<td>-.05</td>
<td>-.16</td>
<td></td>
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<tr>
<td>4. Short Blessed Test</td>
<td>-.17</td>
<td>.18*</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Geriatric Depression Scale–Short Form</td>
<td>-.05</td>
<td>.12</td>
<td>.02</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Early Treatment of Diabetic Retinopathy Study</td>
<td>.02</td>
<td>-.45**</td>
<td>.01</td>
<td>-.14</td>
<td>-.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Activity Card Sort</td>
<td>-.09</td>
<td>-.45**</td>
<td>-.01</td>
<td>-.31**</td>
<td>-.39**</td>
<td>.51**</td>
<td></td>
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</tbody>
</table>

*p < .05. *p < .01.

Of the participants, 8% (n = 7) had a positive screening value of ≥5 on the Geriatric Depression Scale, and 5% (n = 4) reported mental health problems. Among the 7 participants with a positive screening value for depression, the mean ACS score was 37.4 (SD = 9.1) compared with 45.3 (SD = 11.9) for those with a negative screening value (p = .09). The small effect size correlation was computed as .18. Older participants engaged in fewer activities (mean = 39.7, SD = 10.6) than younger participants (mean = 48.8, SD = 11.4, p < .001). The moderate effect size correlation for this difference was .34 (Table 3).

Table 4 reports Pearson correlation coefficients between gender, age, Hearing Screening Test, Short Blessed Test scores, Geriatric Depression Scale–Short Form rating, ETDRS binocular distance visual acuity scores obtained under ambient light, and ACS participation scores. The highest intercorrelations with the ACS were found for binocular distance visual acuity (r = .51), age (r = -.45), Short Blessed Test scores (r = -.31), and Geriatric Depression Scale scores (r = -.39).

Table 5 reports a multiple regression analysis of the relationship of screening assessment scores (vision, depression, hearing, and cognition) and demographic factors (age, gender) to activity participation. Factors that significantly contributed to participation included age, depression, cognition, and vision. Hearing and gender were not associated with ACS participation scores.

The measures used in the data analysis were selected from a much larger 2.5-hr battery of assessments used in a research project. The measures reported in this article required approximately 25 min to complete. Participants were receptive to the entire assessment process. All measures are available free of cost in the public domain and can easily be used in the home setting or included in a routine initial assessment to determine factors that influence design of rehabilitation programs.

Discussion

The PEOP Measurement Model (Baum & Christiansen, 2005) proved to be a valuable structure for guiding the assessment of sensory, affective, and cognitive problems older adults face in their everyday lives and guided us to address the physical and social environments as well. Pearson (2000) supported this notion, stating that a conceptual framework “provides the frame of reference for understanding the variables studied, for selecting the instruments used to collect information and for interpreting results” (p. 22). By using the PEOP model, we were able to create an approach to assessment that allowed us to detect changes in daily activities in a community-residing sample of older adults and determined that vision, cognition, and depression had a significant impact on participation.

The findings of this pilot study suggest that participation changes as people age. As would be expected, younger participants were more active (engaging in 48.8 of 80 activities) than older participants (engaging in 39.7 of 80 activities). However, the problems of decreased vision, decreased cognition, and depression are limiting factors beyond age and must be considered to foster health and participation in older adults. The importance of a comprehensive screening procedure to identify factors that may limit participation is supported by the results. People at risk for restricted participation need to be identified because many of these age-related conditions may be improved with proper medical care; in addition, activity plays an important role in maintaining health and...
avoiding excess disabilities. We discuss each of the contributing factors in further detail.

A distance visual acuity level in the range of 20/40 to 20/70 was a positive screening test for mild visual impairment. We found a statistically significant decrease in participation at this seemingly adequate visual acuity level. These findings are surprising considering that 20/40 visual acuity is considered sufficient to possess an unrestricted driver’s license in many states. The 1999–2002 National Health and Nutritional Examination Survey (Vitale, Cotch, Sperduto, & Ellwein, 2006) found that 83% of the visual impairment, defined as distance visual acuity of 20/50 or worse, could be improved to 20/40 or better with refractive correction. Small changes, such as getting new glasses or increasing levels of luminance in the home, may increase visual acuity. In addition, adding contrast can increase the visibility and safety of the environment. This finding suggests that low-cost public health intervention could have an important impact on quality of life and function.

Surprisingly, we found no significant difference in participation levels between the study participants who had a positive Hearing Screening Test (n = 13, 15%) and those with a normal screening value. The small number of participants with a positive Hearing Screening Test limited the statistical power to detect differences. In addition, it is possible that the Hearing Screening Test (Scheuerle, 2000) is not sensitive enough to detect mild hearing losses or that mild hearing loss may not have an impact on instrumental activities of daily living or leisure activities that are performed alone, thus participation levels would not be affected. Further investigation is warranted.

In our sample, age, depression, cognition, and vision were related to participation. As people aged, they were less active. In addition, depression and decreased cognition negatively affected participation. People with minor vision impairment (20/40) experienced reduced participation. These results were surprising and of particular interest in light of low vision’s being defined as 20/70 or worse. These findings suggest the importance of occupational therapists’ administering screening tools to identify these issues that may affect what people need and want to do.

The negative relationship indicates that as depression scores increase, activity participation decreases. Similar findings have been noted by Williamson (1998), who concluded that stressful life events experienced by older adults affect psychological well-being “largely (and sometimes, only) to the extent to which they restrict the ability to engage in routine activities” (p. 327). Benyamini and Lomranz (2004) found that giving up activities because of failing health was linked to depressive symptoms and that replacing these activities with suitable alternatives resulted in psychological well-being comparable to that of healthier adults. Depression must be detected early, diagnosed accurately, and managed (Ormel et al., 1998). In addition to referring clients to their primary physician to address depressive symptoms, occupational therapists are well positioned to adapt activities of interest or assist clients in choosing meaningful replacement activities.

The tests selected to screen for distance acuity, cognition, hearing, depression, and activity participation were sensitive to mild problems that affected performance. The ETDRS distance acuity chart (Ferris et al., 1982), Short Blessed Test (Blessed et al., 1968; Katzman et al., 1983), Hearing Screening Test (Scheuerle, 2000), Geriatric Depression Screen–Short Form (Alden et al., 1989; Sheikh & Yesavage, 1986), and ACS (Baum, 1995; Baum & Edwards, 2008) proved to be easy to administer and applicable for use in home and community settings. Rather than rely on self-report of these problems, we found actual screening for deficits to be important. Actual measurement of vision, cognition, hearing, depression, and participation is important because older adults may under- or overreport problems or attribute changes to the normal aging process. In addition, changes may be so gradual that they are not noted by the individual or his or her family members.

Administration of these tests as part of routine occupational therapy plays an important role in supporting successful aging in two ways: identifying impairments that can limit participation in older adults and addressing these impairments through occupational therapy intervention or referring older adults to their primary care physician and other health care professionals.

The limitations of our study include possible selection bias because people who agreed to participate may have a higher level of participation than is truly present in the community. The small sample size of positive screening tests for hearing, cognition, and depression may not accurately reflect the effects these sensory modalities have on participation. Future studies including a larger, more representative sample size may provide a better understanding of whether such associations exist. The population used in this study was predominantly White and resided in a community-dwelling neighborhood. These participants were relatively healthy and had fairly good visual acuity. The results of this study may not generalize to other ethnicities, older adults in nursing homes, or people with increased comorbidities or substantially decreased vision. The etiology of decreased vision in this report was not documented. Further assessment of whether various
ocular disorders affect participation differently will be important to determine as well. Last, the cross-sectional nature of our study makes it difficult to attribute a cause-and-effect relationship among vision, depression, and participation.

The cause-and-effect relationship of these variables and their impact on occupation and participation are not known. We pose the following interesting questions that could guide future research in the area of productive aging.

1. Does decreased vision limit participation and ultimately result in depression?
2. Do people who self-identify cognitive and sensory changes limit their activities?
3. Does depression limit participation and cause further decline in participation when vision is limited?
4. Is it possible that people with depression and limited vision restrict participation and, therefore, decrease engagement in experiences, resulting in cognitive loss?

These questions can be addressed with large samples of people with a broader range of sensory and cognitive impairment, as well as more diverse ethnic and socioeconomic representation. An ideal situation would be to have a longitudinal cohort study to test the hypothesis using a structured equation model.

A broader issue is the evolution of our understanding of the importance of participation and its relationship to health and well-being. Inherent in understanding successful aging is the need to determine how changes associated with aging affect social engagement, leisure participation, and activities instrumental to community independence. This study is a beginning step in describing how person, environmental, and occupational factors contribute to the participation of older adults. Eventually, such work can inform policy, inform the practice of medicine and rehabilitation, and provide evidence for innovative programs for older adults.

Factors such as cognition, vision and other sensory modalities, and depression dictate, in part, a person’s capacity for doing and influence his or her desire and need to engage in occupation (Foster et al., 2008) and should be routinely assessed. Knowledge of the presence of these impairments can be incorporated into client-centered assessment and intervention plans. Occupational therapists should be aware that even seemingly minimal losses of vision and cognition and mild depression can have negative ramifications on participation and potentially on quality of life and that excess disabilities can occur when a person has untreated vision or hearing loss or has unrecognized cognitive impairment or depression (Baum, Perlmutter, & Edwards, 2000). Occupational therapists are in a prime position to identify impairments that will affect the occupational therapy assessment and intervention process and to connect clients with services and other health care professionals to enhance occupational performance and well-being. ▲

Acknowledgments

This project was possible because of the efforts of occupational therapy graduate students at Washington University in St. Louis’s Program in Occupational Therapy. We acknowledge the contributions and support of Michael Kass, MD, and Anne Coleman, MD. Preliminary results of this study were presented at the Association for Research in Vision and Ophthalmology Annual Conference, Ft. Lauderdale, Florida, May 2005.

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