This study examines the relationship between vision impairment, defined as best corrected distance acuity, and disruptive behaviors among nursing home residents (N = 89). All data were collected from nursing home records. Vision impairment was significantly related on the bivariate level to the disruptive behavior index (r = .21; p < .05). Hierarchical regression analyses, with disruptive behaviors as the criterion and age and comorbid conditions as covariates, indicate that vision status is a significant independent contributor to disruptive behaviors among long-term care residents. Several interpretations for this observed relationship are discussed, as are implications for nursing home services and future research.

Key Words: Sensory impairment, Problem behaviors, Long-term care, Rehabilitation, Mental health

The Relationship Between Vision Impairment and the Assessment of Disruptive Behaviors Among Nursing Home Residents

Amy Horowitz, DSW

This article addresses the relationship between disruptive behaviors and age-related vision impairments, two common conditions affecting significant proportions of nursing home residents. Disruptive behaviors have been the subject of considerable research, including the prevalence, characteristics, and care management of residents who exhibit such behaviors. In contrast, vision impairment and its consequences have been addressed only rarely in the long-term care gerontological literature. Furthermore, the potential relationship between vision loss and the prevalence of disruptive behaviors has been virtually ignored in previous research.

Disruptive Behaviors Among Nursing Home Residents

Disruptive behaviors among nursing home residents represent a major care issue for clinical and administrative staff and may significantly contribute to increased costs of long-term care (Beck, Rossby, & Baldwin, 1991; Hu, Huang, & Cartwright, 1986; Jackson et al., 1989; Spector & Jackson, 1994). Although the specific types of disruptive behaviors incorporated in clinical and research instruments vary widely, typical behavior indicators include: wandering, physical and verbal abusiveness, yelling, noisiness, compulsive stealing, sexually inappropriate behavior, temper tantrums, hurting self or others, confusion, agitation, hallucinations, regression, delusions, and resistance to care (see Beck et al., 1991, for review).

Estimates of the prevalence of disruptive behaviors among nursing home residents also vary considerably. Discrepancies in prevalence estimates exist, not only because studies differ in which behaviors are included and whether they are assessed through chart review, staff reports, or observation, but also because investigations differ in their samples of interest. That is, some study samples include only residents diagnosed as cognitively impaired, whereas others select samples representative of all nursing home residents, regardless of mental status and/or diagnosis of dementia. In a review of 14 studies of disruptive behaviors within nursing home settings, which included samples of both types described above, Beck et al. (1991) report an average prevalence of 42.8% across a total of 5,650 subjects. However, research exclusively focused on cognitively impaired residents indicates that the prevalence of disruptive behaviors may be as high as 75% to 100% (e.g., Cohen-Mansfield, 1986). Studies with large representative samples of nursing home residents indicate that only about one-fourth exhibited some form of severe disruptive behaviors (Jackson et al., 1989; Zimmer, Watson, & Treat, 1984).

Considerable research attention has also been given to identifying the correlates of disruptive behaviors among nursing home residents. While cognitive status, functional ability, age, and premorbid personality represent the variables most frequently linked with disruptive behaviors (Beck et al., 1991), significant relationships have also been detected between disruptive behaviors and incontinence (Jackson et al., 1989), longer lengths of stay (Nilsson, Palm-
tic or disruptive behaviors, other research has documented that disruptive behaviors may be exhibited in cognitively intact elders as well. For example, Zim-
er et al. (1984) report that almost one-fifth (18.6%) of residents who were found to have behavioral problems were not diagnosed as cognitively impaired. Data from a representative sample of more than 3,000 nursing home residents in Rhode Island indicate that slightly more than half of the residents who exhibited at least one disruptive behavior had either no or only mild cognitive impairments (Jackson et al., 1989). Furthermore, within a community-
based sample, only 57% of elders with disruptive behaviors were also classified as cognitively impaired (Spector, 1991). While investigators of these studies speculate that they may be identifying elders at early stages of undiagnosed cognitive impairment, they also raise the hypothesis that other factors in the social, psychological, physiological, and/or environmental spheres may play a role in the assessment of disruptive behaviors (Spector & Jackson, 1994).

Thus, the available literature points to the importance of examining additional, less commonly studied comorbid conditions that are typically present within nursing home populations and that may prove to be important correlates of disruptive behaviors among nursing home residents.

Vision Impairment Among Nursing Home Residents

It has been suggested that sensory loss may compound the problems associated with dementia and represent an environmental factor contributing to problem behaviors (Coons & Weaverdyck, 1986; Le-
er et, 1991). Early research among nursing home resi-
dents found a significant relationship between vision impairment and mental functioning among nursing home residents (Snyder, Pyrek, & Smith, 1976). In studies of community-based elders, vision functioning has been found to be related to cognitive status (Golden, Teresi, & Curland, 1984) and to self-reported memory problems (Colsher & Wallace, 1990).

The prevalence of vision impairment increases dramatically with age (Havlik, 1986), placing the oldest elderly most at risk of a vision disability. Because of the advanced age of most nursing home residents, it has been estimated that the rate of vision impairment among the institutionalized population is at least four times as great as it is among elders residing in the community (Kirchner, 1985). Data from the 1985 National Nursing Home Survey (Hing, Sekscen-
ski, & Strahan, 1989) indicate that 22% of all nursing home residents age 65 years and older have a partial or severe vision impairment and another 2.5% are totally blind. Among those 85 years and older, 28% are reported to have a partial or severe impairment, with another 3.2% being totally blind.

Because the National Center for Health Statistics collects data from medical records and/or staff reports, these data have been criticized as underestimating the prevalence of vision impairment for several reasons. First, and most critically, regular vision examinations are more the exception than the rule in most institutional facilities (Kirchner, 1985; Leslie & Greenberg, 1974; Newell & Walsh, 1985; Search, 1976; Snyder et al., 1976; Verma, 1989). As a result, accurate vision data are seldom available in resident medical records. Second, in-service training for staff rarely addresses, in any depth, issues relevant to vision problems among the elderly (Wineburg, 1982). Thus, given the significant comorbidity of most nursing home residents and the typically gradual onset of a vision disability associated with age-related eye disorders, untrained staff are unlikely to identify residents requiring comprehensive vision assessments. Finally, the residents themselves tend not to self-identify a vision problem, and their families are unlikely to realize there is a problem; instead, they are likely to accept the common myth that vision loss is a “natural” part of the aging process (Faye, 1984; Hilton, 1988; Kirchner, 1985; Retsinas & Gaffity, 1988; Rosenbloom, 1983; Yeadon, 1984).

The existence of a vision impairment, regardless of whether it is accurately identified or, as is more com-
monly the case, remains unidentified, can have profound implications for the quality of life afforded to the nursing home resident. Previous research has documented that vision impairment is associated with functional dependency in performing activities of daily living (ADLs) among nursing home residents (Horowitz, 1994; Kirchner, 1985; Marx, Werner, Cohen-Mansfield, & Feldman, 1992).

Although no previous studies of the relationship between vision status and the prevalence of disruptive behaviors were identified in the research literature, observations reported in the clinical literature do suggest that staff may often confuse an older resi-
dent's vision loss with limitations in mental functioning (Hilton, 1988; Peterson & Kirchner, 1980). For the visually impaired person entering an institutional facility, Mummah (1975) suggests that the isolation caused by unfamiliar surroundings and strange caregivers can frequently contribute to mental confusion and result in aggressive, inappropriate behavior. It has been observed that staff tend to differentiate only residents who are totally or function-
ally blind from the general resident population and thus treat elders with partial, but impaired vision as if they were fully sighted (Search, 1976). As a result, staff may tend to label any inappropriate behavior exhibited by these partially sighted residents as indicative of cognitive decline. Visually impaired residents have also been observed to be isolated in their rooms, and to have their freedom of movement severely restricted (Hiatt, 1986, Hill & Harley, 1984). Furthermore, analyses of the 1977 National Nursing Home Survey data found that restraining devices (e.g., geriatric chairs and cuffs) were used more often for residents with vision loss than for nonvisually im-
paired residents (Peterson & Kirchner, 1980). Overall,
the initial signs of an emerging vision loss can appear similar to those associated with cognitive disorders: disorientation, withdrawal, wandering, and aggressive/assaultive behavior (Hilton, 1988; Snyder, Pyrek, & Smith, 1976).

In summary, vision deficits among nursing home residents are a common, but often unrecognized and untreated condition. Furthermore, clinical evidence suggests that disruptive behaviors may, in part, be a function of the limitations associated with the vision impairment. The purpose of this study, therefore, was to explore the relationship between vision impairment and disruptive behaviors and to determine whether vision loss independently contributes to the extent to which staff assess nursing home residents as exhibiting disruptive behaviors.

**Method**

The research reported in this article is part of a larger study on *The Prevalence and Consequences of Vision Impairment Among Nursing Home Residents*. Methodological information has been previously reported (Horowitz, 1994), but is selectively repeated here as relevant to the current research question regarding the relationship between vision impairment and disruptive behaviors.

**Study Site**

The research was conducted in one moderate-size (250-bed) long-term care facility in upstate New York that offered both skilled nursing and health-related levels of care at the time of the study. Although the restriction to a single site limits the generalizability of study findings, this facility provided a unique and optimal setting in which to conduct the research. Unlike most nursing home settings, this facility had recently implemented an eye care program that provided both admission and annual optometric examinations for all residents. Thus, clinical data on best distance acuity were available, and the study did not have to rely on the gross and largely unreliable functional ratings of impairment that are typically the only vision data available in resident records. Even more important, the availability of optometric services, which included appropriate refraction, meant that residents would be unlikely to exhibit “false vision disabilities” caused by inadequate and/or outdated corrective lenses. The relationship between vision and disruptive behaviors could, therefore, be explored without having to interpret findings within the context of this confounding factor.

**Sample**

All residents who had received an optometric examination following the initiation of the eye care program (*n* = 159) were eligible for inclusion in the study. Informed consent to review nursing home records was secured from 114 residents and/or family members, representing a participation rate of 72% of those eligible.

Of the 114 residents, the mean age was 81.9 years, with more than half (51%) age 85 years or older. The slight majority (54%) were male. The gender distribution is atypical of nursing home populations and is primarily a function of the facility’s relationship with a state veterans’ association (although not affiliated with the U.S. Department of Veterans Affairs). There is no evidence in the epidemiological literature, however, to suggest gender differences in the prevalence of vision impairment (Havlik, 1986). Neither are there consistent findings regarding the relationship between gender and disruptive behaviors (Beck et al., 1991).

The subjects had resided in the facility for an average of five years, with approximately one-third (32.5%) having been admitted within the past year, one-third (35.1%) between two and five years, and one-third (32.4%) six or more years.

As will be discussed in greater detail in the next section, data on best corrected distance acuity were available for only 91 of the 114 participants, whereas 89 residents had data on both vision status and disruptive behaviors. The latter, therefore, constitute the sample for the analyses presented herein. Demographic characteristics of these 89 residents closely parallel those in the total study sample: Average age of these residents was 81.1 years, with 49.4% over the age of 85; 57% were male; average length of stay in the facility was 4.2 years with a distribution similar to that noted above.

**Data Sources and Measures**

All data for this study were collected from the residents’ nursing home records. These records contained several standard forms including the DMS-1; the Patient Review Instrument (PRI); the Monthly Nurse’s Assessment (MNA); the annual Physical Examination (PE); and the Optometric Examination Record (OER). Information on the variables of interest was extracted from each of these sources during the data collection phase. It is important to note that all data reflected the residents’ status approximately three months following the optometric examination and, therefore, after the prescription of new refractive lenses, if needed.

The major variables of interest were the prevalence of disruptive behaviors as the dependent variable and vision impairment as the primary independent variable. Because the primary study objective is to identify the independent influence of vision impairment on the assessment of disruptive behaviors, the variables selected as potential covariates represent comorbid conditions and characteristics of the nursing home experience that have been previously identified in the literature as associated with disruptive behaviors among nursing home residents. These variables include age, gender, functional disability (ADL), dementia, psychiatric diagnosis, use of restraints, length of stay, incontinence, and hearing impairment. Final measures used in the analyses are described below.

**Vision Status.** — Best corrected distance acuity, following refraction, was used to operationalize vision impairment status, and these data were available
from the Optometric Examination Record. Distance acuity is the most common single clinical indicator used in previous research to define visual status (e.g., Felson et al., 1989; Greig, West, & Overbury, 1986; Marx et al., 1992; Thompson, Gibson, & Jagger, 1989; Verma, 1989). For analytic purposes, the raw acuity data were collapsed into three major categories: (a) 20/20 to 20/60, representing normal/near normal vision; (b) 20/70 to 20/100, representing moderate impairment; and (c) 20/200 or worse, representing severe to total vision impairment. As noted earlier, acuity data were available for only 91 (79.8%) of the 114 residents in the study sample. Discussions with the staff optometrist indicated that missing acuity measures were largely concentrated among those residents who were the most severely cognitively impaired and who could not participate in the vision examination. Thus, subsequent analyses exclude this latter group, and findings cannot be generalized to residents with severe dementia.

Disruptive Behaviors. — The Monthly Nurse’s Assessment (MNA) served as the source of data on disruptive behaviors. The use of staff assessment data, rather than direct observation, is consistent with the study purpose, which is to determine the extent to which a resident’s vision status independently contributes to the staff’s perception of resident behavior. This assumption is consistent with that made by Jackson et al. (1989), in that “…people whose behavior is perceived and defined as disruptive will be treated (appropriately or inappropriately) as though they are disruptive” (p. 356). Nurses’ ratings on four commonly used behavioral items in previous research (see Beck et al., 1991) were used for the measure of disruptive behaviors: socially inappropriate; verbally disruptive; physically aggressive; and resistant to care. Each item was rated on a 3-point scale: (1) never, (2) sometimes, (3) always. Item scores were added to form a scale score with a potential range of 4 to 12. The observed range was 4 to 8, with a mean of 4.2 and a standard deviation of 1.4. Cronbach’s alpha, an indicator of the scale’s internal consistency, was .75.

Activities of Daily Living (ADLs). — Data on ADL status were available from three sources: the MNA, DMS-1, and PRI. While each form differed in the number and ratings of ADL items, summary scores were highly correlated (ranging from .87 to .91). ADL items from the MNA were used in the analysis because they yielded the most complete data for the largest number of subjects and were consistent with the data source for disruptive behaviors. Six items were included in this additive measure: mobility, transfer, toileting, bathing, dressing, and feeding. Each item was rated on a 4-point scale: (1) independent, (2) partial assistance needed, (3) total assistance needed, (4) cannot do even with assistance. Observed scale scores for the 89 residents ranged from 6 to 21, with a sample mean of 10.3 and a standard deviation of 3.7. The alpha for the ADL scale was .95.

Dementia Diagnosis. — As noted earlier, previous research has documented a relationship between cognitive functioning and disruptive behaviors. Thus, a diagnosis of dementia was used as the indicator of mental impairment. Residents were classified as being mentally impaired if such a diagnosis was noted in either the DMS-1, the PRI, or the PE. Dementia was diagnosed in 21% of the 89 residents.

Psychiatric Diagnosis. — Similarly, the diagnosis data in the DMS-1, PE, and PRI were examined to identify diagnoses of other mental/psychiatric conditions that could be expected to contribute to disruptive behaviors. These diagnoses included: depressive reaction with agitation, manic depression, dependent personality, anxiety with depression, depressive disorder, anxiety neurosis, schizophrenia, paranoia, alcoholism, and history of alcoholism. Analyses of the DMS-1 and PE data resulted in similar distributions, with 24% of the residents having at least one diagnosis noted in each record. The PRI only contains data on the diagnosis responsible for the major amount of care. A psychiatric diagnosis was recorded in the PRI for 9% of residents. For analytic purposes, residents were classified as having at least one psychiatric diagnosis recorded in any of the three data sources (29%) versus having none (71%).

Use of Restraints. — Prior research cited earlier suggests a relationship between the use of restraints and both disruptive behaviors and visual impairment among nursing home residents. Four items on types of restraints used were available from the MNA: use of waist, vest, seat belt, and/or other restraint. Each was coded as used or not used. The items were added to create a use of restraints index, with an observed range of 0–3, a mean of .29, and a standard deviation of .59. No restraints were used with 76% of residents; one type of restraint was reported for 19%, two for 3%, and three for 1%.

Length of Stay. — Because longer lengths of stay have been identified as a correlate of disruptive behaviors in prior research, this variable was also included as a potential covariate. Length of stay for the sample ranged from less than one year to 17 years, with a mean of 4.2 years and a standard deviation of 4.3.

Incontinence. — The single item on toileting from the PRI was used and coded as (0) continent or (1) incontinent of bowel and/or bladder. Twenty-three percent of the residents were rated as incontinent.

Hearing Impairment. — Hearing loss is not only common among nursing home residents, but has been identified as a correlate of psychiatric disorders, in general (Eastwood, Corbin, Reed, Nobbs, & Kedward, 1985); depression, in particular (Ives, Bonino, Traven, & Kuller, 1995); and of cognitive impairment (Ives et al., 1995; Uhlmann, Larson, Rees, Koepsell, & Duckert, 1989). Furthermore, it has been noted that the behaviors of older people who are hearing impaired (e.g., confusion, disorientation)
may appear similar to those associated with dementia (Weinstein & Amsel, 1986). Therefore, this variable was included as a covariate. Both functional ratings and diagnosis data were used to categorize residents as hearing impaired or unimpaired. Because data were not always consistent across the data sources, a conservative approach was taken. Residents were categorized as hearing impaired when at least two of the following three data elements were present: a diagnosis of "poor hearing" or presbycusis on the PE; a rating of partial or total hearing impairment on the DMS-I; and a rating of partial or total hearing impairment on the MNA. This method resulted in 42% of the residents being categorized as hearing impaired.

Results

Vision Status of Residents

Data on the distance acuities of the 89 residents are presented in Table 1. These data represent the residents' distance acuity in the better eye following the optometric examination and, therefore, with appropriate refraction. With best correction, slightly more than three-fourths (76.4%) had normal/near normal vision, with acuities between 20/20 and 20/60. Approximately 8% were moderately impaired, with acuities between 20/70 and 20/100. It is significant that almost 16% of the total sample met the criteria for legal blindness with acuities of 20/200 or worse, although only 2% of the total sample were totally blind. Thus, these findings highlight that, even with appropriate eye care services and correction to best distance acuity, a significant subgroup (24%) of nursing home residents can be expected to experience a vision loss. Because other indicators of visual status (e.g., near acuity, field loss, color defects, contrast sensitivity) that can also produce vision problems were not measured, these data still likely underestimate the prevalence of vision problems among nursing home residents.

Disruptive Behaviors

Descriptive data on each of the four behavior items are presented in Table 2. None of the residents were coded as "always" exhibiting any of the behaviors. However, almost half (47%) were assessed as at least sometimes resistive to care; two-fifths (40%) as socially inappropriate; one-third (33%) as verbally disruptive; but less than one-fourth (22.5%) as physically aggressive.

The item scores were summed to create a disruptive behavior index. Thirty-four residents (38.2%) received a score of 4, indicating the absence of any disruptive behaviors. Approximately 50% of the residents were categorized as having at least one disruptive behavior.

Table 1. Best Corrected Distance Acuity in Better Eye

<table>
<thead>
<tr>
<th>Acuity</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal/Near Normal</td>
<td>68</td>
<td>76.4</td>
</tr>
<tr>
<td>20/20</td>
<td>11</td>
<td>12.4</td>
</tr>
<tr>
<td>20/25</td>
<td>14</td>
<td>15.7</td>
</tr>
<tr>
<td>20/30</td>
<td>17</td>
<td>19.1</td>
</tr>
<tr>
<td>20/40</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>20/50</td>
<td>11</td>
<td>12.4</td>
</tr>
<tr>
<td>20/60</td>
<td>11</td>
<td>12.4</td>
</tr>
<tr>
<td>Moderately Impaired/Low Vision</td>
<td>7</td>
<td>7.9</td>
</tr>
<tr>
<td>20/70</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>20/80</td>
<td>3</td>
<td>3.4</td>
</tr>
<tr>
<td>20/100</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Severely Impaired/Legally Blind</td>
<td>14</td>
<td>15.7</td>
</tr>
<tr>
<td>20/200</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>20/400</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Finger counting only</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Hand motion only</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>No light perception/All blind</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: Due to rounding, percentages within acuity subgroups do not necessarily equal those of subgroup totals.

Table 2. Percent Distribution of Ratings on Disruptive Behavior Items (N = 89)

<table>
<thead>
<tr>
<th>Item</th>
<th>Never (1)</th>
<th>Sometimes (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socially inappropriate</td>
<td>59.6</td>
<td>40.4</td>
</tr>
<tr>
<td>Verbally disruptive</td>
<td>67.4</td>
<td>32.6</td>
</tr>
<tr>
<td>Physically aggressive</td>
<td>77.5</td>
<td>22.5</td>
</tr>
<tr>
<td>Resistant to care</td>
<td>52.8</td>
<td>47.2</td>
</tr>
</tbody>
</table>
ruptive behaviors over the past month. The remaining 61.9%, however, exhibited at least one problem behavior during this time period. The index had a potential range of 4 to 12. Observed scores for the 89 residents with both vision and behavioral data available ranged from 4 to 8 with a mean of 5.4 and standard deviation of 1.4. A significant bivariate relationship was observed between the distance acuity of residents and the disruptive behavior measure \( r = .21; p < .05 \), supporting further multivariate analyses to examine this relationship within the context of resident comorbidity.

**Vision Status as a Predictor of the Assessment of Disruptive Behaviors**

The primary objective of this study was to determine whether a resident’s vision status independently contributes to the assessment of disruptive behaviors by nursing staff. In order to address this question, a two-step hierarchical regression analysis was conducted with disruptive behaviors as the criterion variable. The variables initially considered as covariates included those identified in the literature as related to vision status and/or disruptive behaviors. These variables included age, gender, ADL status, a diagnosis of dementia, a psychiatric diagnosis, use of restraints, length of stay, incontinence, and hearing impairment. The pairwise correlation matrix of all study variables is presented in Table 3.

The data indicate that poorer visual status was significantly related to older age, greater ADL disability, longer lengths of stay, and hearing impairment. Exhibiting more frequent disruptive behaviors was significantly related to a diagnosis of dementia, a psychiatric diagnosis, and the use of restraints. Neither, however, were associated with gender or incontinence.

Because of the relatively small sample size, only a limited number of variables could be considered for the regression analysis. Therefore, only those variables having a significant bivariate relationship with visual acuity or disruptive behaviors were entered as covariates in Step 1 of the regression analyses. Furthermore, the interrelationships of these covariates were examined to identify variables with correlations greater than .60 that could lead to problems of multicollinearity. Although the relationship between ADL status and incontinence met this criterion \( r = .61 \), incontinence was not a significant bivariate correlate of either vision impairment or disruptive behaviors and, therefore, was not included. It should be noted that ADL and use of restraints were also highly correlated \( r = .56 \), albeit short of meeting the criterion. However, because of their conceptual independence, both were retained for entry in the regression equation.

The results of the hierarchical regression are presented in Table 4 and indicate that 18% of the variance in disruptive behaviors was explained by the first block of variables, with use of restraints and psychiatric diagnosis having significant betas. When visual acuity was entered into the equation in the second step, it significantly explained an additional 4% of the variance. The entire model explains 22% of the total variance in the assessment of disruptive behaviors. The findings support the hypothesis that vision impairment, independent of age and other concurrent cognitive and physical conditions, is an important contributor to the assessment of disruptive behaviors among nursing home residents.

**Discussion**

This study focused on identifying the relationship between vision impairment and the assessment of disruptive behaviors among nursing home residents. Controlling for other common correlates of disruptive behaviors, the study found that poorer visual functioning significantly adds to explained variance in the prevalence of disruptive behaviors. Thus, study findings suggest that vision status is an important, yet generally overlooked, comorbid impairment for understanding and addressing this common care management problem within institutional facilities.

As discussed in Horowitz (1994), several limitations in the study design are important to note. First, the study was conducted in one long-term care facility in New York State and, thus, generalizability of findings...
is limited. However, because this facility had a regular program of optometric care, there was access to clinical data on distance acuities that are not typically available in the majority of facilities. Given the lack of previous research addressing the relationship between vision status and disruptive behaviors, the benefits of a valid measure of vision status were considered to outweigh the disadvantages of using a single site.

Second, although the availability of clinical data on distance acuity represents a strength of the study, the study concurrently remains limited by the reliance on distance acuity as the sole indicator of vision impairment status. Although distance acuity is the most commonly used indicator of visual function, other visual functions — such as near acuity, contrast sensitivity, depth perception, as well as problems with glare and color — can also result in functional vision impairments for older people. Data on these multiple indicators, however, were not available. Thus, it is very possible that some residents with vision impairments based on other criteria were misclassified as having “normal” vision, based on distance acuities. Yet, the fact that visual status, based on distance acuity only, did emerge as a significant predictor of disruptive behaviors supports the importance of addressing the visual needs of nursing home residents.

Third, like many studies of disruptive behaviors within institutional facilities, we were limited to a cross-sectional sample and thus only association, rather than causality, can be assumed. Even so, study findings do contribute to the general knowledge base by providing additional preliminary evidence that noncognitive factors, such as vision loss, can play an important role in the behavior of nursing home residents, as well as in how that behavior is perceived by nursing home staff.

Fourth, the study was limited to the data available in resident records. Thus, other possible correlates of disruptive behaviors, such as premorbid personality, could not be examined. Our reliance on resident records as the primary data source made it impossible to determine if, in fact, the residents actually used their prescribed refractive glasses. Failure to use glasses has been identified as a problem, overall, in nursing home care.

The last limitation concerns the fact that the most severely cognitively impaired residents were excluded from the study sample because the optometrist was unable to accurately assess their visual status. The study findings, therefore, are specific to residents exhibiting either no or moderate cognitive impairments. It is for this subgroup of residents with no or moderate cognitive impairments that a better understanding of the etiology of problem behaviors may be especially important in the development of interventions that go beyond pharmacology or mechanical restraints.

The observed relationship between impaired visual functioning and higher rates of assessed disruptive behaviors suggests several interpretations, none of which are mutually exclusive. Given the lack of regular vision care in most facilities, the first likely scenario is one in which the resident’s visual loss is not identified by the staff or family members, nor self-reported by the resident. Yet, as several writers have noted (Hatt, 1986; Hilton, 1988; Mummah, 1975; Search, 1976), the initial signs of vision loss can appear similar to those associated with cognitive deficits (e.g., disorientation, difficulty locating things and places, wandering behavior, and failure to recognize familiar objects and people). As a result, behaviors that, in fact, reflect the functional limitations of the vision impairment are misinterpreted by staff as behaviors defined as “disruptive.”

The second possible scenario that can explain the relationship between vision impairment and disruptive behaviors follows an argument developed by Jackson et al. (1989). While these investigators confirmed the primary relationship between cognitive impairment and disruptive behaviors, they also found that cognitively intact residents who were incontinent had extremely high rates of disruptive behaviors. They hypothesize that, “... incontinence may be a humiliating and frustrating experience, one that assaults a person’s sense of personal control ... the loss of control over bodily functions [then] contributes to acting out behaviors ...” (p. 365). It is argued here that the same phenomenon is likely to be operative in the case of the resident who is cognitively intact, but visually impaired. With the loss of information normally available through the visual sys-

### Table 4. Hierarchical Regression With Disruptive Behaviors as Criterion (N = 88)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Multiple R</th>
<th>R²</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.01</td>
<td>2.14*</td>
<td>.42</td>
<td>.18*</td>
</tr>
<tr>
<td>Use of restraints</td>
<td>.26*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of stay</td>
<td>-.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatric diagnosis</td>
<td>.28**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dementia diagnosis</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing impairment</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADL</td>
<td>-.06</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Step 2</strong></td>
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<tr>
<td>Visual acuity</td>
<td>.24*</td>
<td>2.7**</td>
<td>.47</td>
<td>.22</td>
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</table>

*p < .05; **p < .01.
tem, the resident loses that critical sense of personal control over self and the environment. Frustration and anxiety are likely to increase. Thus, the increased prevalence of disruptive behaviors among visually impaired residents may, in fact, accurately reflect their behavioral and/or emotional response to the psychosocial consequences of their vision loss.

Finally, a third scenario is one in which the coexistence of cognitive deficits and visual deficits serves to increase problem behaviors. It has been suggested that the combination of minor to moderate vision impairments and minor to moderate memory impairment may render individuals confused about their whereabouts (Hiatt, 1986). Often, treatment for disruptive, cognitively impaired residents relies heavily on environmental cues and interventions.

Yet, a resident with dementia who is also visually impaired is unlikely to be successful in these programs. As Heitzmann and Ward (1990) note, "Their cognitive deficits predispose them towards disorientation and confusion and these states may be exacerbated when they cannot see their environment clearly" (p. 12). Thus, the vision deficit plays an additive role relative to the cognitive deficit in contributing to behavior problems.

Although the study findings and the scenarios outlined above should be considered preliminary and require confirmation in future research, they do suggest several implications for nursing home services. First, the need for regular eye/vision assessments, which go beyond the diagnosis and medical treatment of disease, and which address visual function, is critical. Unfortunately, many vision problems of residents are simply the result of inadequate or outdated prescription lenses and thus represent unnecessary or "excess" disability (Hellinger, 1971; Woodruff, Pozza, & Gagliardi, 1985). Second, it is critical that nursing home staff be trained to recognize the cues that may indicate an emerging vision problem, especially since these cues (e.g., losing one's way, losing interest in reading, social activities, television, and difficulty identifying familiar persons) are all likely to indicate a sensory deficit as they are to reflect a cognitive decline. Third, providing vision rehabilitation services for visually impaired residents remains a pressing need within long-term care facilities. These interventions include: training in orientation and mobility; training in skills for daily living that compensate for the vision loss; and providing low vision clinical services. The latter involves an assessment of residual vision and the prescription and training in the use of optical and nonoptical devices that can maximize visual functioning. Vision rehabilitation can potentially maximize the functional abilities of even the most frail older persons and increase their sense of control over both self and their environment. To the extent that loss of a sense of personal control contributes to disruptive behaviors, vision rehabilitation may have a direct influence on reducing such behaviors. Finally, the findings regarding the relationship between vision impairment and the assessment of disruptive behaviors highlight the need for additional research in this area. Future efforts need to utilize larger, multisite samples and longitudinal designs. Furthermore, evaluation research is critically needed to test rehabilitation interventions with visually impaired residents in order to determine effects on the prevalence of disruptive behaviors.

References


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