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Depression and Vision and Hearing Impairments in Later Life

By Amy Horowitz, *guest editor*

The experience of sensory impairment in later life, especially after a lifetime of functioning as a fully sighted and hearing person, can have profound consequences for the well-being of older adults. These consequences are especially pronounced for mental health and, in particular, the relationship of sensory impairments to late-life depression. Depression is probably the most pervasive mental health problem among older adults (Blazer, 2003), and its robust and reciprocal relationship with functional disability in later life has been well documented (see, for example, Bruce, 2001; Penninx et al., 1999; Zeiss et al., 1996). That is, disability is a key risk factor for the onset of depressive symptoms and disorders, and depression, in turn, results in an increased risk for both physical illness and functional disability in later life. In fact, disability has been called the hallmark of depression among older people (Lebowitz, 1996). Although there is some evidence that age-related sensory impairments, especially hearing impairment, may increase the risk of anxiety disorders among older adults (Mehta et al., 2003), the latter are less prevalent. This article examines the extent and nature of the relationship between age-related vision

A robust and reciprocal relationship.

and hearing impairments and depression and discusses the implications for practitioners working with elders who have sensory impairments.

PREVALENCE AND CHARACTERISTICS

Population-based studies provide clear evidence that vision impairment significantly increases the risk of depression among community-dwelling elders, even when factors such as age, gender, race, and other coexisting conditions are controlled (Bazargan, Baker, and Bazargan, 2001; Branch, Horowitz, and Carr, 1989; Carabelese et al., 1993; Penninx et al., 1998). Such studies find that visually impaired older adults are anywhere from two to five times as likely to experience depression as their nonimpaired peers, making it a more potent risk factor for depression than many other common age-related health conditions. In terms of actual prevalence, between one-fourth and one-third of all visually impaired elders have been found to report a significant number of depressive symptoms (e.g., Horowitz, Reinhardt, and Kennedy, 2002; Reinhardt, 1996; Rovner and Casten, 2002; Wallhagen et al., 2001), compared to between 8 percent and 16 percent of community-dwelling elders in general (Blazer, 2003).

Further, in studies applying DSM-IV criteria, approximately 7 percent of visually impaired elders meet the criteria for a major depressive disorder (e.g., Horowitz, Reinhardt, and Kennedy, 2002), compared to 1 percent to 4 percent of noninstitutionalized elders (Blazer, 2003). Higher levels of depression have been associated with more recent onset of the vision impairment (Upton, Bush, and Taylor, 1998; Williams et al., 1998). This situation suggests that the initial experience of vision loss is a trigger for depression and that some resolution occurs over time. However, affective disorders of long-term duration have also been documented and are not uncommon (e.g., Horowitz et al., 1994).

Interestingly, research focusing on visually impaired elders has generally failed to document a relationship between the objective severity of the vision loss (e.g., as measured by acuity) and the severity of the depression (see Horowitz and Reinhardt, 2000, for review; also Casten, Rovner, and Edmonds, 2002; Horowitz and Reinhardt, 2000; Rovner and Casten, 2002; Upton, Bush, and Taylor, 1998). That is, elders with even minimal vision impairment are at no less risk for depression than those with more severe impairments. In fact, Williams and colleagues (1998) found that elders who were legally blind in one eye were more likely to be depressed than those legally blind in both eyes and proposed that “the uncertain potential for further vision loss in the remaining good eye may create greater distress than would be explained by changes in visual acuity alone.”

Research findings are less consistent when we examine the relationship between hearing loss and depression. Some studies do find that age-related hearing loss significantly increases the risk of depression, even when coexisting conditions are controlled (Carabelese et al., 1993; Kramer et al., 2002; Maggi et al., 1998; Strawbridge et al., 2000; Wallhagen et al., 2001), with hearing-impaired older adults approximately twice as likely as their nonimpaired counterparts to have clinically significant depressive symptoms. However, many other studies do not support this finding and report no significant independent relationship between hearing impairment and depression (e.g., Bazargan,

Baker, and Bazargan, 2001; Dye and Peak, 1993). Prevalence of depression among hearing-impaired elders also tends to be lower than among those with vision loss (Mulrow et al., 1990), although long-term depressive conditions among hearing-impaired elders have also been documented (Wallhagen et al., 2001). Similarly, evidence regarding the relationship between the severity of the hearing loss and the severity of depression is also inconsistent. While some investigators report that higher levels of depression are associated with higher levels of hearing loss (Kochkin and Rogin, 2000; Strawbridge et al., 2000), others do not (Maggi et al., 1998; Mulrow et al., 1990).

In studies where both vision and hearing impairments are examined, vision impairment consistently has the stronger effect on predicting negative mental health outcomes, even when a significant independent relationship between depression and hearing impairment has been documented (Carabelese et al., 1993; Wallhagen et al., 2001). Elders with concurrent age-related impairments in both vision and hearing, however, have been found to be most at risk of depression compared to those with a single impairment in either vision or hearing (Carabelese et al., 1993; Lupsakko et al., 2002).

PATHWAYS FROM SENSORY LOSS TO DEPRESSION

What, then, explains the strong and robust relationship between age-related vision impairment (and to a lesser extent, hearing impairment) and late-life depression, even at relatively low levels of impairment? Horowitz and Reinhardt (2000) have proposed two primary explanations for the persistence and strength of this relationship.

First, even a moderate vision impairment can have a pervasive impact on the elder's ability to accomplish daily tasks. Given that so few elders receive vision rehabilitation training, it is not surprising that vision impairment has consistently been found to be related to high levels of functional disability, both concurrently and over time, especially in terms of the instrumental tasks of daily living (e.g., Carabelese et al., 1993; Keller et al., 1999; Reuben et al., 1999; West et al., 2002). Evidence for the effect of hearing

impairment on functional disability is again contradictory; with some studies documenting this relationship (e.g., Bess et al., 1989; Carabellese et al., 1993; Keller et al., 1999; Strawbridge et al., 2000) and others finding no increase in functional disability among hearing-impaired elders (e.g., Verbrugge and Patrick, 1995; Reuben et al., 1999; Wallhagen et al., 2001) or a relationship that was significantly weaker than that between functional disability and vision impairment (Keller et al., 1999). In fact, vision impairment has been found to have a more severe impact than most other physical impairments on everyday functioning, on par with the effects of stroke and arthritis (Furner, Rudberg, and Cassel, 1995; Verbrugge and Patrick, 1995). Thus, given the relationship between functional disability and depression discussed earlier, we can see that the one major pathway of sensory impairment to depression is through the effects of the loss on everyday functional competence.

Yet there is another pathway to consider, and that is the subjective experience of the sensory loss. One of the most unusual characteristics of a vision loss is the intense fear it evokes. Loss of vision is viewed as an extraordinary traumatic disability that threatens the very identity of the individual. Public opinion polls have found that other physical disabilities, such as mobility limitations and hearing impairment, are more tolerable than "blindness," which follows only AIDS, cancer, and Alzheimer's disease as the medical condition most feared by Americans (The Lighthouse Inc., 1995; National Society for the Prevention of Blindness, 1984). This generalized fear appears to stem primarily from the fear of dependency that is misconstrued as an inevitable consequence of vision loss. Thus, perceived and anticipated loss of autonomy become central to understanding the emotional context and meanings ascribed to vision impairment by older adults—and by their family members, who have internalized many of the same fears and stereotypes. Furthermore, information loss, a factor uniquely associated with both vision and hearing impairments, has been identified as one of the most critical traumas of sensory loss (Hershberger, 1992), affecting quality of life over and above the objective functional limitations imposed by the impairment.

Thus, both the objective disability and the subjective experience make the older sensory-impaired individual extremely vulnerable to depressive disorders.

Furthermore, psychological distress may stem, not only from general disability in everyday life, but also from the impact of the sensory loss on activities that are especially valued (Kemp, 2000; Rovner and Casten, 2002). Hearing loss makes social interaction more difficult and often embarrassing, resulting in a narrowing of social partners and activities. Vision loss directly affects two of the most common and valued activities of older adults—reading and driving. Losing the ability to read is clearly one of the most devastating consequences of vision loss for older adults (Ryan et al., 2003). The loss affects many aspects of life: Not only is reading for pleasure affected, but inability to read newspapers and magazines can psychologically break one's connection with the larger society, difficulty reading menus and materials for religious services may threaten one's connection to one's social community, and difficulty reading price labels, street signs, and medicine bottles further contributes to problems with everyday activities.

Perhaps even more psychologically stressful is the impact of vision impairment on the ability to drive. For older adults, driving is more than just a means to accomplish daily activities. Driving is permeated with personal meanings related to one's sense of autonomy, independence, and self-worth. Giving up driving is often experienced psychologically as the first step toward a downward spiral of dependency. Indeed, losing the ability to drive is one of the most feared aspects of vision impairment (Horowitz and Higgins, 2000). Among the general population of older people, those who have had to stop driving exhibit significantly higher levels of depression than current drivers, even when demographic and health conditions are controlled (Johnson, 1995, 1999), and this situation is true among vision-impaired older adults as well (Horowitz, Boerner, and Reinhardt, 2002). Furthermore, higher levels of depression persist many years after the actual time of driving cessation (Fonda, Wallace, and Herzog, 2001; Marottoli et al., 1997), suggesting that cessation of driving may be a factor

contributing to the persistence of depression over time among visually impaired elders.

THE RELATIONSHIP BETWEEN DEPRESSION AND REHABILITATION

Depression not only has pervasive effects on overall quality of life but also directly affects use and outcomes of rehabilitation services. Depression can limit access to rehabilitation by negatively affecting both physician referrals and patient motivation to engage in rehabilitation programs. For example, physicians may be more reluctant to refer a depressed patient for rehabilitation services. Among vision-impaired older people, depression has been associated with rejection of low-vision aids (Greig, West, and Overbury, 1986) and orientation and mobility training (White, Carrol, and Martin, 1990). Clinical experience has also shown that depressed elders, even if they initially participate, are more likely to drop out of rehabilitation programs and less likely to comply with rehabilitation regimens than are elders who are not depressed. Depression is also clearly related to poorer rehabilitation outcomes in skills for activities of daily living (Robbins and McMurray, 1988; Shmueli-Dulitzki, Rovner, and Zisselman, 1995) and use of adaptive devices (Overbury, Greig, and West, 1982).

However, on the good-news side, a growing body of evidence shows that rehabilitation interventions, through improving functional skills and addressing issues of psychosocial adaptation, directly reduce levels of depression among adults with sensory impairments. For example, use of hearing aids is related to lower levels of depression and to greater emotional stability among older adults (Kochkin and Rogin, 2000). In a randomized trial, use of hearing aids resulted in significant improvements in depression after six months of use (Mulrow et al., 1990) that were maintained after twelve months (Mulrow, Tuley, and Aguilar, 1992). Rehabilitation teaching programs for vision-impaired elders have been found to result in decreased depression (Bernbaum, Albert, and Duckro, 1988; Dodds, Flannigan, and Ng, 1993), with use of low-vision services and low-vision optical devices predicting decreased depression over time in a two-year follow-up study

(Horowitz et al., in press). Thus, rehabilitation programs that improve functional abilities serve to impede the downward spiral of increasing disability and increasing depression.

At the same time, it is also becoming increasingly apparent that, because depression is a primary cause of excess disability among elders with sensory impairments, interventions that directly treat the depression can have far-reaching beneficial effects on rehabilitation outcomes and can lead to reduced disability (Rovner and Casten, 2002). For example, Trozzolino and colleagues (2003) tested a ten-session cognitive-behavior group psychotherapy program with persons with diabetic retinopathy and found a significant improvement in control of blood glucose levels at the end of the program. Brody and colleagues (1999) implemented a randomized trial using a "self-management" intervention that included training in cognitive skills, which not only reduced levels of depression, but increased use of vision aids. There is clear evidence that treatments for depression, both psychopharmacological and psychotherapeutic (and, more often, both in combination), are successful with older adults in general and older adults with disabilities in particular (Reynolds, Alexopoulos, and Katz, 2003). Thus, given the complex interrelationships between depression and disability, it is not surprising that interventions aimed at the former can effect the latter, as well as the other way around.

IMPLICATIONS FOR PRACTICE

The evidence clearly shows that depression is not an inevitable consequence of age-related sensory loss for older adults. Depression is neither a normal part of aging nor a normal reaction to vision and hearing impairments in later life. The majority of sensory-impaired adults do not experience significant symptoms of depression, either initially or over time. Strong coping resources and the support and encouragement of family, friends, caregivers, and others are important factors in reducing the risk of depression.

However, depression is a common consequence of sensory impairment for a significant subgroup of elders. Even more than most other age-related chronic conditions, sensory impairment, and especially vision impairment, repre-

sents a major risk factor for depression and needs to be recognized as such. It is also important to recognize that it is not only severe sensory impairments that are likely to result in depressive conditions; even mild to moderate losses can have significant consequences for mental health. In addition, the initial onset of the sensory impairment can be a time of great emotional distress, regardless of the degree of loss at that time. Therefore, it is important to be ready to intervene when the older adult is still in the early stages of a sensory impairment.

One important first step in avoiding or ameliorating the depression that may accompany a sensory impairment is to simply identify the impairment in a timely manner, before substantial functional consequences in everyday life are experienced by the older person and to ensure that the elder is referred to appropriate clinical and rehabilitation services. Just learning that something can be done to lessen the impairment and maximize functional independence is often all that the older adult needs to avoid a potential plunge into despair.

Furthermore, since vision and hearing impairments are so often overlooked or simply accepted by older adults and their families, it is all too easy for professionals who serve older adults to overlook or misinterpret the signs of depression that they may exhibit. As outlined in the DSM-IV, these signs and symptoms include feelings of sadness, loss of interest or pleasure, feelings of worthlessness or inappropriate guilt, loss of appetite, sleep disturbance, psychomotor agitation or retardation, fatigue or loss of energy, trouble thinking or concentrating, and thoughts of death. Two or more of these symptoms, when present for most of the day almost every day for two weeks, represent the minimum criteria for a minor depression and signal the need to intervene.

In some situations, therefore, the elder's depression may need to be addressed before beginning any rehabilitation, if the rehabilitation is to be successful. For example, Leinhaas and Hedstrom (1994) describe a model of service in a low-vision clinic that included systematic assessments for depression. Based on the clinical rationale that depressed patients typically have unsuccessful low-vision outcomes,

patients meeting criteria were referred for psychiatric consultation, and the low-vision intervention was delayed.

It is also critical to ensure that family members and significant others are involved in both rehabilitation and mental health interventions. While family and friends can provide invaluable instrumental and emotional support, they can also have both unrealistic expectations and unfounded fears about the capabilities of the older person with vision or hearing impairment. Such thoughts and attitudes will influence how well the elder adapts both functionally and psychosocially. Family members may also need assistance in determining when to offer help and how best to help without undermining the elder's continued independence. It has also been documented that family members, especially spouses, of depressed vision-impaired elders are at greater risk of depression themselves, a phenomenon called "emotional contagion" (Goodman and Shippy, 2002), suggesting the need for family-based therapeutic interventions.

Finally, it is only through strong collaborative relationships among professionals in the fields of sensory rehabilitation, mental health, and aging services that we will be able to meet the growing needs of the growing numbers of elders with vision and hearing impairments and their families. ❧

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REFERENCES

- Bazargan, M., Baker, R. S., and Bazargan, S. H. 2001. "Sensory Impairments and Subjective Well-Being Among Aged African American Persons." *Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 56: 1268-78.
- Bernbaum, M., Albert, S. G., and Duckro, P. N. 1988. "Psychosocial Profiles in Patients with Visual Impairment Due to Diabetic Retinopathy." *Diabetes Care* 11: 551-5.
- Bess, F. H., et al. 1989. "Hearing Impairment as a Determinant of Function in the Elderly." *Journal of the American Geriatrics Society* 37: 123-8.
- Blazer, D. G. 2003. "Depression in Late Life: Review and Commentary." *Journals of Gerontology: Medical Science* 58A: 249-65.
- Branch, L. G., Horowitz, A., and Carr, C. 1989. "The

Implications for Everyday Life of Incident Reported Visual Decline Among People Over Age 65 Living in the Community." *Gerontologist* 29: 359-65.

Brody, B. L., et al. 1999. "Age-Related Macular Degeneration: A Randomized Clinical Trial of a Self-Management Intervention." *Annals of Behavioral Medicine* 21: 322-9.

Bruce, M. L. 2001. "Depression and Disability in Late Life: Directions for Future Research." *American Journal of Geriatric Psychiatry* 9: 102-12.

Carabele, C., et al. 1993. "Sensory Impairment and Quality of Life in a Community Elderly Population." *Journal of the American Geriatrics Society* 41: 401-7.

Casten, R. J., Rovner, B. W., and Edmonds, S. E. 2002. "The Impact of Depression in Older Adults with Age-Related Macular Degeneration." *Journal of Visual Impairment and Blindness* 96: 399-406.

Dodds, A. G., Flannigan, H., and Ng, L. 1993. "The Nottingham Adjustment Scale: A Validation Study." *International Journal of Rehabilitation Research* 16: 177-84.

Dye, C. J., and Peak, M. F. 1983. "Influence of Amplification on the Psychological Functioning of Older Adults with Neurosensory Hearing Loss." *Journal of Rehabilitation Audiology* 17: 210-20.

Fonda, S. J., Wallace, R. B., and Herzog, A. R. 2001. "Changes in Driving Patterns and Worsening Depressive Symptoms Among Older Adults." *Journals of Gerontology: Social Sciences* 56: 5343-51.

Furner, S. E., Rudberg, M. A., and Cassel, C. K. 1995. "Medical Conditions Differentially Affect the Development of IADL Disability: Implications for Medical Care and Research." *Gerontologist* 35: 444-50.

Goodman, C. R., and Shippy, R. A. 2002. "Is It Contagious: Affect Similarity Among Spouses?" *Aging and Mental Health* 6: 266-74.

Greig, D.E., West, M.L., and Overbury, O. 1986. "Successful Use of Low Vision Aids: Visual and Psychological Factors." *Journal of Visual Impairment and Blindness* 74: 221-4.

Hershberger, P. J. 1992. "Information Loss: The Primary Psychological Trauma of the Loss of Vision." *Perceptual and Motor Skills* 74: 509-10.

Horowitz, A., et al. 1994. *Age-Related Vision Loss: Factors Associated with Adaptation to Chronic Impairment Over Time*. New York: The Lighthouse Research Institute.

Horowitz, A., et al. In Press. "The Influence of Health, Social Support Quality and Rehabilitation on Depression among Disabled Elders." *Journal of Aging and Mental Health*.

Horowitz, A., Boerner, K., and Reinhardt, J. P. 2002. "Psychosocial Aspects of Driving Transitions in Elders with Low Vision." *Gerontechnology* 1(4): 262-73.

Horowitz, A., and Higgins, K.E. 2000. "'Older' Drivers and Failing Vision: Time to Surrender the Keys?" *Consultant* 40(7): 1310-16.

Horowitz, A., and Reinhardt, J. P. 2000. "Mental Health Issues in Visual Impairment: Research in Depression, Disability, and Rehabilitation." In B.M. Silverstone, M. Lang, R. Rosenthal, and E. Faye, eds., *The Lighthouse Handbook on Vision Impairment and Vision Rehabilitation: Vol. II. Vision Rehabilitation*. New York: Oxford University Press.

Horowitz, A., Reinhardt, J. P., and Kennedy, G. 2002. "Major and Subthreshold Depression Among Elders in Community-Based Rehabilitation." Paper presented at the Annual Scientific Meeting of the Gerontological Society of America, Boston.

Johnson, J.E. 1995. "Rural Elders and the Decision to Stop Driving." *Journal of Community Health Nursing* 12: 131-8.

Johnson, J.E. 1999. "Urban Older Adults and the Forfeiture of a Driver's License." *Journal of Gerontological Nursing* 25: 12-18.

Keller, B. K., et al. 1999. "The Effect of Visual and Hearing Impairment on Functional Status." *Journal of the American Geriatrics Society* 47: 1319-25.

Kemp, B. J. 2000. "Psychosocial Considerations in a Rehabilitation Model for Aging and Vision Services." In J.E. Crews and F. J. Whittington, eds., *Vision Loss in an Aging Society: A Multidisciplinary Perspective*. New York: AFB Press.

Kochkin, S., and Rogin, C. M. 2000. "Quantifying the Obvious: The Impact of Hearing Instruments on Quality of Life." *Hearing Review* 7(1): 6-34.

Kramer, S. E., et al. 2002. "The Association of Hearing Impairment and Chronic Diseases with Psychosocial Health Status in Older Age." *Journal of Aging and Health* 14(1): 122-37.

Lebowitz, B. D. 1996. "Diagnosis and Treatment of Depression in Late Life: An Overview of the NIMH Consensus Statement." *American Journal of Geriatric Psychiatry* 4: 53-6.

Leinhaas, M., and Hedstrom, N. J. 1994. "Low Vision: How to Assess and Treat Its Emotional Impact." *Geriatrics* 49: 53-9.

The Lighthouse Inc. 1995. "The Lighthouse National Survey on Vision Loss: The Experiences, Attitudes and Knowledge of Middle-Aged and Older Americans." New York: The Lighthouse Inc.

Lupsakko, T., et al. 2002. "Combined Hearing and Visual Impairment and Depression in a Population Aged 75 Years and Older." *International Journal of Geriatric Psychiatry* 17(9): 808-13.

Maggi, S., et al. 1998. "Prevalence Rates of Hearing Impairment and Comorbid Conditions in Older People: The Veneto Study." *Journal of the American Geriatrics Society* 46: 1069-74.

Marottoli, R. A., et al. 1997. "Driving Cessation and Increased Depressive Symptoms: Prospective Evidence from the New Haven EPESE. Established Populations for Epidemiologic Studies of the Elderly." *Journal of the American Geriatrics Society* 45: 202-6.

- Mehta, K. M., et al. 2003. "Prevalence and Correlates of Anxiety Symptoms in Well-Functioning Older Adults: Findings from the Healthy Aging and Body Composition Study." *Journal of the American Geriatrics Society* 51(4): 499-504.
- Mulrow, C. D., et al. 1990. "Association Between Hearing Impairment and the Quality of Life of Elderly Individuals." *Journal of the American Geriatrics Society* 38: 45-50.
- Mulrow, C. D., Tuley, M. R., and Aguilar, C. 1992. "Sustained Benefits of Hearing Aids." *Journal of Speech and Hearing Research* 35: 1402-5.
- National Society for the Prevention of Blindness. 1984. "Survey '84: Attitudes Towards Blindness Prevention." *Sight-Saving* 53: 14-7.
- Overbury, O., Greig, D., and West, M. 1982. "The Psychodynamics of Low Vision: A Preliminary Study." *Journal of Visual Impairment and Blindness* 76: 101-5.
- Penninx, B. W., et al. 1999. "Exploring the Effect of Depression on Physical Disability: Longitudinal Evidence from the Established Populations for Epidemiologic Studies of the Elderly." *American Journal of Public Health* 89: 1346-52.
- Reinhardt, J. P. 1996. "Importance of Friendship and Family Support in Adaptation to Chronic Vision Impairment." *Journals of Gerontology: Psychological Sciences* 51B: 268-78.
- Reuben, D. B., et al. 1999. "The Prognostic Value of Sensory Impairment in Older Persons." *Journal of the American Geriatrics Society* 47: 930-5.
- Reynolds III, C. F., Alexopoulos, G., and Katz, I. R. 2003. "Geriatric Depression: Diagnosis and Treatment." *Generations* 26: 28-31.
- Robbins, H. G., and McMurray, N. E. 1988. "Psychological and Visual Factors in Low Vision Rehabilitation of Patients with Age-Related Maculopathy." *Journal of Vision Rehabilitation* 2: 11-21.
- Rovner, B. W., and Casten, R. J. 2002. "Activity Loss and Depression in Age-Related Macular Degeneration." *American Journal of Geriatric Psychiatry* 10: 305-10.
- Ryan, E. B., et al. 2003. "Coping with Age-Related Vision Loss in Everyday Reading Activities." *Educational Gerontology* 29: 37-54.
- Salive, M. E., et al. 1994. "Association of Visual Impairment with Mobility and Physical Function." *Journal of the American Geriatrics Society* 42: 287-92.
- Shmueli-Dulitzki, Y., Rovner, B. W., and Zisselman, P. 1995. "The Impact of Depression on Functioning in Elderly Patients with Low Vision." *American Journal of Geriatric Psychiatry* 3: 325-9.
- Strawbridge, W. J., et al. 2000. "Negative Consequences of Hearing Impairment in Old Age: A Longitudinal Analysis." *Gerontologist* 40: 320-6.
- Trozzolino, L., et al. 2003. "Effects of Psychoeducational Group on Mood and Glycemic Control in Adults with Diabetes and Visual Impairments." *Journal of Visual Impairment and Blindness* 230-9.
- Upton, L. R., Bush, B. A., and Taylor, R. E. 1998. "Stress, Coping, and Adjustment to Adventitiously Blind Male Veterans with and Without Diabetes Mellitus." *Journal of Visual Impairment and Blindness* 92: 656-65.
- Wallhagen, M. I., et al. 2001. "Comparative Impact of Hearing and Vision Impairment on Subsequent Functioning." *Journal of the American Geriatrics Society* 49(8): 1086-92.
- Verbrugge, L. M., and Patrick, D. L. 1995. "Seven Chronic Conditions: Their Impact on US Adults' Activity Levels and Use of Medical Services." *American Journal of Public Health* 85: 173-82.
- West, S. K., et al. 2002. "Is Vision Function Related to Physical Functional Ability in Older Adults?" *Journal of the American Geriatrics Society* 50: 136-45.
- White, K., Carrol, R., and Martin Jr., W. 1990. "Personality Factors Associated with the Decision to Accept or Reject Mobility Training." *Journal of Visual Impairment and Blindness* 84: 470-4.
- Williams, R. A., et al. 1998. "The Psychosocial Impact of Macular Degeneration." *Archives of Ophthalmology* 116: 514-20.
- Zeiss, A. M., et al. 1996. "Relationship of Physical Disease and Functional Impairment to Depression in Older People." *Psychology and Aging* 11: 572-81.