

SELF-REPORTED INDEPENDENT LIVING OUTCOME MEASURES OF BLIND
ELDERS ATTENDING ADJUSTMENT TRAINING

by

Ruth R. Van Tol

A Research Paper

Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
With a Major in

Vocational Rehabilitation

Approved: 2 Semester Credits

Investigation Advisor

The Graduate School
University of Wisconsin-Stout
January 2002

The Graduate School
University of Wisconsin-Stout
Menomonie, WI 54751

Abstract

Writer: Ruth R. Van Tol

Title: Self-Reported Independent Living Outcome Measures of Blind Elders Attending Adjustment Training

Graduate Major: Vocational Rehabilitation

Research Advisor: Susie Eberhard, Ph.D., CRC

Month/Year: January, 2002

Number of Pages: 80

American Psychological Association (APA) Style Used

This descriptive study was a 2-year follow up of Adjustment to Blindness training and filled gaps in the literature by using self-report to measure an array of adjustment to blindness outcomes. Trainee participants strongly validated the positive impact blindness training had on their daily lives. Survey response rates were high. Results showed participants were very satisfied with training, experienced better post-training adjustment to blindness and regularly used a variety of the adaptive devices and techniques with which they were trained. Research related to aging is critical. The American population is aging; the “oldest old” or those over age 85 will number approximately 19 million or 5 % of the U.S. population by 2050 (U.S. Bureau of the Census, 1995). As more people live to older ages, the incidence of chronic debilitating conditions such as heart disease, diabetes and visual impairment/blindness increases. These circumstances dramatically affect independent living skills (Administration

on Aging, 2001). Rehabilitation agencies have focused efforts at serving the growing population of elders with vision loss. A current issue in rehabilitation is the measurement of outcomes. In adjustment to blindness training “outcomes can be portrayed as the acquisition of skills, higher self-esteem, a better quality of life and improved attitudes toward blindness...” (Crews & Long, 1997, p. 124). Most post-service outcome studies are completed within a short time after training. There is little information about the adaptive devices and techniques most commonly used by the blind. There is however increasing evidence that self-report is useful and reliable when measuring outcomes (Meyers, Holliday, Harvey, & Hutchinson, 1993). Minnesota Services for the Blind has provided Adjustment to Blindness classes for a number of years to interested legally blind individuals over age 55. This outcome study done in Fall 2001, surveyed individuals who completed the Minnesota Adjustment to Blindness classes during fiscal year 1999, nearly two years earlier. The objectives were: (a) to determine level of satisfaction with the instruction received; (b) to determine the degree to which the participants’ attitudes about blindness have changed; (c) to assess adjustment to blindness as measured by the Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998) and other researcher developed survey questions, (d) to identify the 4 most frequently used alternative techniques in daily living activities and (e) to identify the 4 most frequently used adaptive devices. A 60% survey response rate afforded considerable confidence when generalizing the results to the trainee population. Training satisfaction was high, with 70.2% reporting that they were “very satisfied” with training and 23.8% reporting that they were at least “somewhat satisfied”. Change in attitude regarding blindness was reported as “much better” by 40.5%; “somewhat better” by 34.5%; “about the same” by 17.9% and “worse” by 1.2%. Trainees also showed good adjustment. The mean

score on the AVL scale was 18.3 (range of 7 – 23.6) with a SD of 3.6. Training was critical for daily life. Most techniques and devices were used for instrumental daily life activities. The 4 most frequently used alternate techniques were: tactile markings on appliances, 68.3%; asking for assistance in the store, 57.1%; dialing the phone by touch, 53.2%; and tactile or folding methods to handle money, 44.4%. Most frequently used adaptive devices were: time telling pieces, 83.1%; better lighting, 80.2%, darker writing devices, 74.4%; and talking books, 60.9%. Self-reported outcomes from elders who attended Adjustment to Blindness training show significant life impact of the training.

Acknowledgement

Special thanks and appreciation goes to Susie Eberhard for her patience, encouragement, assistance and support throughout the process of this research project. Her dedication and commitment to the profession of Vocational Rehabilitation is a greatly admired.

Table of Contents

Title	1
Abstract.....	2 - 4
Acknowledgement.....	5
Table of Contents.....	6 - 8
List of Tables.....	9 - 14
Table 1. Description of Fiscal Year 1999 Trainees.....	9
Table 2. Level of Satisfaction with Service Received.....	10
Table 3. Change in Attitude Regarding Blindness.....	11
Table 4. Adaptation to Vision Loss (AVL) Scores.....	12
Table 5. Four Adaptive Techniques Used Most Frequently.....	13
Table 6. Four Most Frequently Used Adaptive Devices.....	14
Text.....	15 - 68
Chapter 1. Introduction.....	15 - 21
Purpose.....	17
Statement of the Problem.....	18
Hypothesis.....	19
Definition of terms.....	19 - 21
Chapter 2. Review of Literature.....	22 - 29
Demographic of Aging and Blindness.....	22 - 24
Historical Background of Independent Living Services.....	24

Table of contents continued

Measurement of Outcomes.....	25 - 26
Research Findings of Rehabilitation of Older Blind Persons.....	26 - 29
Summary of what is Know and Unknown about this Topic.....	29 - 30
Chapter 3. Methodology.....	31 - 40
Specific Procedures.....	31
Population.....	32
Subjects.....	33
Instrumentation.....	34
Data Collection.....	34 - 35
Data Analysis.....	35
Strengths and Limits of Methodology.....	36 - 40
Limits of the study.....	36 - 38
Strengths of the study.....	39 - 40
Summary.....	40
Chapter 4. Results.....	41
Response Rate from Subjects.....	42
Results: Research Question 1.....	42 - 45
Results: Research Question 2.....	45 - 46
Results: Research Question 3.....	47 - 48
Results: Research Question 4.....	49 - 51
Results: Research Question 5.....	51 - 53
Unanticipated Findings.....	53

Table of contents continued.

Summary of Results and Evidence related to research hypothesis.....	53 – 56
Chapter 5. Conclusions and Recommendations	57 - 68
Conclusions.....	57 - 60
Implications.....	60 - 65
Recommendations.....	65 - 68
References.....	69 - 71
Appendix	72 - 80
A. AVL (Adaptation to Vision Loss) scale Survey Instrument.....	72 - 73
B. Additional Survey Questions.....	74 - 75
C. Introductory Letter	76
D. Informed Consent Document.....	77
E First Follow-up Letter.....	78
F. Third Request.....	79
G. Raw Data Scores.....	80

Table 1

Description of Fiscal Year 1999 Trainees

Age	Males	Females	Total
55-64	4	8	12
65-74	10	14	24
75-84	17	57	74
85+	13	36	49
All ages	44	115	159

Table 2

Level of Satisfaction with Services Received

Responses	#	%	%*
Very Satisfied	59	70.2	74.7
Somewhat Satisfied	20	23.8	25.3
Somewhat Dissatisfied	0	0	0
Very Dissatisfied	0	0	0
Missing Responses	5	6	0

Mean Satisfaction Score: $\bar{X} = 3.75$

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the actual percentage if all 84 persons had responded to this question.

%* Represents the valid percentage based on the actual number of individuals (79) who responded to this item.

Table 3

Change in Attitude Regarding Blindness

Responses	#	%	%*
Much Better	34	40.5	43
Somewhat Better	29	34.5	36.7
About the Same	15	17.9	19
Worse	1	1.2	1.2
Total response	79	94	
Missing Responses	5	6	

Mean Attitude Change: $\bar{x} = 3.22$

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the actual percentage if all 84 persons had responded to this question.

%* Represents the valid percentage based on the actual number of individuals (79) who responded to this item.

Table 4

Adaptation to Vision Loss (AVL) Scores

Range of Scores	7 - 23.6
Mean Score	18.3
Standard Deviation	3.6

Table 5

Adaptive Techniques Used Most Frequently in Daily Living Activities

Response	Tactile Appliance Settings			Asking for Assistance in the store		
	#	%	%*	#	%	%*
Usually	56	66.6	68.3	48	57.1	57.1
Sometimes	9	10.7	10.9	24		28.6
Rarely	1	1.2	1.2	3		3.6
Never	16	19	19.5	9		10.7
Total Response	82	97.6		84		100
Missing Responses	2	2.4		0		

Response	Dialing phone by touch			Money Identification		
	#	%	%*	#	%	%*
Usually	42	50	53.1	36	42.9	44.4
Sometimes	16	19	20.2	24	28.6	29.6
Rarely	1	1.2	1.2	9	10.7	11.1
Never	20	23.8	25.3	12	14.3	14.8
Total Response	79	94		81	96.4	
Missing Response	5	6		3	3.6	

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the actual percentage if all 84 persons had responded to this question

%* Represents the valid percentage based on the actual number of individuals who responded to this item.

Table 6

Four Most Frequently Used Adaptive Devices

Response	Adaptive Time Piece			Lighting		
	#	%	%*	#	%	%*
Usually	69	82.1	83.1	65	77.3	80.2
Sometimes	3	3.6	3.6	3	3.6	3.7
Rarely	2	2.4	2.4	2	2.3	2.5
Never	9	0.7	10.8	11	13	13.6
Total response	83	98.8		81	96.4	
Missing response	1	1.2		3	3.6	

Response	Darker Pen			Talking Books		
	#	%	%*	#	%	%*
Usually	61	74.4	72.6	50	60.9	59.5
Sometimes	11	13	13.4	11	13	13.4
Rarely	2	2.4	2.4	7	8.3	8.5
Never	8	9.5	9.8	14	16.6	17
Total response	82	97.6		82	97.6	
Missing response	2	2.3		2	2.3	

Note. # Represents the number of trainees that indorsed each satisfaction level.

% Represents the actual percentage if all 84 persons had responded to this item.

%* Represent the valid percentage based on the actual number of individuals who responded to this item

SELF-REPORTED INDEPENDENT LIVING OUTCOME MEASURES OF BLIND ELDERS ATTENDING ADJUSTMENT TRAINING

Introduction

The American population is aging. According to Census Bureau projections, the elderly population (65+) will more than double between now and the year 2050, reaching a total of 80 million. By that year, as “baby boomers” age, nearly 1 in 5 Americans will be elderly. It is estimated that this population currently represents 13% of the total population but will reach 20% by the year 2030. The “oldest old,” a term designating those ages 85+ is the most rapidly growing group of elders. This group numbered 3 million or 1% of the total population in 1994. By 2050, this number is expected to reach 19 million or 5 % of the population (U. S. Bureau of the Census, 1995).

As more people live to older ages, the incidence of chronic debilitating conditions such as arthritis, diabetes, heart disease, and visual impairments/blindness increases. Four of the five major causes of blindness are related to the aging process. These circumstances have a significant impact on one’s ability to maintain independent living skills (Administration on Aging, 2001).

Since the 1970s, rehabilitation agencies began to focus efforts at serving this growing population of elders with vision loss by providing independent living services. Congress authorized Title VII part C (Independent Living Services for the Elderly Blind) in 1973. Unfortunately, no funds were appropriated for Title VII Part C until 1986. Twenty-five state agencies secured funds to serve older blind persons that year. Since then, Title VII Part C has been changed to Chapter 2 of Title VII as part of the Rehabilitation Amendments of 1992 (PL 102-569) (Moore & Stephens, 1999). Approximately 8.1 million dollars has been

awarded to 33 states and territories on a 3-year cycle. A major concern with the 3-year period of awards is that some states that began independent living service programs for elderly blind persons are no longer receiving funding (Herndon, 1993).

Several models of providing independent living services for blind elders have been documented. They can be grouped as: (a) itinerant outreach models, (b) center based models, and (c) mixed services including a combination of itinerant and center based training (Moore & Stephens, 1994). Minnesota State Services for the Blind established a group model of training for blind elders. The group model would be considered a mixed service. The curriculum has been standardized in a manner similar to center based training, however the classes are itinerant in nature since the instructor goes to different community locations to provide the training. Several vendors who have a contract with the state agency have been trained in teaching a standardized curriculum. The curriculum covers a broad array of daily living skills with instruction in the use of various adaptive devices and non-sighted or alternative methods for doing various activities. Local rehabilitation counselors refer those adults who are legally blind, over age 55, and who have agreed to participate in the classes. The classes are scheduled to meet in a community location for five hours, once a week for twelve weeks. Assistance with transportation is made if needed. The group size ranges from 4 to 6 adults.

Research has shown that blind individuals who participated in peer support groups and rehabilitation instruction reported feeling that they were successful in coping with their visual loss, were satisfied with their level of activities, and generally had a positive outlook on life (Van Zandt & Van Zandt, 1994). Blindness training curriculum and subsequent outcomes vary widely. A general consensus in the field of rehabilitation is that there are two

components to the process of making a successful adjustment to blindness: (a) a change of attitude to a belief that blindness is not a devastating change - that blind people can be competent, productive, normal human beings and (b) learning the alternative non-visual ways of doing things (Jacobs, 1984).

A current issue in rehabilitation is the measurement of outcomes (Crews & Long, 1997; De l' Aune, Williams & Welsh, 1999; Farish & Wen, 1994; Long, Crews, & Mancil, 2000). The concern is less with process and more with results and an emphasis on responding to the unique needs of the individual. This is particularly important in the area of independent living. Each individual must adapt to the demands within their own particular home and community environment so that they can engage in all of the activities that are necessary or meaningful for them. In blindness or adjustment training, "outcomes can be portrayed as the acquisition of skill, higher self-esteem, a better quality of life, and improved attitudes toward blindness and visual impairments..." (Crews & Long, 1997, p. 124). There is increasing evidence to suggest that self-report measures are useful and reliable instruments in measuring outcomes (Meyers, Holliday, Harvey & Hutchinson, 1993).

Purpose

The current study examining blindness-training outcomes was designed to fill gaps in the research. The combined factors of an aging population, the likelihood of increased incidents of blindness/visual impairments and limited research data on the measurements of outcomes in blindness rehabilitation make this topic an important research issue. It was hoped that trainee self-reports on daily life impact of blindness training would provide useful information for program planning. If the training proved to be effective this would provide validation of agency training efforts. It might also provide incentive for examining funding

issues and other actions to insure consistently available services. The research could also assist rehabilitation professionals in understanding what adaptive devices and alternative techniques were most frequently used in successful independent living.

At the conclusion of this study the research intentions were to discuss the outcomes blind elders reported after attending a 12-week Adjustment to Blindness training program provided by Minnesota Services for the Blind. The implications such outcomes have for future clients, rehabilitation agencies and rehabilitation professionals were also considered.

Statement of the Problem

The purpose of this study was to describe outcomes as reported by blind elders who participated in the group model of Adjustment to Blindness classes offered by Minnesota Services for the Blind as measured by the Age-Related Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998) and additional questions this researcher constructed. The study focused on the following objectives:

1. To determine the participants' level of satisfaction with the instruction received.
2. To determine the degree to which the participants' attitudes about blindness have changed.
3. To measure adaptation to blindness as measured by scores on the Age-Related Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998).
4. To identify the four most frequently used alternative techniques in daily living activities.
5. To identify the four most frequently used adaptive devices for daily activities.

Hypothesis

The research hypothesis was: Individuals who have participated in a group model of training will report a high level of satisfaction with the services received, however, there will be a wide range of adaptive techniques and devices the individuals reported using on a regular basis.

The null hypothesis was: Individuals who have participated in a group model of Adjustment to Blindness training will report minimal levels of satisfaction with training and will use few adaptive techniques and devices on a regular basis in their daily living.

Definition of Terms

Legal blindness is a term used to define loss of vision so severe that for all practical purposes the person can be considered “blind.” The definition of legal blindness is that the best corrected vision in the best eye is measured at less than 20/200 or that the visual fields are restricted to less than 20 degrees. Persons who are legally blind may have some useable vision but in a very limited way. The word blind in this document refers to the continuum of those who are legally blind including those totally blind.

Adjustment to Blindness classes or group model of training will refer to the Minnesota State Services for the Blind model of training that is provided to persons who are legally blind, over 55 years of age and currently living in Minnesota. The Adjustment to Blindness class meets in communities around the state. The class size is generally 4-6 persons who have been referred by their rehabilitation counselor. The classes meet once per week for 5 hours for twelve consecutive weeks. The instructors have an operating agreement with the state agency and implement an approved curriculum. The curriculum covers many of the alternative techniques and adaptive devices that are available to assist in one’s independent living.

Training includes use of the white cane; various writing guides; alternative methods to tell time, identify coins and bills, prepare meals and participate in leisure activities; as well as an introduction to Grade One Braille.

A *CCTV* (closed circuit TV) is an electronic magnification device that can magnify print from 4 to 40 times. A camera views the reading material and magnifies it on a TV-like monitor.

Instrumental Activities of Daily Living and Activities of Daily Living both have an impact on one's independent living status. Activities of Daily Living (ADL) will be defined as all activities required for self-care. ADL activities include the activities of bathing, toileting, eating and getting around the home. The Instrumental Activities of Daily Living (IADLs) will be defined as those activities necessary to support one's life. They include meal preparation, shopping, managing money, using the telephone, doing housework and taking medications.

Adaptation to Vision Loss includes the common themes of acceptance of vision loss in a realistic manner and believing that the blindness is not a devastating change. It also means that one does not dismiss the vision loss as inconsequential. In this study it is defined as scores on the Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998).

Throughout the remainder of this paper Adjustment to Vision Loss scale will be referred to as AVL scale.

Adjustment to Blindness as defined in this study includes the adaptation to blindness previously discussed, but is a more global measure. Adjustment includes one's attitude regarding blindness and the extent to which accommodations for vision loss are integrated in daily life. For the purposes of this study then, adjustment will be measured by reported change

in attitude regarding blindness, AVL scores and use of adaptive devices and techniques in daily life.

Review of the Literature

This section will discuss the literature in several sections: (a) demographics of aging and blindness, (b) historical background of independent rehabilitation services, (c) the measurement of outcomes, and (d) findings of previous research regarding rehabilitation of blind elders. This section is concluded with a summary of what is known and unknown about this topic.

Demographics of Aging and Blindness

America's elderly (65+) population is currently growing at a moderate rate. Within the next ten years as the "baby boom" generation reaches traditional retirement age, the number of elderly will grow by 2.8%. The "oldest old" - those aged 85 and over are the fastest growing age group. From 1960 to 1994, their numbers rose 274%. The oldest old numbered 3 million in 1994. It is estimated that this group will total nearly 19 million by the year 2050 (U. S. Census Bureau, 1995).

Women, who have longer life expectancies (age 79) than men (age 72), outnumber men at every age group. This difference continues to grow with advancing age. Generally, while most elderly men are married, most elderly women are not. While elderly men have a spouse for assistance, especially when health fails, most elderly women do not. The likelihood of living alone increases with age. For women it rose from 32 % for 65 to 74 year-olds to 57% for those aged 85 or more; for men the corresponding proportions were 13% and 29% (U.S. Census Bureau, 1995; Administration on Aging, 2001).

While it is sometimes thought that increasing age and poverty are related, that may not be the case for elders in the future. They will have higher levels of education and generally, higher levels of education are associated with higher levels of income (U. S. Census Bureau,

1995). Research has shown that better educated individuals are better off financially and stay healthier longer (Administration on Aging, 2001).

As people live to the oldest ages, chronic limiting conditions such as arthritis, diabetes, heart conditions and vision loss become more prevalent. These changes have a significant effect on the ability to perform independent living activities. In 1997, nearly three-fourths (73.6%) of those aged 80+ reported at least one disability. Over half (57.6%) of those aged 80+ had one or more disability. After age 80, 27.5% reported difficulty with ADLs and 40.4% reported difficulty with IADLs. These rates are nearly double those aged 65+. ADLs include activities of self-care such as bathing, dressing, toileting, and getting around the house. IADLs are the activities that are necessary to support one's life, e.g. meal preparation, shopping, managing money, using the telephone, and doing housework. Clearly these factors jeopardize independent living (U.S. Bureau of the Census, 1995; Administration on Aging, 2001).

The four leading causes of visual impairments/blindness are associated with aging. The incidence of macular degeneration, glaucoma, cataracts and diabetic retinopathy all increase with age (National Society to Prevent Blindness, 1992). Vision impairment increases dramatically with age. One in five adults over age 64 reported impaired vision. Among the 65-74 age group 17% reported vision impairment. This vision impairment rate increased to as much as 26% for people 75 and over (Stuen, 1997).

As this society continues to age and live longer, there is the likelihood of increased physical disabilities including blindness and visual impairments. In the group of those over age 75, 1 of every 4 adults has a visual impairment. Vision impairment in older persons jeopardizes independent living skills and abilities. Federal and State rehabilitation agencies

have begun to focus attention on and serve the group of elders with vision loss. Professional response to the functional limitations associated with aging will be discussed in the next section.

Historical Background of Independent Living Services for Elderly Blind

State rehabilitation agencies serving individuals who are blind and visually impaired began to focus on the independent living needs of their older constituents during the 1970s. Congress authorized Title VII Part C (Independent Living Services for the Elderly Blind) in 1973 but no funds were appropriated until 1986. Twenty-five states secured funding that year. Since then, Title VII Part C has been changed to Chapter 2 of Title VII as part of the rehabilitation amendments of 1992. Nearly 8.1 million dollars have been awarded to 33 states and territories on a 3-year cycle. A major concern with 3-year periods of awards is that some states that began programs for independent living for elderly blind persons no longer receive funding (Herndon, 1993).

Several models of providing independent living services have been documented. They are identified as: (a) itinerant outreach models, (b) center based models and (c) mixed services including a combination of itinerant and center based training (Moore & Stevens, 1994). The Minnesota training model, which is the focus of the study reported here, could be considered a mixed model in which the training is similar to center based training but is mobile; trainers go out to various communities to provide the rehabilitation training.

Independent living services for blind elders are relatively new. The services have developed over the last 30 years. There are still concerns regarding funding and consistency in programming. Various models of service have been developed. Thus a particular concern in research is the measurement of training outcomes, which is discussed in the next section.

Measurement of Outcomes

Measurement of outcomes is a current issue across the rehabilitation field (Crews & Long, 1997; De l' Aune, et.al., 1999; Farish & Wen, 1994; Long, et. al., 2000).

Accountability is a major concern. Consumers want to know if the services that are provided by rehabilitation agencies are effective; the general public and governmental officials want to know if tax dollars are well spent; rehabilitation agencies need to report the number of individuals that are successfully served by programs (De l' Aune et. al., 1999, Crews & Long, 1997). In the areas of independent living training, outcome measures must include assessment of how strategies and techniques are incorporated into and enhance life functions. In blind rehabilitation, "Outcomes can be portrayed as the acquisition of skill, higher self-esteem, a better quality of life, improved attitudes toward blindness or visual impairments and increased social integration and employment" (Crews & Long, 1997, p. 124). With a shift toward outcomes, the emphasis is less with the rehabilitation process and more with the results obtained through services. The emphasis of training is now on responding to the needs of the individual, which is a hallmark of rehabilitation (Crews & Long, 1997).

Historically, rehabilitation counselors have used a checklist of skills and abilities, to report outcomes. The issue however, is how one incorporates these skills into daily living. The skills of travel and reading can be measured but the greater impact of independent travel, social integration and choice may be more important than specific skills. A woman may demonstrate she can use her white cane effectively to get around. She may use magnification to read menus and check prices when shopping. If these skills are demonstrated in the rehabilitation setting, but not incorporated outside the rehabilitation setting, the woman would likely remain isolated and the gains made would not improve her quality of life. By the same

token, some people may demonstrate few measurable gains, but still feel better about themselves, understand and accept their vision loss and make more informed choices for themselves (Crews & Long 1997).

There are two factors that limit the ability to conduct outcome research in vision rehabilitation. Experimental design would deny rehabilitation services to one group, which clearly is an ethical issue. Outcomes measured by observations of others raises concerns about the reliability and validity of the measurements. The general strategy in rehabilitation has been to create pre- and posttests (Lambert, Becker, Courington, & Wright, 1982). Pre- and posttests can include a combination of observations made by rehabilitation counselors and self-reports from the individual. With self-report there is the possibility that responses can reflect how the person believes the evaluator would like them to respond or even outright lies. There has been increasing evidence, however, to suggest that self-report measures are useful and reliable instruments. Smith, De l' Aune and Geruschat (1992) reviewed outcome related research evidence and quoted Allport: "Too often we fail to consult the richest of all sources of data, namely the subject's own self-knowledge."

Outcome measurement is important in rehabilitation. There is much concern about the quality of information that has been obtained in past research. Older blind training outcome measurement is complicated by the need to understand how training affects everyday life. The next section includes a discussion of research related to older blind training.

Research Findings on Rehabilitation of Older Blind Persons

Consumer and professional organizations and private and public rehabilitation agencies have advocated for independent living rehabilitation services (Farish & Wen, 1994). Over the last decade, it has been recognized that older persons with disabilities could benefit

from such rehabilitation (Corthell & Fleming, 1990). Independent living centers and rehabilitation training facilities and agencies have helped people with disabilities gain independence, stressed the importance of self-advocacy and choice of goals, used peer role models and encouraged self-help approaches to problem solving (Farish & Wen, 1994). In addition, there is ample research evidence in Borkman, 1976; Kalafat & Dehmer, 1993; Levy, 1976; and McCulloh, Crawford, & Resnick, 1994 studies (as cited in Horowitz, Leonard, & Reinhardt, 2000) regarding the role of peer or support groups for persons with vision impairments.

A variety of attributes and assets affect a person's response to blindness including the availability of adequate support. Kleinschmidt's qualitative study (1999) of older adults' perspectives on their successful adjustment to vision loss identified several important themes: (a) prior life experience, (b) internal resources, and (c) external resources. Prior life experiences can be summarized as general coping methods. Internal resources identified by participants included positive attitudes, a sense of humor, problem-solving perspectives, a resolve to remain active and involved, and religious beliefs. Some of the external resources that contributed to their successful adjustment after vision loss were personal support from friends, family and neighbors both for functional and emotional support, professional support, having a peer role model to learn from, and comparisons to "others who were more unfortunate".

Support has also been shown to enhance rehabilitation intervention outcomes. There is evidence that adjustment to blindness skill training when coupled with peer support results in the best outcomes for blind elders. A Nebraska study in 1994 (Van Zandt & Van Zandt) examined group involvement and blind elders' feelings of success in dealing with changes in

their life as a result of their vision loss and the person's level of satisfaction with their current level of activity. The study compared these variables in 3 groups of elderly blind: (a) those who participated in a peer support group only, (b) those who participated in a peer support group and received rehabilitation training, and (c) those who did not participate in either group. The study found those participating in a support group and receiving rehabilitation training reported the highest levels of success in coping with their vision loss, were most satisfied with their level of activity, and generally had the most positive outlook on life.

There have been several efforts to examine the factors contributing to rehabilitation training satisfaction. Generally, research has demonstrated positive outcomes from blindness training. In fact, studies have reported that virtually all average changes associated with the rehabilitation experience were in a positive direction, including the level of satisfaction with the training received (De l'Aune, et al., 1999). A Mississippi study on the effectiveness of an independent living services program for elderly blind persons found significant gains in capacity and mode of performance in 41 of 47 of the areas of independent living that were assessed. Capacity was measured on a four-point scale of difficulty in doing the task. Performance was measured on a six-point scale that described how the task was completed (Farish & Wen, 1994). The frequency that acquired skills are used after training does not fully account for a person's level of satisfaction and perceived benefit from training. Frequency in being able to do a specific task doesn't appear to be as much of an issue as the elder's self-perceived level of independence and satisfaction with performance of the task (De l'Aune, et al., 1999).

There was considerable research evidence to support the importance of this study. There was also considerable research to guide the development of appropriate techniques to answer the research questions. A summary of that literature is provided below.

Summary of what is Known and Unknown about this Topic

The research indicated that older persons can benefit from rehabilitation training. There was evidence that the results of blind elder rehabilitation training have the most positive outcomes when the rehabilitation training is provided along with a peer support group. Measuring outcomes has become a very critical issue in the field of rehabilitation. Cost effectiveness of services, benefits, and improvement in attitudes and skills are all outcomes that have been measured in a variety of different ways. Evidence was found to demonstrate that self-reports of individuals who have participated in rehabilitation are useful and reliable instruments in assessing outcomes.

There is scant research on long-term outcomes of rehabilitation training for blind elders. There is insufficient information about training impact on daily life. Do trainees actually use training they receive? Does this enhance the ability to carry out daily living activities? There is little documentation to determine the adaptive devices or techniques that are used most frequently and successfully by blind elders. For the sake of expedience, most outcome studies have examined training results experienced by samples of elders. What is known about elder blind rehabilitation has thus been extrapolated from selected samples of elder trainees. Seldom have results from an entire cohort of trainees been examined to see the full range of training experiences and effects. There is very little information in the literature about training outcomes for an entire state. Surveying across an entire state can be quite cumbersome. As a result there is a lack of information about the extent of outcome variation

within a statewide sample. As mentioned previously, there are numerous ways that elder blind training is formatted. The Minnesota model lasts 12 weeks and is somewhat unique in providing such a lengthy training period. The Minnesota training also follows the mixed model of service with training in the elder's own community but with standardized curriculum and provider preparation. There is limited outcome information to distinguish between the center based, itinerant and mixed models of service delivery. Just how effective is this mixed-model design?

The completed study with results reported here, was an effort to build upon what is known about elder blind rehabilitation, while addressing some of the identified gaps in understanding. The specific methodology used to examine the research hypothesis and to answer the research questions will be described in the next section, methodology.

Methodology

This section will describe the steps taken to answer the research questions and accumulate evidence to test the null hypothesis. Specifically this section will include a discussion of (a) specific procedures, (b) population, (c) subjects, (d) instrumentation, (e) data collection, (f) data analysis, (g) limits and strengths of methodology and finally (h) summary. The first of those discussions, specific procedures, follows.

Specific Procedures

Minnesota Services for the Blind provides rehabilitation training to persons of all ages if they have a significant vision loss that creates functional limitations in the areas of education, employment and/or independent living. Most agency consumers are over age 55 and receive independent living services. Administrative staff of Services for the Blind approved the research study reported here and provided the listing of elders who had received Adjustment to Blindness training during Fiscal Year 1998 and 1999. A comparison of demographics was made between these 2 groups. Participants in both groups were similar. A decision was made to limit survey numbers to just those elders who were trained during Fiscal Year 1999. This allowed statewide sampling of an entire cohort of rehabilitation trainees.

Review of literature resulted in finding the Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998). The author was contacted and permission was obtained to use the instrument for this research. Questions related to satisfaction with training and changes in attitude toward blindness were developed. Additional questions specific to devices and techniques used in daily independent living activities were added to the survey. Further information about the survey is provided in the section on Instrumentation.

Population

Administrative staff of Services for the Blind reviewed the research proposal and the documentation regarding the protection of human subjects and approved this research study. The agency provided a listing of all persons who had attended Adjustment to Blindness classes during Fiscal Year 1999 (October 1, 1998 to September 30, 1999).

Minnesota Services for the Blind provided Adjustment to Blindness training classes to 173 persons during fiscal year 1999. Of those that attended the training, 10 had since been reported as deceased and 4 did not complete the rehabilitation process. The remaining 159 individuals were the population for this study. Forty-four or 27.6% were men and 115 or 72.3% were women. The participant's ages at the time of training ranged from 55 to 97. The mean age for women was 80.2. The mean age for men was 78.3. Table 1 shows the age ranges of men and women who attended the classes and who were surveyed for this study.

Table 1:

Description of Fiscal Year 1999 Trainees

Age	Males	Females	
55-64	4	8	12
65-74	10	14	24
75-84	17	57	74
85+	13	36	49
All ages	44	115	159

As is evident from the preceding table, this was an older population. The bulk of trainees in this cohort group were aged 75 or older at the time of training. At the time of follow-up the respondents were 2 years older. Further information about trainees surveyed for this study will be described in the section below on subjects.

Subjects

Of the 159 mailed surveys, the response was as follows: Four were reported as deceased and 9 surveys were returned with expired forwarding addresses. This reduced the potential sample size to 146 ($159 - 13 = 146$). Of this group of 146, 6 subjects were reported as being in nursing homes or too ill (dementia or terminal cancer) to participate ($146 - 6 = 140$). Thus, the resulting sample of subjects for this study included 140 individuals who received Adjustment to Blindness training through Minnesota Services for the Blind in fiscal year 1999. Not all of these 140 potential subjects completed the survey that is summarized in Chapter 4. Five individuals declined to participate in the study (3 returned the postcard asking to remove their names from the mailing lists and 2 returned the postcard which asked for assistance and then declined after the consent was read to them.) This would be a 3.6% rate of declining to participate. Specific survey response rates for the remaining 140 individuals are included with all survey data in the findings section. More detail about the survey and instrumentation is provided below.

Instrumentation

Instrumentation used in this study was the Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998) (Appendix A) and survey questions developed by this researcher (Appendix B). Horowitz & Reinhardt (1998) developed the AVL scale to measure three general areas of blind elder's adaptation to vision loss. The areas included acceptance of

vision loss, attitudes toward rehabilitation training, and attitudes toward relationships with family members or friends. Scores on the test range from 0 - 24, with higher scores indicating more successful adaptation to vision loss. Analysis conducted on the AVL scale indicated good internal consistency ($\alpha = .84$). Evidence of convergent validity for this scale was demonstrated by a positive relationship between the AVL score and global life satisfaction (.63) and a negative relationship with depression (- .74). The AVL scale is designed to be completed in an interview setting. For this study it was modified to be in large print (18-point type) so that individuals with limited vision could read and mark their own responses and thus be considered a “self-report”. The option of “don’t know” was also removed from the response sheet.

Instrumentation also included a researcher-designed survey with questions to assess satisfaction with training, attitude change as a result of training and the 4 most frequently used adaptive techniques and devices. Instructors of the classes and other rehabilitation counselors provided suggestions and recommendations for survey inquiries and assisted in validating the survey questions. For example, the use of the white cane was included in both the section of adaptive devices and the section of blindness techniques. It was felt that some elders use the cane only for safety and identification purposes, which would be a “device”, while others use the cane and cane techniques for getting around (Appendix B).

Data Collection

Data collection was done by mailing a large print introductory letter (Appendix C), consent form (Appendix D), and the questionnaire (Appendix A & B). The subjects were asked to complete the survey and return it in an enclosed envelope. Individuals who could not read the large print were given the option of returning an enclosed post card with their phone

number listed. The researcher then called the participant to complete the survey by telephone. A follow-up reminder letter was mailed one week after the original mailing (Appendix E). A third mailing included another survey and an appeal to complete the survey if it had not been done earlier (Appendix F). The option of returning the post card and obtaining reader assistance in completing the survey was also made available with this mailing.

Data Analysis

The results of the survey were tabulated with frequencies and descriptive statistics used to report group results. Group means were computed where appropriate. The 'level of satisfaction with training' survey question included response choices of very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied. Adaptation to blindness was measured by the Adaptation to Age-Related Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998) scores. Adjustment to blindness was a researcher-developed construct that included AVL scores, reported change in attitude regarding vision loss and frequency with which vision accommodations were made in daily life. The response choices for reporting change in attitude were: attitude is much better, somewhat better, about the same or worse. Vision accommodation in daily life was measured by the incidence of reported use of adaptive devices and techniques. Specifically, the number of participants responding that they used adaptive devices and/or techniques never, rarely, sometimes, usually and those not responding to the item were counted. The 4 most frequently used devices and techniques are included in the results reported in Chapter 4. These values were then converted to percentages of the total sample to indicate how prevalent use of that technique or device was for the group as a whole. Results of the survey are reported in the findings described in Chapter 4 as are results related to the research questions. A full table that includes all raw data can be found in Appendix G.

Strengths and Weaknesses of Methodology

This study included various methods to assess the quality of training provided to blind elders by Minnesota Services for the Blind. As with all research, there were inherent limitations associated with the methods used to answer the research questions. A variety of techniques were included in this study to restrict the effects of these naturally occurring limits. There were also a number of methodological strengths that enhance confidence in study findings. The limitations and strengths of this study will be described below.

Limits of the study. Sampling occurred with only the participants of the Adjustment to Blindness classes from one fiscal year. As a result there is no way to determine if the results reported here would generalize to individuals trained at any other time. It is possible that this group of individuals may have been different or had different kinds of experiences that would affect the outcomes they experienced as a result of training. This specific limitation was addressed through efforts to examine the group of elders trained during Fiscal Year 1998 compared to those trained in Fiscal Year 1999.

No marked differences in group composition or demographics were noted when trainees from Fiscal Year 1998 and 1999 were compared. Experiences in training were also considered. Older blind training is standardized. Thus, findings reported here are based on training that was similar across fiscal years since it followed the same curriculum using trainers who were given similar delivery orientation and training. Analyzing evidence related to this limitation then, it would appear that this limitation may be minor when attempting to generalize study results to the population of elders trained with the Minnesota model of 12- week training throughout the years. No objective evidence was found to suggest that this

was an atypical training year, or that outcomes would be substantially different during other training years.

No data from a control group of untrained blind elders was available to compare with the outcomes reported by people who participated in Adjustment to Blindness classes. Thus caution must be taken in assuming that reported changes in life and blindness adjustment were the result of the older blind training. Even without Adjustment to Blindness training, elders may have experienced similar changes in adaptation and adjustment over a period of time. This study included limited potential to isolate training effects because of the lack of a comparable sample of untrained subjects.

Some effort was made to adjust for this lack of control. There were also concerns about delayed recall effects on reporting. In this study there was a 2 -year time delay between training and report. Subjects were thus asked to report about specific life changes that they attributed to classes. Participants were asked to tell about attitudes before and after training. Changes that they experienced then could be expected to occur because of the training intervention. This question was phrased so that respondents were encouraged first to think about how they felt and what they believed about vision loss before attending the classes. They were then asked what they think and believe about blindness now. This question was phrased so that elders reflected on their earlier experiences before they tried to evaluate attitude change. Subjects were also asked in great detail about the training content and how it was used in their later life. Respondents were able to report very specific information about training effects (use of techniques and devices). As a result, even without a control group, methods used in this study allow for some confidence that observed effects were due to training.

Findings were also limited because there was no pre-test functioning data to compare to post-training outcomes. Thus it is impossible to demonstrate that observed outcomes were the result of training. Lack of pre-test information had limited influence here. This limitation was restricted by study design. Detailed information was collected about subjects' post training functioning. Thus, if training were proven effective, trainees functioning would be enhanced.

All individuals who participated in this study were individuals who had voluntarily completed blindness training. Participants may have been more motivated, informed and thus had a better adjustment to the vision loss even prior to training. Lack of pre-training function data limits the ability to determine how these results might generalize to older blind individuals who do not elect to receive training.

Although this study was designed to examine the effects of older blind training on the long-term use of adaptive devices and techniques, many other variables may have occurred during the two years prior to follow up that could affect the outcome of the survey. No effort was made to gather disability or life status information. The subjects may have experienced another illness/medical condition that could affect their independent living ability. They may have experienced a change in their living environment with a death of a spouse or a move to a different living situation. There are numerous variables that could have affected the reported outcomes. Group level data was examined to try to limit the influence of such variation. By examining numerous individuals through the use of group level data (percentages and mean scores), the effects of individual variations that were not controlled can be minimized although not eliminated.

Strengths of the study. This study had a number of methodological strengths that lend credence to the reported findings. Multiple sources of expertise were used in study design. Extensive literature review identified a well-researched instrument with demonstrated capacity to collect relevant adaptation to vision loss information. Additional questions regarding devices and techniques used in daily living activities were formulated with the assistance of an expert panel of individuals who were familiar with the blindness-training curriculum. The survey thus reliably reflected training content. Measurement of independent living outcomes is complicated by the tremendous variation across people (e.g. living arrangements, daily activities, values). When attempting to study outcomes the value of findings is only as good as the specific questions or items explored. Use of the expert panel in this study resulted in generating relevant questions and thus good quality of information regarding independent living.

Access to subjects was another methodological strength. This study includes a survey of the entire cohort of elders who had attended Adjustment to Blindness training during one fiscal year. This limited the need to rely on random sampling across several years. Although random sampling attempts to even out differences while incorporating significant variation that occurs in the population, it is still just an approximation of the naturally occurring variation. In this study since all trainees were sampled, the full range of outcomes can be measured. This was a statewide sample, so results obtained should be relevant regardless of geographic area.

Various providers, in various settings and in many different small groups, trained the participants who were surveyed. This lends considerable confidence in the ability to methodologically discern Minnesota trainees' overall outcomes in the areas of satisfaction

with the quality of training, life impact and effect of the training on activities of independent living.

Numerous efforts were made to increase participation and thus more accurately assess outcomes following training. Surveys were done in large print and the option of returning a postcard for reader assistance in completing the questionnaire was provided. This demonstrated respect for the participants' vision impairment. Multiple mailings were sent which highlighted the participants' expertise, the value of their comments and future benefits for others who may experience a vision loss. For detailed review of all mailings please refer to Appendix C - F.

Summary

The group of 159 blind elders who received Adjustment to Blindness training from Minnesota Services for the Blind during fiscal year 1999 was the population for this study. This population was reduced to 140 potential subjects due to deaths, severe illnesses and inability to locate others. The survey measurement instrument was the AVL (Horowitz & Reinhardt, 1998) scale and other questions related to training satisfaction, attitude change following training and use of accommodations learned in class. Additional questions on the survey were developed with the assistance of an expert panel of rehabilitation counselors and instructors of the class. A large print questionnaire was mailed to the subjects. The analysis of the data was completed using descriptive statistics. Survey results are described in the next section.

Results

The purpose of this study was to describe blind elders' report of outcomes from Adjustment to Blindness offered by Minnesota Services for the Blind. The measurement instrument used was the AVL scale (Horowitz & Reinhardt, 1998) and other questions developed by this researcher. The research hypothesis examined was: The individuals who participated in a group model of training will report a high level of satisfaction with the services received, however, there will be a wide range of level of skills and adaptive techniques and devices the individuals reported using on a regular basis. The null hypothesis was that individuals who have participated in a group model of Adjustment to Blindness training will report minimal levels of satisfaction with training and will use few adaptive techniques and devices on a regular basis in their daily living. The study examined the hypothesis through the analysis of data related to the following research questions:

1. How satisfied are the participants with the instruction they received?
2. To what degree have the participants' attitudes about blindness changed?
3. How well adapted are the trainees after they have participated in the Adjustment to Blindness classes?
4. What are the 4 most frequently used alternative techniques in daily living activities?
5. What are the 4 most frequently used adaptive devices for daily living?

The remainder of this section of results will include reported findings related to each of these major research questions. Each of the research questions will be answered with accompanying data to support that answer to the research question. Unanticipated findings

will also be discussed. A review of the findings related to the overall research hypothesis will conclude this results section.

Response Rate from Subjects

There was a very positive response to the survey from the majority of the trainees, with a subsequently high survey response rate. Eighty-six (86) surveys were returned for a response rate of 61.4%. There were two surveys that were considered not valid. In the first invalid survey, the individual reported getting his vision back and only answered some of the survey questions. Another survey had a note included that a daughter had answered the questions for her mother. Thus, the useable responses were 84 questionnaires from 140 participants or 60% of all appropriate trainees. The remainder of the data analyzed to answer the research questions will be based on this sample of 84 elders trained by Minnesota Services for the Blind during Fiscal Year 1999. Results related to the first research question are described below.

Results Related to Research Question 1: Level of Satisfaction with Training

Trainees were asked to indicate their level of satisfaction with the services they had received from Services for the Blind. Specifically this survey item asked, "Overall, my level of satisfaction with the training I received from Services for the Blind would be: very dissatisfied, somewhat dissatisfied, somewhat satisfied and very satisfied." A Likert scale was used to assign weighted numeric values to each of the responses for comparison purposes with a low number (1) being assigned to very dissatisfied and a higher number (4) to very satisfied. It was impossible to determine the value for individuals who did not respond to this question. Assigning a 0 as very dissatisfied was considered, but the nature of this sample precluded such an assumption. Respondents may have failed to respond because they could

not determine a difference between very satisfied or somewhat satisfied. The vision limits this group experienced may have resulted in problems with visual scanning. A participant may have left this item blank and not seen that they failed to respond to this item. Thus, group results are only reported for those who responded.

All of the subjects who responded to this item indicated that they were somewhat or very satisfied with training. Five trainees or 6% of the total sample did not respond to this question and thus data is missing. Seventy-nine of the 84 subjects did answer the training satisfaction question, with 59 individuals or 70.2% who were very satisfied with the services and 20 individuals or 23.8% who were somewhat satisfied with the services they received. Thus in examining results of those who responded about their level of satisfaction, 74.7% were very satisfied and 25.3% of respondents were at least somewhat satisfied with the training they received. There were no responses in the category of very dissatisfied or somewhat dissatisfied. A Likert scale was used to assign weight to responses. Weights ranged from 1 - 4 with higher numbers meaning greater satisfaction (1 = very dissatisfied and 4 = very satisfied). Mean satisfaction was then computed using these weights. The mean satisfaction level for the group of trainees who responded to this question was 3.75. See Table 2 for the results.

Table 2

Level of Satisfaction with Services Received

Responses	#	%	%*
Very Satisfied	59	70.2	74.7
Somewhat Satisfied	20	23.8	25.3
Somewhat Dissatisfied	0	0	0
Very Dissatisfied	0	0	0
Missing Responses	5	6	0

Mean Satisfaction Score: $\bar{x} = 3.75$

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the percentage if all 84 persons had responded to this question.

%* Represents the valid percentage based on the actual number of individuals (79) who responded to this item.

As is evident in the preceding table, there was widespread satisfaction with the training and services provided by Minnesota Services for the Blind. Thus the answer to the first research question, ‘How satisfied are the participants with the instruction they received?’ is that trainees were highly satisfied with training. All of the participants who responded to this item indicated that they were somewhat or very satisfied with training. Most (74.7%) reported they were very satisfied with training. The mean group training satisfaction score was 3.75. In addition to being highly satisfied with the services provided by Minnesota

Services for the Blind, the participants also reported a positive change in attitude as discussed in the next section.

Results Related to Research Question 2: Change in Attitude Regarding Blindness

Change in attitude toward blindness was measured by asking the class participants to reflect on their feelings and beliefs about vision loss before they attended the classes and what they felt or believed about vision loss after attending the classes. They were then asked to indicate their change in attitude regarding vision loss, if any. There were 6 surveys with no response to this question, thus 79 trainees or 94% of the participants answered this question. Proportions of the participants who did answer this question were then calculated. Thirty-four of the item respondents or 40.5% reported their attitude was much better, 29 or 34.5% reported their attitude was somewhat better, 15 or 17.9% reported their attitude was about the same, and 1 or 1.2% reported their attitude as being worse.

In order to make group comparisons, a Likert scale was used to assign weights to responses. Weights ranged from 1-4 with higher numbers indicating a much better attitude (1 = attitude is worse to 4 = attitude is much better). No scores were recorded for those who failed to answer this question. Mean attitude change was then computed using these weights. The mean change in attitude regarding blindness for this group was 3.22. Sixty-three or 75% of the participants indicated some level of improvement in their attitude regarding their vision loss. See Table 3 for results. Not every participant responded to all of these items. Each category in the next table has a column labeled % and %*. The % column is what the percentage would be if all 84 participants had responded to that item. The %* column shows the valid percentage score based on the number of participants who actually responded to that item.

Table 3

Change in Attitude Regarding Blindness

Responses	#	%	%*
Much Better	34	40.5	43
Somewhat Better	29	34.5	36.7
About the Same	15	17.9	19
Worse	1	1.2	1.2
Missing Responses	5	6	
Mean Attitude Change	$\bar{x} = 3.22$		

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the percentage if all 84 persons had responded to this question

%* Represents the valid percentage based on the actual number of individuals (79) who responded to this item.

As indicated by the previous table, a majority (75%) of all participants in the Adjustment to Blindness class reported their attitude regarding blindness was either much better or somewhat better following training. This answers the second research question: “To what degree regarding attitude about blindness has change occurred?” The mean score for the change in attitude was 3.22. This positive change in attitude regarding blindness and the high level of satisfaction with the services reported by these participants also seemed to be related to the AVL (Adaptation to Vision Loss) scale (Horowitz & Reinhardt, 1998) scores, which are discussed in the next section.

Results Related to Research Question 3: Adaptation to Vision Loss

Scores on the Adaptation to Vision Loss (AVL) scale (Horowitz & Reinhardt, 1998) were used to address the third research question: “How well adapted are the trainees after they have participated in the Adjustment to Blindness classes?” The AVL scale scores can range from 0 - 24 with a higher score indicating a better adjustment to vision loss. The AVL scores of this group of trainees ranged from 7 to 23.6. The group's mean score was 18.3 with a standard deviation of 3.6. This mean score was slightly higher than means of the norm groups when the scale was standardized. The initial norm group scores ranged from 4 to 24, with a mean score of 17.4 and a standard deviation of 4.8. The second group that was used to norm the scale had scores that ranged from 3 to 24, with a group mean being 17.8 and a standard deviation of 5. The group who participated in the Minnesota Adjustment to Blindness classes had scores on average then that were .5 to .9 higher than the groups used for standardization. Trainee scores also tended to cluster together a bit more than the scores in the norm samples.

The differences between The Adjustment to Blindness group trainees and the norm group were minimal but in a positive direction. There was a slightly larger difference in the range of scores between norm and trainee groups. The lowest Minnesota trainee score recorded was 7 while the lowest recorded scores for the norm groups were 3 and 4. In summary, both trainees and norm sample were fairly well adjusted. After training, the lowest scoring participants of the Adjustment to Blindness class showed a more positive adjustment than did the lowest scoring people in the sample.

One-half of the subject's scores in the Services for The Blind group were in the top one-fourth of the score range (scores from 18-24). No comparison can be made with the norm group sample since no comparable results were reported for the norm groups. Adaptation to

Vision Loss Scale scores for the Minnesota Services for the Blind Adjustment to Blindness groups are summarized in the next table.

Table 4

Adaptation to Vision Loss Scores

Range of Scores	7 - 23.6
Mean Score	18.3
Standard Deviation	3.6

As evident in the preceding table, trainees who completed Adjustment to Blindness classes demonstrated very positive adaptation. Thus, the answer to the third research question, ‘How well adapted are the trainees after they have participated in the Adjustment to Blindness classes?’ was that trainees were very well adapted after completion of classes. Results for the group whose results are reported here were slightly better than results obtained for a generalized group of elders during scale standardization. This difference was small however. Perhaps more important were the differences in overall adjustment for those who reported more difficulty in adjustment. In the norm sample groups the lowest scores were 3 and 4 indicating significant problems with adjustment. In the Minnesota sample the lowest score was 7. There are a several potential reasons that the analysis of AVL scores did not show as great a training effect as findings reported about other questions. These alternative explanations will be covered in the conclusion section. Overall, trainees had relatively high scores on the AVL scale. They also reported using a variety of alternative techniques on a frequent basis in their daily living activities. Those results are discussed in the next section.

Results related to Research Question #4: Four Most Frequently Used Alternate Techniques

The additional survey questions that were developed included a list of alternative techniques and skills covered in training. The participants were asked to respond to this question: “How often do you use the following method or adaptations for daily living?” The response choices were: usually, sometimes, rarely or never. The 4 alternative techniques that were reported to be used most frequently or “usually” by the participants were: 1) using tactile markings to set appliances, 2) asking for assistance in the store, 3) dialing the phone by touch, and 4) using tactile or folding methods to identify money. When the responses in the categories “sometimes” and “usually” were added together, the rank order of these adaptive techniques changed to: 1) asking for assistance in the store, 2) using tactile markings to set appliances, 3) using tactile or folding methods to identify money, and 4) dialing the phone by touch. When the responses of “usually” and “sometimes” were added together, nearly three-fourths or more (73.3% - 85.7%) of the participants reported they are using these four alternative techniques in their daily living activities. Not every participant responded to each survey item. Each category in the next table has a column labeled % and %*. The % column is what the percentage would be if all 84 participants had responded to that item. The %* column shows the valid percentage score based on the actual number of individuals who responded to the question. Refer to Table 5 below that shows responses and group percentages in each of the 4 categories about techniques that were reported used most frequently and the resulting percentages.

Table 5

Adaptive Techniques Used Most Frequently in Daily Living Activities

Response	Tactile Appliance Settings			Asking for Assistance in the store		
	#	%	%*	#	%	%*
Usually	56	66.6	68.3	48	57.1	57.1
Sometimes	9	10.7	10.9	24		28.6
Rarely	1	1.2	1.2	3		3.6
Never	16	19	19.5	9		10.7
Total Response	82	97.6		84		100
Missing Responses	2	2.4		0		

Response	Dialing phone by touch			Money Identification		
	#	%	%*	#	%	%*
Usually	42	50	53.1	36	42.9	44.4
Sometimes	16	19	20.2	24	28.6	29.6
Rarely	1	1.2	1.2	9	10.7	11.1
Never	20	23.8	25.3	12	14.3	14.8
Total Response	79	94		81	96.4	
Missing Response	5	6		3	3.6	

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the percentage if all 84 persons had responded to this question.

%* Represents the valid percentage based on the actual number of individuals who responded to this item.

Participants reported that the adaptive techniques they use most frequently in their daily living activities are tactile methods to set appliances, asking for assistance in the store,

tactile methods to dial the phone and to identify money. This answers the research question “What are the 4 most frequently used alternative techniques for daily living”? The rank order of the alternate techniques used most frequently changes when the responses “usually” and “sometimes” are added together, instead of just counting the response that a technique was “usually” used. In addition to using a variety of alternate techniques, the participants also reported using a number of adaptive devices in their daily living. Those results are discussed in the next section.

Results to Research Question # 5: Four Most Frequently Used Adaptive Devices

The survey instrument included a list of adaptive devices commonly used by persons with vision impairments and covered in the Minnesota blind rehabilitation training curriculum. The participants were asked to identify how frequently they used each item by responding usually, sometimes, rarely, or never.

An adaptive timepiece was reported as used most frequently (usually) by the participants. The rank order of the other devices used frequently in daily living was: better lighting, a darker/heavier writing device and talking books. The rank order of these four devices changes if the responses of “usually” and “sometimes” are added together. There is a tie for first place with both the darker/heavier writing device and an adaptive timepiece being used by 72 of the participants. Better lighting is third with 68 participants and the use of talking books is fourth with 61 participants reporting using this item. Including the number of trainees that responded that a device was used sometimes or usually, 72.9% to 86.7% of the participants reported using these devices in their daily living activities. Again on this survey item, not all 84 participants answered each item. Therefore, the following table (#6) has a column listed as % and as %*. The % column is what the percentage would be if all 84

trainees had answered the item. The %* column is the valid percent: the actual total number of responses observed for each response choice.

Table 6

Four Most Frequently Used Adaptive Devices

Response	Adaptive Time Piece			Lighting		
	#	%	%*	#	%	%*
Usually	69	82.1	83.1	65	77.3	80.2
Sometimes	3	3.6	3.6	3	3.6	3.7
Rarely	2	2.4	2.4	2	2.3	2.5
Never	9	0.7	10.8	11	13	13.6
Total response	83	98.8		81	96.4	
Missing response	1	1.2		3	3.6	

Response	Darker Pen			Talking Books		
	#	%	%*	#	%	%*
Usually	61	72.6	74.4	50	59.5	60.9
Sometimes	11	13.0	13.4	11	13.0	13.4
Rarely	2	2.4	2.4	7	8.3	8.5
Never	8	9.5	9.8	14	16.6	17.0
Total response	82	97.6		82	97.6	
Missing response	2	2.3		2	2.3	

Note. # Represents the number of trainees that endorsed each satisfaction level.

% Represents the percentage if all 84 persons had responded to this item.

%* Represents the valid percentage based on the actual number of individuals who responded to this item

A high percentage of the participants (72.9 to 83.9) reported that they usually or sometimes used the adaptive devices of a timepiece, better lighting, a darker/heavier writing

device and talking books. This information answers the research question of “What adaptive devices do you use most frequently in daily living?” There was an unanticipated finding in the results of this question on the survey. Those results are discussed in the next section.

Unanticipated Findings

A little over one-third (32.1%) of the participants reported that they usually or sometimes used a CCTV for reading purposes (78 responded to this item). The Veteran’s Administration had purchased the CCTVs for several of the men who participated in the group. The ability to read mail, recipes, correspondence and labels on household materials with a CCTV is a very important activity in the area of IADLs.

Another notable finding was that the sample included over 25% men. This positive but unanticipated finding appears to suggest that the agency is not gender biased in the provision of services. Fewer men survive into later life and those that do are often married. Men therefore would be less apt to seek outside assistance when they lose vision. Agency outreach efforts must be working to have such a high number of men participate in the training.

Other unanticipated findings were related to the degree and not the nature of findings. It was expected that survey response rates would be good. Typical mailed surveys have a return rate somewhere in the 20% range. In this study 3 times that number responded. It was also expected that participants would report satisfaction with training and demonstrate the value of training in their daily lives. Again, the extent of the positive response was unanticipated. This discussion of results will conclude with a summary of results and evidence related to the research hypothesis.

Summary of Results and Evidence Related to the Research Hypothesis

Analyses of a wide variety of data have been reported. This section will conclude with a) summary of results and b) evidence related to the research hypothesis.

Summary of results. There was a high level of satisfaction with services received by the participants. All respondents to the satisfaction question reported some level of satisfaction with the Adjustment to Blindness training. When looking at the entire group of fiscal year trainees including those who did not indicate their level of satisfaction, 94% reported some level of satisfaction with the services they received. Of those who responded, there were 70.2 % who reported that they were very satisfied and 23.8% who were somewhat satisfied with the services they had received from Minnesota Services for the Blind. In addition to the high levels of satisfaction, participants were well adjusted as defined in this study. Specifically, 75 % of participants reported positive change in attitude regarding vision loss, including the responses that attitudes were “much better” (40.5%) and “somewhat better” (34.5%). AVL scores were high for this group. Overall analysis of results then demonstrated that trainees felt that they had experienced positive attitudinal change and trainees also showed a high level of adjustment to blindness.

This high level of adjustment was substantiated by the extent to which trainees used accommodations to carry out activities. Trainee responses demonstrated that the tools and techniques learned in training were integrated in daily life. Participants reported using a variety of the devices and techniques covered in Adjustment to Blindness classes and many of these were used on a regular basis. The adaptive devices used most frequently by this group were some pretty simple and inexpensive devices. The items included a heavier or darker pen, timepieces with large print or ones that talk, better lighting, and talking books. The alternative

techniques identified as being used most frequently were setting appliances by using tactile (raised) marks, asking for assistance in the store, using touch to dial the phone, and using tactile or folding methods to identify and manage money.

Information across all of these research questions was examined to address the research hypothesis. Results of this analysis are detailed below.

Evidence related to research hypothesis. The research hypothesis studied was: Individuals who have participated in a group model of training will report a high level of satisfaction with the services received, however, there will be a wide range of adaptive techniques and devices the individuals report using on a regular basis. This hypothesis was tested by examining the evidence collected to refute the null hypothesis. The null hypothesis was that individual who have participated in a group model of Adjustment to Blindness training will report minimal levels of satisfaction with training and will use few adaptive techniques and device in a regular basis in their daily living. The preponderance of evidence analyzed refuted the null hypothesis. Thus, the research hypothesis was accepted. Blind elder training was effective. Trainees reported high levels of satisfaction with training and used the training in their daily lives.

All participants who responded to the question reported that they were satisfied with training. Most of these (70.2%) indicated that they were very satisfied with the training. Specific device and technique training also proved beneficial. Respondents reported using these adaptations in their daily lives. When the responses of “usually” and “sometimes” were added together, 73.3% to 85.7% of the participants reported they were using adaptive techniques to dial the phone, identify money, set appliances, and ask for assistance in the store. The devices used most frequently were an adaptive timepiece, a darker/heavier writing

device, better lighting and talking books. As hypothesized there was considerable variation across subjects in terms of which techniques and devices were used most often. All of the content covered in classes appeared to have merit since each technique and device was endorsed by at least some participants. Trainees thus used all of the accommodations covered in training.

Conclusions and Recommendations

Conclusions

Clearly, this group was satisfied with the services they received from Minnesota Services for the Blind. Ninety-four percent or 79 subjects indicated that they were somewhat satisfied or very satisfied with the services that were provided to them. A high rate of satisfaction could be expected based on prior research of peer support and blind training (Van Zandt & Van Zandt), as well as past findings that any rehabilitation training is likely to be rated positively by participants (De l'Aune, 1999). The high level of reported satisfaction by trainees in this study exceeded expectations even considering this research. All trainees who responded to this question indicated that they were satisfied with Adjustment to Blindness training.

Minnesota elders showed an excellent adjustment to blindness as a result of training. The elder's self-reported change in their attitude regarding blindness indicated 75% felt their attitude was somewhat or much better. The 15 or 17.9% of the subjects that indicated their attitude was about the same may have had a good attitude about blindness and a healthy outlook on life prior to the class. Their response to "about the same" may indicate that their overall attitude was a relatively positive one. On the other hand, there may have been subjects who had a very negative attitude about blindness and a poor outlook on life in general and their response to "about the same" would be considered negative. There is no way to know if "about the same" is a negative, positive or neutral indicator about attitude towards blindness.

The mean score of the AVL scale indicates a high degree of adjustment to the vision loss. The mean score of the group is 18.7, which is in the top one-fourth of the score range. When this average score is considered with the level of satisfaction and the positive change in

attitudes regarding blindness, it is clear that the Adjustment to Blindness classes had a significant impact on the lives of these elders. Although these scores were slightly better than scores reported during scale norming, the size of the difference was not nearly as great as would be expected when considering other findings.

There are numerous potential reasons for this inconsistency. The general group of blind elders who were part of the norm samples may have experienced less vision loss life disruption than the trainees who were referred for help from the Adjustment to Blindness classes. Survey modification may have affected scores. This scale was normed as an interview instrument. Those original norm groups may have had inflated scores due to the interaction with the interviewer. A limitation with face-to-face surveying is that people may try to avoid offending the researcher and thus give answers they believe the researcher wants to hear. The Minnesota trainees were also older than the individuals in the norm sample. The average age + 2 was 81.6 of the Minnesota trainees at the time of this survey. The average ages of the control groups were 78.3 and 79.2. Since this was an older sample, it would be expected that there would be more disability, and more aging related life impact. Two years is a long time in the lives of the oldest old. This appears consistent with findings related to participation. Two years after training 10 trainees had been reported to the agency as deceased. An additional 6 persons were reported as too ill or incapacitated to participate in the survey (terminal cancer or dementia). Many other new challenges may have occurred during and after training. In light of this, it is remarkable to note that trainees had adaptation scores similar to their younger blind peers.

The adaptive devices and alternative techniques used most frequently by these subjects cover a range of the instrumental activities of daily living. These accommodations enhance

independence in important areas of life. Specifically, personal management includes being able to tell time and use the phone. Financial management includes being able to identify coins and money. Food preparation requires one to be able to set the dials and operate appliances. Communicating with self and others is improved by using a heavier or darker writing device. Better lighting enhances a variety of visual tasks. Being assertive and asking for help when needed, particularly when shopping, was also identified as a skill these elders used frequently. This skill is crucial when available accommodations are insufficient to accomplish a task. A good number also used the Library of Congress Talking Books for leisure enjoyment. Certainly all of these skills and abilities improve the independent living activities and daily life of these elders.

In addition to identifying and ranking the 4 most frequently used devices and techniques, the survey instrument also showed what the trainees did not use. A vast majority of the elders did not use any Braille for labeling or identifying items. The issue of teaching Braille in these classes has been debated and subsequently teaching Grade I Braille was dropped from the curriculum. Thus the 12 weeks of classes were cut to 8 weeks. A major factor in the decision to discontinue Braille was the limited financial resources of the agency. This decision may have been made to meet the needs of the agency, but the indications are that very few individuals used this alternative technique.

There is a huge impact from what was learned in this study. Specifically, examination of trainee outcomes strongly supported the provision of independent living services for elder blind people. The consistency of responses across individuals and across each of the research questions was entirely unexpected. Although research suggested that training would be evaluated positively, it was impossible to predict the observed strength of this positive

response. Training certainly meets goals. No effort was made in this study to break responses down by geographical area. Still, the strength of the positive responses in all areas appears to show that regardless of circumstances (e.g. setting, demographics) training meets the goal of enhancing quality of life and independent living function. In the next section the implication of these conclusions will be discussed.

Implications

There are many implications of this study. These implications affect all whom are concerned about elders. All of us have parents and grandparents. From the moment we are born we are aging, and those of us with luck, will reach the age of the trainees in the sample. Since the value of training was clearly and robustly demonstrated when outcomes were examined, the remainder of this section will describe study implications and recommendations. This discussion will cover implications and recommendations for elders, service provision, professional practice/practitioners, society, and for future research.

Again, outcome evaluation strongly supported the provision of independent living services for blind elders. There were robust findings across individuals, questions and evaluation instruments. As a result, these findings can be used to frame how services and supports are offered to elders. This study showed the clear value of training for elders. Specific study implications for elders are described below.

Implications for elders. Training has merit for daily life function. Elders who complete training integrate what they have learned on a regular basis. These accommodations affected independent living since they affected both elders' ability to care for self and to maintain a household. Techniques and devices most commonly used were for IADLs, since most survey items related to instrumental activities of daily living. Some of these accommodations

(devices or techniques) also related to more basic self-care or activities of daily living. The ability to operate appliances has nutritional and health implications. Markings on microwaves and stoves can allow safety and ease in meal preparation. This in turn can impact overall general health. Diabetic and other health management issues are also covered in classes. Health content (e.g. use of talking glucometer) definitely falls under self-care or the activity of daily living category. Other survey items reflected both IADLs and ADLS (e.g. lighting, mobility).

These results also have tremendous potential implication in helping elders to cope. These positive results can be shared to encourage people. There is life after vision loss. Participants made necessary adaptations in their daily lives and were very well adjusted to blindness following training. Past research shows that peer involvement with individuals sharing a common characteristic has value in encouraging others. This study has implication for elders as potential source of hope and modeling for newly blind elders. This implication is huge because ultimately 1 in 4 people will lose vision.

Implications for service provision. Group training has clear value in the fact that there is peer interaction between blind elders. Participants can learn from each other and provide support and encouragement. The professional instructors can provide the actual rehabilitation training to promote better life functioning and independence. Braille was not a common technique used following classes. Recently Braille was dropped from the training curriculum in an effort by the agency to shorten the 12-week classes to 8 weeks. Study findings suggested that this move to shorten classes by dropping Braille might not substantially interfere with accomplishment of proficiencies needed in daily life. The shorter classes do have advantages in terms of expedience for consumers and cost savings to the agency. It was impossible to

determine the full impact of these shorter classes within the context of this study. All trainees who were surveyed completed the longer 12-week course of classes. As mentioned, past research has suggested that peer interaction is an important part of training and leads to positive outcomes. It is possible that the more limited 8-week interaction with trainers and peers could affect outcomes or the level of actual competencies learned in classes. Since all in this group were trained with the 12-week program it is impossible to know if 8-week trainees would experience similar adjustment, satisfaction and device and technique use.

There are certainly implications other for service provision. Limited information collected here suggests that training without Braille (8 week) may be sufficient for high quality programming and outcomes that enhance daily life function and thus independent living status and quality of life. Braille may not be necessary. One possible reason for this might be that those blind elders might consider training in Braille not worth the effort. Another possible explanation might be that there are other methods that are easier to learn and use to accomplish the same task (e.g. low vision devices, CCTVs, scanners and adaptive computer systems).

Implications for professional practice and practitioners. There are also implications in terms of professionals who provide service to elder consumers with vision loss. Professionals may place more emphasis on the tools and techniques that are reported as most often used. It is important to note that at least some elders in this sample reported using each of the devices or techniques that were included in training. This is a strong validation of course content. Professionals should consider increased referrals for this valuable service.

Study results also validated the need to continue to cover a divergent set of devices and techniques. This had been anticipated since there is such incredible diversity in the human

population, which of course affects those adaptations that would be most important to independent living and to quality of life. It is important to spread the word to elders. Training does work. Training also makes life better. As discussed in the consumer section, peers are important. Elders may not be aware of services. Practitioners have an ethical responsibility to share what we know works.

Implications for society. These positive training effects have important societal implications particularly as society ages. People used their blind training in everyday life. The techniques and devices allowed people to continue to take care of themselves as independently as possible. When considering the care costs for institutional living, training that helps people to maintain independent living is critical. Long-term care costs are ballooning and will continue to do so as the baby boomers enjoy longer elder lives due to medical and scientific advancements.

People also reported more positive attitudes following training. This has major societal implications. More positive attitudes coupled with increased independence could certainly affect an elder's mental health status. Elders in this study reported feeling more positively about blindness. Elders also had positive adaptation as measured by scores on the AVL scale following training. During validation survey studies, it was demonstrated that high AVL scores are strongly correlated with the absence of depression and with positive global life satisfaction. This also has important societal implications because of the high costs of mental health difficulties.

The Federal Government has determined elder mental health is an urgent concern for all Americans. As a result the Surgeon General was ordered to submit a report on this health care crisis. The National Institute of Health, National Institute of Mental Health and other

federal agencies cooperated in examining elder mental health issues and made recommendations regarding service response (U. S. Department of Health and Human Services, 1999). The Department of Health and Human Services and the Administration on Aging have also teamed up to examine elder mental health and how services might be redesigned to support better mental health outcomes for elders (U. S. Department of Health and Human Services and Administration on Aging, 2001). The study reported here certainly seems to demonstrate that blind training for elders is certainly an important part of this arsenal. There are protective benefits of a person's ability to continue daily life activities that they value. In addition, skills gained in classes can remediate activity difficulties even after they have occurred. Thus people can return to more normal activity levels and independence to maintain positive mental health and global life satisfaction.

Course content is varied and this provides a certain degree of immunity from distress as people continue the aging process. Not all respondents used every device. Instead of suggesting surplus course content, the additional material actually facilitates adjustment. Elders are familiarized with an array of accommodations to use when the need arises. As vision declines, the training received can be implemented. New accommodations can be used to prevent any life disruption.

Implications for research. There are numerous research implications from this study. First, this study concurs with prior research to show that elder blind training is effective. It also supports past research that suggests people are pleased with the outcomes of training. It builds on existing research because it demonstrates that longer-term training effects may be even greater than immediate post-training results. The current study also has implications for researchers who work in this area. Training benefits were so great that people need to know

more about elder blind training. More research and wide dissemination of the results of research on elder blind training is important. The robustness of findings and the very high response rates from trainees suggest that methodological efforts used here should be replicated. More specific discussion of research recommendations as well as recommendations related to implications in each of the other areas discussed will be included in the next section.

Recommendations

There are a variety of recommendations that emerge from an examination of study implications. This section will include targeted recommendations based on the implications of this study. These recommendations include those: for elders, for service provision, for professional practice and practitioners, for society and for research.

For Elders. Elders should access and use blind training. Outcomes from training show that this training works. Elders who have been trained should share information about the training and the success that they have achieved with their peers. Successful blind elder role models can provide hope and encouragement to others. Elder advocacy groups should be made aware of these findings and then should use the results when advocating for effective policy and services.

For Service Provision. Elder blind training is a great investment. These services should be made more widely available as the population ages. It is crucial that policy and decision-makers not fix what is working well. This study demonstrated that the 12-week course of training in Minnesota works very well. As noted, the course has been shortened to 8 weeks. Policy makers may want to consider a similar outcome study on the 8-week course of training to ensure that elders still get the full benefit of this excellent training. Elder training

should be incorporated in any full spectrum of services provided to promote healthy aging and adaptation to vision loss. Agency outreach efforts must continue to focus on this valuable service. As previously discussed, there was evidence to suggest that outreach efforts were successful (higher than expected male participation). The agency should continue whatever it is doing now, and continue to place high priority on developing ways to get training to elders who experience vision loss. Results of this study showed program outcomes were excellent. Professionals serving blind elder trainees often have the opportunity to get perspectives from a number of elders. These professionals should seize opportunities to share their insights and experiences with elders and training with decision-makers and others so that such perspectives can be incorporated in service and policy.

For service providers and practitioners. Elders must be made aware of this service. Advisory and consumer groups can be used to help in recruitment efforts. Physicians, particularly ophthalmologists and optometrists should also be informed about blind training. Often this is the single point of professional contact for elders who are experiencing age related vision loss.

For researchers. Future research should include a “pre-training” survey with those participants who plan to attend an adjustment to blindness class. Post-training outcomes should also be measured within a short time span after training and then longer-term outcomes should be measured 2 or 3 years after the training. The comparison of post-test data to the pre-test data would provide additional support and evidence about how significant the changes are due to training in attitudes, adjustment to blindness and the use of adaptive devices and techniques in daily living. It is also suggested that a control group of blind elders who receive rehabilitation training in their home on a one-to-one basis from rehabilitation

professionals be used and compared to those who attend the group model of training. These results would likely show the value of the peer support benefit of the group.

Elder blind training is offered using three models of delivery, center-based, outreach and mixed. Since this study demonstrated that elder blind who were trained with a mixed model of services had positive outcomes, it would be worthwhile to examine the outcomes associated with each of these delivery models. It would be interesting to examine how different models of service delivery might affect access and completion rates. Are there differences in the number of elders referred for training? Are there differences in the number of referred elders who actually participate in the training? Are there differences in the number of elders who start training but never complete the entire course? In addition, the Minnesota model of group training could be compared to the models and curriculums that are provided in other states. Are there things in the Minnesota model that are unique and should be replicated elsewhere?

Another interesting and valuable study would be to correlate group training and mental and physical health and independent living status using a group of untrained blind elders as a comparison group. Researchers might get answers to some of the questions that emerged from this research: Does the improved adjustment to blindness result in better mental health? Are trained elders better able to care for their own health and thus do they enjoy longer, healthier lives? Does the improved ability to care for daily living needs prevent or forestall nursing home placement? Does training improve trainee's functioning even when they need to move into assisted living and thus reduce the cost of such support?

Additional research that isolates living factors would be warranted. It is likely that living arrangements would affect the utility of training. Certainly a trainee who subsequently

lives alone in their own apartment or house would be much more likely to use devices and techniques than would a trainee living in an institutional setting or with others. A further investigation of AVL scores compared to the living situation of the individual would be helpful in understanding what role living with a family member or alone has on overall blindness adjustment.

It appears the research instrument was effective in demonstrating outcomes associated with older blind training. Replication of this study would be beneficial to see if the results hold up with other trainees using other training packages. The instrumentation used in this study employed self-report. Various measures were included that assessed not only satisfaction but also a variety of adjustment indicators. The listing of specific course content (adaptive techniques and devices) and inclusions about specific frequency of use are especially valuable in demonstrating the benefits of training that blind elders achieved through the Adjustment to Blindness training provided by Minnesota Services for the Blind.

References

- Administration on Aging. (2001). A Profile of Older Americans.
<<http://www.aoa.dhhs.gov/aoa/stats/profile/default.htm>> 1/10/02.
- Corthell, D. W., & Fleming, K. (1990). Aging in America: Implications for vocational rehabilitation and independent living. Stout: University of Wisconsin, Research and Training Center.
- Crews, J. E. (1991). Strategic planning and independent living for elders who are blind. Journal of Visual Impairment and Blindness, 85, 52-57.
- Crews, J. E., & Long, R. G. (1997). Conceptual and methodological issues in rehabilitation outcomes for adults who are visually impaired. Journal of Visual Impairment and Blindness, 91, 117-130.
- De l'Aune, W. R., Williams, M. D., & Welsh, R. L. (1999). Outcome assessment of the rehabilitation of the visually impaired. Journal of Rehabilitation Research & Development, 36, 4, 273-294.
- Elliot, J. L., & Kuyk, T. K. (1994). Self-reported functional and psychosocial outcomes of blind rehabilitation. Journal of Visual Impairments and Blindness, 88, 206-212.
- Farish, J., & Wen, S. -S. (1994). Effectiveness of independent living services program for older persons who are blind. Journal of Visual Impairment and Blindness, 88, 3, 527-532.
- Herdon, G. (1993). Analysis of the title vii, part c-independent living for older Americans with visual impairments. 1991-92. Mississippi State: Mississippi State Rehabilitation Research & Training Center on Blindness and Low Vision.

Horowitz, A., Leonard, R., & Reinhardt, J. P. (2000). Measuring psychosocial and functional outcomes of a group model of vision rehabilitation services for older adults.

Journal of Visual Impairment and Blindness, 94, 5, 328-337.

Horowitz, A., & Reinhardt, J. P. (1998). Development of the adaptation to age-related vision loss scale. Journal of Visual Impairment and Blindness, 92, 30-41.

Jacobs, P. L. (1984). The older visually impaired person: A vital link in the family and the community. Journal of Visual Impairment and Blindness, 1984, April, 154-162.

Kleinschmidt, J. J. (1999). Older adult's perspectives on their successful adjustment to vision loss. Journal of Visual Impairment and Blindness, 93, 2, 69-81.

Lambert, R. W., Becker, S. W., Courington, S. M., & Wright, B. D. (1982). Evaluating the rehabilitation process: An example with the blind. International Journal of Rehabilitation Research, 5, 487-498.

Long, R. G., Crews, J. E., & Mancil, R. (2000). Creating measures of rehabilitation outcomes for people who are visually impaired: The FINBA project. Journal of Visual Impairment & Blindness, 94, 5, 292-307.

Meyers, A. M., Holliday, P. J., Harvey, K. A., & Hutchinson, K. S. (1993). Functional performance measures: are they superior to self-assessment? Journal of Gerontology, 48, M196-M206.

Moore, J. E., & Stephens, B. C. (1994). Independent living services for older individuals who are blind: issues and practices. American Rehabilitation, 20, 1, 30-35.

National Society to Prevent Blindness (1992). Four most common vision diseases among older Americans. Schaumburg, IL: Author. (Now Prevent Blindness America).

Smith, A. J., De l'Aune, W., Geruschat, D.R. (1992). Low vision mobility problems: Perceptions of O&M specialists and persons with low vision. Journal of Visual Impairment and Blindness, January, 58-62.

Stuen, C. (1997). Vision rehabilitation and older adults: the prevention of disability. Technology and Disability, 6, 3, 147-158.

U.S. Departement of Health and Human Services. Mental health: A report of the surgeon general – Older adults and mental health. Rockville, MD: U. S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999.

U. S. Department of Health and Human Services. Older adults and mental health: issues and opportunities. U. S. Department of Health and Human Services, Administration on Aging. 2001.

Rogers, P., & Orr, A. L. (1999). Establishing a national service delivery program for older people who are blind or visually impaired. Association for Education and Rehabilitation of the Blind and Visually Impaired, 31, 3, 103-112.

U.S. Bureau of the Census. (1995). Sixty-five plus in the United States.
<<http://www.census.gov/socdemo/www/agebrief.html>> 2/27/2000.

Van Zandt, P. L., & Van Zandt, S. L. (1994). The role of support groups in adjusting to visual impairment in old age. Journal of Visual Impairment and Blindness, 88, 3, 244-253.

Appendix A

Adaptation to Vision Loss (AVL) ScaleADAPTATION TO VISION LOSS (AVL) SCALE
(Horowitz & Reinhardt, 1998)

Please mark each statement whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.

	STRONGLY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE
1. Because of my vision loss, I feel like I can never really do things for myself.				
2. Most services available to visually impaired persons are useless in really helping them with their problems.				
3. I can still do many of the things I love, it just takes me longer because of my vision impairment.				
4. Visual impairment is the cause of all my problems.				
5. Some people in the family act as though the visually impaired person is a burden to them.				
6. A visually impaired person can never really be happy.				
7. Because of my trouble seeing, I am afraid that people will take advantage of me.				
8. By learning new ways of doing things (that compensate for vision loss), a visually impaired person has a chance to be more independent.				
9. Visually impaired persons cannot afford to talk back or argue with family and friends.				
10. People should not expect too much from visually impaired persons.				
11. People who experience vision loss late in life will never be able to learn how to get around without bumping into things.				
12. It is too hard for older people to learn new ways of doing things (that compensate for vision loss) if they become visually impaired.				

	STRONGLY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE
13. Visually impaired people might as well accept the fact that vision impairment makes people pretty helpless.				
14. It is degrading for visually impaired persons to depend so much on family and friends.				
15. Although the circumstances of my life have been changed, I am still the same person I was before my vision impairment.				
16. Sighted people generally dislike being with visually impaired people (because of their vision problems).				
17. Sighted people expect visually impaired persons to do things that are impossible.				
18. Visually impaired people have to depend on sighted people to do most of the things they did for themselves.				
19. Losing one's sight means losing one's self.				
20. People with vision problems are uncomfortable making new friends because they cannot always see people's faces clearly.				
21. I feel comfortable asking my family and friends for help with things I can no longer do because of my vision loss.				
22. When a person becomes visually impaired, sighted friends don't understand him or her as they did before.				
23. It is better for a person with vision problems to let other people do things for them.				
24. There are worse things that can happen to a person than losing vision.				

Note. This survey was used with the approval of the author. This survey instrument was done in 18-point type print and printed in a landscape format for greater ease in completion by the subjects who had low vision.

Appendix B

Additional Survey Questions

How often do you use the following items in your every day living activities?

	Never	Rarely	Sometimes	Usually
Magnifying glasses for reading				
CCTV (closed circuit TV) for reading				
CCTV for writing				
Writing guides for writing checks				
Writing guides for writing letters				
Writing guide for my signature				
White cane for safety and identification				
Sport glasses or TV magnifier to watch TV				
Talking Watch or timepiece with larger numbers.				
Telephone with larger numbers				
Better lighting				
A heavy or darker writing pen				
Large print materials				
Playing cards				
Checks or check ledgers				
Recipes or cookbooks				
Crossword puzzles				
Talking Books				
Adaptive sewing aids				
Adaptive kitchen devices:				
Large print timer				
Oven Mitts				
Heat diffuser				
Adaptive medical and diabetic equipment				
Glucometer				
Count a dose				
Talking scale				
Talking blood pressure cuff				
Talking thermometer				
Any other things you can identify that haven't been listed:				

Appendix B continued

	Has gotten worse	Has stayed about the same	Is somewhat better	Is much better
Thinking about how I felt and what I believed about vision loss before class and what I think and feel about vision loss after the training, I would say my attitude:				

How often do you use the following methods or adaptations for daily living?

	Never	Rarely	Sometimes	Usually
Label and identify things in Braille				
Identify coins and bills by touch and folding				
Use a white cane to get around				
Use sense of touch and raised marks to set:				
Appliances				
Thermostat				
Use touch method to dial the phone				
Pour liquids by sense of touch				
Ask for assistance in the store				

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
Overall, my level of satisfaction with the training I received from Services for the Blind would be:				

Note. This survey was printed in large print (18-point type size) and in a landscape format for ease in completion by the subjects who had low vision.

Appendix C

Introductory Letter Sent to Trainees

Dear Blindness Class Trainee:

I am a counselor with Minnesota State Services for the Blind. I am currently doing a research project as part of my Master's Degree in Rehabilitation Counseling from the University of Wisconsin - Stout. The purpose of my study is to describe adjustment to blindness outcomes. In other words I want to find out how people use the skills and techniques they learned in the Adjustment to Blindness classes offered by Minnesota Services for the Blind.

The study is a questionnaire that will be in large print. If you can read the large print of this letter, you will be able to read the questionnaire and mark your responses. If you are unable to read the print and don't have a friend or family member to assist you with this questionnaire, I will be willing to assist you by reading the questionnaire to you over the telephone.

Your participation in this study is voluntary. Your decision about participating will not affect your present or future services from Minnesota Services for the Blind. It is hoped that the results of this study will assist rehabilitation professionals to provide rehabilitation training that best helps blind elders to maintain their independent living.

If you agree to participate, a more detailed consent release is attached to the survey. Once you complete the survey, you can return it in the enclosed envelope. If you would like to complete the survey and need help with reading the survey, you can return the enclosed postcard. Please write only your phone number on the postcard and put it in the mail. I will then call to you and read the consent and survey to you.

If you have any questions about this study please call me at 1-800-657-3846 during business hours or 1-507-282-2472 in the evenings. You may also call my UW-Stout faculty research advisor Susie Eberhard, at 715-232-1442.

Sincerely,

Ruth Van Tol

Note. This letter was printed in 18-point size for ease in reading for subjects with low vision.

Appendix D

Informed Consent Document

Informed Consent

I understand that by returning the attached survey I agree to participate in this research study.

I understand that the purpose of this research study is to find out how people use the skills and techniques they learn in the adjustment to blindness classes offered by Minnesota Services for the Blind.

I understand that I have a choice to participate in this research. There are no consequences if I choose not to participate. If I chose to participate, all of my responses will be anonymous. Only group level data will be reported.

I understand that I can discontinue my participation at anytime.

I understand there are no expected risks of participation.

I understand that there are no direct benefits to me for participating in this research. The research will be used to help improve future services to older blind persons.

If I wish to participate in the survey and need help reading it, I can return the enclosed postcard, and the researcher will call me and read the survey and mark my responses. By returning the postcard, I am also giving my informed consent.

Any questions about this study can be directed to Ruth Van Tol at 1-800-657-3846. You may also call Susie Eberhard, UW-Stout faculty research advisor, at 715-232-1442 or Sue Foxwell, Human Subjects Protection Administrative Coordinator, 715- 232-1126.

Note. This document was printed in 18-point size print for ease in reading for subject with low vision.

Appendix E

First Follow-up Letter

Dear Blindness Class Trainee:

You received a research survey from me about one week ago. This is a follow-up note asking you to return the large print survey if you can read it and want to participate in the research. If you are unable to read the large print but would like to participate in the survey, you can return the stamped addressed post card that was included in the original mailing. All you need to do is list your phone number on the post card. I will then call you and do the survey with you over the telephone.

If you have already completed the survey, Thank You!

Only the persons who participated in the classes during 1999 are being surveyed. Your responses, whether positive or negative, will be very helpful.

Sincerely,

Ruth Van Tol

Note. This document was printed in large print (18-point) for ease in reading by subjects with low vision.

Appendix F

Third Request Which Included the Survey and Informed Consent

Dear Blindness Class Trainee:

You previously received the survey that is included in this envelope. Because the survey is anonymous, I have no way to tell if you have already replied. If you have already completed and returned the survey or if you returned the post card asking for reader assistance, I want to thank you very much. I also want to tell you that since you have already replied you can ignore the rest of this letter.

If you have not responded, I am making another appeal for your help. I am surveying those persons who attended the adjustment to blindness classes offered by Minnesota Services for the Blind during 1999. I want to learn how frequently you use blindness devices and techniques in daily living activities. Your knowledge and experiences will provide helpful information in order to continue to provide good training opportunities to others who need rehabilitation services. Your participation is very valuable and would be much appreciated.

If you would like to participate in this research, there are two ways it can be done. If you can read this large print, you will be able to read the survey, mark your responses and then return it in the enclosed envelope. If you want help reading the survey, you can return the enclosed post card and put your phone number on it. I will then call you and read the survey to you and mark your responses.

Please return this survey or the post card by November 20, 2001.

Sincerely,

Ruth Van Tol

Note. This document was done in 18-point size print for ease in reading for the subjects with low vision.

Appendix G

Raw Data Scores

USE OF ADAPTIVE DEVICES	Never	Rarely	Sometimes	Usually	Total	Missing
Magnifier to read	26	3	10	42	81	3
CCTV to read	50	3	5	20	78	6
CCTV to write	57	5	6	11	79	5
Check guide	42	16	9	13	80	4
Letter guide	58	12	4	8	82	2
Signature guide	44	16	6	15	81	3
Cane for identification	27	14	14	28	83	1
Sport glass	70	2	3	5	80	4
Adaptive time piece	9	2	3	69	83	1
Telephone with large print	22	2	6	50	80	4
Lighting	11	2	3	65	81	3
Darker pen	8	2	11	61	82	2
Large print	21	1	10	21	53	31
Playing cards	43	3	4	31	81	3
Checks/ledgers	52			15		11
Checks/ledgers	52	5	1	15	73	11
Recipes	46	8	9	13	76	8
Crosswords	64	3	0	6	73	11
Talking Books	14	7	11	50	82	2
Sewing aids	47	9	8	11	75	9
Kitchen	15	2	7	12	36	48
Adaptive timers	34	9	9	28	80	4
Oven Mitts	28	5	10	32	75	9
Heat Diffuser	64	2	1	2	69	15
Medical Equipment	44	0	0	3	47	37
Talking glucometer	66	2	0	9	77	7
Count a dose	66	0	3	6	75	9
Talking Scale	70	1	1	3	75	9
Talking Thermometer	66	0	2	6	74	10
Talking Blood Pressure	72	0	0	2	74	10

USE OF ADAPTIVE TECHNIQUES	Never	Rarely	Sometimes	Usually	Total	Missing
Braille - mark and ID	74	2	3	2	81	3
Tactile/fold coins and money	12	9	24	36	81	3
Use cane to get around	31	13	11	28	83	1
Tactile marks on appliances	16	1	9	56	82	2
Tactile marks on thermostat	28	3	7	40	78	6
Dialing phone by touch	20	1	16	42	79	5
Pouring by touch	20	9	20	35	84	0
Ask for assistance in store	9	3	24	48	84	0