



LITERACY: THE VISION, LEARNING AND VOLUNTEER CONNECTION

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ABSTRACT

A VISTA (Volunteer In Service To America) volunteer, trained in the use of the NYSOA Vision Screening Battery, screened 54 people enrolled in an adult literacy program. Seventy-four percent of the subjects failed the visual screening and were referred for a complete optometric examination. Results indicate that there may be extensive visual problems among illiterate adults and trained volunteers can effectively carry out the screening process.

KEY WORDS

illiterates, vision-learning, vision-screening, trained volunteers

Functional illiteracy is the inability of an individual to use reading, speaking, writing and computational skills in everyday life situations. According to the United States Department of Education, one in five American adults are functionally illiterate.¹ There are at least 20 to 30 million American adults who have major difficulty with basic reading, writing, calculating, solving problems, and/or communicating well enough to function effectively on the job and in everyday living.

Unfortunately, illiteracy is not a problem that is going away. Instead, each year significant numbers of young people enter the work force with serious educational deficiencies. American industry spends millions of dollars annually attempting to remedy these educational deficiencies and 25 to 30 billion dollars may be lost due to lowered productivity, workplace accidents, absenteeism, poor product quality, and lost managerial time.²

It has been estimated that one out of every six children in the United States has a visual performance problem.³ Some of the adult illiterates of today were the children of yesterday who had undetected visual problems. Today, illiteracy is one of the most pressing problems facing the United States.⁴ Many of the adults in this population need lens corrections and visual therapy.

Optometry has led the way in assisting the literacy movement to obtain an understanding of the role of vision in the learning process. Vision Plus, started in Albuquerque, New Mexico, in 1986, was an initial program in which local op-

tometrists worked in close cooperation with literacy programs. Later, the American Optometric Association developed a planning guide to help the affiliated state optometric associations, societies, and member optometrists to implement local Vision Plus programs within their communities.⁵ The Optometric Extension Program Foundation (OEPF) has had extensive involvement with the literacy movement.⁶ In 1991, The Literacy Volunteers of America presented The Literacy Volunteers of America Leadership Award to the American Optometric Association.

As individual optometrists begin to work with the literacy volunteers, it is important to recognize the extent of the visual problems within the local communities. A. P. Thau, using optometrists to perform vision screening of adult illiterates enrolled in the New York City Development Agency-sponsored literacy programs, found that a significant number of adult illiterates failed the visual screening examination.⁷ Although many optometrists are not able to participate daily in a visual screening program, they are able to train volunteers to conduct visual screening. This visual screening process, using trained volunteers under optometric supervision, will enable optometry to better identify and provide for the visual needs of the illiterate adult population. Hence, the purpose of this project is as follows:

1. to investigate the effectiveness of trained volunteers to screen illiterate adults for visual problems,
2. to identify the extent of specific visual problems in a sample of this population.

METHODS

The Tidewater Literacy Council, Inc., located in Chesapeake, Norfolk, Portsmouth, and Virginia Beach, Virginia, is a non-profit organization whose purpose is to tutor illiterate adults. Over 280 volunteer tutors have participated in 12 hours of literacy training. Each tutor received additional in-service training and had frequent contact with area coordinators, who supported the tutors with advice and resources in tracking students' progress.

SUBJECTS

Fifty-four illiterate adults (31 males and 23 females) served as subjects. Of these 54 subjects, 26 were African-American, 25 Caucasian, two Asian, and one Hispanic. The illiterate adults ranged in age from 20 to 75 years, with 27 the median age. The occupations of the illiterate adults who were tested represented a variety of unskilled and skilled positions, including hairdresser, housekeeper, security guard, construction worker, mechanic, sales clerk and restaurant manager. Twelve of the 54 subjects had completed high school or had passed the high school equivalency examination. Twenty were classified as requiring special education, and the other 22 had dropped out before high school. Seven students were classified as reading below the first grade level, 13 as reading between the first and second grade, seven between the second and fourth grade, 17 between the fourth and sixth grade, and 10 of the students were reading above the sixth grade level. These classifications were determined during intake sessions using the Diagnostic Inventory of the Literacy Program.⁸

SCREENING PROCEDURES AND INSTRUMENTATION

A VISTA volunteer, trained in the use of the New York State Optometric Association (NYOSA) Vision Screening Battery,⁹ screened all subjects in the study at the various literacy locations. The volunteer was trained in the use of the equipment under direct optometric supervision during two, four-hour sessions. Along with the screening battery, each student's reading tutor filled out a 30-item

Literacy Visual Checklist, adapted from the OEP Educator's Checklist (see Appendix A). Each student filled out a biographical data sheet (see Appendix B).

The NYSOA Vision Screening Battery was utilized in the screening procedures. There was one modification of the test battery. Since normative standards were not established for an adult population, the "Copy Forms" subtest was eliminated from the battery. Elimination of the "Copy Forms" subtest in no way denigrates it as a useful tool in evaluating eye-hand coordination. Age appropriate screening tests for eye-hand coordination problems can certainly be included in the literacy screening program.

The NYSOA Vision Screening Battery included the following eight areas: Visual Acuity-Distance, Visual Acuity-Near, Hyperopia, Convergence, Stereopsis, Fusion, Eye Tracking, and Color Vision. The NYSOA Vision Screening Battery has been described in the literature.^{9,10} Based on the criteria of the Battery, subjects who did not pass the screening were referred for a visual evaluation, using the Visual Screening Literacy Referral Form (see Appendix C).

RESULTS

Table 1 depicts the percentages of 54 illiterate adults who had performance deficiencies on the subtests of the NYSOA Vision Screening Battery. Seventy-four percent of the subjects failed the visual screening and were referred for complete optometric examination. Of this group, 44% failed at least two subtests.

DISCUSSION

Seventy-four percent of this sample, enrolled in an adult literacy program, failed at least one of the NYSOA Vision Screening Battery subtests and were referred for comprehensive vision care. This compares favorably with previous research by Thau,⁷ who utilized optometrists and found a 66% referral rate. Thus, the most

important finding of the current study was the large number (40 of 54 subjects, or 74%) of illiterate adults who failed the visual screening battery.

More specifically, the illiterate adults in the current population experienced a significant number of problems in the tracking, binocular, and accommodative areas. Sixty-one percent of the population experienced difficulties on the tracking subtest, while a significant number of subjects failed the fusion and the stereopsis subtests. Distance visual acuity produced a 20% referral rate. Thirteen percent failed the near visual acuity test.

This large number of referrals substantiates the importance of optometrists developing a close working relationship with their local literacy groups. Volunteers and local optometric associations can interact successfully so that literacy students who fail the visual screening can be referred for appropriate visual care. Although it is understood that the best screening is accomplished with professional optometric presence, this is not always feasible because of geographical and time limitations.

Many in the adult illiterate population of today were the children of yesterday whose learning-related visual problems were not detected. It is therefore important for optometry to cooperate and share its knowledge and expertise with voluntary literacy groups, as well as other professionals in the literacy field. Visual screening under optometric supervision, with trained volunteers, is certainly a significant aspect of this relationship. Through this cooperative effort on the local, state, and national level, optometrists will be able to maximize their contribution to the visual and educational needs of America.

TABLE 1
Number and Percent of Subjects Failing NYSOA Subtests
N = 54

Subtests	Number	Percentages
Tracking	33	61
Fusion	15	28
Acuity-Distance	11	20
Stereopsis	10	19
Acuity-Near	7	13
Convergence	4	7
Hyperopia	3	6
Color Vision (not referred)	1	2
Failed at least one subtest	40	74
Failed two or more subtests	24	44

This project indicates the following:
 1. a significant number of potential visual problems in an adult illiterate sample, 2. the need for visual care for these adults, and 3. trained volunteers can effectively carry out the visual screening process. Future research should explore further the relationship between tracking and illiteracy as well as investigating if there are other differences in the visual conditions of literate and illiterate adult populations.

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REFERENCES

1. Literacy Volunteers of America, Inc. Facts on illiteracy in America. Syracuse, New York, 1991.
2. Berney K. Can your workers read? Nation's Business, Oct 1988.
3. Peters HB. Vision care of children in a comprehensive health program. J Am Optom Assoc, Dec 1966, Vol. 37, #12: 1113-1116.
4. Chisman FP. Jump start: the federal role in adult literacy. Southport Institute for Policy Analysis, Southport, Conn, Jan. 1989.
5. Facts about vision/project literacy U.S. Am Optom Assoc Communications Center, June 1989.
6. Transcripts of papers given by presenters at the conference, A Cooperative Attack on Illiteracy, George Washington University, Oct 22 and 23, 1988. Optom Extension Prog.
7. Thau AP. Vision and literacy. J Reading, Nov 1991, 35,(3): 196-199.
8. Sawyer D, Daugherty C, Lipa S. Laubach way to read: diagnostic inventory. New Readers Press, Syracuse NY, 1987.
9. Cohen A, Liberman S, Stolzberg M, Ritty J. The NYSOA vision screening battery--a total approach. J Am Optom Assoc, 1983, 54: 979-984.
10. Lieberman S, Cohen A, Rubin JR. NYSOA K-D test. J Am Optom Assoc, 1983, 54 (7): 631-637.

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APPENDIX A

LITERACY VISUAL SYMPTOM CHECKLIST

NAME OF STUDENT _____

ADDRESS _____

PHONE _____

AGE _____

- 1. Head turns as reads across page
- 2. Loses place often during reading
- 3. Needs finger or marker to keep place
- 4. Displays short attention span in reading or copying
- 5. Too frequently omits words
- 6. Repeatedly omits "small" words
- 7. Rereads or skips lines unknowingly
- 8. Complains of seeing double (diplopia)
- 9. Omits letters, numbers or phrases
- 10. Squints, closes or covers one eye
- 11. Tilts head extremely while working at desk
- 12. Consistently shows gross postural deviations at all desks
- 13. Writes crookedly, poorly spaced; cannot stay on ruled lines
- 14. Uses his hand or fingers to keep his place on the page of print
- 15. Mistakes words with same or similar beginnings
- 16. Fails to recognize same word in next sentence
- 17. Reverses letters and/or words in writing and copying
- 18. Confuses likenesses and minor differences
- 19. Confuses same word in same sentence
- 20. Repeatedly confuses similar beginnings and endings of words
- 21. Fails to visualize what is read either silently or orally
- 22. Whispers to self for reinforcement while reading silently
- 23. Comprehension reduces as reading continues; loses interest too quickly
- 24. Mispronounces similar words as continues reading
- 25. Blinks excessively at desk tasks and/or reading; not elsewhere
- 26. Holds book too closely; face too close to desk surface
- 27. Complains of discomfort in tasks that demand visual interpretation
- 28. Closes or covers one eye when reading or doing desk work
- 29. Rubs eyes during or after short periods of visual activity
- 30. Fatigues easily during near tasks

APPENDIX B
STUDENT DATA

Name _____ D.O.B. _____
Address _____
Phone _____
What area/section of city? _____
Preferred tutoring location _____
Children? _____
Employed? _____ What Hours? _____
Type of Work _____ Best time to meet _____
Have transportation? _____ How far in school? _____
Where/How did you hear of us? _____
Student's Goals: _____

INFORMAL INTERVIEW QUESTIONS

1. What kinds of things are you comfortable reading NOW?
2. Do you have to read and write at work? If so, what kinds of things? At home?
3. When you get stuck on a word, what do you usually do?
4. Any hobbies or special interests?
5. Something you are really good at?
6. What do you WANT to learn to read?
7. What do you NEED to learn to read?

APPENDIX C

VISUAL SCREENING LITERACY REFERRAL FORM

NAME _____ DATE _____

SCREENING COORDINATOR _____

_____ was screened on _____

using the NYSOA Vision Screening Battery. Below you will find listed the areas tested. If a check is placed by any of these areas, it indicates a potential vision problem. Please remember that this was detected in our screening and only indicates that a problem may exist. A more thorough evaluation/exam by an eye care professional who is familiar with the testing areas listed below is recommended.

_____ Visual Acuity-Distance	_____ Hyperopia
_____ Visual Acuity-Near	_____ Convergence
_____ Stereopsis	_____ Color Vision
_____ Fusion	_____ Tracking

We are screening for visual-related learning difficulties which may or may not affect performance. This is only a screening to see if further evaluation is necessary.

This is not a diagnosis.
This is not an eye health check.
This is not an educational check.
This is not a substitute for a visual exam.

There may be conditions present not indicated here because there are conditions which can only be revealed by a complete eye exam by an eye care professional.

There may be conditions indicated for referral which after a sophisticated exam may not be present or may not be severe enough to need treatment.