

ELEMENTARY SCHOOL TEACHERS' PERSPECTIVES OF FACTORS ASSOCIATED WITH READING DISABILITY

- David Jones, O.D.^a
- Justin Stilley, O.D.^b
- Michele Bither, O.D.^a
- Ronald Rounds, O.D.^c

- a. Northeastern State University College of Optometry, Tahlequah, Oklahoma
- b. Joplin, Missouri
- c. Muskogee, Oklahoma

Abstract

This paper reports the results of a survey that was designed to investigate the understanding that teachers in several Kansas and Oklahoma schools have about vision and its impact on classroom performance. The respondents were teachers in several Kansas and Oklahoma elementary schools. The results provide evidence that the majority of these teachers were unaware of the potential consequences of visual dysfunctions on reading and learning. Recommendations are made for optometry to proactively educate the elementary school teaching profession regarding these consequences.

Key Words

children's vision, elementary school teachers, reading disability, visual symptoms, visual signs

INTRODUCTION

Controversy as to the causes and treatment of reading disorders has persisted throughout much of the last century and into the present day. Reading is a skill that is necessary for academic learning and success. The educational system allows only a short time for mastery before reading becomes an essential tool, and some children do not attain adequate reading proficiency. Consequently, there are some children who appear to be intelligent, yet continually struggle in school. There also are those who do well in lower grades, but abruptly drop off in achievement as they progress through the educational system.¹

There is no doubt that there is a need for remediation of those children who fail or are behind in reading. Clay believes that the longer a child is allowed to fail, the more difficult remediation will become.² When a child attempts to read in an incorrect manner and practices this way day after day, the pattern becomes habitual and embedded, and, thus, potentially more difficult to change. As a child struggles, self-esteem is often negatively affected as his classmates progress at a faster rate and begin to take on new tasks.³ Early intervention is therefore vital.⁴⁻⁸

Due to the complex processes involved in learning to read, one might assume that there are many different potential causes of reading difficulty; however, some believe that there is a single factor that leads to these difficulties.⁹⁻¹⁰

Next to the parents, teachers and educators are the most important factor in the life of a learning disabled (LD) child. Teachers are the ones who take responsibility for the child's learning and educational experiences. They man the "front lines," identifying and dealing with children who exhibit learning problems. However, a literature search did not indicate any studies investigating teachers' opinions and knowledge regarding the relationship of vision and learning, with emphasis on reading. Consequently, the purpose of the present study was to ascertain these opinions and knowledge.

METHODS AND MATERIALS

This research explored a sample of teachers' perceptions of how reading and visual skills are related in the classroom via a survey instrument. The areas surveyed were: 1) characteristics of children struggling with reading, 2) complaints of children with vision problems, 3) visible signs of a vision problem, 4) amount of teachers' college curriculum dealing with vision and reading, 5) percentage of struggling readers, 6) percentage of children who struggle with reading due to a vision problem, and 7) areas with which struggling readers might have difficulties. Three open-ended questions were designed to cover the following areas: common characteristics of struggling readers, complaints of children with vision problems, and visible signs of children with a vision problem. Likert scale questions were used to survey the following areas: amount of the teacher's college curriculum that dealt with vision and its impact

on reading ability; the percentage of students with reading disabilities; percentage of students with vision problems that might affect reading; and other academic areas in which children with reading difficulties also struggle.

Demographic information about the teachers was requested, including years of teaching experience, size of city, gender, grade level taught, average size of class taught, location of the college where the degree in education was received, highest degree earned, and year graduated. The survey is presented in Appendix A. Attached with each survey was a cover letter explaining the reasons for the survey and its goal, along with a self-addressed, postage paid envelope for return.

The elementary schools surveyed were randomly selected from the public school listings of the State Board of Education in Kansas and in Oklahoma. The administrator of each school district was then contacted and asked permission to survey the teachers. Those administrators who were willing to participate agreed to distribute the surveys to the teachers. Each participating school was sent a packet that contained the number of surveys the administrator requested.

Two hundred thirty-eight surveys were sent to nine Oklahoma and eight Kansas school districts. The returned surveys came from seven Oklahoma and seven Kansas school districts. Upon return, the survey responses were totaled, and the data was entered into a spreadsheet and analyzed.

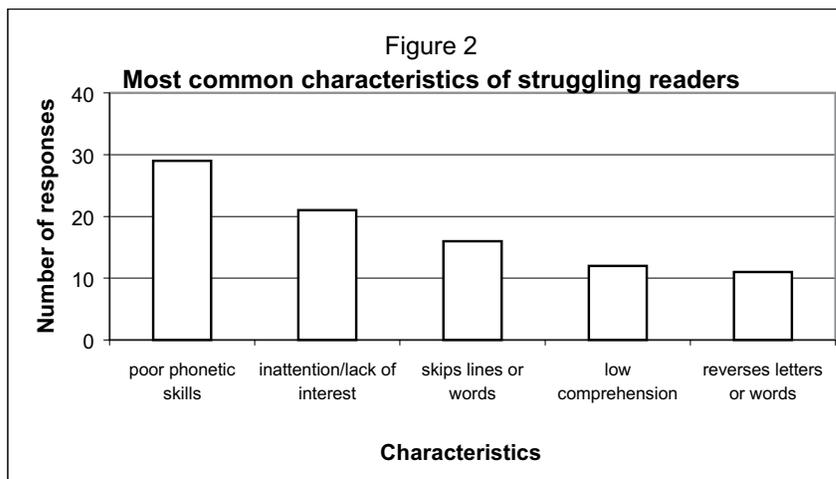
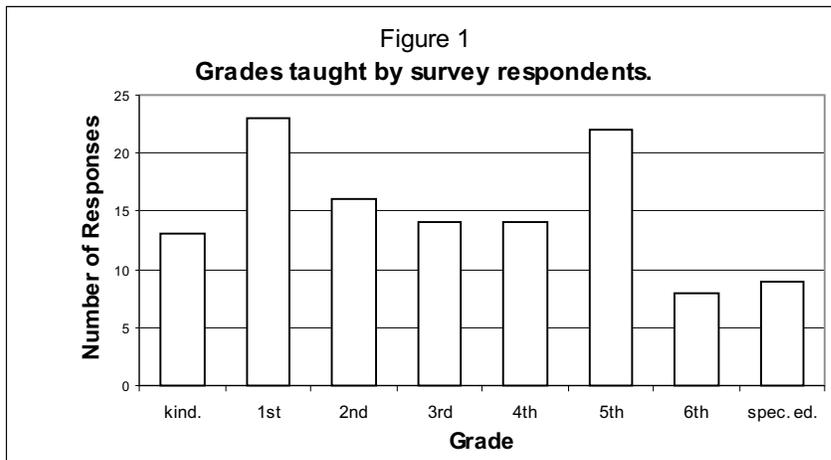
RESULTS

Respondent demographics

Seventy-two surveys were returned from seven Oklahoma and seven Kansas school districts constituting a 30% response rate. The sum of responses for particular questions did not always equal 72 because some questions were not answered by all participants while some respondents provided multiple answers.

Some 94% (66) of teachers responding to our survey were females, 6% (4) were males. Many respondents were veteran teachers. Forty-one percent (30) reported that they had taught for more than 21 years. However, 24% (17) answered as teaching for five or less years.

Many of the participants in the survey taught in less populated areas. Fifty-three percent (36) were from rural areas or



towns with a population less than 10,000. The grade levels taught by the teachers ranged from kindergarten to sixth grade, including special education. Grades one and five were listed the most; 19% (23) and 18% (22) respectively. The sixth grade and special education were the least common; 7% (8) and 8% (9) respectively. See Figure 1.

When examining the average size of the class taught by those surveyed, 17% (12) reported a size of less than 10 students, 57% (40) had a size of 10-20 students, and 26% (18) said that their class included more than 20 students.

The majority of elementary teachers who took part in our survey graduated from an Oklahoma or Kansas college or university. Only 12% graduated elsewhere.

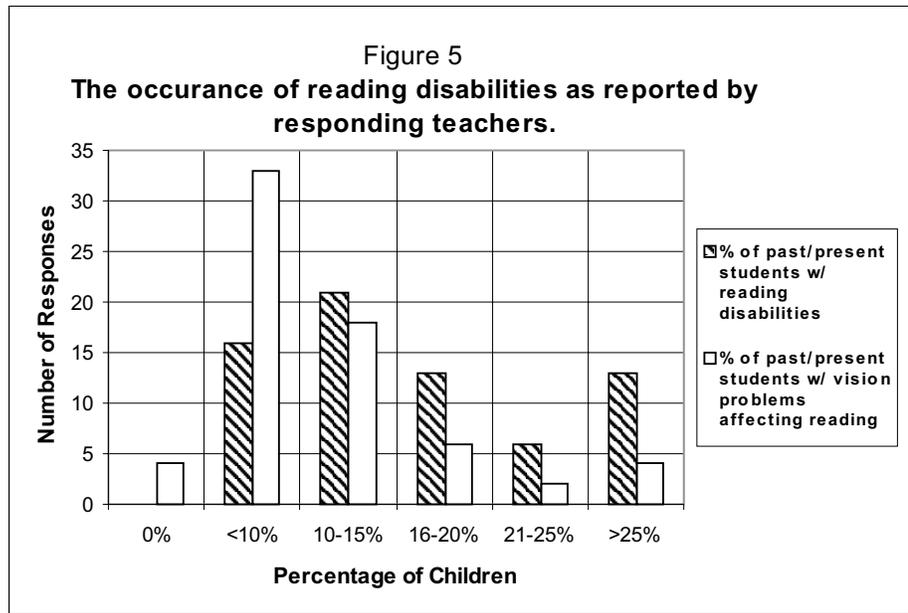
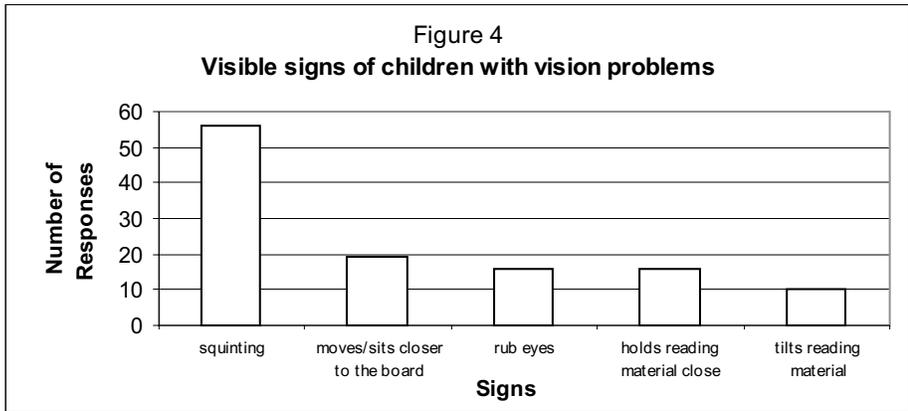
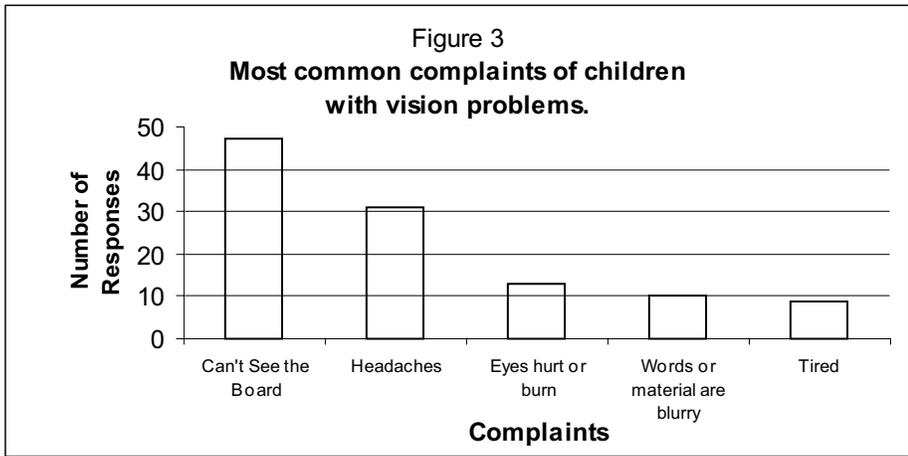
Of the 72 respondents, 79% (57) had received a bachelors degree. 21% (15) had a master's degree.

Responses to questions

In response to the question, "Do your students show common characteristics if

they are struggling with their reading skills?" we received 237 remarks, which were grouped into 23 categories. Poor phonetic skills were the most popular with 29 responses. Inattention or lack of interest in reading and schoolwork was a close second with 21 listings. The problems of skipping lines and words, poor comprehension, and letter and word reversals rounded out the top five list with values of 16, 12, and 11 respectively. In the next eight characteristics reported, the frequency's included one 9 times, one 7 times, four 5 times, and two 4 times. Six characteristics were listed 3 times, 10 were listed 2 two times, and 59 were listed once. The top five answers are shown in Figure 2.

In response to the next question, "If you think a child in your classroom has a vision problem, they express what type of complaints?" we received 152 total responses and we were able to group them into 23 different categories. The top five responses included: can't see the board (47), headaches (31), eyes hurt or burn (13), words or materials are blurry (10),



and tired (9). Figure 3 illustrates the frequency of these complaints.

The next question, "If you think a child in your classroom has a vision problem, they show what sorts of visible signs?" resulted in 210 answers which fit into 46 dif-

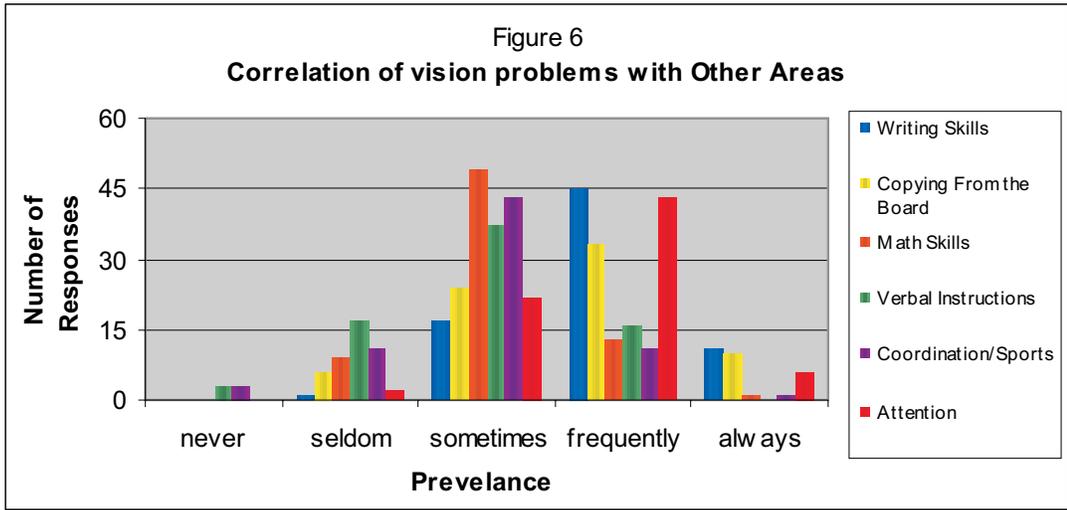
ferent categories. By far the number one visible sign noticed by the teachers in the survey was squinting, with 56 responses. Other visible signs that topped the teachers' lists were: moves/sits closer to the board (21), rubs eyes (16), holds reading

material close (16), and tilts reading material (10). Figure 4 shows the frequency of the five most common responses.

Our next question asked, "How much of your college curriculum dealt with vision and the impact of vision on reading ability?" Only about 11% (8) of those surveyed believed that their educational curriculum was more than 10% vision related. In fact, 38% (27) of the survey reported that they received no information regarding proper visual skills during their entire college career and 51% (37) indicated that <10% of their college curriculum was related vision.

Our next question asked, "When considering your past and present students, the percentage with reading disabilities was (is).....?" We found that 77% (53) of the teachers answered as saying that 10% or more of their students had reading disabilities. The responses were: no students—0% (0), <10% of students—23% (16), 10-15% of students—30% (21), 16-20% of students—19% (13), 21-25% of students—9% (6), and >25% of students—19% (13). However, in response to the question, "When considering your past and present students, what percentage do you believe had (have) a vision problem affecting reading?" we found that only 45% (30) of teachers felt that 10% or more of their students had a vision related reading problem. The responses were: no students—6% (4), <10% of students—49% (33), 10-15% of students—27% (18), 16-20% of students—9% (6), 21-25% of students—3% (2), and >25% of students—6% (4). Figure 5 illustrates the results from both of these questions.

The last portion of the survey asked, "Do the children in your class who have reading difficulties, also have difficulties in any of the following areas—writing skills, copying from the chalkboard, math skills, verbal instructions, coordination/sports, or attention." We listed options of *never*, *seldom*, *sometimes*, *frequently*, and *always*. Observations from the respondents regarding math skills, verbal instructions, and coordination all peaked in the area of 'sometimes'. Observations on writing skills, copying from the board, and attention all peaked in the 'frequently' range. When evaluating poor writing skills and its relation to reading disabilities the teachers answered: never—0% (0), seldom—1% (1), some-



times—23% (17), frequently—61% (45), and always—15% (11). As to copying from the board, the teachers responded: never—0% (0), seldom—8% (6), sometimes 33% (24), frequently—45% (33), and always—14% (10). Teachers reported the association with math skills as: never—0% (0), seldom—13% (9), sometimes—68% (49), frequently—18% (13), and always—1% (1). Associations with verbal instructions were as follows: never—4% (3), seldom—23% (17), sometimes—51% (37), frequently—22% (16), and always—0% (0). Physical coordination and ability in sports was observed in the following manner: never—4% (3), seldom—16% (11), sometimes—62% (43), frequently—16% (11), and always—1% (1). The final area, attention, proved to have the following results: never—0% (0), seldom—3% (2), sometimes—30% (22), frequently—8% (6). See Figure 6.

DISCUSSION

The US Department of Education in 1999 reported that, of all school-aged children, approximately 5% were receiving special education services. Of those children who are considered to be learning disabled, approximately 80% specifically have a reading disability.⁴ The overall prevalence of reading disabilities has been estimated to be 10% to 15% among school children; however, the variations in these percentages may be due to the variability of the definition of reading disorder, cut-off criteria, and socioeconomic differences in population factors.⁵ Regardless of the cause, total numbers of children with reading disabilities in the United

States is approximately 10 million.³ The sheer scope of this national problem among our children is sobering.

Where does vision enter this realm? The role of vision in traditional reading and learning is obvious. However, it is reported that only 14% of children in America have had an eye and vision examination by the time they reach five years of age.⁶ This lack of ocular and visual care becomes important in view of other research. For example, Scheiman⁷ reviewed the education literature and found that 10% to 15% of school-aged children have a visual disorder significant enough to cause a decrease in academic performance. Another report estimates this type of relationship to be as high as 25%.⁸ In children already diagnosed as having learning disorders, the incidence of vision disorders reach 30% to 85%.^{7,8}

At least some of the apparent lack of attention of the relationship of vision to reading and learning is the misconception that vision and eyesight are synonymous. In the case of our subjects, it is apparent that optometry has not made a strong case that vision is not only receiving clear photic information, but involves further perception and cognition.^{11, 12}

Optometrists can make a positive impact in a struggling reader's life by offering lenses, prisms, and vision therapy (VT). VT is an area in which all optometrists are trained and should either offer this service or refer to a colleague who provides this service. The goal of VT is to treat visual dysfunctions, prevent the development of such dysfunctions, and to heighten one's vision to meet an individual's needs.¹³ It does not directly treat the

learning problem, but improves those visual skills that are prerequisite to classroom learning and reading.

Busby¹⁴ noted that after completion of VT, teachers anecdotally reported that the child's attention to printed material improved, hyperactivity and distractibility decreased, willingness to participate increased, and relations with peers improved. Cook¹⁵ surveyed patients and parents and allowed them to respond in their own words about how VT affected them or their children.

Of the 65 categories of responses that were noted, "improved reading" was the most common. Lane and Maples¹⁶ performed a similar study using a more standardized surveying method. Their results indicated a significant success rate; ninety-nine percent of those surveyed reported that the VT had made a positive impact on their lives, and 82% percent reported an increase in school performance.

The teachers surveyed in the present study reported many characteristics of struggling readers that optometrists may never have a chance to observe. For instance, they noted some common mistakes made on homework assignments, specific facial expressions, and behaviors seen in the classroom when a child struggles to read. The teachers shared many common responses in regard to visual complaints and visible signs of children who may suffer with vision disorders. There were also many responses that optometrists might not consider, such as: rushing through assignments, shyness, stomach aches or imaginary illnesses. Teachers also reported several comments that children with vision problems might make: "what does that say," "that letter looks like another," "I didn't think that was what that word said," or "is it time for..."

When considering the question of "how much of your college curriculum dealt with vision and its impact on reading ability," over half of the respondents felt there was no part of their education that dealt with this area. In fact, only 38% more felt they had received even a small amount of such instruction.

The survey was a success at gathering a baseline of teachers' perspectives of struggling readers. In retrospect, there were items that could have been evaluated in a different manner. The question regarding the teachers' college curriculum should be re-worded to obtain more realistic data. Rather than inquiring about how much of their education dealt with vision, the question should have asked, "How much emphasis was placed on vision and its role in reading ability in your college curriculum?" Looking back, perhaps it would have been beneficial to incorporate a direct question, such as, "To what degree do you feel vision can affect a child's ability to learn to read?"

The association between vision and reading can be evaluated from a variety of perspectives. In regard to future research, we recommend an investigation of the relationship between a child's complaints and the visual diagnosis. In addition, it would be beneficial to acquire a better understanding of the most common visual diagnoses among struggling readers.

If there are a multitude of factors that cause reading difficulty, then eliminating visual disorders in a child may be the factor that is preventing the other factors from being conquered. Young, Collier-Gary, and Schwing¹⁷ stated:

If there were even one problem which prevented him/her from seeing print, it could be enough to cause that student to be a nonreader. If there were any combination of minor problems, which would make visual discrimination tiring, it would probably keep the child from achieving his academic potential. If the child were immature, hyperactive, unmotivated, ill, or a combination of these factors, it would require very little in the way of visual impediments to cause a rejection of the reading task.

As illustrated by our survey, the elementary educators do recognize some of the signs and symptoms of learning-related visual problems; however, they apparently lack an adequate educational foundation to appreciate how academically devastating such problems might become to the child. What conclusion can be drawn from this? Organized, professional teacher education courses about visually-related learning problems should be developed and integrated into the teachers' core curriculum. During

their professional education, teachers should be taught that vision is an essential factor in struggling readers, rather than gaining this information after they have been teaching for a while. One way that this might be accomplished is to team together teacher education colleges with schools of optometry in order to design courses and workshops that address vision in the classroom. This intermixing has the potential to build valuable bridges between both professions, enhancing them both. Optometry has a wonderful opportunity to assist in this process; as a consequence, many children who have gone undiagnosed with learning-related visual problems can finally receive appropriate care.

References

1. Meade, J. Bright child, poor grades. *Prevention* 1991 Sept; 43(9):50-62.
2. Clay MM. *The early detection of reading difficulties*. New Zealand: Heinemann Education, 1989.
3. National Institute of Child Health and Human Development. *Why children fail*. Research from the NICHD's program in learning disabilities. 1998.
4. Anonymous. Reading difficulties vs. learning disabilities. *CEC Today* 1997 Nov/Dec;4(5) http://www.ldonline.org/ld_indepth/reading/cec_rldd.html
5. Tinker MA. *Bases for effective reading*. Minneapolis: University of Minnesota Press, 1965.
6. Poe GS. Eye care visits and use of glasses or contact lenses. United States 1979 and 1980. Vital and health statistics. Series 10, No. 145, DHHS Publication (PHS) 84-1573, Hyattsville, MD: National Center for Health Statistics, 1984.
7. Scheiman M. Hidden eye problems can block learning. *Learning* 1991 Jul/Aug; 20(1):70-1.
8. McMains M. *Vision and learning disabilities*. 2000. <http://www.visionandlearning.org/learningdisabilities.htm>
9. Harris HJ, Sipay ER. *How to increase reading ability*. New York and London: Longman, 1990.
10. Aaron PG, Joshi M, Williams KA. Not all reading disabilities are alike. *J Learn Dis* 1999 Mar; 32(2):120-37.
11. Solan HA. A rationale for the optometric treatment and management of children with learning disabilities. *J Learn Dis* 1981 Dec; 14(10):568-572.
12. Getz DJ. Children with special needs. http://www.children-special-needs.org/vision_therapy/esophoria_reading.html
13. American Optometric Association. <http://www.aoa.org/clinicare/issues-joint.asp>
14. Busby RA. Vision development in the classroom. *J Learn Dis* 1985 May; 18(5):266-72.
15. Cook DL. Vision therapy and quality of life. *J Optom Vis Dev* 1995; 26:205-11.
16. Lane KA, Maples WC. Parent's satisfaction with vision therapy. *J Behav Optom* 1995; 6(6):151-3.
17. Young BS, Collier-Gary D, Schwing S. Visual factors: A primary cause of failure in beginning reading. *J Optom Vis Dev* 1994; 25:276-88.

Corresponding author
 Michele R. Bither, O.D., F.C.O.V.D.
 Associate Professor
 Northeastern State University
 College of Optometry
 1001 North Grand Ave
 Tahlequah, OK 74464
 918-456-5511 X 4020
 Date accepted for publication:
 January 2, 2005

**APPENDIX A
SURVEY OF CLASSROOM TEACHERS' EXPERIENCES WITH VISION AND READING SKILLS IN THEIR STUDENTS**

OKLAHOMA COLLEGE OF OPTOMETRY AT NORTHEASTERN STATE UNIVERSITY

Time In Profession: ___ 0-5 Yr ___ 6-10 Yr ___ 11-15 Yr ___ 15-20 Yr ___ 21+ Yr
 Area in Which You Teach: ___ Rural ___ <1000 Town ___ <10,000 City ___ 10 - 50,000 City ___ >50,000 City
 Gender: ___ F ___ M Grade Level Taught: ___ K ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Spec. Ed.
 Average Size of Class Taught: ___ <10 ___ 10-20 ___ >20
 Educated At Univ/College: ___ OK Regional ___ OK Private ___ OU/OSU ___ KS Regional ___ KS Private ___ KU/KSU/WSU
 ___ Other
 Highest Degree Earned: _____ Year Graduated: _____

Do your students show common characteristics if they are struggling with their reading skills? *(Please list in your words)*

1. _____
2. _____
3. _____
4. _____
5. _____

If you think a child in your classroom has a vision problem, they express what type of complaints? *(Please list in your words)*

1. _____
2. _____
3. _____
4. _____
5. _____

If you think a child in your classroom has a vision problem, they show what visible signs? (behavior, facial expressions, etc.) *(Please list in your words)*

1. _____
2. _____
3. _____
4. _____
5. _____

(Please Check)

	0%	10%	10-15%	16-20%	21-25%	>25%
How much of your college curriculum dealt with vision and the impact of vision on reading ability?						
When considering your past and present students, the percentage with reading disabilities was (is) ?						
When considering your past and present students, what percentage do you believe had (have) a vision problem affecting reading?						

Do the children in your class who have reading difficulties, also have difficulties in any of the following areas? (Please check)

	Never	seldom	sometimes	frequently	always
writing skills					
copying from the chalkboard					
math skills					
verbal instructions					
coordination/sports					
attention					

Please make any other comments you have on the back of this sheet.