

ABSTRACT

BERG, C.B. Myopia education 101: A holistic journey to understanding myopia development, natural improvement, and prevention strategies. MPH in Community Health Education, May 2000, 118pp. (R. Detert)

The conventional way of rectifying the myopic state is for optometrists to prescribe corrective lenses (contacts or glasses) that assist a person to see clearly at a distance. More recently, some of these professionals are opting to provide laser refractive surgery to correct the myopia of their clients. The purpose of this graduate project was to provide a synthesis of the literature, concerning lifestyle and environmental factors that can influence myopia development. Natural, noninvasive strategies for myopia improvement and prevention were also summarized. A manual was created for the lay individual and health care professionals to facilitate understanding of this information. This manual was also designed to serve as a comprehensive reference for professionals interested in formulating research questions relating to natural myopia improvement and prevention. Background information was included in the manual regarding human vision development and function, testing procedures for refractive error, optometric prescription reading tips, and conventional ways of correcting myopia. Case examples of individuals who have improved and cured their myopia were provided to illustrate application of natural myopia improvement strategies. An analysis of the topic, including implications for society and the individual, conclude the manual. A professional review process was conducted to evaluate the quality of the manual's content, readability, and format. Comments and suggestions collected during this professional review process were used to improve the quality of the manual.

MYOPIA EDUCATION 101: A HOLISTIC JOURNEY TO UNDERSTANDING
MYOPIA DEVELOPMENT, NATURAL IMPROVEMENT,
AND PREVENTION STRATEGIES

A GRADUATE PROJECT PRESENTED
TO
THE GRADUATE FACULTY
UNIVERSITY OF WISCONSIN-LA CROSSE

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
MASTER OF PUBLIC HEALTH IN COMMUNITY HEALTH EDUCATION

BY
CHRISTINA M. BERG

MAY 2000

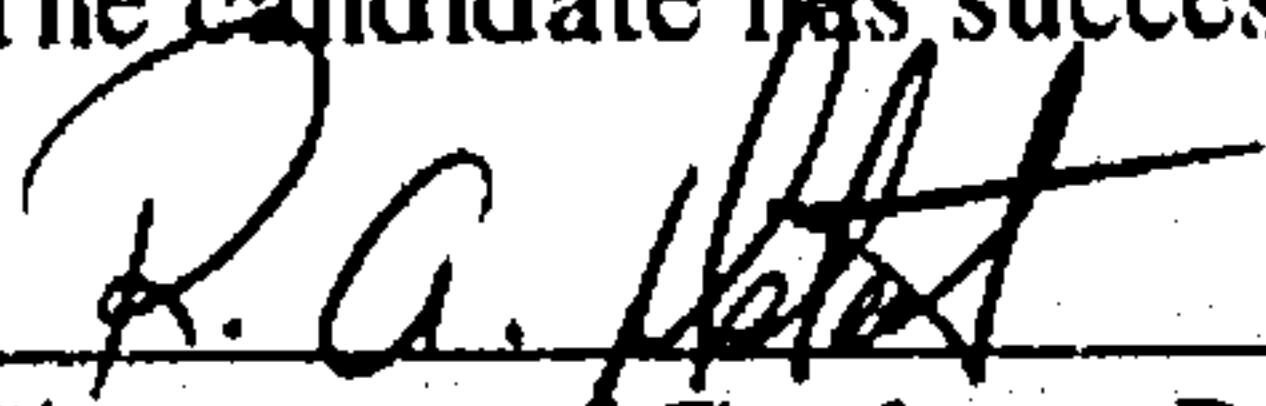
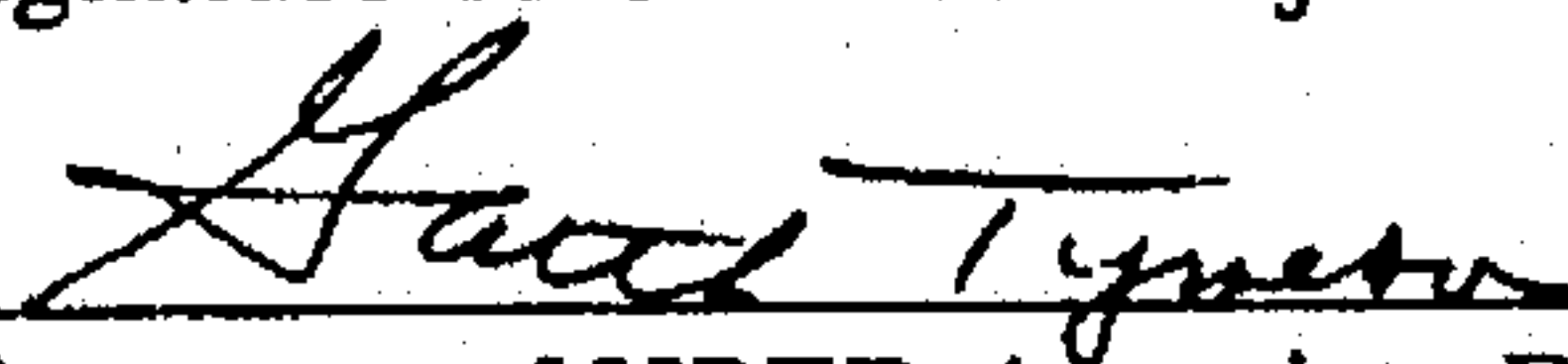
COLLEGE OF HEALTH, PHYSICAL EDUCATION, AND RECREATION
UNIVERSITY OF WISCONSIN-LA CROSSE
DEPARTMENT OF HEALTH EDUCATION AND HEALTH PROMOTION
HEALTH GRADUATE PROJECT FINAL APPROVAL FORM

Candidate: Christina M. Berg

I recommend acceptance of this Graduate Project in partial fulfillment of this candidate's requirements for the degree:

Masters of Public Health in Community Health Education

The candidate has successfully completed the Graduate Project.

	<u>4-27-00</u>
Signature of Graduate Project Advisor	Date
	<u>5-12-00</u>
Signature of HPER Associate Dean	Date
	<u>5-12-00</u>
Signature of Director of University Graduate Studies	Date

ACKNOWLEDGEMENTS

I wish to first thank God for being my inner guidance and support, as I focused much of my time during my graduate career to create a natural myopia improvement and prevention manual. This journey has provide me with personal blessings and understandings too numerous to mention.

My sincere appreciation and admiration also goes out to the pioneers in the field of natural vision improvement and alternative/complementary health care. Their work has greatly inspired my holistic look on life, health, and belief in natural myopia improvement and prevention.

A sincere thanks is extended to Dr. Richard Detert and Dr. Brenda Soto-Torres, faculty within the Department of Health Education and Promotion at the University of Wisconsin-La Crosse. Their professional guidance and insight have significantly contributed to the formulation of the natural myopia improvement and prevention manual.

I appreciate the efforts of Donell Kerns, Ph.D., John Curtis, Ph.D., and Bentley Lien, M.S., regarding the evaluation of my natural myopia improvement and prevention manual. Professional and personal insights gained from their comments and suggestions were of great use in improving the manual's content, readability, and format.

And finally, my connection to the natural beauty of the La Crosse area goes beyond words. So does my appreciation for the area bluffs, parks, and hiking trails that provided opportunities for physical, mental, emotional, and spiritual rejuvenation, while working on my graduate project and degree.

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SECTION 1

INTRODUCTION AND OVERVIEW

Purpose

The focus of this graduate project was to provide a synthesis of the literature concerning natural myopia improvement and prevention for use by the public and health care professionals. The information gathered has taken the form of a manual, designed to assist the reader in better understanding factors that can influence the development of myopia and natural strategies for myopia improvement and prevention.

The manual has been formulated to inspire professionals reading its content to explore the potential for research in this field. Although there were various case examples of natural vision improvement noted in the literature, clinical studies showing the effectiveness of natural improvement and prevention strategies were few. Therefore, the manual can serve as a comprehensive reference for professionals interested in formulating research questions relating to natural myopia improvement and prevention.

Review of Related Literature, Including Rationale for Manual

Nearly all humans develop the ability to experience the outer world through the sense of sight. In fact, it serves as people's primary sense (Kaplin, 1995). The Optometric Extension Program Foundation (1995) has found that two-thirds of all the information humans receive is visual. Approximately 90% of what humans learn enters through their eyes (Leviton, 1992). This information evidences the extreme importance of vision in learning, feeling, working, and playing.

Unfortunately, not everybody has the visual ability to clearly experience objects in his or her outer world. People that develop the refractive error problem known as myopia, for example, are incapable of seeing clearly when viewing distant objects. This myopic condition is considered refractive because the condition relates to the eye's inability to properly bend (or refract) light rays entering the eye (Goodrich, 1996).

One hundred and thirty-two million people wear corrective lenses (glasses or contacts) in the U.S. (Kaplin, 1995). About one-in-four of these corrective lens wearers are estimated to be myopic (Orfield, 1994). Hence, myopia is likely to be one of the most common ocular conditions encountered by optometrists.

The conventional way of rectifying the myopic state is for optometrists to prescribe corrective lenses (contacts or glasses) that assist a person with myopia to see clearly at a distance. More recently, some of these professionals are opting to provide laser refractive surgery to correct the myopic state of their clients. My personal and professional journey has illustrated to me that conventional ways of approaching myopia do well at enabling people to function in the world, but seem to do little in regards to preventing myopia or helping individuals explore what other factors, besides genetic disposition, could be influencing their myopic state.

This concept of preventing and even naturally improving the myopic state might be new to most. Up until my late teens, it was for me too. Half-way through my undergraduate degree I had already worked myself into a corrective lens prescription of a -6.50 diopters in my right eye and a -7.50 diopters in my left eye. Refractive visual problems, such as myopia, are measured in units called diopters. They represent the level of correction needed in corrective lenses to normalize vision (Goodrich, 1996).

Although I was excelling in college and enjoying the company of my friends at the time, I did not feel whole or truly connected to the world around me. Intentions made to mend this state of being started me on a healing journey that caused me to question my myopia. Researching the field of natural vision improvement and prevention eventually followed, fueled by such questions as:

- Is a person's genetic disposition solely the reason for myopia development? If not, is myopia preventable?
- Are people with myopia destined to wear corrective lenses all their lives? Can corrective lenses be harmful?
- Are there natural, noninvasive strategies for myopia improvement that would not require a person to undergo laser refractive surgery?

Natural vision improvement and prevention is based on the philosophy that lifestyle choices, various forms of physical, mental, and emotional stress, poor visual habits and thinking patterns, or any combination of these factors, can influence the development of myopia. Leviton (1992), author of *Seven Steps to Better Vision*, explained that such factors not only impair clear distance vision but can produce diverse problems in behavior, social adjustment, learning, and physical health.

Natural vision improvement professionals, both past and present, oppose the conventional ways of approaching myopia, stating that corrective lenses only mask the factors associated with influencing the visual blur. They often compare corrective lenses to crutches, which enable a person with myopia to see clearly at a distance but provide minimal therapeutic benefit. These same professionals view corrective lenses as debilitating, because

they maintain, if not worsen, the degree of refractive error of the individual (Bates, 1940; Cino, 1995; Goodrich, 1996; Kaplin, 1995; Liberman, 1995).

The reason corrective lenses seem to maintain or even worsen vision is they are thought to interfere with the bodymind's natural healing process. Specifically, they counteract the homeostatic response that continuously strives to maintain and achieve balance within the bodymind (Liberman, 1995). Any vision problems, including refractive error, are believed to be messages alerting the individual of imbalances within the bodymind (Goodrich, 1986). In a way, myopia can be viewed as a biofeedback mechanism that enables a person with myopia to realize the need for personal change and healing (Berne, 1994).

Dr. Robert Kaplin (1995), an optometrist who has been facilitating the natural healing process for people with myopia for several years, stated it is becoming evident in all medical fields that lifestyle habits effect the quality of an individual's health. In fact, "up to 70% of premature mortality in the United States is directly related to environmental and lifestyle factors that are potentially controllable by individuals and society" (Scutchfield & Keck, 1997, p. 6). It is even suggested that the 10% of people that acquire illnesses because of genetic predispositions can alter expression of those genes through lifestyle choices like stress reduction and diet (Chopra, 1995).

Even so, some research does suggest that one's genetic disposition is associated with myopia development (Gwiazda, Thorn, Bauer, & Held, 1993; Zadnik, Satarrano, Mutti, Sholtz, & Adams, 1994). Hereditary research comparing monozygotic twins with dizygotic twins supports the belief that myopia is associated with parental genetics (Kimura, 1965; Minkovitz et al., 1993; Sorsby, Sheridan, & Leary, 1962). These findings endorse the

biological theory that asserts myopia is not preventable or curable (Angle & Wissmann, 1980).

What is intriguing, though, is that the U.S., as well as other countries, has witnessed an increase in the prevalence of myopia, especially in the school-aged population (Selby, 1987; Wang, Klein, Klein & Moss, 1994). In fact, there seems to be a direct correlation between educational levels and the percentage of individuals that develop myopia (Angle & Wissmann, 1980; Goldensmidt, 1968; Rosner & Belkin, 1987; Sperduto, Seigal, Roberts, & Rowland, 1983; Teasdale, Fuchs, & Goldschmidt, 1988; Zadnik & Mutti, 1987). The prevalence of myopia is often as high as 80% in students at the graduate level (Lieberman, 1995; Sherman, 1993).

A sharp increase in myopia for younger cohorts has been identified by various cross-sectional studies in the U.S. and in different countries (Alsbrk, 1979; Garner, Owens, Kinnear, & Frith, 1999; Morgan, Speakman, & Grimshaw, 1975; National Eye Institute, 1996; Young, 1969). This research suggests the influence environmental and lifestyle factors appear to have on the development of myopia. Even if myopia is programmed on a genetic basis, other factors may very well disrupt the process of vision and influence final refractive status (Kadnik, 1997; National Eye Institute, 1996). Therefore, myopia development appears to be multifactorial in nature, seemingly making prevention and intervention possible (Pruett, 1988).

The myopia natural improvement and prevention manual has been formulated to summarize the literature regarding myopia development and natural improvement and prevention strategies. Lifestyle and environmental factors presented in the manual that are thought to influence myopia development include: (a) extensive use of the eyes in nearpoint

work situations, (b) staring, (c) emotional stress, (d) poor posture and spinal misalignment, (e) poor nutrition, (f) improper lighting, (g) unhealthy thinking and perceptual patterns, and (h) refractive error screening. Each of these factors are discussed in detail in the manual, as are natural strategies for improving and preventing myopia extracted from the literature. These strategies include: (a) eating healthy, (b) exercising, (c) maintaining good posture, (d) using proper lighting, (e) reducing nearpoint work stress, (f) engaging in effortless doing, (g) decreasing body and mind tension, (h) inducing the relaxation response, (i) changing destructive perceptions and thinking patterns, (j) using exercises for visual system enhancement, (k) honoring emotions, (l) releasing suppressed emotions, and (m) utilizing guided imagery.

Case examples of individuals who have improved and cured their myopia have also been provided in the manual to illustrate application of natural myopia improvement strategies. Information is presented to educate its readers about human vision development and function, testing procedures for refractive error, optometric prescription reading tips, and conventional ways of correcting myopia, as with corrective lenses. This has been done to assist the reader in understanding the factors that influence myopia development, and natural strategies for improvement and prevention. An analysis of the topic, including implications for society and the individual, conclude the manual.

SECTION 2

METHODS

Project Phases

The formulation of a natural myopia improvement and prevention manual occurred in four major phases.

Phase One – Getting Started

Upon entering my graduate degree program, I made a decision to begin work on the formulation of a manual regarding natural myopia improvement and prevention, knowing accomplishment of this academic goal would be time consuming. After assessing my first semester course requirements in graduate school, HED 701 - Contemporary Health Issues seemed the most logical option for beginning work on the manual. This course was designed to have students develop a research paper on a contemporary health issue of one's choosing and, of course, I chose natural myopia improvement and prevention as my topic.

Once my first semester of graduate work was underway, I quickly began my research paper for Contemporary Health Issues. My affiliation as a graduate student at the University of Wisconsin-La Crosse (UW-L) provided me with Internet access and an opportunity to use interlibrary loan to order all of the reference materials I found on the topic. I was like a kid in a candy store when I received the materials I ordered, but it took many hours to take detailed notes from each of the reference materials. I felt it was necessary for me to do this not only to complete my assignment but also so I could refer to the information when working on later endeavors relating to the topic.

The course professor provided guidelines for construction of the research paper. These requirements caused me to organize the information for the beginning stage of the manual according to the following categories: (a) importance of the topic, to include the magnitude of the problem and individuals affected, (b) definitions related to the topic, (c) review of relative literature, (d) personal analysis of the topic, (e) implications for society, and, (f) personal recommendations based on the literature review.

After completion of this assignment, I decided to create another opportunity to continue work on the manual. This is when I asked my Contemporary Health Issues professor if she would be willing to oversee a two-credit independent study.

Phase Two – Manual Creation Continuation

My professor agreed to supervise the two-credit independent study that would allow me to continue my work in creating a natural myopia improvement and prevention manual. The following were my objectives for the independent study:

1. Complete the section of the manual entitled, *Factors that Influence the Development of Myopia*.
2. Complete the section of the manual entitled, *Approaches to Improving and Healing Myopia, Including Implications for Prevention*.
3. Create an appendix for the manual.
4. Add case examples of myopia improvement using natural approaches to myopia improvement in the manual.
5. Create a table of contents for the manual.
6. Make the necessary grammatical corrections to the manual began in Contemporary Health Issues.

7. Arrange for five professionals interested in my work to evaluate the manual by providing written comments and suggestions on the copy of the manual issued to them.
8. Make revisions to the manual based on the peer review suggestions and comments.

Phase Three – Development of Epidemiology Protocol

After the completion of my independent study, I put the natural myopia improvement and prevention manual aside. Although I was proud of what I had accomplished during my independent study, I innately knew I would be adding to and fine-tuning the manual at a later time during my graduate experience.

My graduate course, HED 755 - Epidemiology and Public Health Issues provided an opportunity for me to gather further information about the topic of naturally improving and preventing myopia. A major requirement for this course was to create an epidemiological study proposal. I chose to create a study that would examine the effects of a designed myopia intervention program for UW-L college students ages 17-26. For this proposal, I used the library at Gundersen Lutheran Medical Center in La Crosse, Wisconsin to conduct an extensive literature review of the optometry and ophthalmology research. I also foresaw the information gathered being incorporated later into the natural myopia improvement and prevention manual.

Phase Four – Graduate Project Process and Product

After a discussion with Dr. Gilmore, my graduate advisor, it seemed most logical for my graduate project to involve my work in the area of myopia development and natural myopia improvement and prevention. We decided an appropriate plan would be for me to continue my work regarding the creation of a natural myopia improvement and prevention manual. The manual, once completed, was to serve as my graduate project product. The

process of revising the manual was to include the valuable literature collected for my study proposal in HED 755 - Epidemiology and Public Health Issues and would embody other information I believed the manual was lacking since my independent study experience.

Graduate Project Objectives for Manual, Including Procedures for Objective Completion

The following presents the eight objectives used to guide the completion of the natural myopia improvement and prevention manual for my graduate project product. Each objective had written procedures for completion.

Objective One

Take literature collected during HED 755 - Epidemiology and Public Health and incorporate it into the natural myopia improvement and prevention manual.

Accomplishment of this objective involved using printed copies of the study proposal created for HED 755 - Epidemiology and Public Health and the version of the manual created during my independent study to make a plan concerning the best way to combine this information.

Once the plan was formulated, the literature in the study proposal was incorporated into the computerized version of the manual.

Objective Two

Incorporate additional information about the development of the human visual system into the natural myopia improvement and prevention manual. This involved utilizing the UW-I library computer system to locate resources pertaining to the development of the human visual system. Once these references were obtained, they were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Three

Incorporate additional information about visual perception into the natural myopia improvement and prevention manual. This involved utilizing the UW-L library computer system to locate resources pertaining to visual perception. Once these references were obtained, they were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Four

Incorporate additional information about the role emotions play in regard to effecting vision into the natural myopia improvement and prevention manual. This involved utilizing the UW-L library computer system to locate resources pertaining to the role emotions play in regard to effecting health and vision. Once these references were obtained, they were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Five

Incorporate additional information about ways to release stored emotions that can influence the myopic state into the natural myopia improvement and prevention manual. Completion of this objective entailed sorting through the information that I obtained, concerning alternative/complementary therapy practices used to release stored emotions and bring balance to the bodymind. These references were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Six

Incorporate additional information about how nutrition can influence the myopic state into the natural myopia improvement and prevention manual. The UW-L library computer system was used to locate resources pertaining to nutrition and vision. Once these references

were obtained, they were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Seven

Incorporate additional information about how to decrease tension in the body and mind, including how to induce the relaxation response. The UW-L library computer system was used to locate resources pertaining to the proposed topics. Once these references were obtained, they were analyzed for their usefulness, and content was selected for citation in the manual.

Objective Eight

Incorporate visual references and information in the appendix of the manual created during the independent study into the main body of the current version of the manual. The version of the manual created during my independent study had a 30 page appendix section. Looking back I realized that this was not the best way to present the information, especially since most of material could have been woven into the main body of the manual. The computer services at the UW-L Target Center were utilized to help me scan appendix visuals into the appropriate sections of the manual. The printed information in the appendix was then incorporated into the main body of the manual.

Manual Evaluation

Upon completion of the manual objectives, Dr. Detert, my graduate project advisor, reviewed the manual, providing written comments and suggestions for improvement. After incorporating his suggested changes, a professional review of the manual followed. Information gained from this professional review process was used to improve the quality of the manual.

Three reviewers were invited to be a part of the professional review process. Donell Kerns, Ph.D., Director of Human Services Programming in the Office of Continuing Education and Extension at the UW-L, and Bentley Lein, M.S., a University of Wisconsin-Extension Officer, were asked because of their interest in and familiarity with my work. They both were a part of the professional review process for the manual created during my independent study experience and were skilled in evaluating written materials. The third peer reviewer was John Curtis, Ph.D., a professor in the Department of Health Education and Health Promotion at the UW-L and knowledgeable in the area of stress and stress management. He was asked to review the manual, paying special attention the content regarding stress. The professional review process was limited to three reviewers to make it feasible to incorporate suggestions provided.

For the professional review process, a manual evaluation form and cover letter (see Appendix A) was created to assist the peer reviewers in critiquing the manual. This form was designed to provide an organized way for the reviewers to comment and make suggestions, regarding the manual's content, readability, and format. Reviewers had the opportunity, when using this form, to rank the quality of each statement regarding the manual's content, readability, and format. The ranking code was 1 = poor, 2 = average, 3 = good, and 4 = excellent. Reviewers were provided space below each statement to make written comments concerning their ranked responses. In addition, the manual evaluation form provided space on the second page for reviewers to make any additional comments. My graduate project advisor revised the form and provided suggestions for improvement before it was utilized.

Reviewers were instructed via the cover letter to first read the evaluation criteria located on the manual evaluation form before proceeding to read through the manual. This was to better ensure that the reviewers had a good understanding of the evaluation criteria before constructively reading through the manual. The reviewers were also encouraged to make comments and suggestions directly on the pages of the manual, as they read along. These, too, served useful when revising the manual. The reviewers were given two weeks to read and provide their written comments and suggestions regarding the manual's content, readability, and format. During this time they were to also fill out the manual evaluation form.

At the beginning of the second week, a phone call was made to each reviewer to set up a time to collect both the copy of the manual issued to them and the completed manual evaluation form. The meetings, when possible, provided an opportunity to go over with the reviewers any comments and suggestions they made on the copy of the manual itself and on the manual evaluation form. Comments and suggestions provided by the reviewers were taken into consideration when revising the manual.

Graduate Project Product and Process Description Timeline

The following was the timeline for completion of all aspects of the graduate project product (manual) and this graduate project process description:

January 20-23, 2000	Created sections one and two of graduate project process description.
January 24, 2000	Turned in sections one and two of graduate project process description into project advisor for review.
January 25 - February 8, 2000	Obtained information needed to complete manual objectives two, three, four, six, and seven.

January 25 – February 25, 2000

Completed manual objectives one, two, three, four, five, six, seven, and eight.

Received back and made the suggested changes to sections one and two of graduate project process description, as indicated by graduate project advisor.

Created the title and acknowledgements page for graduate project process description.

February 26 – March 9, 2000

Selected and invited three professional reviewers to critique manual.

Made final adjustments to manual, including the table of contents, title page, glossary of terms, and reference list.

Typed out Health Graduate Project Final Approval Form.

March 10, 2000

Turned manual into graduate project advisor for review.

March 21 – April 3

Created manual evaluation form for the professional reviewers and had it reviewed by graduate project advisor.

Received back and made changes to manual and manual evaluation form, as suggested by graduate project advisor.

April 4, 2000

Gave manual, along with the designed manual evaluation form, to designated professional reviewers.

April 5, 2000 – April 14, 2000

Received approval to set up graduate project oral defense from graduate project advisor.

Set up graduate project oral defense by (a) reserving a room in Mitchell Hall with Mr. Mark Guthrie, (b) scheduling audio-visual needs with the Information Technology Lab in Mitchell Hall, (c) announcing the presentation in the *Campus Connection*, and (d) posting an announcement on the official bulletin board for the Department of Health Education and Health Promotion.

- April 17, 2000
Received back copies of manual, with completed manual evaluation form from professional reviewers.
- April 17 – April 19, 2000
Completed sections three and four of graduate project process description, including the reference page, abstract, and table of contents.

Revised manual based on comments and suggestions made during the professional review process.
- April 20, 2000
Resubmitted manual to graduate project advisor.

Handed in all sections of graduate process description to graduate project advisor.
- April 20 – 22, 2000
Created graduate project oral defense.
- April 25-26, 2000
Received back manual and graduate process description from graduate project advisor and made necessary corrections.
- April 27, 2000
Gave graduate project oral defense.

Received final approval concerning graduate project process description and manual from graduate project advisor. Provided advisor with the Health Graduate Project Final Approval Form to sign.
- April 28, 2000
Submitted one copy of the graduate project process description, one copy of the manual, a completed Graduate Project abstract on a 3.5' disk, one copy of the Revision Communication Record Form, and one copy of the Permission to Publish in Microform Form to the Associate Dean of the College of HPER and Director of University Graduate Studies.
- Late May
Completed steps for pressboard or spiral binding of graduate project manual and process description.

Distributed one copy of the final graduate project to project advisor, the Department of Health Education and Health Promotion and Murphy Library.

SECTION 3

FINDINGS

Reviewing Manual Evaluation Criteria

Manual Review by Graduate Project Advisor

The comments and suggestions solicited from my graduate project advisor and professional reviewers, regarding improvement of the natural myopia improvement and prevention manual, were quite useful. As recommended, I more clearly separated the major sections of the manual with appropriate headings and introductory paragraphs and reworked the language in the manual to give it a more personal feel. I followed through with his suggestion to reorganize the order of the content in the *Strategies to Improving Myopia, Including Implications for Prevention* section of the manual so the information presented could be more easily read and understood. In this section, as advised, I incorporated additional information on recommended readings and contact information for organizations, when appropriate. His review of the manual also provided ideas for word choice changes, sentence structure improvement, and minor reconstruction insights to improve the manual's content regarding stress.

Manual Review by Professional Reviewers

Based on the results of the professional review process, it was clear that the professional reviewers thought the manual served not only for interesting reading and promoted awareness, but was successful in synthesizing the literature regarding myopia

development and natural myopia improvement and prevention strategies. On the hard copy of the manual issued to the reviewers, some grammatical, word choice, and sentence structure changes were provided for me to consider incorporating in to the manual.

The manual evaluation form filled out by each professional reviewer served as an effective way to critique the manual's content, readability, and format. As mentioned, the reviewers had the opportunity, when using this form, to rank the quality of each statement regarding the manual's content, readability, and format. The ranking code was 1 = poor, 2 = average, 3 = good, and 4 = excellent. The three professional reviewers gave a ranking of mostly 3's and 4's, regarding the organization of content, usefulness of figures, and usefulness of information presented in the manual. Manual readability was given a ranking of mostly 4's, regarding clear sentence structure, length of paragraphs, key terms defined, grammar, and spelling. The format of the manual, in reference to citation usage, size and style of print, print quality, use of headings, and placement of figures, was given rating of mostly 3's and 4's.

One of the professional reviewers on the manual evaluation form, as had my graduate project advisor, suggested for me to better articulate that few clinical studies have been done to examine the effectiveness of natural myopia improvement and prevention strategies discussed in the manual. This suggestion was noted, and statements were incorporated into the beginning and end of manual to highlight this point. These statements also were consciously included to encourage professionals to formulate research questions relating to natural myopia improvement and prevention.

Difficulties Encountered during the Manual Evaluation Process

There was one challenge that arose during the manual evaluation process. This was in regards to acknowledging the busy schedules of my graduate project advisor and professional reviewers. It was often necessary to allot them more time than I originally planned to complete the evaluation tasks that I requested of them. This is understandable, noting the workload and previous commitments of these professionals. I sincerely appreciated them taking the time to help me improve the quality of the natural myopia improvement and prevention manual. The extra time needed for the evaluation processes, though, did push back my graduate project and process timeline regarding completion.

SECTION 4

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Through the process of completing the natural myopia improvement and prevention manual, I have grown both professionally and personally. Manual creation has certainly honed my organizational skills, as I focused my efforts to synthesize information from a massive literature review into one source for use by the lay individual, health care professionals, and other professionals interested in formulating research questions related to natural myopia improvement and prevention. Technical skills I acquired during the creation of the manual involved learning how to scan in and "clean up" images. These skills, I believe, will serve useful in future endeavors.

Another benefit to creating this manual is I have gained further insight and understanding, regarding factors that can influence myopia development and natural myopia improvement and prevention strategies. With this understanding, I believe I am better able to articulate this knowledge to individuals and professionals interested in natural myopia improvement and prevention.

The process of creating a natural myopia improvement and prevention manual has also fostered ideas for additional literature review regarding the subject matter. An area of interest that may hold insight regarding factors that can influence myopia development and natural strategies for myopia improvement and prevention is Chinese Medicine. Information gained from a literature review as such, in relation to myopia development, intervention, and

prevention, could improve the content of the manual. Unfortunately, the timeframe for this graduate project did not permit for much exploration in this area. A decision was made early in the creation of the manual to review this subject matter at a later time.

Recommendations

There are several recommendations I would like to provide for individuals thinking of performing a literature review and creating a manual. When performing a literature review, there can be an abundant amount of information. Creating a written agenda of what one is searching for and the process by which one plans to locate it can be quite helpful in saving time and lessening frustration during the literature review process. Once that information is obtained, a suggestion would be to organize that information, which seems likely to be used in the manual, on to notecards. Be sure to write the source of the information on each card. This information on notecards can be easily shuffled later into the order in which it will appear in the manual. This can make composition of the manual a smoother process. A reference list can be started at this time, as well. Any images found during the literature review that might be incorporated into the manual should be copied as clearly as possible at that time. This serves as an important factor when scanning images into the manual.

Another recommendation is in reference to the professional review process, which served as a beneficial tool in gathering information on how the natural myopia improvement and prevention manual could be enhanced. As I began receiving comments and suggestions from the reviewers, I realized that there were varying opinions on what should be improved and how to improve it. For me, it was important not to lose sight of what my goals were, regarding the manual, so I could consciously utilize the comments and suggestions that were

most appropriate. I would recommend doing the same when using information gained from a professional review process.

Conclusions

An exploration into the field of natural myopia improvement and prevention has revealed that there are various lifestyle and environmental factors that can influence myopia development. A literature review also revealed natural, noninvasive strategies for myopia improvement and prevention. The creation of a natural myopia improvement and prevention manual has summarized this information for use by the lay individual, health care professionals, and other professionals interested in formulating research questions related to natural myopia improvement and prevention. A completed version of the manual is located in Appendix B.

For the U.S. to see a reduction in the number of cases of myopia, broad educational efforts need to be undertaken. The modern American dental industry has helped to greatly reduce tooth decay through educational prevention efforts and intervention strategies. As a health educator, I believe this same approach is needed to enhance and maintain visual health and refraction. Medical schools, optical professionals, and societal institutions need to investigate the efficacy of natural myopia improvement and prevention. It is also important for institutions, such as schools and businesses, to examine their environments and the types of visual stress they create for their students and employees. Work can be done to promote and apply prevention measures within these settings.

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APPENDIX A

MANUAL PROFESSIONAL REVIEWER EVALUATION FORM

April 2, 2000

Dear Reviewer,

Thank you for agreeing to review my natural myopia improvement and prevention manual. The attached manual evaluation form is designed to assist you with critiquing my manual, while providing an opportunity for you to comment and make suggestions regarding its content, readability, and format. Information gained from this evaluative process will be used to improve the quality of the manual.

The directions regarding use of the manual evaluation form are located on the top of the form. It is important to first read the evaluation criteria located on the manual evaluation sheet before proceeding to read through the copy of the manual. This is to ensure that you have a good understanding of the evaluation criteria before constructively reading through the manual. I encourage you to make comments and suggestions directly on the pages of the manual, as you read along. These, too, will be useful when revising the manual and may assist you in filling out the manual evaluation form.

Once you have completed reading and providing your written comments and suggestions in the manual, please fill out the manual evaluation form. I will contact you in the beginning of the week of April 10th to arrange a time to collect the copy of the manual issued to you, along with the completed manual evaluation form.

Again, I appreciate you taking the time to evaluate my natural myopia improvement and prevention manual. If you have any questions during this evaluation process, please call me at 608-785-6504.

Sincerely,

Christina Berg
UW-L MPH-CHE Graduate Student

Name of Peer Reviewer: _____

Date: _____

Natural Myopia Improvement and Prevention Manual Evaluation Form

Directions: This evaluation form is to be filled out once you have read through the manual. The form has been designed to assess the manual in relation to its content, readability, and format. Please select and circle the number to the right of each statement that best reflects your opinion, regarding the quality of each category. There is space provided below each statement to make written comments concerning your response.

Item code: Poor = 1, Average = 2, Good = 3, Excellent = 4

Content:

	<u>Poor</u>	<u>Average</u>	<u>Good</u>	<u>Excellent</u>
Organization of content	1	2	3	4
Usefulness of figures in manual	1	2	3	4
Usefulness of information presented in manual	1	2	3	4

Readability:

	<u>Poor</u>	<u>Average</u>	<u>Good</u>	<u>Excellent</u>
Clear sentence structure	1	2	3	4
Length of paragraphs	1	2	3	4
Key terms defined	1	2	3	4
Grammar	1	2	3	4
Spelling	1	2	3	4

Format:**Poor Average Good Excellent**

Citation usage

1 2 3 4

Size and style of print

1 2 3 4

Print quality

1 2 3 4

Use of headings

1 2 3 4

Placement of figures

1 2 3 4

Additional Comments:

Thank you again for taking the time to review my natural myopia
improvement and prevention manual and filling out this evaluation form!
Please know your comments and suggestions are appreciated.

APPENDIX B

**MYOPIA EDUCATION 101: A HOLISTIC JOURNEY TO
UNDERSTANDING MYOPIA DEVELOPMENT, NATURAL
IMPROVEMENT, AND PREVENTION STRATEGIES**

Myopia Education 101

**A Holistic Journey to Understanding Myopia
Development, Natural Improvement,
and Prevention Strategies**

by

Christina Berg

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INTRODUCTION

Nearly all humans develop the ability to experience the outer world through the sense of sight. In fact, it serves as people's primary sense (Kaplin, 1995). The Optometric Extension Program Foundation (1995) has found that two-thirds of all the information humans receive is visual. Approximately 90% of what humans learn enters through their eyes (Leviton, 1992). This information evidences the extreme importance of vision in learning, feeling, working, and playing. Imagine for a moment being without this visual sensory system. One's experience of the outer world would be quite different!

Unfortunately, not everybody has the visual ability to clearly experience objects in his or her outer world. People that develop the refractive error problem known as myopia, for example, are incapable of seeing clearly when viewing distant objects. This myopic condition is considered refractive because the condition relates to the eye's inability to properly bend light rays entering the eye. Another commonly known refractive error problem you may have heard of is hyperopia (farsightedness), which is the inability to see clearly when looking at near objects (Goodrich, 1996).

The conventional way of rectifying the myopic state is for optometrists to prescribe corrective lenses (contacts or glasses) that assist people to see clearly at a distance. More recently, some of these professionals are opting to provide laser refractive surgery to correct the myopia of their clients. My personal and professional journey has illustrated to me that conventional ways of approaching myopia do well at enabling people to function in the world but seem to do little in regards to

preventing myopia or helping individuals explore what other factors, besides genetics, could be influencing their myopic state.

This concept of preventing and even naturally improving myopia might be new to most. Up until my late teens, it was for me too. Half-way through my undergraduate degree I had already worked myself into a corrective lens prescription of a -.6.50 diopters in my right eye and a - 7.50 diopters in my left eye. Refractive visual problems, such as myopia, are measured in units called diopters. They represent the level of correction needed in corrective lenses to normalize vision (Goodrich, 1996).

Although I was excelling in college and enjoying the company of my friends at the time, I did not feel whole or truly connected to the world around me. Intentions made to mend this state of being started me on a healing journey that caused me to question my myopia. Researching the field of natural vision improvement and prevention eventually followed.

Natural vision improvement and prevention is based on the philosophy that lifestyle choices, various forms of physical, mental and emotional stress, unhealthy visual habits and thinking patterns, or any combination of these factors, can influence the development of myopia. Leviton (1992) explained that these factors not only impair clear distance vision but also can produce diverse problems in behavior, social adjustment, learning, and physical health.

Several natural vision improvement professionals, both past and present, oppose the conventional way of approaching myopia, stating that corrective lenses only mask the factors associated with influencing visual blur. They often compare corrective lenses to

crutches, which enable a person with myopia to see clearly at a distance but provide minimal therapeutic benefit. These same professionals view corrective lenses as debilitating, because they maintain, if not worsen, the degree of refractive error of the individual (Bates, 1940; Cinc, 1995; Goodrich, 1996; Kaplin, 1995; Liberman, 1995).

The reason corrective lenses seem to maintain or even worsen vision is they are thought to interfere with the bodymind's natural healing process. Specifically, they counteract the homeostatic response that continuously strives to maintain and achieve balance within the bodymind (Liberman, 1995). Any vision problems, including refractive error, are believed to be messages alerting the individual of imbalances within the bodymind (Goodrich, 1986). In a way, myopia can be viewed as a biofeedback mechanism that enables a person with myopia to realize the need for personal change and healing (Berne, 1994).

Dr. Robert Kaplin (1995), an optometrist who has been facilitating the natural healing process for people with myopia for several years, stated it is becoming evident in all medical fields that lifestyle habits effect the quality of an individual's health. In fact, "up to 70% of premature mortality in the United States is directly related to environmental and lifestyle factors that are potentially controllable by individuals and society" (Scutchfield & Keck, 1997, p. 6). It is even suggested that the 10% of people that acquire illnesses because of genetic predispositions can alter expression of those genes through lifestyle choices like stress reduction and diet (Chopra, 1995).

As Dr. Herbert Benson (1996) in his book, *Timeless Healing* addressed, there is an abundant amount of scientific research today that also illustrates the

interconnectedness of the physical, mental, emotional and spiritual dimensions of ourselves. The realization and recognition of this interconnection makes a difference in how health care providers and the general public approach health and healing. This belief is also at the root of myopia development and natural prevention and intervention strategies.

Purpose of Manual

The manual has been written to provide a synthesis of the literature, concerning natural myopia improvement and prevention for use by the lay individual and health care professionals. This educational tool is designed to assist the reader in better understanding factors that can influence myopia development and natural strategies for myopia improvement and prevention. Natural myopia improvement and prevention strategies presented in the manual are meant to provide options for individuals interested in improving their distance vision and preventing deterioration.

The manual has also been formulated to encourage professionals reading its content to explore the potential for research in this field. Although there were various case examples of natural vision improvement noted in the literature, clinical studies showing the effectiveness of natural myopia improvement and prevention were few. Therefore, the manual may serve well as a comprehensive reference for professionals interested in formulating research questions relating to natural myopia improvement and prevention.

Summary of Manual Content

The content of this manual includes information about factors that influence the development of myopia, as well as provides natural strategies for improvement and prevention. Case examples have been included of individuals who have improved and cured their myopia to illustrate application of natural myopia improvement strategies. This manual also contains information to educate its readers about human vision development and function, testing procedures for refractive error, optometric prescription reading tips, and conventional ways of correcting myopia, as with corrective lenses. This is done to assist the reader in understanding the factors that influence myopia development and natural strategies for improvement and prevention. An analysis of the topic, including implications for society and the individual, conclude the manual.

FOUNDATIONS

The Foundations section of this manual provides information regarding human vision development and function, testing procedures for refractive error, optometric prescription reading tips, and conventional ways of correcting myopia, as with corrective lenses. If you believe that you already have a good understanding of this kind of information, feel free to bypass this section, and move on to the next entitled, Factors That Influence the Development of Myopia, beginning on page 14.

Understanding the Visual Process and its Development

The process of vision is said to begin when rays of light enter the eye through the cornea, known as the "window of the eye". The cornea's purpose is to focus this light, while the pupil, the "black circle" in an individual's eye, controls the amount of light that enters the eye. After the light travels past the cornea and the pupil, the light then moves through the lens where it is further fine-tuned to focus properly on the retina. The lens is the clear structure located behind the pupil, whose primary function is to provide fine-tuning for focusing and reading. This is accomplished by the alteration of its shape by the ciliary muscle that encircles the lens of the eye. Therefore, it is the cornea, lens and pupil that specifically alter the rays of light entering the eye to produce a clear, sharp, unblurred image on the retina of the eye (Marieb, 1995). Figure 1 serves as visual reference regarding the structure of the eye.

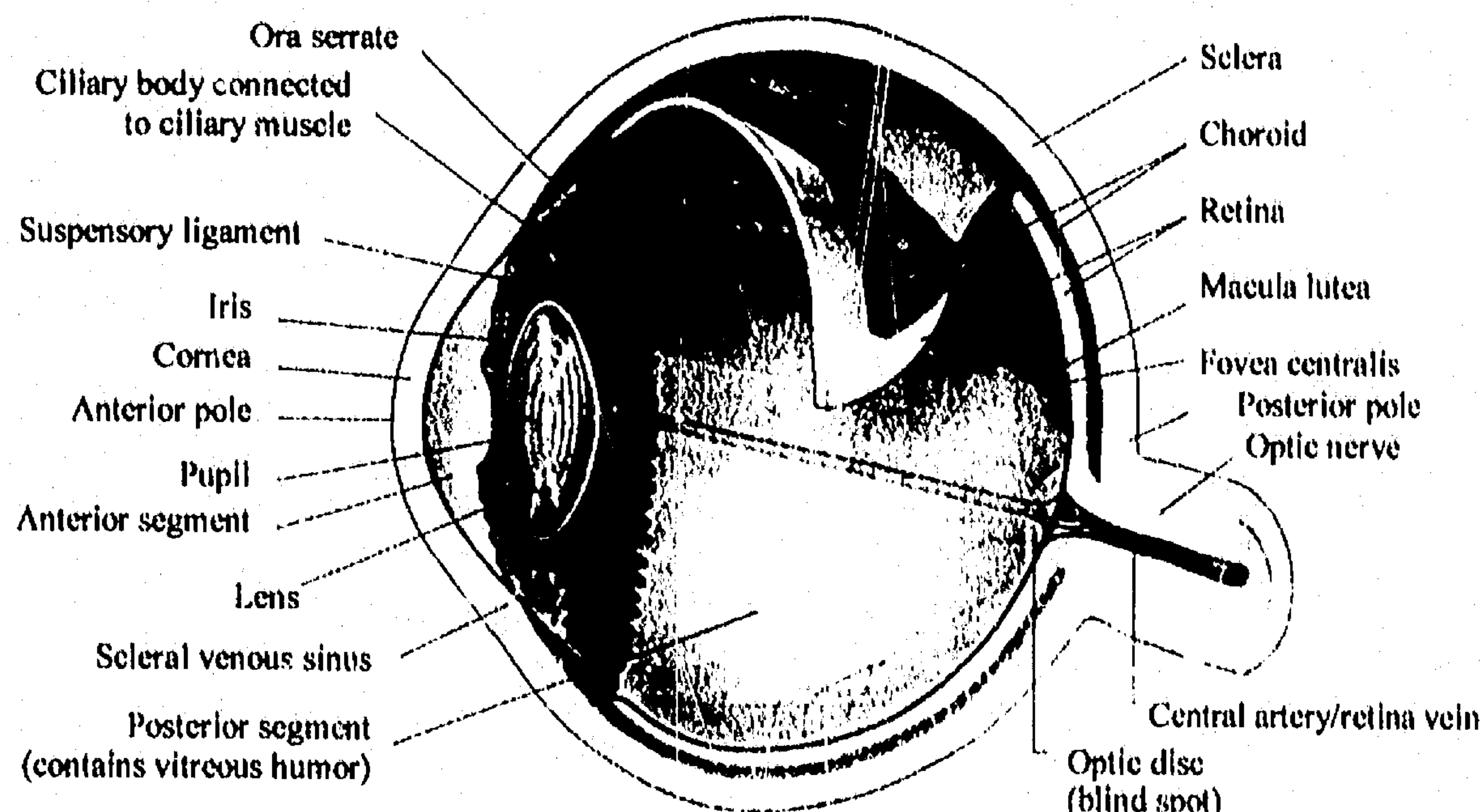


Figure 1. Internal structure of the eye. From Human Anatomy and Physiology (p.510), by E. Marieb, 1995, Redwood City, CA: The Benjamin Cummings Publishing Company. Copyright 1995 by The Benjamin Cummings Publishing Company.

The retina consists of fine nerve tissue that lines the inner two-thirds of the inside wall of the eye. Its primary purpose is to capture and transmit images. Cones (color and detail receptors) that help make color vision possible and rods (black and white receptors) are located in the retina. A necessary component for clear vision is that light must be focused precisely on the retina's fovea centralis (Greenfield, 1996). The fovea centralis is the point of keenest vision in the eye, located in the center of the macula lutea, a small area of the retina that is directly in-line with the lens of the eye. It has a higher number of cone receptor cells than the rest of the retina. When light enters and is cast directly on the fovea centralis, sharp, detailed images will result (Marieb, 1995).

The retina is what changes the light into millions of electrical impulses that are carried by the optic nerve, cross over at the optic chiasm and continue along the optic tract to the visual cortex (see Figure 2). This is where 75% of the electrical impulses go. The visual cortex decodes and analyzes these nerve signals and processes the shape, form, color, contrast, distance, depth and motion of an object. This information is disseminated to other parts of the cerebral cortex where it is used to adjust movements or to visually identify objects (Berne, 1994).

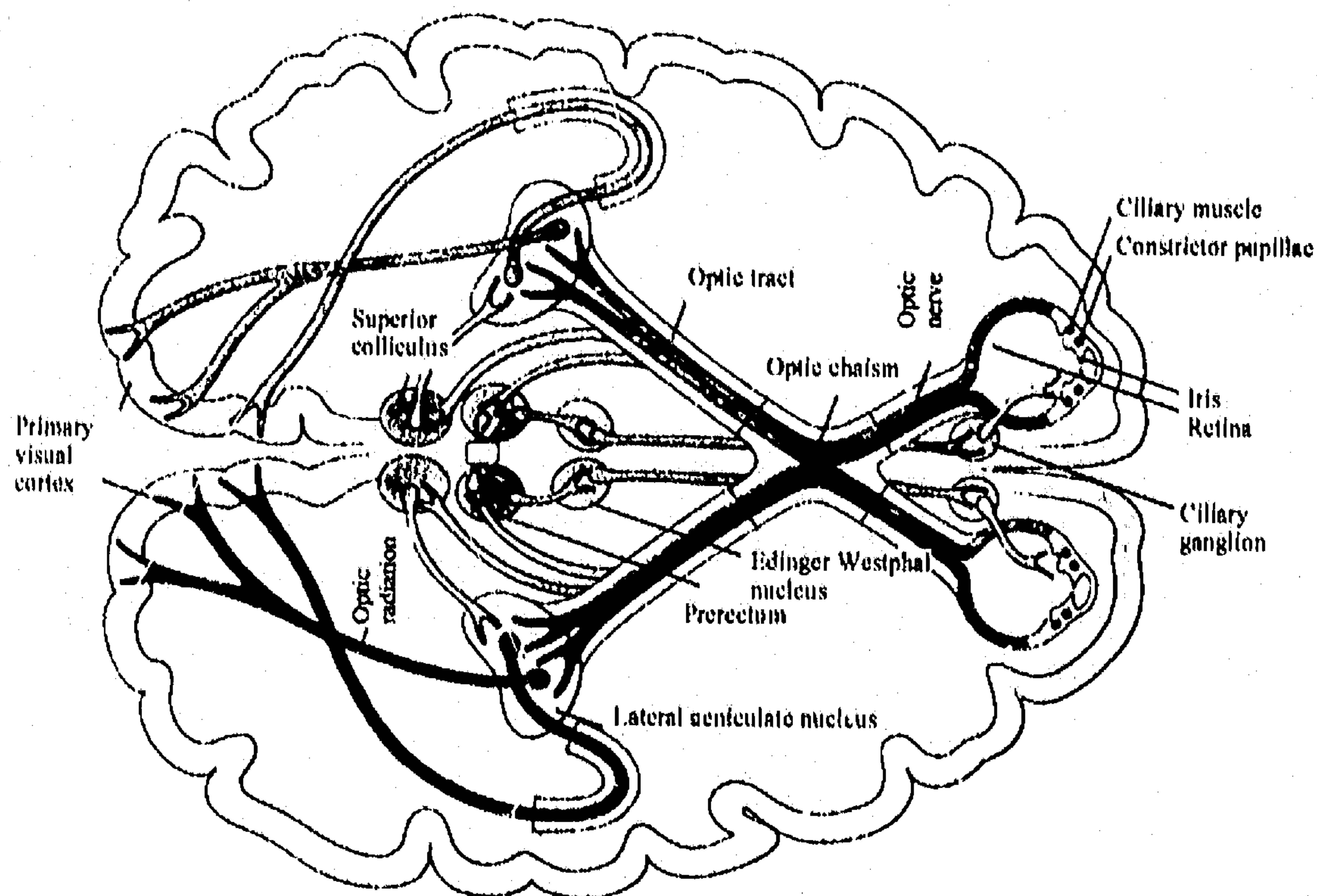


Figure 2. Brain's visual system. From The Human Mind Explained: An Owner's Guide to the Mysteries of the Mind (p. 93), by S. Greenfield, 1996, New York, NY: Henry Holt and Company. Copyright 1996 by Henry Holt and Company.

The other 25% of the electrical impulses of light are sent to the hypothalamus. This section of the brain is involved in regulating a person's endocrine system, which is the body system that includes internal organs that secrete hormones. It also regulates the sympathetic and parasympathetic nervous system, which controls an individual's growth, reproductive processes, circulatory system, breathing, emotions, metabolism, sleep, and physical functioning of the muscles of the eye. The sympathetic nervous system reacts, while the parasympathetic nervous system works to slow down and rejuvenate the body and mind (Berne, 1994).

Liberman (1995) describes the three major processes of the visual system in the following manner. The sensory process receives information, the integrative process compares visual input with past experiences and information, and the motor process produces finalized outcomes. All in all, clear vision is more encompassing than light rays falling directly on the fovea centralis of the retina. The essence of vision is cerebral, with 90% of the visual process taking place within the brain (Selby, 1987).

In order to develop normal visual function, people need visual experiences. In fact, the visual system of people seems to develop poorly when deprived of their sense of sight from birth. This visual system development involves not only the eyes and the brain but also the entire body. Normal perceptual development requires active body movements under visual guidance (Coren & Ward, 1989).

Therefore, people learn to see, just as they learn to ride a bike or walk, and it is an individual's perceptions of received stimulus from the human senses that influences how he or she sees both physically and mentally (Leviton, 1992). From birth, the human brain

receives visual images from the eyes, and it is the mind's job to give them meaning. For example, individuals that have regained their sight through surgery after being blind from birth need to learn how to see, even though their eyes have been altered to mechanically function correctly (Liberman, 1995).

Standard Testing Procedures for Refractive Error, Including Myopia

The standard way of explaining why a person with myopia cannot see distant objects is that light rays entering the eye do not come to a sharp focus precisely on the fovea centralis of the retina. Instead, they fall short of the retina, producing a blurred image (Gottlieb, 1982) (see Figure 3).

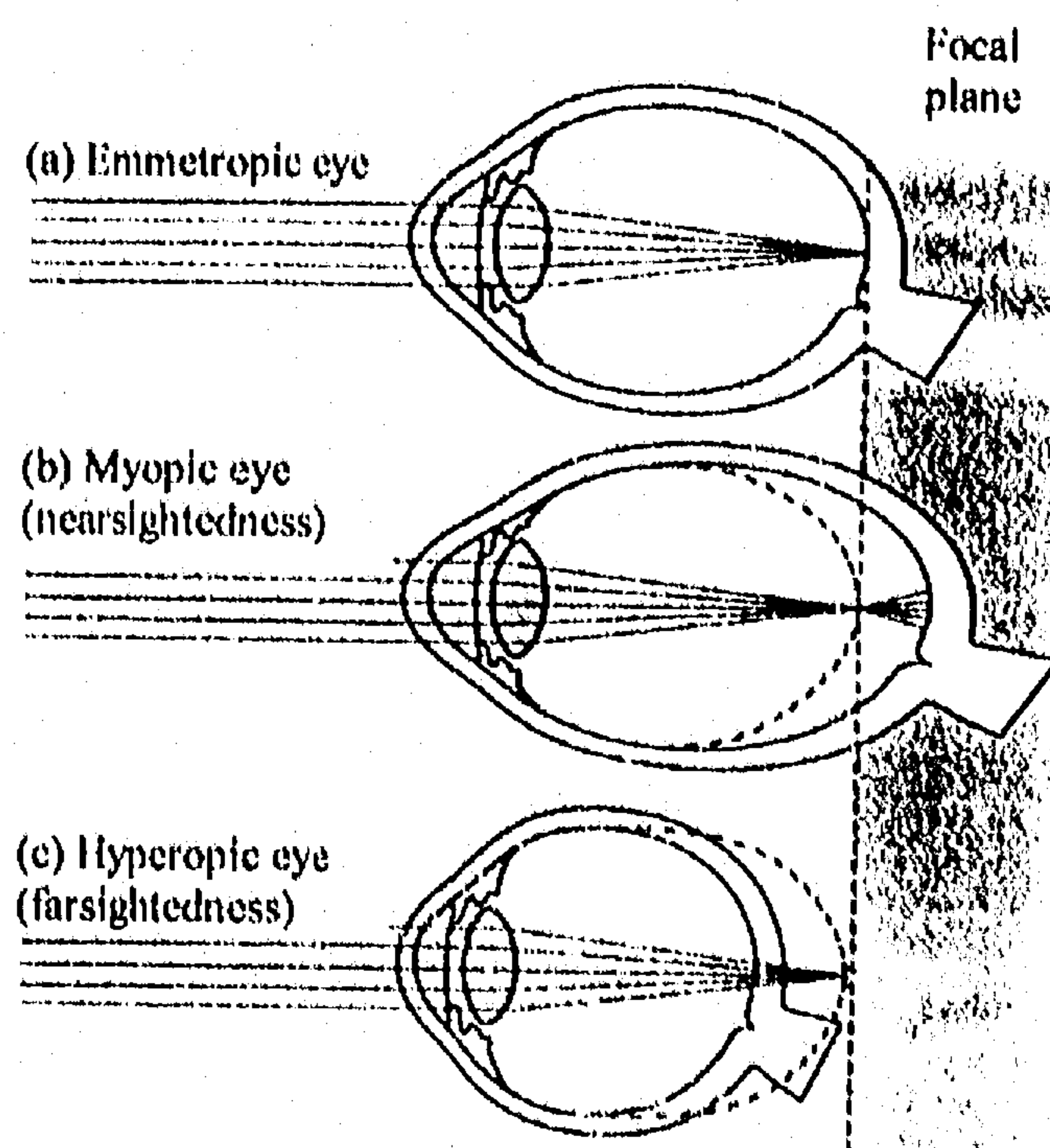


Figure 3. Problems of refraction. (a) In the emmetropic (normal) eye, light from both near and distant objects is focused properly on the retina. (b) In a myopic eye, light from a distant object is brought to a focal point before reaching the retina. (c) In the hyperopic eye, light from a near object is brought to a focal point behind (past) the retina. From Human Anatomy and Physiology (p. 518), by E. Marieb, 1995, Redwood City, CA: Benjamin Cummings Publishing. Copyright 1995 by The Benjamin Cummings Publishing.

There are two types of tests an optometrist performs during a regular eye examination to test for myopia - subjective and objective. Both of these examination procedures test for refractive error.

Subjective Testing Procedure

The Snellin chart is the lettered chart designed to subjectively evaluate visual refractive ability from a distance of twenty feet. The originator of the Snellin chart, Dr. Herman Snellin, based the standards for this testing procedure from the vision of one of his assistants, who he felt had good eyesight (Lieberman, 1995). An individual is supposed to accurately discern a 3/8-inch letter on the Snellin chart to illustrate if he or she has 20/20 vision. When someone has 20/20 vision, they can see clearly at twenty feet what should normally be seen at this distance. If an individual has 20/100 vision, for example, it means that an individual must be as close as 20 feet to see what a person with normal vision could see at 100 feet (Goodrich, 1996).

Objective Testing Procedure

The objective test is performed with the use of the retinoscope, which is an instrument used to measure the eyes' ability to focus light on the retina. With this device, the optometrist is again examining the person's ability to see 20/20 (Lieberman, 1995). The results of both the subjective and objective tests are used to determine, if necessary, a person's optometric prescription.

How to Read an Optometric Prescription

When a person receives a prescription for glasses from an optometrist, it is written numerically. The following example explains how to read such a prescription.

	SPH (sphere)	CYL (cylinder)	Axis
Right Eye (OD)	-3.50	-1.00	X15
Left Eye (OS)	-4.00	-1.50	X180

Figure 4. Example of a optometric prescription.

The number(s) in the column labeled 'sphere' box (See Figure 4) illustrates the strength of lens for either hyperopia or myopia. In other words, it is the amount of correction needed to see 20/20. A minus (-) before the number indicates myopia while a plus (+) before the number signifies hyperopia. A concave, minus lens is used to correct myopia, and a convex, plus lens is used to correct hyperopia.

The number(s) in the column labeled 'cylinder' box identifies a person's degree of astigmatism. Astigmatism is visual blur at a particular angle, produced by the warping of the cornea or lens of the eye. (Goodrich, 1996). The number can be written with either a plus or a minus sign. In the third column labeled 'axis', the number signifies the angle of a person's astigmatism on the cornea, or sometimes lens, of his or her eye.

For the right eye, the number in the 'sphere' box means the person is myopic in that eye. He or she would need a lens with a focusing strength of three and one half diopters. If the sphere numeral had been a plus three and a half diopters, the individual would be hyperopic in his or her right eye. As mentioned, the boxes marked 'cylinder' and 'axis' are used if there is an astigmatism correction. About 50% of all people that are myopic have astigmatism (TLC Laser Center, 1998). This individual has one diopter of

astigmatism correction at an angle (axis) of 25 in their right eye. Prescriptions for the right and left eye can be different.

FACTORS THAT INFLUENCE THE DEVELOPMENT OF MYOPIA

As illustrated previously, vision is an integrative process. This section will present factors that are believed to influence the development of the myopic state. They include: (a) extensive use of the eyes in nearpoint work situations, (b) staring, (c) emotional stress, (d) poor posture and spinal misalignment, (e) poor nutrition, (f) improper lighting, (g) unhealthy thinking and perceptual patterns, and (h) refractive error screening. The foundation for understanding these influencing factors will be set first by presenting the literature, regarding the role genetics and environmental factors play in the development of myopia.

Genetics vs. Environmental Factors

One hundred and thirty-two million people wear corrective lenses (glasses or contacts) in the U.S. (Kaplin, 1995). About one-in-four individuals are estimated to be myopic (Orfield, 1994). Hence, myopia is likely to be one of the most common ocular conditions encountered by optometrists.

Some research suggests that an individual's genetic disposition is associated with the development of myopia (Gwiazda, Thorn, Bauer, & Held, 1993; Zadnik, Satarrano, Mutti, Sholtz, & Adams, 1994). Hereditary research comparing monozygotic twins with dizygotic twins, supports the belief that myopia is associated with parental genetics (Kimura, 1965; Minkovitz et al., 1993; Sorsby, Sheridan, & Leary, 1962). These findings endorse the biological theory that asserts myopia is not preventable or curable (Angle & Wissmann, 1980).

What is intriguing, though, is that the U.S., as well as other countries, have witnessed an increase in the prevalence of myopia, especially in the school-aged population (Wang, Klein, Klein, & Moss, 1994; Selby, 1987). In fact, there seems to be a direct correlation between educational levels and the percentage of individuals that develop myopia (Angle & Wissmann, 1980; Goldenschmidt, 1968; Rosner & Belkin, 1987; Sperduto, Seigel, Roberts, & Rowland, 1983; Teasdale, Fuchs, & Goldschmidt, 1988; Zadnik & Mutti, 1987). The prevalence of myopia is often as high as 80% in students at the graduate level (Lieberman, 1995; Sherman, 1993).

A sharp increase in myopia for younger cohorts has been identified by various cross-sectional studies in the U.S. and elsewhere (Alsbirk, 1979; Garner, Owens, Kinnear, & Frith, 1999; Morgan, Speakman, & Grimshaw, 1975; National Eye Institute, 1996; Young, 1969). This research suggests the influence environmental and lifestyle factors appear to have on the development of myopia.

Young (1969), in his study of three generations of Eskimo families in Barrow, Alaska, found only 5% of myopia among grandparents or parents, yet 58% of the third generation of the same family unit developed myopia. Since heredity was constant, Young correlated environmental and lifestyle changes, including new regulations concerning school attendance and dietary patterns, to the increase in myopia among this third generation of youth.

Morgan, Speakman, and Grimshaw (1975) studied the Inuit in Canada 25 years ago and found the prevalence of myopia was far in excess of that of their elders and suggested that there was "...little, if any, genetic contribution to this 'epidemic' of

myopia in the young" (pg. 575). Alsbirk (1979) reached similar conclusions when he studied Eskimos in West Greenland. He also found a higher myopia correlation between siblings than between parents of offspring and considered this to be evidence for lifestyle and environmental influences relating to the development of myopia.

A longitudinal study was started in 1954 in Japan that reported the number of cases of myopia experienced by the population throughout a 25 year span of time. A two-to-three times increase in the cases of myopia in Japan was noted during this time frame. This increase was correlated to the rapid industrialization and westernization of the culture (Liberman, 1995). Similar findings relating increases in the prevalence of myopia and urbanization of place of residence were reported in studies done by Paritus, Sarafidou, Kotiopoulos, and Trichopoulos (1983), Garner, Owens, Kinnear, and Frith (1999) and Sperduto, Seigal, Roberts, and Rowland (1983).

A study by the National Eye Institute (1996) used offspring from the Framingham heart studies, which described the nature and extent of coronary heart disease within families. The researchers found a large prevalence of myopia in the United States for more recent birth cohorts. They also noted the familial association they discovered as being stronger between siblings closer in age and significantly less as the age difference increased. Factors influencing this difference were proposed to be environmental in nature.

Over all, the data supports the assertion that environmental and lifestyle influences can play a role in development of myopia. Even if myopia is programmed on a genetic basis, various environmental and lifestyle factors may very well disrupt the

process of vision and influence final refractive status (Kadnik, 1997; Kaplin, 1995; National Eye Institute, 1996).

Myopia development, therefore, seems to be multifactorial in nature, seemingly making prevention and intervention possible (Pruett, 1988). In light of this possibility, specific environmental and lifestyle factors discussed in the literature, that can influence the development of myopia, will be explored in this section. This summation of influencing factors begins with a brief overview of concepts related to stress and how stress can influence health and distance vision. The rationale for this being to assist the reader in better understanding the manual's content on influencing factors and strategies for natural myopia improvement and prevention, since the concepts related to stress are interwoven throughout this information.

Stress

According to Curtis and Detert (1981), the stress response is a series of reactions that occur in order to sustain a person's life. This biological and biochemical process begins in the brain and disperses through the autonomic nervous system that regulates the non-voluntary functions of the body (e.g., respiration). This in turn initiates the release of hormones that influence bodily functions, in order to prepare a person for a "fight or flight" response. The physiological response to stress means increased body metabolism, blood pressure, heart rate, breathing rate, cardiac output, oxygen consumption, blood glucose levels, muscular tension, and blood flow to the major muscles to enable a person to take action.

The conscious and unconscious response to stressors is what summons the stress response. Stressors are known as anything that can initiate the stress response. These stressors can be physical (such as a viral infection), emotional (such as repressed anger), mental (such as confusion), social (such as rejection), and spiritual (such as value reclarification) in nature. Stressors can challenge the human bodymind's internal sense of balance (Hafen & Hoeger, 1994).

Now stress certainly is not all bad. Positive stress, known as eustress, can keep life interesting, help people to maintain balance, and provide opportunities for growth (Curtis & Detert, 1981). Prolonged bouts of stress or having the stress response triggered repeatedly in a short period of time, though, can lead to distress (negative stress), which is known to create anxiety and disease in the body and mind. Distress puts strain on all dimensions of health and can effect body systems negatively (Balch & Balch, 1997). In fact, it is estimated that 75% to 90% of all visits to health care providers result from stress (Hafen & Hoeger, 1994).

Interestingly, research has found an association between a stressed lifestyle and the prevalence of myopia (Garner, Owens, Kinnear, & Frith, 1999; Lin et al., 1999). This may not seem surprising since individuals seem to be bombarded with many types of visual stressors, such as extensive use of the eyes in nearpoint work situations, psychological and emotional stress, poor nutrition, and inadequate lighting (Berne, 1994).

The first of a series of factors associated with myopia development discussed in this manual are extensive use of the eyes in a nearpoint work situation and mental stress. These factors will be followed by a presentation of how staring, emotional stress, poor

posture and spinal misalignment, poor nutrition, improper lighting, unhealthy thinking and perceptual patterns, and refractive error screening, all potential stressors, can influence the development of the myopic state.

Nearpoint Work and Mental Stress

The myopic shift in refractive error in the general population is known to occur throughout the education years (Dunphy, Stoll, & King, 1968; Saunders, 1981). Occurrence of myopia remains fairly stable over the first few years of life but shows an increase through childhood into young adulthood. This increase is seen at about the same time children begin school, potentially linking nearpoint work with myopia development (Whitmore, 1992).

Numerous researchers have talked about what appears to be a positive correlation between myopia, educational status, and nearwork habits (Angle & Wissmann, 1980; Garner, Owens, Kinnear, & Frith, 1999; Goss & Rainey, 1998; Mohan, Pakrasi, & Garg, 1988; Morgan, Speakman, & Grinshaw, 1975; National Eye Institute, 1996; O'Neal & Cannon, 1987; Ong & Cuiffreda, 1997; Paritus, Sarafidou, Kotiopoulos, & Trichopoulos, 1983; Sperduto, Seigal, Roberts, & Rowland, 1983; Wallman, 1994; Richler & Bear, 1980; Wong, Coggon, Cruddas, & Hwang, 1993; Young, 1969). Young (1963, 1961) showed that myopia can be induced in growing animals confined to small visual spaces, representing a nearpoint work situation. He found the greater amount of time spent in this condition produced greater degrees of myopia.

People today use near vision at work and play more than ever before. According to the Optometric Extension Program Foundation (1993), individuals now read three

times the number of books. Interestingly, individuals with myopia have been shown to spend more time reading than non-myopics (Angle & Wissmann, 1978; Angle & Wissmann, 1980; Jensen, 1991). The use of computers, video games, and television have engaged a growing number of individuals in prolonged, near vision tasks in artificial lighting situations. This heavy nearpoint usage is often accompanied by mental stress and time constraints (Gallop, 1994).

Van Alphen (1961) proposed from his research in the early 1960's that the stress associated with studying for exams, accompanied by nearwork, could be a contributing factor in regards to the development of myopia during the school years. Many professionals believe that people that develop myopia create mental tension by striving to achieve in the world of academia and work (Bates, 1940; Berne, 1994; Goodrich, 1996; Huxley, 1942; Kaplin, 1995; Leviton, 1992; Liberman, 1995; Selby, 1987; Quackenbush, 1997). Therefore, it is not surprising that myopic individuals tend to be achievers, scoring higher on college exams, having higher grade point averages, and are more represented in honors programs than non-myopics (Kaplin, 1995).

The Physiological Connection between Nearpoint Work and Myopia Development

There are several theories postulating why extensive nearpoint work may lead to the development and progression of myopia. As previously mentioned, the standard way of explaining why a myopic cannot see distant objects is that light rays entering the eye do not come to a sharp focus precisely on the fovea centralis of the retina. Instead, they fall short of the retina, producing a blurred image. The most commonly accepted reasons

among optometric professionals for this is the genetically-induced, elongated eyeball and distortion of the lens and cornea (Gottlieb, 1982).

More recently, data shows that the extrinsic eye muscles can elongate the eye (see Figure 5), influencing refraction by increasing the vitreous pressure within the eyeball, pulling the eye out-of-shape or by warping the cornea (Kaplin, 1995; Liberman, 1995). The extrinsic eye muscles are the six eye muscles that control the movement of the eyeball. They also maintain the shape of the eyeball and hold it in the orbit. The vitreous fluid is the clear "gel-like" substance located inside the eye's cavity. It provides the spherical shape to the eye (Goodrich, 1996).

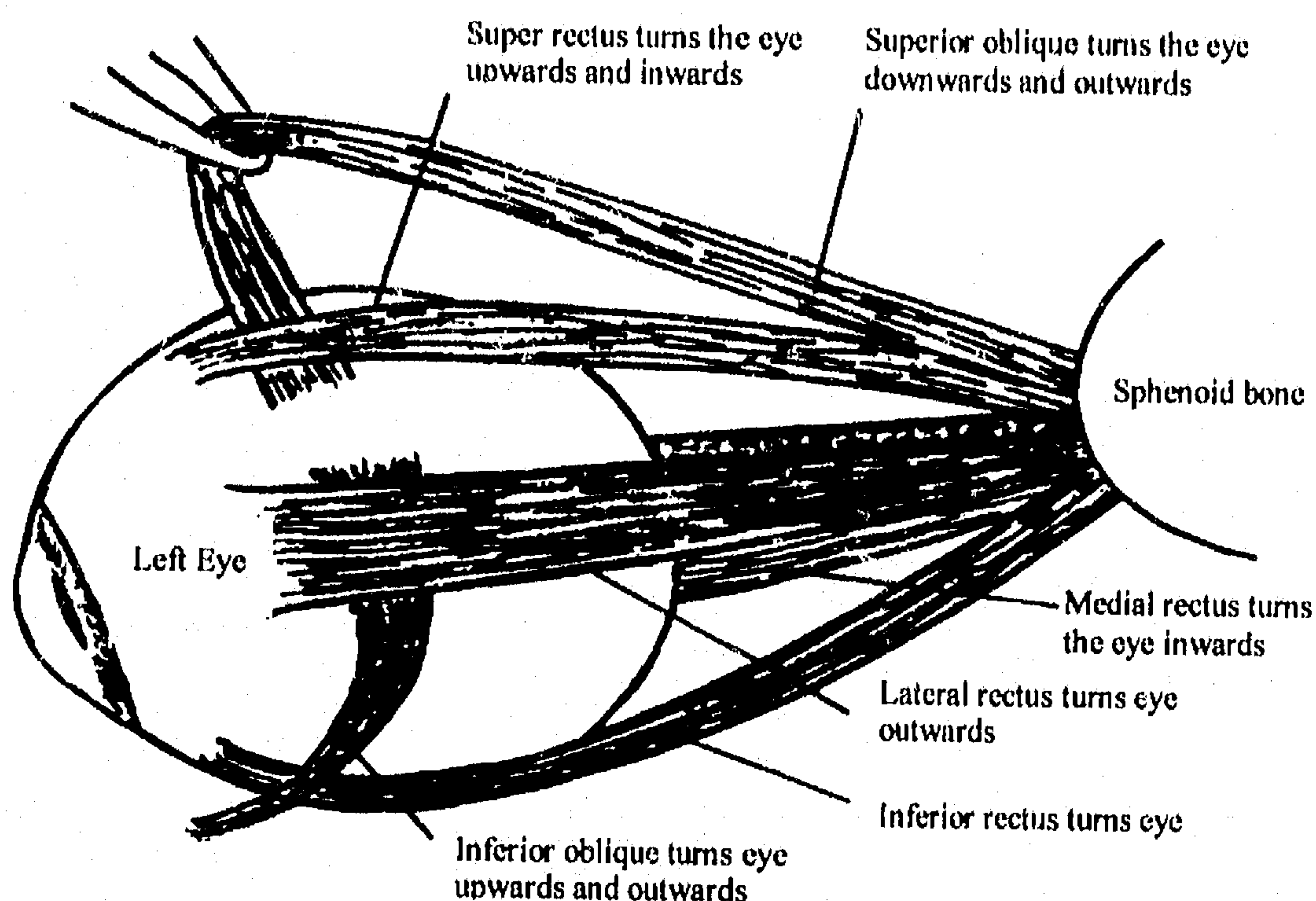


Figure 5. Six extrinsic eye muscles. From Help Your Child to Perfect Eyesight without Glasses (p.95), by J. Goodrich, 1996, Berkley, CA: Celestial Arts. Copyright 1996 by Celestial Arts.

When individuals engage in extensive nearpoint work, a high lag of accommodation, the ability of the eye to change focus from distant to near objects during nearwork, occurs that seems to contribute to the development and progression of myopia (Goss & Rainey, 1999; Goss & Wickham, 1995; Jiang & White, 1999; Ong & Cuiffreda, 1997; Rosenfield, 1994). Static eye muscle load is often required to keep focused on close up work with little movement for long periods of time (Godnig & Hacunda, 1990). This tensing of the extrinsic eye muscles, because of nearpoint work, and potentially mental stress, effects refraction by increasing the vitreous pressure within the eyeball, pulling the eye out of shape (Angle & Wissmann, 1980; Goss & Wickham, 1995; Greene, 1980; Kaplin, 1995; Liberman, 1995; Pruett, 1988). Pruett also discussed research studies that showed that the vitreous pressure (intraocular pressure) is higher in the myopic eye. He provided an overview in his article, *Progressive Myopia and Intraocular Pressure: What Is the Linkage?*, of research confirming that the inclined position of the body and head, often associated with reading and writing, seems to produce an increase in intraocular pressure, as can the simple, horizontal eye movements that occur while reading and writing.

Another theory regarding nearwork and myopia development involves the ciliary muscles of the eye. As mentioned previously, the ciliary muscle of the eye encircles the lens of the eye. When the ciliary muscles of the eyes become tense, they alter the shape of the inner lens so that a person can see objects up-close. When the ciliary muscles relax, the lens flattens so that an individual can see objects in the distance (Goodrich, 1996). Constant nearpoint work, such as reading and computer work, can also cause the

ciliary muscles to be in constant contraction to maintain close-up focus, thus inducing myopia (Kaplin, 1995).

Prolonged nearpoint work and mental stress has also been known to produce muscular tension in the neck and shoulders, cutting off the oxygen-carrying blood supply to the brain and visual system. This too can create tension in the eye muscles themselves, and as chronic muscular eye tension persists, so does the chances of one developing myopia (Bates, 1940, Gottlieb, 1982; Kaplin, 1995).

Myopia, therefore, can be produced by a combination of nearpoint work and mental stress that creates tension in the bodymind and eyes, eventually influencing the loss of one's distance focusing ability (Selby, 1987). As Godnig and Hacunda (1990) explained, humans have created a society where people now engage in prolonged use of their eyes for close-up work. This is especially true for individuals who use computers for work and play. The reality, though, is that the human visual system is not designed for constant, close-up viewing. As Sherman (1993) stated, using the eyes for extensive nearpoint work is biologically unacceptable and often results in the development of myopia.

Staring

As with nearpoint work, staring puts stress on the visual system. Staring is the opposite of the natural, soft saccadic movements of the eye (Goodrich, 1996). The eye can move up to 70 times a second when building a complex image in the visual cortex (Cinc, 1995). Someone with normal vision will have his or her eye in constant motion, scanning the visual field. On the other hand, someone with a refractive error, like

myopia, will have slow and jerky saccadic movements. Normal sight is impossible without saccadic motion (Selby, 1987). A person with poor visual habits tries to stare at one point for an extended length of time in order to see it more clearly. They think looking "harder" will allow themselves to see better. However, this approach can tighten up the eye muscles that control accommodation of the lens and shape and move the eye, playing into the development of the myopic state (Lieberman, 1995).

Emotional Stress

Some professionals suggest emotional distress can influence the development of myopia (Bates, 1940; Berne, 1994; Goodrich, 1996; Huxley, 1942; Kaplin, 1995; Leviton, 1992; Lieberman, 1995; Selby, 1987; Quackenbush, 1997; Rotti & Yamamoto, 1986). Emotionally stressful experiences during the time an individual received corrective lenses may cause a person, consciously or unconsciously, to become disconnected with the outside world, blurring the experience out (Kaplin, 1995). Emotion produced by a single or by multiple traumatic events can produce such a response. Some examples of these kinds of events might include: abandonment, loss of love, the perception of not being loved, punishment, sexual and physical abuse, failure, death of a loved one, divorce, pressure at school or on the job, money problems, or having alcoholic parents.

People that develop myopia have a tendency to learn to respond to such emotional experiences by restricting emotional expression and/or withdrawing from the world instead of fully feeling the experience (Cinc, 1995; Kaplin, 1995; Lieberman, 1995). Hafen and Hoeger (1994) discussed that this inability to express emotions or the controlling of expression may lead to physical manifestations of stress and disease in the

body. For example, Emrika Padus (1986), author of the book, *The Complete Guide to Your Emotions and Your Health*, stated that a common characteristic of a cancer patient is nonexpression of emotion. These individuals have a tendency to suppress and conceal emotions such as anger, hurt, and hostility. If they do express such emotions, it usually occurs in an explosive manner, when it becomes impossible to hold them in any longer.

Unresolved and suppressed emotions effect general health, as well as visual health (Kaplin, 1995). Wilhelm Reich (1897-1957), a psychiatrist and biologist, believed that the suppression of natural feelings can result in chronic tension in the body, including the visual system (Goodrich, 1996). It is a common response that when people become afraid, they contract the body and become tense. This continual response to fear, though, can mean shallow breathing or the holding of one's breath, which leads to less oxygenated, blood flow to the visual system and detoxification of the blood that can effect all bodily functions including vision (Rotti & Yamamoto, 1986). In fact, sight problems are said to almost always be accompanied by consistent patterns of muscle tension. Common areas of tension for myopics include the eyes, forehead, jaw, neck, shoulders, abdomen and lower back (Cinc, 1995; Goodrich, 1996).

Teerguarden (1991) stated that emotions are a natural human response and serve a homeostatic function, in order to maintain and foster balance in the body and mind. Yet, generally, someone with myopia thinks rather than feels to avoid discomfort, pain, and yes, even joy and love (Goodrich, 1996; Kaplin, 1995; Liberman, 1995). Teerguarden explained that people frequently suppress their feelings, because they fear the intensity of the unpleasurable emotions or hurting another. People often suppress pleasurable

feelings like love, allowing themselves not to fully engage, for fear the emotion will soon wane and pain will follow.

Over all, some professionals have witnessed that individuals with myopia tend to control their emotions and dislike not being in control. These same individuals seem to explain or figure things out rather than express their feelings. The degree of these responses often relates to one's degree of myopia (Goodrich, 1996; Kaplin, 1995; Liberman, 1995).

Poor Posture and Spinal Misalignment

Improper posture can influence the development of refractive error as well. Myopics tend to have a forward slouch and downward gaze. People often engage in reading in this slouched, body posture (Leviton, 1992). Blood congests in the shoulder and neck region of an individual because of this posturing, making it more difficult for the blood to circulate freely through the neck to feed the parts of the visual system (Rotti & Yamamoto, 1986).

Improper posture, especially from slouching forward, can also initiate spinal misalignment. This misalignment is crucial because one of the two major arteries that carry the blood supply to the brain and eyes runs through the transverse processes of the upper six cervical vertebra (Jenkins, 1998). It is also important to note that the vertebrae of the spinal column relate to different body systems. Misalignment can lead to neuro-dysfunction of these systems, which directly and indirectly effects the visual system (Rotti & Yamamoto, 1986).

Poor Nutrition

The literature also suggests that poor nutrition can induce an internal stress response and negatively influence the function of body systems, including the visual system. For example, if good nutritional habits are not adhered to, the inner cells of the lens often die, effecting its ability to shape and bend light properly (Selby, 1987). Gottleib (1982) discussed a cross-sectional study in his article, *Neuropsychology of Myopia*, that indicated myopia was less prevalent in cultures that maintained their traditional diets. General malnutrition has been shown to be associated with the higher incidences of myopia by investigators. Mc Laren (1960) found a much higher incidence of myopia in an African tribe during a two year famine compared to children of a neighboring tribe who were not undernourished. Halasa (1964) discovered similar findings that are reported in his research article, *The Refractive State of Malnourished Children*.

There is evidence linking childhood deficiencies of calcium and vitamin D to myopia, because these minerals work together to maintain the vitreous pressure of the eyeball. When this pressure is out of balance, it creates elongation of the eyeball and can induce myopia (Baldwin, 1981; Cinc, 1995). Diets high in refined carbohydrates can also result in the deficiency of minerals and vitamins, which influences visual health (Goodrich, 1996). These vitamin and mineral deficiencies are often caused by ingesting chemically produced, preservative-laden, sugar-loaded, processed foods (Balch & Balch, 1997).

There also may be a link between stress and nutritional status. It seems the constant activation of the stress response can change nutritional requirements, causing people under stress to need more protein and vitamins and minerals (Hafen & Hoeger, 1994). Excessive alcohol and caffeine are also known to cause harm to the body and the visual system (Kaplin, 1995).

Improper Lighting

Just as poor nutrition seems to influence the bodymind and visual health, so can improper lighting. Light is a vital element, specifically for the hypothalamus, pineal gland and pituitary gland. These glands control the body's biological rhythms, metabolic and respiration rates, digestion, blood pressure, liver, kidney and pancreas functions, immune response, and even emotional states. And specific to refractive error, the hypothalamus influences the tensing and releasing of the eye muscles (Goodrich, 1986).

It seems that not a single cell in the body can escape the influence of light striking the eyes. The source of this light seems to have a major influence on the body. Natural sunlight is full-spectrum, meaning it contains all color frequencies (violet, blue, green, yellow, orange and red). This differs from artificial sources, such as incandescent or fluorescent bulbs, because they do not produce the full-spectrum or may emit too much of one color frequency (Leviton, 1992). According to light researcher, Dr. John Ott, long-term exposure to these light deficiencies can cause health problems. He showed that extended exposure to fluorescent lights leads to high body levels of metabolic hormones related to stress (Cinc, 1995). Earlier in this manual it was illustrated the role stress plays in the development of myopia.

Perception

Personal perceptions of the outer world can play a role in visual health, including distance vision. The human senses are what pick up stimuli from the outer world, and the perception of this data is based on prior experiences, learned values, and beliefs. It is thought that humans create their own reality by how they perceive the world around them and within them (Coren & Ward, 1989).

Recall that vision is ultimately constructed in the mind, and the bodymind connection appears to be very powerful. For example, studies have shown that if a person imagines terrible things happening in their life, the flow of blood to the heart decreases (Kaplin, 1995). Dr. Benson (1996), in his book *Timeless Healing*, presented numerous studies that illustrated how positive beliefs or expectations by patients, doctors, and caregivers can have a restorative influence on patient health. He also discussed studies that reflected the power of placebo, which he affirmed was more powerful than what was originally thought.

Chopra (1995) commented in his video, *Explorations of Consciousness: An Interview with Deepak Chopra*, humans are the end product of their own thoughts and perceptions of experiences. Mind is said to project itself as body. The above examples illustrate the effect thoughts and beliefs have on health. One's thought processes, may very well influence visual health and refraction (Kaplin, 1996).

Optical Examination Process (Refractive Error Screening)

Interestingly, literature regarding factors that influence the development of myopia suggests that the visual examination process itself and the conditions it is

conducted in can induce myopia (Selby, 1987). In reference to the Snellin Chart, vision improvement specialists question the use of black letters on a two-dimensional chart to test for visual refraction, skeptical of whether this procedure really measures how humans see in their daily lives. They also mention that the standard optometric exam takes place in a setting that does not even come close to the natural conditions under which vision is designed to operate (Lieberman, 1995; Selby, 1987).

It is important to note, as well, that the size of exam room can cause physiological changes in the visual system. Small narrow rooms induce more retinoscopic and subjective refraction (Sherman, 1993). Below is a story taken from optometrist and natural vision improvement specialist, Dr. Jacob Lieberman's (1995) book entitled, *Take off Your Glasses and See*, that may call into question the testing procedures for myopia:

Children know how little seeing clearly has to do with reading the eye chart. One day a young boy and his mother came to see me. A routine eye test had revealed the boy had a mild case of myopia. The boy's eye doctor had prescribed a pair of glasses and the mother was trying to decide whether to get them. During our conversation, I asked the boy to look out my window at the mountains on the far side of the valley, miles away. "How do they look?" I asked him. He replied, "I can see everything just fine. I just can't read those letters on the chart!" (p. 10)

Concluding Remarks Regarding Influences

In building the foundation for understanding and applying natural myopia improvement strategies, factors that can influence the development of myopia have been presented. The factors discussed include: (a) genetics, (b) excessive nearpoint work, (c) mental stress, (d) emotional stress, (e) poor posture and spinal misalignment, (f) poor

nutrition, (g) improper lighting, (h) perception of life's events, and (i) the refraction examination itself.

In concluding this section, two points need to be highlighted. First, as Quackenbush (1997) expressed, it is natural for vision to slightly fluctuate. Somedays one's vision might be blurrier because of periods of stress, fatigue or nutritional choices. Other days, when one is relaxed, nourished, and rested, vision may be clearer. Vision is even known to fluctuate throughout the day (Goodrich, 1996; Liberman, 1995). In other words, no person's vision, including distance vision, is perfect all the time.

Second, it is important to realize that one person's imbalances are not necessary another's. For example, an individual with myopia may have contributed unknowingly to his or her myopic state from extensive use of the eyes in a nearpoint work situation, while another might have experienced a traumatic event during his or her childhood that seems to correspond with the onset of myopia. Reasons for myopia development vary from person to person. This is especially important to recall when selecting the appropriate, natural strategies to improve the myopic state.

STRATEGIES FOR IMPROVING MYOPIA, INCLUDING IMPLICATIONS FOR PREVENTION

A depiction of strategies for improving the myopic state, based on the factors that influence myopia development, are presented in this section. This summation of strategies, based on an extensive literature review, include: (a) eating healthy, (b) exercising, (c) maintaining good posture, (d) using proper lighting, (e) reducing nearpoint work stress, (f) engaging in effortless doing, (g) decreasing body/mind tension, (h) inducing the relaxation response, (i) changing destructive perceptions and thinking patterns, (j) using exercises for visual system enhancement, (k) honoring emotions, (l) releasing suppressed emotions, and (m) utilizing guided imagery.

Information about transitional lens, clear flashes, and personal assessment will be discussed before presentation of strategies. Most of the natural improvement approaches mentioned in this section can be utilized as prevention strategies to maintain general health, as well as visual refraction. Please note that this section contains a good amount of information to process and potentially apply. Feel free to read through it as many times that seem necessary to understand and apply the concepts presented.

Transitional Lens

If you or somebody you know is attempting to improve their myopia, one of the first steps is to get a pair of transitional lenses from your optometrist. This is especially important if your refractive error is too great to allow you to function without corrective

lenses (Goodrich, 1996; Kaplin, 1995; Liberman, 1995). You can search out a behavioral optometrist if your own optometrist does not comply with your request. A behavioral optometrist is an optometric doctor who has obtained postgraduate education learning to implement visual strength and coordination programs, in an attempt to prevent and correct visual problems and enhance visual performance (Goodrich, 1996).

Transitional lenses allow the visual system room to improve. The goal, eventually, is to function without corrective lenses. Transitional glasses should correct vision to a blurry 20/40 prescription in both eyes, if necessary. As soon as you are seeing better, it is time to weaken them again. Goodrich (1996) suggested that glasses, rather than contacts, be used for this transitional process, because they can easily be taken off when performing eye exercises and other natural myopia improvement strategies, all of which are discussed later in this section. Liberman (1995) also stressed going without corrective lenses as much as possible, as you work on improving your myopic state.

Personal Assessment

Another important step, before embarking on this journey to improve your distance vision, involves personal assessment. This entails evaluating your lifestyle choices, environment, behaviors, beliefs, and fears. Kaplin (1995) expressed that awareness is the first step in changing habits, behaviors, and ways of perceiving. Berne (1994) commented that self-awareness for an individual trying to improve or correct their visual state has a powerful curative factor.

This personal assessment process can begin by writing down your thoughts and emotions in response to the question, "What was happening to you and around you at the

time you received your very first pair of glasses or contacts?" I suggest saving your responses to this question, as you continue to explore the influencing conditions that contributed to your myopic state. This information will come in handy when formulate the best natural myopia improvement plan for yourself, based on intervention strategies discussed later in this section. The following are sample responses to the assessment question from clients seeking vision improvement:

"We moved, and I had to change schools. It was very different from my last school, and I just didn't feel like I fit in" (Lieberman, 1995, p. 60).

"The beginning of myopia coincided with the time when my father abruptly and without explanation stopped coming to take me for weekend visitations" (Lieberman, 1995, p. 61).

"My mom was divorced when I was about three or four. The difficult part was when she remarried, I didn't like her new husband. It was a strange time, and that is when I got glasses" (Lieberman, 1995, p. 61).

"I was first prescribed glasses at age twenty-eight as I was studying to retake my Registered Nurse examinations. I had failed my first attempt and was very upset and disappointed. I saw myself as a failure academically" (Lieberman, 1995, p. 61).

"...the onset of Dolly's nearsightedness concurred with her parents divorced more than twenty years previously" (Kaplin, 1995, p. 83).

The second part of the awareness process involves reviewing the following factors that can influence myopia development: (a) nearpoint work and mental stress, (b) emotional stress, (c) poor posture and spinal misalignment, (d) poor nutrition, (e) improper lighting, and (f) personal perception and thinking patterns. Next write down which of these factors, or combination of these factors, best relate to your own myopia development. Along with the your answers to the previous assessment question, keep

this assessment information handy when formulating the best action plan for natural myopia improvement. More discussion concerning the creation of this plan, pages 63-66, will follow the presentation of strategies for naturally improving and preventing myopia.

Feedback and Clear Flashes

While applying strategies for improving and healing myopia, it is recommended that you reflect on how you feel and think. This form of feedback can further assist you with the healing process and engagement in various treatment procedures (Selby, 1987).

It is also important to note that while performing natural myopia improvement strategies, many experience what are known as clear flashes. These flashes are moments of super clear sight without the aid of corrective lenses and can be emotionally shocking (Bates, 1940; Goodrich, 1996; Liberman, 1995). Cinc (1995) explained that, at first, these flashes are short, even lasting just seconds, but eventually they will last longer, and your overall vision will improve along with them.

Strategies for Natural Myopia Improvement and Prevention

With information about transitional lens, personal assessment, and clear flashes in mind, it is time to learn about the following natural myopia improvement and prevention strategies, as mentioned previously: (a) eating healthy, (b) exercising, (c) maintaining good posture, (d) using proper lighting, (e) engaging in effortless doing, (f) reducing nearpoint work stress, (g) decreasing body and mind tension, (h) inducing the relaxation response, (i) changing destructive perceptions and thinking patterns, (j) using exercises for visual system enhancement, (k) honoring emotions, (l) releasing suppressed emotions, and, (m) utilizing guided imagery.

Eat Healthy

The first natural myopia improvement and prevention strategy presented concerns personal eating habits. Food can either be medicine or poison. You can nourish the visual system and body by eating nutritious, whole, unprocessed foods and keeping the intestines clean to insure the best possible nutrient absorption (Balch & Balch, 1997). General rules of a cardiovascular diet apply to the improvement and maintenance of vision, which includes a low fat, low salt, high fiber diet that is abundant in fresh fruits and vegetables (Selby, 1987).

It is best to eliminate sugar, white flour and caffeine from your diet and replace them with foods rich in vitamins and minerals. Consuming foods that contain Vitamin A and protein are important, because the light absorbing retinal pigment is composed of these nutrients. They are constantly being used up when images are formed. Vitamin A, which is abundant in yellow and yellow-orange foods like carrots and cantaloupe, also supports the health of the cornea and retina. The B Vitamins support intracellular metabolism and normal vision. Vitamin C helps maintain the intraocular pressure of the eye. Zinc prevents retinal detachment (Balch & Balch, 1997).

A book recommended to assist with understanding the principles of holistic nutrition is *Prescription for Nutritional Healing* by Dr. James Balch and Phyllis Balch. This text explains what nutrients humans need to improve and maintain health, while illustrating how you can prevent disease through applying sound nutrition principles. Important information on natural food supplements, herbs, and products that improve nutrient activity are also presented.

Exercise

Exercise can be used to reduce stress and your physiological reactions to stress that play a role in the development of myopia (Kaplin, 1995). Exercise is known to improve your ability to cope with stress and can bring on a general feeling of well-being (Curtis & Detert, 1981). The visual system benefits from exercise because such activity causes the circulation of oxygen-rich blood throughout the body, including the brain and eyes. Exercise also removes toxins from the body, which benefits the functional capacity of the body, as well as the visual system (Balch & Balch, 1997).

Examples of physical activities to engage in are walking, running, swimming, aerobics, cross-country skiing, hiking, and biking. Remember to choose an activity you like and one that honors any physical limitations you might have. Hafen and Hoeger (1994) stated a standard recommendation is to exercise three to five times per week, between twenty to sixty minutes per session.

Maintain Good Posture

As previously discussed, proper body alignment is essential for healthy vision. It is advised that you should hold your head up, body upright and shoulders back to keep the neck and shoulders relaxed and to make sure the vertebrae of the spine stay properly aligned. This promotes adequate blood flow to the parts of the visual system located within the head region (Jenkins, 1998). It also allows your chest to open, increasing your capacity to breath deeply to oxygenate the blood that fuels the body and visual system (Rotti & Yamamoto, 1986). While reading, it may be wise to follow the example set by

Thomas Jefferson. He avoided leaning over his reading material by propping it up parallel to his face (Orfield, 1994).

Use Proper Lighting

The Optometric Extension Program Foundation (1993) explained that illumination on what you are doing should be three times brighter than the rest of the room. A person should make sure to expose him or herself to natural sunlight every day, in order to take in the full-spectrum of light frequencies that are so beneficial to good health (Goodrich, 1996). Offices, businesses and homeowners can purchase full-spectrum lights to receive the maximum benefit from their artificial lighting sources and to prevent the problems that are associated with the use of fluorescent and incandescent lights discussed previously (Lieberman, 1995).

Engage in Effortless Doing

An important suggestion regarding engagement in daily tasks, whether they involve nearpoint work or not, is to perform them in an effortless way. Two quotes from pioneers in the field of vision improvement summarize the concept of engaging in effortless doing, while participating in life events to enhance distance acuity and prevent deterioration. Adolph Huxley (1942), author of *A Brave New World* and *The Art of Seeing*, who cured himself of near blindness through natural visual improvement techniques, stated:

Whatever the art you wish to learn - whether it be acrobatics or violin playing, mental prayer or golf, acting, singing, dancing or whatever you will - there is one thing that every good teacher will always say: learn to do what you have to do without strain; work hard, but never under tension. (p. 37)

Dr. Bates (1940) made a similar comment when he said, "it is as natural for the eye to see as it is for the mind to acquire knowledge, and any effort in either case not only is useless but defeats the end in view" (p. 44). Therefore, whatever task or event you engage in, the key is to perform it without strenuous effort. This decreases the likelihood of a negative, stress response, effecting the bodymind and visual system (Lieberman, 1995).

Reduce Nearpoint Work Stress

The recommendations regarding engagement in nearpoint work situations are important to follow to improve and prevent myopia. It is suggested to look up and away from near tasks to distant objects regularly to reduce the chance of inducing myopia or fostering myopic progression. For example, individuals working on computers or reading should shift focus to distant images once every fifteen minutes. Remember to balance the use of your eyes for near and far usage and to perform tasks in an effortless way to eliminate bodymind tension (Optometric Extension Program Foundation, 1993). When reading, it is advised to position the material as far from the eyes as you can, propping up the material when possible (Rehm, 1981).

If a your work requires constant computer use, it is suggested that that you work 20 inches away from your monitor and that your line of sight be slightly below the horizontal line of vision. Feet should be positioned flat on the floor when working on the computer, which means you may need a footrest. Sitting in a chair that allows for good posture is also important for reducing visual stress and muscle tension (Godnig & Hacunda, 1990).

Decrease Bodymind Tension

Some suggested ways to decrease bodymind tension to enhance the functioning of the visual system are: (a) stretching, (b) listening to soft music, and (c) taking a walk outdoors in nature. Progressive relaxation is another tool that can be utilized to rid the body and mind of tension.

Progressive Relaxation

The technique known as progressive relaxation was created by a physician named Edmund Jacobson. He had the desire to help his patients alleviate their chronic muscle tension created from stress. The technique is rather simple and involves contracting and relaxing the muscles of the body to rid the bodymind of tension.

Progressive relaxation exercise. Start this exercise by finding a quiet place to lay down. Make sure you are comfortable, clothes are loose and arms and legs are not crossed. Once in a good position, begin by paying attention to your breath, as you breathe in and out. After a few breaths, concentrate on contracting and releasing the major muscle groups of the body, but also include the muscles of the face, forehead and eyes (Curtis & Detert, 1981). It is recommended to make a mental note of how the muscle feels when it is contracted and released. Release the contraction if you begin to experience any cramping or pain (Hafen & Hoeger, 1994).

Yawning and Massaging the Facial Pressure Points

Ideas for releasing the tension in the face, especially around the eyes are yawning and massaging specific facial pressure points for the eyes. Yawning simply involves

opening your mouth as wide as possible and holding the stretch for a few seconds (Goodrich, 1996).

Massaging the facial pressure points, as Liberman (1995) explained, involves keeping the eyes shut and massaging in a circular motion, lightly and slowly, the areas indicated below. Note these points may be or become sore, as you work to release the tension. Excessive pressure is not necessary when working with the points.

Facial pressure point massage. First, use the thumbs to massage the inside corners of the eyebrows. Next, move to the bridge of the nose, and use the thumb and index finger to massage this area. Then take the index and middle fingers, and place them together. Run these fingers from the edge of your nostrils to the middle of the cheekbones. Massage slightly under the cheekbones in this area of your face (Liberman, 1995). Gach (1990), in this book, *Acupressure's Potent Points: A Guide to Self-Care for Common Ailments*, also suggested massaging the occipital lobe area, which is located at the base of the skull in the back of the head, to relieve eye tension.

Induce the Relaxation Response

Although the activities stated above are good for releasing tension, there are specific techniques that can be used to induce the relaxation response to benefit the visual system. The relaxation response is the opposite of the stress response, because it decreases body metabolism, heart rate, breathing, blood pressure, oxygen consumption, and muscular tension (Benson, 1996). The relaxation response techniques discussed here are meditation and yoga. I would also review Dr. Herbert Benson's (1975) book, *The Relaxation Response*, if interested in learning more about the relaxation response and

ways to induce it. Remember, while engaging in any relaxation technique, do so without corrective lenses.

Meditation

As Guinness (1993) explained, meditation has been practiced in various regions of the world since ancient times. Chopra (1995) stated that meditation takes you to a level where thoughts, feelings, emotions, desires emerge. Meditation quiets the mind and slows down the body processes, producing the relaxation response. People have used this practice to cope with stress, relieve stress and tension in the bodymind, and seek a deeper understanding of life. The practice of meditation also can allow you to get in touch with a sense of self (Hafen & Hoeger, 1994).

Technique for meditating. When engaging in meditation, it is recommended that you find a quiet environment free of external distractions. A formal posture is often used to keep alert, yet relaxed. Many find it helpful to focus on one's own breathing when engaging in meditation, while others prefer to repeat silently and rhythmically a word or phrase in order to stay focused. The repetition of the word or phrase, which is also known as a mantra, should correspond to the breathing cycle. Examples of mantras could be words like "inner peace" and "love". Some examples of phrases for meditation are "I am balanced" or "My mind, body and spirit are in harmony". If you find your mind tends to wander during meditation, it is recommended that you acknowledge the thoughts that come, let them pass, and once again return to focusing on your breath or personal word or phrase. Some find it easier to meditate if they close their eyes, but it is not necessary (Hafen & Hoeger, 1994; Guinness, 1993).

Practicing meditation is illustrated to improve the relaxation response. It is recommended not to eat before meditating or consume stimulants like caffeine, because these factors make it more difficult to induce the relaxation response. Try to make time in your schedule to meditate about 15 to 20 minutes every day (Hafen & Hoeger, 1994; Guinness, 1993).

Today there are numerous books written on the topic of meditation. Here are some books I recommend that provide information about different facets of meditation: *A Path With Heart* by Jack Kornfield, *Breath by Breath: The Liberating Practice of Insight Meditation* by Larry Rosenberg, *The Power of Meditation and Prayer* by Larry Dossey, and *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life* by Jon Kabat-Zinn.

Yoga

Yoga involves a series of precise positions and rhythmic breathing that works to induce the relaxation response (Benson, 1975). This relaxation technique invigorates the mind and connects an individual who practices with a sense of self, while reducing muscular and mental tension, and increasing personal flexibility, endurance, and strength. (Hafen & Hoeger, 1994).

There are many books on the market to help you learn more about yoga. One recommended reading is, *Yoga: The Iyengar Way* by Silva Mehta and Shyam Mehta. Another suggestion would be to find a good yoga instructor in your area of residence to learn the yoga poses from. Proper positioning of the body will prevent injury and maximize the effect of the yoga experience.

Change Destructive Perceptions and Thinking Patterns

Leviton (1992) stated, "present condition of the eyes reflects part of the mind's picture of how you saw part of your world and life" (p. 59). This statement refers to how an individual perceives reality and responds based on those perceptions. One opinion is that, "vision disturbances are your eyes expressing your doubts and fears" (Kaplin, 1995, p. 91). Fears and doubts can be transformed through viewing the world and yourself in a non-judgmental, compassionate way to create and maintain a healthy visual system (Kaplin, 1995).

Therefore, it may be necessary to access your "self talk" and ways of perceiving to heal and maintain your visual health, including visual refraction. Changing your thinking patterns to be positive, supportive, and nonjudgmental in nature can be accomplished. Affirmations can be utilized to successfully modify thinking, consciously and deliberately, through the constant repetition of a positive, present tense intention or phrase (Kaplin, 1995; Leviton, 1992). As Benson (1996) stated, "the top-down repetition of these healthy messages becomes a part of your internal dialogue, a theme that changes your belief system and rewires your brain" (p. 276). Affirmations can either be repeated out loud or to oneself. An example of an affirmation could be, "I think positively".

Consciously observing personal conversations with others and with yourself is also another way to change destructive perceptions and thinking patterns. It is suggested to listen to the words that you use, and note how they describe you and situations. Assess if they are positive or negative in nature. With this information you can make a

conscious effort to use more positive, supportive, constructive language in conversations (Hafen & Hoeger, 1994).

Use Exercises for Visual System Enhancement

Muscle tone, strength, coordination, and deep breathing come about through exercise, awareness of movement, and integration of mental and physiological functioning. As with the body, the eyes also respond to this increased attention (Selby, 1987). This section presents exercises that, if used regularly, can enhance visual system function, including distance vision, and help prevent the onset of myopia. All these exercises should be performed without corrective lenses, while breathing fully and making efforts not to tense the body/mind.

Palming and Sunning Exercises

Exercises to relax, increase blood flow and oxygen inhalation, and decrease muscular rigidity in relation to the visual system include palming and sunning.

Palming. Lay down and rub your hands together for fifteen seconds. Cup your hands and place them over your closed eyes. The cupped hands will keep you from placing pressure on your eyeballs. Relax the body and mind by focusing on your breathing cycle, while engaging in this exercise (Bates, 1940; Goodrich, 1996; Liberman, 1995). Liberman (1995) explained that palming can be done at almost anytime, for as long and often as you like. He recommended starting out, though, by engaging in this exercise 20 times a day for one-minute segments.

Sunning. Sit or lay outside in the direct sunlight. Close your eyelids and allow the sun to fall on them. Make an effort to pay attention to your breathing and relax your

muscles. If necessary, use sunblock to protect your skin. This simple exercise can be both enjoyable and excellent for decreasing light sensitivity (Cinc, 1995; Goodrich, 1996).

Tracking the Ball, Finger Zooming, Tromboning, Eye Stretches Exercises 1-2, Beaded String, and Thumb Fusion Exercises

Exercises that strengthen the eyes' ability to accommodate, facilitate eye teaming, improve image fusion, release eye muscle tension, and increase blood flow within the visual system include: (a) tracking the ball, (b) finger zooming, (c) tromboning, (d) eye stretches, (e) beaded string, and (f) thumb fusion. Eye teaming refers to how the eyes work together to perform visual tasks. This is also known as binocular vision. Fusion refers to the eyes' ability to work together as a team. This process converges two images from each eye into one (Goodrich, 1996).

Tracking the ball. Suspend a tennis ball on a string so that it hangs about 16 inches from your eyes when lying or sitting. Swing the ball from left to right, and proceed to track it with your eyes. Track the ball for about 20 to 50 breaths then take a break, and palm your eyes (Cinc, 1995; Kaplin, 1995).

Finger zooming. Hold the index finger of your right hand, about six inches from your eyes. Position the index finger of your left hand beyond your right hand, about 12 inches from your eyes. Choose a third point of focus, which you can shift to beyond your second finger. With every full breath, shift your focus from one point to the next (Goodrich, 1996; Selby, 1987).

Tromboning. Attach a favorite picture to a ruler. This paddle will serve as a focal point. Next, cover one eye, and hold the paddle with the other hand out as far as possible at eye level. Slide it towards your eyes in two-inch intervals. Focus on the paddle at each interval. Once the paddle reaches the nose, reverse the process by moving the paddle outward in intervals of two inches. Remember to repeat this exercise with the eye that was covered (Goodrich, 1996).

Eye Stretches. With eyes open, look up and down as far as possible. Do this stretch for a few minutes. Then begin moving the eyes clockwise in a full circle, followed by moving them counter-clockwise in a full circle. Casually view the objects that you see when looking in these directions. (Goodrich, 1996; Leviton, 1992; Rotti & Yamamoto, 1986).

Beaded string. Take a string 10 feet long, and attach a bright bead every eight inches. Tie one end of the beaded-string to a wall or door. Sit in a chair, and pull the string tight, holding the end of the string to your nose. The string will be horizontal to the floor. Focus on the bead closest to the nose, and slowly move your focus down the beaded string, pausing at each bead until you reach the other end. Once you reach the end, start at the second bead from your nose, and work your way to the wall or door. Continue the pattern of moving up a bead after reaching the end of the string until you run out of beads. The same exercise can be used while isolating one eye by covering the other with a patch or your hand. If eyestrain begins, stop, palm the eyes, and then proceed (Goodrich, 1996; Leviton, 1992).

Thumb fusion. Hold arms straight in front of your body with your thumbs facing upward and knuckles touching at eye level. Focus on the space between your thumbs. At a point half way between your thumbs, you should see an illusionary, third thumb. Hold this image for a minute, making sure to breathe fully in and out. If fusion is poor, it will be very challenging to hold the illusionary image but continuation is encouraged to improve function in this capacity (Cine, 1995; Leviton, 1992; Rotti & Yamamoto, 1986). The same exercise can be performed with pencils instead of using thumbs (Guinness, 1993).

Edging, Trace the Lines, Dot to Dot, and Spiked Circle Exercises

Exercises to encourage eye shifting and discourage staring include: (a) edging, (b) trace the lines, (c) dot to dot, and (d) spiked circle.

Edging. Identify an object beyond your clear range of seeing. Trace the edges of the object clockwise with your eyes, then trace it counter-clockwise (Goodrich, 1996; Kaplin, 1995). Continue this exercise with new objects, but stop if your eyes become too fatigued. This exercise could be done while taking a walk outside, while you are viewing your surrounding environment.

Trace the lines. Take a piece of paper, and draw an abstract, curvy shape on it. Inside this shape, fill it with straight lines that are to connect with the border of the shape. The inside lines can intersect. Once completed, position this image just out of clear sight but at eye level. Next, follow the curved outer line of the image with your eyes. Then feel the mental shift as you change to the straight lines inside (Selby, 1987).

Dot to dot. Obtain a dot-to-dot children's book. Prop the book up to eye level and select a picture to work with. Position the book just out of clear sight. Connect the dots of the picture selected in sequential order with your eyes (Goodrich, 1996).

Spiked circle. Draw a circle with spikes coming from the edge of the circle outward, creating something that resembles a sun. The spiked circle should be large enough so that it fills a 8 1/2" by 11" sheet of paper. Position the drawing just out of clear sight but at eye level. Start by focusing your eyes on any one line that intersects the circle. Move your eyes randomly from that line to other spikes (Selby, 1987).

Honor Emotions

Another component of natural vision improvement and prevention involves the understanding of how emotions effect the bodymind and eyesight. Liberman (1995) suggested that it is best to acknowledge, verses resist, emotions to insure proper visual health. This acknowledgement means acceptance of any emotion without judging or immediately reacting to it. With this acknowledgment comes a realization that there is no need to be "in control" of your emotions. The key point is to stay with your emotion even if you do not like it (i.e., grief, anger, hurt). Try not to act quickly or irrationally but to experience and mindfully observe your emotions. It is from this honoring that full experience of emotions that your intuition will give insight as to the correct action regarding the emotion (Braza, 1997; Nelson, 1993).

Emotions can be life affirming, based on the way people deal with them (Hafen & Hoeger, 1994). Remember that emotions are a natural response to life that serve a homeostatic function, indicating change or that change is necessary. Emotional balance

can be fostered through involvement with people who are positive and know how to give and receive love (Teegarden, 1991).

Release Suppressed Emotions

As mentioned, suppressed emotions can play a role in the onset of myopia. For those embarking on the journey of natural myopia improvement, it may be necessary to examine old wounds that were inadequately dealt with in the past and change personal ways of approaching emotional expression (Goodrich, 1996). An immense amount of energy is needed to keep emotions suppressed (Nelson, 1993). Richard Leviton (1992), author of *Seven Steps to Better Vision*, believes that unless an individual frees blocked emotions, a vision improvement program is not likely to succeed.

The information gathered from your answer to the assessment question, "What was happening to you and around you at the time you received your very first pair of glasses or contacts?" can be useful in identifying suppressed emotions. Dr. Candace Pert (1997), in her book *Molecules of Emotion*, stated the need for individuals to explore personal fears, because often fear is the root of issues pertaining to suppression.

Various healing techniques can be utilized to release these suppressed emotions, in order to bring the bodymind back into balance. Approaches presented in this manual include: (a) syntonics - color therapy through the way of the eyes, (b) the life energy-based therapy of Reiki, (c) Selby's Emotional Release Exercise, and (d) forgiveness.

Remember to remove corrective lenses when engaging in these approaches. Also note that the suppression of memory and emotion can serve as a protective mechanism for the psyche. A person's unconscious self will know when the bodymind are ready to

release suppressed memories and emotions, so do not push yourself too hard (Selby, 1987). Trust that the release will come when one is ready.

Syntonics

Light and color therapy were very much a part of the healing culture during the ancient times of the Greeks, Egyptians and Hebrews (Berne, 1994). In more recent times, Liberman (1995) and other visual improvement professionals use specific frequencies of light (colors) to release emotional holding patterns, the very holding patterns that may affect your eyesight. This field of study is known as syntonio optometry and was created by an American scientist by the name of Dr. Harry Riley Spitler. In 1933, Dr. Spitler founded the College of Syntonio Optometry. His research showed that various colored lights projected into the eye directly onto the retina affected the autonomic nervous system and endocrine system, and produced healthful outcomes, including improved vision. The light is shined directly into the eyes because, as Dr. Spitler found, the eyes have the most direct connection to the autonomic nervous system and endocrine system via nerve pathways (Leviton, 1992).

The color combinations used to restore visual imbalances of the autonomic nervous system and endocrine system include: (a) green/blue (turquoise) - a parasympathetic stimulant used to reduce inflammation, (b) yellow/green (lime) - a slight sympathetic stimulant used to activate release, (c) yellow/red (orange) - a strong sympathetic stimulant used to deeply activate release, (d) blue/violet (indigo) - a deep parasympathetic stimulant used to reduce pain, and (e) red/violet (magenta) - a parasympathetic stimulant used to balance emotions (Berne, 1994; Kaplin, 1995).

If interested in using Syntonics, contact the College of Syntonic Optometry (717-387-0900) to locate a practitioner nearest to where you live. The College's website address is <http://www.syntonicphototherapy.com/index.htm>. Some reference books regarding light and color therapy are *Light, Medicine of the Future* by Jacob Liberman, and *Light Years Ahead: The Illustrated Guide to Full Spectrum and Colored Light in Mindbody Healing*, edited by Brian Breiling and Bethany Argisle.

Reiki

There are several alternative healing practices that utilize the universal life energy, present everywhere and in everything, to facilitate balance in the bodymind. One might have heard of this universal life energy also referred to as life force energy, ki, chi, and prana, in relation to different cultures and spiritual practices.

The methodology behind Reiki was discovered, or as some believe rediscovered, by Dr. Mikao Usui in the mid-1800's in Japan. Reiki practitioners channel the life force energy through their hands to dispel energy blockages in the bodies of their clients that are believed to be brought about by physical, emotional, mental, or spiritual stress. Even though Reiki practitioners are taught hand positionings that correspond to the body's chakra system, what seems to be important is the transference of life energy from one being to another. The intention for healing is what innately guides the healing process (Guinness, 1993).

Note that chakras are areas of organized life energy in the body that receive, assimilate, and transmit life energy. Each chakra corresponds to different body and glandular systems in the body (Adodea, 1996). Reiki helps to open, balance, and release

old memories and emotional perceptions that have been stored in the chakras and corresponding body systems (Guinness, 1993). If interested in using Reiki or other similar energy-based, hands on healing therapies, like Therapeutic Touch or Healing Touch, contact the American Holistic Nurses Association (1-800-278-2462) or your local massage therapist to locate a trustworthy practitioner in your area of residence. If interested in specifically learning more about Reiki, two books I recommend are *Reiki Fire* by Frank Arjava Petter and *Reiki: A Touch in Daylight* by Dr. Karyn Mitchell.

Selby's Emotional Release Exercise

Dr. John Selby is a psychologist who has, over the years, specialized in working with the emotional and environmental causes of physical disorders. As Selby (1987) has noted, myopia may be a habitual patterning that the mind maintains to defend against outside threats. With this exercise, Selby sets the stage for participant's to face the fears and perceptions of traumas, which caused one to blur out existence as a child or adult. The script below was taken from Selby's book, *The Visual Handbook: The Complete Guide to Seeing More Clearly*. For the best results, the script for this exercise should be read to individuals or tape-recorded and used by people working on exploring their emotional suppression in relation to their onset of myopia.

Find a comfortable place to sit or lie down, and relax for the next fifteen minutes, as we explore your eyesight and your emotions. Turn your attention to your breathing, so we can use changes in your breathing as a direct barometer of your internal responses to various suggestions. Notice the air going in and out of your nose, feel the sensation of the air as it rushes inside you and then is blown out again. Breathe effortlessly, with an honest observance of how you are feeling right now, as we approach your feelings about your eyesight. Without forethought, you see what word comes to mind as you consider the question, "Do I want to regain clear vision?" Notice your breathing and accept either a positive

or negative answer to the question. You will be doing this same exercise a number of times, and you can see how your feelings change as you grow.

Now let your mind wander into your past memories, as you look back to see what childhood experiences might have caused you to want to blur away the outside world. Breathe consciously and just see what the first memory is that pops into your head right now, and let that memory expand in any direction that naturally happens. Stay aware of your breathing, and breathe into any memories you are now experiencing. What faces did you want to blur away? What imaginary monsters were you afraid you might suddenly see out there somewhere? Stay with your breathing as the memories come effortlessly to you.

And now allow yourself to feel the fear, which you felt as a child or young adult. Be brave and finally face the dangers, which you ran away from through blurring them into nonexistence. Turn and face your danger. Exhale as you do so and feel your present strength. Do those people, those dangers, those fears and monsters still threaten you? Breathe and feel your strength. Exhale completely and push all your fears out of you. Now inhale a new feeling toward the outside world. Inhale and feel a new confidence in your body. Consciously choose to let go of past habits, which keep fear inside you. Let those old fears die. Let go of them. Breathe. Be open to whatever memories, insights or feelings, which begin to rise to the surface now. Breathe into whatever comes, let the feelings come up and out, so that the old wounds heal.

If you feel tears coming, allow them to release. If you feel anger, pound on the floor with your hands if you want, and vocalize your feelings. Let the pressure be released finally. Breathe. Face what scares you. Look directly at the danger and see if it still exists. Exhale and feel your strength as you look. Breathe out through the mouth. Let your deeper wisdom guide you to the memory, which needs healing. Keep your breathing expansive and in touch with your feelings. Accept whatever comes. Look at yourself. Be free of this inner blur zone. Focus on the point of your fear.

And now, when you are ready and finished with this session, you can slowly stretch. Allow your eyes to open when they want to, and spend a few moments reflecting on what you have just learned about yourself and your eyesight. (p. 119-123).

Forgiveness

The final approach discussed in this manual to assist with the release of suppressed emotion is forgiveness. Forgiveness often is a misunderstood concept, but

can be a very powerful tool for fostering inner peace and releasing emotions that can be associated with myopia development. Forgiveness can be viewed as a gift you give yourself (International Forgiveness Institute, 1998). The act of forgiveness allows you to stop playing the role of the victim, which can rob you of your peace of mind.

Forgiveness is an empowering choice that allows you to take back control of your life. Engaging in forgiveness serves as a tool to accept and let go of the past to heal emotional wounds (Ross, 1998).

Note that forgiveness does not depend on if the person that has wronged another is sorry for his or her actions. Nor does forgiveness condone, excuse, deny, or justify wrongful behavior (Andersen, 1995; International Forgiveness Institute, 1998). Forgiveness is for your own sake, and helps you honor the pain and emotions associated with hurtful situations, to bring your bodymind back to homeostasis. When inner peace is fostered, it is often easier to be at peace with those around you. Forgiveness is not about forgetting. It is about letting go. The key seems to be learning from the past and using it to help yourself and others (Ross, 1998).

As Braza (1997) stated, holding on to anger and resentment appears to lead to disharmony and unfinished business. Choosing not to forgive, though, can make you feel like you have power over those that have hurt you. This type of response actually can cause you to give your power away. As the saying goes, "Hanging on to resentment is allowing someone you despise to live rent free in your head" (Braza, 1997, p. 80). In other word, this allows yourself to be continually harmed by the person who has committed the unjust act (Ross, 1998).

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Process model of interpersonal forgiving. Forgiveness is a process that is not always a clear-cut, one-time decision and may take time (International Forgiveness Institute, 1998). To understand the process of forgiveness better, this manual presents the work of Dr. Robert Enright, an educational psychology professor at the University of Wisconsin – Madison, and founder of the International Forgiveness Institute. Enright and Reed (1998) have created a process model of interpersonal forgiving. There are four phases to the process model, but Enright and Reed (1998) are quick to note that people do not always follow the sequence of the model, nor do they experience all of the steps.

Phase one is the Uncovering Phase. In this phase, a person begins to realize that they have been emotionally harmed by someone's hurtful actions. Emotions, such as anger and hatred, can often manifest. As Enright and Reed explained, the healing begins when these emotions are honored and recognized.

In the second phase, the Decision Phase, the person begins to understand that to continuously think about the hurtful actions, or the perpetrator of those actions, seems to cause needless anguish. This is when the individual decides to use forgiveness as a healing strategy and makes a commitment to forgive. Complete forgiveness is not achieved during this phase, but the person makes a conscious decision not to retaliate.

The third phase is the Work Phase. During this phase of forgiveness a person begins to actively work towards forgiving the person who has hurt them. The emotional pain is still being processed at this time, to avoid passing on the pain through one's interactions with others. The person compassionately tries to understand the individual that has harmed them and why they may have committed the hurtful actions. This

process in no way condones, justifies or excuses the actions. Instead it provides insight that potentially allows one to offer goodwill towards the perpetrator. Forgiveness, though, does not necessarily mean reconciliation with the perpetrator, because issues of trust and safety need to be considered.

Phase four is the Outcome Phase. This is the phase when an individual notices emotional relief from the process of forgiving. They may find meaning regarding the pain they experienced that can lead to heightened compassion for self and others, as well as a new sense of purpose. It seems that through giving the gift of forgiveness, the forgiver is healed.

Forgiveness exercise. Concluding this segment on forgiveness is a forgiveness exercise from Dr. Steven Levine's book, *Healing into Life and Death*. It is another approach to assist with the process of forgiveness and releasing suppressed emotion. Dr. Levine is known for his work as a death educator, poet, teacher of meditation and facilitator of healing techniques. The exercise takes the participant through a journey, in which one works to forgive another, asks for forgiveness from another, and focuses on forgiving oneself. For the best results, this exercise should be read slowly to individuals working on emotional release and forgiveness. If this is not possible, the exercise can be read silently to oneself. Feel free to use whatever part of the content of the exercise that is appropriate for your own healing journey. Remember to engage in this exercise without corrective lenses.

Begin to reflect for a moment on what the word "forgiveness" might mean. What is forgiveness? What might it be to bring forgiveness into one's life, into one's mind? Begin by slowly bringing into your mind, into your heart, the

image of someone for who you have some resentment. Gently allow a picture, a feeling, a sense of them to gather there. Gently now invite them into your heart just for this moment. Notice whatever fear or anger may arise to limit or deny their entrance and soften gently all about it. No force. Just an experiment in truth, which invites a person in.

And silently in your heart say to this person, "I forgive you." Open to a sense of their presence and say, "I forgive you for whatever pain you may have caused me in the past, intentionally or unintentionally, through your works, your thoughts, your actions. However you may have caused me pain in the past, I forgive you." Feel for even a moment the spaciousness relating to that person with the possibility of forgiveness. Let go of those walls, those curtains of resentment, so that your heart may be free. So that your life may be lighter. "I forgive you for whatever you may have done that caused me pain, intentionally or unintentionally, through your actions, through your words, even through your thoughts, through whatever you did. Through whatever you didn't do. However the pain came to me through you, I forgive you. I forgive you." It is so painful to put someone out of your heart. Let go of that pain. Let them be touched for this moment at least with the warmth of your forgiveness. "I forgive you. I forgive you." Allow that person to just be there in the stillness, in the warmth and patience of the heart. Let them be forgiven. Let them be forgiven. Let the distance between you dissolve in mercy and compassion. Let it be so. Now, having finished so much business, dissolved in forgiveness, allow that being to go on their way. Not pushing or pulling them from the heart, but simply letting them be on their own way, touched by a blessing and the possibility of your forgiveness. And now gently, giving yourself whatever time is necessary, allow the other person to dissolve as you invite another in.

Now gently bring into your mind, into your heart, the image, the sense, of someone who has resentment for you. Someone whose heart is closed to you. Notice whatever limits their entrance and soften all about that hardness. Let it float. Mercifully invite them into your heart and say to them, "I ask your forgiveness." "I ask you to be let back into your heart. That you forgive me for whatever I may have done in the past that caused you pain, intentionally or unintentionally, through my words, my actions, even through my thoughts." "However I may have hurt you or injured you, whatever confusion, whatever fear of mine caused you pain, I ask your forgiveness."

And allow yourself to be touched by their forgiveness. Allow yourself to be forgiven. Allow yourself back into their heart. Have mercy on you. Have mercy on them. Allow them to forgive you. Feel their forgiveness touch you. Receive it. Draw it into your heart. "I ask your forgiveness for however I may have caused you pain in the past. Through my anger, through my lust, through my fear, my ignorance, my blindness, my doubt, my confusion. However I may

have caused you pain. I ask that you let me back into your heart. I ask for your forgiveness." Let it be. Allow yourself to be forgiven. If the mind attempts to block forgiveness with merciless indictments, recriminations, judgements, just see the nature of the unkind mind. See how merciless we are with ourselves. And let this unkind mind be touched by the warmth and patience of forgiveness. Let your heart touch this other heart so that it may receive forgiveness. So that it may feel whole again. Let it be so. Feel their forgiveness now as it touches you. If the mind pulls back, thinks it deserves to suffer, see this merciless mind. Let it sink into the heart. Allow yourself to be touched by the possibility of forgiveness. Receive the forgiveness. Let it be.

And now gently bid that person adieu and with a blessing let them be on their way, having even for a millisecond shared the one heart beyond the confusion of seemingly separate minds. And now gently turn to yourself in your own heart and say, "I forgive you," to yourself. Calling out to yourself in your heart, using your own first name, say "I forgive you," to you.

If the mind interposes with hard thoughts, such as that it is self-indulgent to forgive oneself, if it judges, if it touches you with anger and unkindness, just feel that hardness and let it soften at the edge. Let it be touched by forgiveness. Allow yourself back into your heart. Allow you to be forgiven by you. Let the world back into your heart. Allow yourself to be forgiven. Let forgiveness fill your whole body. Feel the warmth and care that wishes your own well-being. Seeing yourself as if you were your only child, let yourself be bathed by this mercy and kindness. Let yourself be loved. See your forgiveness forever awaiting your return to your heart. How unkind we are to ourselves. How little mercy. Let it go. Allow yourself to embrace yourself with forgiveness. Know that in this moment you are wholly and completely forgiven. Now it is up to you just to allow it in. See yourself in the infinitely compassionate eyes of the Buddha, in the sacred heart of Jesus, in the warm embrace of the Goddess. Let yourself be loved. Let yourself be love.

And now begin to share this miracle of forgiveness, of mercy and awareness. Let it extend out to all the people around you. Let all be touched by the power of forgiveness. All those beings who also have known such pain. Who have so often put themselves and others out of their hearts. Who have so often felt so isolated, so lost. Touch them with your forgiveness, with your mercy and loving kindness, that they too may be healed just as you wish to be. Feel the heart we all share filled with forgiveness so that we all might be whole. Let the mercy keep radiating outward until it encompasses the whole planet. The whole plant floating in your heart, in mercy, in loving kindness, in care.

May all sentient beings be freed of their suffering, of their anger, of their confusion, of their fear, of their doubt. May all beings know the joy of their true

nature. May all beings be free from suffering. Whole world floating in the heart. All beings freed of their suffering. All beings' hearts open, minds clear. All beings at peace. May we heal the world, touching it again and again with forgiveness. May we heal our hearts and the hearts of those we love by merging with forgiveness, by merging with peace. (p. 98-101)

Utilize Guided Imagery

Guided imagery is yet another tool that can be used to improve vision, in particular distance vision. This healing strategy works on the premise that the body is controlled by the mind. Interestingly, the mind does not know the difference between a real or imagined event. Therefore, one can work to reprogram the mind to have the body respond in a way one would like (Bolduc, 1992; Curtis & Detert, 1981).

When your defenses are down, there seems to be a tendency to be more open to the imagery used to reprogram the mind. The key, therefore, is to turn down the rational mind, because the rational mind serves as a gatekeeper of conscious thoughts. There is the capacity to slow down conscious thought when one is in a relaxed state. This makes it easier for the subconscious mind to accept the imagined images as experience. In a way, the subconscious mind can be seen as a garden, where one can plant thoughts to witness them grow into reality (Bolduc, 1992).

Guided Imagery Exercise. Below is an example of a guided imagery exercise specific for improving vision taken from Dr. Selby's (1987) book, *The Visual Handbook: The Complete Guide to Seeing More Clearly*. You can either have someone read this script to you, or you can make a tape recording of the script and play it back to yourself. Feel free to modify the script to meet your needs, or be creative and design a script. Dr. Selby suggests using this guided imagery exercise at least three times a week to see if you

can foster myopia improvement with this technique. Remember to engage in this exercise without corrective lenses.

Find a quite place to either lie down or sit correctly, and close your eyes. Allow your breathing to become calm, regular and deep, with a feeling of effortless movement of the air in and out of your lungs. Let your body relax step by step, as you notice tensions and let them relax, from your feet, to your legs, your pelvis, your back, your chest, your arms, your neck and your head.

Now that you are feeling very comfortable, relaxed and calm, imagine that you are sitting on a peaceful, warm beach. The sunlight is soft and soothing on your skin, and your breathing is free, deep and effortless. You have your eyes closed and can feel the warm, radiating sunlight on your closed lids, sending pulsating flows of energy directly into the deeper regions of your brain. This sensation brings an expansive, nurturing feeling throughout your body, as if the sun is providing you with vital healing energy. Your eye muscles relax step by step, as the sunlight penetrates through the tensions and melts the stress from your muscles.

Without opening your eyes, you imagine the surrounding beach and ocean view, which you have seen before closing your eyes. You remember seeing the blue of the sky, the white clouds overhead, the glistening sand, the inviting water with waves lapping gently on the soft sand. Your visual memory is perfectly clear and focused in the distance, and you enjoy the visualization of the safe, secure, welcoming landscape. Then you have the desire to sit up and look again at the beauty and peace, which surrounds you, so you sit up in your imagination and allow your eyes to open when they want to, without forcing the lids to open until they choose to. Without your glasses (contacts), you find that you can see quite perfectly, with a relaxed sensation in your eyes and a calm, joyful feeling in your chest and your breathing. With every inhalation, you take in the beauty, which surrounds you as you turn your head and look around. And with every exhalation, you feel your vitality and presence flowing out your eyes, letting the world around you know you are there.

In your imagination, you stand up now, feeling full of a new energy, which makes you eager to run along the beach. Your feet enjoy the cool of the wet sand along the shore. Your breathing is powerful and yet relaxed. And you look around you as you run gently along the shore, you can still see far into the distance with perfect clarity. You can feel that this new clarity is related to the feeling of peace, confidence and power that you have with every breath. You turn around and walk back to your towel, noticing where it is far in the distance. You

can see the book you were reading, your watch on the towel and other items very clearly from a considerable distance.

And then you see someone walking towards you. At first, you might feel apprehension and you find that your vision instantly becomes blurry. But you breathe into your habit of contracting and allow your eyesight to focus on the distance and see the person clearly. It is a person whom you find attractive and friendly, someone who is pleased to share your quiet peace with you. And you now continue with whatever you might imagine happening, until you feel ready to leave the fantasy and return to alert waking consciousness. (p. 114-115)

CREATING AN ACTION PLAN FOR NATURAL MYOPIA IMPROVEMENT AND PREVENTION SUCCESS

Creating an action plan for natural myopia improvement can help you organize personal endeavors, in order to increase distance acuity and bring the bodymind into balance. Such a plan can be created for those interested in preventing myopia as well.

With personal assessment information in hand, begin by selecting what strategies for natural myopia improvement and prevention meet your needs. A written action plan then can be created to indicate how you plan to incorporate the selected strategies into your daily life. Once this plan is formulated, make a plan to get started on it right away. A suggestion would be to post this plan up around your living residence, in the car and, if possible, at work, to serve as a constant reminder of what you are trying to accomplish.

Your new, custom-made plan will help provide direction and serve as a motivator to achieving success, in regards to natural myopia improvement and prevention. I also suggest finding other individuals, perhaps friends, to engage on this journey of natural myopia improvement and prevention with you. They can serve as a support system, to keep you focused on applying strategies indicated in your personal action plan.

Note that an action plan is somewhat different than creating goals. Goals are great for formulating ideas of what you want to accomplish, but a list of activities that you can do regularly will move you toward achievement of your goals.

Action Plan Example

An example of a natural myopia improvement plan is described below. This example is based on personal assessment information for a 26-year-old business manager. It is meant to help stimulate your thinking on developing an action plan.

Personal Assessment Information

Assessment question. "What was happening to you and around you at the time you received your first pair of glasses or contacts?"

Question answer. "It was my second year in college, and I was putting in long hours studying. There was a lot of reading and paper writing required of me, and I remember feeling overwhelmed quite frequently. My shoulders, neck and eyes always seemed tight.

During this time in my life I was also working at least 20 hours a week as a bookkeeper to pay tuition that semester. With all the work I was doing, I literally ate most of my meals 'on the go', grabbing quick bites from fast food joints and vending machines. My parents thought it was crazy when I told them I needed glasses, because neither of them ever had problems with their distance vision."

Factors that could have influenced myopia development. "I was constantly on the computer and reading for my classes, engaging in extensive nearpoint work. My bookkeeping job also had me working on the computer. Rarely did I allow myself time to breath, let alone relax. I never took the time to exercise. I remember pushing myself, almost to the point of stressing myself out. Late night study sessions were the norm. These seemed to be the only way for me to complete my coursework, because I had class

and worked during the day. Looking back, I also now realize how poor my posture was when working on the computer, or while reading and writing. Usually, I was slouched over when performing these tasks."

Formulation of an Action Plan to Improve Myopia

1. "I know my optometrist will not be open to what I am trying to achieve so I will make an appointment with another optometrist in town to discuss the possibility of getting transitional lens from him."
2. "My job requires me to be on the computer a lot, and I often have to read some financial reports. I plan to reduce nearpoint stress and maintain good posture by setting up my workstation to lessen visual stress, posting a sign by my computer to remind me to look away from the screen every fifteen minutes, and purchasing a stand to hold my papers at eye level when reading them."
3. "Since I spend so much time at work, I have decided to purchase full-spectrum lights to install in the office and at home."
4. "Even out of college I still have had a tendency to eat foods that are not so nutritious for me. I will make a conscious effort now to purchase and consume foods that benefit my general health and visual refraction."
5. "Regarding my exercise habits, I plan to at least go for a half-an-hour walk outside with a fellow co-worker three nights a week after work."
6. "I have always wanted to try yoga. Since it seems like a way to help me relax and alleviate the tension in my shoulders and neck, I plan to sign up for a yoga class offered through our wellness center at work. The class is two nights a week right

after work. This is perfect, because the yoga class will alternate with my walking engagements during the week."

7. "It is feasible for me to take time in the evenings, after supper, to practice the eye exercises for visual system enhancement. This can take the place of the hours of television I watch every night. Some of this time could also be used to hang out with my husband."

ANALYSIS OF TOPIC, INCLUDING IMPLICATIONS FOR SOCIETY AND THE INDIVIDUAL

My analysis of improving or curing myopia naturally has been a wonderful, yet challenging journey. The writing of this manual is a synopsis of several years of investigation and exploration. I embarked on this journey initially for personal reasons, but it has since become a mission to bring this information to the lay individual and health care professionals.

Most individuals accepted the diagnosis, as I once did, when the optometrist told them they needed to wear corrective lenses. There were no options given to explore what potential lifestyle habits, thought patterns and perceptions, emotional responses, environmental conditions, or any combination of these factors that could have initiated the symptom of visual blur.

Natural myopic improvement and prevention relates well to the current movement in society, in which more people are taking personal responsibility for their own health and healing. What is beginning to be better understood in the Western model of looking at health is that there is a dynamic relationship between the bodymind. This is an essential element in understanding myopia, its influencing factors and strategies for improvement and prevention. As long as the eyes are seen as isolated sensory organs, visual health appears only distantly related to physical, emotional, mental, and spiritual

health. Recall that the bodymind functions as an integrative whole, each system effecting the other.

As Bates (1940) stated, "the theory that errors of refraction are due to permanent deformations of the eyeball leads naturally to the conclusion that errors of refraction are permanent states and that normal refraction is a continuous condition" (p. 21). This seems not to be the case. This manual has postulated that certain physical, mental, emotional, spiritual, and environmental factors can play a role in the development and progression of myopia. There is the option to explore these factors and apply natural myopia improvement strategies to improve vision refractive error, to bring your bodymind back into balance. Myopia reduction is not just about healing your eyesight; it can also be viewed as an empowering journey that is also about healing your life!

Some scholars and philosophers, both past and present, say that people do not see things as they are, they see things from their view of reality. Opinions, ideas and beliefs are, in fact, illusions that construct an infinite reality into something that is finite. Every part of the body is reflective of the mind. Thoughts, beliefs, and emotions can either harm, or they can create and heal. It is important to explore these concepts to locate the root of what is influencing one's myopia and not to limit your healing potential because of the currently accepted beliefs.

People once thought it was impossible to run a mile under four minutes, and now that is the norm. We must challenge the belief that myopia is naturally incurable and not preventable. The first step is to increase awareness of the possibility of natural myopia improvement and prevention. This is not to say that this "bucking of the norms" will not

have its challenges. The obstacles to implementing this natural approach of treating refractive error can be both political and personal. Politically, there is money to be made in correction and refractive surgery (Kaplin, 1995). Personally, it can be difficult for people to accept the idea of natural myopia improvement and prevention, even with literature supporting how various physical, mental, emotional, spiritual, and environmental factors can influence myopia development and progression.

Corrective lenses and refractive laser surgery do serve their purpose, making it possible for people with myopia to function. However, these processes can be viewed as quick fixes that do not allow the natural balancing of the visual system to occur under optimal conditions. The natural balancing processes, though, takes time and involves personal examination, commitment, and effort to make responsible lifestyle and environmental changes.

For some, natural myopia improvement is not an option, because they simply do not know about it. For others, natural myopia improvement this is not appealing, choosing to use conventional ways to improve their myopia. Certainly, this is a personal choice. Engaging in the journey of healing one's vision involves, in some cases, major lifestyle changes and alternative approaches to thinking and feeling, just like in healing other chronic illnesses. I believe it is important, though, that people know there are natural options for improving and yes, even preventing myopia. The benefits of this healing journey can also be well worth it – balance, inner peace, increased energy, a sense of connectedness with surroundings and people, and improved distance vision!

For the U.S. to see a reduction in the number of cases of myopia and other vision problems, broad educational efforts need to be undertaken. The modern American dental industry has helped to greatly reduce tooth decay through educational prevention efforts and intervention strategies. As a health educator, I believe this same approach is needed to enhance and maintain visual health and refraction. Medical schools, optical professionals, and societal institutions need to investigate the efficacy of natural myopia improvement. It is also important for institutions, such as schools and businesses, to examine their environments and the types of visual stress they create for their students and employees. Work can be done to promote and apply prevention measures within these settings.

PERSONAL RECOMMENDATIONS

The number one recommendation I have for individuals who choose to embark on this journey of balancing the bodymind to improve their myopic state is not to take oneself too seriously. As the old saying goes, "Do not take life too seriously. You will never get out of it alive". For most, there will be "bumps along the healing road" that may be quite challenging physically, mentally, emotionally, and spiritually. It can shake the very foundation upon which you stand. Therefore, staying light-hearted about the healing process will allow you to enjoy the self-exploration that leads to a healthier, more balanced life.

I also realize this task of changing behaviors, perceptions, and environmental factors is not always easy. The most progress can come, though, when an individual sees the natural myopia improvement process as integrative in nature, involving the physical, emotional, mental, environmental, and spiritual dimensions of a person's health. An individual can work on exploring all these levels for the most success.

CASE EXAMPLES OF NATURAL VISION IMPROVEMENT

Case Example #1

Berne (1994) presented the following case example in his book, *Creating Your Personal Vision: A Mind-Body Guide for Better Eyesight*:

I am a 34-year-old woman who has worn lenses since the age of 12. My lens prescription had gradually increased over the years to -3.00 diopters in both eyes. My ophthalmologist's prognosis was that vision 'just continues to get worse with age and time.' I was tired of that answer. I knew there was a better one; I just hadn't found it yet.

At the age of 24, after spending 2 years enduring Western medicine's idea of curing cancer, from surgery and radiation to chemotherapy, I made a radical shift. I quit chemotherapy, moved to a new city, began acupuncture treatments, changed my diet (and eventually my entire life), and began healing. That was 10 years ago. Based on my own healing experience, I knew my ophthalmologist's prognosis was flawed. I strongly believed in the body's ability to heal and I believed that anything, no matter how severe, could shift. I also trusted that I could find the teacher I needed to help me change my vision. When two women in my women's group mentioned a new 'vision therapist' had moved to town, I knew immediately he was the one and I made an appointment. Three months later, I was no longer wearing lenses.

... vision, I learned, has little to do with the eyes and everything to do with the heart. Vision therapy became another journey of discovery. I was able to uncover events in my past that had caused my mind to put up blocks to good vision. I learned that my body reacted to those experiences by disengaging my right eye from my left so that they no longer functioned as a team. I learned that my inner voices, established as a child, kept my spirit caged, incapable of healthy self-expression of who I am and how I feel. I chose not to see at the age of 12 because there were things in my life I couldn't bear to see. Discovering abuse in my childhood was a necessary revelation for visual healing. I began believing that it was really OK to see. Eye muscle exercises helped my left eye

begin reacquaintance with my right eye so they could begin to work together again. Expressing the pain of my caged spirit began the reclamation of my creative self.

I couldn't force these things to happen, I could only allow them. To force vision with the use of lenses is to rigidly control that which must be allowed the freedom to thrive. The more I allow my vision to happen, the more my heart opens. The more my heart opens, the more vision I receive. I continue to move toward more visual acuity.

The effects have been far-reaching. More and more, I allow myself to express how I feel with my husband, my sons, and myself. As my heart opens, I'm more accepting of people and the environment and am able to listen (see) more. During the course of vision therapy, I also practiced Iyengar yoga and participated in personal therapy. These things have been powerful teachers. Mind/body/spirit integration is now my self-proclaimed prognosis. (p. 177-179)

Case Example #2

Kaplin (1995) stated the following case example in his book, *The Power Behind Your Eyes: Improving Your Eyesight with Integrated Vision Therapy*:

Joanne's original lens prescription for glasses was -10.50 with -1.25 diopters of astigmatism. She never went without her glasses, since she was unable to wear contacts. She incorporated a home-based Integrated Vision Therapy, and after four years, the astigmatism was gone and the measured nearsightedness was down to -5.00. There were actual structural changes, verified by an optometrist who was not administering the vision therapy program. Joanne had also reduced her wearing of glasses by 85 percent. (p. 75)

Case Example #3

Kaplin (1995) stated the following case example in his book, *The Power Behind Your Eyes: Improving Your Eyesight with Integrated Vision Therapy*:

I have worn glasses for approximately forty years, and up to about one year ago, I always believed that the only way that I could see properly was

through the use of glasses, or to have one of those corneal operations. I have discovered that this is not the case, and that natural procedures exist for improving vision. Furthermore, it can be exhilarating to experience the process of vision improvement, in particular after being conditioned in the belief that glasses or an operation are the only answers.

In my case, my vision one year ago was 20/400, and my glasses had a prescription of -4.50 diopters, complete with bifocals and prisms to compensate for my double vision. I was totally dependent upon my glasses. My current vision is about 20/80 (58.5 percent clearness) to 20/100 (48.9 percent clearness), and the prescription for my glasses is -2.50 diopters, with no prism or bifocals. My eyes are still improving, and I am confident that I will get to a point where I can function almost totally without glasses. (p. 74)

Case Example #4

Meir Schneider, author of *Self-Healing: My Life and Vision*, was born legally blind. His childhood consisted of several operations to gain sight, but they were only successful in allowing Meir to barely distinguish between light and shadow. It was at age 17 that two teachers showed him vision improvement exercises and strategies. Even though his family, friends and ophthalmologist did not agree with these unorthodox approaches to healing vision, Meir was determined to do what was necessary to see. His first breakthrough came after six months of steady work retraining his eyes, mind and body when he began seeing objects visually for the first time in his life. Eighteen months later, he could read print without glasses, and nine years later Meir was driving without a restricted driver's license (Schneider, 1987). Meir Schneider currently teaches and lectures in the United States on the topic of self-healing and runs The Center and School for Self-Healing in San Francisco, California.

Case Example #5

Liberman (1995) presented the following case example in his book, *Take Off Your Glasses and See: How to Heal Your Eyesight and Expand Your Insight*:

I began wearing glasses when I was twelve years old. I recall at that time being challenged with my body and relationships all changing at once. The hardest thing for me was being seen as a sexual being. Suddenly, men were treating me differently and since I didn't feel any different, I had no ideas what to do. I remember deciding that if I didn't see it, I wouldn't have a problem anymore. I consciously chose not to see when someone was attracted to me. This was the beginning of a process I now call visual denial.

It was at that time I was found to need glasses. I remember crying for an hour when the optometrist told me this. I felt very overwhelmed and helpless at the prospect of spending my life behind glasses. More than worrying about looking ugly, I was grieving because I know that a better way was available, but this doctor could not help me find it. I now know that moment of profound grief was actually the beginning of my life's purpose.

Twenty years went by, with my prescription increasing steadily through the university year until it reached between -3.00 and -4.00 in each eye... I wore my glasses constantly, never removing them although I wanted to.

By the time I had been practicing optometry for four years, I had accomplished all my career goals and considered leaving the profession. I was bored and disillusioned with my work. I was developing a keen interest in mind/body medicine and human potential research and I needed to explore it more. When I went to work, I felt I had to repress a part of me in order to fit the image of a "good optometrist". I felt like a liar. I could tell there was a radical shift coming, because I would oscillate between feeling very excited and very afraid. I felt afraid because I didn't know how the change would look, and yet the old way was draining the life out of me.

One day a light came on: If these body/mind theories were really true, then we all had the potential to heal anything within ourselves. If so, then I had the potential to see without glasses. I felt immense fear at the prospect, so I knew I was onto something. My vision needed to be

improved if I was going to offer anything new to optometry. I had been asking for a vision for my life for so long. It occurred to me that the two questions were converging; they were one and the same question. I began a search for perfect eyesight and in the process found the vision of my life. I met many optometrists who were going through the same changes themselves, and their advice and support got me through the process of weaning myself from my glasses. I began to wear weaker glasses, never more than I needed at a given time. Every time I released more energy, I found I could reduce my prescription further. I did breathing exercises and yoga and started a regular meditation practice. I let myself express anything I needed to, whether it be having a breakdown at work or finally telling my father what I'd always wanted to. I quit my job just to take care of me for a while.

You now when you're living the right way when life becomes effortless. Everything you need comes to you without trying. I had a dream in which I could see clearly for a long distance. I felt ecstatic because I knew once it happened at the unconscious level, it would soon happen at the conscious level.

Shortly after that dream in November 1991, I attended Jacob's workshop and had the opportunity to work on the trampoline with him. When he asked me to breathe, jump, and do an apparently impossible task of spelling a sentence backwards and out of order, something incredible happened. Once I started, the letters just began to pop into my mind one at a time. This was an experience of nonthinking, of simply being rather than trying with my head. Logic and effort had always served me, but the beauty of that exercise is that those approaches do not work.

In that moment, I found the silence within myself---I call it Presence. Some call it God, Higher Self, a deep knowingness; the name doesn't matter. It was an opportunity to stop thinking and to allow myself to just have an experience. It is an experience of one's true self. I did not intellectually understand the task; I only knew I felt afraid to risk making a mistake. With Jacobs's support, I broke through the fear into a new level of being, and that's what seeing without glasses is all about.

...Medicine is now just beginning to recognize this interrelatedness of the body/mind/spirit. My search has been about bridging these aspects within myself. My single goal now is to help others wake up, see who they really are, and realize their own purpose. There was something incredibly powerful about one person seeing that I could do something,

and when I was ready, his vision helped me change forever. It was in that moment I realized again we all have the power to help one another.
(p. 212 - 214)

DEFINITIONS ASSOCIATED WITH VISION

This section is a reference for concepts associated with vision (Goodrich, 1996; Marieb, 1995).

Accommodation – Accommodation is the process of increasing the refractive power of the lens of the eye.

Astigmatism – This is the experience of having distorted or blurry vision when viewing distant objects and/or near objects.

Behavioral Optometrist - A behavior optometrist is an optometric doctor who obtains postgraduate education learning to implement visual strength and coordination programs, in an attempt to prevent and correct visual problems and enhance visual performance.

Ciliary Muscle – The ciliary muscle is the muscle that encircles the lens of the eye. It contracts and releases, changing the shape of the lens, thus producing accommodation.

Cornea – The cornea is known as the “window of the eye”. It provides most of the focusing power when light enters the eye and is the eye’s protective layer.

Diopter - Refractive visual problems, such as myopia, astigmatism and hyperopia, are measured in units called diopters. Diopters represent the level of correction needed in corrective lenses to normalize the vision.

Emmetropia – This refers to normal vision refraction.

Extrinsic Eye Muscles - The extrinsic eye muscles are the six eye muscles that control the movement of the eyeball. They also maintain the shape of the eyeball and hold it in the orbit.

Eye Teaming - Eye teaming refers to how the eyes work together to perform visual tasks. This is also known as binocular vision.

Focusing - Focusing involves the eye's ability to accommodate lens shape for various distances.

Fovea Centralis - The fovea centralis is the point of keenest vision in the eye, located in the center of the macula lutea. When light enters and is cast directly on the fovea centralis, sharp, detailed images will result.

Fusion - Fusion refers to the eyes' ability to work together as a team. This process converges two images from each eye into one.

Hyperopia - This is referred to as "farsightedness." It is inability to see clearly when looking at near objects.

Iris - The iris is the colored part of the eye. The primary function of the iris is to control the size of the pupil.

Lens - The lens is the clear structure located behind the pupil. Its primary function is to provide fine-tuning for focusing and reading, which is accomplished by the alteration of its shape.

Macula Lutea - The macula lutea is a small area of the retina that is directly in-line with the lens of the eye. It has a higher number of cone receptor cells than the rest of the retina.

Optic Chiasm - The optic chiasm is the intersection of the optic nerves from the two eyes. At this point in the brain, the optic nerve fibers from each eye are divided in half, crossing over to join with half of the nerve fibers from the other eye.

Optic Nerve - The optic nerve is the nerve that carries the electrical light impulses from the retina to the brain.

Pupil - The pupil is the "black circle" in your eye. The primary function of the pupil is to control the amount of light entering one's eye. When a person is in a bright environment, the pupil becomes smaller to allow less light through. When it is dark, the pupil expands to allow more light to reach the back of the eye.

Refractive Error - Refractive error refers to the eyes' inability to properly bend (or refract) light rays entering the eye to land on the fovea centralis of the retina.

Retina - The retina consists of fine nerve tissue that lines the inner two-thirds of the inside wall of the eye. Its primary purpose is to capture and transmit images. Cones (color and detail receptors) and rods (black and white receptors) are located in the retina.

Retinoscope - This is an instrument used to measure the eye's ability to focus light on the retina.

Saccadic Movements - Saccadic movements are the small, quick movements the eyes automatically make that enable them to detect details as they move from one object of interest to another.

Sclera - The sclera is the "white part" of the eye that provides structure, strength and protection for the eye.

Tracking - Tracking is the process of the eyes following a particular object.

Visual Cortex - The visual cortex is the part of the cerebral cortex in the brain that is primarily responsible for interpreting visual impulses from the eyes.

Vitreous Fluid - The vitreous fluid is the clear "gel-like" substance located inside the eye's cavity. It provides the spherical shape to the eye.

20/20 Vision - A person with 20/20 vision, can see clearly at twenty feet what should normally be seen at this distance. If an individual has 20/100 vision, for example, it means that an individual must be as close as twenty feet to see what a person with normal vision could see at one hundred feet.

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