

CASE STUDY

## Approaching Myopia Holistically: A Case Study and Theoretical Exploration

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### ABSTRACT

**Introduction:** Myopia is a commonly occurring condition that, in Western countries, affects 30%–35% of the population. At present the most common way of treating myopia is by optical intervention by means of spectacles, contact lenses, or surgery.

**Background:** An exploration of the history of and scientific rationale for the current methods of treatment are presented. The concept of myopia as a holistic phenomenon and the idea of the possibility of healing are introduced.

**Case study:** A case study of a patient reducing spectacle strength and using holistic healing techniques to induce changes in myopia is presented together with a statement from the patient.

**Conclusion:** It is concluded that the contemporary model of vision that justifies the prescription of negative lenses in cases of myopia needs re-examining in light of the case study presented.

### INTRODUCTION

Myopia has been described as “the state of refraction in which parallel rays of light entering the eye are brought to rest in front of the retina” (Curtin, 1985). It is experienced as a blurring of distant vision, the degree of blur and the distance at which it occurs varying with the degree of myopia. The rate of myopia incidence varies widely across the world. Children raised in rural Nepal show an incidence rate of 3% (Garner et al., 1999) and schoolchildren in Hong Kong show an incidence rate of 62% (Lam et al., 1999). The trend in Western countries is a rate of 30%–35% (Grosvenor and Goss, 1999). Conventional treatment alters the refractive state at the front of the eye, allowing

light entering the eye to focus on the retina by means of spectacles, contact lenses, orthokeratology (the procedure in which rigid contact lenses worn at night are fitted in such a way as to temporarily flatten the corneal apex), or surgery on the cornea. None of these methods changes the myopic state of the eye; that is, the myopia remains but it is compensated for.

### BACKGROUND

#### *History*

The experience of myopia is, in any culture with an established optometry profession, intimately linked with the experience of refractive

correction by the means described above. (Where lenses or spectacles are referred to, any of the above techniques are also being referred to.) Understanding myopia and questioning the role of optical intervention means a wider historical and philosophical exploration of the reasons and justifications for this intervention (Bambridge, 2001). This paper consists of an exploration of the scientific reasoning for medical intervention in the case of myopia and uses a case study methodology (Bromley, 1986). It concludes that when myopia is viewed within a holistic model of health healing (that is a reversal of the myopia and a change to clearer vision) is possible making optical intervention unnecessary.

Optical intervention and more specifically the organized method of assigning a refractive prescription as an optometrist does, has grown from the scientific study of optics, especially the late 19th century work of Helmholtz (1871) and Donders (1864). Insights into the nature of light and the way it travels through different media and the ability of glass lenses and prisms to bend and focus light were used to model the eye and its focusing system.

The process of science is a collective activity in gathering organized knowledge. This knowledge is rooted in hypotheses that are continually being tested with each observation and with each experiment. When the results of an experiment or an observation are not compatible with the hypothesis, then either the quality of the experiment is called into question or the hypothesis is rethought in order to harmonize theory and observation. It is this tension between theory and experiment or observation that is the catalyst for the creativity of new ideas and new experiments in the development of science. (This relationship can be taken to the point where theory emerges from observation rather than observation or experiment testing theoretical hypotheses [Glaser and Strauss, 1967].) Throughout the process, however it is conducted, there can be no apodictic certainty beyond the reach of criticism (Medawar, 1984) and hypotheses always remain hypotheses, that is suppositions to the complete certainty of which we can never attain (Kant c. 1790, cited in Medawar, 1984). When the tense balance between the information gathering and theoriz-

ing of science is lost then there can be an overload of observations and information without any theoretical grounding to bind the information together to make sense of it. Likewise hypotheses can be taken as "truths" and as such any discrepancy between experiment or observation and theory is always seen as a lack of rigor in experimental technique. It is at this point that science ceases and is overtaken by dogma. It is an imbalance of this sort that has led to a continuing general disbelief within the profession of optometry that any improvements in vision are possible.

Throughout the interweaving of theory and experiment different methods of inquiry and analysis can be used, the most successful being those that most accurately describe the results of experiments and observations. Examples of changes in methods of analysis are the use of calculus in describing curves and curved surfaces (Kreiling, 1968; Whiteside, 1968) multifractal geometry in the modeling of clouds and topography (Lovejoy et al., 2001), and special relativity in the analysis of high-velocity astronomical observations (Bohm, 1996). Each of these theoretical models has extended the ability to make sense of experiment and observation and as such can be deemed as successful with the proviso that should a theory that describes the situation more accurately come about the current model would be superseded.

The classical method of scientific analysis, which is the most commonly used for optometric research, involves a theoretical separation of all the possible components of interaction. Experimentation then takes place limiting as many variables as possible in order to establish cause-and-effect relations. When the number of variables is large and the interactions between them complex this method of analysis becomes inefficient and can break down or worse describe the phenomenon inaccurately. The problem is that the context stripping that worked reasonably well for the classical physics of falling bodies has become the model of how to do every kind of science (Hubbard, 1989). Biologic systems, specifically organisms, are an example of a multivariable system that classical reductionist techniques of analysis can often misdescribe. A nonbiologic example of this is a spiral. If a spiral were to be

sectioned into many small pieces for analysis, it could be concluded that it is made up of straight lines because this is what each piece would approximate. This analysis misses many important features of a spiral and is an example of the type of inaccuracies that can develop if the most appropriate tool of analysis is not used and the scale and context of a situation is not properly addressed. Likewise giving optical intervention for myopia while providing clarity of detail misses the context of a struggling visual system and the opportunities for healing.

As engineering and electronics are practical applications of physics that reinforce our confidence in the truths of the field (our understanding of nature is only true to the extent that it works [Keller, 1989]) so medicine can be regarded as a practical application of our biologic understanding for the promotion of healthy functioning. As scientific understanding shifts and changes so too do medicine and health care in reflection of these changes. The tools of analysis of biology have grown to reflect the patterns of the systems involved and their contextual, embedded, and relational nature. It has come to be recognized that it is a relational order between components that matters more than material composition in living processes (Goodwin, 1994). The impact and role, therefore, of an individual part cannot be understood without the context and associations of that part. This is a holistic approach to science and is an argument for a holistic approach to medicine and health care. Emphasizing the relational order between components means that any symptom must be regarded within its system with all the interactions that entails.

Working from a holistic viewpoint, lifestyle, relationships, emotions, and the body are all signals, reflections, part of and all of the state of health. Local symptoms, expressions of pain or disease can only be addressed in this context by a broad view of the needs and wants of the individual and his or her community. Healing, then, becomes an emotional process as well as a physical one. There is no thought, feeling or perception without molecular and chemical reaction and change. What one seeks to treat is ultimately the chemical/molecular manifesta-

tion of the way someone sees and interprets things (Jobst et al., 1999).

### *Myopia as a holistic phenomenon*

The blurred vision that accompanies myopia is, in this context, just one aspect of its manifestation. Myopia can also be described as a pattern of pronounced tension in the forehead, jaw, neck, shoulders, upper arms, and lower back. It can be described as a reduced peripheral awareness and a prolonged central fixation time (staring) (Schneider et al., 1994). Myopia can be construed as a "state of compressed anxiety and unconscious apprehension" (Goodrich, 1985) and "introvertedness, over-control of emotions and a high tolerance for anxiety" (Lanyon and Giddings, 1974). When spectacles are worn the myopia is locked in place and the conscious vulnerability that blurring brings about is lost, help and interaction are not requested or received, and a sense of subconscious loneliness and distancing can occur. The world as projected through lenses is narrow, stark, and shallow and, for the person wearing the lenses, the only world that exists. Lenses as a physical intervention have an impact on the body, thoughts, feelings, and perceptions.

Healing myopia, then, becomes a process of change: a relaxation of body tension; increasing peripheral awareness; an expansion of a sense of context and an increase in the fluidity and depth of movement of eyes, body, thought and feeling. (It should also be noted that although myopia is the topic of this paper there have also been reports of healing other vision difficulties using these techniques, e.g., congenital cataracts and nystagmus [Schneider, 1987]). The following quotation is from a paper by Orfield who followed a program of vision therapy over a time span of 7 years:

I saw space visibly expanding—people grew taller and the volume of space expanded enormously. Seeing space, very different from having 20/20 sight is the vision thing which is lost with strong lenses when central sight is all that is prescribed for. Regaining it is what makes reducing and controlling my myopia worthwhile.

The “apparent motion” of the trees and hedges where I walked caused me to perceive distances in new ways. I noted that the apparent speed of the stationary objects that seemed to move past me and around each other was all related to their distance from me as I walked past them. I felt as if the pillars were whizzing by, the pavement rolled under my feet. It was quite different from the telescopic sight in my strong lenses, (Orfield, 1994).

Another description tells of experiences practicing the Bates method of vision therapy (see below for a description):

My imagination became strong and clear and I was able to picture whatever I wanted to see. The world began to light up with a new found resonance and my resistance to the urban landscape, Los Angeles, and to the world in general diminished. I became more receptive to seeing the whole of what lay before my eyes. And so I discovered that the lessons included relinquishing my fears and defenses and looking directly at what was keeping me from fully facing the world. After a month or so, I suddenly glimpsed sharp, razor-like edges and neon colours. With time more glimpses came, now teasing me like insights slipping in and out of view. As I became more practised glimpses became long moments of rich perception. Soon fabulous shapes and vibrant colours signalled to me, edges were sharp all the time, and whole stories revealed themselves on street corners. (Sewall, 1999).

These experiences illustrate the intensity of sensation that is reported when vision therapy is attempted.

## CASE STUDY

### *Optometric report*

At the age of 3 the patient had minus lenses prescribed for myopia and a divergent squint. The squint ceased but throughout childhood

the strength of the spectacle lenses was increased until in 1995, when the patient was 21 years old, the prescription was  $-9.75-1.75 \times 80$  for the right eye and  $-9.50 - 0.75 \times 90$  for the left. Unaided vision at this time was of the order 20/3000. In 1996 the patient started using holistic techniques to work with vision and started changing the strength of the lenses worn. The strength of the first reduced prescription lenses were  $-7.25 - 1.75 \times 80$  for the right eye and  $-7.75 - 1.50 \times 85$  for the left (in 1996 spectacle lenses prescribed by and acuity measures taken by A. Kirshner, O.D., F.A.A.O., Montreal, Quebec, Canada). On June 12, 1996 when these were first worn the acuity as measured through them was 20/40. On July 12, 1996 it was measured as 20/20 and the strength of the lenses reduced to  $-6.50 - 1.75 \times 80$  for the right eye and  $-6.50 - 1.50 \times 85$  for the left through which the acuity was again measured as 20/40. By August 21, 1996 the patient's acuity through these new lenses was measured as 20/20 and again they were changed, this time to  $-5.50 - 1.75 \times 80$  for the right eye and  $-5.50 - 1.50 \times 85$  for the left. In November 1996 the patient was spending from a few minutes to several hours each day without spectacles and in June 1997 the acuity as measured through the new spectacles was 20/20. In September 1997 the strength of the spectacle lenses was changed to  $-4.50$  in both eyes. The amount of time that the patient spent without spectacles was also steadily increasing so that sometimes a full day would be spent without them. In January 1998 unaided binocular vision was recorded as 20/60 (this measurement was recorded by an optometrist at Glasgow Caledonian University who also assisted in providing the changing prescriptions). In February 1998 the strength of part time wear lenses was reduced to  $-3.50D$  in both eyes and in April 1998 the patient stopped wearing spectacles altogether.

### *Treatment*

The time the patient spent without spectacles and in reduced strength lenses was supported by a variety of holistic techniques. These are listed below with a brief description of each.

CranioSacral therapy is an unforced light

touch form of bodywork reported to help access embodied trauma (Milne, 1995). Aromatherapy massage as received by the patient was full-body manipulative massage using essential oils (Vickers, 2000). The self-healing methods of Meir Schneider involve breathing exercises, body stretching, and moving particularly in ways unfamiliar to the patient (Schneider, 1994). The Alexander technique is a bodywork technique that brings attention to habits of body use and facilitates new awareness of posture and movement. In a session the teacher will move the client through subtle posture changes particularly of the neck (Chance, 1999). The components of palming, swinging, swaying, shifting, and sunning are collectively known as the Bates method (Mansfield, 1992). Palming is the name given to the technique of covering one's own eyes with the palms of the hands. This gentle cupping of the eyes is recommended to be done in the dark. Swinging is the technique of rotating the body through 180° while standing and maintaining the line of sight in the direction of the nose and shoulders. Swaying is the technique of standing and rocking the weight from one foot to another while observing the apparent motion between near and far objects. Shifting is the name given to the practice of observing details by shifting the focus of attention smoothly and rapidly from one point to another. Gazing at the sun through closed eyelids is known as sunning. The vision therapy that the patient took part in with a vision therapist was a mixture of the Bates method, psychotherapy, and counseling.

Initially (June to September 1996) the patient did a daily full-body relaxation exercise and splashed cold water on the eyes. In the autumn of 1996 the patient started monthly sessions with a vision therapist. This support continued throughout the process although the session frequency was reduced to once every 3 months during 1998 and 1999. From September 1997 and throughout 1998 and 1999 the patient learned techniques of stretching, breathing, and peripheral vision stimulation using the self-healing techniques of Meir Schneider. These were practiced daily at home. During the autumn of 1998 the patient had CranioSacral therapy, an Alexander technique lesson, or an aromather-

apy massage once a week. These sessions continued through 1999 with a decreased frequency of one session (massage, craniosacral therapy, or Alexander technique) every 6 weeks.

#### *Patient's statement*

It is hard for me now to imagine my level of dependency on my glasses. I did not exist without them; they were a part of my identity that I had never questioned. Learning to change my vision was an entirely new experience and one which I was bringing about. From the optometrist who introduced me to the techniques I received enthusiasm, praise, and encouragement but it was I who was undertaking and implementing the changes even if I did not quite understand them. The feelings of power and change were overwhelming and as my prescription changed so my sense of identity had to shift.

I began to feel things I had never felt, sensations around my eyes and in my face. An uncovering through which I would weep. I could see in a way I had never seen before; the leaves moving on trees, the colour of the sky. Things I knew but had never felt before. The intensity was shocking and I could not deal with it and would often retreat to bed to recover from the experience. Movement and depth were also new and expanding and walking along a street felt like being on a rollercoaster with all the fear and excitement that accompanies such a ride. There was a new depth the like of which I had not known and I could feel how far away objects were and how far away I was. As I began to see more and in different ways I also began to feel different. There was a feeling of filling my body from the inside and my circulation improved so that icy hands and feet were not so common. I became more aware of my emotional state and that of other people, a change which was, at first, bewildering and confusing. A room full of people with its cacophony of interactions would leave me dizzy, feeling the need for retreat, feeling ill-equipped for the intensity of it.

When I first saw clearly for a few moments my knees went weak, my heart pounded and it was a relief when my vision blurred back again. It felt so new and there was something about the clarity that was more frightening than the preceding blur. I was scared with an intensity that could leave me doubled over clutching my stomach, not moving, not daring to look. My muscles ached in my face and there was often a sensation of tightness. Anger would consume me but its expression, laughing and crying always brought me clarity.

Having felt the fluidity, connectedness, and ease of seeing, when I put glasses back on a retreated sadness came over me and I felt myself curl, my shoulders hunch up, my discomfort revealed in snide snips and my lack of communication. Each step into the blur has been a step into the unknown but through the bewilderment of the changes it has all made sense. There was a relaxing reassuring feeling amidst an emotional chaos. I could write, draw, hear music, look at pictures and feel the emotional content not just understand it from a distance. The same is true of my communication with other people. It became easier.

My experience of wearing a refractive compensation for myopia is that it was inflexible, constrained, narrow, and numb, driven forward with an inability to change. Coming out of it was difficult. Sometimes I felt caught half-way up a cliff with no way down and no choice but to cling and keep climbing. It is at these times that family, friends, therapists, being outdoors, music and art have not just eased the process of healing but been the instrument of it and the very reason for it. I discovered that change was possible, I found I had the capability for an independence of vision and the idea of putting lenses back on now fills me with desolation.

## CONCLUSION

In this paper the scientific justifications behind the contemporarily dominant theory of vi-

sion that underpins the profession of optometry were explored. The contextual relevance and appropriateness of scientific models was discussed and the emergence of holistic models in biology presented as a rationale for experimenting with holistic models in health care. A case study that involves a holistic approach to myopia was presented. The results of this study were an increase in acuity, a loosening of tension, and a heightening of sensations of perception. This study of a holistic approach to myopia interprets myopia as being intrinsically part of the human process and as such any attempt at changing it involves an interaction with that process. From this perspective, any successful healing entails paying attention to a deep, embedded world of symbolism and metaphor and a commitment to the textured interaction such attention brings about.

This case study and the experience of undergoing the changes described are offered as evidence that the contemporary model of vision that justifies the prescribing of negative lenses for myopia needs to be reexamined. Because the case study presented is an experiment with holistic health techniques this also implies an engagement with the question of validity of a holistic model of health.

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