5-1-1994

Boost your optometric practice with bifocal contact lenses

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Abstract
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Degree Type
Thesis

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Boost Your Optometric Practice With Bifocal Contact Lenses

By

Joseph J. Raffa

A thesis submitted to the faculty of the College of Optometry Pacific University Forest Grove, Oregon for the degree of Doctor of Optometry May, 1994

Advisor:

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Author's Signature

Joseph J. Raffa

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Acknowledgments

I would like to thank John Krebsbach O.D. and the staff at Family Vision Practice of Hillsboro for their generous assistance in allowing me to utilize their facility for this project. This thesis would not have been possible without their cooperation and expertise.

I would also like to thank James Peterson O.D. for his time and wisdom as advisor. It was greatly appreciated.
BIOGRAPHY

Joseph J. Raffa attended St. Thomas College in Denver, Colorado where he graduated with a Bachelor of Arts degree in Philosophy, a Masters degree in Theology and a Masters degree in Values Clarification Counseling. He will graduate from Pacific University in May of 1994 with a Doctor of Optometry degree. He is a student member of the American Optometric Association, Contact Lens Section, and plans to enter private practice with an emphasis in primary care, contact lenses and vision therapy.
Fifteen patients (representing an age range between thirteen and fifty) were selected from a private practice, in which the doctor practiced primary care optometry and integrated the fitting of bifocal contact lenses as a "specialty niche." Upon completion of the fitting process, questionnaires were filled out by both the patient and doctor. From these questionnaires (representing issues ranging from visual performance and self image to the doctor's monetary gain and overall growth of the practice), a single subject design was implemented, comparing the impact before and after the bifocal contact lens fitting.

Although bifocal contacts are not a panacea for all near point problem patients, this study demonstrated that with some tenacity, careful patient selection, and the correct lens, a significant success rate could be achieved from both the patient's and the doctor's perspective.

**KEY WORDS:** Bifocal Contact Lenses, Presbyopia, Optometric Practice Growth, Contact Lens Market, Multifocal Contact Lenses, Specialty Contacts, Aspheric Bifocal Contact Lenses.
**INTRODUCTION:** A patient presents complaining of fluctuating acuity at far and blurred vision at near. The mundane thought of a near point add is elicited in the clinician's mind as the case history continues. What is the next move? How many options can the practitioner present to this patient?

Imagine the options that the clinician can currently offer the patient: traditional bifocal or trifocal spectacles, "no line" progressive addition lenses, as well as combinations of single vision spectacles and contact lenses or monovision. This study maintains, however, that the best possible and most neglected option for many patients is the bifocal contact lens.

The U.S. Census Bureau projects that the 40 to 65 age group will be the largest segment of the population in 1993 and will grow faster than any other group over the next seven years. According to research, there are currently 75-80 million presbyopics in the United States with the possibility of 100 million by the end of this decade. It is hypothesized that about 20 million of these are potential contact lens wearers. Another study claims that there are about 70 million people who are bifocal candidates, with only 1% now wearing contact lenses. Why is this market so untapped?

One recent manufacture sponsored study concluded that one in ten presbyopes demonstrated an immediate interest in being fit with bifocal contact lenses, but only after they were told that such lenses existed. The Eye-Q Survey, distributed by the Contact Lens Council in 1990, found that only about half of all Americans are aware that contact lenses can correct presbyopia. It was discovered from this survey that many current contact lens wearers believe that when they become presbyopic, contact lenses will no longer be useful to them.

It is common knowledge that many practitioners, and even bifocal contact lens manufacturers themselves, believe that an ideal bifocal contact lens is not a reality at this time. Clinicians have heard all the "war stories" of the increased chair time, initial cost of diagnostic lenses, substantial cost to the patient and overall poor patient satisfaction. Is it possible that any success in the area of fitting bifocal contacts can justify dealing with these problems?

As these questions are pondered, it is important to keep in mind that an estimated 80% of the wealth in this country is in the hands of those over 50 years of age. It is also important to realize that this new generation of
presbyopes is considerably different from previous ones. For example, they appear to be much more willing to pay whatever cost is necessary to continue looking young and fashionable. This new generation of presbyopes wants to maintain the comfort and "no specs" status that they previously enjoyed. One author states, "The 'boomers' are a unique group. They set 'megatrends,' demand disposable diapers, drive trendy autos, thrive on wellness and fitness, and generally will not accept aging. Would presbyopia be outlawed by this group? If it could, this generation would try." This makes the presbyopic community an excellent group for whom to provide bifocal contact lens services. In targeting this group of people, the bifocal patient, in general, will be "growing old" with the practice. In other words, by offering products such as the bifocal contact lens, the practice and the patient can "age gracefully together."

Many bifocal contact lens fitters stress that it is prudent to indicate "up front" to potential candidates that any option, which is chosen to help meet their visual needs, will be a compromise. There are no miracle lenses that will give presbyopes back the "fountain of youth" for their vision. In fact, current studies estimate that bifocal contacts will work for only 40-50% of their patients. Another study involving the PS-45, which was one the lenses of choice for this project, reported a 79% success rate. Experienced bifocal contact lens fitters suggest that: "learning to fit and manage difficult contact lens cases doesn't happen overnight. An inexperienced clinician can only expect 5 out of 10 attempted bifocal fits to be successful. Of the next 10 fits, only about 8 will be successful. Eventually, about 85% of bifocal candidates will become successful wearers."

Although bifocal contacts are not a panacea for all near point problem patients, this study will demonstrate that with some tenacity, careful patient selection, and the correct lens, up to 94% or greater can be successfully fit with bifocal contacts.

As bifocal contact lens technology continues to evolve, there are many pre-presbyopic conditions which can be successfully addressed with the use of the current bifocal contact lenses. For example, many responsible high school and college students in need of relaxing their eyes due to prolonged near point study or computer work, yet who require
constant or rapid changes of focus (but are not willing to wear bifocal spectacles), are excellent candidates for bifocal contact lenses.

Many practitioners let the fitting challenges and the inner patience needed for bifocal contact lenses get in the way of considering this service as a practice builder. In fact, it is the contention of this study that, regardless of whether the bifocal contact lens option is the “best” system for someone, prospective patients are introduced into a caring, modern, professional and competent practice providing services and materials which their eyes had never been "opened to" before.

**METHODS:** Fifteen patients (eleven females and four males), who had shown interest in being fit after their initial exam, were invited for a free screening or trial fitting. This patient population represented an age range between thirteen and fifty. Keratometric ranges were between 40.00 to 47.75D. Spherical power ranges were between plus 1.00 to minus 7.50D. Refractive astigmatism ranged between 0.00 and 2.50D and near point adds up to 1.75D. Over an eight month period, patients were selected from a single private practice setting in which the doctor practiced primary care optometry and integrated the fitting of bifocal contact lenses as a “specialty niche.” The patients were asked during the preliminary screening process to participate in this study and the format of the questionnaire was discussed. Upon completion of the fitting process, the questionnaire (Figure 1) was distributed to each patient (who remained anonymous) with a self addressed, stamped envelope. A questionnaire (Figure 2) was also completed by the doctor after the final fitting. Patient confidentiality was emphasized and participants were informed that the doctor would only see the statistical graph results at the conclusion of the study.

Although not listed in the 1993 Tyler's Quarterly, the lens of choice for this study was an aspheric hydrogel PS-45. This lens, once manufactured by Product Development Corporation, is now produced by Preferred Optics Inc. The PS-45 is in the process of being approved for a new manufacturer and will eventually have a name change to the PS Multifocal. The PS-45 polymacon hydrophilic contact lens is a hemispherical shell which covers the cornea and a portion of the sclera. The lens material, polymacon, is a hydrophilic copolymer. Fully hydrated in normal saline solution, it consists of 62% polymacon and 38% water (by
weight). In its hydrated state, the material has a refractive index of 1.43 and an estimated visible light transmittance of 96%. The base curve is 8.7mm with a .17mm center thickness and a 14.0mm diameter. It comes in plus or minus 6D power with an add progressive to +2.00D within a concentric 2.5mm simultaneous image center near zone. The most plus or least minus powers are in this central region used for near vision.

Optimum patient profile for the PS-45 lens included: 1) patients who had not more than 1.00D corneal astigmatism, 2) patients who fall within 41.50 to 45.50 keratometer readings and will be fitted with the 8.7/14.0 parameters, 3) patients who have no more than 2.00D of near add, 4) patients who have distance manifest refractions from -3.00D to +4.00D, 5) patients who currently wear bifocal glasses, either segmented or multifocals, for both distance and near correction, 6) patients who currently wear distance contact lenses with reading glasses, 7) patients who require excellent intermediate visual acuity, 8) patients who depend greatly on their near add for upward fields of gaze (for example, pilots, electricians, plumbers, mechanics etc.).

The doctor attempted to produce the best possible fit and visual performance for the patient. Five to ten minutes was allowed for the lenses to equilibrate on the patient's eyes. “Out of phoropter” over-refraction was initiated monocularly, starting at near and then far, using plus or minus 0.25 to 0.50D hand held lenses. The optical disparity between aspheric and spherical surfaces required the use of PS-45 trial lenses to within 0.50D of the patient's prescription. If good acuity was not achieved with the 0.25 to 0.50D lenses, new diagnostic lenses were selected with powers suggested by the over-refraction. Since vision is a function of the brain, and in order to provide best acuity at far, intermediate and near distances (through the simultaneous image multifocal lens design), binocular responses were critical in the final over-refraction.

Distance (far) acuity was checked in low to normal illumination. Because photophobia is a common complaint of most "first time" contact lens wearers, proper illumination control was important in the over-refraction. Initial light sensitivity and excessive bright lights could abnormally constrict the pupil, making the initial distance over-refraction unreliable. Near and intermediate acuity's were checked under normal to bright illumination, with the card placed at varying reading distances. A
newspaper want ads section was also used, moving it up, down, right and left to demonstrate the natural vision of this aspheric simultaneous multifocal system.

The power selection formula for the hydrogel bifocal contacts consisted of adding the distance Rx to the add Rx. PS-45 power is always determined in terms of the highest plus power (or lowest minus power in minus lenses). This power represents the near correction rather than the near addition. The near addition for this lens is fixed at +2.00D. For example, in the case of patient two (Figure 3), a -2.25-0.75 X 060 distance refraction, with the need for a +1.00D add, resulted in a -1.25D (near correction) PS-45 lens. A +0.25D over-refraction yielded adequate near and far acuity's. The final lens to order was a PS-45 lens of -1.00D. In the case of patient seven (Figure 3), a +1.00-0.50 X 065 distance refraction, needing a +1.50 near add, produced a +2.50D (near correction) PS-45 lens. A -0.25D over-refraction gave good near and far acuity's. The final lens for this patient was a +2.25D. The early presbyope, however, needing a near add of +1.00 to +1.25D, was sometimes given the exact power needed for distance vision. For example, patient fourteen (Figure 3), with a refraction of -1.25-0.25 X 115 needing a +1.25D add, required a -1.25D (near correction) PS-45 lens. Over-refraction yielded a final lens of -1.00D. Interestingly enough, the natural asphericity inherent in the lens design (given the fixed +2.00D center) provided the needed plus power for the add (-1.00D + 2.00D = +1.00D add). If the refractive cylinder was over 1.00D, the equivalent sphere would be added. However, with refractive astigmatism over 1.00D, an aspheric RGP lens yielded better acuity's.

The literature suggests that for best visual comfort, -0.25D should be crowded on the dominant eye and +0.25D on the non-dominant eye. Even though this may sound like a modified monovision style of fitting, it really is not. Due to the expanded depth of focus provided by the aspheric simultaneous image design, good binocular vision was not compromised as it is in monovision. Because of the unique dynamics of this lens, as the power for distance vision was increased, the add power for near vision needed to be decreased and visa-versa.

When higher powers for distance, larger diameters, or different base curves were needed, a Unilens hydrogel aspheric was used. This lens,
which is very similar to the PS-45, was optimum for 1) hyperopes with up to plus 2.00D of spectacle add, 2) myopes with up to plus 2.00D of near add, 3) astigmatics with up to 1.50D of WTR or up to 0.75 ATR, 4) residual astigmatism of up to 0.50D, 5) patients with a combination (of the absolute values ) of their spectacle cylinder and add powers not exceeding 3.00D. The Unilens is of the Heflicon A low water (45%) Type 1. The base curves for the Unilens include 8.7, 9.0 and 9.3 with a .16 to .24 center thickness and a 14.0 or 14.5 diameter. It comes in a range from plus 6D to minus 8D power in .25D steps, with an add progressive to plus 2.25D within a 2.5mm simultaneous image front aspheric center near zone and a 9.0 total optical zone. Obtaining the "calculated power" for the Unilens included: determining the patient's spectacle refraction, compensating for any vertex distance, dropping the cylinder, and adding one half the near add power to the distance spectacle sphere.

A "good fit", for both the Unilens and the PS-45, consisted of a 360 degree covering of the limbus with at least 0.5 to 1mm overlap onto the sclera. The lens needed to center well and move approximately 0.5 to 1mm in primary gaze, and 1 to 1.5mm in upward gaze.

When the fit warranted a rigid gas permeable lens (cylinder of up to 2.50D WTR or 0.75 ATR), the choice for this study was the Metro Progressive lens with an aspheric back surface produced by Metro Optics. This lens incorporated the Fluroperm 30 material with a dk of 30 and an overall diameter of 9.5mm. Base curves were 6.8 to 8.5mm in 0.1 steps. Powers included plano to plus or minus 20D with an add progressive to +2.00D. Similar in design to the Unilens and PS-45, the Metro is an annular, near-center, simultaneous view lens. An added benefit, for those who needed the RGP, was that the lenses could be modified and polished, thus adding to their longevity. The Metro's back aspheric surface generates a progressive power change as the radius of curvature changed. This aspheric surface progressively flattened toward the periphery, indicating a steep base curve radius. Initial selection for this lens was at 1.25D steeper than the flattest K to provide good centration.

At the end of this thirty five to forty five minute session, the patient was informed as to whether or not the bifocal contact lens system would meet his or her visual needs. Other options were also discussed. If the patient agreed on the bifocal contact lens option, full payment for the lenses...
was necessary before they could be ordered. The doctor explained that this fee not only covered the cost of the lenses, but all additional fitting and evaluation sessions as well. Furthermore, there would be no other unexpected costs, unless the patient damaged or lost one of the lenses. In which case, it could be replaced for less than one third of the original cost, plus a small office fee for any additional fitting sessions. The patients were told that with the proper care, the lenses would last for at least two years. Within six weeks, if the patient did not feel the system was effective or visual results were unsatisfactory, all but a modest portion (for lab and evaluation time) of the original cost would be refunded. The doctor was quick to add that a refund had been requested only once before.

During the second session, the doctor dispensed the new lenses, allowed five to ten minutes for the lenses to equilibrate, then once again checked vision at the necessary distances. If there were any adjustments needed, new lenses were exchanged, modified or re-ordered. When both doctor and patient felt comfortable with the performance of the system, the solutions regimen was explained, emphasizing the importance of compliance with it. Wearing time was suggested as six hours for the first two days, with an increase of two hours per day each consecutive day thereafter for the first week. By the seventh day, the lenses were to be worn for all waking hours. Patients were emphatically warned that sleeping in the lenses, for even a short time, was not permissible and could result in edema, subsequent blurred vision or possible corneal problems. The doctor also worked with each patient until he or she was comfortable with the insertion and removal of the lenses.

During the third meeting, the patient reported the negative and positive experiences they had with the lenses during the past week. The doctor assessed the fit once again and made the necessary adjustments. If new lenses were required, they were exchanged or reordered through the distributor. Compliance with the cleaning regimen and any problems encountered with insertion or removal of lenses were once again addressed. Generally, a minimum of three sessions was required to properly fit the lenses. Upon the final fitting, patients were asked to return to the clinic for their regular yearly or bi-annual appointment, or as necessary.
RESULTS: A single subject design comparing the impact before and after the bifocal contact lens fitting was implemented. The results for this study are contained in the patients' overview chart (Figure 3). Success for this study was ultimately defined as the patient responding with a moderate to considerable positive change in regards to three questions: a) Has your overall visual performance with the bifocal contacts changed from what it was prior to being fit? (Figure 7) Of the fifteen patients responding to this question, there was a 94% success rate. b) Since being fit with bifocal contact lenses, how would you rate your feelings about coming back to this office for non-contact lens services or materials? (Figure 10) There was an 87% success rate of patients responding to this question. c) Compared to before you were fit with bifocal contacts, how likely are you to refer another person to this office? (Figure 11) Of the fifteen patients responding, there was a 87% success rate. Five other questions were asked of each patient, ranging in content from visual performance to self image after lens wear as compared to before the lenses were dispensed (refer to Figure 1 for the patient's questionnaire).

From the doctor's point of view, success was determined by a moderate to considerable positive change based on eight questions. These were in regard to the patient's visual performance, as well as monetary gain derived from the patient, the patient's ability to refer others into the practice and the overall growth of the practice after the fittings (refer to Figure 2 for the doctor's questionnaire). Four questions that proved to be the most significant were: a) How would you rate the monetary profitability of this patient after the bifocal lens fitting versus before? (Figure 16) The doctor reported 94% success. b) How would you rate the patient's success in terms of someone who will refer others to your office after the fitting versus before? (Figure 17) 100% success rate was reported by the doctor. c) How would you rate the patient's usage of services or materials other than bifocal contacts versus before the fitting? (Figure 18) The doctor reported 100% success. d) How would you rate your experience with this patient in regards to bifocal contact lenses boosting your overall practice versus prior to fitting them? (Figure 19) 100% success rate was reported. The combined percentage of these four questions (reflecting a boost in the overall practice) from the doctor's perspective resulted in a 98% success rate.
By studying Figures 13-15, one may note that the combined percentage of the three questions (concerned with the patient's visual performance) results in only a 76% success rate. However, in cases in which the patient presented with 20/20 visual acuity prior to fitting the bifocal lens, the doctors' response of "neutral" must be regarded as a "success". For example, in six of the fifteen patients, binocular vision was improved at near point while eight of these remained at their original 20/20 visual acuity. Only one patient had a slight (20/20 to 20/20-1) binocular near point reduction. In light of this consideration, the combined percentages of the eight questions for the doctors' success rate equaled 89%.

All but one of the fifteen patients reported neutral, moderate or considerable positive change in regards to the eight questions. The doctor, with the exception of one case, also reported neutral, moderate or considerable positive change to the eight questions. Refer to Figures 4-19 for graphical representations of the responses to all questions represented in the patients' and doctors' questionnaires.

**DISCUSSION:** Because vision is a binocular function, binocular summation played a critical role in acuity. Therefore, monocular viewing was discouraged. The unique design of these aspheric multifocal lenses allowed the brain to review the powers available to it and choose the best one for the visual demand. The PS-45, according to the manufacturer, is an aspherical front power curve on a spherical back curve. This combination (called an "s" power curve) produces a controlled power gradient across the optic zone of the lens. This curvature undergoes constant, controlled change so that, within a predetermined band, light rays from objects at all distances are directed to a common focal point. This simultaneous multi-focal system works on the premise that the brain is accommodative and interprets, with great clarity, only those impulses relevant to the object being viewed. This accommodation is constant and automatic while the patient is not aware of it. For example, one patient stated that she was very happy with the bifocal contacts. She stated, "not only is vision better at far and near with the bifocal contacts (versus single vision contacts), but uncorrected vision seems better".
Movement from one focus to another was found to be immediate, effortless and independent of eye position. Every patient reported being able to read as easily looking upwards as straight ahead. Peripheral vision was reported as full. Because the front surface of the center-near lens design is aspheric or non-elliptical, the eccentricity of the surface is greatest near the center of the lens and decreases at a constant rate toward the edge of the optical zone. Due to this design, lateral aberrations were found to be minimum. For example, according to the doctor, one patient reported that she tried to make her vision blurry with the bifocal contacts by looking in the wrong part of the lens, through head movements, but it was always clear. Although she also purchased an expensive pair of high index progressives, she feels her contacts are better.

These simultaneous vision designs are "pupil dependent", in that the quality of far distance and night vision has been reported clinically to be affected by both the pupil diameter and the rate at which the aspheric surface flattens from the central to peripheral regions of the lens. The primary initial complaint of many patients was of halos or shadows at near and far point under low illumination, driving under bright conditions, and at night when bright headlights "hit" them. It was important to remind patients to observe good illumination for near work and sunglasses for bright environments. Each patient, however, adapted to this "shadow" or photophobia problem and considered it to be very minor by their second or third progress check. This study confirmed what other clinicians had discovered: near vision myosis and night vision mydriasis can bias vision towards an inappropriate power zone in the lens. Pupil sensitivity is the most common problem with multifocal aspherics, but did not dissuade any of the fifteen patients in this study from lens wear. Pupil size presents the greatest challenge in older presbyopics with non-reactive pupils smaller than 2 to 2.5mm in normal illumination. When pupil diameter was a problem, the doctor experimented by adding more minus power for adequate distance vision with enough plus to maintain good near acuity. Regardless of pupil size, for patients needing excellent near vision, "pushing the plus" for the far acuity was critical. For example, just 0.25D more plus at the far distance dramatically improved near acuity for many patients (up to 2 lines on the Snellen chart). With certain patients, optical principles appeared to be reversed. In several cases, the addition of
+0.50D allowed some myopes to attain the clarity they needed for distance vision. Experimentation with the bifocal contacts and each patient's unique visual system was critical to success.

Many patients were ecstatic with the success of these lenses. One, a presbyopic heating and air conditioner installer, desired good intermediate acuity as well as frequently needing the near add in upward gaze for wiring purposes. This individual reported that the lenses were also excellent for hobbies such as hunting and viewing sporting events. Another presbyopic patient, a pilot, who needed good vision at far distance, but also at intermediate and near distance to see instrument switches overhead, reported great success with these lenses. Spectacle trifocals were not a viable option for these patients, because of the unique fields of gaze demanded by their occupations.

Many pre-presbyopic patients, who would not wear traditional multifocal or progressive addition spectacles, also enjoyed tremendous success with these lenses. For example, a convergence excessive, asthenopic high-school patient, who spent a considerable amount of time studying at near point and in front of a computer, found needed relief with the bifocal contact lens system. Similarly, an engineer, who operated a computer full time, reported eye strain, headaches and ocular fatigue disappearing with the use of these lenses.

The doctor exhibited caution when correcting pre-presbyopic myopes (patient's eleven through fifteen) with this system, as the accommodative demand could have been increased, thus precipitating presbyopia. On the other hand, pre-presbyopic hyperopes (patients one and ten) benefited from decreasing the accommodative demand with these bifocal contacts. This study confirmed (what recent literature also suggests) that when fitting bifocal contact lenses for the pre-presbyope, bifocal adds can be increased for myopic patients (whose eyes will be required to accommodate more than they did with spectacles), whereas adds may be decreased from the spectacle prescription of early hyperopic presbyps.

What about the failures with this bifocal contact lens system? Was this wasted chair time? Of the patients who decided against this system, each of them chose an alternative with the assistance of the doctor. For some of them, the option was a bifocal or trifocal spectacle system. For
others, the solution took on the form of an expensive high index, anti-reflection, “no line” progressive add design (or, in a few cases, single vision reading glasses over their current contact lenses). No matter what choice was ultimately made, each patient had his or her unique problem resolved with the knowledge that the most sophisticated and “high-tech” design solutions currently available had been presented. This study shows that many of the patients (especially the new ones) were “initiated” into a caring, competent and modern practice where they felt encouraged to return for services or products at any time. Just as important, these patients demonstrated that they would actively refer others into this practice for care. A follow-up study would be warranted to determine the actual services, products purchased and referrals generated from these bifocal contact lens candidates. Additional research may also address the longevity concerning these patients using this type of bifocal contact lens system.

Some authors have suggested that bifocal contacts will only work for early presbyopes. Younger presbyopes, they contend, may initially opt for bifocal contact lenses. But as the visual, physiological, and psychological effects of aging continue to escalate the risks and minimize the benefits of wear, most will revert back to spectacles to obtain the best correction.24 However, the high initial success of fitting (94%) and boost in the overall practice (98%) supports the benefits of offering all options available to patients in need of a near point add, especially the bifocal contact lens system.

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FIGURE 1:
PATIENT'S BIFOCAL CONTACT LENS QUESTIONNAIRE

In answering the following questions every effort will be made to maintain patient confidentiality. Your examining doctor will at no time have access to viewing your answers. The only data shared with your doctor will be the statistical response at the end of this study. When you have completed the questionnaire please return it in the self addressed, stamped envelope, not to your doctor.

PLEASE CIRCLE THE APPROPRIATE ANSWERS.

1 2 3 4 5

considerable moderate neutral moderate considerable
negative change negative change neutral positive change positive change

1. Did the fact that bifocal contact lenses were offered to you influence your perception of the quality and service of this office compared to before you were fit?

2. In recreational activities has your visual performance with the bifocal contacts changed from what it was prior to being fit?

3. In work or study activities has your visual performance with the bifocal contacts changed from what it was prior to being fit?

4. Has your overall visual performance with the bifocal contacts changed from what it was prior to being fit?

5. How would you rate your awareness of the availability of bifocal contact lenses as an option since being fit with them?

6. How would you rate the effect of bifocal contacts on your self image versus before you were fit?

7. Since being fit with bifocal contact lenses, how would you rate your feelings about coming back to this office for non-contact lens services or materials?

8. Compared to before you were fit with bifocal contacts how likely are you to refer another person to this office?

THANK YOU FOR YOUR COOPERATION!
**FIGURE 2:**
**DOCTOR'S BIFOCAL CONTACT LENS QUESTIONNAIRE**

**Patient's Best VA (Snellen)**

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**PLEASE CIRCLE THE APPROPRIATE ANSWERS.**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>considerable negative change</td>
<td>moderate negative change</td>
<td>neutral</td>
<td>moderate positive change</td>
<td>considerable positive change</td>
</tr>
</tbody>
</table>

1. Based on the chief complaint, after fitting the bifocal contacts versus before, how would you rate the patient's overall satisfaction?

1 2 3 4 5

2. How would you rate the patient's visual performance at far after the bifocal contacts versus before?

1 2 3 4 5

3. How would you rate the patient's visual performance at an intermediate distance after the bifocal contacts versus before?

1 2 3 4 5

4. How would you rate the patient's visual performance at near after the bifocal contacts versus before?

1 2 3 4 5

5. How would you rate the monetary profitability of this patient after the bifocal lens fitting versus before?

1 2 3 4 5

6. How would you rate the patient's success in terms of someone who will refer others to your office after the fitting versus before?

1 2 3 4 5

7. How would you rate the patient's usage of services or materials other than bifocal contacts versus before the fitting?

1 2 3 4 5

8. How would you rate your experience with this patient in regards to bifocal contact lenses boosting your overall practice versus prior to fitting them?

1 2 3 4 5
**FIGURE 3**

**PATIENTS' BIFOCAL CONTACT LENS OVERVIEW**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>7a Refraction</th>
<th>Habitant VA Far 20/ Near 20/</th>
<th>Bifocal CL VA Far 20/ Near 20/</th>
<th>Rx Add</th>
<th>Bifocal CL Rx</th>
<th>CL Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>R: +0.25-0.50X025 L: +0.25-0.25X090</td>
<td>R: 20-2 R: 20</td>
<td>R: 15-1 R: 20</td>
<td>+1.00</td>
<td>+0.25</td>
<td>soft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 15-2 L: 20</td>
<td>L: 15 L: 20</td>
<td>+1.00</td>
<td>-0.25</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>45</td>
<td>R: -2.25-0.75X060 L: -3.00-0.50X130</td>
<td>R: 25 R: 20</td>
<td>R: 25-2 R: 20</td>
<td>+1.00</td>
<td>-1.00</td>
<td>PS 45 soft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 30-2 L: 20</td>
<td>L: 20-1 L: 20</td>
<td>+1.00</td>
<td>-2.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>43</td>
<td>R: -7.50-0.50X005 L: -5:00-1.50X016</td>
<td>R: 30-1 R: 25-3</td>
<td>R: 25-2 R: 20</td>
<td>+1.25</td>
<td>-7.87</td>
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<tr>
<td>4</td>
<td>46</td>
<td>R: -1.50-2.00X178 L: plano-2.50X177</td>
<td>R: 25-2 R: 30-1</td>
<td>R: 15-3 R: 20-1</td>
<td>+1.75</td>
<td>-2.50</td>
<td>Metro Bifocal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 25-3 L: 30-1</td>
<td>L: 20 L: 20-2</td>
<td>+1.75</td>
<td>-1.75</td>
<td>RGP Bifocal</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>R: -3.50-0.75X180 L: -2.50-0.75X175</td>
<td>R: 20-2 R: 20-2</td>
<td>R: 20-1 R: 20-2</td>
<td>+1.00</td>
<td>-2.75</td>
<td>PS 45 soft</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 20-2 L: 20-1</td>
<td>L: 20 L: 20-2</td>
<td>+1.00</td>
<td>-2.25</td>
<td></td>
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<tr>
<td>6</td>
<td>41</td>
<td>R: -2.25-1.50X010 L: -2.00-2.00X170</td>
<td>R: 15 R: 20-1</td>
<td>R: 20-2 R: 20-1</td>
<td>+1.00</td>
<td>-3.50</td>
<td>Metro Bifocal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 15 L: 20-1</td>
<td>L: 20-1 L: 20-1</td>
<td>+1.00</td>
<td>-3.25</td>
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<tr>
<td>7</td>
<td>50</td>
<td>R: +1.00-0.50X065 L: +1.00-0.50X116</td>
<td>R: 20-1 R: 40</td>
<td>R: 25+1 R: 20-2</td>
<td>+1.50</td>
<td>+2.25</td>
<td>PS 45 soft</td>
</tr>
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<td>L: 20-2 L: 30-1</td>
<td>L: 20-2 L: 20-1</td>
<td>+1.50</td>
<td>+2.75</td>
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<td>8</td>
<td>37</td>
<td>R: -7.25-0.50X045 L: -7.25-0.75X160</td>
<td>R: 15-1 R: 20</td>
<td>R: 20-1 R: 20</td>
<td>+1.00</td>
<td>-5.75</td>
<td>Unilens soft</td>
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<tr>
<td></td>
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<td>L: 15-2 L: 20</td>
<td>L: 20-1 L: 20</td>
<td>+1.00</td>
<td>-6.25</td>
<td></td>
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<tr>
<td>9</td>
<td>13</td>
<td>R: -1.50DS L: -1.50DS</td>
<td>R: 15-2 R: 20</td>
<td>R: 20+2 R: 20</td>
<td>+1.00</td>
<td>-1.25</td>
<td>PS 45 soft</td>
</tr>
<tr>
<td></td>
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<td>L: 15-2 L: 20</td>
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<td>-1.00</td>
<td></td>
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<tr>
<td>10</td>
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<td>R: +0.25-2.00X004 L: +0.50-1.50X180</td>
<td>R: 20+1 R: 30+3</td>
<td>R: 20+1 R: 20-1</td>
<td>+1.00</td>
<td>-1.25</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 20+2 L: 30</td>
<td>L: 20+2 L: 20-2</td>
<td>+1.00</td>
<td>-1.50</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>B: 15-1 B: 30+3</td>
<td>B: 15-1 B: 20</td>
<td>+1.00</td>
<td>+1.25</td>
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<tr>
<td>11</td>
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<td>R: -0.75-1.00X103 L: -1.50-0.50X075</td>
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<td>R: 20-1 R: 20</td>
<td>+1.00</td>
<td>-2.37</td>
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<tr>
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<td></td>
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<td>L: 15-1 L: 20</td>
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<td>+1.00</td>
<td>-3.12</td>
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<td></td>
<td></td>
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<td>B: 20+2 B: 20</td>
<td>+1.00</td>
<td>+1.00</td>
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<tr>
<td>12</td>
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<td>R: 20 R: 20</td>
<td>+1.00</td>
<td>-3.25</td>
<td>PS 45 soft</td>
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<td>L: 15-2 L: 20</td>
<td>L: 20 L: 20</td>
<td>+1.00</td>
<td>-4.00</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>25</td>
<td>R: -1.50DS L: -1.50DS</td>
<td>R: 20 R: 20</td>
<td>R: 20+1 R: 20</td>
<td>+1.00</td>
<td>-0.75</td>
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<td>L: 20 L: 20</td>
<td>L: 15 L: 20</td>
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<td>-1.00</td>
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<td>R: -1.25-0.25X115 L: -2.25-0.25X050</td>
<td>R: 15 R: 20</td>
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<td>-1.00</td>
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<td>L: 15 L: 20-1</td>
<td>L: 15 L: 20</td>
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<td>-1.50</td>
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<td>B: 15 B: 20</td>
<td>B: 15 B: 20</td>
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<td>R: 15-3 R: 20</td>
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<td>-7.00</td>
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<tr>
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<td></td>
<td>L: 15-3 L: 20</td>
<td>L: 15-2 L: 20</td>
<td>+1.00</td>
<td>-6.37</td>
<td>RGP Bifocal</td>
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<tr>
<td></td>
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<td></td>
<td>B: 15-3 B: 20</td>
<td>B: 15 B: 20</td>
<td>+1.00</td>
<td>+1.00</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 4:
1. Did the fact that bifocal contact lenses were offered to you influence your perception of the quality and service of this office compared to before you were fit?

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 5:
2. In recreational activities has your visual performance with the bifocal contacts changed from what it was prior to being fit?

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 6:
3. In work or study activities has your visual performance with the bifocal contacts changed from what it was prior to being fit?

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 7:
4. Has your overall visual performance with the bifocal contacts changed from what it was prior to being fit?

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 8:
5. How would you rate your awareness of bifocal contact lenses as an option since being fit with them?

<table>
<thead>
<tr>
<th>Response</th>
<th>patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) considerable negative</td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15</td>
</tr>
<tr>
<td>2) moderate negative</td>
<td></td>
</tr>
<tr>
<td>3) neutral</td>
<td></td>
</tr>
<tr>
<td>4) moderate positive</td>
<td></td>
</tr>
<tr>
<td>5) considerable positive</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 9:
6. How would you rate the effect of bifocal contacts on your self image versus before you were fit?

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 10:

7. Since being fit with bifocal contact lenses, how would you rate your feelings about coming back to this office for non-contact lens services or materials?

Response:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
8. Compared to before you were fit with bifocal contacts, how likely are you to refer another person to this office?

FIGURE 11:

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 12:
1. Based on the chief complaint, after fitting the bifocal contacts versus before, how would you rate the patient's overall satisfaction?

Response:
1) considerable negative
2) moderate negative
3) neutral
4) moderate positive
5) considerable positive

Patients:
FIGURE 13:
2. How would you rate the patient's visual performance at far after the bifocal contacts versus before?

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 14:
3. How would you rate the patient’s visual performance at an intermediate distance after the bifocal contacts versus before?

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 15:
4. How would you rate the patient's visual performance at near after the bifocal contacts versus before?

Response:

Patients:

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative
FIGURE 16:
5. How would you rate the monetary profitability of this patient after the bifocal lens fitting versus before?

Change Response:
1) considerable negative
2) moderate negative
3) neutral
4) moderate positive
5) considerable positive

Response:
Patients:
FIGURE 17:
6. How would you rate the patient's success in terms of someone who will refer others to your office after the fitting versus before?

Response:

Change Response:
1) considerable negative
2) moderate negative
3) neutral
4) moderate positive
5) considerable positive

Patients:
FIGURE 18:
7. How would you rate the patient's usage of services or materials other than bifocal contacts versus before the fitting?

Change Response:
- 5) considerable positive
- 4) moderate positive
- 3) neutral
- 2) moderate negative
- 1) considerable negative
FIGURE 19:
8. How would you rate your experience with this patient in regards to bifocal contact lenses boosting your overall practice versus prior to fitting them?

Change Response:
5) considerable positive
4) moderate positive
3) neutral
2) moderate negative
1) considerable negative