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Abstract

Many studies in the past have compared toric hydrogel lens designs with regard to vision, stability, and patient satisfaction. While each of these variables is important in the success of contact lens fitting, few studies in the literature have explored the relationship between lens design and visual performance, specifically as it relates to functional daily activities. This study was developed to identify whether or not a correlation exists between lens design and visual performance by comparing the prism ballasted Soflens 66 toric lens to the double slab-off Acuvue toric hydrogel lens. Eight subjects were fit with each lens to wear for one week, after which visual performance was assessed with the following tests: logMAR visual acuity, speed and accuracy of stereopsis, dynamic visual acuity, and accommodative facility. The subjects were also required to complete a questionnaire at the end of the week regarding the performance of each lens. It was found that due to the small sample size, there was no statistically significant difference between the two lenses with regard to many of the visual performance measurements. One question from the questionnaire pertaining to frequency of blur when shifting focus from near to far was determined to be statistically significant, showing the Acuvue toric lens design to be preferred by the subjects involved in the study. Without regard to statistical significance, it did appear that a relationship exists between lens design and visual performance, as subjects wearing the prism ballasted lens performed better than when wearing the double slab-off lens in many categories. To further validate these findings, future studies with larger sample sizes are therefore warranted.

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VISUAL PERFORMANCE WITH TWO FREQUENT REPLACEMENT TORIC HYDROGEL CONTACT LENS DESIGNS

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Tracie Inouchi. Originally from Honolulu, Hawaii, Tracie completed her undergraduate studies at Pacific University in 1998 with a Bachelor of Science degree in Biology. She was accepted into the Pacific University College of Optometry later that year and has since been a member of the AOSA, SOA, AAO, Amigos, and BSK. She plans on returning home to Hawaii to practice where she hopes to play an integral role in the development of a multi-disciplinary group practice in the state. Outside of optometry, she enjoys spending time with family and friends.

Elizabeth Fong Shipman. Elizabeth received her undergraduate degree at the University of California, Los Angeles and her optometric training at Pacific University College of Optometry, Oregon. While an undergraduate she worked several years in a Southern California private practice. She is currently an active member of AMIGOS, a student organization that provides eye care for under served communities. Her clinical education includes rotations in the Pacific Northwest through the Portland VA Hospital, Salem Indian Health Services, and Group Health HMO of Seattle.

Susan Hsu. Susan graduated from the University of Nevada, Reno with a Bachelor of Science degree with distinction. She will receive her optometry degree from Pacifc University College of Optometry in 2003. Upon graduation she plans to establish a private or group practice in a small urban setting. Her hobbies include running, biking, dancing, and weight lifting.

Abstract

Many studies in the past have compared toric hydrogel lens designs with regard to vision, stability, and patient satisfaction. While each of these variables is important in the success of contact lens fitting, few studies in the literature have explored the relationship between lens design and visual performance, specifically as it relates to functional daily activities. This study was developed to identify whether or not a correlation exists between lens design and visual performance by comparing the prism ballasted Soflens 66 toric lens to the double slab-off Acuvue toric hydrogel lens. Eight subjects were fit with each lens to wear for one week, after which visual performance was assessed with the following tests: logMAR visual acuity, speed and accuracy of stereopsis, dynamic visual acuity, and accommodative facility. The subjects were also required to complete a questionnaire at the end of the week regarding the performance of each lens. It was found that due to the small sample size, there was no statistically significant difference between the two lenses with regard to many of the visual performance measurements. One question from the questionnaire pertaining to frequency of blur when shifting focus from near to far was determined to be statistically significant, showing the Acuvue toric lens design to be preferred by the subjects involved in the study. Without regard to statistical significance, it did appear that a relationship exists between lens design and visual performance, as subjects wearing the prism ballasted lens performed better than when wearing the double slab-off lens in many categories. To further validate these findings, future studies with larger sample sizes are therefore warranted.

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Introduction

Recent advances in contact lens manufacturing and design have allowed practitioners more options when selecting disposable toric hydrogel lenses that provide the clearest and most stable vision for their astigmatic patients. Developments in this area have focused primarily on creating a toric lens design that provides maximum stability. Given a spherical lens on the astigmatic cornea, the lens would rock with each blink due to the toricity created by varying degrees of curvature in the corneal meridians. The same then holds true for a toric lens on the eye. However, the toric lens has unequal power in all meridians, so rotation of the lens would induce cylindrical power away from the appropriate axis. Fittingly, toric hyrogel lenses that are stable with the blink should then produce better visual performance and patient satisfaction.[1]

Various techniques have been implemented in the development of a toric lens design that provides both superior visual performance and maximum rotational stability. Traditionally, the use of prism ballasting has been incorporated into the toric lens design for this purpose. The prism adds weight to the lower part of the lens to create a wedge that interacts with the lid upon blinking. When the upper lid moves over the top, the lens is squeezed towards the base of the prism, thereby stabilizing the lens.[2]

Additional methods for achieving rotational stability incorporate the use of lens thickness in the design of the toric lens. The double slab-off design used for toric hydrogel lenses has a superior and inferior thin zone with a thick zone in the middle of the lens. During

the blink, the thin zones are affected by the movement of the lids and, as a result, help to position and stabilize the lens.[3]

As rotational stability has proven to be essential for the best visual performance, studies have also shown that toric lens design in itself influences visual performance. Recently, a study comparing the Soflens 66 toric and Acuvue toric contact lenses showed that subjects wearing the prism-ballasted Soflens 66 toric lens were able to achieve better Snellen visual acuity than subjects wearing the double slab-off Acuvue toric lens.[3] Other studies, however, have suggested that lens stability was comparable and that visual performance was equal.[5,6]

Historically, soft toric contact lens wearers have often proven to be a challenge for contact lens practitioners with regard to both visual performance and patient satisfaction. Even despite having measurable Snellen visual acuity of 20/20 with their lenses, these patients often report dissatisfaction with their visual quality. This leads the practitioner to address specific needs of the patient and to address other components of visual performance.[4] Past studies have attempted to do just that in comparing contrast sensitivity between the two lens designs. In one study, it was shown that contrast sensitivity was better when wearing the prism ballasted lens than when wearing the double slab-off lens.[1]

While past contact lens research studies have supported the fact that visual performance comprises more than visual acuity, few have gone beyond the realm of traditional

research methods to account for the needs of the toric lens wearer. In these patients, achieving rotational stability is essentially important, especially as it influences daily activities such as shifting focus from near to far in a classroom or tracking a moving object like a car as it passes by. Both of these tasks, as with many other visual tasks, depend heavily on clear and stable vision. The effort to simulate these real-life conditions in a clinical setting is therefore critical to fully evaluate the demands placed upon the toric lens wearer.

Particularly important in addressing these demands is the development of a comprehensive battery of tests that would effectively evaluate all aspects of visual performance as it relates to toric hydrogel contact lenses. This would include measurements of logMAR visual acuity, dynamic visual acuity, speed and accuracy of stereopsis at distance and near, and near-far accommodative vergence facility. These tests, taken from the Pacific Sports Visual Performance Profile[7], aid in the evaluation of visual performance of toric hydrogel contact lens designs.

Methods

Eighteen subjects were recruited for this randomized, double masked study from the patient base of the Family Vision Centers at Pacific University in Oregon. Of these subjects, 10 were excluded from the study because they did not meet specific criteria in the study protocol; six subjects were unable to wear the Acuvue toric lens, four due to excessive rotation and two because of unacceptable lens fit; two subjects could not be fit

with the Soflens 66 toric lens for the same reasons, one due to excessive rotation and one due to an excessively flat fit; one additional subject was excluded due to accommodative dysfunction that was determined through the screening and another was excluded due to ocular allergies and dry eyes that were diagnosed before the lenses were fit. For the remaining eight subjects, the two study lenses were fit and then evaluated to determine whether lens design affected visual performance of each lens.

The parameters for the two lenses limited the study to subjects with a spectacle correction of –0.75 D to –2.00 D of astigmatism and between plano and –6.50 D of myopia in each eye. Of the eight subjects participating in the study, four were female and four were male, ranging in age from 21 to 40. Each subject was required to have had no known ocular or systemic allergies or medication use at the time of the study that might have interfered with contact lens wear. Subjects who were enrolled in vision therapy at the time of the study were also excluded from participation.

Prior to enrollment, each subject was screened to determine his or her qualification for the study. The following data were obtained in the process: spectacle logMAR visual acuities at 40 cm and 6 m, near cover test, and distance stereo acuity measured with the Mentor O&O B-VAT. The subject must have demonstrated visual acuity best correctable to at least 20/25 for each eye with their current spectacles and must have had no known diagnosis of amblyopia or strabismus in either eye. Each subject was also required to have at least 180 seconds arc of distance stereo acuity with their current spectacles in order to participate in the study. Subjects who met all eligibility requirements were subsequently enrolled in the study.

At the enrollment visit, baseline spectacle measurements were obtained in three consecutive trials in order to minimize the learning curve for each test. The tests administered were: logMAR visual acuity at 6m, logMAR visual acuity at 40 cm, dynamic visual acuity, speed and accuracy of distance stereo acuity, speed and accuracy of near stereo acuity, and accommodative/vergence facility.

Distance visual acuity was measured using the high contrast Bailey-Lovie acuity chart. Both monocular and binocular measurements were obtained. Visual acuities were scored using the logMAR system with each letter receiving a score of 0.02 on the logMAR scale.

Near visual acuity was assessed using the Lighthouse near chart, also a logMAR chart. Visual acuities were scored in the same manner as the distance visual acuity measurements with each row having a value of 0.1 and each letter having a value of 0.02 on the logMAR scale.

Visual acuity for a moving rotational target was determined in a dim room at a testing distance of 3 m in accordance with the Pacific Sports Visual Performance Profile.[7] The subject was instructed to stand stationary with no head movement being allowed for the duration of the test. The test target was one of four Landolt rings with its orientation being varied by the researcher. Each ring subtended a size of 10 minutes visual arc at the test distance, creating a target with a 20/40 visual acuity demand. A rotating mirror

device called a Kirshner Rotator presented the targets in a clockwise rotation at an initial speed of 100 rpm and was gradually and steadily decreased at a rate of 4-5 rpm/second. The speed of rotation (to the nearest rpm) at which the subject could first correctly identify the orientation of the rotating Landolt ring on each of three trials was determined to be the subject's dynamic visual acuity.

The Mentor O&O B-VAT II was used to measure the speed and accuracy of stereopsis at a test distance of 6 m. The subject was seated while wearing high-frequency liquid crystal goggles. No head movement was allowed for the duration of the test. Targets were presented in order of increasing difficulty from 240 seconds arc to 15 seconds arc of stereopsis. Each subject was instructed to quickly identify the circle that appeared closest to them.. Timing began once the stimulus was presented and continued until a correct response was given or 30 seconds had elapsed. If an incorrect response was given during the test, a second target of the same stereo acuity demand was presented and timing begun once again. If an incorrect response was given once again or 15 seconds had elapsed, the test was concluded and the response was recorded as incorrect (-) for the appropriate stimulus level.[7]

Near stereo acuity was measured at 40 cm using the Titmus stereo test in the Randot. The subject was seated in a room with standard nearpoint illumination and wore polarized glasses over their own habitual near prescription. No head movement was allowed for the duration of the test. A typoscope was used to isolate each target individually so that only a single line of a particular stereo acuity demand was presented

at a time. The targets were presented in a random fashion and the subject was instructed to as quickly as they could identify the circle that appeared closest to them. Timing began once the target was presented and concluded when a correct response was given or 30 seconds had elapsed. If the subject incorrectly identified the appropriate circle, the researcher instructed the subject to attempt the same target again. If the subject again gave an incorrect response, the researcher proceeded to the next target. The test was concluded after all ten lines were tested.

Accommodative vergence facility was measured by changing fixation repeatedly from a 40 cm to a 6 m target at two visual acuity demands, 20/25 and 20/80.[7] The subject stood stationary while holding the near chart just below eye level and on line with the distance chart. Testing began with the 20/80 letters on the near chart. The subject was instructed to, as quickly and accurately as they could, shift their fixation back and forth between the two charts while calling out each successive letter. The number of cycles completed in sixty seconds was determined by subtracting one from the total count of letters called on the near chart. Each score was further adjusted for any letters skipped. Accommodative vergence facility testing concluded with the same procedure repeated for the 20/25 letters.

Upon completion of the three baseline measurements, diagnostic trial lenses were ordered or obtained from the Family Vision Centers at Pacific University. Once all trial lenses were received for a particular subject, an appointment was made to fit and dispense the lenses.

All eligible subjects were diagnostically fit with the Acuvue Toric and Soflens 66 Toric hydrogel contact lenses. Diagnostic lenses were worn for a minimum of 20 minutes before the vision and lens fit were assessed. Each subject must have demonstrated at least 20/30 visual acuity in each eye with each pair of contact lenses in order for the lenses to be considered acceptable. The lens fit was determined to be adequate only if centration was established and at least 0.25 mm of movement was evident in both primary and up gaze. If either lens rotated in primary gaze, it was only considered to be an acceptable fit if the rotation was determined to be stable after each blink. In that case, a sphero-cylinder over-refraction was performed and the rotation was compensated for using the LARS mnemonic. A second diagnostic lens was then ordered in the resulting power. If either lens was shown to be unstable with regards to rotation, the subject was excluded from the study on the basis that a proper lens fitting relationship was not obtained. When a lens did not rotate, a sphero-cylinder over-refraction was performed and the resulting power was ordered.

Upon arrival of the contact lenses, the same fitting assessment procedure was repeated. The lens was dispensed provided that the subject could obtain 20/30 Snellen visual acuity, the subject was satisfied with the vision and comfort of the lens, and an adequate lens-fitting relationship was obtained as determined by the above criteria. If any of the above were determined to be otherwise, additional diagnostic lenses were fit until adequate vision and fit were obtained. Subjects who were unable to achieve either of the two were excluded from participation in the study.

The order of lens wear was randomly assigned so that four subjects wore the Soflens 66 toric lens on both eyes for the first week and the Acuvue toric lens the following week. The remaining four subjects wore the Acuvue toric lens on both eyes for the first week and the Soflens 66 toric lens the following week. None of the lenses were dispensed until the fitting process was completed for both lenses for each subject.

For the duration of the study, the subjects were instructed to clean and disinfect their lenses with the Quickcare cleaning system. Detailed oral and written instructions were given to each subject regarding the appropriate lens care regimen as described in the package insert. Subjects were instructed to wear their lenses for a minimum of 8 hours a day and to wear the same pair of lenses throughout the duration of the study on a daily wear basis.

Following one week of lens wear, all subjects were instructed to return for the first follow-up visit. Upon arrival, each subject was asked to complete a subjective questionnaire addressing the visual performance of the lens they were currently wearing. Following completion of the questionnaire, the same tests were performed as those previously done for the baseline spectacle measurements. Once all testing was completed with the lenses, the second lenses were dispensed and the subject was instructed to return following one week of lens wear.

At the second follow-up visit, the subject was again instructed to complete the subjective questionnaire. The same battery of tests was performed and the lenses were removed once all testing was completed.

Results

Descriptive data for all measured variables are displayed in Tables 1-7. The data were analyzed for differences in visual performance by lens type using the Wilcoxon signed ranks test, a non-parametric test used for bivalent repeated measures data. While the performance tests are scaled parametrically, the small sample size precluded the use of parametric statistical tests. If a probability level of $p<0.05$ is required of the data, significant differences exist only for question 4 in the questionnaire data. If a probability level of $p<0.10$ is allowed, then the distance visual acuity data for the left and both eyes are different, as are questions 3 and 6 in the questionnaire data.

For question 4 related to the frequency of blur when looking from far to near, the Acuvue toric lens was rated better than the Soflens 66 toric lens ($Z=-2.45$, $p=0.014$).

Discussion

In light of recent studies comparing toric hydrogel lens designs' effects on vision and stability, the goal of this study was to determine whether or not a correlation exists between lens design and visual performance, specifically as it relates to functional daily activities.

Statistically, no difference was found in the performance of the two lenses, but some interesting findings in the data were noted throughout the study. Eight subjects were excluded from participation due to failure to meet the fitting criteria as stated in the study protocol. For six of the eight subjects, the Acuvue toric lens fitted improperly, primarily due to excessive rotation and decentration. The Acuvue lens was found to rotate more than 30 degrees for four of the subjects, with two rotating as much as 90 degrees on the subject's eye. In each of the cases, the lenses were allowed to equilibrate for a minimum of 30 minutes. For two subjects, the Acuvue lens was found to be fitting excessively flat with the lens decentered to the limbus temporally. Two other subjects were excluded from the study based on similar findings with the Soflens 66 toric lens. One subject was determined to be ineligible because the lens rotated 35 degrees on the eye, while another was excluded due to an excessively flat fit with decentration to the limbus temporally and inferiorly.

In the course of the study, 33 different visual performance measurements were obtained. While only one of the measurements was determined to be statistically significant, there appeared to be a trend in the data. Almost two-thirds of the measurements favored the Soflens 66 toric lens design. Subjects wearing this lens performed better than subjects wearing the Acuvue toric lens in 21 of the 33 conditions. For 11 measurements, the subjects performed better with the Acuvue toric lens, and in one condition, the subjects performed equally when wearing either lens.

In a recent study, Edmunds showed that the Soflens 66 toric lens performed significantly better than the Acuvue toric lens with regard to Snellen visual acuity.[2] While the study at hand compared logMAR acuity instead, the findings were similar. Subjects wearing the Soflens 66 toric lens did appear to perform better, though not statistically significant, particularly in the distance. The data showed that the largest difference between the lenses was 0.06 logMAR units, equivalent to three letters on the acuity chart.

Without regard to stereo threshold, subjects wearing the Soflens 66 toric lens responded faster to the target in 4 of the 6 presentations for speed of stereopsis testing in the distance. Interestingly, in one of the conditions in which the Acuvue toric lens wearers performed faster, there were actually fewer subjects responding correctly to the target than subjects wearing the Soflens 66 toric lens. There was only occurrence where subjects wearing the Acuvue toric lens actually performed faster with equal or better accuracy than the Soflens 66 toric lens wearers.

Of the ten targets presented at near for stereopsis testing, subjects wearing the Soflens 66 toric lens performed faster for five targets, while the Acuvue toric lens wearers performed faster for the other five targets. With regard to accuracy, though, subjects wearing the Soflens 66 toric lens performed either equally as well or better than the Acuvue toric lens wearers in nine of the ten target presentations.

When wearing the Soflens 66 lens, subjects demonstrated marginally better distance stereoacuity than when wearing the Acuvue toric lens. Had the sample size been larger, it would be interesting to note whether or not there was truly a significant difference here.

Following the trend for much of the study data, the questionnaire results showed that, although not statistically significant, subjects seemed to prefer the Soflens 66 toric lens. In 5 of the 6 questions, subjects preferred the Soflens 66 toric lens as compared to the Acuvue toric lens, including an overall assessment of the quality of the two lenses. The sixth question, relating to frequency of blur when shifting focus from near to far, showed the Acuvue toric lens to be preferred over the other. Remarkably, this was the only measurement in the entire study to achieve statistical significance.

Although all efforts were made in the course of the study to determine a relationship between lens design and visual performance, the small sample size prohibited many of the outcome measurements from being statistically significant. While only one of the 33 visual performance measurements achieved statistical significance, it appeared that the Soflens 66 toric lens, a prism ballasted lens, was preferred and generally provided better visual performance than the double slab-off Acuvue toric lens.

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Appendix.

	LM6R	LM6L	LM6B	LM40R	LM40L	LM40B
Baseline mn	0.11	0.15	0.09	-0.06	-0.07	-0.09
Baseline s.d.	0.05	0.06	0.06	0.04	0.03	0.02
Acuvue mn	0.15	0.17	0.10	-0.06	-0.09	-0.09
Acuvue s.d.	0.06	0.09	0.05	0.06	0.02	0.02
Soflens 66 mn	0.12	0.11	0.06	-0.07	-0.08	-0.09
Soflens 66 s.d.	0.07	0.08	0.07	0.05	0.03	0.03
Diff b/w lenses	-0.03	-0.06	-0.04	-0.01	0.01	0.00

Table 1. Comparison of LogMAR visual acuities at 6 m and 40 cm between the two lenses.

	DVA
Baseline mn	49.87
Baseline s.d.	9.57
Acuvue mn	56.16
Acuvue s.d.	13.66
Soflens 66 mn	60.29
Soflens 66 s.d.	12.71
Diff b/w lenses	-4.13

Table 2. Dynamic visual acuity measurements (rpm) for both lenses.

	DSS240	% sample	DSS180	% sample	DSS120	% sample
Baseline mn	1.17	100.00%	1.46	100.00%	1.71	100.00%
Baseline s.d.	0.47		0.67		0.95	
Acuvue mn	1.43	100.00%	1.76	100.00%	1.73	100.00%
Acuvue s.d.	0.87		1.14		0.94	
Soflens 66 mn	1.02	100.00%	1.50	100.00%	1.67	100.00%
Soflens 66 s.d.	0.05		1.07		1.75	
Diff b/w lenses	-0.41		-0.26		0.02	

	DSS60	% sample	DSS30	% sample	DSS15	% sample
Baseline mn	2.67	87.50%	4.58	75.00%	4.39	75.00%
Baseline s.d.	1.25		2.86		1.42	
Acuvue mn	1.61	62.50%	1.74	62.50%	5.87	50.00%
Acuvue s.d.	1.36		0.77		4.83	
Soflens 66 mn	2.66	100.00%	4.02	62.50%	2.95	50.00%
Soflens 66 s.d.	2.47		2.89		1.28	
Diff b/w lenses	1.05		2.28		-2.92	

Table 3. Comparison of speed of stereopsis (sec) at 6 m between the two lenses.

	NSS400	% sample	NSS200	% sample	NSS140	% sample
Baseline mn	1.29	100.00%	1.40	100.00%	2.85	100.00%
Baseline s.d.	0.60		0.47		1.55	
Acuvue mn	1.20	100.00%	1.56	100.00%	2.14	87.50%
Acuvue s.d.	0.40		0.98		0.71	
Soflens 66 mn	1.14	100.00%	1.20	100.00%	2.15	100.00%
Soflens 66 s.d.	0.36		0.41		1.93	
Diff b/w lenses	-0.06		-0.36		0.01	

	NSS100	% sample	NSS70	% sample	NSS50	% sample	NSS40	% sample
Baseline mn	1.85	87.50%	3.03	87.50%	3.41	87.50%	5.58	75.00%
Baseline s.d.	0.86		1.94		1.70		3.41	
Acuvue mn	2.25	87.50%	2.09	100.00%	4.10	75.00%	2.36	62.50%
Acuvue s.d.	1.72		0.84		3.61		1.41	
Soflens 66 mn	2.15	87.50%	2.99	100.00%	3.27	87.50%	2.90	75.00%
Soflens 66 s.d.	1.28		1.77		0.87		1.46	
Diff b/w lenses	-0.10		0.90		-0.83		0.54	

	NSS30	% sample	NSS25	% sample	NSS20	% sample
Baseline mn	4.55	87.50%	5.18	87.50%	6.22	75.00%
Baseline s.d.	1.84		2.75		2.54	
Acuvue mn	3.29	87.50%	3.91	87.50%	6.75	37.50%
Acuvue s.d.	1.29		1.23		3.98	
Soflens 66 mn	4.75	75.00%	4.29	87.50%	5.70	50.00%
Soflens 66 s.d.	2.50		2.26		2.05	
Diff b/w lenses	1.46		0.38		-1.05	

Table 4. Speed of stereopsis measurements (sec) for each lens at 40 cm.

	DSA	NSA
Baseline mn	53.75	25.21
Baseline s.d.	46.89	5.80
Acuvue mn	48.75	23.75
Acuvue s.d.	46.58	3.54
Soflens 66 mn	30.00	23.13
Soflens 66 s.d.	19.64	3.72
Diff b/w lenses	-18.75	-0.62

Table 5. Stereo acuity measurements (sec arc) for the two study lenses.

	AF80	AF25
Baseline mn	13.50	7.92
Baseline s.d.	2.30	1.81
Acuvue mn	13.63	9.00
Acuvue s.d.	2.50	1.63
Soflens 66 mn	15.00	10.71
Soflens 66 s.d.	1.69	1.38
Diff b/w lenses	-1.37	-1.71

Table 6. Comparison of accommodative facility measurements (cycles per min) for lens A and B.

	Q1	Q2	Q3	Q4	Q5	Q6
Acuvue mn	3.75	3.50	46.88%	15.63%	18.75%	3.38
Acuvue s.d.	1.16	0.93	28.15%	18.60%	17.68%	0.74
Soflens 66 mn	3.88	4.38	25.00%	21.88%	18.75%	4.25
Soflens 66 s.d.	0.99	0.74	26.73%	28.15%	29.12%	1.04
Diff b/w lenses	-0.13	-0.88	-21.88%	6.25%	0.00%	-0.87

Table 7. Comparison of subjective questionnaire responses between the two lenses.