

# INFLUENCE OF FRAME SIZE IN THE EFFICACY OF A SPECTACLE LENS WITH ASYMMETRIC MYOPIC PERIPHERAL DEFOCUS

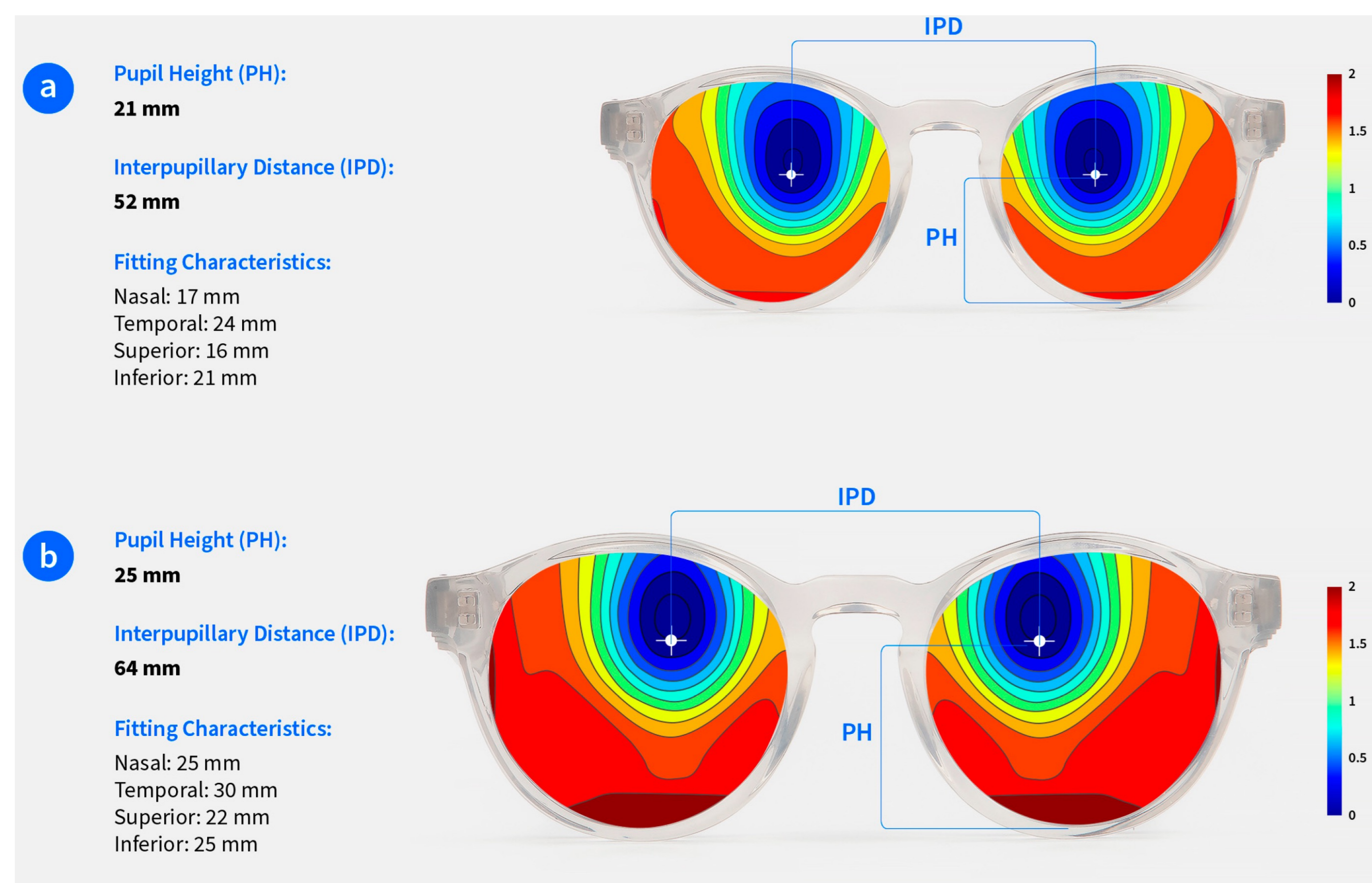
Eva Chamorro<sup>1</sup>, Miguel Ángel Sánchez-Tena<sup>2-3</sup>, Jose Miguel Cleva<sup>1</sup>, Clara Martínez-Pérez<sup>3</sup>, Marta Álvarez<sup>1</sup>, Cristina Álvarez-Peregrina<sup>2</sup>, César Villa-Collar<sup>4</sup>

1. Indizen Optical Technologies S.L. Spain. 2. Universidad Complutense de Madrid. Spain. 3. ISEC-LISBOA-Instituto de Educação e Ciências. Portugal. 4. Universidad Europea de Madrid. Spain.

Corresponding author (Eva Chamorro): [evachamorro@iot.es](mailto:evachamorro@iot.es)

## INTRODUCTION

- Myoless spectacle lenses are characterized by an asymmetric myopic peripheral defocus (MPDL) consisting of a central blur-free small area surrounded by a progressive power distribution whose defocus level varies between the different regions of the lens. A recent randomized clinical trial (RCT) has demonstrated that the lens MPDL significantly reduced the absolute growth of axial length (AL) by 39% after 12 months of treatment in comparison to the control group in a Spanish population<sup>1-3</sup>.
- During the prescription and dispensing of these type of lenses, one of the most common challenge is to select a comfortable frame according to the children physiognomy that provides the maximum compliance of the treatment and in consequence increase its efficacy. However, one of the typical concerns for eye care professional is which is the recommendable size that frames should have to ensure a sufficient treatment area.
- For that reason, in this study, we have analyzed the relationship between the efficacy of the Myoless lens and the characteristics of the spectacle frame.



**Figure 1.** Fitting characteristics of 2 participants of the study with extremely different face physiognomies, indicating distances from the pupil to the nasal, temporal, superior, and inferior sides of the edge of the frame. (a) Seven-year-old participant wearing a frame with horizontal size of 41 mm, vertical size of 37 mm, and bridge of 18 mm. (b) Eleven-year-old participant wearing a frame with horizontal size of 55 mm, vertical size of 47 mm, and bridge of 14mm.

## PURPOSE

The aim of this study is to investigate if the frame size and, in consequence, treatment size of the spectacle glasses influences the myopia control effects in myopic children wearing MPDL lenses.

## REFERENCES

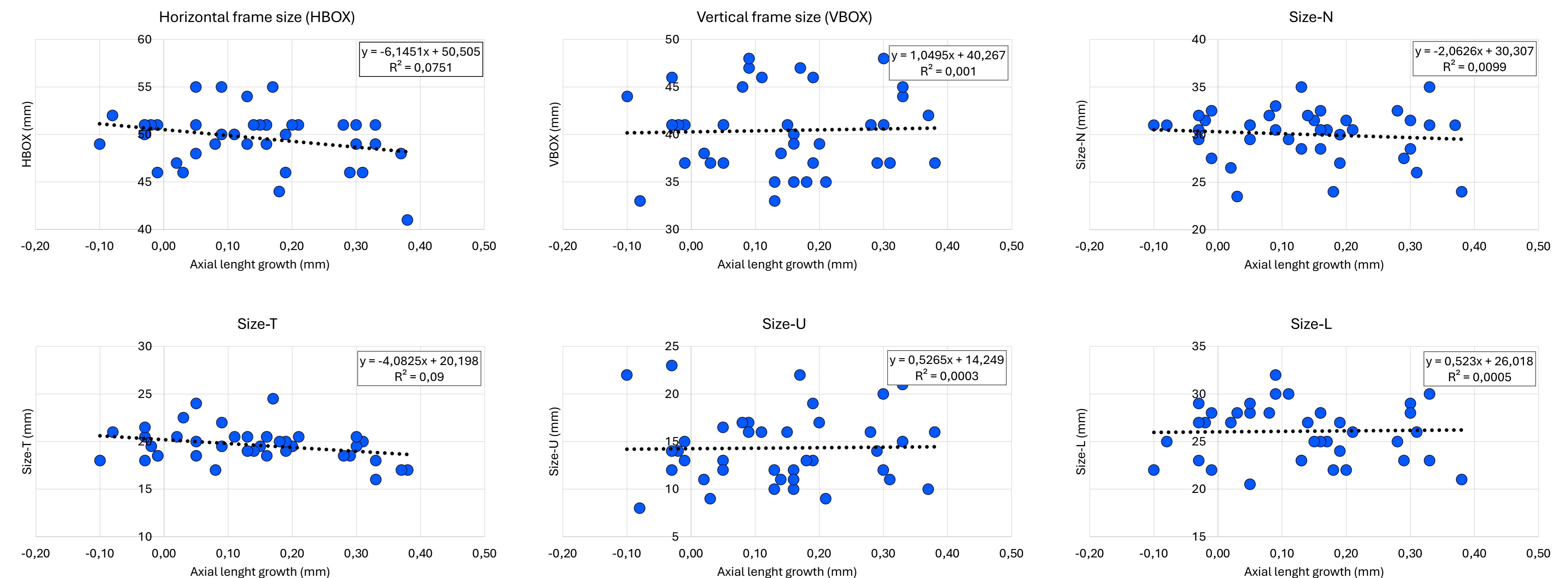
1. Sánchez-Tena, M. Á., Cleva, J. M., Villa-Collar, C., Álvarez, M., Ruiz-Pomeda, A., Martínez-Pérez, C., Andreu-Vázquez, C., Chamorro, E. & Álvarez-Peregrina, C. (2024). Effectiveness of a Spectacle Lens with a Specific Asymmetric Myopic Peripheral Defocus: 12-Month Results in a Spanish Population. *Children*, 11(2), 177.
2. Concepción-Grande, P., Cano, C., M.-P. C., Sánchez-Tena, M., Álvarez-Peregrina, C., Andreu-Vázquez, C., Cleva, J., & Villa-Collar, C. Subjective wearing experience of a novel spectacle lens for myopia management based on peripheral asymmetric myopic defocus. *European Academy of Optometry and Optics (EAOO)*. 2024
3. Álvarez, M., Álvarez-Peregrina, C., Sánchez-Tena, M.A., Andreu-Vázquez, C., Martínez-Pérez, C., González, A., Chamorro, E., & Villa-Collar, C. (2024). Effect on accommodative and binocular function of a novel spectacle lens designed to slow myopia progression based on peripheral asymmetric myopic defocus. *European Academy of Optometry and Optics (EAOO)*.

## METHODS

The relationship between the frame characteristics and treatment efficacy of 39 children who participated in a 1-year randomized controlled trial was analyzed. The axial length growth of the right eye of children wearing MPDL treatment was correlated with horizontal frame size (HBOX), vertical frame size (VBOX) and distances from pupil position to the frame edge at the nasal (Size-N), temporal (Size-T), upper (Size-U) and lower (Size-L) sides. Spearman's rank correlation coefficient was calculated for the participants right eye considering a statistical significance level of p-value<0.05.

## RESULTS

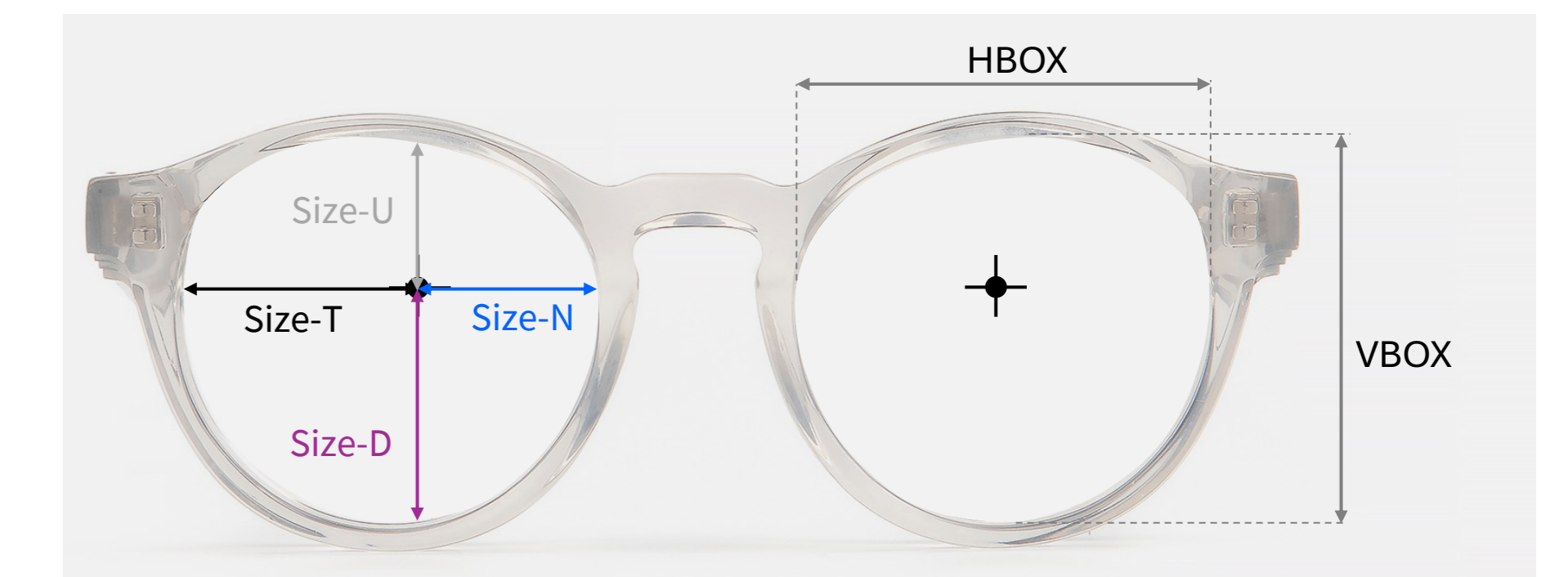
No statistically significant relationship was found between the axial length growth during the 12 months of treatment follow-up and any of the analyzed variables, suggesting there is not any relation between frame characteristics and the efficacy of the Myoless lens.



**Figure 3.** Dispersion graphs representing the distribution of values within the dataset: Relationship between axial length growth after 12 months of follow up and frame characteristics: horizontal frame size (HBOX), vertical frame size (VBOX) and distances from pupil position to the frame edge at the nasal (Size-N), temporal (Size-T), upper (Size-U) and lower (Size-L) sides.

## CONCLUSION

Frame size does not affect to the efficacy of the myopia management treatment in the analyzed sample of children wearing MPDL lenses. This suggests that during prescription and dispensing of this lenses, it is more important to select a spectacle frame that correctly fits to the children physiognomy maintaining a correct position of the lenses in front of the eye, instead of forcing to select bigger frames with bigger treatment areas that can produce an inadequate fitting of the lenses, reduce comfort and decrease the compliance of treatment.



**Figure 2.** Frame characteristics variables correlated with axial length growth after 12 months of follow up: horizontal frame size (HBOX), vertical frame size (VBOX) and distances from pupil position to the frame edge at the nasal (Size-N), temporal (Size-T), upper (Size-U) and lower (Size-L) sides.

	HBOX	VBOX	Size - N	Size - T	Size - U	Size - L
<b>Mean ± SD</b>	49.67 ± 2.92	40.41±4.27	30.02 ± 2.70	19.64 ± 1.77	14.32 ± 3.85	26.09 ± 3.05
<b>Range (min to max)</b>	41 to 55	33 to 48	23.5 to 35	16 to 24.5	8 to 23	20.5 to 32
<b>Spearman's rank (r)</b>	-0.222	-0.004	-0.089	-0.261	0.027	-0.019
<b>p-value</b>	0.171	0.980	0.582	0.107	0.866	0.908

**Table 1.** Statistical analysis: Mean and standard deviation of each variable, minimum and maximum value, spearman's rank correlation coefficient and p-value

