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ORIGINAL ARTICLE

Ciliary muscle and anterior segment characteristics in pre-presbyopic adults with Down syndrome

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Abstract

Purpose: Previous research has shown that accommodation deficits are common in individuals with Down syndrome (DS), but the origin and mechanisms behind these deficits are still unknown. The aim of this study was to investigate the characteristics of different ocular structures involved in accommodation, in particular the ciliary muscle (CM), in a population of individuals with DS to further understand this deficit and its mechanisms.

Methods: Thirty-two volunteer participants of pre-presbyopic age with ($n = 16$) and without DS ($n = 16$) were recruited. Temporal and nasal images of the CM were acquired using anterior segment optical coherence tomography (AS-OCT) while participants fixated an eccentrically located target. Analysis of CM parameters was undertaken using validated semi-automated software. Axial length, anterior chamber depth, lens thickness and corneal curvature were obtained with the Topcon Aladdin Optical Biometer and Corneal Topographer. Non-cycloplegic refractive error and accommodative ability were obtained with an open-field autorefractor and dynamic retinoscopy, respectively. Independent *t*-tests were conducted to determine differences in CM and other anterior segment parameters between participants with and without DS.

Results: No significant differences were found in the CM parameters studied between participants with and without DS ($p > 0.05$). In contrast, significant differences were found in visual acuity ($p < 0.001$), accommodative response ($p < 0.001$) and corneal curvature (K1 $p = 0.003$ and K2 $p < 0.001$) between participants with and without DS.

Conclusions: Despite having poorer accommodation, pre-presbyopic adults with DS do not have a different CM morphology to that found in typically developing adults. These findings suggest that the accommodative deficit found in this population is not due to a mechanical deficit of the CM.

KEYWORDS
accommodation, anterior segment OCT, ciliary muscle, Down syndrome

Valldeflors Vinuela-Navarro conducted this work at Aston University.

INTRODUCTION

Down syndrome (DS) is the most common genetic cause of learning disability, and is caused by extra genetic material in chromosome 21.[1] Vision problems, including strabismus, nystagmus and significant refractive errors, are common in people with DS.[2,3] Accommodative deficits are also highly prevalent in this population and have been reported by many authors.[3–8] Despite this, the mechanism underlying this deficit is still unknown, but three different hypotheses have been proposed.[8] First, this deficit could be the result of a sensory deficit of the accommodative system,[9,10] which would prevent individuals in this population accurately detecting blur or disparity, and therefore not triggering accommodation appropriately. Second, this deficit could also be explained by an abnormal coupling or link between the accommodative and vergence systems.[6,8] Finally, this could also be a result of a mechanical deficit caused by structural and/or morphological differences in any of the structures of the accommodative system.[6,9] While any of these hypotheses is plausible, it can be argued that there is some evidence to advocate for the last, given that structural ocular differences have already been reported in individuals with DS. For instance, individuals with DS have been found to have decreased corneal thickness and steeper corneal curvature,[11–13] as well as decreased crystalline lens thickness and lower crystalline lens power.[12] Given such structural and morphological ocular differences, as well as reduced skeletal muscle tone reported in people with DS,[14] it is plausible to suggest that the study of the ciliary muscle (CM), that is, the muscle directly involved in the accommodative process, is of significant interest in understanding the mechanism of accommodative deficits in DS.

Changes in the CM have been observed, with age-related accommodative deficits in typically developing adults. For instance, the anterior portion of the CM has been reported to thicken with age, while some posterior areas of the CM become thinner temporally.[15] CM anterior length has also been reported to decrease with age temporally and nasally for emmetropes only.[15] These changes have been described as an antero-inwards shift of CM mass.[15] While the CM has been well studied in typically developing adults, limited research has been conducted in the population with DS, who frequently under-accommodate. A recent study has reported a relationship between hyperopia and increased CM thickness in adults with DS, similar to that found in adults without DS.[16] By visually inspecting and comparing their CM thickness data with that published previously in typically developing individuals, the authors suggested that the CM thickness in the population with DS is relatively similar to that reported in both children and adults without DS.[16]

The purpose of this study was to investigate further differences in the morphology of the CM between individuals with and without DS, with the aim to characterise this key accommodative structure in DS in more detail, and determine the aetiology of accommodative deficits in this population.

Key points

- Under-accommodation is frequently found in people with Down syndrome, but the origin of this vision deficit is unknown.
- In this study, the characteristics of the ciliary muscle were investigated in people with and without Down syndrome to ascertain if structural ocular differences in this muscle could explain the observed under-accommodation.
- No significant differences were found in the ciliary muscle morphology, suggesting that the accommodative deficit found in this population is more likely to be of sensory origin.

METHODS

Sample size calculation and recruitment

Prior to study recruitment and data collection, a sample size calculation was performed utilising previously published CM measurements from pre-presbyopic and presbyopic individuals[15,17] and using G*Power[18] (Heinrich-Heine-Universität Düsseldorf, gpower.hhu.de). A sample size of $n = 15$ (SD = 0.15; power 80%) in each group would be sufficient to determine differences in CM thickness between pre-presbyopic individuals with and without DS, equivalent to those found between pre-presbyopic and presbyopic adults.[15]

Volunteer participants with and without DS were recruited via advertising in the optometry clinic of Aston University and throughout the Aston University campus. To recruit additional participants with DS, national support groups such as the Downs Syndrome Association, the Downs Syndrome Research Foundation UK and the Ups of Downs were contacted to aid dissemination of the study.

The exclusion criteria were known ocular pathology, including cataracts, nystagmus and general health conditions that can have an impact on vision, such as diabetes and high blood pressure. All procedures were carried out in accordance with relevant guidelines and regulations, and the study received ethical approval from the National Health Service (NHS) Health Research Authority South Central—Oxford C Research Ethics Committee. For those participants with DS, the standard participant information sheet and consent form were adapted and approved by the same committee. Consent was obtained from all

participants, and permission was also obtained from the parents/guardians of the participants with DS.

Procedures

Prior to the imaging of the CM, habitual visual acuity (VA), refractive error and accommodative accuracy were assessed. Participants' VA was assessed monocularly at distance and near with their habitual correction using the Sonksen Crowded LogMAR test (Medstore Medical, medstore.ie). This letter-based test was chosen so that participants could name or match the letters presented on a matching card. Refractive error was determined in the right eye by taking and averaging 10 consecutive objective refraction readings with the open-view distance autorefractor WAM-5500 Auto Ref–Keratometer (Grand Seiko Co., grandseiko.com). Autorefraction with the WAM-5500 was chosen over retinoscopy as this method provides fast and objective measurements of refractive error that have been found to be repeatable and accurate, compared with non-cycloplegic subjective refraction in adults.[19] For the refraction readings, all participants fixated a Maltese Cross located 3 m away. An over-refraction with distance retinoscopy was also conducted to ensure appropriate refractive error correction, and therefore that adequate accommodative measures were obtained. To assess participants' accommodative ability, accommodation accuracy was measured in the right eye using Nott dynamic retinoscopy and the Ulster-Cardiff Accommodation Cube (PA Vision Ltd., pavisionuk.com). The technique is a quick procedure and the clinical tool of choice to currently assess accommodative deficits in the population with DS, and therefore has been widely used in extant studies.[4,6,7,20]

Following this, anterior segment optical coherence tomography (AS-OCT) was used to obtain in vivo images of the CM. Although AS-OCT was designed to obtain images of the anterior segment only, the Aston University Optometry and Vision Science Group has developed and published a protocol to successfully obtain images of the CM in pre-presbyopic and presbyopic individuals with the Zeiss Visante AS-OCT[15,17] (zeiss.com). Briefly, this protocol requires the participants to fixate an eccentrically located target (40°), so the Visante AS-OCT was aligned with the temporal or nasal area of the eye, thus allowing the imaging of the CM. Previous studies undertaken using the Visante AS-OCT and the aforementioned protocol have required participants to wear soft contact lenses and fixate a Maltese Cross through a Badal Optometer.[15,17] However, this would not be possible in some participants with DS due to the invasive nature of contact lens fitting. Hence, a pilot study was conducted to investigate whether valid CM measurements could be obtained without wearing contact lenses (i.e., uncorrected) while looking at a distant light target. Ten healthy pre-presbyopic adults without DS and no previous history of ocular abnormality or surgery were recruited from the staff members or students of Aston University. Participants' spherical equivalent refraction measured in the right eye with the WAM-5500 Auto Ref–Keratometer ranged from −5.50 to +5.00 D with cylinders up to 2.50 DC. Images of the CM were taken with the Visante AS-OCT while the participants were fully corrected wearing contact lenses and fixating at the Maltese Cross through a Badal Optometer as previously described and published,[15,17] and also while the same participants were uncorrected and fixating a non-accommodative distant light target (planned adapted protocol). The results of this pilot study showed that there were no statistically significant differences in CM maximum thickness (mean ± SD Badal Optometer protocol 847 ± 52 µm and adapted protocol and 856 ± 65 µm; $t = -0.39$ $p = 0.71$) and CM thickness at 2 mm posterior to the scleral spur thickness (mean ± SD Badal Optometer protocol 590 ± 69 µm and adapted protocol and 585 ± 60 µm; $t = 0.62$ $p = 0.55$) between the two setup conditions. Given these results, the imaging of the temporal and nasal CM of the right eye was conducted while participants were uncorrected and by aligning the participants with the instrument, but asking them to fixate a coloured light target eccentrically located 40° to the right and to the left. Using the in-built Visante high-resolution corneal mode, a total of six CM images for each participant was attempted: three with right-gaze eccentric fixation to image the nasal CM of the right eye and three with left-gaze eccentric to image the temporal CM of the right eye. For consistency and comparison purposes, the described procedure of obtaining six images (three temporally and three nasally) from the right eye followed the CM acquisition protocol published by the Aston University Optometry and Vision Science Group.[15,17]

Finally, the Aladdin Optical Biometer and Corneal Topographer (Topcon Healthcare, topconhealthcare.eu) was used to obtain lens thickness (LT), anterior chamber depth (ACD), axial length (AL), corneal curvature (K1 and K2) and central corneal thickness (CCT) of the right eye in each participant to further understand the morphology of additional ocular structures involved in the accommodation process.

CM analysis

All images acquired were exported in raw DICOM (Digital Imaging and Communications in Medicine, dicomstandard.org) and were analysed offline with custom-designed Matlab (The MathWorks Inc., mathworks.com) semi-automated software that has been previously validated and used.[21] A member of the research team (FJB) inspected each image to assess its quality and suitability for further analysis. Images that were not well centred (i.e., the CM was displaced), as well as images in which the CM was distorted or tilted, were discarded from further analysis. Following this, the same researcher manually localised CM landmarks

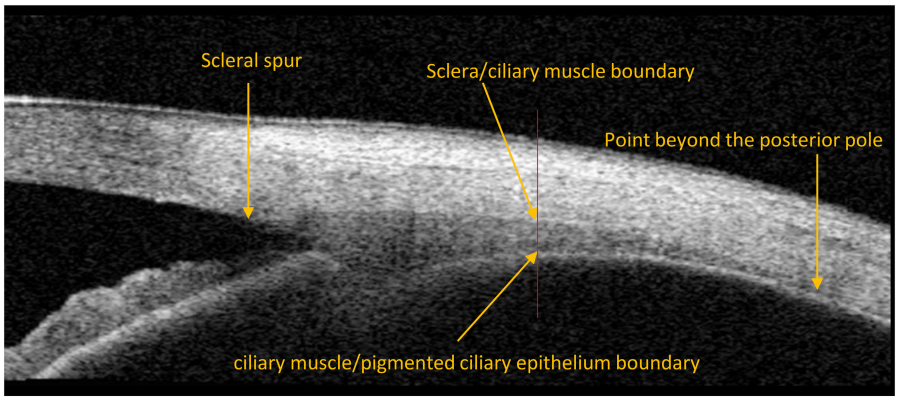

FIGURE 1 Ciliary muscle landmarks identified as required by the custom-designed software.

(the scleral spur, an assumed posterior end based on the posterior visible limit and the scleral/CM and CM/pigmented ciliary epithelium boundaries) as required by the custom semi-automated software as shown in Figure 1. Manual identification of the CM landmarks in OCT images was conducted with care and systematically, while the researcher (FJB) was masked to whether the images being analysed corresponded to a participant with or without DS. This was to ensure consistency and minimise bias in the identification of CM landmarks, in particular the CM end-point, since its identification has been suggested to be challenging,[22] and therefore has been described here as 'assumed posterior end'.

Further CM analysis was fully automated, and the following measurements were obtained and exported: CM thickness at 1 mm (CMT1), 2 mm (CMT2) and 3 mm (CMT3) posterior from the scleral spur, maximum CM thickness (CMTMAX) and distance from the scleral spur to the inner apex (SS_IA).

Statistical analysis

The IBM SPSS software package version 28.0 (IBM SPSS Inc., ibm.com) was used for statistical analysis. Independent *t*-tests were used to investigate differences in the optometric and ocular morphological parameters between participant groups. Normality tests, including histograms and Shapiro–Wilk tests, were performed on all data. Except for VA (near and distance for both eyes), all parameters were normally distributed. Hence, parametric independent *t*-tests were used for the analysis of all ocular morphological parameters, spherical equivalent and accommodative accuracy, and non-parametric statistical analysis was used only for the analysis of VA. For the parametric independent *t*-test, the homogeneity of variances was considered during the analysis with Levene's test for equality of variances. Given the number of multiple comparisons that arose from the different optometric and ocular morphological parameters studied, a Bonferroni correction was applied to avoid an increase in type I error. Hence, a *p*-value <0.008, <0.005 and <0.01 was considered statistically significant for the optometric, CM and the other ocular parameters obtained, respectively.

The mean, standard deviation, maximum and minimum values were recorded for each parameter and group.

RESULTS

Participants

A total of 16 participants with DS (9 females, 7 males) with a mean age of 25.87 ± 5.48 years and 16 participants without DS (12 females, 4 males) with a mean age of 24.12 ± 4.75 years participated in the study.

The optometric parameters (VA, objective refraction and accommodation) were successfully obtained from all participants. Participants with DS had significantly lower VA than control participants ($p < 0.001$), and their accommodative lags were also significantly larger ($p < 0.001$). In contrast, participants from both groups were matched for age ($F = 1.10$; $p = 0.34$) and objective spherical equivalent refractive error (SER) obtained with the WAM-5500 open-view autorefractor ($F = 0.51$; $p = 0.43$). Table 1 presents a summary of the optometric parameters obtained in both participant groups.

While all optometric parameters were successfully obtained from all participants, complete imaging sets were not obtained from all of the participants. Six images of the CM (three temporal and three nasal) were successfully obtained or considered suitable for further analysis for 90% of the control participants; this was the case for only 30% of participants with DS. However, at least four successful or suitable images of the CM (two temporal and two nasal) were obtained for all control participants and most participants with DS (68.75%). For the situations in which only one successful image or image suitable for analysis was obtained, the CM measurement taken was the one obtained for that single image. Similarly, additional ocular measurements conducted with the Aladdin were obtained from 94% and 56% of controls and participants with DS, respectively.

CM and ocular morphological parameters

Table 2 presents the average CM measurements obtained from both groups. The same table indicates the *p*-values from the independent *t*-tests that were conducted to compare potential differences between the participant groups. It can be observed that most *p*-values indicate non-significant differences between the groups ($p > 0.10$). Only one parameter had a *p*-value < 0.05: Nas_CMT3 (0.046). However, after applying the Bonferroni correction, this *p*-value becomes statistically non-significant.

A correlation analysis was also conducted to investigate any associations between CM thickness and accommodative ability. For this purpose, correlations between CM thickness parameters (maximum thickness, CMT1, CMT2 and CMT3) and total accommodative response (i.e., dioptric value of the neutral point in dynamic retinoscopy plus any difference between the participant's refractive error and the spectacle prescription) produced during the dynamic retinoscopy procedure were conducted. No association was found between accommodative response and CM maximum thickness (nasal $p = 0.32$ and temporal $p = 0.88$), CMT1 (nasal $p = 0.42$ and temporal $p = 0.67$), CMT2 (nasal $p = 0.53$ and temporal $p = 0.96$) and CMT 3 (nasal $p = 0.40$ and temporal $p = 0.83$) in participants with DS. Similarly, no association between the accommodative response and the same CM thickness parameters was found in participants without DS ($p > 0.15$).

Table 3 presents the results of the other ocular morphological parameters studied. Following the Bonferroni correction (significance level set at 0.01), K1 ($p = 0.003$) and K2 ($p < 0.001$) were significantly different between groups, indicating steeper corneas in participants with DS compared to participants without DS.

TABLE 1 Mean and standard deviation (SD) of the optometric parameters found in the control group and in the group with Down syndrome (DS).

Optometric parameter	DS group (mean ± SD)	Control group (mean ± SD)	*p*-value
Mean SER (D)	−0.32 ± 2.28	−1.10 ± 3.13	0.43
Distance RE VA (logMAR)	0.27 ± 0.13	−0.13 ± 0.28	*<0.001*[a]
Distance LE VA (logMAR)	0.30 ± 0.15	−0.10 ± 0.12	*<0.001*[a]
Near RE VA (logMAR)	0.29 ± 0.19	−0.01 ± 0.03	*<0.001*[a]
Near LE VA (logMAR)	0.38 ± 0.20	0.01 ± 0.04	*<0.001*[a]
Accommodative lag (D)	1.00 ± 0.47	0.32 ± 0.27	*<0.001*[a]

Abbreviations: D, dioptre; LE, left eye; RE, right eye; SER, spherical equivalent refraction; VA, visual acuity.

[a]A significant difference between the DS group and control group.

Italics represents significant *p* value is <0.008.

DISCUSSION

Despite the fact that accommodative deficits are common in the population with DS, their aetiology is still unknown. While the complete mechanism of presbyopia is better understood, it still remains equivocal.[23,24] Morphological changes with age in some ocular structures involved in the accommodative process have been described,[23–27] and these could partly explain presbyopia.[24] These age-related changes include a reduction in ACD and increases in LT and AL.[24–26] Similarly, ageing has also been found to impact CM characteristics, and changes including a decreased CM anterior length and width as well as a reduction in the distance of the inner apex of the CM to the scleral spur have been found.[15,27]

TABLE 2 Mean, standard deviation (SD), maximum and minimum values of the ciliary muscle (CM) parameters found in the control group and in the group with Down syndrome (DS).

	CONTROL					DS					
CM measurements (μm)	*n*	Mean	SD	Max	Min	*n*	Mean	SD	Max	Min	*p*-value
Temp CMT1	15	894	160	1101	574	16	889	151	1073	606	0.92
Temp CMT2	15	578	150	845	352	16	575	140	811	337	0.95
Temp CMT3	15	339	124	593	163	16	329	115	582	134	0.82
Temp CM Max	15	937	175	1190	582	16	924	160	1176	586	0.83
Temp SS IA	15	1245	129	1524	1058	16	1255	152	1454	972	0.83
Nas CMT1	15	818	141	996	567	14	795	158	1067	520	0.68
Nas CMT2	15	529	113	668	341	14	471	130	667	186	0.20
Nas CMT3	15	285	94	432	150	14	221	71	363	117	0.046
Nas CM Max	15	911	177	1166	575	14	870	164	1161	554	0.31
Nas SS IA	15	1137	96	1358	1025	14	1137	131	1330	953	0.99

Abbreviations: CM Max, ciliary muscle maximum thickness; CMT1, ciliary muscle thickness at 1 mm posterior to the scleral spur; CMT2, ciliary muscle thickness at 2 mm posterior to the scleral spur; CMT3, ciliary muscle thickness at 3 mm posterior to the scleral spur; Nas, nasal; SS IA, distance from the scleral spur to the inner apex; Temp, temporal.

TABLE 3 Mean, standard deviation (SD), maximum and minimum values of the anterior segment parameters found in the control group and in the group with Down syndrome (DS).

	Control					DS					
	n	Mean	SD	Max	Min	*n*	Mean	SD	Max	Min	*p*-value
AL (mm)	15	23.80	1.38	26.04	21.28	16	22.54	1.60	25.93	20.01	*0.02*
ACD (mm)	15	3.63	0.27	4.10	3.13	16	3.46	0.49	4.14	2.23	0.17
Lens_Thickness (mm)	15	3.57	0.19	3.90	3.27	15	3.63	0.98	5.81	0.92	0.81
K1	15	7.95	0.25	8.41	7.44	10	7.55	0.54	8.36	6.61	*0.003**
K2	15	7.61	0.21	7.92	7.11	10	7.16	0.35	7.65	6.50	*<0.001**
CCT	14	526.60	29.79	580	469	14	506.92	39.29	583	415	0.14

Abbreviations: ACD, anterior chamber depth; AL, axial length; CCT, central corneal thickness; K1, corneal radius 1; K2, corneal Radius 2.
Italics represents significant *p* value is <0.01.

Given these findings, the CM changes with age have been suggested to result in an anterior inward displacement of the CM mass.[15] However, there is evidence to suggest that the age-related CM changes are unlikely to be responsible for presbyopia, as these were not found to affect the ability of the CM to contract during accommodation.[15] While early results suggested the accommodative deficit found in a population with DS may have similar characteristics to the accommodative decline found in presbyopia,[5,10] this has been later dismissed.[8,28] Hence, the origin and mechanism of the accommodation deficits found in typical presbyopic adults and in pre-presbyopic adults with DS are likely to be different, with the morphological characteristics of the CM as a possible cause of accommodation deficits in the population with DS.[8] Reports of low muscle tone in the population with DS[14] further justify the need for the characterisation of the CM in this population and its impact on near vision.

In the present study, no differences were found in the CM parameters between individuals with and without DS, suggesting that the morphology of the CM is no different in this population. These findings are in agreement with a recent published study that, despite not having a control group for a direct comparison of the CM measurements, concluded that typical CM thickness is found in adults with DS.[16] The authors obtained CM thickness from 26 adults with DS and compared their results with those previously published from a typical adult population. The results of this study, which included a control group of adults without DS, align with those published by Anderson et al.[16] as, for instance, the mean CM measures CMT1, CMT2 and CMT3 obtained in participants with DS in both studies differ only by an average of 72 μm. The current results reinforce the view that a different CM morphology is not likely to be the origin of accommodation deficits in this population.

Further, our results complement those previously published by making a direct comparison of CM parameters using the same protocol in controls and DS groups, and by providing further CM measures to better characterise the CM in the population with DS. However, our study also has some limitations. First, despite the sample size calculation, it could be argued that 16 participants in each group is still a small sample. In addition, successful and good-quality images were not obtained for all participants, especially from those with DS. This consequently impacted on the power of the sample and study (power sample reduction to 70% or 50.5% considering the number of participants with six and four successful CM acquisitions, accordingly). Second, in our study, no cycloplegia was instilled, and therefore it cannot be ensured that the CM was completely unaccommodated during the procedure. While this can pose some questions regarding the measurements obtained, the fact that our findings align with those previously published using cycloplegia justifies the avoidance of diagnostic drugs, which encouraged participation with less discomfort for participants. Further, our pilot study found no differences in CM parameters when these were obtained with participants being corrected and fixating a Maltese Cross through a Badal optometer and the same participants, while uncorrected, fixating on the light target. In terms of the accommodative abilities of the participants, this study has only considered accommodative accuracy because this assessment using dynamic retinoscopy has been widely used in previous studies involving the population with DS.[4,6,7,20] Future research could incorporate the assessment of other accommodative aspects. It is also important to note that there are questions in the literature about the ability and validity of identifying the posterior end-point of the CM in an OCT image.[22] While the identification of the CM posterior end-point can be considered challenging and a possible source of error, a study investigating the variability of manual CM segmentation in OCT images found parameter variation between sessions and examiners to be insignificant.[29] Further, the study suggested that the variability of parameters was mainly dependent on factors inherent to the examiners rather than variability due to the difficulty of finding the same location across images.[29] In line with this, our CM parameter variability was minimised by having the same researcher identifying the CM boundaries for all OCT images.

Previous work investigating CM characteristics in DS has only studied the nasal CM thickness (nasal CMT1, CMT2, CMT3, CMT Max), but in addition to these parameters, the present work has also evaluated these thickness parameters temporally (temporal CMT1, CMT2, CMT3, CMT Max) and the distance from the scleral spur to the inner apex (SS IA). Hence, the current study provides a more complete characterisation of the CM in DS than previous investigations, as measurements beyond the nasal CM thickness were obtained. Similarly, this study also provides additional insight into the understanding of the origin of under-accommodation in the population with DS, given the direct comparison of measurements conducted between participants with and without DS. To further characterise the CM in DS, it could be useful to study the accommodated CM and its changes during accommodation in this population.

The results of the present study suggest that the CM morphology is not different in the population with DS, and therefore it is unlikely that the CM is responsible for the accommodative deficit found in DS. The next step in the field of accommodation in DS would be to explore sensory differences or deficits that could result in accommodative impairments in this population.

AUTHOR CONTRIBUTIONS

Valldeflors Vinuela-Navarro: Conceptualization (lead); data curation (supporting); formal analysis (supporting); funding acquisition (lead); investigation (lead); methodology (lead); project administration (lead); resources (equal); software (supporting); supervision (lead); validation (lead); visualization (lead); writing – original draft (lead); writing – review and editing (lead). **Fiona Jane Baker:** Data curation (equal); formal analysis (lead); investigation (equal); software (lead); writing – review and editing (equal). **J. Margaret Woodhouse:** Funding acquisition (supporting); investigation (equal); visualization (equal); writing – review and editing (equal). **Amy L. Sheppard:** Funding acquisition (supporting); investigation (supporting); supervision (supporting); visualization (supporting); writing – review and editing (supporting).

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FUNDING INFORMATION

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CONFLICT OF INTEREST STATEMENT

JM Woodhouse has a financial interest in the Ulster-Cardiff Accommodation Cube. The other authors have no competing interests to declare that are relevant to the content of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author (VVN) upon reasonable request.

CONSENT TO PARTICIPATE

Informed consent was obtained from all individual participant included in the study.

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