Introduction: Amblyopic children read slowly and make more forward saccades during binocular reading compared with nonamblyopic strabismic and control children (Kelly et al, 2015). Binocular inhibition - better performance during fellow eye viewing than binocular viewing - is related to slow reading in age-related macular degeneration and to contrast sensitivity loss in amblyopia. Here, we investigated whether binocular inihibition slows reading in amblyopia (ie, slower reading for binocular vs fellow eye viewing).
Methods: 41 children age 7-12 years treated for strabismus, anisometropia, or both (24 amblyopic [0.2-1.2 logMAR], 17 nonamblyopic) were enrolled. Children silently read grade-appropriate paragraphs during binocular (BV) and fellow eye viewing (FEV) while fitted with the ReadAlyzer. Reading rate (words/min) and number of forward saccades (per 100 words) were recorded. Visual acuity (VA) and stereoacuity were obtained.
Results: Consistent with our previous study, amblyopic children read more slowly and made more forward saccades than nonamblyopic children during BV (Ps < 0.05). Nonetheless, no differences were found between BV and FEV for amblyopic children (reading rate: BV, mean $\pm$ SD $= 160 \pm 57$ vs FEV, 154 ± 63 words/min, $P = 0.50$; Saccades: 107 ± 35 vs. 109 ± 46 per 100 words, $P = 0.75$). Reading rate was not related to etiology, amblyopic eye VA, or stereoacuity.
Discussion: Binocular reading did not differ from fellow eye reading in amblyopic children; binocular inhibition is unlikely to play a role in their slow reading.
Conclusions: Slow reading in amblyopic children is not due to inhibition of the fellow eye by the amblyopic eye. We are currently exploring other potential factors contributing to slow binocular reading, including fixation instability and abnormal saccadic eye movements.

027 Novel digital therapeutic improves visual acuity and encourages high adherence in amblyopic children. Aaron M. Miller, Lisa I. Bohra, Christie L. Morse, Louis C. Blumenfeld, Noha S. Ekdawi, Ann U. Stout, Scott Xiao, David G. Hunter, Eric Gaier, Malcolm L. Mazow
Introduction: Current amblyopia treatments can be limited in effectiveness due to low adherence over long treatment periods (33-54%)[1] and monocular viewing conditions. We tested the clinical effectiveness and adherence of Luminopia One—a virtual reality system that applies binocular therapeutic modifications to television shows or movies chosen by the patient.
Methods: This single-arm, multi-center study enrolled children aged 4-12 with anisometropic, strabismic, or mixed amblyopia at 10 centers to use Luminopia One at-home for 1 hour/day, 6 days/week for 12 weeks. Best-corrected visual acuity (BCVA) and stereoacuity (Randot) were assessed at each visit. A group of participants (n $=$ 20) was excluded from this analysis due to improper software calibration.
Results: Of the 55 enrolled participants (mean age 7.1 ± 2.3 years), 53 had stable BCVA at enrollment and 46 had prior treatment beyond glasses (eg, patching, atropine). Thirty-one participants have completed 12 weeks of treatment with mean adherence 84% of prescribed dose. Mean amblyopic eye BCVA improved 0.20 logMAR (2 lines; 95% CI 0.14-0.25, $P < 0.0001$) after 12 weeks from baseline of 0.47 logMAR. Mean stereoacuity improved 0.30 log arcsec (1 octave step; 95% CI, 0.00-0.59, $P = 0.047$). Infrequent mild blurry vision (n $=$ 3), headache (n $=$ 3), and double vision (n $=$ 1) were reported and resolved without additional treatment.
Discussion: Patients demonstrated clinically and statistically significant improvements in visual acuity and stereoacuity, maintaining high adherence over 12 weeks.
Conclusions: Luminopia One shows promise as an engaging and potentially effective at-home amblyopia treatment.

028 Reliability of telemedicine for real-time pediatric ophthalmology consultations. Sudha Nallasamy, Josephine Coffey-Sandoval, Carly Stewart, Mark W. Reid, Thomas C. Lee
Introduction: Geographic and socioeconomic disparities in access to care impede timely diagnosis and treatment of pediatric ophthalmic conditions. Telemedicine may address these disparities, but its technological and diagnostic reliability are uncertain.
Methods: This prospective, noninferiority study included 349 examinations of 210 patients aged 0-17 years (median, 6 years). Examinations were conducted by an optometrist using Pivothead glasses, a digital slit lamp, and a digital indirect ophthalmoscope, and streamed via Polycom codec to an ophthalmologist, who recorded diagnoses, measurements, and management plans. Following each telemedicine examination, the ophthalmologist verified the results in-person.
Results: Sixty-two percent of patients were primarily diagnosed with strabismus (n $= 130$); other common primary diagnoses included nasolacrimal duct obstruction (n $= 8$) and glaucoma (n $= 7$). No primary diagnoses were changed (although two nonprimary diagnoses were), and no management plans (including surgical plans) were changed following in-person examination. In strabismus patients, almost perfect agreement was observed for angle measurements (ICCs $= 0.97$-1.00) and disease categorization ($\kappa = 0.94$-1.00). Almost all patients who consented for surgery (54/55) did so during the telemedicine examination, masked to receiving an in-person exam. Most families felt comfortable with the quality of the telemedicine examination (99%), and indicated they would participate in another one in the future (97%).
Discussion: The ophthalmologist was able to make accurate diagnoses, plans, and measurements via telemedicine, in contrast to previous studies with older technology.
Conclusions: Pediatric ophthalmic conditions can be reliably diagnosed and monitored by ophthalmologists via telemedicine. Care delivery for underserved populations can be improved by collaboration between optometrists and ophthalmologists using video-conferencing technology.

029 A prospective outcomes study of pediatric optic neuritis. Stacy L. Pineles, Michael X. Repka, Elizabeth L. Lazar, Grant T. Liu, Amy T. Waldman, Mark S. Borchert, Sangeeta Khanna, Gena Heidary, Jennifer S. Graves, Veeral S. Shah, Mark J. Kupersmith, Raymond T. Kraker, David K. Wallace
Introduction: We are aware of no prospective data on visual outcomes in children with optic neuritis (ON).
Methods: In a nonrandomized observational study, we prospectively enrolled 3- to <16-year-olds with a clinical diagnosis of acute ON (onset within 2 weeks) and at least one of the following: visual acuity (VA) deficit $\geq$0.2 logMAR below age-based norms in the affected eye, diminished color vision, abnormal visual field, or optic disk swelling. The primary outcome was percentage of study eyes within age-normal VA range after 6 months.
Results: Fifty-four eyes of 44 participants age 3-15 years were enrolled; 41% were female. Regarding type of ON and central nervous system associations: 14 participants had unilateral isolated ON, 10 had bilateral isolated ON, 8 had acute disseminated

encephalomyelitis, 5 had multiple sclerosis, 5 had neuromyelitis optica spectrum disorder, and 1 had myelin oligodendrocyte glycoprotein-associated demyelination. Twenty-two (51%) had cerebral white matter lesions and 39 (89%) were treated with steroids. Of the 31 affected eyes with 6-month follow-up, 8 (26%) had VA within age normal range at enrollment (median, 0.50 logMAR; range, −0.20 to 1.70 logMAR) and 24 (77%) eyes had VA within age normal range (median, 0.00 logMAR; range, −0.22 to 0.60 logMAR) after 6 months.
Discussion: Despite poor VA at presentation (median Snellen equivalent, 20/63), there was marked improvement in the majority six months after onset (median, 20/20).
Conclusions: In this prospective study visual acuity outcomes in pediatric ON were often favorable with current treatment practice patterns, although some patients have significant deficits.

030 Comparison of outcomes, adverse events, and treatment burden of intravenous chemotherapy versus intra-arterial chemotherapy for retinoblastoma: results of a pilot study. Pranav R. Santapuram, Jessica L. Burris, Debra L. Friedman, Tatsuki Koyama, Anthony B. Daniels
Introduction: Intra-arterial chemotherapy (IAC) is gaining widespread acceptance to treat retinoblastoma, replacing intravenous chemotherapy (IVC) in many centers. Higher globe salvage rates are reported with IAC than IVC. A direct comparison of adverse events and treatment burden with each modality has not been performed.
Methods: Pilot retrospective cohort study of 20 consecutive patients (IVC only = 9, IAC only = 7, IAC after IVC failure = 4). Globe salvage rate, unplanned healthcare visits, cytopenias, transfusions, and opioid usage were recorded, both during treatment and in the 12-months following treatment completion. Primary outcomes were globe salvage, number of grade 3/4 cytopenias, number of transfusions, number of unplanned healthcare visits, and opioid use.
Results: Compared to patients receiving IAC, patients receiving IVC had more unplanned healthcare visits (1.0 (0.5, 1.0) vs 4.0 (1.0, 5.2) [IAC vs IVC], $P = 0.012$) more grade 3/4 cytopenias (1.0 [1.0, 2.0] vs 6.0 (5.0, 9.2) $P < 0.001$), more transfusions (0.0 (0.0, 0.0) vs 4.0 (1.0, 5.2), $P = 0.004$), required greater use of opioids (mean oral morphine equivalents: 63.5 (37.4, 79.1) vs 120.1 (79.2, 142.5), $P = 0.013$), and lower rates of globe salvage (100% vs. 58% of eyes [IAC vs. IVC], $p = 0.016$).
Discussion: Prior studies have compared success rates for patients undergoing IVC and those undergoing IAC. However, in selecting therapy, likelihood of treatment success, expected adverse events, and treatment burden must be considered. This study provides evidence regarding adverse events and burden associated with each treatment modality.
Conclusions: Treatment success is greater with IAC. IVC is associated with more adverse events and greater treatment burden.

031 The effect of decreasing working distance in stereopsis and its role in perception of closure while texting and driving. Amanda M. Selchau, Kelli M. Coleman, Wyche T. Coleman, Arthur S. Kavanaugh, Alan Richards
Introduction: The hypothesis was that working distance as well as the working angle are independent variables that provide a physiologic basis for the dangers of texting while driving.
Methods: A total of 94 medical students with no significant ocular disease volunteered to participate in the study. While viewing a video of a car in front of their own, participants had to respond when the participant perceived the leading car getting closer, and the trial was repeated while performing a math problem on a cell phone. Trials were done where the math game was held at 30 cm, 60 cm, 30 cm at 30°, and 60 cm at 30°.
Results: All trial had times that were significantly slower than the control. The slowest trial overall was 30 cm at 30°. The trial at 30 cm was significantly slower than the trial at 60 cm ($P < 0.01$). Furthermore, the trial at 30 cm held at 30° was slower than 30 cm at 90° ($P < 0.01$).
Discussion: Both viewing angle and working distance affect the ability to perceive closure. Both visual acuity and stereopsis are severely affected. These findings help explain why texting and driving is so distracting when compared to other distracting tasks such as changing the radio or viewing the dash.
Conclusions: Other authors have established that texting while driving is dangerous. This study helps to isolate the visual effects of altering working angle and distance and the significant effects upon visual acuity and stereopsis.

032 Comparison of hand-held spectral domain optical coherence tomography (HH-SDOCT) findings in nonaccidental injury (NAI) and non-NAI. Bhamy Hariprasad Shenoy, Vinod Sharma, William Newman, Jane Ashworth, Susmito Biswas
Introduction: We previously reported the utility of HH-SDOCT in identifying characteristic and unique vitreoretinal abnormalities not detected on clinical examination in children with NAI. The aim of this study was to compare HH-SDOCT findings in retinal haemorrhages of NAI and non-NAI and evaluate their usefulness in differentiating NAI from non-NAI.
Methods: Retrospective comparative study of HH-SDOCT findings in children with confirmed diagnosis of NAI and children with retinal hemorrhages due to non-NAI. All the children underwent complete ophthalmic evaluation in addition to the HH-SDOCT imaging.
Results: A total of 10 children with retinal findings due to child protection multidisciplinary confirmed NAI and 4 children with retinal hemorrhages due to non-NAI causes were included in the study. All children with NAI induced retinal hemorrhages showed evidence multi-layered retinoschisis and multi-layered retinal haemorrhages. None of the eyes with retinal hemorrhage due to non-NAI causes demonstrated vitreo-retinal interface changes or inner retinal schitic changes.
Discussion: This HH-SDOCT study represents the largest consecutive NAI series reported to date. It demonstrates that the HH-SDOCT identifies characteristic retinal findings associated with NAI cases which may not be seen in non-NAI cases and are usually not evident using routine examination techniques and imaging. These findings add further evidence that could potentially help distinguish between lesions secondary to NAI from non-NAI causes.
Conclusions: HH-SDOCT helps in identifying characteristic retinal findings associated with NAI which may not be may not be seen in retinal hemorrhages due to non-NAI. Future studies with larger sample is needed to validate this finding.

033 Redesigning surgical magnification loupes: effect of angle of declination, weight, and strap design on the postural ergonomics of ophthalmic surgeons. Safeer F. Siddicky, Hozhabr Mozafari, Gregory W. King, Donny W. Suh
Introduction: Ophthalmologists using surgical loupes often report chronic neck pain. We designed a surgical loupe and head-strap to reduce neck loading in surgeons. To quantify the effect of this