

# Stanford

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## Tawna L. Roberts, OD, PhD

Associate Professor of Ophthalmology (Pediatric) and, by courtesy, of Pediatrics

### **CLINICAL OFFICE (PRIMARY)**

- **Byers Outpatient Surgery Center**  
2452 Watson Court  
Palo Alto, CA 94303

**Tel** (650) 723-1143      **Fax** (650) 721-2884

### **Bio**

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#### **BIO**

Dr. Tawna Roberts is an Associate Professor at Stanford University's Byers Eye Institute. She earned her Optometry degree from Pacific University, completed a residency in Pediatrics and Vision Therapy at Southern California College of Optometry, and earned her PhD in Vision Science and Physiological Optics at University of Houston College of Optometry studying oculomotor function in children and young adults. At Stanford, she directs the National Institute of Health (NIH/National Eye Institute (NEI) and Department of Defense funded Vision Development and Oculomotor Lab investigating refractive error development, strabismus, amblyopia, and concussion-related vision disorders. Currently, Dr. Roberts is the Principal Investigator (PI) for the Department of Defense study, Abnormal Dynamic Visual Function and Associated Symptomatology in Mild Traumatic Brain Injury, and the co-PI for the NIH-funded study, 'Vision Disorders in Adolescents Following Concussion.' She is also a consultant for the Department of Defense Vision Center of Excellence where she serves as the co-PI for the FOCUS Study (Frequency of Oculomotor Dysfunction in Symptomatic Mild Traumatic Brain Injury). Dr. Roberts is the past co-Vice Chair of the Pediatric Eye Disease Investigator Group, an NEI-funded clinical research network of 400+ pediatric optometrists and ophthalmologists who conduct clinical studies on pediatric eye disease. She also provides direct patient care to children in the pediatric ophthalmology and concussion clinics at Stanford Children's. She is a fellow of the American Academy of Optometry (AAO), serves as the Co-Chair of the Research Committee, and is Past-Program Chair of the Binocular Vision, Perception, and Pediatric Section. Dr. Roberts received the AAO's 2021 Irvin and Beatrice Borish Award.

### **CLINICAL FOCUS**

- Optometrist
- Pediatric Vision
- Binocular Vision
- Strabismus
- Amblyopia
- Concussion Related Vision Disorders

### **ACADEMIC APPOINTMENTS**

- Associate Professor - University Medical Line, Ophthalmology
- Associate Professor - University Medical Line (By courtesy), Pediatrics

- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

## HONORS AND AWARDS

- Irvin M. and Beatrice Borish Award, American Academy of Optometry (2021)
- Walt and Lilly Disney Awardee for Amblyopia Research, Research to Prevent Blindness (2021)
- Emerging Vision Scientist, Alliance for Eye and Vision Research (2018)

## PROFESSIONAL EDUCATION

- BS, Pacific University , Biology (1999)
- OD, Pacific University College of Optometry , Optometry (2003)
- Residency, Southern California College of Optometry , Pediatrics and Vision Therapy (2004)
- MS, Indiana University , Vision Science (2014)
- PhD, University of Houston College of Optometry , Vision Science and Physiological Optics (2015)

## LINKS

- Roberts Vision Development and Oculomotor Laboratory: <https://med.stanford.edu/roberts-lab.html>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research efforts are funded by grants from the National Eye Institute, Department of Defense, and various foundations to study vision development in infants and young children as well as binocular vision disorders in adolescents and adults with concussions. Our focus is to identify underlying mechanisms that will inform clinical treatment approaches and ultimately leading to the prevention of strabismus, amblyopia, and binocular vision disorders.

## Publications

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### PUBLICATIONS

- **Effects of vision therapy on near exodeviation in children with convergence insufficiency treated during the convergence insufficiency treatment trials.** *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians (Optometrists)*  
Schulman, E., Scheiman, M., Kulp, M. T., Roberts, T. L., Cotter, S., Sinnott, L. T., Toole, A.  
2024
- **<i>F</i> statistic for steady-state evoked potentials; a generalized version of<i> T</i>**2**<i>circ</i> statistic** *BIOMEDICAL SIGNAL PROCESSING AND CONTROL*  
Norouzpour, A., Roberts, T. L.  
2024; 87
- **Ocular motor disorders in children and adults with mTBI: a scoping review protocol.** *BMJ open*  
Theis, J., Chen, A. M., Burgher, A. P., Greenspan, L. D., Morgenstern, A., Salzano, A. D., Yap, T. P., Scheiman, M., Roberts, T. L.  
2023; 13 (10): e073656
- **Low-Dose 0.01% Atropine Eye Drops vs Placebo for Myopia Control: A Randomized Clinical Trial.** *JAMA ophthalmology*  
Repka, M. X., Weise, K. K., Chandler, D. L., Wu, R., Melia, B. M., Manny, R. E., Kehler, L. A., Jordan, C. O., Raghuram, A., Summers, A. I., Lee, K. A., Petersen, D. B., Erzurum, et al  
2023
- **Prescribing patterns for paediatric hyperopia among paediatric eye care providers.** *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians (Optometrists)*

Morrison, A. M., Kulp, M. T., Ciner, E. B., Mitchell, G. L., McDaniel, C. E., Hertle, R. W., Candy, T. R., Roberts, T. L., Peterseim, M. M., Granet, D. B., Robbins, S. L., Srinivasan, G., Allison, et al  
2023

● **Stability of Astigmatism following Lensectomy for Pediatric Cataract**

Bothun, E., Repka, M., Freedman, S., Sutherland, D., Hatt, S., Leske, D., Kraker, R., Melia, B., Roberts, T., Holmes, J., Cotter, S.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023

● **Effect of Co-existing Clinical Signs on Prescribing Patterns for Pediatric Hyperopia**

Morrison, A., Kulp, M. T., Ciner, E. B., McDaniel, C., Mitchell, G., Allison, C. L., Block, S. S., Granet, D., Hertle, R. W., Moore, B., Orel-Bixler, D., Roberts, T. L., Robbins, et al  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023

● **Accommodative Response in Astigmatic Children Aged 3 to <10 Years**

Haensel, J. X., Chen, A., Cotter, S. A., Lorenzana, I., Han, S., Lytle, A. A., Raghuram, A., Huang, K., Manh, V., Patel, R., Retnasothie, D., Jordan, L., Roberts, et al  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023

● **Comparison of Push-Up versus Push-Out Accommodative Amplitude Measurement Methods in a Pediatric Population**

Marusic, S., Oke, I., Vyas, N., Haensel, J., Slinger, K., Jenewein, E., Meiyepen, S., Scheiman, M., Roberts, T., Raghuram, A.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023

● **A complementary note for the analytical method to estimate individual attention fluctuation using steady-state evoked potentials** *Biomedical Signal Processing and Control*

Norouzpour, A., Roberts, T. L., Klein, S. A.  
2023

● **Strabismus and Nystagmus in Patients with Pediatric Cataracts: Study using Insurance Claims Data.** *American journal of ophthalmology*

Kim, S. J., Slinger, K., Lambert, S. R., Koo, E., Shue, A., Roberts, T. L.  
2022

● **Vergence/accommodative therapy for symptomatic convergence insufficiency in children: Time course of improvements in convergence function.** *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians (Optometrists)*

Jenewein, E. C., Cotter, S., Roberts, T., Kulp, M., Mitchell, G. L., Jones-Jordan, L. A., Chen, A. M., Hopkins, K., Huang, K., Amster, D., Fecho, G., Tyler, J., Meiyepen, et al  
2022

● **Validation of the PowerRef 3 for Measuring Accommodation: Comparison With the Grand Seiko WAM-5500A Autorefractor.** *Translational vision science & technology*

Gehring, A. M., Haensel, J. X., Curtiss, M. K., Roberts, T. L.  
2022; 11 (10): 25

● **Low- and Very Low-Dose Bevacizumab for Retinopathy of Prematurity Reactivations, Additional Treatments, and 12-Month Outcomes** *OPHTHALMOLOGY*

Freedman, S. F., Hercinovic, A., Wallace, D. K., Kraker, R. T., Li, Z., Bhatt, A. R., Boente, C. S., Crouch, E. R., Hubbard, G., Rogers, D. L., VanderVeen, D., Yang, M. B., Cheung, et al  
2022; 129 (10): 1120-1128

● **Pathway of care for visual and vestibular rehabilitation after mild traumatic brain injury: a critical review.** *Brain injury*

Xiang, L., Bansal, S., Wu, A. Y., Roberts, T. L.  
2022: 1-10

● **Associations Between Distance Visual Acuity and Cycloplegic Refractive Error in Children Aged 5 to 9 Years**

Haensel, J. X., Jordan, L., Chen, A., Cotter, S. A., Lorenzana, I., Han, S., Aldrich, A. E., Raghuram, A., Huang, K., Manh, V., Patel, R., Retnasothie, D. V., Roberts, et al  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022

● **Associations Between Stereoacuity and Vision Characteristics in Children with Uncorrected Refractive Error**

Han, S., Chen, A., Cotter, S. A., Jordan, L., Lorenzana, I., Aldrich, A. E., Raghuram, A., Huang, K., Manh, V., Patel, R., Retnasothie, D. V., Roberts, T. L.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022

● **Repeatability of the Accommodative Response Measured by the Grand Seiko Autorefractor in Children with and without Amblyopia and Adults.** *American journal of ophthalmology*

Chinn, R. N., Raghuram, A., Curtiss, M., Gehring, A., De Paula, A. J., Roberts, T. L.  
2021

- **Endophthalmitis after pediatric cataract surgery in the United States: report using an insurance claims database.** *Journal of cataract and refractive surgery* Nguyen, A. M., Roberts, T. L., Ryu, W. Y., Lambert, S. R.  
2021; 47 (9): 1161-1166

- **Vergence and accommodation deficits subacutely and chronically in concussion recovery**  
Raghuram, A., Chinn, R., Wiecek, E. K., Marshall, C., Roberts, T. L., Stevens, R., Hawash, K. K., O'Brien, M., Shah, A. S.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Prescribing Patterns for Hyperopia**  
Kulp, M., Ciner, E., Mitchell, G., Ying, G., Peterseim, M., Alex, A., Allison, C., Block, S., Candy, T., Granet, D., Hertle, R., Moore, B., Orel-Bixler, et al  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Vergence and accommodation deficits subacutely and chronically in concussion recovery**  
Raghuram, A., Chinn, R., Wiecek, E. K., Marshall, C., Roberts, T. L., Stevens, R., Hawash, K. K., O'Brien, M., Shah, A. S.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Diagnosis of vergence and accommodation deficits in children and adolescent with concussion using established clinical criteria versus normative data**  
Chinn, R., Marshall, C., Wiecek, E. K., Roberts, T. L., O'Brien, M., Hawash, K. K., Stevens, R., Shah, A. S., Raghuram, A.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021

- **Vergence, accommodation, and visual tracking in children and adolescents evaluated in a multidisciplinary concussion clinic.** *Vision research* Wiecek, E. K., Roberts, T. L., Shah, A. S., Raghuram, A.  
2021; 184: 30–36

- **Association between post-concussion symptoms and oculomotor deficits among adolescents.** *Brain injury* Gowrisankaran, S., Shah, A. S., Roberts, T. L., Wiecek, E., Chinn, R. N., Hawash, K. K., O'Brien, M. J., Howell, D. R., Meehan, W. P., Raghuram, A.  
2021: 1-11

- **Repeatability of Accommodation in Children with and without Amblyopia using the Grand Seiko Autorefractor**  
Roberts, T. L., Chinn, R., Curtiss, M., Gehring, A., De Paula, A., Raghuram, A.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020

- **Effectiveness of vergence/accommodative therapy for accommodative dysfunction in children with convergence insufficiency.** *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians (Optometrists)* Chen, A. M., Roberts, T. L., Cotter, S. A., Kulp, M. T., Sinnott, L. T., Borsting, E. J., Tea, Y. C., Jones-Jordan, L. A., Hertle, R. n., Mitchell, G. L., Eugene Arnold, L. n., Chase, C. n., Scheiman, et al  
2020

- **Repeatability of Contrast Sensitivity in Patients with Infantile Nystagmus Syndrome Using the CSV-1000(R)**  
Kraft, A. R., Gehring, A. M., Hertle, R. W., Roberts, T. L.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019

- **Objective Blur Detection Thresholds in Amblyopic and Fellow Eyes of Children with Amblyopia**  
Gehring, A. M., Juric, A., Ricker, I. A., Roberts, T. L.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019

- **Impact of Visual Cues on the Magnitude and Variability of the Accommodative Response in Children With Emmetropia and Uncorrected Hyperopia and Adults.** *Investigative ophthalmology & visual science* Roberts, T. L., Manny, R. E., Anderson, H. A.  
2019; 60 (5): 1527–37

- **A Randomized Clinical Trial of Immediate versus Delayed Glasses for Moderate Hyperopia in 1- and 2-Year-Olds.** *Ophthalmology* Kulp, M. T., Holmes, J. M., Dean, T. W., Suh, D. W., Kraker, R. T., Wallace, D. K., Petersen, D. B., Cotter, S. A., Manny, R. E., Superstein, R. n., Roberts, T. L., Avallone, J. M., Fishman, et al  
2019

- **The Impact of Visual Cues on Accommodative Variability in Children with Emmetropia and Uncorrected Hyperopia**  
Roberts, T. L., Manny, R. E., Anderson, H. A.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018

- **Reliability and Validity of Gaze-Dependent Functional Vision Space: A Novel Metric Quantifying Visual Function in Infantile Nystagmus Syndrome** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*

Roberts, T. L., Kester, K. N., Hertle, R. W.

2018; 59 (5): 1760–68

- **Blur Detection, Depth of Field, and Accommodation in Emmetropic and Hyperopic Children** *OPTOMETRY AND VISION SCIENCE*

Roberts, T. L., Stevenson, S. B., Benoit, J. S., Manny, R. E., Anderson, H. A.

2018; 95 (3): 212–22

- **Impact of Cognitive Demand during Sustained Near Tasks in Children and Adults** *OPTOMETRY AND VISION SCIENCE*

Roberts, T. L., Manny, R. E., Benoit, J. S., Anderson, H. A.

2018; 95 (3): 223–33

- **Accommodative Accuracy and Stability In Passive and Active Viewing Tasks in Children with Uncorrected Hyperopia**

Roberts, T. L., Benoit, J. S., Manny, R. E., Stevenson, S. B., Anderson, H. A.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2016

- **Accommodative Gain in Relation to Perceived Target Clarity** *OPTOMETRY AND VISION SCIENCE*

Roberts, T. L., Anderson, H. A., Stuebing, K. K.

2015; 92 (11): 1092–1102

- **Comparison of Objective and Subjective Accommodative Response from Preschool to Pre-Presbyopia**

Roberts, T. L., Stuebing, K. K., Anderson, H. A.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2014

- **The Correlation Between a Dynamic Stimulus and Accommodation or Vergence Responses in Open-Loop Conditions During Infancy**

Candy, T., Roberts, T. L., Babinsky, E., Manh, V.

ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2014

- **Intraobserver reliability of contact pachymetry in children** *JOURNAL OF AAPOS*

Weise, K. K., Kaminski, B., Melia, M., Repka, M. X., Bradfield, Y. S., Davitt, B. V., Johnson, D. A., Kraker, R. T., Manny, R. E., Matta, N. S., Schloff, S., Pediatric Eye Disease Investigator Grp

2013; 17 (2): 144–48

- **Vision Specific Quality of Life of Pediatric Contact Lens Wearers** *OPTOMETRY AND VISION SCIENCE*

Rah, M. J., Walline, J. J., Jones-Jordan, L. A., Sinnott, L. T., Jackson, J., Manny, R. E., Coffey, B., Lyons, S., ACHIEVE Study Grp

2010; 87 (8): 560–66

- **Randomized Trial of the Effect of Contact Lens Wear on Self-Perception in Children** *OPTOMETRY AND VISION SCIENCE*

Walline, J. J., Jones, L. A., Sinnott, L., Chitkara, M., Coffey, B., Jackson, J., Manny, R. E., Rah, M. J., Prinstein, M. J., ACHIEVE Study Grp

2009; 86 (3): 222–32

- **A Randomized Trial of the Effect of Soft Contact Lenses on Myopia Progression in Children** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*

Walline, J. J., Jones, L. A., Sinnott, L., Manny, R. E., Gaume, A., Rah, M. J., Chitkara, M., Lyons, S., ACHIEVE Study Grp

2008; 49 (11): 4702–6