

Effects on Visual Acuity and Stereoacuity of Oculomotor Changes Produced by Pre-Flight Adaptation Training

Harold Bedell, Ph.D., Professor of Optometry;
Saamil Patel, Ph.D., Aerospace Post-Doctoral Fellow,
University of Houston

THE ISSO-FUNDED PROJECT ENDED IN MAY, 1999. IN FALL, 2001, Dr. Patel was appointed as a Research Assistant Professor in the Department of Electrical and Computer Engineering at the University of Houston. Publications, presentations, and proposals that resulted from studies achieved with ISSO support are listed below.

Publications

- Akutsu, H., H. E. Bedell, and S. S. Patel. "Recognition Thresholds for Letters with Simulated Dioptric Blur," *Optom. Vis. Sci.* 77 (2000): 524-30.
- Bedell, H. E., S. T. L. Chung, and S. S. Patel. "Elevation of Vernier Thresholds During Image Motion Depends on Target Configuration," *J. Opt. Soc. Am. A* 17 (2000): 947-54.
- Patel, S. S., B.-C. Jiang, and H. Ögmen. "Vergence Dynamics Predict Fixation Disparity," *Neural Comput.* 13 (2001): 1495-525.
- Patel, S. S., H. E. Bedell, D. K. Tsang, and M. T. Ukwade. "Normalization of Suprathreshold Perception of Position and Stereoscopic Depth." (*To be submitted.*)
- Patel, S. S., H. Ögmen, H. E. Bedell, and V. Sampath. "Flash-Lag Effect: Differential Latency, Not Postdiction," *Science* 290 (2000): 1051a <<http://www.sciencemag.org/cgi/content/full/290/5494/1051a>>.
- Patel, S. S., M. T. Ukwade, S. B. Stevenson, H. E. Bedell, V. Sampath, and H. Ögmen. "Oblique Phase Disparities Enhance Stereoscopic Depth Perception in Humans." (*To be submitted.*)

Presentations

- Bedell, H. E., S. S. Patel, and S. T. L. Chung. "Attenuation of Perceived Motion Smear During Vergence Tracking," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 29-May 4, 2001. *Investig. Ophthalmol. Vis. Sci.* 42.4 (2001): S622.
- Bedell, H. E., E. Founkner-Fracht, and S. S. Patel. "Independence of Horizontal and Vertical Eye Movements During Horizontal Pursuit," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 30-May 5, 2000. *Investig. Ophthalmol. Vis. Sci.* 41.4 (2000): S306.
- Jiang, B.-C., H. M. Queener, and S. S. Patel. "Parameters of Accommodation and Vergence Systems Determined by a Random Search Optimization Method," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 30-May, 2000. *Investig. Ophthalmol. Vis. Sci.* 41.4 (2000): S819.
- Langaas, T., H. E. Bedell, S. S. Patel, and M. T. Ukwade.

"Psychophysical Estimates of Stereoacuity and Vergence Fluctuations During Voluntary Horizontal

Head Motion," Ann. Mtg., American Academy of Optometry, Philadelphia, PA, Dec. 6-10, 2001. *Optom. Vis. Sci.* 78.12s (2001): 35.

- Patel, S. S. and H. E. Bedell. "'Normalization' of Suprathreshold Perception of Motion," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, May 5-10, 2002.
- Patel, S. S., H. E. Bedell, D. K. Tsang, and M. T. Ukwade. "Influence of Threshold Elevation on the Perceived Magnitude of Suprathreshold Position Offset and Stereoscopic Depth," 18th Ann. Houston Conf. on Biomedical Engineering Research, Houston, TX, Feb. 10-11, 2000.
- Patel, S. S., H. E. Bedell, D. K. Tsang, and M. T. Ukwade. "Normalization of Suprathreshold Perception of Position and Stereoscopic Depth," Ann. Mtg., Association for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 30-May, 2000. *Investig. Ophthalmol. Vis. Sci.* 41.4 (2000): S237.
- Patel, S. S., M. T. Ukwade, H. E. Bedell, and V. Sampath. "Near Stereothresholds Measured with Sub-Pixel Resolution Using Random-Dot Stimuli," Ann. Mtg., American Academy of Optometry, Orlando, FL, Dec. 7-12, 2000. *Optom. Vis. Sci.* 77.12s (2000): 270.
- Patel, S. S., S. T. L. Chung, H. E. Bedell, and H. Ögmen. "Color and Motion: Which is the Tortoise and Which is the Hare?" Ann. Mtg., Vision Science Society, Sarasota, FL, May 4-8 2002.
- Patel, S. S., M. T. Ukwade, S. B. Stevenson, H. E. Bedell, V. Sampath, and H. Ögmen. "Stereoscopic Depth Perceived from Differences in the Fourier Phase Spectra of Images in the Two Eyes," 19th Ann. Houston Conf. on Biomedical Engineering Research, Houston, TX, Feb. 8-9, 2001.
- Patel, S. S., M. T. Ukwade, S. B. Stevenson, H. E. Bedell, V. Sampath, and H. Ögmen. "Role of Oblique Phase Disparities in Stereoscopic Depth Perception," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 29-May 4, 2001. *Investig. Ophthalmol. Vis. Sci.* 42.4 (2001): S402.
- Ukwade, M. T., H. E. Bedell, and S. S. Patel. "Stereothresholds with Disparity Noise at Different Temporal Frequencies," Ann. Mtg., Assoc. for Research in Vision & Ophthalmology, Ft. Lauderdale, FL, April 30-May, 2000. *Investig. Ophthalmol. Vis. Sci.* 41.4 (2000): S734.

Funding and proposals

- "Characterization of Threshold and Suprathreshold Visual Perception." Joint RFP, National Science Foundation and National Eye Institute, Feb. 2002; *pending*.
- "Dynamic and Static Aspects of Vergence Eye Movements." National Eye Institute, Oct. 2001.; *not funded, revision in progress*.
- "Threshold and Suprathreshold Visual Perception of Position." National Science Foundation, July 2000; *not funded*.