

Russell David Hamer

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EDUCATION

Syracuse University

Ph.D. Sensory Neuroscience

1979

Institute for Sensory Research

Ph.D. Thesis: Vibrotactile masking and interaction between sensory channels in the human cutaneous system.

City College of the City University of New York, B.S. Biology, *Magna Cum Laude*

1971

PROFESSIONAL EXPERIENCE:

1978-1982 Post-Doctoral Fellow, Dept. of Psychology, University of Washington, Seattle, WA.

1982-1984 Post-Doctoral Fellow, School of Optometry, University of California, Berkeley, CA.

1984-1985 Research Associate, School of Optometry, University of California, Berkeley, CA.

1984-1986 Research Associate, Smith-Kettlewell Inst. Vis. Sci., M.R.I., San Francisco, CA.

1986-1987 Research Associate, Smith-Kettlewell Eye Research Foundation, San Francisco, CA.

1987-2000 Associate Scientist, Smith-Kettlewell Eye Research Institute, San Francisco, CA.

2000-2006 Scientist, Smith-Kettlewell Eye Research Institute, San Francisco, CA.

2006-present Affiliate Scientist, Smith-Kettlewell Eye Research Institute, San Francisco, CA.

2007-2009 Professor Visitante, Depto. De Psicologia Experimental, Univ. de São Paulo, São Paulo, Brasil

2009-2011 Professor Colaborador, Univ. de São Paulo, São Paulo, Brasil

2011-2013 Professor Visitante, Depto. De Psicologia Experimental, Univ. de São Paulo, São Paulo, Brasil

2014-present Professor Visitante Especial, Depto. De Psicologia Experimental, Univ. de São Paulo, São Paulo, Brasil. Ciência Sem Fronteiras Program, CAPES, Brasil.

2014-2023 Affiliate Research Professor, Dept of Psychology, Florida Atlantic University, Boca Raton, FL

2014-2018 Adjunct Professor, Dept of Psychology, Florida Atlantic University, Boca Raton, FL

2023-present Affiliate Scientist, Smith-Kettlewell Eye Research Institute, San Francisco, CA

GRANTS & AWARDS:

NEI 5R01EY011513: Computational Analysis of Phototransduction. 1997-2001

NEI Competing: Computational Analysis of Cone Phototransduction 2002-2006

Smith-Kettlewell Eye Research Foundation Grants:

Analysis of Vertebrate Phototransduction Mechanics 1997-1999

Computational Analysis of Phototransduction Mechanisms 2000-2001

Computational Analysis of Phototransduction 2002-2006

William A. Kettlewell Chair Award, \$50,000

2000-2005

Visiting Professor Grant from Fundação do Amparo a Pesquisa do Estado de São Paulo (FAPESP Grant 2007/52321-4), Normal and abnormal visual functions in infants and adults

2007-2008

National institutional interchange Grant (PROCAD/CAPES Grant 182/2007)

Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq Grant 302527/2008-7)

Normal and abnormal vision in infants and adults	2008-2009
Visiting Professor Grant (Pró-Reitoria of Instituto de Psicologia, Universidade de São Paulo (IPUSP), Grant 2011.1.454.47.0)	2011-2013
São Paulo State Travel Grant (FAPESP, 2012/01654-1)	2012
IPUSP Travel Grant (Pró-Reitoria)	2013
Ciência Sem Fronteiras, Professor Visitante Especial, CAPES	2014-2017

EDITORIAL EXPERIENCE

2008-present. Associate Editor, *Psychology & Neuroscience*

2008-present. Associate Editor, *Psicologia USP*

TEACHING & LECTURE EXPERIENCE:

February 5, 2025. *Pictorial Design & Levels of Meaning In The Art of Rene Magritte* Invited lecture at the Human Vision & Engineering Imaging Conference (HVEI), San Francisco, CA.

October 15, 2024. Invited lecture on *Art & The Brain* presented to undergraduate *Vision & Perception* class, invited by Prof. Lucia Vaina, *Brain & Vision Laboratory*, Boston University.

October 14, 2024. *A Mona Lisa de Da Vinci é Apenas Mais Um "Sabor de Chocolate"?* Invited lecture at the International Course on Cognitive Neuroscience, Belem, Brazil.

February, 2024. *What Surreal Art Tells Us About The Human Brain*. Invited lecture at the Human Vision & Engineering Imaging Conference (HVEI), Burlingame, CA.

June 15, 2023. *Science-Art Meets Neuro-Science: Analysis of the Art of Selected Works of Rene Magritte*. Invited colloquium at the Faculty of Mathematics & Computer Science, Heidelberg University, Heidelberg, Baden-Württemberg, Germany. Zoom lecture

May 12, 2023. Invited lecture at the Norton Museum of Art, West Palm Beach, FL. "What Art Tells Us About The Brain: Perceptual-Cognitive Analysis of Selected Works of René François Ghislain Magritte". (<https://youtu.be/UhJDpX4zQRU?si=EmwRFaxMt2KXGmwU>)

March 20, 2023. Invited lecture on *Art & The Brain* presented to undergraduate *Vision & Perception* class, invited by Prof. Lucia Vaina, *Brain & Vision Laboratory*, Boston University.

February 28, 2023. Lecture at Osher Lifelong Learning Center, Florida Atlantic University, Jupiter, FL Campus: "*Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte.*"

April 16, 2020. Invited lecture at Smith-Kettlewell Eye Research Institute, San Francisco, CA: "*Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte.*"

April 6, 2020. Invited lecture at the Lifelong Learning Institute, Nova Southeastern University, Davie, FL: "*The Timba Revolution: Unparalleled Explosion of Musical Creativity in Modern Cuban Music!*"

Mar. 12- April2, 2020. Weekly lecture series. Osher Lifelong Learning Center, Florida Atlantic University, Boca Raton Campus. "*Artist As Neuroscientist: Analysis of Selected Works of René François Ghislain Magritte.*"

Jan. 27, 2020. Invited lecture at the Institute For Learning In Retirement, Boca Raton, FL: "*The Timba Revolution: Unparalleled Explosion of Musical Creativity in Modern Cuban Music!*"

Nov. 20, 2019. Invited lecture at Broward College, Davie, FL: *"What Art Tells Us About The Human Brain (and vice versa): Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte"*

Nov. 4, 2019. Invited lecture at the Institute For Learning In Retirement, Boca Raton, FL: *"What Art Tells Us About The Human Brain (and vice versa): Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte"*

2017-present. Graduate Neuroscience 2 course, Sections on Retinal & Central Vision, through the *Center for Complex Systems & Brain Sciences*, Florida Atlantic University.

2015-2016. Spring & Fall Semesters teaching General Psychology, undergraduate program through *Navitas*, Florida Atlantic University.

2013. Six-week graduate seminar "Psicologia, Neurociência e Valores Humanos" (*Psychology, Neuroscience and Human Values*). The seminar class delved into the critical role that the brain sciences – psychology, neuroscience, sensory-perceptual science – have in the evolution of our shared human values and morals. The thesis that a complete and rich ethical and moral structure can be derived from, based on, knowledge derived from evidence based science, and that knowledge of the locus of morals and ethics - the human brain – is paramount in the endeavor.

2011, 2012, 2013. Six-week intensive graduate seminar "*Desenvolvimento Visual*" (*Visual Development*) was offered in all 3 years. Review of the structure and function of the visual system and critical developmental milestones. Functional vision topics covered: development of visual acuity, contrast sensitivity, color vision, sensitivity to motion, binocular vision, challenges to normal visual development, higher perceptual-cognitive development.

August 17, 20, 2012. Graduate mini-course "*Estratégias Retinianas de Codificação Visual - III*". (*Retinal strategies of visual coding - III*) Taught with visiting Prof. Henrique von Gersdorff (The Vollum Institute, Oregon Health & Science University) and Profa. Christina Joselevitch (IPUSP).

August 19, 22, 2011. Graduate mini-course "*Estratégias Retinianas de Codificação Visual - II*". (*Retinal strategies of visual coding - II*) Taught with visiting Prof. David Zenisek (Yale University School of Medicine, USA) and Profa. Christina Joselevitch (IPUSP).

August 20 – December 3, 2010. Graduate course "*Psicologia Sensorial*". (*Sensory Psychology*). Taught with Profas. Christina Joselevitch (IPUSP) and Mirella Gualtieri (IPUSP). Essential topics in sensory neuroscience spanning all sensory systems were presented, including hands-on lab experience in electrophysiological and psychophysical methods. Student class participation and critical analysis of research articles was required.

November 22, 24, 2010. Graduate mini-curso "*Técnicas de preparação de Trabalhos Científicos – Apresentação Oral de Trabalhos Científicos*." (*Techniques for oral presentation of scientific research*) With Profa. Christina Joselevitch (IPUSP). Methods to optimize effective scientific presentations are discussed with student participation. This course was also offered in 2011, 2012, 2013.

August 20, 23, 2010. Graduate mini-course "*Estratégias Retinianas de Codificação Visual - I*". (*Retinal strategies of visual coding - I*) Taught with visiting Prof. Maarten Kamermans (Netherlands Institute for Neuroscience, Netherlands) and Profa. Christina Joselevitch (Instituto de Psicologia, Universidade de São Paulo, IPUSP).

July, 2010. Graduate mini-course "*Medidas com PVE de varredura do processamento de vernier é consistente com a dominância das respostas magnocelulares*." (*Sweep VEP measurements of vernier processing is consistent with dominance by magnocellular responses*.) This class introduced students

to human vernier (high-precision spatial localization) processing and the use of visual evoked potentials in measuring vernier responses.

June, 2010. Graduate mini-course “*Desenvolvimento do processamento de movimento: novos paradigmas para o estudo dos mecanismos de movimento indisponíveis para análise no sistema visual do adulto.*” (“*Development of motion processing: new paradigms to study motion mechanisms unavailable for analysis in the adult visual system.*”) This class summarized the key features of motion processing in both normal and abnormal development. The content focused on results from visual evoked potentials in response to periodic motion (MVEPs). A new VEP paradigm with which to study development of both motion and pattern (contrast) processing (from a single MVEP waveform) was introduced.

March 17 – June 09, 2010. Graduate course, “*Fisiologia e Fototransdução em Fotorreceptores de Vertebrados – História e Problemas Atuais Revelados por Técnicas Genéticas Modernas e Modelamento Computacional.*” (“*Physiology and phototransduction in vertebrate photoreceptors – history and problems revealed by modern genetic methods and computational modeling.*”) Presented to students at Instituto de Psicologia, Universidade de São Paulo in São Paulo, Brasil, and to students at the Federal University of Pará (Universidade Federal do Pará), in Belém, Pará, Brasil (by videoconference). The course introduced retinal function, especially photoreceptor function, and illustrated the use of computational modeling in understanding this complex biological system.

2009 – 2013. *Orientador (Graduate Advisor), co-orientador, Laboratório de Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo (USP), São Paulo, Brasil*. I was an advisor for two Masters (Mestrado) students, Fabio A. Carvalho and Marina Von Zuben de Arruda Camargo, and a co-advisor, with Professor Marcelo F. Costa, for a Ph.D. student, Valtenice C.R.M França. All three have since obtained their respective degrees, and one is in a Post-Doctoral program at USP.

2009 – 2011. *Professor Colaborador, Departamento de Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo, São Paulo, Brasil*. Courses included: Visual Development, Visual Evoked Potential Methods in Visual Neuroscience, Essential Math and Analysis For Visual Neuroscience Research, Vertebrate Photoreceptor Physiology and Phototransduction, Sensory Psychology.

2007 – 2008. *Professor Visitante, Laboratório de Psicologia Experimental, Instituto de Psicologia, Universidade de São Paulo, São Paulo, Brasil*. In early 2007 I had the honor of being invited to become a Visiting Professor at the University of São Paulo in the Psychology Department. My first semester, I taught visual physiology and perception to graduate students in the Psychology Department with an emphasis on five topics: (1) physiology and phototransduction in vertebrate photoreceptors; (2) visual development in human infants, including development of grating acuity, contrast sensitivity and motion responses; (3) behavioral and swept parameter VEP methods for measuring visual function, including a primer on frequency domain analyses; (4) Introduction to human temporal contrast processing, including a second primer on frequency domain vs temporal domain analysis; (5) The course concluded with an open seminar on “*Ethics & Animal Research*” which I designed and guided. By invitation of Dra. Dora F.Ventura, head of the Laboratório da Visão at the Instituto de Psicologia.

2008 1st semester. Taught undergraduates in a lab-based course on measurement of visual function using sweep VEP and Teller Acuity cards applicable to research with infants or adults.

July, 2007. Postgraduate level class in visual physiology and photoreceptor function, phototransduction. By invitation of Professor Luiz Carlos L. Silveira, professor at the Centro de Ciências Biológicas, Departamento de Fisiologia at the Universidade Federal do Pará in Belém.

2004 – 2006. *Preceptor to a Postdoctoral Fellow, Dr. Ali Navid*. As Dr. Navid’s preceptor, my role was to teach and train him to help promote his success in a scientific research career. I spent many hours

teaching him about our field, about visual neuroscience, about how to write up scientific results for submission to peer-review journals and about how to write research grant proposals.

Fall, 1994. *Guest lectures in the sophomore science class* (Frank Daar, teacher) at Arrowsmith Academy, Berkeley, CA. Taught a class on the human senses, focusing on vision, visual perception, visual illusions and the lessons these carry for an appreciation of the complexities of the human experience and the biologically-based characteristics that transcend cultures and bind us to each other.

1986 – 1995. *Monthly lectures to parents groups* at Kaiser Hospital and California Pacific Medical Center, SF, CA, educating parents about normal and abnormal visual development of infants.

Summer, 1984. *Introduction to Bioengineering*. College preparatory summer course for advanced placement minority high school students at the School of Optometry, University of California, Berkeley. I taught these bright HS students the basics in the anatomy, physiology and perceptual psychology of hearing, vision and the cutaneous senses, with the major emphasis on vision. Towards the end of the unit on visual perception and the physiological basis of some well-known perceptual illusions, we did a field trip to local art museums to help link the academic material with real-world perception and esthetic experience.

1980-1981 *Graduate Seminar in Systems Neuroscience*, Departments of Psychology and Electrical Engineering. This was a high-level seminar course co-taught by me and Dr. Robert Pinter from the College of Engineering. Students were guided through reading of and evaluation of significant new scientific papers in the field of visual neuroscience.

1976 – 2006. *Scientific invited lectures, presentations & colloquia*. As a central part of my scientific career, I have given innumerable talks and lectures and presentations at conferences and universities around the world (see Scientific Abstracts below). I thus have had an enormous amount of experience in organizing complex material in a manner that is clear and communicative and interesting, and most importantly, understandable by diverse audiences with different backgrounds and levels of expertise.

TRAINING & CREDENTIALING

California Basic Educational Skills Test (CBEST), Oct. 7, 2006.

Registered member of Association for Supervision and Curriculum Development (ASCD).

Credentialed by Florida Department of Education to teach Biology, Grades 6-12. January, 2018.

MULTICULTURAL & ARTISTIC ACTIVITIES

Languages: English, Portuguese, Functional Spanish

1992 – 2018. Taught Cuban and Miami-style Salsa dance to all levels of dancers. Taught weekly classes in San Francisco, Emeryville, and Santa Cruz, CA, plus workshops in Arizona, Washington State, Brisbane & Sydney, Australia, Losone, Switzerland (1992 – 2006). Weekly classes in Salsa taught in Portuguese and Spanish at the Universidade de São Paulo, SP, Brasil (2007-2013). Choreographed dance performances.

1992 – 2018. *Salsa dance instruction*. I have taught thousands of students Cuban & Miami-style Salsa dance, including classes of pre-teens. I taught Salsa and Rueda de Casino at the *Rhythm & Motion Studios* and *Dance Mission Theater* in SF, and at the *The Beat Studio* in Berkeley, CA. I have taught classes in San Francisco Bay Area public schools, and taught a large class of Napa High-School (which has national award-winning Jazz and Pom dance teams!) students for 3 months in 2004. They learned Salsa from scratch, and learned a complicated choreography to perform at their annual dance performance extravaganza. I have also taught classes all over northern California, in Seattle, WA, Vancouver, Canada, Tucson and Phoenix, AZ as well as in Switzerland, Australia and (for 6 years), at the Universidade de São Paulo, SP Brasil between 2007 and 2013. In the Summer of 2006, I taught Salsa to an all-girls' (ages 11-13) soccer team in Alameda, CA. I also choreographed Salsa and Rueda

performances for dancers in the San Francisco Bay area that were performed in local Dance Studios and cultural festivals, as well as a choreography for a University-wide competition at the Universidade de São Paulo (which has more than 50,000 students). That choreography won 1st prize.

2014 – present. I have been analyzing the surreal art of Rene Magritte from the point of view of what his paintings can reveal about visual processing in the brain. The surreal effects he creates provide clues about the hierarchy processing of objects in 2D representation on a canvas of a 3D scene. Magritte carefully constructs objects and space in his works, then proceeds to violate the space he so meticulously constructed. The result is a surreal confounding of figure vs background, perceptual distortions of familiar objects induced by our visual system's attempts to reconcile conflicting cues. Open spaces become occluding objects. In Magritte's world, the same object can be perceived as either opaque or a transparent opening.

SCIENTIFIC PUBLICATIONS:

- Gescheider GA, Verrillo RT, Capraro AJ, Hamer RD. (1977) Enhancement of vibrotactile sensation magnitude and predictions from the duplex model of mechanoreception. *Sensory Processes* 1(3):187-203.
- Gescheider GA, Capraro AJ, Frisina RD, Hamer RD, Verrillo RT (1978) The effects of a surround on vibrotactile thresholds. *Sensory Processes* 2(2): 99-115.
- Hamer RD, Alexander KR, Teller DY. (1982) Rayleigh discriminations in young human infants. *Vision Res.*; 22(5): 575-577. [https://doi.org/10.1016/0042-6989\(82\)90116-x](https://doi.org/10.1016/0042-6989(82)90116-x)
- Hamer RD, Verrillo RT, Zwislocki JJ. (1983) Vibrotactile masking of Pacinian and non-Pacinian channels. *J Acoust Soc Am.*; 73(4): 1293-303. <https://doi.org/10.1121/1.389278>
- Enoch, JM and Hamer, RD (1983) Image size correction of the unilateral aphakic infant. *Ophthalmic Pediatrics and Genetics* 2:153-165. <https://doi.org/10.3109/13816818309007806>
- Hamer RD, Schneck ME. (1984) Spatial summation in dark-adapted human infants. *Vision Res.*; 24(1): 77-85. [https://doi.org/10.1016/0042-6989\(84\)90146-9](https://doi.org/10.1016/0042-6989(84)90146-9)
- Schneck ME, Hamer RD, Packer OS, Teller DY. (1984) Area-threshold relations at controlled retinal locations in 1-month-old infants. *Vision Res.* 24(12):1753-63.
- Hamer RD, Dobson V, Mayer MJ. (1984) Absolute thresholds in human infants exposed to continuous illumination. *Invest Ophthalmol Vis Sci.*; 25(4): 381-388.
- Hamer, RD, Yasuma, T, Lakshminarayanan, V, Enoch, JM, , Birch, DG, Birch, EE (1985) Stiles-Crawford functions are not broader after one week of total light exclusion. Presented at the First Topical Meeting on Noninvasive Assessment of the Visual Function, Optical Society of America, Incline Village, Nevada, March 19-20, 1985. Published Abstract in The Technical Digest. <https://doi.org/10.1364/NAVF.1985.WA7>
- Hamer, RD, Cohn, TE. (1985). Visibility of suprathreshold targets. Presented the Optical Society of America Annual Meeting. <http://dx.doi.org/10.1364/OAM.1985.WF5>
- Hamer RD, Norcia AM, Tyler CW, Smith-Kettlewell. (1986). Development of Monocular VEP Acuities During The First Year of Life: Interocular Comparisons and Measurement Error. *Topical Meeting on Noninvasive Assessment of the Visual System (NAVS)*, paper MB2.
- Hamer RD, Norcia AM, Tyler CW. (1986). Visual Evoked Potential Evidence for Binocularity in Young Infants. *OSA Annual Meeting (FIO)*, paper FJ3.
- Hamer, R.D., Lakshminarayanan, V., Yasuma, T., Enoch, J.M. and O'Donnell, J.J. (1986) Selective adaptation of the Stiles-Crawford function in patient with gyrate atrophy. *Clin. Vis. Sci.* 1:103-106.
- Tyler, C. W., & Hamer, R. D. (1986, October). Linear temporal response of the human cone pathways. In *OSA Annual Meeting* (p. MP5). Optica Publishing Group.
- Yasuma, T, Hamer, RD, Lakshminarayanan, V, Enoch, JM and O'Donnell, JJ (1986) Retinal receptor alignment and directional sensitivity in a gyrate atrophy patient. *Clin. Vis. Sci.* 1:93-102.
- Tyler, CW, Norcia, AM & Hamer, RD. (1987). Two Mechanisms Revealed by Sweep VEP Contrast Functions in Infants, in *Topical Meeting on Noninvasive Assessment of the Visual System, Technical Digest Series (Optica Publishing Group)*, paper MB2. <https://opg.optica.org/abstract.cfm?URI=NAVS-1987-MB2>

- Enoch, JM, Hamer, RD, Lakshminarayanan, V, Yasuma, T, Birch, DG and Yamade, S. (1987) Effect of monocular light exclusion on the Stiles-Crawford function. *Vision Res.* **27**:507-510. [https://doi.org/10.1016/0042-6989\(87\)90035-6](https://doi.org/10.1016/0042-6989(87)90035-6)
- Pagon RA, Chatrian GE, Hamer RD, Lindberg KA. (1988) Heterozygote detection in X-linked recessive incomplete achromatopsia. *Ophthalmic Paediatr Genet.* **9**(1): 43-45. <https://doi.org/10.3109/13816818809031480>
- Norcia AM, Tyler CW, Hamer RD. (1988) High visual contrast sensitivity in the young human infant. *Invest Ophthalmol Vis Sci.*; **29**(1): 44-49.
- Tyler, C. W., Hamer, R. D., & Liu, L. (1988, October). Can human cones process one million quanta per millisecond?. In *OSA Annual Meeting* (p. MCC8). Optica Publishing Group.
- Norcia AM, Tyler CW, Hamer RD, Wesemann W. (1989) Measurement of spatial contrast sensitivity with the swept contrast VEP. *Vision Res.*; **29**(5): 627-637. [https://doi.org/10.1016/0042-6989\(89\)90048-5](https://doi.org/10.1016/0042-6989(89)90048-5)
- Hamer RD, Norcia AM, Tyler CW, Hsu-Winges C. (1989) The development of monocular and binocular VEP acuity. *Vision Res.*; **29**(4): 397-408. [https://doi.org/10.1016/0042-6989\(89\)90004-7](https://doi.org/10.1016/0042-6989(89)90004-7)
- Hsu-Winges C, Hamer RD, Norcia AM, Wesemann H, Chan C. (1989) Polaroid photorefractive screening of infants. *J Pediatr Ophthalmol Strabismus* **26**(5):254-260. <https://doi.org/10.3928/0191-3913-19890901-12>
- Norcia AM, Tyler CW, Hamer RD. (1990) Development of contrast sensitivity in the human infant. *Vision Res.*; **30**(10): 1475-86. [https://doi.org/10.1016/0042-6989\(90\)90028-j](https://doi.org/10.1016/0042-6989(90)90028-j)
- Tyler, C.W. and Hamer, R.D. (1990) Analysis of visual modulation sensitivity IV. Validity of the Ferry-Porter law. *J. Opt. Soc. Am.A* **7**, 743-758. <https://doi.org/10.1364/josaa.7.000743>
- R. D. Hamer and C. W. Tyler, "Red- and green-cone pathways have different temporal properties: implications for photometry," in *Optical Society of America Annual Meeting*, Technical Digest Series (Optica Publishing Group, 1991), paper MKK2. (<https://opg.optica.org/abstract.cfm?uri=OAM-1991-MKK2>)
- Lasley DJ, Hamer RD, Dister R, Cohn TE. (1991) Postural stability and stereo-ambiguity in man-designed visual environments. *IEEE Trans Biomed Eng.* **38**(8):808-813. <https://doi.org/10.1109/10.83593>
- Norcia, A.M., Garcia, H., Humphry, R., Holmes, A., Hamer, R.D. and Orel-Bixler, D. (1991). Anomalous motion VEPs in infants and in infantile esotropia. *Invest. Ophthalmol. Vis. Sci.* **32**, 436-439.
- Hamer RD, Tyler CW (1992) Analysis of visual modulation sensitivity. V. Faster visual response for G- than for R-Cone pathway? *J. Opt. Soc. Am.A*, **9**, 1889-1904. <https://doi.org/10.1364/josaa.9.001889>
- Hamer RD, Tyler CW (1992) Isolation of R-Cone Response with red light *Invest. Ophthalmol. Vis. Sci.* **33**(4), 704.
- Hamer RD, Norcia AM, Day SH, Haegerstrom-Portnoy G, Lewis D, Hsu-Winges C. (1992) Comparison of on- and off-axis photorefractive with cycloplegic retinoscopy in infants. *J Pediatr Ophthalmol Strabismus*; **29**(4): 232-239. <https://doi.org/10.3928/0191-3913-19920701-11>
- Hansen, R.M., Hamer, R.D. and Fulton, A.B. (1992). The effect of light adaptation on scotopic spatial summation in 10-week-old infants. *Vis. Res.* **32**, 387-392. [https://doi.org/10.1016/0042-6989\(92\)90147-b](https://doi.org/10.1016/0042-6989(92)90147-b)
- Hamer, R.D., Norcia, A.M., Orel-Bixler, D. and Hoyt, C.S. (1993) Motion VEPs in late-onset estropia. *Clin. Vis. Sci.* **8**, 55-62.
- Tyler, C.W. and Hamer, R.D. (1993) Eccentricity & the Ferry-Porter law. *J. Opt. Soc. Am. A*, **10**, 2084-2087. <https://doi.org/10.1364/josaa.10.002084>
- Hamer, R.D. and Mayer, D.L. (1994) The development of spatial vision. In: *Principles and Practice of Ophthalmology*, Chapter 42, Albert DM, Jakobiec FA (Eds.), W.B. Saunders Co., Philadelphia, PA., pp. 578-608.
- Jampolsky A, Norcia AM, Hamer RD (1994) Preoperative alternate occlusion decreases motion processing abnormalities in infantile esotropia. *J. Ped. Ophthalmol. Strab.* **31**, 6-17. <https://doi.org/10.3928/0191-3913-19940101-04>
- Hamer RD, Norcia AM (1994) The development of motion sensitivity during the first year of life. *Vis. Res.* **34**, 2387-2402. [https://doi.org/10.1016/0042-6989\(94\)90283-6](https://doi.org/10.1016/0042-6989(94)90283-6)

- Tyler CW, Hamer RD. (1995) Photokinetic analysis of primate cone responses implies qualitative differences from rod transduction. *Vis. Sci. and Its Appl., Technical Digest Series, Opt. Soc. Am.* 1: 260-263. <https://doi.org/10.1364/VSIA.1995.MA1>
- Hamer RD, Tyler CW (1995) Phototransduction: modeling the primate cone flash response. *Visual Neuroscience* 12, 1063-1082. <https://doi.org/10.1017/s0952523800006726>
- Norcia, AM, Hamer RD, Jampolsky, A, Orel-Bixler, D (1995) Plasticity of human motion processing mechanisms following surgery for infantile esotropia. *Vis. Res.* 35, 3279-3296. [https://doi.org/10.1016/0042-6989\(95\)00144-4](https://doi.org/10.1016/0042-6989(95)00144-4)
- Hamer, R.D. and Tyler, C.W. (1996) Rising phase of rod phototransduction is fitted by a linear model of the molecular cascade with no absolute delay. *Vision Science and Its Applications, Tech. Digest Series, Opt. Soc. Am.* 1, 56-59.(see <https://opg.optica.org/abstract.cfm?uri=vsia-1996-ThD.1>)
- Hamer, R.D. (2000a). Computational analysis of vertebrate phototransduction. Combined quantitative & qualitative modeling of dark- and light-adapted responses in amphibian rods. *Visual Neuroscience* 17, 679-699. <https://doi.org/10.1017/s0952523800175030>
- Hamer, R.D. (2000b). Analysis of Ca⁺⁺-dependent gain changes in PDE-activation in vertebrate rod phototransduction. *Molecular Vision* 6, 265-286. [PDF](#).
- Hamer, RD, Nicholas, SC, Tranchina, D & Liebman, PA. (2002) A Full Stochastic Molecular Model of Phototransduction: Testing Theories for the Reproducibility of the Vertebrate Rod Single Photon Response. *Invest. Ophthalmol. Vis. Sci.*;43(13):1411.
- Hamer, R.D., Nicholas, S.C., Tranchina, D. & Liebman, P.A. (2002). On the reproducibility of single photon responses (SPRs): the Gordian knot of rod phototransduction perseveres. *Journal of Vision* 10: 113a. doi: 10.1167/2.10.113 [WebLink](#).
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- Gualtieri, M, Damico, FM, Moura, AL, Hamer, R & Ventura, DF. (2010). Fast adaptive mechanisms in the diabetic retina assessed from Mferg recordings. Presented at Annual Meeting of ARVO, Ft. Lauderdale, FL, May 1 – May 5.
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- França, VCRM, Hamer, RD, Ventura, DF & Costa, MF. (2011). Sweep VEP (sVEP) Evaluation the effect of fetal growth restriction (*fgr*) on early contrast sensitivity development in fullterm brazilian newborns. Presented at Annual Meeting of ARVO, Ft. Lauderdale, FL, May 1 – May 5.
- Hamer, RD (2011). Development of motion processing and binocularity: insights from evoked potential measurements. **Invited presentation** at the XXVI Annual Meeting of Federação de Sociedade de Biologia Experimental (FeSBE; Federation of the Experimental Biology Society), Rio de Janeiro, Brasil, August 24 – August 27.
- Hamer, RD, Souza, GS, Costa, TL, Gomes, BD, Silveira, LCL & Ventura, DF. (2012). Mapping the spatiotemporal (S-T) domain and gain of putative M- and P-dominated limbs of the human cortical contrast response function (**CRF**) using the Sweep VEP (sVEP). Presented at the Annual Meeting of ARVO, Ft. Lauderdale, FL, May 6 – May 10.
- Hamer, RD, Souza, GS, Costa, TL, Gomes, BD, Silveira, LCL & Ventura, DF. (2012). Spatiotemporal domain and gain of mechanisms underlying the human cortical contrast response function (CRF) using the Sweep VEP (sVEP). **Invited presentation** at the International Society for Clinical Electrophysiology of Vision (ISCEV), Ft. Lauderdale, FL, May 5, 2012.
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- França, Valtenice de Cássia Rodrigues de Matos, Hamer, R. D., Costa, M. F., Ventura, D. F., IBIDI, S. M., Diniz, E. M. A. Evaluación de la agudeza visual y la sensibilidad al contraste en recién nacidos pequeños para la edad gestacional. Presented at the 88 Congreso de la Sociedad Española de Oftalmología, Barcelona, Spain, September 26 - 29, 2012.
- França, Valtenice de Cássia Rodrigues de Matos, Hamer, R. D., Costa, M.F. Avaliação da acuidade visual e sensibilidade ao contraste em recém-nascidos pequenos para a idade gestacional. Presented at VI Congresso Interno do Instituto de Psicologia, University of São Paulo, São Paulo, SP, Brasil, October 29-30, 2012.
- Hamer, RD, Souza, GS, Costa TL, Gomes, BD, Silveira, LCL & Ventura, DF. (2012). Towards development of a spatiotemporal map of the magnocellular and parvocellular contribution to the human cortical contrast response function using the Sweep VEP. **Invited presentation** at the XXVII Annual Meeting of Federação de Sociedade de Biologia Experimental (FeSBE; Federation of the Experimental Biology Society), Águas de Lindóia, São Paulo, Brasil, August 22 – August 25.
- Hamer, RD, Souza, GS, Costa TL, Gomes, BD, Silveira, LCL & Ventura, DF. (2013). Principal components analysis (PCA) of human cortical contrast response functions reveals two dominant mechanisms: M and P? Presented at the Annual Meeting of ARVO, Seattle, WA, May 5 – May 9.
- Hamer, RD (2013). Multiple contrast processing mechanisms underlying the steady-state sweep VEP contrast response function (CRF) are separable. **Invited presentation** at the Department of Psychology, University of Washington, Seattle, WA, USA. May 3.
- Hamer, RD (2013). Development of color vision (Desenvolvimento de Visão Cromática). **Invited presentation** at the Congresso Brasileiro de Neurovisão (Brazilian Neurovision Conference), Belo Horizonte, Minas Gerais, Brasil, July 17 – July 20.
- Hamer, RD (2013). Complex aspects of visual-perceptual development (Aspectos complexos presentes durante desenvolvimento visual-perceptual). **Invited presentation** at the Congresso Brasileiro de

- Neurovisão (Brazilian Neurovision Conference), Belo Horizonte, Minas Gerais, Brasil, July 17 – July 20.
- Hamer, RD (2013). From the subjective to the objective – the importance of psychophysics. **Invited presentation** at the XXVIII Annual Meeting of Federação de Sociedade de Biologia Experimental (FeSBE; Federation of the Experimental Biology Society), Caxambú, Minas Gerais, Brasil, August 21 – August 24.
- Costa, T.L.; Hamer, R.D.; Nagy, B.V.; Gualtieri, M.; Barboni, M.T.S.; Boggio, P.S.; Ventura, D.F. (2013). Transcranial direct current stimulation (tDCS) modulates Vernier, contrast responses and differentially affects visual pathways involved in achromatic vision. Neuropsychology workshop: From theoretical work, to practical applications, and back again: a neuropsychologist's tale, University of Leuven, Leuven, Belgium.
- Costa, T.L.; Hamer, R.D.; Nagy, B.V.; Gualtieri, M.; Barboni, M.T.S.; Boggio, P.S.; Ventura, D.F. (2013). Estimulação transcraniana por corrente contínua (ETCC) modula respostas a mudanças de contraste, estímulos Vernier e afeta distintamente vias visuais envolvidas na visão acromática. V Simpósio Internacional de Neuromodulação, Universidade Presbiteriana Mackenzie, São Paulo, Brasil.
- Hamer, R.D. (2014). Human cortical responses to periodic breaks in collinearity. Invited colloquium at the Department of Psychology, Rutgers University, Piscataway, NJ, April 21.
- Hamer, R.D. (2014). Human cortical responses to periodic vernier offsets: effects of contrast and gap. Meeting of the International Society for Clinical Electrophysiology of Vision, ISCEV@ARVO, Orlando, FL, May 3, 2014.
- Costa TL, Hamer RD, Nagy BV, Barboni MTS, Katayama RK, Gualtieri M, Boggio PS, Ventura DF. (2014). Efeitos da estimulação transcraniana por corrente contínua sobre diferentes vias do sistema visual. Presentation at the XXIX Annual Meeting of Federação de Sociedade de Biologia Experimental (FeSBE; Federation of the Experimental Biology Society), Caxambú, Minas Gerais, Brasil, August 27 – August 30.
- Hamer, RD, Souza, GS, Costa, TL, Peterzell, DH, Milioni, ALV, Gomes, BD, Silveira, LCL, & Ventura, DF (2016). Analysis of individual and spatiotemporal variability in human cortical contrast response functions: further evaluation of separable high and low contrast processes. *Journal of Vision* September (16), 878. doi:10.1167/16.12.878.
- França, Valtenice de Cássia Rodrigues de Matos; Hamer, RD, Ventura, DF, Waiswol, M, Rodrigues, APS, Costa, MF. (2016). Visual acuity and cognitive development in children after bilateral congenital cataracts surgery. In: 2nd FALAN Congress, Buenos Aires.
- França, Valtenice de Cássia Rodrigues de Matos; Hamer, RD, Ventura, DF, Waiswol, M, Rodrigues, APS, Costa, MF. (2016). Comparação entre acuidade visual e acuidade de Vernier de crianças saudáveis. In: XXXI Reunião Anual da Federação de Sociedade de Biologia Experimental (FeSBE), Foz do Iguaçu, Paraná, Brasil.
- Segundo H., Baran L., Decleva D., Leonardo S., Ventura D., Damico M., França V., Barboni M., Passos S., Lima D., Zatz M., Gazeta E., da Silva L., Hamer R., da Costa M.F., Vidal K. (2018). Visual evaluation in newborn infected with Zika virus perinatally. In: XXXIII Reunião Anual da Federação de Sociedade de Biologia Experimental (FeSBE), Campos de Jordão, São Paulo, Brasil.
- Baran, LCP, Costa, MF da, Barboni, MTS, Lima, DS, França, VCRM, Vidal, KS, Damico, FM, Tabares, HS, Silva, LA, Decleva, DV, Dias, SL, Hamer, RD, Gazeta, RE., Passos, SD, Coorte Zika Jundiaí, Zatz, M & Ventura, DF. (2018). Alterations in visual acuity (VA) and visual acuity development in infants and children gestationally exposed to Zika virus. In: XXXIII Reunião Anual da Federação de Sociedade de Biologia Experimental (FeSBE), Campos de Jordão, São Paulo, Brasil.
- Lima, DS, Baran, LCP, da Costa, MF, Vidal, KS, Damico, FM, Barboni, MTS, França, VCRM, Martins, CMG, Tabares, HS, Dias, SL, Silva, LA, Decleva, D, Hamer, RD, Zatz, M, Gazeta, RE, Passos, SD, Ventura, DF. (2018). Desenvolvimento da acuidade visual em crianças expostas ao Zika vírus com e sem síndrome congênita do Zika. XLI Reunião Anual da Sociedade Brasileira de Neurociências e Comportamento (SBNeC), Santos, São Paulo, Brasil.
- Hamer, RD. (2018). Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte. Invited presentation at the Annual *Vision Science & Art Conference*, Trieste, Italy, 26 August 2018.

- Hamer R.D. (2019). *Artist as neuroscientist: a visuo-cognitive safari through the provocative art of René François Ghislain Magritte*. Four-week lecture series presented at the *Osher Lifelong Learning Institute*, Florida Atlantic University, Boca Raton, FL.
- Hamer R.D. (2020). *Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René Magritte*. Invited colloquium at The Smith-Kettlewell Eye Research Institute, San Francisco, CA, USA.
- Hamer R.D. (2021). *What art can tell us about the brain*. Invited lecture at the Annual Meeting of the *Federação de Sociedades de Biologia Experimental (FeSBE)* & Brazilian Association for Research in Vision & Ophthalmology (BRAVO), Brazil, 100% virtual conference, Sept. 10, 2021.
- Hamer, RD. (2022). *Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte*. Demo at the Annual Vision Sciences Society Meeting, St. Petersburg, FL, May 2022.
- Hamer, RD. (2022). *Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte*. Demo at the Annual Vision Sciences Society Meeting, St. Petersburg, FL, May 2022.
- Hamer, RD. (2022). *What art tells us about the human brain (and vice versa): perceptuo-cognitive analysis of selected works of René François Ghislain Magritte*. Lecture presented at the *Osher Lifelong Learning Institute*, Florida Atlantic University, Jupiter, FL, May 16, 2022.
- Tyler, C.W. & Hamer, R.D., Liang, M., Zhou, Z., Likova, L. (2023). Evidence for a second rod pathway in the human retina with a cone-like spectral sensitivity. Poster presentation at the Annual Vision Sciences Society Meeting, St. Petersburg, FL, May 2023.
- Tyler, C.W. & Hamer, R.D., Liang, M., Zhou, Z., Likova, L. (2023). Gap junctions as the explanation for a novel retinal response component in the spectral ERG. Poster presentation at the Annual Meeting of the Association for Research in Vision & Ophthalmology (ARVO), New Orleans, LA, April 23-27 2023.
- Hamer R.D. (2023). *What art tells us about the human brain (and vice versa): perceptuo-cognitive analysis of selected works of René François Ghislain Magritte*. Invited lecture at The Norton Museum of Art, West Palm Beach, FL, May 12, 2023.
- Hamer R.D. (2023). Invited lecture on *Art & The Brain* presented to undergraduate *Vision & Perception* class, invited by Prof. Lucia Vaina, *Brain & Vision Laboratory*, Boston University, March 20, 2023.
- Hamer R.D. (2023). *Science-Art Meets Neuro-Science: Analysis of the Art of Selected Works of Rene Magritte*. Invited colloquium at the Faculty of Mathematics & Computer Science, Heidelberg University, Heidelberg, Baden-Württemberg, Germany. Zoom lecture, June 15, 2023.
- Hamer R.D. (2024). Invited lecture on *Art & The Brain* presented to undergraduate *Vision & Perception* class, invited by Prof. Lucia Vaina, *Brain & Vision Laboratory*, Boston University, October 15, 2024.
- Hamer R.D. (2024). *A Mona Lisa de Da Vinci é Apenas Mais Um "Sabor de Chocolate"?* Invited lecture at the International Course on Cognitive Neuroscience, Belem, Brazil, October 14, 2024.
- Hamer R.D. (2024). *What Surreal Art Tells Us About The Human Brain*. Invited lecture at the Human Vision & Engineering Imaging Conference (HVEI), Burlingame, CA, Feb, 2024.
- Hamer R.D. (2025). *Pictorial Design & Levels of Meaning In The Art of Rene Magritte* Invited lecture at the Human Vision & Engineering Imaging Conference (HVEI), San Francisco, CA, Feb 5, 2025.
- Hamer R.D. (2026). *Making Poetry Visible: What the Surreal Art of Rene Magritte Tells Us About Perception and The Brain*. Invited lecture for a general audience at the *Palace of the Academies (Palais des Academies) Brussels, Belgium, 21 May 2026.s*