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Marc Green, Ph. D.

Dr. Marc Green was born and raised in Pittsburgh, Pa. He has an experimental psychology Ph. D. and 38 years of experience in basic and applied research in perception, attention, reaction time, memory, human factors and related areas. He has also served as an expert in over 350 matters related to road accidents, warnings, falls, police shootings, product design and intellectual property as well as cases involving other human factors issues.

Dr. Green a human factors consulting scientist and also serves as adjunct professor of ophthalmology at West Virginia Medical School. He was previously a faculty member and research associate in psychology, physiological optics, and computer science at several universities including U.C. Berkeley, University of Toronto, and Carnegie-Mellon, and has been a guest lecturer in "Intellectual Property Law and Cognitive Science" at Osgoode Law School of York University. Dr. Green was also formerly at *Exponent Failure Analysis*.

His research background includes 96 articles, abstracts and book chapters as well as grants and contracts from the National Eye Institute, the U.S. Air Force and the National Science Engineering and Research Committee. He has been interviewed by *The New Yorker*, CTV National TV Network in Canada, the *National Post* of Canada (twice), Canadian Broadcasting Company Radio, IEEE radio, US National Public Radio and the Los Angeles Times. He has also served as a consultant to NBC Dateline and Sports Science on FSN. He is also an invited member of the National Institute of Standards & Technology Office of Law Enforcement Standards and the National Institute of Justice Expert Working Group on Human Factors in Latent Print Analysis

Education

1978-81 Postdoctoral Fellow/ Research Faculty University of California, Berkeley
1977-78 Postdoctoral Fellow Brown University
1971-77 Ph.D., Experimental Psychology, Northeastern University
1965-69 B.A., Psychology, University of Pittsburgh

Ph. D. Dissertation: "Comparison of Two Models of Visual Coding"
Master's Thesis: "Signal Detection Theory Analysis of Reaction Times"

Experience

1995-curr Principal, Visual Expert Human Factors
1994-curr Adjunct Faculty, Univ. West Virginia Medical School (Ophthalmology)
2002-03 Managing Scientist, Exponent Failure Analysis
1997-98 Human Factors Consultant, IBM.

1989-94	Faculty Member Trent Univ. (Computer science)
1988-90	Group Leader R&D, Spar Aerospace (Computer science)
1987-88	Visiting Research Scientist Carnegie Mellon Univ. (Computer science)
1986-87	Associate Professor University of Louisville (Psychology)
1984-86	Visiting Faculty York University Canada (Psychology)
1983-84	Visiting Faculty Member Indiana University (Physiological optics)
1981-83	Visiting Faculty Univ. of Toronto Canada (Psychology)
1978-81	Research Associate/Research Faculty Univ. Cal., Berkeley (Physiological optics)
1977-78	Postdoctoral Fellow Brown University (Psychology)

Forensic Experience

- Retained in ~350 cases;
- Case areas include personal injury, criminal, intellectual property, & consumer; and
- Cases split roughly 50-50 between defense and plaintiff;

Memberships

Human Factors and Ergonomic Society: Transportation Technical Group, Aging Technical Group, Safety Technical Group, Forensic Professional Technical Group; Society Risk Analysis: Risk Science and Law Specialty Group; Society of Automotive Engineers (SAE).

Publications (Newest First)

Books

1. *"Forensic Vision: With Applications To Highway Safety."* Lawyers & Judges Publishing: Tucson. 2008. (With B. Abrams, J. V. Odom, M. Allen and L. Weintraub.)
2. *"Knowledge Aided Design,"* editor, Academic Press, London, 1992.

Periodicals

1. "Perception-Reaction Time: Is Olson (& Sivak) All You Need To Know?," *Collision*, 4, *in press*.
2. "The Distribution of Visibility Levels at Target Detection in a Modified Adrian/CIE Visibility Model," *Human Factors & Ergonomic Society Proceedings*, October, 2009 (with K. Ising.)
3. "Human Fallibility Woven Into Forensic Science," *For The Defense* (Newsletter of the Criminal Lawyers' Association), Vol 30, pp 10-14, 2009.
4. "Human Error in Road Accidents," in *Road Safety Management*, P. S. Ranade, ed. pp 57-70. Nagarjuna, Hills: Icfai University Press. 2006. (with J. Senders.)
5. "Is the moth-effect real?" *Accident Reconstruction*, May/June, p18-19, 2006.
6. "Human Error Vs. Design Error," *Trial*, 60-65, June. 2006.
7. "Detecting Glaucomatous Damage: Evaluation With Contrast Independent Tasks," *Modern Optics*, Vol. 53, pp 1373-1385, 2006. (with J.V. Odom, M. Leys, J. Charlton, J., & V. Velitchko).

8. "Reaction Time," *Institute of Transportation Engineers Expert Witness Council Newsletter*, Summer, 2-6, 2005.
9. "'Is It A Gun? Or Is It A Wallet?'" Perceptual Factors In Police Shootings of Unarmed Suspects," *Police Marksman*, July/August, pp 52-54, 2005.
10. "Nursing Error and Human Nature," *Journal of Nursing Law*, Vol. 9, pp 37-44, 2004.
11. "Aging Vision in Visual Clutter," *Proceedings of The Human Factors & Ergonomic Society*, Available from the Human Factors & Ergonomic Society, 2004. (with W. Huang and J. V. Odom)
12. "Why Warnings Fail," *Occupational Health & Safety*, February, 2004.
13. "Proper Eyewitness Identification Procedures," *Law and Order*, pp. 195-198, October, 2003.
14. "Skewed View: Accident Investigation," *Occupational Health & Safety Canada*, pp 24-29, June, 2003.
15. "Why Do Humans Cause So Many Accidents?" *Without Prejudice (Journal of the Ontario Insurance Adjusters Association)*, pp 44-48, May, 2003.
16. "Accidents, 'Inattentive Blindness' And Human Nature," *Claims People*, pp 6-7, Vol. 12 first Quarter, 2002.
17. "The Invisible Pedestrian," *Occupational Health & Safety Canada*, pp44-50, October, 2002.
18. "Railroad Crossing Accidents," *Occupational Health & Safety*, June 2002. (Reprinted in Safety Engineers (ASSE) Transportation Practice Specialty Newsletter.)
19. "Inattentive Blindness," *Occupational Health & Safety Canada*, pp. 23-29, Jan/Feb 2002.
20. "Aging Eyes on the Rise," *Point of Purchase Magazine*, p. 40, April 2002.
21. "Safe Environments for the Older Worker," *Occupational Health & Safety*, January 2002.
22. "On Warning Research and the 'Real World,'" *Safety News (Human Factors & Ergonomics Safety Technical Group Newsletter)*, pp. 8-10, October 2001.
23. "Do Mobile Phones Pose an Unacceptable Risk? A Complete Look at the Adequacy of the Evidence?" *Risk Management*, pp. 40-48, November 2001.
24. "Lies, Damned Lies and . . . Controls," *Risk Management*, pp. 8-9, November 2001.
25. "The Science of Conspicuity," *Brand Packaging*, pp. 38-42, Nov/Dec 2001.
26. "Caution! Warning literature May Be Misguided," *Occupational Health & Safety*, pp. 16-18, Dec 2001.
27. "Human Factors of Diving Accidents in Pools," *Parks & Recreation*, Vol. 36, pp. 52-57, 2001
28. "Psychology of Warnings," *Occupational Health and Safety Canada*, pp. 30-38, Oct/Nov 2001. (with D. Low)
29. "How Long Does it Take to Stop? Methodological Analysis of Driver Perception Brake Times," *Transportation Human Factors*, Vol. 2, pp. 195-216, 2000.
30. "Human Error in Road Accidents," *Swiss Reinsurance Canada Newsletter*, pp 1-4/11-12, September, 2000.
31. "Commentary Reply," *Transportation Human Factors*, Vol. 2, pp. 227-228, 2000.
32. "Parallele Bahnen, Maskierung Durch Rauschen und Glaukomfrüherkennung: Eine Übersicht," *Search on Glaucoma*, Vol. 8, pp. 75-80, 2000 (with J. Odom, M. Leys, T. Yates, & J. Charlton).
33. "Designing Displays for the Aging Population," *Display and Design Ideas*, July 1999.
34. "Parallel Pathways, Noise Masking and Glaucoma Detection: Behavioral and electrophysiological Measures," *Documenta Ophthalmologica*, Vol. 95, pp. 283-293, 1999 (with T. Yates, M. Leys, W. Huang, J. Charlton, J. Reed, B-Z. Di, & J.V. Odom).

35. "Effects of External Noise on Contrast Thresholds in Normal Patients and Patients with Early Glaucoma," *Investigative Ophthalmology and Visual Science*, Vol. 39 (supplement), p. S24, 1998 (with J.V. Odom, T. Yates, M. Leys, W. Huang, B-Z. Di, J. Charlton, & J. Reed).
36. "Influences of Noise on Adult Age Differences in Dot Numerosity and Orientation Discrimination Thresholds," *Investigative Ophthalmology and Visual Science*, Vol. 38 (supplement), p. S67, 1997 (with M. Leys, T. Yates, & J. V. Odom).
37. "Using the 'Ideal Observer' to Measure Situational Awareness," In: *Experimental Analysis and Measurement of Situational Awareness*, D. Garland and M. Endsley (Eds), pp. 351–357, 1997 (with J.V. Odom & T. Yates).
38. "Dot Numerosity and Orientation Discrimination Thresholds: Normals and Patients with Early Glaucoma Compared," *Investigative Ophthalmology and Visual Science* Vol. 37 (supplement), p. s512, 1996 (with T. Yates, M. Leys, W. Huang, B. Di, J. Charlton, J. Reed, & J.V. Odom).
39. "Effects of External Noise on Contrast Thresholds: A Comparison of Normals and Patients with Early Glaucoma," *Investigative Ophthalmology and Visual Science*, Vol. 37 (supp), p. s511, 1996 (with M. Leys, T. Yates, W. Huang, J. Charlton, J. Reed, & J.V. Odom).
40. "Effects of External Noise on VEP Contrast Thresholds: Normal Patients and Patients with Early Glaucoma," *Vision Research*, Vol. 36, p. s70, 1996 (with J.V. Odom, M. Leys, T. Yates, W. Huang, J. Charlton, J. Reed, & B-Z. Di).
41. "Relative Phase Discrimination: Maturation of Hemispheric Asymmetry Continues into Adulthood," *Neuroscience Abstracts*, Vol. 21, p. 126, 1995 (with J.V. Odom).
42. "Hemispheric Asymmetry for Relative Phase Discrimination Reverses over the Lifespan," *Investigative Ophthalmology and Visual Science*, Vol. 35 (supplement), p. 78, 1995 (with M. Leys, C. Cutlip, & J.V. Odom).
43. "Familiarity and Pop-out in Visual Search," *Perception & Psychophysics*, Vol. 56, pp. 495–500, 1994 (with Q. Wang & P. Cavanagh).
44. "The Visual Psychophysics of Data Visualization," Second IEEE Conference on Visualization (Visualization '91) Workshop on Multivariate, Multiparameter, Multidimensional Systems, San Diego, October 21–25, 1993.
45. "Aging Impairs Spatial Discrimination of Phase But Not of Orientation," *Neuroscience Society Abstracts*, p. 384, 1993 (with J.V. Odom, C. Cutlip, G. Chao, K. Yao, & J.F. Charlton).
46. "Visual Search: Detection, Identification and Localization," *Perception*, Vol. 21, pp. 765–777, 1992.
47. "The Perceptual Basis of Temporal Aliasing and anti-Aliasing," *Human Vision, Visual Processing and Digital Display III*, pp. 84–93, J. Merritt and S. Fisher (eds.), IEEE Press, 1992.
48. "Temporal Sampling Requirements for Stereoscopic Displays," *Stereoscopic Displays and Applications III*, pp. 101–111, J.O. Merritt and S. Fisher (eds.), 1992.
49. "Conceptions and Misconceptions of Design," *Knowledge Aided Design*, M. Green (ed.), Academic Press, London, 1992.
50. "Visual Search, Visual Streams and Visual Architectures," *Perception and Psychophysics*, Vol. 50, pp. 388–403, 1991.
51. "Occlusion, Segmentation and the Aperture Problem," *Investigative Ophthalmology and Visual Science*, Vol. 32 (supplement), p. 273, 1991 (with J. V. Odom).

52. "Architectures for Visual Search," *Investigative Ophthalmology and Visual Science*, Vol. 31 (supplement), p. 78, 1990 (with M. Ohmi).
53. "Color Correspondence in Apparent Motion," *Perception and Psychophysics*, Vol. 62, pp. 15–20, 1989.
54. "Knowledge Acquisition for Causal Reasoning," International Joint Conference on Artificial Intelligence Workshop on Knowledge Acquisition, pp. 68–70, 1989 (with L. Eshelman).
55. "What Determines Correspondence Strength in Apparent Motion?" *Vision Research*, Vol. 26, pp. 599–608, 1986.
56. "Real and Apparent Motion," *Motion: Representation and Perception*, pp. 99–104, N. Badler & J. Tsotsos (eds.), Elsevier Science Publishers, New York, 1986 (with M. von Grunau).
57. "Correspondence Matching in Apparent Motion: Evidence for Three Dimensional Spatial Representation," *Science*, Vol. 233, pp. 1427–1429, 1986 (with J.V. Odom).
58. "Correspondence Matching in Apparent Motion: Defining the Heuristics," Proceedings, Vision Interface '86, Vancouver, B. C., pp. 337–342, May 26–30 1986.
59. "Visually Evoked Potential VEP Acuity: Testability in a Clinical Pediatric Population," *Acta Ophthalmologica*, Vol. 62, pp. 993–998, 1984 (with J.V. Odom).
60. "Developmental Physiological Optics: A Brief Review," *Experientia*, Vol. 40, pp. 1187–1181, 1984 (with J.V. Odom).
61. "Color Logic in Apparent Motion," *Perception*, Vol. 13, pp. 249–254, 1984 (with P. Kolars).
62. "Masking by Light and the Sustained-Transient Dichotomy," *Perception and Psychophysics*, Vol. 34, pp. 617–635, 1984.
63. "Real and Apparent Motion: Two Mechanisms or One?" *Computer Graphics*, Vol. 18, p. 23, 1984 (with M. von Grunau).
64. "Comparison of Monoptic and Dichoptic Masking by Light," *Perception and Psychophysics*, Vol. 34, pp. 291–296, 1984 (with J. Odom).
65. "Cortical and Retinal Potentials: Effects of Spatial Adaptation," *Journal of the Optical Society of America*, Vol. 73, pp. 1939–1943, 1983 (with V. Odom).
66. "Rapid Motion Aftereffects Seen Within Uniform Flickering Fields," *Nature*, Vol. 304, pp. 61–62, 1983 (with M. Chilcoat & C. Stromeyer).
67. "Visual Masking by Flickering Surrounds," *Vision Research*, Vol. 23, pp. 735–744, 1983.
68. "Inhibition and Facilitation of Apparent Motion by Real Motion," *Vision Research*, Vol. 23, pp. 861–866, 1983.
69. "Dichoptic Flicker Detection," *J. of the Optical Society of America*, Vol. 73, p. 1873, 1983.
70. "Contrast Detection and Direction Discrimination of Drifting Gratings," *Vision Research*, Vol. 23, pp. 281–289, 1983.
71. "Direction Selective Interactions Between Real and Apparent Motion," *Perception*, Vol. 11, p. A15, 1982 (with M. von Grunau).
72. "Spatiotemporal Variations in the Square/Sine Ratio: Evidence of Independent Mechanisms at Low Spatial Frequencies," *Vision Research*, Vol. 21, pp. 365–372, 1981 (with T. Corwin & C. Schor).
73. "Spatial Frequency Effects in Masking by Light," *Vision Research*, Vol. 21, pp. 801–806, 1981.
74. "Psychophysical Relationships Among Mechanisms Sensitive to Pattern, Motion and Flicker," *Vision Research*, Vol. 21, pp. 971–1084, 1981.

75. "Contrast Detection and Direction Discrimination. *Investigative Ophthalmology and Visual Science*, Vol. 23 (supplement), p. 143, 1981 (with K. White).
76. "Masking of Drifting Gratings by Flickering and Drifting Surrounds," *Investigative Ophthalmology and Visual Science*, Vol. 22, p. 78, 1981 (with C. Schor).
77. "Monoptic and Dichoptic Temporal Integration: Flicker and Motion Detection," *Vision Research*, Vol. 21, pp. 972–985, 1981 (with R. Blake).
78. "Detection and Discrimination of Drifting Gratings Masked by Flicker," *Journal of the Optical Society of America*, Vol. 70, p. 1623, 1980.
79. "Motion Aftereffects in Uniform Flickering Fields," *Journal of the Optical Society of America*, Vol. 70, p. 1598, 1980 (with M. Chilcoat).
80. "Monoptic and Dichoptic Temporal Integration," Optical Society Technical Workshop: Recent Advances in Vision, p. 76, 1980 (with R. Blake).
81. "Orientation-Specific Adaptation: Effects of Checkerboards on the Detectability of Gratings," *Perception*, Vol. 9, pp. 369-377, 1980.
82. "Contrast Sensitivity and Binocular Brightness: Dichoptic and Dioptic Conditions," *Perception and Psychophysics*, Vol. 27, pp. 343–349, 1980 (with R. Blake & B. Breitmeyer).
83. "Comparison of Yes-No and Latency Measures of Auditory Intensity Discrimination," *Journal of the Experimental Analysis of Behavior*, Vol. 33, pp. 363-372, 1979 (with M. Terman & J. Terman).
84. "Effects of Flicker Adaptation on Grating Detection," *Investigative Ophthalmology and Visual Science*, Vol. 18, p. 91, 1979.
85. "Monoptic and Dichoptic Temporal Masking," *Journal of the Optical Society of America*, Vol. 69, p. 1445, 1979 (with C. Schor).
86. "Contrast Effects in Two-Pulse Resolution," *Bulletin of the Psychonomic Society*, Vol. 14, p. 229, 1979 (with T. Corwin).
87. "Changes in the Relative Detectability of Sine and Square Wave Gratings as a Function of Duration," *Investigative Ophthalmology and Visual Science*, Vol. 17, p. 122, 1978 (with T. Corwin & J. Madsen).
88. "The Broca-Sulzer Effect in a Ganzfeld," *Vision Research*, Vol. 18, pp. 1675–1678, 1978 (with T. Corwin).
89. "Adaptation Effects on the Brightness and Darkness of Brief Luminance Changes," *Bulletin of the Psychonomic Society*, Vol. 12, p. 282, 1978 (with T. Corwin).
90. "Checkerboards and Color Aftereffects," *Science*, Vol. 198, p. 206, 1977 (with T. Corwin & V. Zemon).
91. "Crawford' Masking of Sine-Wave Gratings," *Journal of the Optical Society of America*, Vol. 67, p. 1408, 1977 (with T. Corwin).
92. "The Oblique Effect in a Vernier Acuity Situation," *Perception and Psychophysics*, Vol. 22, pp. 445–449, 1977 (with T. Corwin & A. Moskowitz-Cook).
93. "Comparison of Fourier and Feature Analysis in Pattern-Specific Color Aftereffects," *Science*, Vol. 192, pp. 147–148, 1976 (with T. Corwin & V. Zemon).
94. "Two-Dimensional Fourier Analysis and Orientation-Specific Masking," *Investigative Ophthalmology and Visual Science*, Vol. 15, p. 18, 1976 (with T. Corwin & V. Zemon).
95. "Ethology," *Interact With Psychology*, Chapter 8, pp. 8-1 – 8-94, Kendall-Hunt, New York, 1976 (with M. Sidman & R. Goncz).
96. "The Broca-Sulzer Effect in a Ganzfeld," *Journal of the Optical Society of America*, Vol. 66, p. 1078, 1976 (with T. Corwin).

97. A Two-Dimensional Color-Contingent Aftereffect," *Bulletin of the Psychonomic Society*, Vol. 6, p. 417, 1975 (with T. Corwin).

Presentations: Professional

1. "The Rat Is Always Right" And Other Principles Of Human Factors Analysis." The FBI National Academy Associates-Kansas/Western Missouri Chapter The Kansas City MO Police Department's Regional Police Academy, 2008. (Invited.)
2. "Judkins' Law And Its Applications To The Human Factors Of Collision Avoidance And Witness Recall," ARC-CSI Crash Conference, 2008. (Invited.)
3. "Human Factors In Intellectual Property Law Disputes." Toronto Intellectual Property Group, April 2007.
4. "What Error Drives Our Eyes And Ears Amiss?" National Injury Prevention Committee of Ireland Conference, May 2005. (Invited.)
5. "Using The Human Factors Expert," Continuing education seminar, Erie County Bar Association, March, 2004.
6. "The Laws of Accident & Stupid Behavior Prevention." Saskatchewan Safety Council Conference, October, 2003. (Invited.)
7. "Color: Use and Misuse." Toronto Chapter of the Usability Professionals Association, May, 2003. (Invited.)
8. "Learning The Right Lessons From Accidents." Keynote Address at the Saskatchewan Safety Council Road Safety Conference, February, 2003. (Invited.)
9. "Inattentive Blindness." Keynote Address at the Manitoba Safety Council Road Transportation Safety Conference, December, 2002. (Invited.)
10. "The Truth About Cell Phones and Accidents." Address at the Manitoba Safety Council Road Safety Conference, December, 2002. (Invited.)
11. "Eyewitness Perception & Memory." Ontario Police College, November, 2002. (Invited.)
12. "The Role of Human Factors in Litigation." Continuing Legal Education Seminar, Phoenix, Arizona, October, 2002.
13. "Memory." Ohio Association of Civil Trial Attorneys, September, 2002. (Invited.)
14. "The Rat Is Always Right & Other Principles of The Digital TV Interface. Society of Motion Picture & Television Engineers, March, 2002. (Invited.)
15. Served as "expert" in seminar on cross-examining the human factors expert. Ontario Trial Lawyers Association, 2000.
16. "Everything You Wanted To Know About Color But Were Afraid To Ask" Toronto Region Computer Human Interaction SIG, March 2000.

Presentations: Scientific

1. "Aging Vision in Visual Clutter," The Human Factors & Ergonomic Society Meeting, 2004. (with W. Huang and J. V. Odom)
2. "Effects of External Noise on Contrast Thresholds in Normal Patients and Patients with Early Glaucoma: A Comparison of Behavioral and Electrophysiological Thresholds," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1998 (with J.V. Odom, M. Leys, T. Yates, W. Huang, J. Charlton, J. Reed, J. & B-Z. Di.).

3. "Effects of External Noise on Contrast Thresholds in Normal Patients and Patients with Early Glaucoma: Comparison of Behavioral and Electrophysiological Thresholds," Presentation at the International Society for Clinical Electrophysiology of Vision, Hradec Kralove, Czech Republic, 1998 (with J.V. Odom, M. Leys, T. Yates, W. Huang, J. Charlton, J. Reed, J. & B-Z. Di.)
4. "Effects of Noise on Age Differences in Contrast Thresholds," Presentation to the American Psychological Association, 1997 (with W. Huang, J.V. Odom, & A. Colvin).
5. "Parallel Pathways, Noise Masking and Glaucoma Detection," Presentation to Parallel Visual Processes in Health and Disease: Foreign Interuniversity Francqui Chair in Biomedical Sciences Symposium, Leuven, Belgium, 1997 (with T. Yates, M. Leys, W. Huang, J. Charlton, J. Reed, B-Z. Di, B-Z. & J.V. Odom).
6. "Influences of Noise on Adult Age Differences in Dot Numerosity and Orientation Discrimination Thresholds," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1997 (with W. Huang, M. Leys, J. Yates, & J.V. Odom).
7. "Dot Numerosity and Orientation Thresholds: Comparison of Normals and Patients With Early Glaucoma," Poster presented at the Association for Research in Vision and Ophthalmology Meeting, 1996 (with T. Yates, M. Leys, W. Huang, B. Di, J. Charlton, J. Reed, & J.V. Odom).
8. "Effects of External Noise on Contrast Thresholds: A Comparison of Normals and Patients With Early Glaucoma," Poster presented at the Association for Research in Vision and Ophthalmology Meeting, 1996 (with M. Leys, T. Yates, W. Huang, J. Charlton, J. Reed, & J.V. Odom).
9. "Effects of External Noise on VEP Contrast Thresholds: Normal Patients and Patients With Early Glaucoma," Presentation to the Joint European Research Meetings in Ophthalmology and Vision Meeting, 1996 (with J.V. Odom, M. Leys, T. Yates, W. Huang, J. Charlton, & J. Reed).
10. "Hemispheric Asymmetry for Relative Phase Discrimination Reverses During the Lifespan," Poster presented to the Association for Research in Vision and Ophthalmology Meeting, 1995 (with M. Leys, C. Cutlip, & J.V. Odom).
11. "Relative Phase Discrimination: Maturation of Hemispheric Asymmetry Continues into Adulthood," Neuroscience Society Meeting, San Diego, CA, 1995 (with J.V. Odom).
12. "Hemispheric Asymmetry for Relative Phase Discrimination Reverses Over the Lifespan," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1994 (with M. Leys, C. Cutlip, & J.V. Odom).
13. "Aging Impairs Spatial Discrimination of Phase but Not of Orientation," Poster presented Neuroscience Society Meeting, Washington, D.C., 1993 (with J.V. Odom, C. Cutlip, G. Chao, K. Yao, & J.F. Charlton).
14. "Spatial Discrimination in Young and Elderly Observers," Poster presented at the Human Factors and Ergonomics Society Meeting, Seattle, 1993 (with J.V. Odom & G. Chao).
15. "The Perceptual Basis of Temporal Aliasing and Anti-Aliasing," Presentation to the SPIE/IS&T Symposium on Electronic Imaging Science and Technology, 1992.
16. "Temporal Sampling Requirements for Stereoscopic Displays," Presentation to the SPIE/IS&T Symposium on Electronic Imaging Science and Technology, 1992.
17. "Familiarity and Pop-Out in Visual Search. Presentation to the Association for Research in Vision and Ophthalmology, 1992 (with Q. Wang & P. Cavanagh).

18. "Occlusion, Segmentation and the Aperture Problem," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1991 (with J. Odom).
19. "The Visual Psychophysics of Data Visualization," Presentation to the Visualization '91 Workshop on Multivariate, Multiparameter, Multidimensional Systems, 1991.
20. "Expert Systems: Theory, Practice and Limitations," Presentation to the Canadian Weizman Institute, Toronto, Canada, 1990.
21. "Architectures for Visual Search," Presentation to the Association for Research in Vision and Ophthalmology Meeting, Sarasota, 1990.
22. "Representing Design Knowledge," Presentation to the Canadian Workshop on AI in Engineering Design, Toronto, Canada, 1989.
23. "Knowledge Acquisition for Causal Reasoning," Presentation to IJCAI Workshop on Knowledge Acquisition, Detroit, MI, 1989 (with L. Eshelman).
24. "Motion Path Selection by Achromatic and Chromatic Color," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1987.
25. "Dynamic Stereo Acuity: Effects of Cyclopean Spatial Frequency," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1987 (with J. Odom).
26. "Visual Search: Detection, Identification and Localization," Presentation to the Psychonomic Society Meeting, Seattle, WA, 1987 (with D. Ash).
27. "Correspondence in Apparent Motion: Defining the Heuristics," Presentation to the Vision Interface '86, Vancouver, 1986.
28. "What Determines Correspondence in Apparent Motion?" Presentation to the Psychonomic Society Meeting, Boston, MA, 1985.
29. "A Filtering Approach to Understanding Apparent Motion," Presentation to the APA Symposium: Recent Advances in Understanding Apparent Motion, Toronto, Canada, 1984.
30. "Real and Apparent Motion: One Mechanism or Two?" Paper presented at the American Computing Society SIG ART/GRAPH Conference on Motion, Toronto, 1983 (With M. von Grunau).
31. "Dichoptic Flicker Detection," Presentation to the Optical Society of America Meeting, New Orleans, LA, 1983.
32. "Cortical and Retinal Potentials: Effects of Spatial Adaptation," Presentation to the Optical Society of America Meeting, New Orleans, LA, 1983 (with J. Odom).
33. "Determinants of Binocular Summation," Presentation to the Optical Society of America Meeting, 1983 (with J. V. Odom).
34. "Contrast Detection and Direction Discrimination," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1982 (with K. White).
35. "Direction Selective Interactions Between Real and Apparent Motion," Presentation to the European Conference on Visual Perception, Leuven, 1982 (with M. von Grunau).
36. "Masking of Drifting Gratings by Flickering and Drifting Surrounds," Presentation to the Association for Research in Vision in Res. and Ophthalmology Meeting, 1981 (with C. Schor).
37. "Real Motion Can Facilitate or Inhibit Apparent Motion," Presentation to the American Academy of Optometry Meeting, Orlando, FL, 1981.
38. "Monoptic and Dichoptic Temporal Integration: Flicker and Motion Detection," Presentation to the Optical Society of America Technical Group Meeting, Sarasota, 1980 (with R. Blake).

39. "Direction and Nondirectional Mechanisms in Human Vision," Presentation to the NATO Symposium on the Study of Motion Perception, Veldhoven, 1980.
40. "Detection and Discrimination of Drifting Gratings Masked by Flicker," Presentation to the Optical Society of America Meeting, Chicago, IL, 1980.
41. "Motion Aftereffects in Uniform Flickering Fields," Presentation to the Optical Society of America Meeting, Chicago, IL, 1980 (with M. Chilcoat).
42. "Monoptic and Dichoptic Temporal Masking," Presentation to the Optical Society of America Meeting, Rochester, NY, 1979 (with C. Schor).
43. "Contrast Effects in Two-Pulse Resolution," Presentation to the Psychonomic Society Meeting, Phoenix, AZ, 1979 (with T. Corwin).
44. "Effects of Flicker Adaptation on Grating Detection," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1979.
45. "Adaptation Effects in the Brightness and Darkness of Brief Luminance Changes," Presentation to the Psychonomic Society Meeting, San Antonio, TX, 1978 (with T. Corwin).
46. "Changes in the Relative Detectability of Sine- and Square-Wave Gratings as a Function of Duration," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1978 (with T. Corwin and J. Madsen).
47. "'Crawford' Masking of Sine-Wave Gratings," Presentation to the Optical Society of America Meeting, Toronto, Canada, 1977 (with T. Corwin).
48. "The Broca-Sulzer Effect in a Ganzfeld," Presentation to the Psychonomic Society Meeting, Tucson, AZ, 1977 (with T. Corwin).
49. "Two-Dimensional Fourier Analysis and Orientation Specific Adaptation," Presentation to the Association for Research in Vision and Ophthalmology Meeting, 1976 (with T. Corwin & V. Zemon).
50. "A Luminance Dependent Shift in the Oblique Effect," Presentation to the Eastern Psychological Association Meeting, 1975 (with A. Moskowitz-Cook & T. Corwin).
51. "A Two-Dimensional Color-Contingent Aftereffect," Presentation to the Psychonomic Society Meeting, Denver, CO, 1975 (with T. Corwin).
52. "Latency Differentiation of Hits and False Alarms in Rat Auditory Intensity Discrimination," Presentation to the Eastern Psychological Association Meeting, Philadelphia, PA, 1974 (with M. Terman, & J. Terman)

Research Awards

1. U. S. Air Force: "Spatial and Visual Effects Illumination on Pilot Performance: Linear Systems Analysis." (Brooks AFB). 1996
2. U. S. Air Force: "Ideal Observer Theory Applied to Aging Pilot and Situational Awareness." (Brooks AFB). 1994
3. National Science and Engineering Research Committee (NSERC): "Feature-Space Architectures." 1990
4. Trent Research Competition (NSERC): "Acquiring and Representing Metric Knowledge." 1989
5. National Institute of Health Research Grant (NIH): "Visual Interpolation in Spatiotemporal Channels." 1984.
6. Connaught Research Grant: "Studies of Apparent Motion." 1981.

7. National Science Foundation Research Grant (NSF): "Mechanisms of Flicker, Motion and Pattern Detection." (author) 1978.
8. National Eye Institute Postdoctoral Fellowship (NIH): "Spatial Properties of Chromatic Mechanisms." 1977.
9. Biomedical Sciences Research Grant: "Luminance Summation in Sinusoidal Gratings." 1975.
10. Biomedical Sciences Research Grant: "Effects of Luminance the Detection of Vertical and Oblique Stimuli." 1974.
11. National Defense Administration Predoctoral Fellowship. 1971.

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