

*Resume of Principal Investigator*

PI: James R. Dykes, Jr.

**PERSONAL:**

Office: Department of Psychology  
University of Texas at San Antonio  
San Antonio, Texas 78785

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**EDUCATION:**

B.A. University of Texas at Austin, 1972  
Major: Psychology  
Ph.D. University of Texas at Austin, 1976  
Area: Human Experimental Psychology

**HONOR SOCIETIES:**

Psi Chi, 1972  
Phi Beta Kappa, 1973

**PROFESSIONAL AFFILIATIONS:**

American Psychological Association (member) and Division 3  
(Experimental Psychology)  
American Psychological Society (member)  
Psychonomic Society (member)

**PROFESSIONAL EXPERIENCE:**

9/76 – 8/82 Assistant Professor  
University of Texas at San Antonio  
9/82 - present Associate Professor  
University of Texas at San Antonio

**COURSES TAUGHT:**

Lower Division	PSY 1013	Introduction to Psychology	
	PSY 1203	Principles of Psychology	
	PSY 2013	Fundamentals of Psychology	
	PSY 2543	Theories of Learning	
	PSY 2553	Perception	
	PSY 2573	Psychology of Thought	
	STA 1073	Statistics for Psychology	
	Upper Division	PSY 3013	Cognition
		PSY 3153	Sensation and Perception
		PSY 3403	Experimental Psychology
PSY 3413		Experimental Psychology	
PSY 4113		Cognitive Development	
PSY 4143		Memory	
PSY 4153		Attention	
PSY 4163		Sensory Processes	
PSY 4183		Visual information Processing	
HON 3113		Cognitive Science	
HON 3113	Mind's Eye: Color (team-taught)		
HON 3253	Nature-Nurture (team-taught)		
Graduate	PSY 5413	Inferential Statistics	

**DISSERTATION COMMITTEE:**

Member for Priya Padmanabhan  
Member for Diana Young

**REVIEWER**

May 2013 Army Research Office: Life Sciences Division

**CONSULTING:**

- 3/90- 12/90 Consultant to Universal Energy Systems on knowledge assessment of ground crew skills. The task included a literature review of cognitive science, the development of a framework for assessing declarative and procedural knowledge within the specific task domain, and recommendations for constructing test items to measure expertise.
- 6/90- 8/90 Summer faculty fellow at HRL/IDI. I worked with Dr. Wes Regian and Randy Morlen to develop and test a computer-based tutoring shell for a complex spatial skills task and a computer-based spatial ability test. The skills developed within the task are relevant to pilots and air intercept controllers. The experiment measured the training effectiveness of synthesized speech and competition, the stability of individual differences in spatial ability, and the differential effectiveness of four training procedures for crewmen with different initial levels of spatial ability.
- 6/91- 8/91 Summer faculty fellow at AL/HRTI. In this second fellowship, Dr. Regian and I investigated the impact of two social variables (competition and team discussion) on the acquisition of high performance skills. Three different tasks were tested. The tasks varied whether the skill was based in two-dimensional or three-dimensional space and varied the number of procedures to be learned.
- 6/94- 8/94 &  
6/95- 8/95 Consultant to Applied Human Factors. I helped Dr. Jim Schroeder prepare two grant proposals studying human-computer interfaces. The proposal to NSF researched a computer-based tutor for high school physics. I worked at Applied Human Factors under the Phase I and follow-up funding. The second proposal to NIH involves research on standard keyboard and mouse computer input and applying those principles to provide access to paraplegics via alternate input devices. The NIH proposal received funding in September 1998. I also served as a consultant during the intersession of the 1998/1999 academic year.
- 8/94- Present Consultant to TASC (formerly Northrop Grumman IT) for the High Energy Laboratory at Brooks AFB. I provide statistical support for evaluating decrements in aircrew performance as a function of the physical characteristics of laser eye protection. More recently, my role has expanded into developing a model of physical requirements necessary to maintain adequate color constancy and of the effect of haze on acuity.

**GRANTS:**

- U.T.S.A. Faculty Research Grant - Artificial Figure/Ground Separation  
\$2990.00
- B.R.S.G. Equipment Grant - Eccentricity and Visual Field Effects in Dyslexic  
and Normal Readers \$1900.00
- U.S.A.F. Research Initiation Program Grant - Training a Complex Spatial Skill and Target  
Identification \$19,993

U.S.A.F. Grant with Marc Green - Spatial and Visual Effects of Stroboscopic Illumination: A Linear Systems Approach \$117,539

U.S. Army Research Office Instrumentation Grant (with David M. Johnson, PI) – Bio/Chemical Sensors, Biophysical and Biocompatible Materials Initiative Instrumentation Support. Awarded 9/2003. Instrumentation grant for a Pritchard PR-1980B spectrophotometer (\$71, 000).

U.S.A.F. H.E. HBCU/MI Grant - Psychophysical Test of Contrast Acuity to Aid Operational Effectiveness of Aircrew Laser Eye Protection (LEP). 12 January 2004 (\$108, 721).

U.S.A.F. H.E. HBCU/MI Grant - Modeling Mesopic Vision Based on Measured Photoreceptor Sensitivity (\$143, 082). June 29, 2007.

#### **PUBLICATIONS AND PAPERS PRESENTED:**

- Dykes, J., & Cooper, R. An investigation of the perceptual basis of redundancy gain and orthogonal interference for integral dimensions. *Perception and Psychophysics*, 1978, 23, 36-42.
- Dykes, J.R. A demonstration of selection of analyzers for integral dimensions. *Journal of Experimental Psychology: Human Perception and Performance*, 1979, 5, 734-745.
- Dykes, J.R. Perceptual encoding and decision strategies for integral dimensions. *Journal of Experimental Psychology: Human Perception and Performance*, 1981, 7, 56-70.
- Dykes, J.R., & Pascal, V. The effect of stimulus probability on the perceptual processing of letters. *Journal of Experimental Psychology: Human Perception and Performance*, 1981, 7, 528-537.
- Dykes, J., & Davila, K. *Classification of Digitized Faces*. Paper read at the 1982 convention of the Psychonomic Society; Minneapolis, Minnesota.
- Dykes, J., & Potts, B. *Local and Global Processing*. Paper read at the 1987 convention of the Psychonomic Society; Seattle, Washington.
- Dykes, J. *Hybrid Architectures as Models of Stroop Interference*. Paper read at the 1992 ARMADILLO convention; Rice University.
- Dykes, J. & Regian, W. *Part versus Whole Training in High-performance, Spatial Skill Acquisition*. Paper presented at the 1994 South Texas Symposium on Human Factors, UTSA.
- Garcia, P., Dykes, J.R., Thomas, S.R., Lapage, C.S., Catalano, T., & McLin, L.N. *Quantifying Color Discrimination Changes due to Wearing Short Wavelength Absorbing Filters*. Poster presented at the 1995 American Academy of Optometry conference in New Orleans.
- Dykes, J.R., Garcia, P., Thomas, S.R., Kang, R.N., & McLin, L.N. *Effect of Laser Protection Filters on Word Color Identification*. Poster presented at the 1996 American Academy of Optometry conference in Orlando.
- Dykes, J.R., Garcia, P.V., & Maier, D.A.. *Preliminary Investigation: Effects of Holographic Laser Eye Protection (LEP) on Contrast Acuity and Color Vision*. Technical Report USAF Armstrong Laboratory, 1998, AL/OE-TR-1996-0050.
- Schmeisser, E., Dykes, J., Ghani, N., Garcia, P., Maier, D., Brockmeier, W., & Kang, R. *Optical and Psychophysical Evaluations of Prototype Infrared Laser Protective Filters*. Paper presented at the 1998 SPIE conference in San Diego.
- Garcia, P., Dykes, J., Schmeisser, E., Ghani, N., Maier, McLin, L., D., Kang, R., Harrington, K., & DeVilbiss, C. *Modeling the Trade-Off between In-Band Laser Eye Protection and*

*Color Confusions*. Poster presented at the 1998 American Academy of Optometry conference in San Francisco.

- Ghani, N., Garcia, P., Dykes, J., Schmeisser, E., & McLin, L. *Discriminating Laser Eye Protection Technologies on the Basis of Regan Contrast Letter Acuity Performance*. Poster presented at the 1998 American Academy of Optometry conference in San Francisco.
- Dykes, J.R., Garcia, P.V., Thomas, S.R., and Kang, R.N. (1998) *Effects of Daytime and Nighttime Near Infrared Aircrew Laser Protection (LEP) on Visual Performance*. AFRL-HE-BR-TR-1998-0076, Brooks AFB, Texas.
- Schmeisser, E., Dykes, J., Ghani, N., Garcia, P., Maier, D., and Brockmeier, W. (1999) *WARDOVE Laser Eye Protection (LEP): Optical and Psychophysical Evaluation*. AFRL-HE-BR-TR-1999-0223, Brooks AFB, Texas.
- Kang, R.N., Ghani, N., Garcia, P.V., Dykes, J.R., and Maier, D. *Assessment of Aerospace Visual Performance in Three Prototype Holographic Spectacles for Laser Eye Protection*. AFRL-HR-BR-TR-1999-0178, Brooks AFB, Texas.
- Dykes, J., Garcia, P., Ghani, N., McLin, L.N., Harrington, K., and DeVilbiss, C. (1999) *Changes In Contrast Ratio And Target Search Time With Laser Eye Protection*. Poster presented at American Academy of Optometry, Seattle, WA.
- Dykes, J., Garcia, P., Schmeisser, E., Ghani, N. (2000) *WARDOVE Laser Eye Protection (LEP): Evaluation of Color Constancy*. AFRL-HE-BR-TR-2000-0077, Brooks AFB, Texas.
- Dykes, J., Schmeisser, E., Garcia, P., McLin, L., Harrington, K., and Apsey, D. (2000) *Changes in Color Appearance Induced by a Laser Eye Protection Device: Effects of Stimulus Spectrum Width and Context*. Poster presented at American Academy of Optometry, Orlando, FL.
- Dykes, J., Schmeisser, E., Garcia, P., Cantu, N., McLin, L., DeVilbiss, C., Harrington, L., & Apsey, D. (2001, December). *The Effects of Spectacle Sideshield Transmittance and Haze on Peripheral Detection in a Dual-Task Paradigm*. Poster presented at American Academy of Optometry, Philadelphia, PA
- Dykes, J. (2001) *Spatial and Visual Effects of Stroboscopic Illumination: Linear Systems Analysis*. Air Force Research Laboratory: HEDO. (AFRL-HE-BR-TR-2001-0145)
- Ghani, N., Dykes, J., Garcia, P., Schmeisser, E., Maier, D., McLin, L.N. (2001) *The Effect of Glare on Regan Contrast Letter Acuity Scores Using Dye-Based and Reflective Laser Eye Protection*. Air Force Research Laboratory: HEDO. (AFRL-HE-BR-TR-2001-0094)
- McLin, L., Dykes, J., Garcia, P., & Cantu, N. (2003, December). *Comparing Contrast Acuity Functions*. Poster presented at American Academy of Optometry, Dallas, TX.
- Hess, A.J. & Dykes, J. (2004, April) *The Effect of CRT and LCD Displays on Contrast Acuity*. Poster at Southwestern Psychological Association.
- Dykes, J. (2004, April) *Color Appearance and Acuity with Computer Monitors*. Invited address to ARO Biosciences Workshop, Cashiers, NC.
- Dykes, J.R., Martinsen, G.L., Kuyk, T., McLin, L.N., Garcia, P.V., & Salcedo, N.C. (2004, December). *Measuring the Impact of Laser Eye Protection Devices on Color Perception*. Poster presented at the American Academy of Optometry, Tampa, FL.
- Villarreal, J.S., Dykes, J.R., and Barea-Rodriguez, E.J. (2004) F344 rats display age-related memory deficits in trace fear conditioning. *Behavioral Neuroscience*, 118,6,1166- 1175.
- Dykes, J. (2005). *Psychophysical Test of Contrast Acuity to Aid Operational Effectiveness of Aircrew Laser Eye Protection (LEP)*, AFRL-HE-BR-TR-2005-0134, USAF Research Laboratory, Brooks City Base, TX 78235.
- McLin, L.; Dykes, J.; Brockmeier, W.; Martinsen, G.; Goettl, B.; Gorsche, R.; Kuyk, T.; and Garcia, P. (2005) *Contrast Acuity through Colored Filters*. Paper presented at American Academy of Optometry, San Diego, CA.
- Martinsen, G.; Kuyk, T.; Garcia, P.; Acosta, H.; and Dykes, J. (2005). *Visual Performance at Low Light Levels*. Poster presented at American Academy of Optometry, San Diego, CA.
- Acosta, H., Archibald, A., Elizondo, A., Maier, B., Dykes, J., and Notabartolo, J. (2005) AFRL-HE-BR-TR-2005-0017, Operational Aircrew Assessments of Prescription Reflective

Laser Eye Protection (LEP) and Alternative Clip-on Devices. March 2005, USAF Research Laboratory, Brooks City- Base TX 78235.

- Maier, D., Brockmeier, W., Dykes, J., McLin, L., Garcia, P., and Salcedo, N. (2005). AFRL-HE-BR-TR- 2005-0021, Physical and Psychophysical Evaluation of Tristimulus Laser Eye Protection. April 2005, USAF Research Laboratory, Brooks City-Base TX 78235.
- Dykes, J., Maier, D., Schmeisser, E., McLin, L., and Garcia, P. (2005) AFRL-HE-BR-TR-2005-0042, Quantifying Color Perception as a Function of In-Band Laser Eye Protection. May 2005, USAF Research Laboratory, Brooks City-Base TX 78235.
- Maier, D.A., Brockmeier, W.R., Garcia, P.V., Salcedo, N.C., Kuyk, T.K., Dykes J.R., and DeVilbiss, C.A. (2005) AFRL-HE-BR-TR-2005-0136, Physical and Psychophysical Evaluations of ALEP ATD Laser Eye Protection Spectacles. USAF Research Laboratory, Brooks City-Base TX 78235.
- Goettl, B.P., Dykes, J.R., Martinsen, G.L., Kuyk, T.K., McLin, L.N., Garcia, P.V., and Salcedo, N.C. (2005) AFRL-HE-BR-OP-2005-0009, Measuring the Impact of Laser Eye Protection Devices on Color Perception. *Lasers on the Modern Battlefield*, February, 2005.
- Martinsen, G.L., Goettl, B., Dykes, J.R., Salcedo, N.C., Garcia, P.V., McLin, L.N., and Kuyk, T., (2005) Light Transmittance Requirements for Laser Eye Protection in Low Light Environments, 2005, XXVI Lasers on the Modern Battlefield Conference, Brooks City-Base, TX
- Martinsen, G.L., Goettl, B., McLin, L.N., Dykes, J.R., Kuyk, T., Salcedo, N.C., and Garcia, P.V. (2005) Light Transmittance Requirements for Laser Eye Protection, Proceedings of the Eighth Annual Directed Energy Symposium, 14 – 18 November 2005. Lihue, HI. (This was presented as both a poster and paper)
- Martinsen, G.L., Goettl, B., McLin, L.N., Dykes, J.R., Kuyk, T., Salcedo, N.C., and Garcia, P.V. (2006) Light Transmittance Requirements for Laser Eye Protection, Proceedings of the Eighth Annual Directed Energy Symposium. Available on CD only.
- Dykes, J.R., Garcia P.V., Acosta, H. M., Salcedo, N.C., Maier, D.A., Brockmeier, W.R., McLin, L.N., Miller, R.E., Schmeisser, E.T., DeVilbiss, C.A., Luthman, N.G., Harrington, L.K., Martinsen, G.L. AFRL-HE-BR-TR-2006-0090. Prescription Spectacles with Laser Eye Protection: Psychophysical Assessments with and without Night Vision Goggles. USAF Research Laboratory, Brooks City-Base TX 78235.
- Acosta, H.M., Archibald, A.M., Elizondo, A.E., Maier, B.A., Dykes, J.R., Kuyk, T.K., Smith P.A., Notabartolo, J. AFRL-HE-BR-TR-2006-0091. Operational Aircrew Assessments of Side Shields with Laser Eye Protection in Spectacle Formats. USAF Research Laboratory, Brooks City-Base TX 78235.
- Acosta, H.M., Archibald, A., Maier, B., Bradley, A., Foltz, M., Chavey, L., Dykes, J., Notabartolo, J., Gronseth, B., and Hayes, C. (2007) AFRL-HE-BR-TR-2007-0058. Aircrew Assessments of Hybrid Reflective and Absorptive Laser Eye Protection (LEP) Devices. USAF Research Laboratory, Brooks City-Base TX 78235.
- Martinsen, G., Havig, P., Dykes, J., Kuyk, T., McLin, L. (2007). Night vision goggles, laser eye protection, and cockpit displays. In Brown, R.W., Reese, C.E., Marasco, P.L., and Harding, T.H. (Eds), *Head- and Helmet-Mounted Displays XII: Design and Applications. Proceedings of SPIE, 6557, 65570v1- 0v7*.
- Kuyk, T., Garcia, P., Brockmeier, W., Dykes, J., & McLin, L. (2007) Predicting the effects of laser eye protection on color vision. Presented at AsMA, May 2007.
- Dykes, J. (2007) Garner redundancy gain and Stroop interference in feature search tasks. Paper presented at ARMADILLO, 12 October 2007, Trinity University, San Antonio, TX.
- McLin, Leon N.; Barnes, Laura A.; Kuyk, Thomas K.; Smith, Peter A.; Dykes, James R. (2007). AFRL-RH-BR-TR-2007-0073. Wavelength differences in visual obscuration from laser disability glare. USAF Research Laboratory, Brooks City-Base TX 78235.
- McLin, Leon N.; Barnes, Laura A.; Kuyk, Thomas K.; Smith, Peter A.; Dykes, James D.; Novar, Brenda J.; Garcia, Paul V. (2007). *Comparison of Red, Green and Blue Laser Disability Glare*. Poster presented at American Academy of Optometry, 24 October 2007, Tampa, FL.

- McLin, Leon N.; Novar, Brenda; Kuyk, Thomas K.; Smith, Peter A.; Dykes, James R.; Garcia, Paul; & Brockmeier, William (2007). AFRL-HE-BR-TR-2007-0057. *Driving Performance And Laser Disability Glare*. USAF Research Laboratory, Brooks City-Base TX 78235.
- Dykes, J. (2008). *Mesopic Contrast Acuity and Contrast Sensitivity*. Poster presented at the 2008 Texas Regional Human Factors & Ergonomics Conference. Austin, TX April 18, 2008
- Kuyk, T.; McLin, L.; Kent, J.; Barnes, L.; Dykes, J.; & Garcia, P. (2008). *Evaluation of Prescription Lenses That Correct Higher Order Optical Aberrations*. Poster presented at the Association for Research in Vision and Ophthalmology Annual Meeting. Fort Lauderdale, FL April 27- May 1 2008.
- Smith, P.A.; Kuyk, T.K.; Dykes, J.R.; McLin, L.N.; & Barnes, L.E. (2008). *Effects of Pulsed and Continuous Glare on Obstacle Avoidance*. Poster presented at the Association for Research in Vision and Ophthalmology Annual Meeting. Fort Lauderdale, FL April 27- May 1 2008.
- Barnes, L. E., McLin, L. N., Chauvin, D. J., Wharmby, A. W., LaTour, P. A., Novar, B. J., & Dykes, J. R. (2009). *The effectiveness of dazzling lasers used in a checkpoint scenario*. Technical Report AFRL-RH-BR-TR-2009-0065, Air Force Research Laboratory, Brooks City Base, TX 78235.
- Dykes, J. (2009). AFRL-RH-BR-TR-2009-0051. *Modeling Mesopic Vision Based on Measured Photoreceptor Sensitivity*. USAF Research Laboratory, Brooks City-Base, TX 78235.
- McLin LN, Barnes LE, Smith PA, Kuyk TK, & Dykes JR. (2009) *Visual obscuration from laser disability glare; the impact of ambient light level and aircraft windscreen scatter*. Technical Report AFRL-HE-BR-TR-2009-0064. USAF Research Laboratory, Brooks City-Base TX 78235.
- Kuyk T, Dykes J, LaFrance M. (2010) *Predicting Color Naming with Laser Eye Protection*. Technical Report AFRL-HE-BR-TR-2010-0054. USAF Research Laboratory, Brooks City-Base TX 78235.
- Kuyk T, Dykes J, LaFrance M, McLin L. (2010) *Predicting errors in color naming caused by laser eye protection*. Poster presented at the Association for Research in Vision and Ophthalmology Annual Meeting. Fort Lauderdale, FL. May 2- 6, 2010.
- McLin, LN & Dykes JR. (2010) *Color Naming Across the Mesopic Range as a Function of Photoreceptor Sensitivity*. Poster presented at the Association for Research in Vision and Ophthalmology Annual Meeting. Fort Lauderdale, FL. May 2- 6 2010.
- Simonds J, Ashworth A, LeBegue B, Barnes L, Dayton T, Kohn N, & Dykes J (2011). *Determining Causal Linkages between Non-Lethal Weapons, Human Effects, and Operational Outcomes*. Paper presented at the 6<sup>th</sup> European Symposium on Non-Lethal Weapons. Stadthalle Ettlingen, Germany May 16- 18, 2011.