

Curriculum Vitae

1. Leslie Welch
Associate Professor
Department of Cognitive, Linguistic and Psychological Sciences

2. **Address:** Available upon request

3. **Education:**

1982 A.B. *University of California, Berkeley* (Psychology)

1990 Ph.D. *University of California, Berkeley* (Optometry School, Vision Sciences Program). Dissertation topic: Visual motion perception

4. **Professional appointments:**

1982 - 1990 Research Assistant, Smith-Kettlewell Eye Research Institute, San Francisco, CA

1990 - 1992 Postdoctoral Fellow, Department of Psychology, University of California, San Diego

1992 - 1998 Assistant Professor, Department of Psychology, Brown University

1998 - 2010 Associate Professor, Department of Psychology, Brown University

2008 - 2010 Director of Graduate Studies, Department of Psychology, Brown University

2010 - present Associate Professor, Cognitive, Linguistic & Psychological Sciences Department, Brown University

5. **Completed publications:**

5c. **Refereed journal articles:** (*Student coauthors are noted with an asterisk)

1985 McKee, S.P. and Welch, L. (1985) Sequential recruitment in the discrimination of velocity. *Journal of the Optical Society of America A*, **2**, 243-251.

1985 Welch, L. and McKee, S.P. (1985) Colliding targets: Evidence for spatial localization within the motion system. *Vision Research*, **25**, 1901-1910.

- 1986 Brown, B., Brabyn, L., Welch, L., Haegerstrom-Portnoy, G. and Colenbrander, A. (1986) The contribution of vision variables to mobility in age related maculopathy patients. *American Journal of Optometry and Physiological Optics*, **63**, 733-739.
- 1989 Welch, L. (1989) The perception of moving plaids reveals two motion-processing stages. *Nature*, **337**, 734-736.
- 1989 McKee, S.P. and Welch, L. (1989) Is there a constancy for velocity? *Vision Research*, **29**, 553-561.
- 1990 McKee, S.P., Welch, L., Taylor, D.G. and Bowne, S.F. (1990) Finding the common bond: Stereoacuity and the other hyperacuities. *Vision Research*, **30**, 879-891.
- 1990 Welch, L. and Bowne, S.F. (1990) Coherence determines speed discrimination. *Perception*, **19**, 425-435.
- 1992 McKee, S.P. and Welch, L. (1992) The precision of size constancy. *Vision Research*, **32**, 1447-1460.
- 1992 Carman, G.J. and Welch, L. (1992) Three-dimensional illusory contours and surfaces. *Nature*, **360** (6404), 585-587.
- 1993 Carman, G.J. and Welch, L. (1993) Illusion and view stability-Reply to Redies and Watanabe. *Nature*, **363**, 120.
- 1997 *Matthews, N. and Welch, L. (1997) Velocity-dependent improvement in single dot direction discrimination. *Perception and Psychophysics*, **59** (1), 60-72.
- 1997 Welch, L., MacLeod, D.I.A. and McKee, S.P. (1997) Motion interference: Perturbing perceived direction. *Vision Research*, **37**(19), 2725-2736.
- 1997 *Festa, E.K. and Welch, L. (1997) Recruitment mechanisms in speed and fine-direction discrimination tasks. *Vision Research*, **37**(22), 3129-3144.
- 1997 *Matthews, N. and Welch, L. (1997) The effect of inducer polarity and contrast on the perception of illusory figures. *Perception*, **26**, 1431-1443.
- 2001 *Vreven, D.L. and Welch, L. (2001) The absence of depth constancy in contour stereograms. *Perception*. **30** (6), 693-705.

- 2001 *Festa-Martino, E.K. and Welch, L. (2001) Motion capture depends on stimulus strength. *Perception*. **30** (4), 489-510.
- 2013 Matthews, N., Welch, L., Festa, E. and *Clement, A. (2013) Remapping time across space. *Journal of Vision*, **13**(8), 2, 1-15.
- 2015 Matthews, N. and Welch, L. (2015) Left visual field attentional advantage in judging simultaneity and temporal order. *Journal of Vision*, **15**(2), 7.
- 2016 Welch, L. and Fasano, C. (2016) Interdisciplinary teaching across vision science and visual arts. *Leonardo*, **49**(3), 220-225. abstract:
http://www.mitpressjournals.org/doi/abs/10.1162/LEON_a_00763#.V08EgtccvLM
- Matthews, N., Welch, L., *Achtman, R., *Fenton, R., and *FitzGerald, B. (2016) Simultaneity and temporal order judgments exhibit distinct reaction times and training effects. *PLoS ONE*, **11**(1): e0145926. doi:10.1371/journal.pone.0145926.
- 2017 Matthews, N., Welch, L., Coplin, F.D., *Murphy, A.J., & *Puritz, M.R. (2017) Visual speed sensitivity in the drum corps color guard. *Journal of Vision*, Jul 1;17(8):7. doi:10.1167/17.8.7.

5f. Abstracts: (*Student coauthors are noted with an asterisk)

- 1983 McKee, S.P. and Welch, L. (1983) Sequential recruitment in velocity discrimination. in *OSA Annual Meeting Technical Digest*, (Optical Society of America, Washington, D.C.,1983), **6**, 20-21.
- 1984 Welch, L. and McKee, S.P. (1984) Colliding targets: Localization of moving objects in space and time. in *OSA Annual Meeting Technical Digest*, (Optical Society of America, Washington, D.C., 1984), **7**, 118-119.
- 1985 Welch, L., MacLeod, D.I.A. and McKee, S.P. (1985) Local interactions affecting direction and velocity of apparent motion. *Investigative Ophthalmology and Visual Science Supplement*, **26**, 189.
- 1986 McKee, S.P. and Welch, L. (1986) Velocity constancy does not exist. *Investigative Ophthalmology and Visual Science Supplement*, **27**, 142.
- 1987 Welch, L. and McKee, S.P. (1987) Small-scale mechanisms require more time. *Investigative Ophthalmology and Visual Science Supplement*, **28**, 356.
- 1987 McKee, S.P., Welch, L. and Taylor, D.G. (1987) Stereoacuity unmasked: The meaning of stereoacuity distance functions. *Investigative Ophthalmology and Visual Science Supplement*, **28**, 138.
- 1988 Welch, L. (1988) Speed discrimination and the aperture problem. *Investigative Ophthalmology and Visual Science Supplement*, **29**, 264.
- 1988 Bowne, S.F. and Welch, L. (1988) Coherence determines speed discrimination of

- plaids. in *OSA Annual Meeting Technical Digest*, (Optical Society of America, Washington, D.C., 1988), **11**, 141.
- 1989 Welch, L. and Bowne, S.F. (1989) Neural rules for combining signals from moving gratings. *Investigative Ophthalmology and Visual Science Supplement*, **30**, 75.
- 1990 Welch, L. and McKee, S.P. (1990) Position judgments are corrected for disparity at large scales. *Investigative Ophthalmology and Visual Science Supplement*, **31**, 411.
- 1991 Welch, L. and MacLeod, D.I.A. (1991) Motion mislocation. in *OSA Annual Meeting Technical Digest*, (Optical Society of America, Washington, D.C., 1991), **14**, 216-217.
- 1992 Welch, L. and *Smallman, H.S. (1992) Is there motion mislocation in depth? *Investigative Ophthalmology and Visual Science Supplement*, **33**, 1333.
- 1992 Carman, G.J., Welch, L., and Albright, T.D. (1992) Relationship of motion and stereo cues to relative depth. *Investigative Ophthalmology and Visual Science Supplement*, **33**, 1333.
- 1993 Carman, G.J. and Welch, L. (1993) Position, orientation, and shape of real and illusory three-dimensional surfaces. *Investigative Ophthalmology and Visual Science Supplement*, **34**, 1131.
- 1994 Welch, L. and Reichel, F.D. (1994) Three-dimensional illusory solids. *Investigative Ophthalmology and Visual Science Supplement*, **35**, 1627.
- 1995 Reichel, F.D. and Welch, L. (1995) Illusory solids from stereopsis. *Investigative Ophthalmology and Visual Science Supplement*, **36**, S368.
- 1995 *Matthews, N. and Welch, L. (1995) Perceptual learning on direction-of-motion tasks. *Investigative Ophthalmology and Visual Science Supplement*, **36**, S15.
- 1995 *Festa, E.K. and Welch, L. (1995) Multiple recruitment mechanisms in motion discrimination. *Investigative Ophthalmology and Visual Science Supplement*, **36**, S636.
- 1996 *Festa, E.K. and Welch, L. (1996) Apparent direction does not depend on transparency / non-transparency. *Investigative Ophthalmology and Visual Science Supplement*, **37**, S739.
- 1996 Welch, L. and *Tolstoshev, N.E. (1996) Is shearing motion detected by spatial-frequency tuned mechanisms? *Investigative Ophthalmology and Visual Science Supplement*, **37**, S916.
- 1996 *Ascher, D., Welch, L. and *Festa, E.K. (1996) Adaptation to stationary gratings results in an increase in apparent speed of moving gratings. *Investigative Ophthalmology and Visual Science Supplement*, **37**, S916.
- 1996 *Matthews, N. and Welch, L. (1996) The effect of contrast and polarity on illusory figures. *Investigative Ophthalmology and Visual Science Supplement*, **37**, S174.
- 1996 Reichel, F.D., Welch, L. and *Imber, M.L. (1996) Stereo-curvature discrimination with and without illusory contours. *Investigative Ophthalmology and Visual Science Supplement*, **37**, S287.
- 1996 *Ascher, D., Welch, L. and Grzywacz, N.M. (1996) Integration across spatial frequency channels in speed discrimination. *Society for Neuroscience, 26th Annual Meeting*, #349.6.
- 1997 *Vreven, D.L., Welch, L. and Reichel, F.D. (1997) Perceived surface curvature depends on both curvature disparity and perceived distance. *Investigative Ophthalmology and Visual Science Supplement*, **38**, S902.
- 1997 *Jackson, C. and Welch, L. (1997) How many temporal frequency filters are used in discriminating speeds? *Investigative Ophthalmology and Visual Science Supplement*, **38**, S377.
- 1997 *Ascher, D. and Welch, L. (1997) Integration in speed discrimination across wide

- ranges of spatial frequencies and orientations. *Investigative Ophthalmology and Visual Science Supplement*, **38**, S376.
- 1997 *Festa, E.K. and Welch, L. (1997) Motion capture depends on signal strength. *Investigative Ophthalmology and Visual Science Supplement*, **38**, S74.
- 1997 *Matthews, N. and Welch, L. (1997) Illusory contours from luminance, stereo and motion defined edges. *Investigative Ophthalmology and Visual Science Supplement*, **38**, S203.
- 1998 *Festa, E.K. and Welch, L. (1998) Perceived strength of compound stimulus depends on component signal strength. *Eastern Psychological Association meeting*.
- 1998 *Vreven, D. and Welch, L. (1998) Disparity interpolation and stereoscopic shape distortions. *Eastern Psychological Association meeting*.
- 1998 *Jackson, C. D., and Welch, L. (1998) Temporal frequency channels and speed perception. Paper presented at *Optical Society of America*, Baltimore, MD.
- 1998 *Festa, E.K. and Welch, L. (1998) Perceived speed of motion metamer depends on component signal strength. *Investigative Ophthalmology and Visual Science Supplement*, **39**, S426.
- 1998 *Vreven, D. and Welch, L. (1998) Perceived depth in curved stereoscopic surfaces. *Investigative Ophthalmology and Visual Science Supplement*, **39**, S670, #3088.
- 1998 *Ascher, D. and Welch, L. (1998) Contrast can affect speed discrimination performance. *Investigative Ophthalmology and Visual Science Supplement*, **39**, S1078, #4987.
- 1999 *Vreven, D. and Welch, L. (1999) Structure from stereopsis: surface interpolation. *Investigative Ophthalmology and Visual Science Supplement*, **40**, S810, #4268.
- 1999 *Matthews, N. and Welch, L. (1999) Illusory contours in colored "X" stereograms. *Investigative Ophthalmology and Visual Science Supplement*, **40**, S808, #4262.
- 1999 *Vreven, D. and Welch, L. (1999) The "Pillow Effect" from interpolated disparity. *Eastern Psychological Association Vision/Attention mini-conference*, **70**, 23.
- 2000 Welch, L. and *Middleton, J.A. (2000) Integration characteristics for temporal frequency discrimination. *Investigative Ophthalmology and Visual Science Supplement*, **41**, S233, #1222.
- 2000 *Jackson, C.D. and Welch, L. (2000) The effects of mask duration on speed perception. *Investigative Ophthalmology and Visual Science Supplement*, **41**, S794, #4210.
- 2000 *Jackson, C.D. and Welch, L. (2000) The effects of double masking on speed perception. Paper presented at the annual meeting of the *Optical Society of America*, Providence, RI.
- 2001 Welch, L. and *Vaitsou, C. (2001) Are outlines part of 3D object category representations? *Investigative Ophthalmology and Visual Science Supplement*, **42**, S732, #3929.
- 2003 Welch, L. and *Boachie, Y. (& *Silverman, D.) (2003) Learning a novel 3D object category. Poster presented at the annual meeting of Vision Sciences Society.
- 2003 *Silverman, D.J. and Welch, L. (2003) Does chunking by color facilitate category learning? Poster presented at the annual meeting of Vision Sciences Society.
- 2004 *Silverman, D.J. and Welch, L. (2004) Category learning in the visual processing stream. Paper presented at annual meeting of Vision Sciences Society.
- 2004 Welch, L. and *Silverman, D.J. (2004) Category learning as an example of perceptual learning. Paper presented at European Conference on Visual Perception, Budapest, Hungary.
- 2007 *Scilipoti, E., Domini, F., and Welch, L. (2007) Adaptation changes the category

- boundary: Evidence from a discrimination task. *Perception*, **36**(S), 52-53.
- 2010 *Scilipoti, E. and Welch, L. (2010) Perceptual learning: Sensory plasticity and adaptation. Poster presented at annual meeting of Vision Sciences Society.
- 2013 Welch, L. and Matthews, N. (2013) Hemifield asymmetries on temporal tasks implicate a motion discrimination stage. Poster presentation at annual meeting of Vision Sciences Society.
- 2013 Matthews, N., Welch, L., *Festa, E. & *Clement, A. (2013) Remapping time across space. Poster presentation at annual meeting of Vision Sciences Society.
- 2014 Welch, L., *Kliman-Silver, C. and *Dolan, E. (2014) Perceptual learning: Specificity and transfer. Poster presentation at annual meeting of Vision Sciences Society.
- 2014 Matthews, N., *Achtman, R., *Fenton, R., *FitzGerald, B., and Welch, L. (2014) Dissociating temporal order and simultaneity: A perceptual learning study. Poster presentation at annual meeting of Vision Sciences Society.
- 2015 Matthews, N., Welch, L. and *Achtman, R. (2015) Perceptual learning on simultaneity and temporal order judgments. Poster presentation at annual meeting of Vision Sciences Society.
- 2016 *Lai, Y.-H., Welch, L. and Schloss, K. (2016) Ad hoc color concept mapping and interpreting visual representations. Poster presentation at annual meeting of Vision Sciences Society.
- 2016 Welch, L. and *Kliman-Silver, C. (2016) Motion shifts number-line locations. Poster presentation at annual meeting of Vision Sciences Society.
- 2016 Matthews, N., Welch, L., *Murphy, A., and *Puritz, M. (2016) A comparison of radial and rotational plaid speed judgments. Poster presentation at annual meeting of Vision Sciences Society.
- 2017 Matthews, N., Welch, L., *Copin, F., *Murphy, A., and *Puritz, M. (2017) Visual speed sensitivity in the drum corps color guard. Poster presentation at annual meeting of Vision Sciences Society.

5g. Invited lectures:

- 1988 Moving plaids: Does the pattern or component motion limit speed discrimination? Colloquium at University of California, Santa Cruz, 18 November 1988.
- 1988 Moving plaids: Does the pattern or component motion limit speed discrimination? Colloquium at University of California, San Diego, 5 December 1988.
- 1990 Transparency and coherence in moving patterns. Optical Society of America's annual meeting. Boston, MA, 9 November 1990.
- 1992 Evidence for two stages of motion processing. Colloquium at the Salk Institute, San Diego, CA, 15 June 1992.
- 1992 Two stages of motion processing. Seminar, Harvard University, Cambridge, MA, 27 Oct. 1992.
- 1996 Three-dimensional illusory shapes defined by stereopsis. Fifth Hans-Lukas Teuber Symposium, MIT, Cambridge, MA, 27 October 1996.

- 1999 How can you tell how fast something is going? New York University Cognition and Perception Seminar, 8 April 1999.
- 1999 Evidence for category learning in the visual system. Seminar, Boston University, 22 April 1999.
- 1999 A new look at perceptual learning. Seminar, Connecticut College, 27 September 1999.
- 2011 Interdisciplinary approaches in teaching and learning: Making visual illusions. Workshop, Sheridan Center for Teaching and Learning, 18 April 2011.

5j. Work in progress

Several articles and projects are in progress.

6. Research grants

- 1990-1992 Individual National Research Service Award, National Institutes of Health
- 1994 New England Consortium for Undergraduate Science Education Grant
- 1994 ARVO/NEI Travel Fellowship Grant
- 1999 Brown University Funded Small Grant
- 2002 Faculty Enrichment Grant
- 2004 Sigma Xi equipment grant with Deborah Silverman
- 2009 Curriculum development grant

7. Service

7i. Service to the University

- 1993-1999 Member Neurosciences Training Committee
- 1994-1995 Visual Perception Job Search Committee, Cognitive & Linguistic Sciences Dept.
- 1995-1996 Behavioral Neuroscience Job Search Committee, Psychology Dept.
- 1998 Developmental Psychology Job Search Committee, Psychology Dept.
- 1999-2000 Chaired Tenure Committee, Paul Quinn
- 1996 Member Psychology Department Space Committee
- 2000-2006 Member Brain Sciences Graduate Program Training Committee
- 2005-2009 Alternate member Institutional Review Board
- 2009-present Regular member Institutional Review Board
- 2006-2007 Member of College Curriculum Committee
- 2006-2007 Member of Independent Concentrations Committee
- 2008 Chaired Human Perception Position Search Committee
- 2010 Member of Social Psychology Search Committee
- 2016-present Member CLPS UCC

7ii. Service to the Profession

Ad hoc reviewer for Nature, Science, Vision Research, Cognitive Psychology, Perception and Psychophysics, Journal of Vision, Journal of the Optical Society of America A, Spatial Vision, Perception, Leonardo, Comparative Psychology

1999-2001 Chair of Members-in-Training Committee for the Association for Research in Vision and Ophthalmology

1995, 1996 Moderator for talks at the annual meeting of the Association for Research in Vision and Ophthalmology

9. Teaching:

2015, Semester I CLPS 0900 Quantitative methods (63)
CLPS 2500 Graduate core in perception (4)
CLPS 1980 Directed research (1)
co-supervising first-year graduate student Yun-hsuan Lai with K Schloss
first year project committees (Brittany Baxter, Jianfei Guo, Ran Xu)
dissertation committee (Aaron Berard)

Semester II sabbatical leave
co-supervising first-year graduate student Yun-hsuan Lai with K Schloss
first year project committees (Brittany Baxter, Jianfei Guo, Ran Xu)
dissertation committee (Aaron Berard)

2016, Semester I CLPS 1580C Visualizing information (14)
first year project committee (James Wilmott)

Semester II CLPS 1091 Research methods and design (17) new, with A Shenhav
first year project committee (James Wilmott)

2017, Semester I CLPS 1900 Research methods and design (14)
CLPS 1580C Visualizing information (13)
CLPS 1980 Directed research (honors students Filip Montgomery, Gabriel Reyes)
first year project committee (James Wilmott)

Semester II CLPS 1980 Directed research (honors students Filip Montgomery, Gabriel Reyes)
first year project committee (James Wilmott)

In addition, I have served as a First-year and Sophomore advisor every semester since 2009 until this year because of my sabbatical leave. I began serving as AB Psychology concentration

advisor this fall, 2015 and resumed the next fall, 2016.

10. Updated: 8 March 2018

11. Theses supervised

- 1) Nicholas Tolstoshev, Psychology Honors student, 1995
- 2) Nestor Matthews, Ph.D. Psychology, 1996
- 3) Michelle Imber, Neurosciences Honors student, 1996
- 4) David Ascher, Ph.D. Cognitive Sciences, 1997
- 5) Elena Festa-Martino, Ph.D. Psychology, 1997
- 6) Dawn Vreven, Ph.D. Psychology, 1998
- 7) Joel Middleton, M.S. Psychology, 1998
- 8) Danah Boyd, Computer Sciences Honors student, 1999
- 9) Chloe Vaitso, Psychology Honors student, 1999
- 10) Yaw Boachie, Human Biology Honors student, 2000
- 11) Deborah Silverman, Psychology Honors student, 2003
- 12) Martha Donovan, Psychology Honors student, 2003
- 13) Deborah Silverman, M.S. Psychology, 2004
- 14) Erika Scilipoti, Ph.D. Cognitive Sciences, 2010