

Richard Russell

August 2020

Department of Psychology
Gettysburg College
300 North Washington Street
Gettysburg, PA 17325

tel: 717-337-6175
email: rrussell@gettysburg.edu
<http://public.gettysburg.edu/~rrussell/>
<http://www.richard-russell.net/>

POSITIONS

Professor	Gettysburg College	2020 – present
Associate Professor		2015 – 2020
Assistant Professor		2009 – 2015
Postdoctoral Fellow	Harvard University	2005 – 2009
Research Assistant	Cambridge University	1998 – 2000

EDUCATION

Ph.D. Cognitive Science	MIT	2000 – 2005
B.A. Neuroscience	Pomona College	1993 – 1998

GRANTS

CEntre de Recherches et d' Investigations Épidermiques et Sensorielles (CE.R.I.E.S) <i>Facial contrast, skin homogeneity, and wrinkles</i>	2015 - 2018
CEntre de Recherches et d' Investigations Épidermiques et Sensorielles (CE.R.I.E.S) <i>Facial contrast and health perception</i>	2011 - 2015
CEntre de Recherches et d' Investigations Épidermiques et Sensorielles (CE.R.I.E.S) <i>Facial contrast and age perception</i>	2010 - 2011
National Institutes of Health Kirchstein-NRSA Post-Doctoral Fellowship <i>Fractionating visual face perception</i>	2006 - 2009

TEACHING EXPERIENCE

Introduction to Psychology (Spring 2010, Fall 2010, Spring 2012, Spring 2013)
Sensation and Perception (Spring 2010, Fall 2010, Fall 2011, Fall 2012, Spring 2015, Fall 2015, Fall 2016, Fall 2017, Fall 2019, Spring 2020)
Human Cognition (Fall 2009)
Statistics and Research Methods II (Spring 2015, Spring 2016, Spring 2017, Spring 2018, Spring 2019)
Advanced Laboratory in Perception (Fall 2009, Spring 2011, Fall 2011, Fall 2012, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018, Spring 2020)
Honors Research (Spring 2013)
Individualized Reading (Fall 2011)
Individualized Research (Spring 2012)

UNDERGRADUATE RESEARCHERS SUPERVISED

Gettysburg Erica Reiss, Michelle Kaminski, Weiqing Shen, Caroline DeAngelis, Mary Beth Bielicki, Sarah Kramer, Bowen Yang, Aleksandra Petkova, Grace Qian Wei, Michael Behling, Binglei Chen, Stephanie Tait, Derik Yager-Elorriaga, Lydia MacKenzie, Alexandra Stoehr

Harvard & MIT Haiwen Chen, Peng Sun, Quynh Nguyen, Robert Luedeman, Ben Burns, Anna Tong, Chen Zhao, Ann Breckenkamp, Mariana Recalde, Wendy Pierce, Erin Krizay, Sarah Chu, Jonathan Choi, Omoleye Roberts, Jill Jin, Nao Gamo, Aayesha Siddiqui, Charisse L'Pree Corsbie-Massay

OTHER RESEARCHERS SUPERVISED

Carlota Batres – postdoctoral fellow	2016 - 2018
Alex L. Jones – postdoctoral fellow	2014 - 2015
Jennifer R. Sweda – research assistant	2011 - 2013
Aur�lie Porcheron – visiting researcher	2010 - 2011

PEER REVIEWING

Journals

<i>Acta Psychologica</i>	<i>JESP</i>
<i>AGE</i>	<i>JSPR</i>
<i>Body Image</i>	<i>Journal of Vision</i>
<i>British Journal of Psychology</i>	<i>Journal of Visualized Experiments</i>
<i>Color Research and Application</i>	<i>Neuroscience</i>
<i>Cognition</i>	<i>Neuroscience Letters</i>
<i>Cognition & Emotion</i>	<i>QJEP</i>
<i>Cognitive Neuropsychology</i>	<i>Perception</i>
<i>Cortex</i>	<i>Personal. Individ. Differ.</i>
<i>Counselling Psychology Quarterly</i>	<i>PLOS ONE</i>
<i>Emotion</i>	<i>Proceedings of the Royal Society B</i>
<i>Evolution and Human Behavior</i>	<i>Psychological Science</i>
<i>Evolutionary Psychology</i>	<i>Psychology and Aging</i>
<i>Experimental Brain Research</i>	<i>Scientific Reports</i>
<i>Frontiers in Psychology</i>	<i>Social Cognition</i>
<i>Infant Behavior and Development</i>	<i>Social Neuroscience</i>
<i>Japanese Psychological Research</i>	<i>Transactions on Applied Perception</i>
<i>JEP: HPP</i>	<i>Visual Cognition</i>
<i>JEP: LMC</i>	<i>Vision Research</i>

Grants

National Science Foundation (USA)
Ministry of Business, Innovation, and Employment (New Zealand)

National Research Foundation (South Africa)
Wiener Wissenschafts-, Forschungs- und Technologiefonds (Vienna Science and
Technology Fund)

PROFESSIONAL MEMBERSHIPS

Association for Psychological Science
Psychonomic Society
Society for Personality and Social Psychology
Vision Sciences Society

AWARDS

Visiting Fellow, Center for Liberal Arts and Society at Franklin & Marshall College 2010
Best Visual Illusion of the Year Contest, 3rd prize 2009
Angus MacDonald Award for Excellence in Undergraduate Teaching 2004

SELECTED MEDIA COVERAGE

Sydney Morning Herald	<i>Could wearing makeup in your early 30s be pointless?</i>	April 5, 2019
The Guardian	<i>Super recognisers: the people who never forget a face</i>	Nov 11, 2018
TIME	<i>Want to Look Younger?</i>	Oct 17, 2017
New Yorker	<i>The detectives who never forget a face</i>	Aug 22, 2016
New York Times	<i>London police 'super-recognizer' walks beat with a facebook of the mind</i>	Oct 9, 2015
CBS News	<i>Science explains why beauty is in the eye of the beholder</i>	Oct 2, 2015
Nat. Geographic Channel	<i>Brain Games</i>	July 28, 2014
NPR Science Friday	<i>Why do we remember faces but not names?</i>	June 10, 2013
BBC World Service	<i>Make-up</i>	June 3, 2013
Scientific American Mind	<i>What's in a Face?</i>	Jan/Feb, 2012
Wall Street Journal	<i>Brain Tricks</i>	Nov 20, 2010
New Yorker	<i>Face-blind</i>	Aug 30, 2010
New York Times	<i>A memory for faces, extreme version</i>	May 25, 2009
BBC World Service	<i>Super-recognizers</i>	April 27, 2009

PUBLICATIONS

Batres, C. & Russell, R. (2020) Examining the influence of cosmetics on jury decisions. *Cosmetics* 7(3): 64
Russell, R., Batres, C., Jones, A.L., & Porcheron, A. (2019) A role for contrast gain control in skin appearance. *Journal of Vision* 19(13):11 1-11

- Batres, C., Porcheron, A., Latreille, J., Seroul, P., Morizot, F., & **Russell, R.** (2019) Cosmetics increase skin evenness: Evidence from perceptual and physical measures. *Skin Research and Technology* 25: 672-676
- Batres, C., Kramer, S.S., DeAngelis, C.G., & **Russell, R.** (2019) Examining the 'cosmetics placebo effect'. *PLOS ONE* 14(1): e0210238
- Russell, R.**, Batres, C., Courrèges, S., Kaminski, G., Soppelsa, F., Morizot, F., & Porcheron, A. (2019) Differential effects of makeup on perceived age. *British Journal of Psychology* 110: 87-100
- Batres, C., Porcheron, A., Kaminski, G., Courrèges, S., Morizot, F., & **Russell, R.** (2018) Evidence that the hormonal contraceptive pill is associated with cosmetic habits. *Frontiers in Psychology* 9:1459
- Jones, A.L., Porcheron, A., & **Russell, R.** (2018) Makeup changes the apparent size of facial features. *Psychology of Aesthetics, Creativity, and the Arts* 12(3), 359-368.
- Batres, C., **Russell, R.**, Simpson, J., Campbell, L., Hansen, A.M., & Cronk, L. (2018) Evidence that makeup is a false signal of sociosexuality. *Personality and Individual Differences* 122: 148-154
- Jones, A.L., Batres, C., Porcheron, A., Sweda, J., Morizot, F., & **Russell, R.** (2018) Positive facial affect looks healthy. *Visual Cognition* 26: 1-12
- Russell, R.**, Kramer, S.S., & Jones, A.L. (2017) Facial contrast declines with age but remains sexually dimorphic throughout adulthood. *Adaptive Human Behavior and Physiology* 3(4): 293-303
- Russell, R.** (2017) The Illusion of Sex. In Shapiro, A.G. & Todorovic, D. (Eds.) *The Oxford Compendium of Visual Illusions*. Oxford: Oxford University Press
- Porcheron, A., Mauger, E., Soppelsa, F., Liu, Y., Ge, L., Pascalis, O., **Russell, R.**, & Morizot, F. (2017) Facial contrast is a cross-cultural cue for perceiving age. *Frontiers in Psychology* 8:1208
- Mileva, V.R., Jones, A., **Russell, R.**, & Little, A. (2016) Sex differences in the perceived dominance and prestige of women with and without cosmetics. *Perception* 45: 1166-1183
- Russell, R.**, Porcheron, A., Sweda, J., Jones, A.L., Mauger, E., & Morizot, F. (2016) Facial contrast is a cue for perceiving health from the face. *Journal of Experimental Psychology: Human Perception and Performance* 42(9): 1354-1362
- Jones, A.L., Porcheron, A., Sweda, J., Morizot, F., & **Russell, R.** (2016) Coloration in different areas of facial skin is a cue to health: The role of cheek redness and periorbital luminance in health perception. *Body Image* 17: 57-66
- Germine, L., **Russell, R.**, Bronstad, P.M., Blokland, G.A.M., Smoller, J.W., Kwok, H., Anthony, S.E., Nakayama, K., Rhodes, G., Wilmer, J.B. (2015) Individual aesthetic preferences for faces are shaped mostly by environments not genes. *Current Biology* 25(20): 2684-2689
- Jones, A.L., **Russell, R.**, & Ward, R. (2015) Cosmetics alter biologically based factors of beauty: Evidence from sex differences in facial contrast. *Evolutionary Psychology* 13(1): 210-229
- Russell, R.**, Sweda, J., Porcheron, A., & Mauger, E. (2014) Sclera color changes with age and is a cue for the perception of age, health, and beauty. *Psychology and Aging* 29(3): 626-635

- Porcheron, A., Mauger, E., & **Russell, R.** (2013) Aspects of facial contrast decrease with age and are cues for age perception. *PLOS ONE* 8(3): e57985
- Russell, R.**, Chatterjee, G., & Nakayama, K. (2012) Developmental prosopagnosia and super-recognition: no special role for surface reflectance processing. *Neuropsychologia* 50: 334-340
- Russell, R.** (2012) Cosmetics Use: Psychological Perspectives. In Cash, T. (Ed.) *Encyclopedia of Body Image and Human Appearance*. San Diego: Academic Press. pp. 366-371
- Sinha, P. & **Russell, R.** (2011) A perceptually based comparison of image-similarity metrics. *Perception*, 40(11): 1269-1281
- Russell, R.** (2010) Why cosmetics work. In Adams, R., Ambady, N., Nakayama, K., & Shimojo S. (Eds.) *The Science of Social Vision*. Oxford: Oxford University Press. pp. 186-203
- Chen, H., **Russell, R.**, Nakayama, K., & Livingstone, M. Crossing the “Uncanny Valley”: adaptation to cartoon faces can influence perception of human faces (2010) *Perception*, 39: 378-386
- Russell, R.** A sex difference in facial contrast and its exaggeration by cosmetics. (2009) *Perception*, 38: 1211-1219
- Russell, R.**, Duchaine, B., & Nakayama, K. Super-recognizers: People with extraordinary face recognition ability. (2009) *Psychonomic Bulletin & Review*, 16(2): 252-257
- Bronstad, P.M., Langlois, J.H., & **Russell, R.** (2008) Computational models of facial attractiveness judgments. *Perception*. 37: 126-142
- Bronstad, P.M. & **Russell, R.** (2007) Beauty is in the “we” of the beholder: Greater agreement on facial attractiveness among close relations. *Perception*. 36: 1674-1681
- Russell, R.**, Biederman, I., Nederhouser, M., & Sinha, P. (2007) The utility of surface reflectance for the recognition of upright and inverted faces. *Vision Research*, 47: 157-165
- Russell, R.** & Sinha, P. (2007) Real world face recognition: The importance of surface reflectance properties. *Perception*. 36: 1368-1374
- Sinha, P., Balas, B.J., Ostrovsky, Y., & **Russell, R.** (2006) Face recognition by humans: 19 results all computer vision scientists should know about. *Proceedings of the IEEE*. Vol. 94, No. 11, 1948-1962.
- Russell, R.**, Sinha, P., Biederman, I., & Nederhouser, M. (2006) Is pigmentation important for face recognition? Evidence from contrast negation. *Perception*. 35: 749-759
- Sinha, P., Balas, B.J., Ostrovsky, Y., & **Russell, R.** (2006) Face recognition by humans. In Chellappa, R. & Zhao, W. (Eds.) *Face Processing: Advanced Modeling and Methods* London: Academic Press. pp. 257-91
- Russell, R.** (2003) Sex, beauty, and the relative luminance of facial features. *Perception*. 32: 1093-1107
- Devlin, J. T., **Russell, R. P.**, Davis, M. H., Price, C. J., Moss, H. E., Fadili, J., & Tyler, L. K. (2002) Is there an anatomical basis for category specificity? Semantic memory studies in PET and fMRI. *Neuropsychologia* 40(1): 54-75

- Tyler L.K., **Russell R.**, Fadili J., & Moss H.E. (2001) The neural representation of nouns and verbs: PET studies. *Brain*. 2001 124(8):1619-34.
- Devlin, J.T., **Russell, R.P.**, Davis, M.H., Price, C.J., Moss, H.E., Matthews, P.M., & Tyler, L.K. (2000) Susceptibility-induced loss of signal: Comparing PET and fMRI on a semantic task *Neuroimage* 11 (6): 589-600
- Devlin, J.T., Davis, M.H., McLelland, S.A., & **Russell, R.P.** (2000) Efficiency, information theory, and neural representations. *Behavioural and Brain Sciences* 23(4): 475

CONFERENCE PRESENTATIONS

- Russell, R.** Contextual effects in skin appearance and person perception. Talk presented at the Capital Area Cognition Attention, and Perception Conference, Washington, DC. January 2020
- Russell, R.** & Batres, C. Hair color modulates skin appearance. Poster presented to the Vision Sciences Society, St. Pete Beach, Florida. May 2019
- Porcheron, A., Courrèges, S., Mauger, E., Latreille, J., **Russell, R.**, Gazorla, G., Jdid, R. Soppelsa, F., Pascalis, O., Jones, A.L., Sweda, J., Liu, Y., Ge, L. Summers, B., & Morizot, F. The diversity in beauty and the impact for cosmetics. Talk presented at the 30th Congress of the International Federation of Cosmetic Chemists. Munich, Germany. September 2018
- Russell, R.**, Batres, C., Jones, A.L., & Porcheron, A. A role for contrast gain control in face perception. Talk presented to the Vision Sciences Society, St. Pete Beach, Florida. May 2018
- Jones, A.L., Batres, C., Porcheron, A., Sweda, J.R., Morizot, F., & **Russell, R.** Positive facial affect looks healthy. Talk presented to the Nonverbal preconference of the Society for Personality and Social Psychology. Atlanta, Georgia. March 2018
- Batres, C., **Russell, R.**, Simpson, J., Campbell, L., Hansen, A.M., & Cronk, L. (2018) Evidence that makeup is a false signal of sociosexuality. Poster presented to the Evolutionary Psychology preconference of the Society for Personality and Social Psychology. Atlanta, Georgia. March 2018
- Russell, R.**, Batres, C., Jones, A.L., & Porcheron, A. Skin appearance is affected by local contrast. Poster presented to Optical Society of America, Fall Vision Meeting. Washington, DC. October 2017
- Bayet, L., Damon, F., Méary, D., Porcheron, A., **Russell, R.**, Pascalis, O. Sensitivity to contrast-enhanced facial features in 3- to 6- month old human infants. Poster presented to the Society for Research in Child Development. Austin, Texas. April 2017
- Russell, R.**, Batres, C., Courrèges, S., Kaminski, G., Soppelsa, F., Morizot, F., & Porcheron, A. Makeup makes women look thirty. Poster presented to the Nonverbal preconference of the Society for Personality and Social Psychology. San Antonio, Texas. January 2017
- Russell, R.**, Jones, A.L., & Porcheron, A. Facial contrast affects the perception of skin homogeneity and wrinkles. Poster presented to the Vision Sciences Society. St. Pete Beach, Florida. May 2016

- Cohan, S., **Russell, R.**, Wilmer, J., Nakayama, K., & Duchaine, B. Broadly Superior: Many, but not all, visual and non-visual abilities are strong in face super-recognizers. Poster presented to the Vision Sciences Society. St. Pete Beach, Florida. May 2016
- Jones, A.L., Porcheron, A., Sweda, J.R., Morizot, F., & **Russell, R.** Coloration in different areas of facial skin is a cue to health: The role of cheek redness and periorbital luminance in health perception. Poster presented to the European Human Behaviour and Evolution Association. London, UK. April 2016
- Russell, R.**, Porcheron, A., Sweda, J.R., Mauger, E., & Morizot, F. Facial contrast is a cue for health perception. Poster presented to the Vision Sciences Society. St. Pete Beach, Florida. May 2015
- Porcheron, A., Mauger, E., Soppelsa, F., **Russell, R.**, & Morizot, F. Facial contrast is a universal cue for perceiving age. Poster presented to the Vision Sciences Society. St. Pete Beach, Florida. May 2015
- Porcheron, A., Mauger, E., Sweda, J., Pascalis, O., **Russell, R.**, Morizot, F. Facial contrast varies between ethnic groups but its decline with age is universal. Talk presented at the 28th Congress of the International Federation of Cosmetic Chemists. Paris, France. October 2014
- Parsi, G.K., Bronstad, P.M., **Russell, R.**, Otarola-Castillo, E., & Briss, D.S. Morphometric analysis of facial structures and its relationship to attractiveness. Poster presented at the annual meeting of the Association for Psychological Science. San Francisco, California. May 2014
- Jones, A.L., **Russell, R.**, & Ward, R. Examining sexual dimorphism: The effects of facial contrast on perceptions of sex typicality. Talk presented at the Experimental Psychology Society. Kent, UK. April 2014
- Russell, R.**, Sweda, J.R., Porcheron, A., & Mauger, E., & Morizot, F. Facial contrast varies with health and is a cue for health perception. Talk presented at the Tagung experimentell arbeitender Psychologen (Conference of Experimental Psychologists). Gießen, Germany. April 2014
- Parsi, G.K., **Russell, R.**, Bronstad, P.M., & Will, L.A. Comparison of attractiveness perception between orthodontists, laymen and computer model. Talk presented at the annual meeting of the American Association for Dental Research. Charlotte, North Carolina. March 2014
- Russell, R.**, Porcheron, A., & Mauger, E. Facial contrast is a cue to age as well as to sex and beauty. Talk presented at the annual meeting of the Association for Psychological Science. Washington, DC. May 2013
- Wilmer, J., **Russell, R.**, Bronstad, M., Kwok, H., Anthony, S., & Germine, L. Disagreements about the attractiveness of faces arise largely from past experience: evidence from twins. Poster presented to the Vision Sciences Society. Naples, Florida. May 2013
- Porcheron, A., Mauger, E., Sweda, J.R., Morizot, F., & **Russell, R.** Aspects of facial contrast are cues for age and health perception. Poster presented to the International Investigative Dermatology conference. Edinburgh, UK. May 2013
- Mileva, V.R., Jones, A., **Russell, R.**, & Little, A.C. The made-up lass is of higher class: Sex differences of dominance and prestige for women with and without

- make-up. Poster presented to the European Human Behaviour & Evolution Association conference. Amsterdam, The Netherlands. March 2013
- Russell, R.**, Porcheron, A., & Mauger, E. Increased facial contrast makes faces look younger as well as more feminine. Poster presented to the Society for Personality and Social Psychology. New Orleans, Louisiana. January 2013
- Russell, R.**, Porcheron, A., & Sweda, J.R. Eyes with higher contrast look younger. Poster presented to the Vision Sciences Society. Naples, Florida. May 2012
- Porcheron, A., Mauger, E., Morizot, F., & **Russell, R.** Faces with higher contrast look younger. Poster presented to the Vision Sciences Society. Naples, Florida. May 2011
- Strong, E.R., **Russell, R.**, Germine, L., & Wilmer, J.B.. Face processing abilities relate to career choice. Poster presented to the Vision Sciences Society. Naples, Florida. May 2011
- Chen, H., **Russell, R.**, Nakayama, K., & Livingstone, M. Crossing the “Uncanny Valley”: adaptation to cartoon faces can influence perception of human faces. Poster presented to the Vision Sciences Society. Naples, Florida. May 2010
- Russell, R.**, Yue, X., Nakayama, K., & Tootell, R.B.H. Neural differences between developmental prosopagnosics and super-recognizers. Poster presented to the Vision Sciences Society. Naples, Florida. May 2010
- Russell, R.**, Chatterjee, G., & Nakayama, K. The use of shape and pigmentation information across the spectrum of face recognition ability. Poster presented to the Vision Sciences Society. Naples, Florida. May 2009
- Chatterjee, G., **Russell, R.**, & Nakayama, K. Non-face visual memory impairments in developmental prosopagnosia. Poster presented to the Vision Sciences Society. Naples, Florida. May 2009
- Russell, R.**, Duchaine, B., & Nakayama, K. Exceptional face recognition ability. Poster presented at the Second Annual Social and Affective Neuroscience conference. Boston, Massachusetts. June 2008
- Russell, R.**, Chatterjee, G., Duchaine, B., & Nakayama, K. Super-recognizers: People with exceptional face recognition ability. Poster presented at Tufts University conference on Cognitive Neuroscience of Visual Knowledge: Where Vision Meets Memory Conference. Medford, Massachusetts. May 2008
- Russell, R.**, Duchaine, B., & Nakayama, K. Extraordinary face recognition ability. Talk presented at the Annual Meeting of the Psychonomic Society. Long Beach, California. November 2007
- Russell, R.**, Duchaine, B., & Nakayama, K. Extraordinary face recognition. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2007
- Nakayama, K., Garrido, L., **Russell, R.**, Chabris, C.F., Gerbasi, M., & Duchaine, B. Developmental prosopagnosia: phenotypes and estimated prevalence. Talk presented to the Society for Neuroscience. Atlanta, Georgia. October 2006
- Russell, R.** & Sinha, P. Pigmentation is important for familiar face recognition. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2006
- Bronstad, P., Langlois, J.H., **Russell, R.** Explaining human facial attractiveness judgments. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2006

- Russell, R.** Male and female faces are differently pigmented. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2005
- Russell, R.**, Sinha, P., Nederhouser, M., & Biederman, I. The importance of pigmentation for face recognition. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2004
- Greene, M.R., **Russell, R.**, & Biederman, I. The N170 adapts only to the shape—not the pigmentation—of individual faces. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2004
- Russell, R.**, Nederhouser, M., & Biederman, I. The roles of shape and surface in face processing. Poster presented to the workshop on Object Perception, Attention, and Memory. Vancouver, British Columbia. November 2003
- Russell, R.** Contrast, sex, and facial attractiveness. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2003
- Russell, R.** Facial contrast, sex, and beauty. Poster presented to the Cognitive Neurosciences Society. New York, New York. April 2003
- Russell, R.P.** Facial coloration, sex, and beauty. Poster presented at the European Conference for Visual Perception. Glasgow, UK. August 2002
- Russell, R.P.** & Sinha, P. A Perceptually based comparison of image similarity metrics. Poster presented to the Vision Sciences Society. Sarasota, Florida. May 2002
- Tyler, L.K., Devlin, J.T., **Russell, R.P.**, & Moss, H.E. The neural representation of nouns and verbs: Evidence from imaging. Poster presented to the Cognitive Neuroscience Society, San Francisco. April 2000
- Devlin, J.T., **Russell, R.P.**, Price, C.J., et al. Neuroimaging evidence for a unitary semantic system. Poster presented to the Cognitive Neuroscience Society, San Francisco. April 2000