

Steven Marshall Boker

PERSONAL INFORMATION

Home:

1934 Blue Ridge Road
Charlottesville, VA 22903

Office:

(434) 243-7275
Department of Psychology
Gilmer Hall Room 102
University of Virginia
Charlottesville, VA 22903

**Fax:**

(434) 982-4766

Email:

boker@virginia.edu

Web:

<http://people.virginia.edu/~smb3u>
<http://faculty.virginia.edu/humandynamicslab>
<http://openmx.psyc.virginia.edu>

Age:

59

FORMAL EDUCATION

B.S. Mathematics, June 1972

University of Denver, Denver, CO.

M.A. Psychology, August 1994

University of Virginia, Charlottesville, VA (advisor John R. Nesselroade)

Thesis Topic: *The Perception of Structure in Simple Auditory Rhythmic Patterns*

Ph.D. Psychology, May 1996

University of Virginia, Charlottesville, VA (advisor John R. Nesselroade)

Dissertation Topic: *Linear and Nonlinear Dynamical Systems Data Analytic Techniques and an Application to Developmental Data*

PROFESSIONAL POSITIONS

2009–present: *Professor*, Department of Psychology, University of Virginia

2010–present: *Speaker-Director*, LIFE Academy, University of Virginia

2007–present: *Area Head*, Quantitative Program, Department of Psychology, University of Virginia

2007–present: *Faculty*, LIFE Academy; Joint graduate program of University of Virginia, University of Michigan, Max Planck Institute for Human Development, Humbolt University, Free University of Berlin, and University of Zurich.

2008–present: *Member*, Council of Representatives for the Federation of Behavioral, Psychological, and Cognitive Sciences.

1990–present: *Statistical & Data Consultant*, National Collegiate Athletic Association

7/2011, 6/2010, 6/2009, 7/2008, 6/2007, 6/2006–7/2006: *Visiting Scientist*, Max Planck Institute for Human Development: Center for Lifespan Psychology, Berlin, Germany

2007–2009: *Associate Professor*, Department of Psychology, University of Virginia

2003–2006: *Associate Professor*, Department of Psychology, University of Notre Dame

2006: *Member*, Faculty Advisory Board, Center for Research Computing, University of Notre Dame.

2005: *Chair*, Institutional Review Board, University of Notre Dame

2004–2005: *Director*, Quantitative Program, Department of Psychology, University of Notre Dame

- 4/2003–5/2003:** *Visiting Scientist*, Riken Brain Science Institute, Tokyo, Japan
- 2/2003–3/2003, 3/2001–6/2001:** *Visiting Scientist*, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
- 1996–2002:** *Assistant Professor*, Department of Psychology, University of Notre Dame
- 1991–1996:** *Graduate Student*, Department of Psychology, University of Virginia
- 1985–1990:** *Co-owner and Recording Engineer*, Triple Helix Recording Studios
- 1979–1991:** *President and Founder*, Data Transforms, Inc. (software publishing)
- 1972–1978:** *Independent Building Contractor*, Zonahedra Construction.

PROFESSIONAL HONORS

- The Maury Pathfinder Prize** (1995) from the University of Virginia Department of Psychology for the outstanding Master's Thesis of 1994.
- The Raymond B. Cattell Award** (2000) from the Society of Multivariate Experimental Psychology for outstanding early-career contributions to multivariate research in psychology.
- The Tanaka Award** (2003) from the Society of Multivariate Experimental Psychology for the outstanding article of 2002 in *Multivariate Behavioral Research*.
- Elected Fellow of the Association for Psychological Science** (2010)
- Elected Fellow of Division 20 of the American Psychological Association** (2010)
- Elected Fellow of Division 5 of the American Psychological Association** (2011)

ELECTED MEMBERSHIPS

Society of Multivariate Experimental Psychology

EXTERNAL GRANT SUPPORT

Mapping Affect and Facial Dynamics during Dyadic Conversation S. M. Boker PI, Funded by the National Science Foundation (BCS-1030806); October 1, 2010 - September 30, 2012; \$199,997 Total Costs. Role: PI

- OpenMx: Multipurpose Software for Statistical Modeling** S. M. Boker PI, Funded by the National Institutes of Health Roadmap Initiative (NIH 1R21DA024304-01); September 26, 2007 - August 31, 2011; \$1,095,362 Total Costs. Role: PI
- Collaborative Research DHB: Coordinated motion and facial expression in dyadic conversation** S. M. Boker PI, Funded by the National Science Foundation (NSF BCS-0527485); January, 2006 - December, 2009; \$715,133 Total Costs. Role: PI
- Training in Quantitative Modeling in Aging Research** J. R. Nesselroade PI, Funded by the National Institute on Aging (2 T32 AG020500-06); May 1 2008 - April 30, 2013; \$1,163,045 Total Costs. Role: Co-PI
- A Twin Study of Ovarian Hormones and Disordered Eating** K. L. Klump PI, Funded by National Institutes of Health (RO1 MH082054-01); 7/1/2008 – 6/30/2013; \$2,021,685 Total Costs. Role: Consortium PD/PI
- Facial Expression Analysis by Image Processing** J. F. Cohn PI, Funded by the National Institute of Mental Health; May 1, 2006 to April 30, 2011. \$2,358,836 Total costs. Role: Consultant
- Dynamical Systems Tools: Modeling multi-level processes in parent-child relations** M. Sturge–Apple PI, Funded by the National Institutes of Health Roadmap Initiative (NIH 1R21NR010857-01); October 1, 2007 – May 31, 2011; \$1,190,373 Total Costs. Role: Consultant
- Notre Dame Study of Resiliency in Later Life** C. S. Bergeman PI, Funded by the National Institute on Aging (5R01AG023571-02); September 15, 2005 - August 31, 2010; \$1,250,000 Direct Costs. Role: Consultant
- Notre Dame Study of Resiliency in Later Life – Supplement** C. S. Bergeman PI, Funded by the National Institute on Aging (3R01AG023571-02S1A1); September 15, 2007 - August 31, 2012; \$950,000 Direct Costs. Role: Consultant
- Conference & Workshop: Child & Adolescent Development and Family Processes** S. M. Boker PI, Funded by the Notre Dame Institute for Scholarship in the Liberal Arts; March 2006 - August 2006; \$9,493 Total Costs. Role: PI
- Conference & Workshop: Connecting Statistical and Computational/Process Models of Cognitive Aging** Michael Wenger PI, Funded by the National Institute on Aging; June, 2004 - May 2005; \$15,000 Total Costs. Role: Co-PI
- Conference & Workshop: Dynamical Systems Data Analysis** S. M. Boker PI, Funded by the National Institute on Aging (NIA R13 AG21625-01); September, 2002 - August 2003; \$18,650 Total Costs. Role: PI
- Dynamic Postural Equilibrium** S. M. Boker PI, Funded by the National Institute on Aging (NIA R29 AG14983); May 1999 to April 2005; \$346,051 Direct Costs. Role: PI

Quantitative Psychology Lab S. M. Boker PI, Funded by the National Collegiate Athletic Association; July 1996 to July 2006; \$49,452 Direct Costs. Role: PI

Predicting and Preventing Neglect in Teen Mothers J. E. Borkowski PI, Funded by the National Institute for Child Development, (NICHD HD-39456) August 15, 2001 to August 14, 2006. \$4,200,000 Direct Costs. Role: Co-PI

Emotion Regulation and Adjustment to Conjugal Loss in Later Life C. S. Bergeman PI, Funded by the National Institute on Aging; March 2000 to February 2003; \$296,760 Direct Costs. Role: Co-PI

Versatile Software for Biomedical Genetic Applications M. C. Neal PI, Funded by the National Institutes of Health, (NIH RR-08123) May 1994 to April 1996. Role: Consultant

EDITORSHIPS

2001–2006 *Notre Dame Series on Quantitative Methodology* Series editor of book series with Lawrence Erlbaum Associates.

2004–present *Multivariate Behavioral Research* Consulting editor.

PEER REVIEWED ARTICLES AND PROCEEDINGS PAPERS

Note: Italicized authors are current or former students.

Hopwood, C.J., Burt, S.A., Keel, P.S., Neale, M., Boker, S., & Klump, K.L. (in press). Interpersonal problems associated with multidimensional personality questionnaire traits in women during the transition to adulthood. *Assessment*

Nicholson, J. S., Deboeck, P. R., Farris, J. R., Boker, S. M., & Borkowski, J. G. (in press) Maternal Depressive Symptomatology and Child Behavior: A Transactional Relationship with Simultaneous Bidirectional Coupling. *Developmental Psychology*

Brick, T. R. & Boker, S. M. (in press) Correlational Methods for Analysis of Dance Movements. *Dance Research Electronic*.

Boker, S. M., Neale, M., Maes, H., Wilde, M., Spiegel, M., Brick, T., Spies, J., Estabrook, R., Kenny, S., Bates, T., Mehta, P., & Fox, J. (2011) OpenMx: An Open Source Extended Structural Equation Modeling Framework. *Psychometrika*. **76**:2, 306–317.

Boker, S., Cohn, J., Theobald, B., Matthews, I., Mangini, M., Spies, J., Amabadar, Z. & Brick, T. (2011) Something in the Way We Move: Motion Dynamics, not Perceived Sex, Influence Head Movements in Conversation. *Journal of Experimental Psychology: Human Perception & Performance*. **37**:2, 631–640.

- Montpetit, M. A., Bergeman, C. S., Deboeck, P. R., Tiberio, S. S., & Boker, S. M. (2010) Resilience–As–Process: Negative Affect, Stress, and Coupled Dynamical Systems. *Psychology and Aging*. **25**:3, 631–640.
- Deboeck, P. R. & Boker, S. M. (2010) Modeling Noisy Data with Differential Equations using Observed and Expected Matrices. *Psychometrika*. **75**:3, 420–437.
- Oertzen, T. v. & Boker, S. (2010) Time Delay Embedding Increases Estimation Precision of Models of Intraindividual Variability. *Psychometrika*. **75**:1, 158–175.
- Deboeck, P. R., Montpetit, M. A., Bergeman, C. S. & Boker, S. M. (2009). Describing Intraindividual Variability at Multiple Time Scales Using Derivative Estimates. *Psychological Methods*. **14**:4, 367–386.
- Boker, S. M., Molenaar, P. C. M., & Nesselroade, J. R. (2009) Issues in Intraindividual Variability: Individual Differences in Equilibria and Dynamics over Multiple Time Scales. *Psychology and Aging*. **24**:4, 858–862.
- Kenny, S., Andric, M., Boker, S. M., Neale, M. C., Wilde, M., & Small, S. L. (2009) Parallel Workflows for Data–Driven Structural Equation Modeling in Functional Neuroimaging. *Frontiers in Neuroscience*. **3**:34, 1–11.
- Ong, A. D., Bergeman, C. S., & Boker, S. M. (2009) Resilience in Adulthood Comes of Age: Defining Features and Dynamic Conceptions. *Journal of Personality*. **77**:6, 1777–1804.
- Boker, S., Cohn, J., Theobald, B., Matthews, I., Brick, T., & Spies, J. (2009) Effects of Damping Facial Expression in Dyadic Conversation Using Real–Time Facial Expression Tracking and Synthesized Avatars. *Philosophical Transactions of the Royal Society B*. **364**, 3485–3495.
- Chow, S.–M., Hamaker, E. L., Fujita, F. & Boker, S. M. (2009) Representing Time-Varying Cyclic Dynamics Using Multiple–Subject State–Space Models. *British Journal of Mathematical and Statistical Psychology*. **62**, 683–716.
- Ashenfelter, K. T., Boker, S. M., Waddell, J. R., & Vitanov, N. (2009). Spatiotemporal Symmetry and Multifractal Structure of Head Movements during Dyadic Conversation. *Journal of Experimental Psychology: Human Perception & Performance* **34**:4, 1072–1091.
- Theobald, B., Matthews, I., Mangini, M., Spies, J., Brick, T., Cohn, J. F., & Boker, S. (2009) Mapping and Manipulating Visual Prosody. *Journal of Language and Speech* **52**:2, 369–386.
- Brick, T., Spies, J., Theobald, B., Matthews, I., & Boker, S. (2009) High–Presence, Low–Bandwidth, Apparent 3–D Video–conferencing with a Single Camera. *Proceedings of the International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS)* .
- Deboeck, P. R., Boker, S. M., & Bergeman, C. S. (2009) Modeling Individual Damped Linear Oscillator Processes with Differential Equations: Using Surrogate Data Analysis to Estimate the Smoothing Parameter. *Multivariate Behavioral Research* **43**:4, 497–521.

- Boker, S. M., Leibenluft, E., *Deboeck, P. R.*, Virk, G. & Postolache, T. T. (2008). Mood Oscillations and Coupling Between Mood and Weather in Patients with Rapid Cycling Bipolar Disorder. *International Journal of Child Health and Human Development* **1:2**, 181–202
- Theobald, B., Matthews, I., Wilkinson, N., Cohn, J. F., Boker, S. (2007) Animating Faces Using Appearance Models. *Proceedings of the 2007 Workshop on Vision, Video and Graphics*.
- Theobald, B., Matthews, I., Cohn, J. F., Boker, S. (2007) Real-time Expression Cloning using Appearance Models. *Proceedings of the 9th International Conference on Multimodal Interfaces*, 134–139.
- Adolphs, S., Bertenthal, B., Boker, S., Carter, R., Greenhalgh, C., Hereld, M., Kenny, S., Levow, G., Papka, M., & Pridmore, T. (2007). Integrating Cyberinfrastructure into Existing eSocial Science Research. *Proceedings of e-Social Science 2007*.
- Bisconti, T. L.*, Bergeman, C. S. & Boker, S. M. (2006) Social Support as a Predictor of Variability: An Examination of the Adjustment Trajectories of Recent Widows. *Psychology and Aging*, **21:3**, 590–599.
- Chow, S. M., Ram, N., Boker, S. M., Fujita, F., & Clore, G. (2005) Emotion as a Thermostat: Representing Emotion Regulation Using a Damped Oscillator Model. *Emotion*, **5:2**, 208–225.
- Boker, S. M., *Covey, E. S.*, *Tiberio, S. S.*, & *Deboeck, P. R.* (2005) Synchronization in Dancing is Not Winner–Takes–All: Ambiguity Persists in Spatiotemporal Symmetry Between Dancers. *2005 Proceedings of the North American Association for Computational, Social, and Organizational Science*.
- Sturge–Apple, M. L.*, Davies, P. T., Boker, S. M. & Cummings, E. M. (2004) Interparental Discord and Parenting: Testing the Moderating Roles of Child and Parent Gender. *Parenting: Science and Practice*, **4:4**, 361–380.
- Boker, S. M. & Crowell, C. R. (2004) Proposal for the Creation of a Web–Based Heterogeneous Distributed Archive for Psychological Data. *Behavioral Research Methods, Instrumentation, & Computers*, **36:4**, 670–677.
- Bisconti, T. L.*, Bergeman, C. S., & Boker, S. M. (2004) Emotion regulation in recently bereaved widows: A dynamical systems approach. *Journal of Gerontology: Psychological Sciences*, **59:4**, 158–167.
- Boker, S. M., *Xu, M.*, *Rotondo, J. L.*, and *King, K.* (2002) Windowed cross–correlation and peak picking for the analysis of variability in the association between behavioral time series. *Psychological Methods*, **7:1**, 338–355.
- Boker, S. M. (2002). Consequences of continuity: The hunt for intrinsic properties within parameters of dynamics in psychological processes. *Multivariate Behavioral Research*, **37:3**, 405–422.
- Boker, S. M. & Nesselroade, J. R. (2002). A method for modeling the intrinsic dynamics of intraindividual variability: Recovering the parameters of simulated oscillators in multi–wave panel data. *Multivariate Behavioral Research*, **37:1**, 127–160.

- Boker, S. M., McArdle, J. J. & Neale, M. C. (2002) An algorithm for the hierarchical organization of path diagrams and calculation of components of covariance between variables. *Structural Equation Modeling*, **9**:2, 174–194
- Boker, S. M. & Ghisletta, P. (2001) Random coefficients models for control parameters in dynamical systems *Multilevel Modelling Newsletter*, **13**:1, 10–17
- Bertenthal, B. I., Boker, S. M., & Xu, M. (2000) Analysis of the perception action cycle for visually induced postural sway in 9-month-old sitting infants. *Infant Behavior and Development* **23**:3–4, 299–315.
- Boker, S. M., & Graham, J. W. (1998) A dynamical systems analysis of adolescent substance use. *Multivariate Behavioral Research*, **33**:4, 479–507.
- Boker, S. M. (1997) A measurement of the adaptation of color vision to the spectral environment. *Psychological Science*, **8**:2, 130–134.
- Kinzie, M. B., Larsen, V. A., Burch, J. B., & Boker, S. M. (1996). Frog dissection via the World–Wide Web: Implications for widespread delivery of instruction. *Educational Technology Research and Development*, **44**:2, 59–69.
- Boker, S. M. & McArdle, J. J. (1995). A vector field analysis of longitudinal aging data. *Experimental Aging Research*, **21**:1, 77–93.

BOOKS

- Boker, S. M. & Wenger, M. J. (2007) *Data Analytic Techniques for Dynamical Systems in the Social and Behavioral Sciences*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Bergeman, C. S. & Boker, S. M. (2006) *Quantitative Methods in Aging Research*. Mahwah, NJ: Lawrence Erlbaum Associates.

BOOK CHAPTERS

- Boker, S. M. & Martin, M. (in press) On the Equilibrium Dynamics of Meaning. In *Current Issues in the Theory and Application of Latent Variable Models*, M. Edwards & R. MacCallum, (Eds). New York: Taylor & Francis.
- Boker, S. M. (in press) Dynamical Systems and Differential Equation Models of Change. In *APA Handbook of Research Methods in Psychology*, H. Cooper, A. Panter, P. Camic, R. Gonzalez, D. Long, & K. Sher, (Eds). Washington, DC: American Psychological Association.
- Fox, J., Byrnes, J., Boker, S. & Neale, M. (2012) Structural Equation Modeling in R with the sem and OpenMx Packages. In *Handbook of Structural Equation Modeling*, R. Hoyle, (Ed). New York: Guilford Press.

- Boker, S. M. & Cohn, J. F. (2010) Real Time Dissociation of Facial Appearance and Dynamics during Natural Conversation. In *Dynamic Faces: Insights from Experiments and Computation*, C. Curio, H. Bültorf, & M. Giese, (Eds). Cambridge, MA: MIT Press, pp 239–254.
- Boker, S. M., Montpetit, M. A., Hunter, M. D., & Bergeman, C. S. (2010) Modeling Resilience with Differential Equations. In *Learning and Development: Individual Pathways of Change*, P. Molenaar & K. Newell (Eds). Washington, DC: American Psychological Association, pp 183–206.
- Boker, S. M., Deboeck, P. R., Edler, C., & Keel, P. K. (2010) Generalized Local Linear Approximation of Derivatives from Time Series. In *Statistical Methods for Modeling Human Dynamics: An Interdisciplinary Dialogue*, S.-M. Chow & E. Ferrar (Eds). Boca Raton, FL: Taylor & Francis, pp 179–212.
- Deboeck, P. R. & Boker, S. M. (2010) Unbiased, Smoothing-Independent Estimation of Oscillators in Psychology. In *Statistical Methods for Modeling Human Dynamics: An Interdisciplinary Dialogue*, S.-M. Chow & E. Ferrar (Eds). Boca Raton, FL: Taylor & Francis, pp 161–178.
- Boker, S. M. (2007) Differential Equation Models for Longitudinal Data. In *Handbook of Longitudinal Research*, S. Menard (Ed). New York: Elsevier, pp. 639–652.
- Boker, S. M. & Laurenceau, J.-P. (2007) Coupled Dynamics and Mutually Adaptive Context. In *Modeling ecological and contextual effects in longitudinal studies of human development*, Little, T. D., Bovaird, J. A. & Card, N. A. (Eds). Mahwah, NJ: Lawrence Erlbaum Associates, pp. 299–324.
- Maxwell, S. E. & Boker, S. M. (2007) Multilevel Models of Dynamical Systems. In *Data Analytic Techniques for Dynamical Systems in the Social and Behavioral Sciences*, S. M. Boker & Wenger, M. J. (Eds). Mahwah, NJ: Lawrence Erlbaum Associates, pp. 161–187.
- Boker, S. M. (2007) Specifying Latent Differential Equations Models. In *Data Analytic Techniques for Dynamical Systems in the Social and Behavioral Sciences*, S. M. Boker & Wenger, M. J. (Eds). Mahwah, NJ: Lawrence Erlbaum Associates. pp. 131–159.
- McCullough, M. E. & Boker, S. M. (2006) Dynamical Modeling for Self-Regulatory Processes: An Example from the Study of Religious Development over the Lifetime. In *Handbook of Methods in Positive Psychology*, A. D. Ong & M. van Dulmen (Eds). Oxford: Oxford University Press, pp. 380–394.
- Boker, S. M. & Bisconti, T. L. (2006) Dynamical systems modeling in aging research. In *Quantitative Methodology in Aging Research*, C. S. Bergeman & S. M. Boker (Eds). Mahwah, NJ: Lawrence Erlbaum Associates, pp. 185–229
- Neale, M. C., Boker, S. M., Bergeman, C. S., & Maes, H. M. (2006) The utility of genetically informative data in the study of development. In *Quantitative Methodology in Aging Research*, C. S. Bergeman & S. M. Boker (Eds). Mahwah, NJ: Lawrence Erlbaum Associates, pp. 269–327.

- Boker, S. M. & Laurenceau, J.-P. (2006) Dynamical Systems Modeling: An Application to the Regulation of Intimacy and Disclosure in Marriage. In *Models for Intensive Longitudinal Data*, T. A. Walls & J. L. Schafer (Eds). Oxford: Oxford University Press, pp. 195–218.
- Boker, S. M. & McArdle, J. J. (2005) Path analysis and path diagrams. In *Encyclopedia of Statistics in Behavioral Science*, B. Everitt and D. Howell (Eds). New York: John Wiley & Sons. Vol. 3, pp. 1529–1531
- Boker, S. M. & McArdle, J. J. (2005) Vector Field Plots. In *Encyclopedia of Biostatistics* (2nd Edition), P. Armitage and T. Colton. (eds) Chichester, UK: Wiley. Vol. 8, pp. 5700–5704
- Boker, S. M., Neale, M. C. & Rausch, J. R. (2004) Latent Differential Equation Modeling with Multivariate Multi-Occasion Indicators. In *Recent Developments on Structural Equation Models: Theory and Applications*, K. van Montfort, H. Oud, & A. Satorra (eds), Amsterdam: Kluwer. 151–174
- Boker, S. M. & Rotondo, J. L. (2003) Symmetry building and symmetry breaking in synchronized movement. In *Mirror Neurons and the Evolution of Brain and Language*, M. Stamenov & V. Gallese (eds), Amsterdam: John Benjamins. 163–171
- Rotondo, J. L. & Boker, S. M. (2003) Behavioral synchronization in human conversational interaction. In *Mirror Neurons and the Evolution of Brain and Language*, M. Stamenov & V. Gallese (eds), Amsterdam: John Benjamins. 151–162
- Boker, S. M. (2001) Differential structural equation modeling of intraindividual variability. In *New Methods for the Analysis of Change*, L. Collins & A. Sayer (Eds.). Washington, DC: American Psychological Association. 3–28
- Boker, S. M. & Nesselroade, J. R. (2000) Multilevel modeling of dynamical systems: random coefficients and order parameters. *Proceedings of the Fifth International Conference on Social Science Methodology of the Research Committee on Logic and Methodology of the International Sociological Association*, Leverkusen, Germany: Leske & Budrich, (Published on CDROM).
- Boker, S. M. & Kubovy, M. (1998). The perception of segmentation in sequences: Local information provides the building blocks for global structure. In Rosenbaum, D. A. and Collyer, C. E. (Eds.) *Timing of Behavior: Neural, Computational, and Psychological Perspectives*. Cambridge, MA: MIT Press. 109–123
- Boker, S. M. & McArdle, J. J. (1998) A psychotelemetry experiment in fluid intelligence. In J.J. McArdle & R.W. Woodcock (Eds.) *Human Cognitive Abilities in Theory and Practice*. Mahwah, NJ: Lawrence Erlbaum Associates, 215–229
- Boker, S. M., Schreiber, T., Pompe, B. & , Bertenthal, B. I. (1998). Nonlinear analysis of perceptual–motor coupling in the development of postural control. In Meyer–Kress, G., Kantz, H. & Kurths, J. (Eds.) *Nonlinear Analysis of Physiological Data*. Berlin: Springer–Verlag. 251–270

- Boker, S. M. & Kubovy, M. (1998). Predicting the grouping of rhythmic sequences using local estimators of information content. In Rosenthal, D. and Okuno, H. G. (Eds.), *Computational Auditory Scene Analysis*. Hillsdale NJ: Lawrence Erlbaum, 309–320.
- Nesselroade, J. R. & Boker, S. M. (1994). Assessing constancy and change. In Heatherton, T. F. and Weinberger, J. L. (Eds.), *Can personality change?* Washington, D. C.: American Psychological Association, 503–541.

SOFTWARE PUBLICATIONS

- Boker, S., Neale, M., Maes, H., Wilde, M., Spiegel, M., Brick, T., Spies, J., Estabrook, R., Kenny, S., Bates, T., Mehta, P., Fox, J. (2010) *OpenMx version 1.0: Multipurpose Software for Statistical Modeling*, University of Virginia, Department of Psychology, Box 400400, Charlottesville, VA 22904. <http://openmx.psyc.virginia.edu>
- Neale, M. C., Boker, S. M., Xie, G., and Maes, H. H. (2006) *MX: Statistical Modeling (7th Edition)*, VCU Box 900126, Richmond, VA 23298: Department of Psychiatry.
- Neale, M. C., Boker, S. M., Xie, G., and Maes, H. H. (2003) *MX: Statistical Modeling (6th Edition)*, VCU Box 900126, Richmond, VA 23298: Department of Psychiatry.
- Neale, M. C., Boker, S. M., Xie, G., and Maes, H. H. (1999) *MX: Statistical Modeling (5th Edition)*, Box 126 MCV, Richmond, VA 23298: Department of Psychiatry.
- Neale, M., Xie, G. & Boker, S. M. (1998) *Mx Windows (4th Edition)*, Box 126 MCV, Richmond, VA 23298: Department of Psychiatry.
- McArdle, J. J. & Boker, S. M. (1990) *RAMpath: A Computer Program for Automatic Path Diagrams*, Hillsdale, NJ: Lawrence Erlbaum Publishers.
- Boker, S. M., VanArsdale, R. A., Houston, W. S., & Nelson, R. (1986) *Printrix*, Denver, CO: Data Transforms, Inc.
- Boker, S. M. & VanArsdale, R. A. (1985) *Personal Touch*. Los Angeles, CA: Okidata Corp.
- Boker, S. M., VanArsdale, R. A. & Houston, W. S. (1983). *Fontrix*, Denver, CO: Data Transforms, Inc.
- Boker, S. M. (1982) *Okigraph*, Los Angeles, CA: Okidata Corp.
- Boker, S. M. (1980) *Graphtrix*, Denver, CO: Data Transforms, Inc.

COMMENTS AND REVIEW ARTICLES

- Boker, S. M. (2007) Discussion on “Parameter Estimation for Differential Equations: A Generalized Smoothing Approach”. *Journal of the Royal Statistical Society*, **69**:5, 774
- Bertenthal, B. I. and Boker, S. M. (1997). Commentary on Karen Adolph’s “Learning in the development of infant locomotion,” *Monographs of the Society for Research in Child Development*, **62**:3, 141–151.
- Bertenthal, B. I. and Boker, S. M. (1996). A review of Thelen and Smith’s “A dynamic systems approach to the development of cognition and action,” *Contemporary Psychology*, **41**:10.

CONFERENCE PAPERS, COLLOQUIA, SYMPOSIA, and POSTERS

Note: Italicized authors are current or former students

- Boker, S. M. (2011) A Differential Equations Model for the Ovarian Hormone Cycle. *Inductive Developmental Systems Theory*; The Pennsylvania State University; Nov. 1, 2011.
- Boker, S., Klump, K., Keele, P., and Hu, Y. (2011) Dynamical Systems Models of Ovarian Hormones and Disordered Eating. *NIH Summit on Systems Biology*; Richmond, VA; June 16, 2011.
- Boker, S. (2011) Dynamics of Change and Change in Dynamics. *Intraindividual Methods in Multivariate Psychology*; Charlottesville, VA; May 30, 2010.
- Boker, S. (2010) Modeling Resilience with Differential Equations. *Fall LIFE Academy*; Schwanenwerder, Berlin, Germany; Oct. 15, 2010.
- Boker, S. & Martin, M.. (2010) On the Equilibrium Dynamics of Meaning. *Conference to Honor the Career of Michael W. Browne*; The Ohio State University, Columbus, OH; Sept. 9, 2010.
- Montpetit, M., Bergeman, C. S., Deboeck, P., & Boker, S. M. (2010). Stress–Resistance and Stress–Recovery: A Dynamic Conception of Resilience-as-Process. *Association for Psychological Science Annual Convention*; Boston, MA; May 27–30, 2010.
- Nicholson, J. S., Deboeck, P., Farris, J. R., & Boker, S. M. (2010). Maternal Depressive Symptomatology and Child Behavior: Transactional Relationship with Simultaneous Bidirectional Coupling. *Association for Psychological Science Annual Convention*; Boston, MA; May 27–30, 2010.
- Boker, S., Neale, M., Maes, H., Wilde, M., Spiegel, M., Brick, T., Spies, J., Estabrook, R., Kenny, S., Bates, T., Mehta, P., Fox, J. (2009) OpenMx: Multipurpose Software for Statistical Modeling. *Facilitating Interdisciplinary Research: Methodological and Technological Innovation in the Behavioral and Social Sciences Meeting*; Bethesda, Maryland; October 8, 2009.

- Boker, S., Neale, M., Maes, H., Mehta, P., Wilde, M., *Brick, T., Spies, J., Spiegel, M. Estabrook, R., Hunter, M.*, Kenny, S., Fox, J., Bates, T. (2009) OpenMx: An Open Source and Extensible SEM Framework. *Annual Meeting of the Society of Multivariate Experimental Psychology*; Salishan, Oregon; October 10, 2009.
- Boker, S. M. (2009) Emotional Elasticity: Models of Affective Resilience. *European Congress on Psychological Assessment*; Ghent, Belgium; September 17, 2009.
- Boker, S. M. (2009) Avatars, Multivariate Analysis, and Metamers: A Theory of Facial Dynamics and Affect Expression. *Colloquium Presented to the Psychology Department at the University of Kansas*; Lawrence, Kansas; September 4, 2009.
- Boker, S. M. (2009) Continuous Expression Spaces and Facial Expression Metamers. *MAXNET Cognition*; Berlin, Germany; June 4, 2009.
- Erbacher, M. K., Schmidt, K. M., Bergeman, C. S., & Boker, S. M.* (2009). Highs and Lows: Measuring Affect Fluctuations Across 56 Days in Older Adults. *Annual Meeting of the Association for Psychological Science*; San Francisco, CA; May 24, 2009.
- Boker, S. M. (2009) New Methodology for the Random Assignment of Apparent Gender and Expressivity in a Videoconference Conversation Paradigm. *Annual Meeting of the Association for Psychological Science*; San Francisco, CA; May 24, 2009.
- Boker, S. M. (2009) Measuring and Modeling Interpersonal Dynamics of Dyadic Conversations. *Colloquium presented to the Department of Psychology at the University of Cincinnati*; Cincinnati, OH; April 17, 2009.
- Nicholson, J. S., Farris, J. R., *Deboeck, P., Borkowski, J. G., & Boker, S. M.* (2009). Maternal Depressive Symptomatology and Child Behavior: Transactional Relationship With Simultaneous Bidirectional Coupling. *Biennial Meeting of the Society for Research in Child Development*; Denver, CO; April 4, 2009.
- Boker, S. M. & Oertzen, T. v. (2009). On the Unreasonable Effectiveness of Time Delay Embedding. *Biennial Meeting of the Society for Research in Child Development*; Denver, CO; April 4, 2009.
- Boker, S. M. (2009) Challenges and Rewards of Multivariate Time Series: Acquisition, Storage, and Analysis of Data with Implications for Models of Dynamical Systems. *NIH Genes, Environment, and Health / Exposure Biology Program Grantees Meeting*; Bethesda, MD; January 14, 2009.
- Boker, S. M. (2008) Coordination Dynamics during Conversation: Social Expectation, Person Perception, and Head Movements. *LIFE Fall Academy*; Berlin, Germany; October 16, 2008.
- Boker, S. M. (2008) Contributions of Motion Dynamics and Social Expectations to Interpersonal Coordination During Dyadic Conversation. *Colloquium presented to the Research Center for Group Dynamics at the University of Michigan*; Ann Arbor, Michigan; October 13, 2008.

- Boker, S. M. & Laurenceau, J.-P. (2008) Multilevel and Multivariate Latent Differential Equation Models of Daily Marital Dynamics. *4th Congress of the European Society on Family Relations (ESFR)*; Jyväskylä, Finland; September 26, 2008.
- Boker, S. M., Brick, T. R., Monpetite, M. A. & Bergeman, C. S. (2008) Modeling Individual Changes due to Resiliency using Differential Equations. *Individual Pathways of Change*; The Pennsylvania State University; September 11, 2008.
- Ashenfelter, K. T., Boker, S. M., & Waddell, J. (2008) Coordination and Self-Similarity of Verbal and Nonverbal Behaviors during Face-to-Face Dyadic Conversation. Poster presented to the Annual Meeting of the Cognitive Science Society; Washington, DC; July 26, 2008.
- Boker, S. M. (2008) A Bird's Eye View. *International Network of Intraindividual Variability Research Collaborations (IntraVarNet)*; Dölln, Germany; July, 19 2008.
- Boker, S. M. (2008) Dissociating facial appearance and dynamics during videoconference conversations. Wherry Memorial Lecture to The Ohio State University Departments of Statistics and Psychology; April 23, 2008.
- Boker, S. M., Brick, T. R. & Spies, J. R. (2008) Coordination of Facial Expressions and Head Movement in Dyadic Conversation. Presented to the *New England Sequencing and Timing 2008*; March 8, 2008.
- Boker, S. M., Cohn, J. F., Theobald, B.-J., & Matthews, I. (2008). Dissociating facial appearance and dynamics in real time during natural conversation. Presented to the *Computational and Systems Neuroscience 2008*; Snowbird, Utah; March 3, 2008.
- Matthews, I., Boker, S. M., Theobald, B.-J., Cohn, J. F., Mangini, M., Spies, J. R., Brick, T. R., & Abadar, Z. (2007) Facial Expression and Motion in Dyadic Conversation. Presented at *Meeting of Minds: The Thinking Head — Thinking Systems Project*; Parramatta, Australia; November 23, 2007.
- Boker, S. M., Cohn, J. F., Lucey, S., Theobald, B.-J., Matthews, I., Abadar, Z., Mangini, M., Spies, J. R., & Brick, T. R. (2007) Measuring and Manipulating Coordination Dynamics during Conversation. Presented to the *Annual Meeting of the Society of Multivariate Experimental Psychology*; Chapel Hill, NC; October 18, 2007.
- Boker, S. M., Cohn, J. F., Lucey, S., Theobald, B.-J., Matthews, I., Abadar, Z., Mangini, M., Spies, J. R., & Brick, T. R. (2007) Manipulation of Appearance and Dynamics during Dyadic Interaction. Invited talk presented to the *National Science Foundation Human and Social Dynamics Program Annual PIs Meeting*; Arlington, VA; October 2, 2007.
- Boker, S. M. (2007) Coupled Linear Oscillator Models. Symposium talk presented to the *Annual Meeting of the European Survey Research Association*; Prague; June 28, 2007.
- Boker, S. M. (2007) Discussion on “Parameter Estimation for Differential Equations: A Generalized Smoothing Approach”. Comment presented to the *Royal Statistical Society*; London; May 11, 2007.

- Boker, S. M. (2007) Dynamical Systems Approaches to Models of Intensive Longitudinal Data. Symposium talk presented to the *Annual Meeting of the Association for Psychological Science*; Washington, DC; May 26, 2007.
- Zentall, S. R., Ekas, N., Lickenbrock, D. M., Boker, S. M. & Braungart-Riker, J. M. (2007) Parent–Infant coupling: A dynamic systems approach. Poster at *The Annual Meeting of the Society for Research in Child Development*; March 31, 2007.
- Boker, S. M. (2007) Dynamic Systems in the Social Sciences: Applications and Challenges. Invited talk presented to the National Science Foundation Workshop *New Frontiers in Dynamical Systems*; Arlington, VA; March 1, 2007.
- T. R. Brick, S. M. Boker, & J. R. Waddell (2006). Joint Angle Extraction from Unconstrained Motion Capture Data. Paper presented to the *Annual Meeting of the North American Association for Computational, Social, and Organization Sciences*.
- Boker, S. M., Ashenfelter, K. T., & Spies, J. R. (2006) Age–Related Latent Differential Equations Models for Multivariate Measurement of the Dynamics of Intraindividual Variability. Symposium talk presented to the *Annual Convention of the Gerontological Society of America*; Dallas, TX; November, 2006.
- Boker, S. M. & Deboeck, P. R. (2006) Age–Related Latent Symmetry Dynamics in Head Movements and Facial Expressions during Dyadic Conversation. Symposium talk presented to the *Annual Convention of the Gerontological Society of America*; Dallas, TX; November, 2006.
- Boker, S. M. (2006) Latent Differential Equations (LDE) Models for Coupled Dynamical Systems. Presented at the *LIFE Academy October, 2006*; Wintergreen, Virginia; October 17, 2006.
- Boker, S. M. (2006) Modeling dyadic and family processes as dynamical systems: An application to the regulation of intimacy and disclosure in marriage. Presented at the conference *New Methods for the Analysis of Family and Dyadic Processes*; University of Massachusetts Amherst; October 15, 2006.
- Boker, S. M. (2006) Embodiment of Self and Other: Mutual Regulation of Affective Symmetry in Conversation. Presented at the *Herbstakademie Ascona 2006: Dynamical Systems in Cognitive Science*; Ascona, Switzerland; October 5, 2006.
- Boker, S. M., Cohn, J., Matthews, I., Ashenfelter, K., Spies, J., Brick, T., Deboeck, P., Covey, E. & Tiberio, S. (2006) Coordinated Motion and Facial Expression in Dyadic Conversation. Poster presented to the 2006 NSF–HSD P.I. meeting; Washington, DC; September 14–15, 2006.
- Boker, S. M. (2006) Information Flow and Symmetry Breaking in Interpersonal Coordination. Keynote address presented to the *Sixteenth Annual Society for Chaos Theory in Psychology & Life Sciences Conference*; Johns Hopkins University; August 4, 2006.
- Ashenfelter, K. T., Waddell, J. R., Vitanov, N., & Boker, S. M. (2006) Multifractal Head Movements During Conversation. Poster presented to the *Annual Convention of the Society for Mathematical Psychology*; July 30 – August 1, 2006.

- Brick, T., Boker, S. M., & Waddell, J. L. (2006) Joint Location and Angle Extraction for Pose Estimation from Underconstrained Motion Capture Data. Presented at the *Annual Conference of the North American Association for Computational, Social, and Organizational Science*, Notre Dame, IN; June 22–23, 2006.
- Boker, S. M. (2006) Estimating Standard Errors in State Space Embedded Latent Differential Equations Models. Presented to the *Society for Multivariate Analysis in the Behavioral Sciences Annual Meeting*; Budapest, Hungary; July 2-5, 2006.
- Laurenceau, J.-P. & Boker, S. M. (2006) Intimacy Regulation in Marriage: A Dynamical Systems Approach. Presented to the *2006 International Association for Relationship Research Conference*; July 8, 2006.
- Boker, S. M. (2006) Symmetry Formation and Symmetry Breaking in Dyadic Interactions. Colloquium presented to the *Center for Lifespan Psychology, Max Planck Institute for Human Development*; June 27, 2006.
- Zentall, S. R., Boker, S. M. & Braungart-Riker, J. M. (2006) Mother–infant synchrony: A dynamical systems approach. Presented to the *Fifth International Conference on Development and Learning*; May 31–June 3, 2006.
- Boker, S. M. & Deboeck, P. R. (2006) Models of intersegmental coordination and control in a moving room. Presented to the *New England Sequencing and Timing Meeting*, New Haven, CT; March 11, 2006.
- Boker, S. M. (2006) Methods and Applications of Dynamical Systems Analysis. Colloquium presented to the Department of Psychology, University of Virginia; February 20, 2006.
- Boker, S. M. & Deboeck, P. R. (2005) Age–Related Differences in Postural Control: Multisegmental Dynamics in a Moving Room. Symposium talk presented to the *Annual Convention of the Gerontological Society of America*; November 21, 2005.
- Boker, S. M. & Spies, J. (2005) Age–related Differences in Time–Varying Coordination during Standing. Symposium talk presented to the *Annual Convention of the Gerontological Society of America*; November 22, 2005.
- Chow S.-M., Boker, S. M., Zu, J., & Fujita, F. (2005) Representing the Circumplex Structure of Emotions as Dynamical Systems Models. Poster presented at *XXV Dynamics Days Europe 2005*, Berlin, Germany; July 25-28, 2005.
- Zu, J., Chow S.-M., & Boker, S. M. (2005) The Effect of Number of Fourier Series Component on Power and Accuracy to Test Circumplex Structure. Poster presented at the *Annual Conference of the North American Association for Computational, Social, and Organizational Science*, Notre Dame, IN; June 26-28, 2005.
- Ashenfelter, K. T., Boker, S. M., & Waddell, J. L. (2005) Multifractal Scaling in Coordinated Head Movements during Dyadic Conversation. Poster presented at the *Annual Conference of the North American Association for Computational, Social, and Organizational Science*, Notre Dame, IN; June 26-28, 2005.

- Laurenceau, J-P. & Boker, S. M. (2005). Examining social and behavioral processes using diary methods: An overview and application of dynamical systems modeling. In T. A. Walls (Chair), *Diary Methods, Microgenetic Designs and Intensive Longitudinal Data Analysis*. Symposium talk presented at the *Annual Convention of the American Psychological Society*, Los Angeles, CA.
- Boker, S. M. (2004) Coupled Differential Equations Models of Disclosure between Spouses. *Society of Multivariate Experimental Psychology Annual Meeting*; Naples, Florida; October 23, 2004.
- Boker, S. M. & Tiberio, S. S.. (2004) Multivariate and Multilevel Coupled Models of Dynamical Systems. *Sixth International Conference on Logic and Methodology*; Amsterdam, The Netherlands, August 20, 2004.
- Boker, S. M. & Laurenceau, J.-P. (2004) Dynamical Systems Analysis of Dyadic Coupled Systems. *Society for Multivariate Analysis in the Behavioral Sciences Annual Meeting*; Jena, Germany; July 20, 2004.
- Boker, S. M. (2004) Some Models of Coordination in Conversation and Dance. *Center for Ecological Study of Perception and Action*; University of Connecticut; March 12, 2004.
- Boker, S. M., Deboeck, P. R. & Tiberio, S. (2004) Latent Differential Equations Models of Interpersonal Coordination in Dance. *New England Sequencing and Timing Meeting*; New Haven, Connecticut; March 13, 2004.
- Boker, S. M. & Laurenceau, J.-P. (2004) Coupled Dynamics in Context: Is There Moderation in All Things? *Modeling Developmental Processes in Ecological Context – A Merrill Center for Advanced Studies, NSF, & SMEP Sponsored Conference*; Phoenix, Arizona; March 5, 2004.
- Boker, S. M. (2004) Continuous change, dynamical metaphors, and statistical tests: A convergence of models of psychological regulation and embodied cognition. *University of Miami*; Miami, Florida; January 16, 2004.
- Boker, S. M. & Deboeck, P. R. (2003) Latent Differential Equations Models of Interpersonal Coordination During Dyadic Dance. *11th Herbstakademie: Dynamical Systems in Cognitive Science*; Ascona, Switzerland; October 21, 2003.
- Tiberio, S. & Boker, S. M. (2003) Estimating Dynamical Systems Model Parameters using Local Linear Regression. *11th Herbstakademie: Dynamical Systems in Cognitive Science*; Ascona, Switzerland; October 21, 2003.
- Boker, S. M. (2003) Differential Structural Equations Models and Application to Rapid Cycling Bipolar Disorder. *McGill University*; Montreal, Canada; October 11, 2003.
- Boker, S. M. & Deboeck, P. R. (2003) Dynamical Systems Models of Rapid Cycling Bipolar Disorder. *Society of Multivariate Experimental Psychology Annual Meeting*; Keystone, Colorado; September 18, 2003.

- Hegde, K. K., Boker, S. M., & Merluzzi, T. V. (2003) Floor Effects in the Sickness Impact Profile (SIP): Distributional Concerns in the “Gold Standard” of Health Status Measures. *American Psychological Association Annual Meeting*; Toronto, Canada; August, 2003.
- Boker, S. M. (2003) Continuous Time Dynamical Systems Data Analysis. *Pennsylvania State University Methodology Center*; State College, PA; June 2, 2003.
- Boker, S. M. (2003) Latent Differential Equations Modeling. *Notre Dame Series on Quantitative Methodology: Data Analytic Techniques for Dynamical Systems*; University of Notre Dame; May 30, 2003.
- Maxwell, S. E. & Boker, S. M. (2003) Multilevel Models of Dynamical Systems. *Notre Dame Series on Quantitative Methodology: Data Analytic Techniques for Dynamical Systems*; University of Notre Dame; May 31, 2003.
- Boker, S. M. (2003) Coordination and segmentation in conversation and dance. *RIKEN Brain Science Institute Forum*; Tokyo, Japan; May 18, 2003.
- Boker, S. M. (2003) Latent Differential Equations Modeling. *Max Planck Institute for Human Development*; Berlin, Germany; March 13, 2003.
- Boker, S. M. (2003) Multivariate Latent Differential Equations Modeling. *Max Planck Institute for Physics of Complex Systems*; Dresden, Germany; March 19, 2003.
- Boker, S. M. & Covey, E. S. (2002) Two recent advances in estimating and testing differential equations models. *Society of Multivariate Experimental Psychology Annual Meeting*; Charlottesville, VA; October 2002.
- Bisconti, T. L., Bergeman, C. S., & Boker, S. M. (2002) Adjustment to widowhood: A dynamical systems approach to emotion regulation. *American Psychological Association Annual Meeting*; Chicago, IL; August 2002.
- Covey, E. S., & Boker, S. M. (2002) Assessing significance in linear oscillator models. *Society for Mathematical Psychology Annual Meeting*; Miami University, Oxford, OH; July 2002.
- Boker, S. M., Neale, M. C. & Rausch, J. R (2002) Dynamical Systems Estimation Using Latent Differential Equation Modeling with Multivariate Multi-Occasion Indicators. *Society for Multivariate Analysis in the Behavioral Sciences Annual Meeting*; Tilburg, The Netherlands; July 3, 2002.
- Boker, S. M.(2002) Linear Differential Equation Models of Short and Long Term Dynamics Applied to Longitudinal Aging Data. *Notre Dame Series on Quantitative Methodology: Quantitative Methodology in Aging Research*; Notre Dame, Indiana; May 31, 2002.
- Boker, S. M. & Neale, M. C. (2002) Dynamical Systems Models and Twin Data. *Genetics, Behavior and Aging Meeting*; National Institute on Aging, Bethesda, MD, March 29, 2002.
- Boker, S. M. (2002) Latent Differential Equations Modeling with Multivariate Multi-Occasion Indicators. *Statistics Department Colloquium*; The Pennsylvania State University, State College, PA, February 21, 2002.

- Boker, S. M. (2002) Differential Equations Models of Self-Regulating Behavior: Factor Invariance and Dynamic Invariance. *Gerontology Center Colloquium*; The Pennsylvania State University, State College, PA, February 20, 2002.
- Boker, S. M. (2001) Consequences of Continuity: The Hunt for Intrinsic Properties within Parameters of Dynamics in Psychological Processes (Cattell Award Address). *Society of Multivariate Experimental Psychology Annual Meeting*; Monterey, CA, October 13, 2001.
- Boker, S. M. & Bisconti, T. L. (2001) Dynamical Systems Models for Self-Regulatory Psychological Processes. *Psychometric Society Annual Meeting*; Valley Forge, PA, June 23, 2001.
- Boker, S. M. (2001) Nonstationarity in the Coordination of Movements during Dyadic Dance and Conversation. *Colloquium*; Max Planck Institute for the Physics of Complex Systems, April 26, 2001.
- Boker, S. M. (2001) Postural Stabilization: Monolithic or Coupled Control Systems? *Austrian Society for Cognitive Science Colloquium Series*; University of Vienna, April 24, 2001.
- Boker, S. M. (2001) Dynamical Systems Modeling of Self Regulation. *Workshop*; Wayne State University, Department of Psychology, February 22, 2001.
- Boker, S. M. (2000) Methods for Estimating the Complexity of Systems in Gerontological Data: From Long Time Series to Mixed Cross-sectional / Longitudinal Designs. *Gerontological Society of America Annual Meeting*; Washington, DC, November 18, 2000.
- Boker, S. M. (2000) Age-based Changes in Stability and Coordination between Body Segments in Visually Informed Postural Stabilization. *Gerontological Society of America Annual Meeting*, Washington, DC, November 18, 2000.
- Boker, S. M. & Xu, M. (2000) Modeling multilimb coordination in unstructured dance as a perception-action system. *Society for Music Perception and Cognition*, Montreal Canada, November 3, 2000.
- Boker, S. M. (2000) A Mixed Model Dynamical Systems Approach to Longitudinal Data. *Society of Multivariate Experimental Psychology*, Saratoga Springs, NY, October 19, 2000.
- Boker, S. M. & Nesselroade, J. R. (2000) Multilevel Modeling of Dynamical Systems: Random Coefficients and Order Parameters. *Fifth International Conference on Logic and Methodology*, Cologne Germany, October 5, 2000.
- Boker, S. M. & Maxwell, S. E. (2000) NCAA Initial-Eligibility Rules and Changes in Prospective Student-Athlete Academic Performance. *Symposium on Large-Scale Longitudinal Studies of College Student-Athlete Academic and Social Development*, American Psychological Association Annual Convention, Washington DC, August 7, 2000.
- Xu, M., Rotondo, J. L. & Boker, S. M. (2000) A Peak Picking Method for the Analysis of Interpersonal Coordination in Conversation. *Annual Meeting of the Society for Mathematical Psychology*, Kingston Ontario, August 10, 2000.

- Boker, S. M. & *Rotondo, J. L.* (2000) Symmetry Building and Symmetry Breaking in Synchronized Movement. *Mirror Neurons and the Evolution of Brain and Language*, Delmenhorst, Germany, July 5–8, 2000.
- Rotondo, J. L.* & Boker, S. M. (2000) Behavioral Synchronization in Human Conversational Interaction. *Mirror Neurons and the Evolution of Brain and Language*, Delmenhorst, Germany, July 5–8, 2000.
- Boker, S. M. (2000) Age Related Differences in Head-Trunk Coordination During Visually Informed Posture Stabilization. *Max Planck Institute for Human Development*, Berlin Germany, May 22, 2000.
- Boker, S. M. (2000) Nonlinear Dependency in Head-Trunk Coordination during Posture Stabilization as a Function of Distance to Visual Target. *Dynamics and Statistics of Complex Systems*, Dresden Germany, May 18, 2000.
- Boker, S. M. (2000) Perception–Action, Environment, and Cognition: A Dynamic Middle Ground Between Internal and External States *Cognitive Science Group*, University of Notre Dame, April 28, 2000.
- Boker, S. M. (2000) Differential Structural Modeling of Mixed Cross–Sectional and Longitudinal Data. *Quantitative Workshop*, University of Southern California, April 21, 2000.
- Boker, S. M., *Rotondo, J. L.* & *Parker, D. R.* (2000) Coordination of Body Segments in Visually Guided Postural Control. *New England Sequencing and Timing Annual Meeting*, New Haven CT, March 4, 2000.
- Parker, D. R.* & Boker, S. M. (2000) A Dynamical Measure of Behavioral Coordination in Self–Monitors. *Annual Meeting of the Society for Personality and Social Psychology*, Nashville, TN, February 5, 2000.
- Boker, S. M. & *Parker, D. R.* (1999) Perceptual Segmentation of Auditory Rhythms and the Coordination of Limb Segments during Unstructured Dance. *Society for Music Perception and Cognition Annual Meeting*, Evanston IL, August 16, 1999.
- McArdle, J. J. & Boker, S. M. (1999) Contemporary Statistical Models for Examining Test Bias. *American Psychological Society Annual Meeting*, Denver CO, June 5, 1999.
- Rotondo, J.* & Boker, S. M. (1999) Analysis of coordinated head movement in mixed– and same–sex dyadic communication. *New England Sequencing and Timing Annual Meeting*, Providence RI, March 7, 1999.
- Boker, S. M. (1998) Age-Based Comparisons of Nonlinear Dependency in Postural Control. *Annual Meeting of the Gerontological Society*, Philadelphia PA, November 22, 1998.
- Boker, S. M. (1998) Nonlinear Analysis and Differential Modeling of Behavioral Time Series. *New Methods for the Analysis of Change*, State College PA, October 12, 1998.

- McArdle, & Boker, S. M. (1998) College Academic Eligibility of NCAA Student–Athlete Recruits from Different Ethnic and Family Income Groups. *Annual Meeting of the American Sociological Society*, San Francisco CA, August 25, 1998.
- Boker, S. M. & Graham, J. (1998). A Dynamical Systems Analysis of Adolescent Substance Abuse *Annual Meeting of the Society for Prevention Research*; Park City, Utah; June 4, 1998.
- Boker, S. M. (1998) A Method for Modeling Self–Regulation in Intraindividual Variability. *Penn State Genetics and Dynamical Systems Workshop*, State College PA, May 29, 1998.
- Boker, S. M. (1998). Differential Structural Equation Models of Postural Control. *New England Sequencing and Timing Annual Meeting*, Providence RI, March 7, 1998.
- Boker, S. M. & Nesselroade, J. R. (1997). A Method for Modeling the Intrinsic Dynamics of Intraindividual Variability: Recovering the Parameters of Simulated Oscillators in Multi–Wave Panel Data. *MacArthur Methodology Meeting*, Palo Alto CA, September 12, 1997.
- Boker, S. M. (1997). Using the Internet and the World Wide Web for Archiving Psychological Data. *Symposium on Data Archiving in Psychology, American Psychological Association Annual Convention*, Chicago IL, August 16, 1997.
- Boker, S. M. (1997). Coupling Between Head Position and Center of Pressure in Visually Guided Quiet Stance. *New England Sequencing and Timing Annual Meeting*, Providence RI, March 8, 1997.
- Boker, S. M. (1996). Collecting data using electronic databases: Heterogeneous distributed data, meta-databases, search agents and the World Wide Web. *Federation of Behavioral, Psychological and Cognitive Sciences Forum on Research Management*, Washington DC, October 11, 1996.
- Boker, S. M. (1996). Perception of Segmentation in Sequences. *New England Sequencing and Timing Annual Meeting*, Providence, RI, March 1996.
- Boker, S. M. & Bertenthal, B. I. (1995). Nonlinear Analyses of Postural Development using False Nearest Neighbors. *Nonlinear Techniques in Physiological Time Series Analysis*, Dresden, Germany, October 26, 1995.
- McArdle, J. J., Hamagami, F. & Boker, S. M. (1995) A Dynamical Systems Analysis of Gf and Gc. *Society of Multivariate Experimental Psychologists Annual Meeting*, Portland, Oregon, October 19, 1995.
- Boker, S. M. & Kubovy, M. (1995). Individual Differences in the Perceptual Segmentation of Auditory Rhythmic Sequences. *International Joint Conference on Artificial Intelligence Workshop on Music and Artificial Intelligence*, Montreal, Canada, August 21, 1995.
- Boker, S. M. (1995). Predicting the Grouping of Rhythmic Sequences using Local Estimators of Information Content. *International Joint Conference on Artificial Intelligence Workshop on Computational Auditory Scene Analysis*, Montreal, Canada, August 19–20, 1995.

- Nesselroade, J. R. & Boker, S. M. (1995). Dynamical Systems Models for Intraindividual Variability in Health and Cognitive Performance. *European Congress on Psychology*, Athens, Greece: July 2, 1995.
- Nesselroade, J. R. & Boker, S. M. (1995). A Dynamical Systems Model of Coupling Between Lung Functioning and Memory in Older Adults. *American Psychological Society Annual Meeting*, New York, June 30, 1995.
- Boker, S. M. & Nesselroade, J. R. (1995). Short term dynamic modeling of health and cognitive processes in a sample of elderly subjects. *University of Virginia 1995 Symposium on Dynamical Systems in Psychology and Biology*, Charlottesville, VA, June 26, 1995.
- Bertenthal, B., Rose, J. & Boker, S. M. (1995). Dynamical Analyses of Postural Development. *The Annual Meeting of the North American Society for the Psychology of Sport and Physical Activity*, Monterey, CA, June 16–18, 1995.
- Bertenthal, B. I., Boker, S. M. & Rose, J. L. (1995). Dynamical analyses of postural development. *Journal of Sport & Exercise Psychology*, **17**:8.
- Kinzie, M. B., Larsen, V. A., Burch, J. B., & Boker, S. M. (1995). Net-Frog: Using the WWW to Learn About Frog Dissection and Anatomy. *Internet Society Annual Meeting (INET-95)*, Honolulu, HI, June 1995.
- Boker, S. M. (1995). How well-adapted is color vision to the spectral environment?. *University of Virginia Department of Psychology Cognitive Area Spring Conference*, Charlottesville, VA, March 24, 1995.
- Boker, S. M. (1995). The Perception of Structure in Simple Auditory Sequences. *New England Sequencing and Timing Annual Meeting*, Providence, RI, March 1995.
- McArdle, J.J. & Boker, S. M. (1994). Large Scale Databases for Convergent Analyses. *Society of Multivariate Experimental Psychologists Annual Meeting*, Princeton, NJ, October 1994.
- McArdle, J.J., Boker, S.M. & Hamagami, F. (1994). A Dynamic Structural Analysis of Gf and Gc. Poster for *Human Cognitive Abilities Conference*, Charlottesville, VA: September 1994.

CLASSROOM TEACHING

Multivariate Analysis (Psyc 7760) University of Virginia, Fall 2010

Structural Equation Modeling (Psyc 8559–001) University of Virginia. Fall 2008, Spring 2010, Spring 2011.

Dynamical Systems Analysis for Psychological Data (Psyc 8559–001) University of Virginia. Spring 2007, Fall 2009, Fall 2011.

Design and Data Analysis (Psyc 797) University of Virginia. Spring 2008–2010.

Exploratory and Graphical Analysis of Data (Psyc 881) University of Virginia. Fall 2007

Multivariate Analysis (Psyc 607) University of Notre Dame, Fall 1997–2006

Dynamical Systems Analysis for Psychological Data (Psyc 611 and 345) University of Notre Dame. Spring 1997, 1999; Fall 2001, 2003, 2005

Exploratory and Graphical Data Analysis (Psyc 506 and 344) University of Notre Dame. Spring 2000, Fall 2002, 2004, 2006.

Quantitative Minor (Psyc 510) University of Notre Dame, Spring 2005.

Quantitative Studies Group (Psyc 701) University of Notre Dame, Spring and/or Fall 1996–2005.

Introduction to Artificial Neural Networks (Psyc 614) University of Notre Dame Spring 2002.

Psychology Department Statistical Consultant University of Notre Dame. 1997–1999, Fall 2001.

Introduction to Statistics for Psychology (Psyc 341) University of Notre Dame, Spring 1998

Multivariate Statistics and Structural Modeling for Cognitive Science RIKEN Brain Science Institute, Tokyo. Spring 2003

WORKSHOPS

New Methods for Conceptualizing, Analyzing, and Visualizing Dyadic Data Within and Across Persons Zurich Summer School, University of Zurich, Switzerland, August 10–12, 2011.

Structural Equation Modeling with OpenMx Society for Multivariate Experimental Psychology Annual Meeting, October 1, 2010.

Introduction to Dynamical Systems Analysis Zurich Summer School, University of Zurich, Switzerland, August 19, 2010.

Structural Equation Modeling with OpenMx LIFE Academy, University of Virginia, Charlottesville, VA; May 13–17, 2010.

Structural Equation Modeling with OpenMx Psychometric Society Annual Meeting; July 6, 2010.

Structural Equation Modeling with OpenMx University of Minnesota, Minneapolis, MN; April 1, 2010.

The 2010 International Workshop on Statistical Genetics and Methodology of Twin and Family Studies: The Introductory Course University of Colorado, Boulder, CO; March 1–5, 2010 (one of 20 faculty).

- American Psychological Association Advanced Training Institute** *Structural Equation Modeling in Longitudinal Research*; University of Virginia, Charlottesville, VA; June 9–13, 2008 (one of four faculty).
- American Psychological Association Advanced Training Institute** *Structural Equation Modeling in Longitudinal Research*; University of Virginia, Charlottesville, VA; June 13–17, 2005 (one of four faculty).
- Longitudinal Research Institute** *Longitudinal Methods, Measurement & Models*; University of Michigan, Ann Arbor, MI; May 18–21, 2004 (one of five faculty).
- American Psychological Association Advanced Training Institute** *Longitudinal Methods, Modeling, and Measurement in Contemporary Psychological Research*; University of Virginia, Charlottesville, VA; June 3–7, 2003 (one of five faculty).
- American Psychological Association Advanced Training Institute** *Longitudinal Methods, Modeling, and Measurement in Contemporary Psychological Research*; University of Virginia, Charlottesville, VA; June 10–15, 2002 (one of five faculty).
- Longitudinal Research Institute** *Longitudinal Methods, Measurement & Models*; University of Virginia, Charlottesville, VA; June 18–21, 2002 (one of five faculty).
- Mixed Models for Gerontological Research** Preconference Workshop, *2001 Gerontological Society of America Annual Meeting*, Chicago; November 2001 (co-taught with S. E. Maxwell).
- Dynamical Systems Seminar** University of Virginia, Fall & Spring, 1992–1993, Spring 1995.
- Artificial Neural Networks Seminar** University of Virginia, Fall, 1994.
- Applied Structural Equation Modeling** University of Southern California, May 1995 (workshop co-taught with J. J. McArdle).
- Methodology of Twin, Family and Adoption Studies** University of Helsinki, September 1995 (one of 11 workshop faculty).

MENTORING

Master's Thesis/Prediss Direction and Co-Direction

- Geneva Dodson, (in progress)
- Yueqin Hu, (in progress)
- Michael Hunter, 2011
- Jeffrey Spies, 2008
- Timothy Brick, 2007
- Pascal Deboeck, 2005

- Stacey Tiberio, 2004
- Eric Covey, 2002
- David Parker, 1999

Ph.D. Dissertation Direction and Co-Direction

- Timothy Brick, 2011
- Kathleen Ashenfelter, 2007
- Pascal Deboeck, 2007
- Eric Covey, 2007
- Joseph Rausch, 2006
- Jennifer Rotondo Waddell, 2000

Postdoctoral Fellow Supervision

- Angela Staples (2010–present)
- Guangjian Zhang (2005–2006)
- Michael Mangini (2004–2006)

Quantitative Minor Direction

- Jennifer Rotondo, 2000
- Melissa Sturge-Apple, 2002

Distinguished Major Direction

- Alicia Grove, 2011

AD HOC REVIEWER

Journals *Psychometrika*; *Journal of Mathematical Psychology*; *Cognitive Science*; *Journal of Gerontology: Psychological Sciences*; *Psychological Methods*; *Scandinavian Journal of Psychology*; *Multivariate Behavioral Research*; *Ecological Psychology*; *Psychological Review*; *Journal of Educational Psychology*; *Behavior Research Methods, Instruments, & Computers*; *Journal of Experimental Psychology: Human Perception & Performance*; *Structural Equation Modeling*; *PLoS ONE*; .

Funding Agencies National Institute on Aging; National Institute on Child and Human Development; National Science Foundation; Netherlands Organisation for Scientific Research; Research Foundation Flanders; South Carolina Commission on Higher Education.

Conferences International Conference on Affective Computing and Intelligent Interaction.

PAST AND CURRENT PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Sciences (AAAS), American Mathematical Society (AMS), American Psychological Association (APA), American Psychological Society (APS), American Statistical Association (ASA), Association for Computing Machinery (ACM), Audio Engineering Society (AES), Institute of Electrical and Electronic Engineers (IEEE), International Neural Network Society (INNS), Society for Mathematical Psychology (SMP), Society of Multivariate Experimental Psychology (SMEP), Society for Music Perception and Cognition (SMPC).