Joshua N. Pritikin

Education

2014–2016 **Ph.D. Psychology**, *University of Virginia*, Charlottesville, VA (advisers Steven Boker and Timo von Oertzen).

Topic: *Unbelievably fast estimation of nested multilevel structural equation models*

2011–2013 **M.A. Psychology**, *University of Virginia*, Charlottesville, VA (advisers Steven Boker, Karen Schmidt, and Timo von Oertzen).

Topic: *Item Factor Analysis: A primer and new open-source implementation*

2007–2009 **B.S. Psychology**, *University of Oregon*, Eugene, OR.

Awards and Honors

2018-2019 Lindon J. Eaves Award for Excellence in Post-Doctoral Research $500

2014-2015 Developing Students for Leadership in Data-intensive Research and Innovation from The Jefferson Trust $20,000

2008-2009 Osher Reentry scholarship $4500

Grants, Submitted

2020 NSF Convergence Accelerator: Reinventing the Data Value Proposition: Personal Data Ownership using Distributed Private Analysis and Targeted Feedback. PI: Brick, Role: key personnel

2020 Polygenic Gene-Environment Interactions for Smoking Initiation and Cessation: Improving Prediction and Understanding Mechanisms. PI: Verhulst, Role: key personnel

Publications

Pritikin, J. N., & Falk, C. F. (in press). OpenMx: A modular research environment for item response theory methods development. *Applied Psychological Measurement*.

Pritikin, J. N., Schmitt, J. E., & Neale, M. C. (2019). Cloud computing for voxel-wise SEM analysis of MRI data. *Structural Equation Modeling: A Multidisciplinary Journal*, *26*(3), 470–480. https://doi.org/10.1080/10705511.2018.1521285

Schmitt, J. E., Neale, M. C., Clasen, L. S., Liu, S., Seidlitz, J., Pritikin, J. N., Chu, A., Wallace, G. L., Lee, N. R., Giedd, J. N., & Raznahan, A. (2019). A comprehensive quantitative genetic analysis of cerebral surface area in youth. *Journal of Neuroscience*, *39*(16), 3028–3040. https://doi.org/10.1523/JNEUROSCI.2248-18.2019

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Schmitt, J. E., Raznahan, A., Clasen, L. S., Wallace, G. L., Pritikin, J. N., Lee, N. R., Giedd, J. N., & Neale, M. C. (2019). The dynamic associations between cortical thickness and general intelligence are genetically-mediated. *Cerebral Cortex*, 1–10. https://doi.org/10.1093/cercor/bhz007

Falk, C. F., & Pritikin, J. N. (2018). Computer programming in quantitative analysis. In B. Frey (Ed.), *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation* (1:335–1:339). SAGE.

Pritikin, J. N., Brick, T. R., & Neale, M. C. (2018). Multivariate normal maximum likelihood with both ordinal and continuous variables, and data missing at random. *Behavior Research Methods*, *50*(2), 395–401. https://doi.org/10.3758/s13428-017-1011-6

Pritikin, J. N. (2017). A comparison of parameter covariance estimation methods for item response models in an expectation-maximization framework. *Cogent Psychology*, *4*(1), 1279435. https://doi.org/10.1080/23311908.2017.1279435

Pritikin, J. N., Hunter, M. D., von Oertzen, T., Brick, T. R., & Boker, S. M. (2017). Many-level multilevel structural equation modeling: An efficient evaluation strategy. *Structural Equation Modeling: A Multidisciplinary Journal*, *24*(5), 684–698. https://doi.org/10.1080/10705511.2017.1293542

Pritikin, J. N., Rappaport, L. M., & Neale, M. C. (2017). Likelihood-based confidence intervals for a parameter with an upper or lower bound. *Structural Equation Modeling: A Multidisciplinary Journal*, *24*(3), 395–401. https://doi.org/10.1080/10705511.2016.1275969

Neale, M. C., Hunter, M. D., Pritikin, J. N., Zahery, M., Brick, T. R., Kirkpatrick, R., Estabrook, R., Bates, T. C., Maes, H., & Boker, S. M. (2016). OpenMx 2.0: Extended structural equation and statistical modeling. *Psychometrika*, *81*(2), 535–549. https://doi.org/10.1007/s11336-014-9435-8

Pritikin, J. N. (2016). A computational note on the application of the Supplemented EM algorithm to item response models. *arXiv preprint arXiv:1605.00860*arXiv 1605.00860.

Pritikin, J. N., & Schmidt, K. M. (2016). Model builder for Item Factor Analysis with OpenMx. *R Journal*, *8*(1), 182–203.

Boker, S. M., Brick, T. R., Pritikin, J. N., Wang, Y., von Oertzen, T., Brown, D., Lach, J., Estabrook, R., Hunter, M. D., Maes, H. H., & Neale, M. C. (2015). Maintained individual data distributed likelihood estimation. *Multivariate Behavioral Research*, *50*(6), 706–720. https://doi.org/10.1080/00273171.2015.1094387

Kelly, G., Mobbs, S., Pritikin, J. N., Mayston, M., Mather, M., Rosenbaum, P., Henderson, R., & Forsyth, R. (2015). Gross motor function measure-66 trajectories in children recovering after severe acquired brain injury. *Developmental Medicine and Child Neurology*, *57*(3), 241–247. https://doi.org/10.1111/dmcn.12592

Pritikin, J. N., Hunter, M. D., & Boker, S. M. (2015). Modular open-source software for Item Factor Analysis. *Educational and Psychological Measurement*, *75*(3), 458–474. https://doi.org/10.1177/0013164414554615

Pritikin, J. N., & Schmidt, K. (2013). A self-report measure for familiarity with mental silence. In W. v. Moer, D. A. Çelik, & J. L. Hochheimer (Eds.), *Spirituality in the 21st century: Journeys beyond Entrenched Boundaries* (pp. 23–31). Inter-Disciplinary Press.

Pritikin, J. N. (2007). We ought to characterize dyadic prospects. In *International Conference on Affective Computing and Intelligent Interaction: Doctoral Consortium*.

In Process

Brick, T. R., & Pritikin, J. N. (in preparation). Regularized structural equation modeling.

Hendriks, T., Pritikin, J. N., & Choudhary, R. (in preparation). Character strengths and virtues in long-term meditation practitioners: A cross-sectional survey.

Hunter, M. D., & Pritikin, J. N. (in preparation). Extended ordinal variable standardization in weighted least squares modeling.

Kirkpatrick, R. M., Hunter, M. D., Pritikin, J. N., & Neale, M. C. (in preparation). Combining structural equation modeling with genomic-relatedness-matrix restricted maximum likelihood in OpenMx.

McKee, K. L., Pritikin, J. N., Kirkpatrick, R. M., & Hanlon, A. L. (submitted). Discrete marginal distributions for count variables in structural equation models.

Neale, M. C., & Pritikin, J. N. (in preparation). Variance components of neuroimaging, cognitive, psychological and behavioral assessments in ABCD 2.0.

Pritikin, J. N. (submitted). An exploratory factor model with ordinal paired comparison indicators.

Pritikin, J. N., & Schmidt, K. M. (in preparation). Initial map of physical activity flow propensities.

Pritikin, J. N., Verhulst, B., & Neale, M. C. (submitted). Genome-wide structural equation modeling revisited.

Verhulst, B., Pritikin, J. N., Clifford, J., & Prom-Wormley, E. (submitted). Using genetic marginal effects to study gene-environment interactions with GWAS data.

Grants, Not Funded

2020 Synthesizing structural equation modeling from classical biometrical genetics with modern statistical methods for genome-wide genotype array & sequence data. PI: Kirkpatrick, Role: key personnel

2020 State Space Neuroscience Methodologies for OpenMx. PI: Hunter, Role: key personnel

2019 Integrating Genome-Wide Analyses and Structural Equation Modeling to analyze the genetic associations with substance use phenotypes. PI: Verhulst, Role: key personnel

2018 Analysis of Big Data with Multivariate Statistics in Social and Behavioural Sciences. PI: Cheung, Role: key personnel

Misc. Teaching Experience

2020 Mar International Behavioral Genetics Workshop. Boulder, CO

2019 Mar International Behavioral Genetics Workshop. Boulder, CO

2018 Fall Statistics for Genetic Studies I. Richmond, VA

2018 Jan Introduction to R. National University of Singapore, Singapore

2017 Fall Statistics for Genetic Studies I. Richmond, VA

2017 Oct Advanced Genetic Epidemiology Statistical Workshop. Richmond, VA

2015 Oct Advanced Genetic Epidemiology Statistical Workshop: Applications to Drug Abuse. Richmond, VA

Conference Presentations

2020 Jan Brad Verhulst, Joshua Pritikin, Shaunna Clark, & Michael C. Neale. *Analyzing latent propensities to addictive behaviors in a multivariate GWAS framework using GW-SEM. 2020 Genetics and Epigenetics Cross-Cutting Research Team (GECCRT) Meeting.* Bethesda, MD.

2019 Oct Brad Verhulst, Joshua Pritikin, Shaunna Clark, Michael Neal, & John M. Hettema. *Using Structural Equation Modeling (SEM) Methods to Examine Genome-Wide Associations with a Latent Recent Depression Factor and Item-Specific Residuals. 27th Annual World Congress of Psychiatric Genetics.* Anaheim, CA.

2019 Oct Brad Verhulst, Shaunna Clark, Joshua Pritikin, Michael Neale, & Elizabeth Prom-Wormley. *Using Polygenic Methods to Detect Gene-by-Sex Interactions for Smoking Initiation American Society for Human Genetics Annual Meeting.* Houston, TX.

2019 Jun Brad Verhulst, Joshua Pritikin, Shaunna Clark, Michael Neale, & Elizabeth Prom-Wormley. *Developing Polygenic Gene-Environment Interaction Models. 49th Annual Meeting of the Behavior Genetics Association.* Stockholm, Sweden.

2017 May 27 *Bayesian model for characteristics of physical activities.* APS, Boston, MA

2017 May 23 *Toward multilevel variance decomposition of interactions in non-linear structural equation models.* Modern Modeling Methods, University of Connecticut, CT

2016 Jul 15 *Multilevel structural equation model rotation.* International Meeting of the Psychometric Society, Asheville, NC

2016 May 25 *Introduction to Relational SEM and an Efficient Computational Strategy for Relational SEM.* Modern Modeling Methods, University of Connecticut, CT

2015 Mar 23 *Statistical Modeling Without Seeing the Data.* 2015 Huskey Research Exhibition, University of Virginia, VA

2015 Feb 21 *Modern Test Theory Primer.* Workshop taught at The 5th International Symposium on Assessment in Music Education, Williamsburg, VA

2013 Mar 08 *A self-report measure for familiarity with mental silence.* Paper presented at The 3rd Global Conference on Spirituality in the 21st Century: Theory, Praxis and Pedagogy, Lisbon, Portugal.

Positions

2016-present **Postdoctoral Fellow**, *Virginia Commonwealth University*.

2015-2016 **Research Assistant**, *University of Virginia*, OpenMx Project.

2013-2014 **Teaching Assistant**, *University of Virginia*.
Undergraduate Advanced Research Methods & Data Analysis series (4005, 4006).
Undergraduate Introduction to Statistics for Psychology Majors (3006).

2011-2012 **Grader**, *University of Virginia*.
Undergraduate Introduction to Statistics for Psychology Majors series (3005, 3006).

2009–2011 **Software Engineer**, *Palo Alto Software*, Eugene, OR.
Worked on two products: Email management for customer service teams and LivePlan business planning software (Java, cloud computing).

2002–2006 **Husband/Father**, Nashik, India.
Spent a lot of time thinking about what I wanted to do with my life.

1996–2001 **Software Engineer**, *NatWest/Deutsche Bank*, New York City, NY.
Developed equities program trading system (Qt, Perl, C++, ObjectStore).

1993–1995 **Software Engineer**, *Various Companies*, New York City, NY.

1990–1992 **Undergraduate Student**, *Carnegie Mellon University*, Pittsburgh, PA.
Math/Computer Science Major

Department Presentations

2020 Feb 27 Genome-Wide Structural Equation Modeling

2019 May 30 A Factor Model with Paired Comparison Indicators

2016 Dec 08 Confidence intervals for a parameter with an upper or lower bound

2016 Mar 17 Fast estimation of multilevel structural equation models

2015 Apr 16 Arne's transient hypofrontality hypothesis: A bridge between flow and meditation

2014 Oct 16 Examination of the likelihood function by simulation of a fictional Hamiltonian system

2014 Mar 27 Numeric derivatives: Pushing the accuracy limits

2013 Oct 17 Item Factor Analysis: Everything I told you in the spring was wrong, and current status

2013 Mar 28 A new implementation of Item Factor Analysis: Accuracy, flexibility, and speed

2012 Nov 01 Navigating the bowels of Marginal Maximum Likelihood: An expectation-maximization Item Response Theory estimation algorithm

2012 Apr 19 Is there a link between flow and meditation?

2011 Dec 05 Oscillation around non-stationary equilibria

Manuscripts Reviewed For

African Journal of Business Management

Cogent Business & Management

Cogent Education

Cogent Mathematics & Statistics

Cogent Medicine

Cogent Psychology

Cogent Social Science

Frontiers in Applied Mathematics and Statistics (Quant. Psychology and Measurement)

Frontiers in Human Neuroscience (Application of Neural Technology to Neuro-Management and Neuro-Marketing)

Frontiers in Psychology (Quant. Psychology and Measurement)

Journal of Happiness Studies

Journal of Intelligence

Structural Equation Modeling: A Multidisciplinary Journal

Popular Press

Bartz, A. (2018). Into the flow. *Cadillac Magazine*, *5*(1), 42–45.

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