

# Joshua N. Pritikin

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## 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.

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## 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

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## Grants, Submitted

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

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## Publications

- Kirkpatrick, R. M., Hunter, M. D., Pritikin, J. N., & Neale, M. C. (in press). Combining structural equation modeling with genomic-relatedness-matrix restricted maximum likelihood in OpenMx. *Behavior Genetics*.
- Pritikin, J. N., Neale, M. C., Prom-Wormley, E., Clark, S. L., & Verhulst, B. (in press). GW-SEM 2.0: Efficient, flexible and accessible multivariate GWAS. <https://doi.org/10.1007/s10519-021-10043-1>
- Pritikin, J. N. (2020). An exploratory factor model with ordinal paired comparison indicators. *Heliyon*, 6(9), e04821. <https://doi.org/10.1016/j.heliyon.2020.e04821>
- Pritikin, J. N., & Falk, C. F. (2020). OpenMx: A modular research environment for item response theory methods development. *Applied Psychological Measurement*, 44(7–8), 561–562. <https://doi.org/10.1177/0146621620929431>
- 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>

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- 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>
- 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>

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- 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.
- 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., & Schmidt, K. M. (in preparation). Initial map of physical activity flow propensities.
- 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 NSF Convergence Accelerator: Reinventing the Data Value Proposition: Personal Data Ownership using Distributed Private Analysis and Targeted Feedback. PI: Brick, Role: key personnel
- 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 Fall Statistics for Genetic Studies I. Richmond, VA
- 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

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- 2017 Oct Advanced Genetic Epidemiology Statistical Workshop. Richmond, VA
- 2015 Oct Advanced Genetic Epidemiology Statistical Workshop: Applications to Drug Abuse. Richmond, VA

## Conference Presentations

- 2021 Feb Alexandra Hanlon, Robert Kirkpatrick, Kevin McKee, & Joshua Pritikin. *Structural Equation Modeling with Count Variables*. 2021 ASA Conference on Statistical Practice. Online.
- 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.

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- 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  
Behavior Genetics  
Behavior Research Methods  
Cogent Business & Management  
Cogent Education

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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  
MDPI Psych  
Structural Equation Modeling: A Multidisciplinary Journal

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## Popular Press

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

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