

JONATHAN J. PARK

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029 Department of Health and Human Development

State College, PA 16801

EDUCATION

The Pennsylvania State University

Department of Human Development and Family Studies

Quantitative Methodology - Dynamic Network Analysis

August 2018 - Present

Doctor of Philosophy

The California State University, Fullerton

Department of Psychology

Quantitative Psychology - Item Response Theory & Measurement

August 2015 - May 2017

Master of Arts

The California State University, Fullerton

Department of Psychology

August 2011 - May 2015

Bachelor of Arts

PEER-REVIEWED PUBLICATIONS & BOOK CHAPTERS

Published

1. **Park, J. J.**, Chow, S. M., Epskamp, S., & Molenaar, P. (Accepted, Oct. 2023). Subgrouping with chain graphical VAR models. *Multivariate Behavioral Research*, Preprint: [10.31234/osf.io/u3ve8](https://doi.org/10.31234/osf.io/u3ve8)
2. **Park, J. J.**, Chow, S. M., & Molenaar, P. C. M. (Accepted, Aug. 2023). What the Fuzz: Leveraging ambiguity in dynamic network models. In M. Stemmler (Ed.), *Dependent data in social sciences research*. Springer, Cham. Preprint: [10.31234/osf.io/ehtkf](https://doi.org/10.31234/osf.io/ehtkf)
3. Chow, S. M., Lee, J., **Park, J. J.**, Kuruppumullage P. D., Hammel, T., Hallquist, M., Nord, E., Oravec, Z., Perry, H., Ram, N., Lesser, L., & Pearl, D. (Accepted pending minor revisions, Sept. 2023). Designing and sustaining personalized education through individualized pathways and resources to adaptive control theory-inspired scientific education (iPRACTISE). *Journal of Statistics and Data Science Education*
4. **Park, J. J.**, Fisher, Z. F., Chow, S. M., & Molenaar, P. C. (2023). Evaluating discrete time methods for subgrouping continuous processes. *Multivariate Behavioral Research*, 1-13. <https://doi.org/10.1080/00273171.2023.2235685>
5. **Park, J. J.**, Fisher, Z. F., Chow, S. M., & Molenaar, P. C. (2023). On subgrouping continuous processes in discrete time. *Multivariate Behavioral Research*, 58(1), 154-155. <https://doi.org/10.1080/00273171.2022.2160957>
Abstract published by the Society of Multivariate Experimental Psychology
6. Chow, S. M., Losardo, D., **Park, J.**, & Molenaar, P. C. M. (2022). Continuous-time dynamic models: Connections to structural equation models and other discrete-time models. Structural equation modeling: Concepts, issues, and applications. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications*. New York: Guilford.
7. **Park, J. J.**, Chow, S. M., Fisher, Z. F., & Molenaar, P. (2020). Affect and personality: Ramifications of modeling (non-)directionality in dynamic network models. *European Journal of Psychological Assessment*, 36(6), 1009-1023. <https://doi.org/10.1027/1015-5759/a000612>
8. Preston, K. S. J., Gottfried, A. W., **Park, J. J.**, Manapat, P. D., Gottfried, A. E., & Oliver, P. H. (2018). Simultaneous linking of cross-informant and longitudinal data involving positive family relationships. *Educational and psychological measurement*, 78(3), 409-429. <https://doi.org/10.1177/0013164417690198>

In Progress

1. **Park, J. J.**, Chow, S. M., Hunter, M. D., & Molenaar, P. C. (Planned Submission 2024). Unsupervised model construction in continuous-time. *Multivariate Behavioral Research*
 - Coding of algorithm to construct special case continuous-time (Ornstein-Uhlenbeck) models via modification indices completed in **OpenMx**
 - Introduction, Methods, Analytic Plans complete

2. **Park, J. J.**, Chow, S. M., & Molenaar, P. C. (Planned Submission 2024). Integration of pareto clustering into dynamic modeling. *Multivariate Behavioral Research*
 - Introduction, Methods, Analytic plan complete
 - Simulation design in progress
3. Crawford, C. M., **Park, J. J.**, Chow, S. M., & Fisher, Z. F. (Planned Submission 2023). Penalized subgrouping of heterogeneous time series. *Multivariate Behavioral Research*.
 - Simulations complete
 - Manuscript in progress
4. Pesigan, I. J. A., **Park, J. J.**, & Chow, S. M., (Planned Submission 2023). Automated estimation of vector autoregression models and dynamic clustering in dynr. *Journal of Open Source Software*
 - Coding of automated VAR fitting and feature-specific subgrouping on dynamic features completed in dynr
 - Manuscript in preparation

CONTRIBUTOR TO SOFTWARE/R-PACKAGES

- [GIMME: Modeling of individual-, subgroup-, and group-level structural VAR data](#)
- [graphicalVAR: Modeling of individual-, subgroup- \(*in prep*\), and group-level graphical VAR models](#)
- [dynr: Modeling of various forms of \(non-\)linear continuous and discrete time models](#)

INVITED TALKS/SYMPOSIA

1. **Park, J. J.**, Fisher, Z. F., Chow, S. M., & Molenaar, P. C. (2023). Implications of clustering continuous-time processes using discrete-time methods. Symposium talk presented to the 2023 International Meeting of the Psychometric Society. College Park, MD.
2. Crawford, C. J., **Park, J. J.**, Chow, S. M., & Fisher, Z. F. (2023). Penalized subgrouping of heterogeneous time series. Symposium talk presented at the 2023 Modern Modeling Methods conference. Storrs, CT.
3. **Park, J. J.**, (2022). What the fuzz: Leveraging ambiguity in dynamic network models. One-Speaker Talk for the QuantDev Brown Bag Series. State College, PA.
4. Chow, S. M., Losardo, D., **Park, J. J.**, & Molenaar, P. C. (2022). Transformations of Continuous-Time Dynamic Models into Alternative Discrete-Time Models. In 2022 Meeting of ISDSA.
5. **Park, J. J.**, (2022). The Group Iterative Multiple Model Estimation (GIMME). Guest lecture at the University of California, Los Angeles for Methods in Developmental Cognitive Neuroscience [NEURO-M297]. Los Angeles, CA
6. **Park, J. J.**, (2021). Emotion dynamics of individuals with major depressive disorder. Joint meeting of QuantDev and Developmental ProSem. State College, PA.
7. **Park, J. J.**, (2021). Subgrouping with chain graphical VAR models. One-Speaker Talk for the QuantDev Brown Bag Series. State College, PA.
8. Weigard, A., Lane, S. K., Gates, K. M., Beltz, A., Ye, A., Henry, T., Luo, L., Arizmendi, C., Fisher, Z., Molenaar, P. C. M., **Park, J. J.**, & Chow, S. M. (2020). Evaluation of Current and Novel Methods for Characterizing Path Directionality in Structural Vector Autoregressive Models. Symposium presented at the 2020 Modern Modeling Methods conference, Storrs, CT. (Cancelled due to COVID - 19)
9. Lee J., Gao, Y., Chow, S. M., Pearl, D., & **Park, J. J.**, (Postponed due to COVID 19). iPRACTISE: An Application for Individualized Learning in Data Science and Other Domains. Symposium presented at the annual Teaching and Learning with Technology (TLT) symposium, State College, PA
10. **Park, J. J.**, (2019). Imposing (non-)directionality in dynamic network models. One-Speaker Talk for the QuantDev Brown Bag Series. State College, PA.
11. **Park, J. J.**, Pizano, N. K., & Preston, K. S. J. (2017). A dynamic assessment of the family: Dynamical correlation and family relationships. One-Speaker Talk at the 2018 meeting of the Western Psychological Association. Portland, OR.

12. **Park, J. J.**, & Preston, K. S. J. (2017). Agreement: Shared perceptions of positive family relationships and life satisfaction in adulthood. Talk presented at the 2018 meeting of the Western Psychological Association. Portland, OR.
13. **Park, J. J.**, Pizano, N. K., & Preston, K. S. J. (2017). To θ or not to θ : A simulation study on the validity of IRT. Paper presented to the 2018 International Meeting of the Psychometric Society. New York, NY.
14. Preston K. S. J., **Park, J. J.**, Manapat, P. D., Pizano, N. K., Rogers, D. M., & Naji, D. A. (2018, April). Longitudinal pathways to success and resilience: A 38-year study. Symposium presented at the Western Psychological Association. Portland, OR.
15. Manapat, P. D., Preston, K. S. J., & **Park, J. J.**, (2017, April). A multilevel SEM analysis of positive family relations and future life satisfaction. Paper presented at the Western Psychological Association. Sacramento, CA.
16. **Park, J. J.**, Preston, K. S. J., Tessler, J. L., & Ramos, M. C. (2017, April). A novel method for assessing dynamic systems: A cross-informant, longitudinal test-linking approach. Paper presented at the Society for Research in Child Development Biennial Meeting. Austin, TX.
17. Preston, K. S. J., Gottfried, W. A., Gottfried, E. A., Oliver, P. H., Guerin, D., **Park, J. J.**, Manapat, P. D., Pizano, N. & Bailey, A. N., (2016, April). Perspectives of the family: Who knows best? President's Symposium presented at the Western Psychological Association. Long Beach, CA.
18. Manapat, P. D., **Park, J. J.**, Pizano, N., & Bailey, A. (2016, February). Transactional perspectives between parent and child across developmental epochs. Talk presented at the CSU Student Research Competition at California State University, Fullerton. Fullerton, CA.

POSTERS

1. **Park, J. J.**, Chow, S., & Molenaar, P. (2022). *Integrating fuzziness into vector autoregressive (VAR)-based clustering*. Poster presented at the 2023 Modern Modeling Methods conference, Storrs, CT
2. **Park, J. J.**, Fisher, Z., Chow, S., & Molenaar, P. (2022). *Subgrouping continuous processes in discrete time*. Poster presented at the Society of Multivariate Experimental Psychology, Monterey, CA
3. Fry, C. M., **Park, J. J.**, & Gatzke-Kopp, L. M. (2019). *Children's frontal EEG asymmetry to reward and frustration predicts social success with peers*. Poster presented at the Society for Psychophysiological Research Annual Meeting, Washington D. C.
4. Lee, J., **Park, J. J.**, Voyak, R., Zhang, A., Gao, Y., Pearl, D.K., & Chow, S. M. (2019). *Introducing Individualized Pathways and Resources to Adaptive Control Theory-Inspired Scientific Education (iPRACTISE) system*. Poster session presented at the United States Conference on Teaching Statistics (USCOTS) 2019, State College, Pennsylvania.
5. Fry, C. M., **Park, J. J.**, & Gatzke-Kopp, L. M. (2019). *Frontal EEG asymmetry in aggressive children*. Poster presented at the Penn State Graduate School Exhibition, State College, Pennsylvania
6. **Park, J. J.**, Pizano, N. K., & Preston, K. S. J. (2017). *Conflict throughout development: A longitudinal exploration*. Poster presented at the 2018 meeting of the Association for Psychological Science. San Francisco, CA.
7. **Park, J. J.**, Preston, K. S. J., Gottfried, A. W., Gottfried, A. E., Guerin, D., Oliver, P. O., Bailey, A., Manapat, P. D., & Pizano, N. (2016). *Longitudinal application of cross-informant linking utilizing the nominal response model*. Poster presented at the American Psychological Association. Denver, CO.
8. Manapat, P. D., Preston, K. S. J., Gottfried, A. E., Oliver, P. H., Gottfried, A. W., **Park, J. J.**, Pizano, N. K., & Bailey, A. (2016). *Transactional perspectives between parent and child across developmental epochs*. Poster presented at the American Psychological Association Conference. Denver, CO.
9. Manapat, P. D., Preston, K. S. J., Oliver, P. H., Gottfried, A. W., Gottfried, A. E., **Park, J. J.**, Bailey, A., & Pizano, N. K. (2016). *Longitudinal trends of parent-child perspectives of the family*. Poster presented at the American Psychological Association Conference. Denver, CO.
10. **Park, J. J.**, Preston, K. S. J., Manapat, P. D., Sambrano, D., & Pizano, N. (2016). *Consequences of Negatively Worded Items on the Predictive capabilities of the NEO-PI-3 using the nominal response model*. Poster presented at the Association for Psychological Science. Chicago, IL.

11. Pizano, N. K., Preston, K. S. J., Manapat, P. D., **Park, J. J.**, Sambrano, D., & Bailey, A., (2016). *The longitudinal comparison of mother and child perspectives of positive and family relationships relating to later life satisfaction and leadership*. Poster presented at the 2016 Association for Psychological Science. Chicago, IL.
12. **Park, J. J.**, Preston, K. S. J., Manapat, P. D., Sambrano, D., & Pizano, N. (2016) *Identifying consequences of negatively worded items with the nominal response model*. Poster presented at the Western Psychological Association. Long Beach, CA.
13. Bailey, A. N., Preston, K. S. J., Oliver, P. H., & **Park, J. J.** (2016). *Adolescents' coping strategies in conflictual home environments across time*. Poster presented at the Western Psychological Association annual conference. Long Beach, CA.
14. Manapat, P. D., Preston, K. S. J., **Park, J. J.**, & Sambrano, D. (2016). *Evaluating the supplemented EM algorithm under the nominal response model*. Poster presented at the Western Psychological Association Conference. Long Beach, CA.
15. Pizano, N. K., Preston, K. S. J., Manapat, P. D., **Park, J. J.**, & Sambrano, D. (2016). *Early childhood socialization predicts mothers' perception of family relationship*. Poster presented at the 2015 Western Psychological Association Conference. Long Beach, CA.
16. Sambrano, D., Preston, K. S. J., **Park, J. J.**, Manapat, P. D., & Pizano, N. (2016). *Decreasing participants' cognitive load while taking surveys under IRT*. Poster presentation at the Western Psychology Association Conference. Long Beach, CA.
17. Sambrano, D., Preston, K. S. J., **Park, J. J.**, Manapat, P. D., & Pizano, N. (2016). *Emotion regulation and well-being: A structural equation model*. Poster presentation at the Western Psychology Association Conference. Long Beach, CA.
18. **Park, J. J.**, Orozco, E., & Trevitt, J. (2016) *A meta-analytic comparison of milnacipran and duloxetine in fibromyalgia patients*. Poster presented at the Western Psychological Association. Long Beach, CA.

RESEARCH EXPERIENCE

The Pennsylvania State University

August 2018 - Present

Graduate Researcher

- Simulation experience with dynamic network analysis (e.g., graphical & structural vector autoregressive models) to identify optimal parameters for identifying contemporaneous relations
- Integrated community detection into chain graphical VAR models to identify group trends in individual processes
- Involved in collaborative project for developing person-specific methods for education in statistical computing in *R* and statistics education
- Created an algorithm for automated model construction of continuous-time Ornstein-Uhlenbeck processes via modification indices in the `OpenMx` R package
- Created utility functions for the `dynr` R package for automated model fitting of VAR(1) models, graphical VAR models, and dynamic subgrouping functions

California State University, Fullerton

August 2017 - May 2018

Adjunct Professor

- Wrote functions to automate optimization of Item Response Models via iterative log-likelihood tests for scale construction. Presented at the International Meeting of the Psychometric Society (IMPS)
- Instructor on record for laboratory classes in Cognitive Psychology and Sensation and Perception
- Lead course discussions on experiments with human subjects, conducting statistical analyses, and guiding submission/writing of formal lab reports

California State University, Fullerton

August 2015 - May 2017

Graduate Researcher

- Conducted thesis work on test equating self-report scores across a longitudinal span (i.e., 9-years) for parent-child dyads and testing the consequences of failing to equate scales across distinct populations
- Conducted research on effects of negatively worded items in scale construction and methods for attenuating their effects using methods established in Item Response Theory
- Administrator of undergraduate research subject pool for the Department of Psychology

TEACHING EXPERIENCE

Pennsylvania State University, University Park

Teaching Assistant - Regression Methods
Dr. Sy-Miin Chow

Jan 2024 - May 2024

Instructor - Applied Statistics Laboratory

Aug 2023 - Dec 2023

Teaching Assistant - Methods of Research in Human Development
Dr. Zita Oravec

Aug 2023 - Dec 2023

Teaching Assistant - Family Relationships
Dr. Molly Countermine

Jan 2019 - May 2019

Teaching Assistant - Resolving Conflict in Family Relationships
Dr. Jennifer Crissman-Ishler

Aug 2018 - Dec 2018

California State University, Fullerton - Instructor on Record

Instructor - Learning and memory

Oct 2017 - May 2018

Instructor - Cognitive Psychology

Aug 2017 - May 2018

California State University, Fullerton - Methodology

Teaching Assistant - Research Methods in Psychology
Daniel Ignacio, M.S.

Aug 2016 - Dec 2016

Teaching Assistant - Multivariate Statistics
Dr. Kathleen Preston

Jan 2016 - May 2016

Teaching Assistant - Introductory Statistics
Dr. Angela Minhthu-Nguyen

Jan 2016 - May 2016

Teaching Assistant - Intermediate Statistics
Dr. Jessica Tessler

Aug 2015 - Dec 2015

Teaching Assistant - Advanced Statistics
Dr. Michael Warren

Aug 2014 - May 2015

TECHNICAL STRENGTHS

| | |
|---------------------------------|--|
| Statistical Packages | R, MPlus, SPSS, EQS, FlexMIRT |
| Software & Languages | L ^A T _E X, Bash, HTML, CSS, JavaScript, Python |

RELEVANT COURSES & EXPERIENCE

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|-----------------------|----------------------|------------------------------|
| Data Mining | Regression Methods | Design of Experiments |
| Multivariate Analysis | Longitudinal SEM | Dynamic Systems Short-Course |
| Time Series Analysis | Cluster Analysis | Gaussian Graphical Models |
| Psychometrics | Item Response Theory | Network Analysis |

ACADEMIC AWARDS

Awarded Society of Multivariate Experimental Psychology (SMEP) Student Travel Award (2022)

Awarded Grace M. Henderson Graduate Scholarship at the Pennsylvania State University (2021)

Awarded Hintz Graduate Educational Enhancement Fellowship upon admission to doctoral study at The Pennsylvania State University (2018)

Sole recipient of the Wilson and Mildred Kee Memorial Scholarship and Outstanding Master of Arts Student in the Department of Psychology at the California State University, Fullerton (2017)

Awarded JoAnne Brannock Student Travel Award and Psychology Department Student Travel Awards for excellence in research at the California State University, Fullerton (2015-2017)

DEPARTMENTAL SERVICE

Pennsylvania State University, University Park

Human Development and Family Studies
Admissions Committee Representative

Aug 2021 - May 2023

Human Development and Family Studies
Quantitative Developmental Systems Brown Bag Coordinator

Aug 2019 - May 2020

California State University, Fullerton

Psychology
President of the Psychology Department Student Association

Aug 2013 - May 2015