

## **Dr. Robert Wilhelm Krause**

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### **PhD Thesis: Multiple Imputation for Missing Network Data – Current and Future Research**

For my [PhD dissertation](#) (Supervisor: Tom Snijders) I developed and evaluated algorithms for handling missing social network data (missing information on the links between actors and actor attributes). My work focuses on the most used network models in the social sciences, exponential random graph models, and stochastic actor-oriented models. For both I developed, evaluated, and implemented algorithms to reduce bias in parameter estimation under missing data, as well as provide proper multiple imputation for subsequent analysis. In my postdoc, I am working on missing data treatments for missing attribute data (missing information attributes of nodes, e.g., gender or substance use), which are required for the estimation of stochastic network models. Further, I am expanding my skills in psychometric modelling of response behavior with Diffusion IRT models.

### **EMPLOYMENT**

Since 2022 Assistant Professor at Gatton College of Business and Economics, University of Lexington, Lexington (KY), United States of America

2020-2022 Postdoc at the Free University Berlin, Germany

2019-2020 Postdoc at the Institute for Analytical Sociology, Linköping University, Linköping, Sweden

2015 –2019 PhD Student at the University of Groningen, Groningen, The Netherlands

2014 –2015 Teaching assistant for first year Research Master students in statistics and programming, Radboud University, Nijmegen, The Netherlands

2015 –2015 Research assistant at the Work, Health and Performance group, Behavioral Science Institute, Radboud University, Nijmegen, The Netherlands. Programming experimental tasks in Python.

2011 –2013 Teaching assistant for undergrad statistics, Ruhr University Bochum, Bochum, Germany

### **EDUCATION**

2015 – 2019 PhD at the department of sociology, University of Groningen, Groningen, The Netherlands

Defense Date 19.12.2019

2013 – 2015 Research M.Sc. Behavioral Sciences, Radboud University, Nijmegen, The Netherlands

2010 – 2013 B.Sc. Psychology – Cognitive Neuroscience, Ruhr University Bochum, Bochum, Germany

## **TEACHING**

Social Networks

Research Methods

Statistics

Programming in R

### **Workshops given**

Handling Missing Network Data – Sunbelt 2020, EUSN 2021, EUSN 2022

Two-day ERGM Workshop 2019 for classroom networks in the context of educational research

AdSUM *Advanced Siena User Meeting* 2019 – teaching multiple imputation for missing network data in longitudinal network research

RSiena Winterschool 2019 – teaching longitudinal network modeling

RSiena Workshop for longitudinal network analysis at EUSN 2017, 2021, Sunbelt 2018, UCL 2022

Introduction to network analysis – University of Mainz 2021

## **ADMINISTRATION**

Since 2022 Member of the library and data committee (Gatton College of Business and Economics, University of Kentucky)

2021 – 2022 Member of ethics committee (Department of Education and Psychology, Free University Berlin)

2021 – 2022 Member of schedule planning committee (Department of Education and Psychology, Free University Berlin)

since 2020 Member of the PhD promotion committee (Department of Education and Psychology, Free University Berlin)

2016 – 2019 Advisor to the Ethics Committee of the Department of Sociology (University of Groningen)

2012 – 2013 Member of the faculty council (Faculty of Psychology, Ruhr University Bochum)

2011 – 2013 Member of the student council (Faculty of Psychology, Ruhr University Bochum)

## **Internships/Research Visits**

- 2020 – Chair of Social Networks, ETH Zürich, Switzerland – Working on triadic network event modelling with Christoph Stadtfeld
- 2018 – Dublin Institute of Technology, Dublin, Ireland – Work on Bergm R package and development of Bayesian Exponential Random Multi-Graph Models with missing data Augmentation with Alberto Caimo
- 2012 – Max Planck Institute for Human Development, Berlin, Germany – Work on financial risk communication with Gerd Gigerenzer and Mirta Galesic

## **SKILLS**

### **IT**

- Advanced programming in R, co-author of the [Bergm package](#), and tutorial writer for [RSiena](#)
- Fluent in Tex, SPSS
- Rudimentary in Python and MatLab

### **STATISTICS**

- (G)LM
- Multilevel (mixed effect) Modelling
- SEM
- SAOMs and (Bayesian) ERGMs
- Multiple Imputation

## **CONFERENCES PRESENTED**

2022 Duisterbelt IX

2022 EUSN – Advances in Bayesian ERGM estimation

2022 DAGStat (German Society for Statistics) – Estimation of (B)ERGMs under Missing Attribute Data and Imputation of Missing Attributes for Non-Respondents

2021 Duisterbelt VIII

- 2021 FGME (German Psychological Association Methods Section Conference) – Estimation of (B)ERGMs under Missing Attribute Data and Imputation of Missing Attributes for Non-Respondents
- 2021 EUSN – Estimation of (B)ERGMs under Missing Attribute Data
- 2020 Duisterbelt VII
- 2020 Sunbelt – Let me tell you about... TriNAM
- 2020 Spring Conference of the German Sociological Association – Introducing the TriNAM
- 2019 Duisterbelt VI
- 2019 EUSN, Zürich, Switzerland – Advances for Multiple Imputation for Network and Attribute Data
- 2019 Complenet, Tarragona, Spain – Missing Data Imputation for multiplex Bayesian ERGMs
- 2018 Duisterbelt V
- 2018 ASONAM, Barcelona, Spain – Imputation for Missing Network Data – an extensive comparison
- 2018 Sunbelt, Utrecht, The Netherlands – Multiple Imputation for Longitudinal Network Analysis
- 2017 Duisterbelt IV
- 2017 EUSN, Mainz, Germany - Multiple Imputation for SAOMs
- 2017 ARS, Naples, Italy – Multiple Imputation for Longitudinal Network Analysis
- 2016 Duisterbelt III
- 2016 RC33, Leicester, UK – Multiple Imputation for Network Analysis
- 2016 EUSN, Paris, France – Imputing Missing Network Data
- 2016 SRA, Baltimore, USA – Challenges in Sociometric Research
- 2015 Duisterbelt II

## **PUBLICATIONS**

### **Books**

[Robert W Krause. Multiple Imputation for Missing Network Data. Dissertation, University of Groningen, The Netherlands. ISBN 978-94-034-1984-8](#)

## Book Chapters

[Huisman, M. and Krause, R. \(2017\). Imputation of missing network data. In Alhaji, R. and J., R., editors, \*Encyclopedia of Social Network Analysis and Mining\*, pages 707-715. Springer, New York.](#)

## Peer-Reviewed Journal Articles

Ranger, J., Much, S., Mutak, A., Krause, R.W., Wolgast, A., & Pohl, S. (2023). Disentangling Different Aspects of Change in Tests with the D-Diffusion Model. *Multivariate Behavioral Research*. (Accepted for publication)

[Caimo, A., Bouranis, L., Krause, R.W., & Friel, N. \(2022\). Statistical Network Analysis with Bergm. \*Journal of Statistical Software\*, 104 \(4\), 1-23](#)

[Landis, B., Jachimowicz, J. M., Wang, D. J., & Krause, R. W. \(2022\). Revisiting extraversion and leadership emergence: A social network churn perspective. \*Journal of Personality and Social Psychology\*. 123\(4\), 811–829.](#)

[Estevez, J. L., Wittek, R., Giardini, F., Ellwardt, L., & Krause, R.W. \(2022\). Workplace gossip and the evolution of friendship relations: the role of complex contagion. \*Social Network Analysis and Mining\*, 12\(113\).](#)

[Albizua, A., Bennett, E. M., Larocque, G., Krause, R. W., & Pascual, U. \(2021\). Social networks influence farming practices and agrarian sustainability. \*Plos ONE\*, 16\(1\)](#)

[Krause, R. W., Huisman, M., Steglich, C.E.G., & Snijders, T. A. B. \(2020\). Imputation of missing network data – a detailed comparison. \*Social Networks\*, 62, 99-112](#)

[Bringmann, L., Elmer, T., Epskamp, S., Krause, R.W., Schoch, D., Wichers, M., Wingman, J., & Snippe, E. \(2019\). What do centrality measures measure in psychological networks? \*Journal of Abnormal Psychology\*.](#)

[Krause, R. W., & Caimo, A. \(2019, March\). Missing Data Augmentation for Bayesian Exponential Random Multi-Graph Models. In \*International Workshop on Complex Networks\* \(pp. 63-72\). Springer, Cham.](#)

[Krause, R. W., Huisman, M., Steglich, C.E.G., & Snijders, T. A. B. \(2018\). Missing network data – a comparison of different Imputation methods. \*IEEE/ACM Proceedings ASONAM 2018\*, 159 – 163.](#)

[Krause, R. W., Huisman, M., & Snijders, T. A. B. \(2018\). Multiple imputation for longitudinal network data. \*Statistica Applicata - Italian Journal of Applied Statistics\*, 30\(1\), 33-57. DOI: 10.26398/IJAS.0030-002](#)

[Open Science Collaboration \(2015\). PSYCHOLOGY. Estimating the reproducibility of psychological science. \*Science\*, 349\(6251\), \[aac4716\]. DOI: 10.1126/science.aac4716](#)

## **Reviewer for the following journals**

- Connections
- Journal of Data Science
- International Journal of Medical Informatics
- SAGE Open
- Social Networks
- Social Network Analysis and Mining
- Social Psychology Quarterly
- Sociological Focus