

CURRICULUM VITAE

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[Google Scholar](#) [ORCID](#)

ABSTRACT

I am an Associate Professor jointly appointed in Psychology and Statistics (and Data Science core member) at the University of Minnesota. I have research interests in machine learning, computational statistics, artificial intelligence, and nonparametric methods with a focus on applications in the psychological and behavioral sciences. My methods and open-source software, which are inspired by my collaborations, strive to solve general computational problems in ways that work in theory and in practice—when the data are messy/noisy. During the past decade, I have helped secure \$14 million in NIH grants, published 11 R packages, which have amassed 1.69 million downloads, advised over a dozen students (and collaborated with dozens more), and produced a vast collection of open-source teaching materials. I have been an AE at JCGS since 2021, and I routinely serve as a reviewer for top journals in psychology, statistics, and beyond.

IDENTIFYING INFORMATION**Academic Rank**

Associate Professor in Department of Psychology and School of Statistics
 Graduate Faculty Appointments in *Psychology, Statistics, and Data Science*

Education

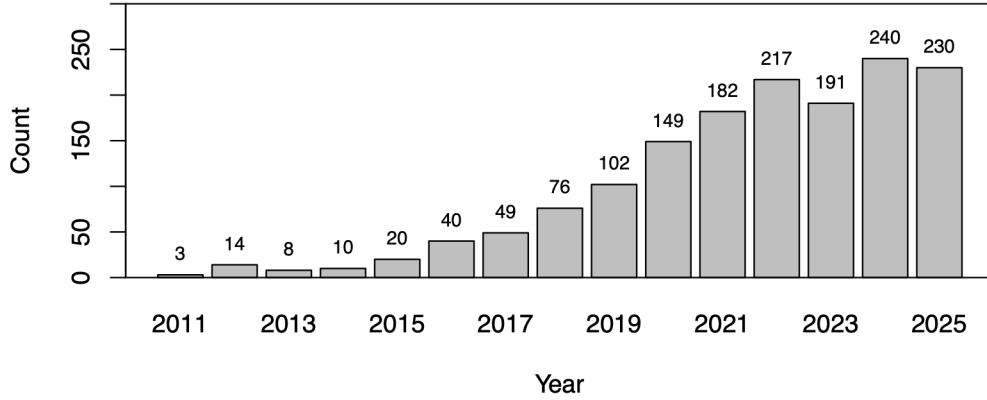
Degree	Institution	Date Degree Granted
B.S.	University of Miami Psychology and Mathematics	2007
M.S.	University of Illinois Statistics	2010
M.A.	University of Illinois Psychology	2011
Ph.D.	University of Illinois Quantitative Psychology	2013

Positions/Employment

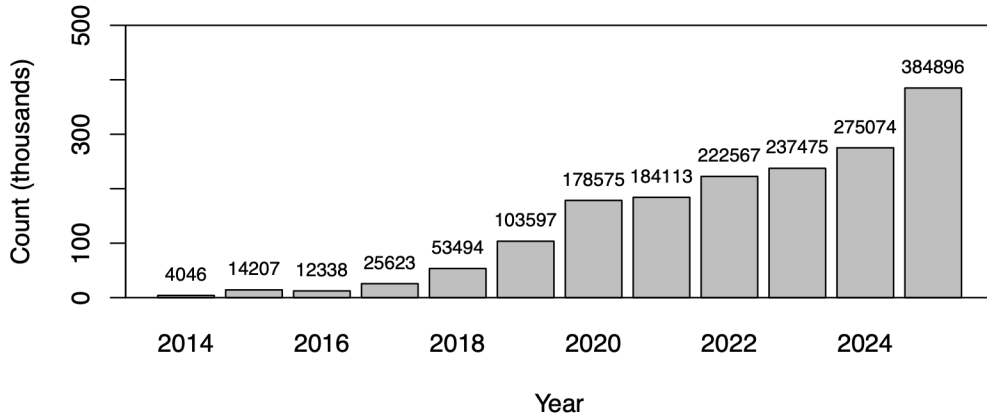
University of Minnesota, Twin Cities Associate Professor of Psychology and Statistics Assistant Professor of Psychology and Statistics	2020 - 2014 - 2020
University of Illinois, Urbana-Champaign Visiting Assistant Professor of Statistics	2013 - 2014

RESEARCH IMPACT GRAPHICS

Google Scholar Citations



CRAN Package Downloads



HONORS AND AWARDS FOR RESEARCH/CREATIVE WORK, TEACHING, PUBLIC ENGAGEMENT, AND SERVICE

University of Minnesota

Single Semester Leave Award, College of Liberal Arts	2017
Partnership for Affordable Content, UMN Libraries	2015

External Sources

Data and AI Intensive Research with Rigor and Reproducibility (DAIR3) Scholarship, National Institutes of Health	2025
Anne Anastasi Dissertation Award, Division 5, American Psychological Association	2014
Nancy Hirschberg Award, Department of Psychology, University of Illinois	2013

Student Paper Competition Winner, Statistical Computing/Graphics Sections, American Statistical Association	2013
Woodrow Fellowship, Department of Psychology, University of Illinois	2011
Graduate Teaching Certificate, Center for Teaching Excellence, University of Illinois	2010
List of Teachers Ranked as Excellent by their Students, Center for Teaching Excellence, University of Illinois	2010
Outstanding Quantitative Psychology Doctoral Student, Department of Psychology, University of Illinois	2010
List of Teachers Ranked as Excellent by their Students, Center for Teaching Excellence, University of Illinois	2009

RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

Grant Funding

Received at the University of Minnesota:

Co-Investigator / Mentor

PIs: Vrieze, Scott & Luciana, Monica

Sponsoring Organization: NIH National Institute on Drug Abuse

Title: Training in Genetic and Neurobehavioral Mechanisms of Addiction

Project Number: T32DA050560

Award Dates: July 1, 2020 - June 30, 2025

Direct Costs: \$1,516,210

Co-Investigator

PIs: Engel, Stephen & Legge, Gordon

Sponsoring Organization: NIH National Eye Institute

Title: Remapping the Visual Field to Aid Reading with Central Scotomas

Project Number: R01EY030890

Award Dates: July 1, 2020 - June 30, 2025

Direct Costs: \$1,345,583

Co-Investigator

PIs: Jacob, Suma & Elison, Jed

Sponsoring Organization: NIH National Institute of Mental Health

Title: Parsing Early Emerging Heterogeneity Related to Autism Spectrum Disorder

Project Number: R01MH115046

Award Dates: March 1, 2019 - December 31, 2024

Direct Costs: \$2,252,932

Co-Investigator

PIs: Ferguson, John & Hughes, Adriana

Sponsoring Organization: NIH National Institute on Aging

Title: Interactive Software for Assessing Meaningful Aging

Project Number: R43AG074740

Award Dates: September 30, 2021 - August 31, 2023

Direct Costs: \$376,278

Co-Investigator

PI: Sponheim, Scott R.

Sponsoring Organization: NIH National Institute of Mental Health

Title: Perceptual Mechanisms of Visual Hallucinations and Illusions in Psychosis

Project Number: R01MH112583

Award Dates: September 21, 2017 - June 30, 2023

Direct Costs: \$2,058,902

Co-Investigator

PIs: Vrieze, Scott & Friedman, Naomi

Sponsoring Organization: NIH National Institute on Drug Abuse

Title: A Twin Study of Adolescent Alcohol and Drug Use Development: Leveraging Intensive Longitudinal Assessments

Project Number:

Award Dates: August 15, 2018 - June 30, 2023

Direct Costs: \$2,258,612

Co-Investigator

PI: Sponheim, Scott R.

Sponsoring Organization: NIH National Institute of Mental Health

Title: Neural Disconnection and Errant Visual Perception in Psychotic Psychopathology

Project Number: U01MH108150

Award Dates: August, 2016 - July 31, 2020

Direct Costs: \$3,013,811

Co-Investigator

PI: Malone, Stephen M.

Sponsoring Organization: NIH National Institute on Alcohol Abuse & Alcoholism

Title: Neural Outcomes of Moderating Alcohol Use in Early Adulthood

Project Number: R21AA026919

Award Dates: June 15, 2019 - May 31, 2022

Direct Costs: \$322,834

Co-Investigator

PI: Ellingson, Arin M.

Sponsoring Organization: NIH National Institute of Child Health/Human Development

Title: Intersegmental Dynamic Mechanisms of Neck Pain In Vivo

Project Number: R03HD097715

Award Dates: June 10, 2019 - May 31, 2022

Direct Costs: \$200,000

Consultant

PI: Kent, Jerilyn

Sponsoring Organization: NIH National Institute of Mental Health

Title: Investigating the Role of Cerebellar Abnormalities in Dysfunctional Predictive Coding in Individuals with Schizophrenia

Project Number: F32MH112334

Award Dates: July 1, 2017 - June 30, 2020

Direct Costs: \$191,307

Co-Investigator

PI: Ellingson, Arin M. and Ludewig, Paula

Sponsoring Organization: Institute for Engineering in Medicine, University of Minnesota

Title: Advancing Translational Musculoskeletal Movement Research towards a Center of Research Translation

Award Dates: January 12, 2017 - January 11, 2018

Direct Costs: \$75,000

Publications

Contribution: A = Majority of work by me and/or my students; B = Large (> 25%) amount of work carried out by me and/or my students; C = Key components of work carried out by me and/or my students; D = Minor (consulting) role. Underline - indicates student

In Preparation

Helwig, N. E., Chen, K., Guy, S. J., & Lyford-Pike, S. (in revision). Multilevel multinomial regression for 'select all that apply' responses and high-dimensional predictors with applications to perception of facial expressions. *Psychometrika* (A)
[Special issue on Integrating and Analyzing Complex High-Dimensional Data in Social and Behavioral Sciences Research]

Wurm, S., & **Helwig, N. E.** (in prep). Modeling the aging curve in Major League Baseball via generalized additive mixed models. *Journal of Quantitative Analysis in Sports* (A)

Helwig, N. E. (in prep). grpnet: an R package for fitting group elastic net regularized generalized linear models and generalized additive models. *Journal of Statistical Software*

Helwig, N. E. (in prep). Automatic model selection and smoothing in generalized nonparametric regression. *Journal of the American Statistical Association*

Snodgrass, M.A., & **Helwig, N. E.** (in prep). Component analysis feature selection for comprehensible classification of functional neuroimaging data. (A)

Wahlquist, R., **Helwig, N. E.**, & Marcoulides, K. M. (in prep). An investigation of the personality traits associated with generic conspiracy theory beliefs. (A)

Refereed Journal Articles

Helwig, N. E., Berry, L. N., Hadlock, T. A., Guy, S. J., & Lyford-Pike, S. (2025). Dynamic facial health predicts psychological first impressions with applications to tailored treatments for facial paralysis. *Journal of Personalized Medicine*, 15(11), 530. doi: [10.3390/jpm15110530](https://doi.org/10.3390/jpm15110530) (A)

Delgado, J., Elison, J. T., & **Helwig, N. E.** (2025). Robust detection of directional outliers in multivariate data with applications to early identification of Autism. *Psychological Methods*. Advance online publication. doi: [10.1037/met0000775](https://doi.org/10.1037/met0000775) (A)

Helwig, N. E. (2025). Versatile descent algorithms for group regularization and variable selection in generalized linear models. *Journal of Computational and Graphical Statistics*, 31(1), 239-252. doi: [10.1080/10618600.2024.2362232](https://doi.org/10.1080/10618600.2024.2362232)

Duffy, K. A., & **Helwig, N. E.** (2024). Resting-state functional connectivity predicts attention problems in children: evidence from the ABCD Study. *NeuroSci*, 5(4), 445-461. doi: [10.3390/neurosci5040033](https://doi.org/10.3390/neurosci5040033) (A)

Ehrmantraut, L. E., Redden, J. P., Mann, T., **Helwig, N. E.**, & Vickers, Z. M. (2024). Self-

- selected diets: Exploring the factors driving food choices and satisfaction with dietary variety among independent adults. *Food Quality and Preference*. 105154. doi: [10.1016/j.foodqual.2024.105154](https://doi.org/10.1016/j.foodqual.2024.105154) (B)
- Helwig, N. E.** (2024). Precise tensor product smoothing via spectral splines. *Stats*, 7(1), 34-53. doi: [10.3390/stats7010003](https://doi.org/10.3390/stats7010003)
- Helwig, N. E.** (2022). Robust permutation tests for penalized splines. *Stats*, 5(3), 916-933. doi: [10.3390/stats5030053](https://doi.org/10.3390/stats5030053)
- Helwig, N. E.** (2022). Computing the real solutions of Fleishman's equations for simulating non-normal data. *British Journal of Mathematical and Statistical Psychology*, 75(2), 319-333. doi: [10.1111/bmsp.12259](https://doi.org/10.1111/bmsp.12259)
- Kage, C. C., Helwig, N. E., & Ellingson, A. M.** (2021). Normative cervical spine kinematics of a circumduction task. *Journal of Electromyography and Kinesiology*, 61, 102591. doi: [10.1016/j.jelekin.2021.102591](https://doi.org/10.1016/j.jelekin.2021.102591) (B)
- Berry, L. N., & Helwig, N. E.** (2021). Cross-validation, information theory, or maximum likelihood? A comparison of tuning methods for penalized splines. *Stats*, 4(3), 701-724. doi: [10.3390/stats4030042](https://doi.org/10.3390/stats4030042) (A) [Invited Submission for Special Issue on Functional Data Analysis]
- Doyle, C. M., Lasch, C., Vollman, E. P., Desjardins, C. D., Helwig, N. E., Jacob, S., Wolff, J. J., and Elison, J. T.** (2021). Phenoscreening: a developmental approach to research domain criteria-motivated sampling. *The Journal of Child Psychology and Psychiatry*, 62(7), 884-894. doi: [10.1111/jcpp.13341](https://doi.org/10.1111/jcpp.13341) (D)
- Helwig, N. E.** (2021). Spectrally sparse nonparametric regression via elastic net regularized smoothers. *Journal of Computational and Graphical Statistics*, 30(1), 182-191. doi: [10.1080/10618600.2020.1806855](https://doi.org/10.1080/10618600.2020.1806855)
- Kage, C. C., Akbari-Shandiz, M., Foltz, M. H., Lawrence, R. L., Brandon, T. L., Helwig, N. E., & Ellingson, A. M.** (2020). Validation of an automated shape-matching algorithm for biplane radiographic spine osteokinematics and radiostereometric analysis error quantification. *PLoS ONE*, 15(2), e0228594. doi: [10.1371/journal.pone.0228594](https://doi.org/10.1371/journal.pone.0228594) (C)
- Almquist, Z. W., Helwig, N. E., & You, Y.** (2020). Connecting Continuum of Care point-in-time homeless counts to United States Census areal units. *Mathematical Population Studies*, 27(1), 46-58. doi: [10.1080/08898480.2019.1636574](https://doi.org/10.1080/08898480.2019.1636574) (B)
- Helwig, N. E.** (2020). Multiple and generalized nonparametric regression. In P. Atkinson, S. Delamont, A. Cernat, J. W. Sakshaug, & R. A. Williams (Eds.), *SAGE Research Methods Foundations*. doi: [10.4135/9781526421036885885](https://doi.org/10.4135/9781526421036885885) [Invited Submission]
- Hammell, A. E., Helwig, N. E., Kaczurkin, A. N., Sponheim, S. R., & Lissek, S.** (2020). The temporal course of over-generalized conditioned threat expectancies in posttraumatic stress disorder. *Behaviour Research and Therapy*, 124, 103513. doi: [10.1016/j.brat.2019.103513](https://doi.org/10.1016/j.brat.2019.103513) (A) [Invited Submission]
- Helwig, N. E.** (2019). Robust nonparametric tests of general linear model coefficients: A comparison of permutation methods and test statistics. *NeuroImage*, 116030. doi: [10.1016/j.neuroimage.2019.116030](https://doi.org/10.1016/j.neuroimage.2019.116030)
- Helwig, N. E., & Snodgrass, M. A.** (2019). Exploring individual and group differences in latent brain networks using cross-validated simultaneous component analysis. *NeuroImage*, 116019. doi: [10.1016/j.neuroimage.2019.116019](https://doi.org/10.1016/j.neuroimage.2019.116019) (A)
- Helwig, N. E.** (2019). Statistical nonparametric mapping: Multivariate permutation tests for

- location, correlation, and regression problems in neuroimaging. *Wiley Interdisciplinary Reviews: Computational Statistics*, 11(2), e1457. doi: [10.1002/wics.1457](https://doi.org/10.1002/wics.1457) [Invited Submission]
- Whiteford, K. L., Schloss, K. B., **Helwig, N. E.**, & Palmer, S. E. (2018). Color, music, and emotion: Bach to the blues. *i-Perception*, 9(6), 204166951880853. doi: [10.1177/2041669518808535](https://doi.org/10.1177/2041669518808535) (C)
- Lyford-Pike, S., **Helwig, N. E.**, Sohre, N. E., Guy, S. J., & Hadlock, T. A. (2018). Predicting perceived disfigurement from facial function in patients with unilateral paralysis. *Plastic and Reconstructive Surgery*, 142(5), 722e-728e. doi: [10.1097/prs.0000000000004851](https://doi.org/10.1097/prs.0000000000004851) (B)
- Liew, B. X.W., **Helwig, N. E.**, Morris, S., & Netto, K. (2018). Influence of proximal trunk borne load on lower limb countermovement joint dynamics. *Journal of Biomechanics*, 79, 223-226. doi: [10.1016/j.jbiomech.2018.08.009](https://doi.org/10.1016/j.jbiomech.2018.08.009) (B)
- Lawrence, R. L., Sessions, W. C., Jensen, M. C., Staker, J. L., Eid, A., Breighner, R., **Helwig, N. E.**, Braman, J. P., & Ludewig, P. M. (2018). The effect of glenohumeral plane of elevation on supraspinatus subacromial proximity. *Journal of Biomechanics*, 79, 147-154. doi: [10.1016/j.jbiomech.2018.08.005](https://doi.org/10.1016/j.jbiomech.2018.08.005) (C)
- Sohre, N., Adeagbo, M., **Helwig, N. E.**, Lyford-Pike, S., & Guy, S. J. (2018). PVL: A framework for navigating the precision-variety trade-off in automated animation of smiles., *32nd AAAI Conference on Artificial Intelligence, AAAI 2018* (pp. 884-892). <https://www.aaai.org/ocs/index.php/AAAI/AAAI18/paper/view/17315> (C) [refereed; <25% acceptance rate]
- Helwig, N. E.**, & Ruprecht, M. R. (2017). Age, gender, and self-esteem: A sociocultural look through a nonparametric lens. *Archives of Scientific Psychology*, 5(1), 19-31. doi: [10.1037/arc0000032](https://doi.org/10.1037/arc0000032) (A)
- Helwig, N. E.** (2017). Regression with ordered predictors via ordinal smoothing splines. *Frontiers in Applied Mathematics and Statistics*, 3. doi: [10.3389/fams.2017.00015](https://doi.org/10.3389/fams.2017.00015)
- Helwig, N. E.** (2017). Estimating latent trends in multivariate longitudinal data via Parafac2 with functional and structural constraints. *Biometrical Journal*, 59(4), 783-803. doi: [10.1002/bimj.201600045](https://doi.org/10.1002/bimj.201600045)
- Helwig, N. E.**, Sohre, N. E., Ruprecht, M. R., Guy, S. J., & Lyford-Pike, S. (2017). Dynamic properties of successful smiles. *PLoS ONE*, 12(6). doi: [10.1371/journal.pone.0179708](https://doi.org/10.1371/journal.pone.0179708) (A)
- Helwig, N. E.** (2017). Adding bias to reduce variance in psychological results: A tutorial on penalized regression. *The Quantitative Methods for Psychology*, 13(1), 1-19. doi: [10.20982/tqmp.13.1.p001](https://doi.org/10.20982/tqmp.13.1.p001)
- Abram, S. V., **Helwig, N. E.**, Moodie, C. A., DeYoung, C. G., MacDonald III, A. W., & Waller, N. G. (2016). Bootstrap enhanced penalized regression for variable selection with neuroimaging data. *Frontiers in Neuroscience*, 10(344), 1-15. doi: [10.3389/fnins.2016.00344](https://doi.org/10.3389/fnins.2016.00344) (B)
- Engel, S. A., Wilkins, A. J., Mand, S., **Helwig, N. E.**, & Allen, P. M. (2016). Habitual wearers of colored lenses adapt more rapidly to the color changes the lenses produce. *Vision Research*, 125, 41-48. doi: [10.1016/j.visres.2016.05.003](https://doi.org/10.1016/j.visres.2016.05.003) (D)
- Helwig, N. E.**, Shorter, K. A., Ma, P., & Hsiao-Wecksler, E. T. (2016). Smoothing spline analysis of variance models: A new tool for the analysis of cyclic biomechanical data. *Journal of Biomechanics*, 49(14), 3216-3222. doi: [10.1016/j.jbiomech.2016.07.035](https://doi.org/10.1016/j.jbiomech.2016.07.035) (A)
- Helwig, N. E.** (2016). Efficient estimation of variance components in nonparametric mixed-

- effects models with large samples. *Statistics and Computing*, 26(6), 1319-1336. doi: [10.1007/s11222-015-9610-5](https://doi.org/10.1007/s11222-015-9610-5)
- Helwig, N. E., & Ma, P.** (2016). Smoothing spline ANOVA for super-large samples: Scalable computation via rounding parameters. *Statistics and Its Interface*, 9(4), 433-444. doi: [10.4310/SII.2016.v9.n4.a3](https://doi.org/10.4310/SII.2016.v9.n4.a3) (A)
[Invited Submission for Special Issue on Statistical and Computational Theory and Methodology for Big Data]
- Helwig, N. E., Gao, Y., Wang, S., Ma, P.** (2015). Analyzing spatiotemporal trends in social media data via smoothing spline analysis of variance. *Spatial Statistics*, 14(C), 491-504. doi: [10.1016/j.spasta.2015.09.002](https://doi.org/10.1016/j.spasta.2015.09.002) (A)
- Helwig, N. E., & Ma, P.** (2015). Fast and stable multiple smoothing parameter selection in smoothing spline analysis of variance models with large samples. *Journal of Computational and Graphical Statistics*, 24(3), 715-732. doi: [10.1080/10618600.2014.926819](https://doi.org/10.1080/10618600.2014.926819) (A)
- Helwig, N. E., & Hong, S.** (2013). A critique of tensor probabilistic independent component analysis: implications and recommendations for multi-subject fMRI data analysis. *Journal of Neuroscience Methods*, 213(2), 263–273. doi: [10.1016/j.jneumeth.2012.12.009](https://doi.org/10.1016/j.jneumeth.2012.12.009) (A)
- Helwig, N. E., Hong, S., & Bokhari, E.** (2013). Analyzing individual and group differences in multijoint multiwaveform gait data using the Parafac2 model. *International Journal for Numerical Methods in Biomedical Engineering*, 29(1), 62–82. doi: [10.1002/cnm.2492](https://doi.org/10.1002/cnm.2492) (A)
- Helwig, N. E.** (2013). The special sign indeterminacy of the direct-fitting Parafac2 model: some implications, cautions, and recommendations for Simultaneous Component Analysis. *Psychometrika*, 78(4), 725–739. doi: [10.1007/S11336-013-9331-7](https://doi.org/10.1007/S11336-013-9331-7)
- Helwig, N. E., Hong, S., & Polk, J. D.** (2012). Parallel Factor Analysis of gait waveform data: A multimode extension of Principal Component Analysis. *Human Movement Science*, 31(3), 630–648. doi: [10.1016/j.humov.2011.06.011](https://doi.org/10.1016/j.humov.2011.06.011) (A)
- Helwig, N. E., Hong, S., Hsiao-Weckler, E. T., & Polk, J. D.** (2011). Methods to temporally align gait cycle data. *Journal of Biomechanics*, 44(3), 561–566. doi: [10.1016/j.jbiomech.2010.09.015](https://doi.org/10.1016/j.jbiomech.2010.09.015) (A)

Open-Source Software

- Helwig, N. E.** (2026). *nptest: Nonparametric Bootstrap and Permutation Tests*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.nptest>
40,244 total downloads (as of 2025-12-31)
- Helwig, N. E.** (2026). *grpnet: Group Elastic Net Regularized GLMs and GAMs*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.grpnet>
10,140 total downloads (as of 2025-12-31)
- Helwig, N. E.** (2025). *CMLS: Constrained Multivariate Least Squares*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.CMLS>
65,966 total downloads (as of 2025-12-31)
- Delgado, J. E., & Helwig, N. E.** (2025). *mvout: Robust multivariate outlier detection*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.mvout>
3,392 total downloads (as of 2025-12-31)
Highlighted in CRAN Task View: Anomaly Detection

- Helwig, N. E.** (2025). *multiway: Component Models for Multi-Way Data*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.multiway>
91,623 total downloads (as of 2025-12-31)
Highlighted in CRAN Task View: Psychometric Models and Methods
Highlighted in Modern Psychometrics with R (doi: [10.1007/978-3-319-93177-7](https://doi.org/10.1007/978-3-319-93177-7))
- Helwig, N. E.** (2025). *eegkit: Toolkit for Electroencephalography Data*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.eegkit>
64,279 total downloads (as of 2025-12-31)
Highlighted in CRAN Task View: Medical Image Analysis
Highlighted in CRAN Task View: Psychometric Models and Methods
Highlighted in Modern Psychometrics with R (doi: [10.1007/978-3-319-93177-7](https://doi.org/10.1007/978-3-319-93177-7))
- Helwig, N. E.** (2025). *gammi: Generalized Additive Mixed Model Interface*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.gammi>
2,602 total downloads (as of 2025-12-31)
- Helwig, N. E.** (2024). *npreg: Nonparametric Regression via Smoothing Splines*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.npreg>
56,136 total downloads (as of 2025-12-31)
- Helwig, N. E.** (2022). *ica: Independent Component Analysis*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.ica>
1,229,922 total downloads (as of 2025-12-31)
Highlighted in CRAN Task View: Psychometric Models and Methods
Highlighted in Modern Psychometrics with R (doi: [10.1007/978-3-319-93177-7](https://doi.org/10.1007/978-3-319-93177-7))
- Helwig, N. E.** (2018). *bigsplines: Smoothing Splines for Large Samples*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.bigsplines>
98,566 total downloads (as of 2025-12-31)
- Helwig, N. E.** (2018). *Dykstra: Quadratic Programming using Cyclic Projections*. The Comprehensive R Archive Network. <https://doi.org/10.32614/CRAN.package.Dykstra>
33,135 total downloads (as of 2025-12-31)
Highlighted in CRAN Task View: Optimization and Mathematical Programming

Open-Source Datasets

- Helwig, N. E., Gao, Y., Wang, S., & Ma, P.** (2024). Twitter Geospatial Data, *Machine Learning Repository*. University of California Irvine. <https://doi.org/10.24432/C5RS5J>
- Helwig, N. E., & Hsiao-Weckslar, E.** (2022). Multivariate Gait Data, *Machine Learning Repository*. University of California Irvine. <https://doi.org/10.24432/C5861T>
- Helwig, N. E., Sohre, N. E., Ruprecht, M. R., Guy, S. J., & Lyford-Pike, S. E.** (2017). S1 Dataset. Smile ratings., *Dynamic properties of successful smiles*. PLoS ONE. doi: [10.1371/journal.pone.0179708.s001](https://doi.org/10.1371/journal.pone.0179708.s001) (B)
- Helwig, N. E., Sohre, N. E., Ruprecht, M. R., Guy, S. J., & Lyford-Pike, S.** (2017). S1 Video. Smile videos., *Dynamic properties of successful smiles*. Minneapolis: PLoS ONE. doi: [10.1371/journal.pone.0179708.s002](https://doi.org/10.1371/journal.pone.0179708.s002) (C)
- Helwig, N. E., & Ruprecht, M. R.** (2017). Self-Esteem by Age, Gender, & Sociocultural Region (ICPSR 36767)., *Age, gender, and self-esteem: a sociocultural look through a nonparametric lens*. Inter-university Consortium for Political and Social Research. doi: [10.3886/ICPSR36767.v1](https://doi.org/10.3886/ICPSR36767.v1) (A)

Book Review

Helwig, N. E., & Anderson, C. J. (2014)., *Review of Handbook of Advanced Multilevel Analysis by J.J. Hox & J.K. Roberts (Eds)* (vol. 79, pp. 175-177). *Psychometrika*. doi: [10.1007/S11336-013-9351-3](https://doi.org/10.1007/S11336-013-9351-3) (A)

Ph.D. Thesis

Helwig, N. E. (2013)., *Fast and stable smoothing spline analysis of variance models for large samples with applications to electroencephalography data analysis*. University of Illinois at Urbana-Champaign. [Winner of the 2014 Anne Anastasi Dissertation Award, Division 5, APA]

Presentations, Posters, and Exhibits***Invited Presentations at Professional Meetings, Conferences, etc.***

- Duffy, K. A., & **Helwig, N. E.** "Predicting Attention Problems from Brain Connectivity using High-Dimensional Poisson Regression". International Meeting of the Psychometric Society, University of Minnesota, Minneapolis, MN, USA. (July 16, 2025).
- Lee, J. W., & **Helwig, N. E.** "Classifying Alcoholism from Electroencephalography Data using High-Dimensional Penalized Regression". International Meeting of the Psychometric Society, University of Minnesota, Minneapolis, MN, USA. (July 16, 2025).
- Helwig, N. E.** "Group Elastic Net Regression: A Framework for High-Dimensional Regression and Classification of Psychological Data". International Meeting of the Psychometric Society, University of Minnesota, Minneapolis, MN, USA. (July 16, 2025).
- Helwig, N. E.** "Model Selection and Smoothing in Generalized Nonparametric Regression". Data and AI Intensive Research with Rigor and Reproducibility, University of Texas at San Antonio, San Antonio, TX, USA, (June 18, 2025).
- Helwig, N. E.** "Model Selection and Smoothing in Generalized Nonparametric Regression". Quantitative and Psychometric Methods Seminar, University of Minnesota. (Oct 8, 2024).
- Helwig, N. E.** "Model Selection and Smoothing in Generalized Nonparametric Regression". School of Statistics Seminar, University of Minnesota. (Sep 13, 2023).
- Snodgrass, M. A., & **Helwig, N. E.** "Component Analysis Feature Selection for Classification of High-Dimensional Neuroimaging Data". Institute for Engineering in Medicine Annual Conference, University of Minnesota. (Sep 27, 2022).
- Duffy, K. A., & **Helwig, N. E.** "Predicting ADHD Symptomatology with Network Connectivity and Family History of Substance Use", University of Minnesota Department of Psychology Research Day. (April 30, 2021).
- Helwig, N. E.** "Statistical learning via spectrally sparse smoothers", 4th International Conference on Econometrics and Statistics. Virtual Conference, Hong Kong University of Science and Technology, Hong Kong. (June 25, 2021).
- Helwig, N. E.** "Spectrally sparse nonparametric regression via elastic net regularized smoothers", Statistics & Data Science Colloquium Series. University of Central Florida, Orlando, Florida, United States. (April 23, 2021).

- Helwig, N. E.** "Exploring latent brain networks via simultaneous component analysis", Quantitative Methods Colloquium, Vanderbilt University. Nashville, Tennessee, United States. (April 5, 2021).
- Helwig, N. E.** "Reproducible data wrangling and modeling with R", Open and Reproducible Science Brown Bag Series, Department of Psychology, University of Minnesota, Minneapolis, Minnesota, United States. (March 8, 2019).
URL: <http://stat.umn.edu/~helwig/talks/ReproducibleCode.html>
- Helwig, N. E.** "Linear regression in R", IRSA Reproducible Research Workshop, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (August 16, 2018).
URL: <https://irsaatumn.github.io/RWorkshop18/linear-regression-in-r.html>
- Helwig, N. E.** "Simple statistics in R", IRSA Reproducible Research Workshop, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (August 16, 2018).
URL: <https://irsaatumn.github.io/RWorkshop18/simple-statistics-in-r.html>
- Almquist, Z. W., (Author & Presenter), **Helwig, N. E., (Author)**, You, Y., (Author). "Connecting HUD continuum of care point-in-time homeless counts to US census geographies: 2005-2016", American Sociological Association Annual Meeting, American Sociological Association, Philadelphia, Pennsylvania, United States. (August 12, 2018).
- Helwig, N. E.** "Statistical learning of successful smiles", Joint Statistical Meetings, American Statistical Association, Vancouver, Canada. (August 4, 2018).
- Helwig, N. E., (Author & Presenter)**, Ma, P., (Author) "Smoothing spline ANOVA for super-large samples: Scalable computation via rounding parameters", ICSA Applied Statistics Symposium, International Chinese Statistical Association, New Brunswick, New Jersey, United States. (June 19, 2018).
- Helwig, N. E.** "Constrained Parallel Factor Analysis with applications to functional data", ThRee-way methods In Chemistry And Psychology (TRICAP) Conference, Sandia National Laboratories, Angel Fire, New Mexico, United States. (June 13, 2018).
- Helwig, N. E.** "lme4 and Beyond", Mixed Models Workshop, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (October 10, 2017).
- Helwig, N. E.** "Statistical learning of successful smiles", Third Annual Twin Cities American Statistical Association Fall Research Conference, American Statistical Association (Twin Cities Chapter), Minneapolis, Minnesota, United States. (October 9, 2017).
- Helwig, N. E., (Author & Presenter)**, Snodgrass, M. A., (Author). "Discovering genuine resting state brain networks via simultaneous component analysis", Second IRSA Neuro-Statistics Workshop, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (September 21, 2017).
- Helwig, N. E.** "Linear regression in R", Introduction to data-analysis with R and reproducible Data Science, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (August 31, 2017).
- Helwig, N. E.** "Simple statistics in R", Introduction to data-analysis with R and reproducible Data Science, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (August 31, 2017).
- Helwig, N. E.** "Multiway factor analysis with functional and structural constraints", Joint

- Statistical Meetings, American Statistical Association, Baltimore, Maryland, United States. (July 31, 2017).
- Ruprecht, M. R., (Author & Presenter), **Helwig, N. E., (Author)** "A nonparametric look at self-esteem development by gender and socioeconomic region", Pipelines into Biostatistics Symposium, Harvard University, Boston, Massachusetts, United States. (July 20, 2017).
- Helwig, N. E.** "Multiway factor analysis with functional and structural constraints.", International Meeting of the Psychometric Society, Psychometric Society & University of Zurich, Zurich, Switzerland. (July 18, 2017).
- Helwig, N. E.** "Estimating latent trends in multivariate longitudinal data via Parafac2 with functional and structural constraints", Modern Modeling Methods Conference, University of Connecticut, Storrs, Connecticut, United States. (May 23, 2017).
- Helwig, N. E., (Author & Presenter)**, Harper, J., (Author), Malone, S., (Author), Iacono, W. G., (Author) "Modeling longitudinal change in brain signals of twins", First IRSA Neuro-Statistics Workshop, Institute for Research in Statistics and its Applications, Minneapolis, Minnesota, United States. (May 6, 2017).
- Helwig, N. E.** "Nonparametric mixed-effects regression for large samples", Conference on Statistical Practice, American Statistical Association, Jacksonville, Florida, United States. (February 25, 2017).
- Helwig, N. E.** "Efficient estimation of variance components in nonparametric mixed-effects models with large samples", 9th International Conference of the ERCIM WG on Computational and Methodological Statistics, European Consortium for Informatics and Mathematics, Seville, Spain. (December 10, 2016).
- Chatterjee, S. B., (Author & Presenter), **Helwig, N. E., (Author)**, School of Statistics, F. M., (Author) "Institute for Research on Statistics and Its Applications", IEM Annual Conference and Retreat, Institute for Engineering in Medicine. (September 26, 2016).
- Helwig, N. E.** "Nonparametric spatiotemporal analysis of neuroimaging data", Joint Statistical Meetings, American Statistical Association, Chicago, Illinois, United States. (July 31, 2016). *Invited.*
- Helwig, N. E.** "Nonparametric mixed-effects models for psychological data", International Meeting of the Psychometric Society, Psychometric Society, Asheville, North Carolina, United States. (June 12, 2016). *Invited.*
- Helwig, N. E.** "Efficient estimation of variance components in nonparametric mixed-effects models with large samples", Modern Modeling Methods Conference, University of Connecticut, Storrs, Connecticut, United States. (May 25, 2016). *Invited.*
- Helwig, N. E.** "Smoothing splines for large samples", 17th Meeting of New Researchers in Statistics and Probability, Institute of Mathematical Statistics, Seattle, Washington. (August 6, 2015). *Invited.*
- Helwig, N. E.** "Tensor analysis of fMRI data", November Meeting of the Imaging Working Group, Departments of Biostatistics and Statistics, Minneapolis, Minnesota, United States. (November 13, 2014). *Invited.*
- Helwig, N. E.** "Fast and stable smoothing spline analysis of variance models for large samples with applications to electroencephalography data analysis", APA Convention, American Psychological Association, Washington D.C, Maryland, United States. (August 8, 2014). *Invited.*

- Helwig, N. E.** "Smoothing spline analysis of variance models for electroencephalography data analysis", Joint Statistical Meetings, American Statistical Association, Boston, Massachusetts, United States. (August 2, 2014). *Invited*.
- Helwig, N. E.** "Semiparametric regression of big data in R", Computational Science and Engineering Big Data/Data Analytics Research Conference, Champaign, Illinois, United States. (May 28, 2014). *Invited*.
- Helwig, N. E.,** Ma, P. "Fast and stable multiple smoothing parameter selection in smoothing spline analysis of variance models with large samples.", Joint Statistical Meetings, American Statistical Association, Montreal, Canada. (August 3, 2013). *Invited*.
- Helwig, N. E.,** Hong, S. "Parallel factor analysis of gait data", Three-way Methods in Chemistry and Psychology, Vall de Nuria, Spain. (June 14, 2009).
- Almquist, Z. A., **Helwig, N. E.,** & You, Y. (2018)., *Connecting HUD Continuum of Care point-in-time homeless counts to US census geographies: 2005 to 2017*.
https://paa.confex.com/paa/2018/mediafile/ExtendedAbstract/Paper21243/AYH_HomelessCounts.pdf (B)

Abstracts

- Kage, C. C., **Helwig, N. E.,** & Ellingson, A. M. (2021). *Normative cervical spine kinematics of a multi-axial task in a healthy cohort*. Orthopaedic Research Society (ORS) Annual Meeting 2021. <https://www.ors.org/wp-content/uploads/2021/02/ORS-2021-Podiums-and-Posters-2-8.pdf> (B)
- Kage, C. C., **Helwig, N. E.,** Hyatt, B., Blaisdell, J., Mabamba, K., Nguyen, L., Foltz, M. H., Eitel, Z., & Ellingson, A. M. (2020)., *Normative cervical spine kinematics during a circumduction task in a healthy cohort*. Combined Sections Meeting of the American Physical Therapy Association.
<https://apta.confex.com/apta/csm2020/meetingapp.cgi/Paper/25668> (B)
- Kage, C. C., Foltz, M. H., MacEwen, M., Akbari-Shandiz, M., Johnson, C. P., **Helwig, N. E.,** & Ellingson, A. M. (2020). *Vertebral kinematics: Biplane radiography validation of shape-matching via ultrashort echo time MRI bone models*. Combined Sections Meeting of the American Physical Therapy Association.
<https://apta.confex.com/apta/csm2020/meetingapp.cgi/Paper/22513> (D)
- Kage, C. C., Foltz, M. H., Akbari-Shandiz, M., Johnson, C. P., **Helwig, N. E.,** & Ellingson, A. M. (2019), *Biplane radiography of the spine: Automated shape-matching via ultrashort echo time MRI generated volumes*. 43rd Annual Meeting of the American Society of Biomechanics. https://www.asbweb.org/wp-content/uploads/isb2019_abstracts_all.pdf (D)
- Kage, C. C., **Helwig, N. E.,** Hyatt, B., Blaisdell, J., Mabamba, K., Nguyen, L., Eitel, Z., Foltz, M. H., & Ellingson, A. M. (2018)., *Normative cervical spine kinematics of a circumduction task in a healthy cohort*. 42nd Annual Meeting of the American Society of Biomechanics.
https://www.asbweb.org/wp-content/uploads/asb2018Abstracts_rev.pdf (B)
- Malone, S., **Helwig, N. E.,** Harper, J., & Iacono, W. (2018)., *Substance-abuse risk among adolescents is associated with increased impulsive errors and decreased theta power in a multiway analysis of NoGo EEG activity* (vol. 55, pp. S123-S123). *Psychophysiology*. doi: [10.1111/psyp.13264](https://doi.org/10.1111/psyp.13264) (C)
- Mervis, J., **Helwig, N. E.,** Meyer-Kalos, P., & MacDonald, A. (2017)., *The mismeasurement of psychosis: Parsing differences in discriminating power across symptom dimensions* (vol.

- 43, pp. S251-S251). *Schizophrenia Bulletin*. doi: [10.1093/schbul/sbx022.106](https://doi.org/10.1093/schbul/sbx022.106) (B)
- Helwig, N. E.** (2016)., *Smoothing Spline ANOVA Models for Analyzing Event-Related Potential Data* (vol. 53, pp. S79-S79). *Psychophysiology*. doi: [10.1111/psyp.12719](https://doi.org/10.1111/psyp.12719)
- Helwig, N. E.**, Hong, S., Polk, J. D., Lague, M. R. (2010)., *Analysis of gait cycle shapes using Parallel Factor Analysis*. 34th Annual Meeting of the American Society of Biomechanics. <https://www.asbweb.org/wp-content/uploads/2010ASBmeetingproceedings.pdf> (A)
- Helwig, N. E.**, Hong, S., & Hsiao-Weckler, E. T. (2009)., *Partitioning gait data into temporal and intensity differences*. 33rd Annual Meeting of the American Society of Biomechanics. <https://www.asbweb.org/wp-content/uploads/2009ASBmeetingproceedings.pdf> (A)
- Helwig, N. E.**, Hong, S., & Hsiao-Weckler, E. T. (2009)., *Time-normalization techniques for gait data*. 33rd Annual Meeting of the American Society of Biomechanics. <https://www.asbweb.org/wp-content/uploads/2009ASBmeetingproceedings.pdf> (A)

Posters or Exhibitions

- Snodgrass, M. A., & **Helwig, N. E.** "Component analysis feature selection for classification of high-dimensional neuroimaging data", Institute for Engineering in Medicine Annual Conference, University of Minnesota. (Sep 27, 2022).
- Snodgrass, M. A., & **Helwig, N. E.** "Cross-validated simultaneous component analysis for identifying individual and group differences in latent brain networks", Annual Meeting of the Society for Psychophysiological Research. Virtual Meeting. (October 16, 2021).
- Duffy, K. A., & **Helwig, N. E.** "Predicting ADHD symptomatology from resting state network correlations using nonparametric smoothing spline regression", Annual Meeting of the Flux Society for Developmental Cognitive Neuroscience. Virtual Meeting. (September 17, 2021).
- Snodgrass, M. A., & **Helwig, N. E.** "Exploring latent brain networks with cross-validated simultaneous component analysis", Spring Meeting of the Twin Cities Chapter of the American Statistical Association, Minneapolis, Minnesota, United States. (April 15, 2021).
- McCoy, M. E., **Helwig, N. E.**, Logue, C., "The impact of hyperbaric oxygen on treating idiopathic sudden sensorineural hearing loss", Annual Scientific Meeting for the Undersea & Hyperbaric Medical Society, Undersea & Hyperbaric Medical Society, Río Grande, Puerto Rico. (June 27, 2019).
- Malone, S., **Helwig, N. E.**, Harper, J., Iacono, W., "Substance-abuse risk among adolescents is associated with increased impulsive errors and decreased theta power in a multiway analysis of NoGo EEG activity", Society for Psychophysiological Research Annual Meeting, Society for Psychophysiological Research, Quebec City, Canada. (October 6, 2018).
- Kage, C. C., **Helwig, N. E.**, Hyatt, B., Blaisdell, J., Mabamba, K., Nguyen, L., Eitel, Z., Foltz, M. A., Ellingson, A. M. "Normative cervical spine kinematics of a circumduction task in a healthy cohort", Annual Meeting for the American Society of Biomechanics, American Society of Biomechanics, Rochester, Minnesota, United States. (August 10, 2018).
- Lawrence, R. L., Sessions, W. C., Jensen, M. C., Staker, J. L., Eid, A., Breighner, R., **Helwig, N. E.**, Braman, J. P., Ludewig, P. M. "The effect of glenohumeral plane of elevation on supraspinatus subacromial proximity", University of Minnesota Supercomputing Institute Research Exhibition, University of Minnesota Supercomputing Institute, Minneapolis,

Minnesota, United States. (April 17, 2018).

Hammell, A. E., Helwig, N. E., Kaczurkin, A. N., Sponheim, S. R., Lissek, S. "Temporal dynamics of fear generalization in PTSD across learning trials: A nonparametric exploratory model", Anxiety and Depression Association of America Annual Conference, Anxiety and Depression Association of America, Washington D.C., District of Columbia, United States. (April 6, 2018).

Ruprecht, M. R., Helwig, N. E. "A nonparametric model for right-wing authoritarianism", Third Annual Twin Cities American Statistical Association Fall Research Conference, American Statistical Association (Twin Cities Chapter), Minneapolis, Minnesota, United States. (October 9, 2017).

Ruprecht, M. R., Helwig, N. E. "A nonparametric model for right-wing authoritarianism", Undergraduate Research Opportunities Program Showcase, University of Minnesota (Twin Cities), Minneapolis, Minnesota, United States. (April 20, 2017).

Ruprecht, M. R., Helwig, N. E. "A nonparametric model for right-wing authoritarianism", Undergraduate Research Opportunities Program Showcase, University of Minnesota (Duluth), Duluth, Minnesota, United States. (April 18, 2017).

Mervis, J. E., Helwig, N. E., Meyer-Kalos, P., Macdonald, A. W. "The mismeasurement of psychosis: parsing differences in discriminating power across symptom dimensions", 16th International Congress on Schizophrenia Research, San Diego, California, United States. (March 27, 2017).

Ruprecht, M. R., Helwig, N. E. "The determination of an effective smile", Second Annual Twin Cities American Statistical Association Fall Research Conference, American Statistical Association (Twin Cities Chapter), Mounds View, Minnesota, United States. (October 3, 2016). [Winning Poster]

Mervis, J. E., Helwig, N. E., Macdonald, A. W. "Measurement of Symptom-Cognition Relationships in Psychosis", Thirtieth Annual Meeting of the Society for Research in Psychopathology, Society for Research in Psychopathology, Baltimore, Maryland, United States. (September 29, 2016).

Helwig, N. E. "Smoothing spline ANOVA models for analyzing event-related potential data", Society of Psychophysiological Research Annual Meeting, Society of Psychophysiological, Minneapolis, Minnesota, United States. (September 24, 2016). *Invited*.

Ruprecht, M. R., Helwig, N. E. "A nonparametric look at self-esteem development by gender and socioeconomic region", Undergraduate Research Opportunities Program Showcase, University of Minnesota, Minneapolis, Minnesota, United States. (April 29, 2016).

Ruprecht, M. R., Helwig, N. E. "A nonparametric look at self-esteem development by gender and socioeconomic region", Minnesota Undergraduate Psychology Conference, Augsburg College, Minneapolis, Minnesota, United States. (April 23, 2016).

Ruprecht, M. R., Helwig, N. E. "The determination of an effective smile", Undergraduate Research Opportunities Program Showcase, University of Minnesota - Duluth, Duluth, Minnesota, United States. (April 14, 2016).

Ruprecht, M. R., Helwig, N. E. "A nonparametric look at self-esteem development", Undergraduate Research Opportunities Program Showcase, University of Minnesota - Duluth, Duluth, Minnesota, United States. (November 17, 2015). [Winning Poster]

Ruprecht, M. R., Helwig, N. E. "A nonparametric look at self-esteem development", First

Annual Twin Cities American Statistical Association Fall Research Conference, American Statistical Association, Rochester, Minnesota, United States. (October 30, 2015).
[Winning Poster]

Helwig, N. E. "A look into the mind of an alcoholic: Smoothing spline models for EEG data analysis", Computational Science and Engineering Annual Meeting (UIUC), University of Illinois at Urbana-Champaign, Urbana, Illinois, United States. (April 24, 2013). *Invited*.

Hsiao-Wecksler, E. T., Dankowicz, H., Hong, S., Lague, M. R., Polk, J. D., Rosengren, K. S., DiBerardino III, L. A., **Helwig, N. E.**, Park, K. "Quantitative characterization of complex motion patterns using shape-based and multivariate techniques", National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI) Research and Innovation Conference, National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI), Atlanta, Georgia, United States. (January 4, 2011). *Invited*.

Helwig, N. E., Hong, S., Polk, J. D., Lague, M. R. "Analysis of gait cycle shapes using parallel factor analysis", 34th Annual Meeting of American Society of Biomechanics, American Society of Biomechanics, Providence, Rhode Island, United States. (August 18, 2010).

Helwig, N. E., Hong, S., Hsiao-Wecksler, E. T. "Methods to time-normalize gait cycle data", 33rd Annual Meeting of American Society of Biomechanics, American Society of Biomechanics, State College, Pennsylvania, United States. (August 26, 2009).

Helwig, N. E., Hong, S., Hsiao-Wecksler, E. T. "Partitioning gait data into temporal and intensity differences", 33rd Annual Meeting of American Society of Biomechanics, American Society of Biomechanics, State College, Pennsylvania, United States. (August 26, 2009).

Hsiao-Wecksler, E. T., Dankowicz, H., Hong, S., Lague, M. R., Polk, J. D., Rosengren, K. S., DiBerardino III, L. A., **Helwig, N. E.**, K. P. "Quantitative characterization of complex motion patterns using shape-based and multivariate techniques", National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI) Research and Innovation Conference, National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI), Honolulu, Hawaii, United States. (June 22, 2009). *Invited*.

Interviews & Media Contributions

Locher, H. Investigating the R in (R)evolution of Open Science. Department of Psychology. Jan 12, 2024. <https://cla.umn.edu/psychology/news-events/story/investigating-r-revolution-open-science>

Schwedel, H. Why Does Ron DeSantis' Smile Make So Many People Want to Jump Off a Cliff? It turns out there are actual answers. *Slate*. Jan 10, 2024.

URL: <https://slate.com/human-interest/2024/01/ron-desantis-iowa-republican-debate-smile-height-boots.html>

Piepenburg, E. In 'Smile,' Why the Grins Are So Grim. *New York Times*. Oct 4, 2022.

URL: <https://www.nytimes.com/2022/10/04/movies/smile-movie-parker-finn.html>

Lindemann, K. What Makes a Successful Smile? *ResearchGate*. June 28, 2017.

URL: <https://www.researchgate.net/blog/post/what-makes-a-successful-smile>

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|---|---------------|
| "More or less teeth? Computer modeling helps work out the recipe for a perfect smile," Digital Trends | July 3, 2017 |
| "Reverse-engineering a winning smile," Axios Science | June 28, 2017 |
| "The science behind the perfect smile," Daily Mail | June 28, 2017 |
| "How to smile without looking like a creep, according to scientists," Popular Science | June 28, 2017 |
| "What makes a successful smile?," ResearchGate | June 28, 2017 |

"Facial models suggest less may be more for a successful smile," Science Daily	June 28, 2017
"Study suggests smiling too widely is less visually appealing," United Press International	June 28, 2017
"The subtleties of smile" Minnesota Alumni Magazine	September 1, 2017
"The science of the perfect smile: say, 'optimal balance!'," Inverse Science	June 28, 2017
"This avatar could help you perfect your smile," Science Magazine	June 28, 2017
"The science of smiles," Minnesota Daily	July 12, 2017
"A winning smile avoids showing too many teeth, researchers say," The Guardian	June 28, 2017
"Why smiling too widely can be a social handicap," The Daily Telegraph	June 28, 2017

TEACHING AND CURRICULUM DEVELOPMENT

Teaching Ratings and Materials

RateMyProfessors.com Ratings for Nate Helwig :	4.6 / 5.00
STAT 5401 Applied Multivariate Methods (SP 24):	5.7 / 6.00
STAT 5601 Nonparametric Methods (SP 24):	5.8 / 6.00

Teaching Website: <http://users.stat.umn.edu/~helwig/teaching.html>

R Resources – 13 topics

Introduction to Statistics – 16 topics

Applied Statistics – 12 topics

Multivariate Statistics – 10 topics

Nonparametric Statistics – 10 topics

University of Minnesota

Courses, seminars, and instructional units taught

Research Lab in Psychology: PSY 5993: Fall 2016, Spring 2017, Fall 2024

Analysis of Psychological Data: PSY 8814: Fall 2020, Fall 2024

Analysis of Psychological Data: PSY 8815: Spring 2015, 2017, 2019, 2021, 2022, 2023, 2024

Graduate Seminar in Psychology: PSY 8960: Spring 2016, Fall 2019

Applied Multivariate Methods: STAT 5401: Spring 2017, Spring 2024

Nonparametric Methods: STAT 5601: 2014, 2015, 2017, 2018, 2019, 2021, 2022, 2023, 2024

Advanced Topics in Statistics: STAT 8931: Spring 2022

Literature Seminar: STAT 8913: Fall 2018

Curriculum Development

Partnership for Affordable Content Program. UMN Libraries.

Aug 2015 - May 2016

Quantitative Data Analysis in the Social Sciences Certificate Cmte.

Apr 2015 - Dec 2015

Psychology Writing Enhanced Curriculum (WEC) participant.

Mar 2015 - Dec 2015

ADVISING AND MENTORING**Undergraduate and Graduate Student Activities*****Advisees***

Jong Won (Peter) Lee, Psychology Ph D	2024 - Present
Krishna Ashok, Statistics B S (with Honors)	2024 - 2025
Kelly Duffy, Psychology Ph D	2019 - 2024
Solomon Wurm, Statistics B A (with Honors)	2023 - 2024
Matthew Snodgrass, Statistics M S	2022 - 2023
Ziming Clark, Psychology Ph D	2017 - 2022
Jonathan Donner, Psychology M A	2021 - 2022
Lauren Berry, Statistics M S	2019 - 2020
Jasmine Syed, Statistics B A (with Honors)	2019 - 2020
Hao Lu, Statistics M S	2018 - 2019
Zihan Su, Statistics M S	2018 - 2019
Gretchen Saunders, Statistics M S	2016 - 2017
Tri Nguyen, Statistics M S	2016 - 2017
Kai Zhong, Statistics M S	2015 - 2016
Christine Storino, Statistics M S	2015 - 2016

Doctoral Final Committee: Committee Chair

Kaibo Gong, Statistics Ph D	2020
Adam Maidman, Statistics Ph D	2018

Doctoral Final Committee: Committee Reviewer

Tyler Sassenberg, Psychology Ph D	2024 - Present
Xin Song, Psychology Ph D	2023
Sooyeon Sung, Psychology Ph D	2022 - 2023
Justin Kracht, Psychology Ph D	2022
Allison Cooperman, Psychology Ph D	2022
Katherine Knutson, Biostatistics Ph D	2021
Shu Han Zhang, Psychology Ph D	2021
Yiyi Yin, Statistics, Ph D	2020
Yizhou Ma, Psychology Ph D	2020
Jun Young Park, Biostatistics Ph D	2020
Haema Nilakanta, Statistics, Ph D	2019
Yihwa Baek, Psychology Ph D	2019
Richard Lenne, Psychology Ph D	2019
Gretchen Saunders, Psychology Ph D	2019
Sha Li, Psychology Ph D	2018 - 2019
Abhirup Mallik, Statistics Ph D	2017
Leah Feuerstahler, Psychology Ph D	2016

Doctoral Preliminary Committee: Committee Chair

Kelly Duffy, Psychology Ph D	2023 - Present
Ziming Clark, Doctor of Philosophy, Psychology, Ph D	2020 - 2022
Adam Maidman, Doctor of Philosophy, Statistics Ph D	2017 - 2018

Doctoral Preliminary Committee: Committee Member

Xin Song, Psychology Ph D	2021 - 2023
Joseph DeWeese, Psychology Ph D	2023 - Present
Hoang Nguyen, Psychology, Ph D	2023 - Present

Sangmin Kim, Business Admin, Ph D	2023 - Present
Sooyeon Sung, Psychology, Ph D	2022 - 2023
Justin Kracht, Psychology Ph D	2021 - 2022
Tyler Sassenberg, Psychology Ph D	2022 - Present
Allison Cooperman, Psychology Ph D	2021 - 2022
Kaibo Gong, Statistics Ph D	2018 - 2022
Martin Nyce, Psychology Ph D	2021 - 2022
King Yiu Suen, Psychology Ph D	2021
Nicholas Sohre, Computer Science Ph D	2016 - 2021
Yang Yang, Statistics Ph D	2014 - 2021
Yiyi Yin, Statistics Ph D	2018 - 2020
Yizhou Ma, Psychology Ph D	2018 - 2020
John Gaffney, Psychology Ph D	2017 - 2020
Jun Young Park, Biostatistics Ph D	2019 - 2020
Yihwa Baek, Psychology Ph D	2017 - 2019
Richard Lenne, Psychology Ph D	2017 - 2019
Gretchen Saunders, Psychology Ph D	2017 - 2019
Sha Li, Psychology Ph D	2017 - 2019
Abhirup Mallik, Statistics Ph D	2015 - 2017
Leah Feuerstahler, Psychology Ph D	2016
<i>Master's Thesis/Research Committee: Committee Chair</i>	
Kelly Duffy, Statistics M S	2023
Matthew Snodgrass, Statistics M S	2023
Jonathan Donner, Psychology M A	2021
Lauren Berry, Statistics M S	2020
Hao Lu, Statistics M S	2019
Zihan Su, Statistics M S	2019
Gretchen Saunders, Statistics M S	2017
Tri Nguyen, Statistics M S	2017
Kai Zhong, Statistics M S	2016
Christine Storino, Statistics M S	2016
Guanhua Piao, Statistics M S	2015
<i>Master's Thesis/Research Committee: Committee Member</i>	
Jiaqi Liu, Statistics M S	2023
Sarthak Jain, Data Science M S	2023
James Peyla, Ecology, Evolution & Behav M S	2023
Somya Sharma, Statistics M S	2022
Martin Nyce, Psychology M A	2021
Martin Nyce, Statistics M S	2020
Justin Kracht, Statistics M S	2020
Eubin Lim, Statistics M S	2020
Ziming Clark, Statistics M S	2020
Wanrong Hu, Statistics M S	2019
Kaibo Gong, Statistics M S	2018 - 2019
Trang Le, Biostatistics M S	2019
Feihong Hu, Statistics M S	2019
Zhuoran Wang, Statistics M S	2019
Jingzhe Wang, Statistics M S	2019
Luke Jacobsen, Statistics M S	2019
Mingjian Zhou, Statistics M S	2019

Yi Rong, Statistics M S	2019
Abbey Hammell, Psychology M A	2019
Stephanie Zellers, Psychology M A	2019
Yiyi Yin, Statistics M S	2018 - 2019
Mario Cifuentes, Applied Economics M S	2018 - 2019
Xin Yang, Statistics M S	2018 - 2019
Leah Kelly, Applied Economics M S	2018
Mingxuan Han, Statistics M S	2017 - 2018
Yannan Pan, Statistics M S	2018
Lihe Liu, Applied Economics M S	2018
Lauren Wisdorf, Food Science M S	2017 - 2018
Saroni Chakraborty, Statistics M S	2017
Purba Mondal, Statistics M S	2017
Jenna Brady, Food Science M S	2017
Siqi Xie, Applied Economics M S	2017
Alexey Korzhov, Biostatistics M S	2017
Mingze Liu, Statistics M S	2017
Yun You, Statistics M S	2017
Teng Peng, Statistics M S	2017
Shi Shen, Statistics M S	2016
Yihan Yang, Applied Economics M S	2016
Jung Koo Kang, Statistics M S	2016
Mo Sun, Statistics M S	2015 - 2016
Amy Jurvis, Statistics M S	2015
Leah Feuerstahler, Statistics M S	2014 - 2015
<i>Master's Thesis/Research Committee: Committee Reviewer</i>	
Brett Peterson, Biostatistics M S	2016 - 2017
Lu Yuan, Statistics M S	2016
Xiaotong Jing, Applied Economics M S	2016

SERVICE AND PUBLIC OUTREACH

Service To The Discipline/Profession/Interdisciplinary Area(s)

Associate Editor

Journal of Computational and Graphical Statistics 2021 - Present

Reviewer

The American Statistician 2024 - Present

Journal of Applied Statistics 2022 - Present

Journal of Statistical Computation and Simulation 2021 - Present

Nature 2020 - Present

NeuroImage 2020 - Present

Research Quarterly for Exercise and Sport 2020 - Present

Psychophysiology 2019 - Present

Journal of the American Medical Association Network Open 2019 - Present

Advances in Methods and Practices in Psychological Science 2018 - Present

NeuroImage 2018 - Present

Gait and Posture 2017 - Present

Journal of Computational and Graphical Statistics 2017 - Present

PLoS ONE	2017 - Present
Psychometrika	2017 - Present
The Quantitative Methods for Psychology	2017 - Present
Econometrics and Statistics	2016 - Present
Journal of Statistical Software	2016 - Present
Neurocomputing	2016 - Present
Psychophysiology	2016 - Present
Statistica Sinica	2015 - Present
Journal of Biomechanics	2014 - Present
Journal of the American Statistical Association	2014 - Present
Multivariate Behavioral Research	2014 - Present
Psychological Methods	2014 - Present
Statistics and Its Interface	2014 - Present
Annals of Applied Statistics	2013 - Present
British Journal of Mathematical and Statistical Psychology	2013 - Present
Journal of Statistical Planning and Inference	2013 - Present

Session Chair

Neuro-Statistics: Interface between Neuroscience and Statistics, Institute for Research on Statistics and its Applications, Minneapolis, Minnesota, United States	May 6, 2017
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Student Representative of the Membership Committee

American Psychological Association, Division 5	August 2010 - August 2011
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Service To The University/College/Department***University of Minnesota******University***

Member, Data Science Initiative Core Member	Sep 2024 - Present
Member, Research Misconduct Investigation Committee	June 2016 - Oct 2017

College

Member, CLA Curriculum, Instruction, and Advising Cmte	Aug 2016 - May 2019
Coordinator, CLA 150th Anniversary Faculty Celebration, Big Data and the Future of Social Research	Oct 11, 2018
Member, CLA Assembly	Aug 2016 - May 2018

Department

Member, Statistics Computing & Technology Cmte	2024 - 2025
Member, Psychology Graduate Studies Advisory Cmte	2024 - 2025
Member, Psychology Faculty Awards Committee	2024 - 2025
Member, Statistics Curriculum Committee	2023 - 2024
Member, Psychology Admissions Committee	2021 - Present
Member, Statistics Awards Committee	2022 - 2023
Member, Statistics Admissions Committee	2021 - 2022
Member, Statistics Executive Committee	2020 - 2022
Member, Statistics Awards Committee	2020 - 2021
Member, Psychology Grad Admissions & Funding Cmte	2018 - Present
Member, Search Cmte for Statistics/Psychology Joint Appt	2019 - 2020
Member, Statistics Graduate Student Orientation Panel	Aug 22, 2019

Member, Psychology Graduate Awards Committee	2018 - 2019
Member, Statistics Awards Committee	2018 - 2019
Member, Psychology Open Science Committee	2016 - 2019
Member, Diversity Weekend, Department of Psychology	October 11, 2018
Member, Statistics Computing Committee	2015 - 2018
Member, Diversity Weekend, Department of Psychology	Oct 12, 2017
Member, Statistics Curriculum Committee	2016 - 2017
Member, Psychology Curriculum Committee	2016 - 2017
Peer Evaluator of Teaching, School of Statistics	Nov 16, 2016
Member, Diversity Weekend, Department of Psychology	Oct 13, 2016
Coordinator, Statistics Seminar	2015 - 2016
Member, Psychology Graduate Awards Committee	2015 - 2016
Member, Computing Committee, School of Statistics	2014 - 2015
Member, Fellowships Committee, School of Statistics	2014 - 2015

Public And Other Service

Organizing Committee Member, MUDAC 2025	Sep 2024 - Present
Judge, Undergraduate Data Analytics Competition	Feb 16, 2019
Judge, STATCOM Data Analytics Competition, Minneapolis	Apr 14, 2018
Faculty Sponsor & Judge, STATCOM Analytics Competition	Apr 15, 2017
Faculty Sponsor, Statistics in the Community	2015 - 2016
Faculty Sponsor & Judge, MUDAC Competition, Eden Prairie	Nov 4 - 5, 2016
Competition Judge, Twin Cities Chapter of the ASA	Oct 3, 2016
Co-Investigator, Driven to Discover, MN State Fair	Aug 25 - Sep 5, 2016
Faculty Sponsor & Judge, MUDAC, Winona	Apr 2 - Apr 3, 2016
Competition Judge, Twin Cities Chapter of the ASA	Oct 30, 2015
Co-Investigator, Driven to Discover, MN State Fair	Aug 27 - Sep 7, 2015