

KWANG HEE JUNG, PH.D

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Assistant Professor

Department of Educational Psychology and Leadership

(Quantitative Methods Concentration)

Institute for Measurement, Methodology, Analysis, and Policy (IMMAP)

Texas Tech University

Box 41071, Lubbock, TX 79409-1071

kwanghee.jung@ttu.edu T 806.834.0023 | F 806.742.2179

https://www.researchgate.net/profile/Kwanghee_Jung

EDUCATION

INSTITUTION AND LOCATION	DEGREE	YEAR(S)	FIELD OF STUDY
University of British Columbia	Post-doctorate	2011-2012	Quantitative and Computational Neuroscience
McGill University	Ph.D.	2007-2011	Quantitative Psychology
Sungkyunkwan University	None	2004-2007 (Ph.D. Coursework completion)	Psychometrics and Industrial/Organizational Psychology
Sungkyunkwan University	M.A.	2002-2004	Cognitive Psychology
Sungkyunkwan University	B.B.A.	1995-2002	Business Administration (I/O Psychology)

RESEARCH INTERESTS

(1) Multivariate Statistics and Functional Data Analysis (2) Psychological Measurement and Testing Theory (3) Learning Analytics and Big Data Analytics (4) Bio-medical Data and Patient-Reported Outcomes Research (5) Human Brain and Mental Health Research (6) Diagnostic Assessment and Performance Management (7) Bayesian Statistical Modeling (8) Statistical Software Development (9) Institutional Research and Educational Technology

POSITIONS

Assistant Professor , Department of Educational Psychology and Leadership (Quantitative Methods Concentration), Texas Tech University	2017-Present
Affiliated Researcher , Institute for Measurement, Methodology, Analysis, and Policy (IMMAP), Texas Tech University	2017-Present
Research Scientist , Advanced Psychometrics Group, ACTNext, ACT, Inc.	2016-2017
Assistant Professor , Department of Pediatrics, McGovern Medical School, University of Texas Health Science Center at Houston, Texas, USA	2013-2016
Post-Doctoral Fellow , BC Mental Health & Addictions Research Institute, Department of Psychiatry, University of British Columbia, Vancouver, Canada	2011-2012
Teaching/Research Assistant , McGill University, Montreal, Canada	2007-2011
Lecturer , Sungkyunkwan University, Seoul, South Korea	2006-2007
Research Assistant , Sungkyunkwan University, Seoul, South Korea	2006-2007
Researcher , Educational Development Center, Sungkyunkwan University, Seoul, South Korea	2004
Research Assistant , Sungkyunkwan University, Seoul, South Korea	2002-2003

HONORS

International Research and Development Seed Grants, Texas Tech University	2019
Texas Tech College of Education Competitive Edge Research Grant Awards	2018
Open Access Publication Initiative Awards, Texas Tech University	2018
XLSTAT Best Paper Award , The 8 th International Conference on Partial Least Squares and its Related Methods, Paris, France	2014
Strategic Fellowship , Mitacs Elevate, Canada	2012-2013
Post-Doctoral Fellowship , The MIND Foundation of British Columbia, Canada	2011-2012
McGill Graduate Studies Fellowship (MGSF) , McGill University, Canada	2007-2011
Research Fellowship , Brain Korea 21 Project, The Ministry of Education and Human Resources Development, South Korea	2005

TEACHING

Texas Tech University

EPSY 6349, Doctoral Seminar in Educational Psychology: Bayesian Statistical Modeling (Spring 2019)

EPSY 6349, Doctoral Seminar in Educational Psychology: Psychometric Modeling (Fall 2018)

EPSY 7000, Research: Generalized Structured Component Analysis (Summer I & II 2018)

EPSY 6349, Doctoral Seminar in Educational Psychology: Bayesian Networks and Decision Making (Spring 2018)

EPSY 6349, Doctoral Seminar in Educational Psychology: Cognitive Diagnostic Modeling (Fall 2017)

RESEARCH SUPPORTS

Principal Investigator , Development of Institutional Research Analytics Tools and Platform. Competitive Edge Seed Grant, College of Education, Texas Tech University.	09/2018-08/2019
Co-Investigator , Panhandle pipeline (P2): Assessing the impact of mandatory vs. self-selected structured activities on STEM undergraduate student success, NSF 1644179 (PI: Biggers)	09/2017-08/2022
Co-Investigator , Engaging in STEM, DOE P031C160244 (PI: Biggers)	09/2016-08/2021
Co-Investigator , Engaging students: The path to STEM success, DOE P031C160219 (PI: Capps)	09/2016-08/2021
Co-Investigator , The Impact of Sources of Strength, a Primary Prevention Youth Suicide Program, on Sexual Violence Perpetration among Colorado High School Students, DHHS-Centers for Disease Control and Prevention, NCT03014271 (PI: Espelage)	09/2017- 09/2020
Co-Investigator , Exposure to Violence and Subsequent Weapons Use: Mediating and Moderating Processes, National Institutes of Health, R01HD084652 (PI: Dubow)	09/2017- 08/2020
Co-Principal Investigator , Comprehensive Preservation Planning for Palmito Ranch Battlefield. U.S. Department of the Interior-National Park Service. (PI: Dr. Currie)	08/2017- 08/2019
Co-Investigator , Dana Center Program Evaluation, University of Texas at Austin, 22B098 (PI: A. Wiggins)	02/2017-01/2019
Co-Investigator , “Texas Kindergarten Entry Assessment System”, US Department of Education/Texas Education Agency (PI: Landry)	10/2013-08/2016
Co-Investigator , “Enhancing Early Learning for Infants with Disabilities: A Responsive Parenting Intervention”, IES R324A120363 (PI: Taylor)	09/2012-08/2016
Co-Investigator , “Testing an Integrated Pre-School Curriculum for English	03/2011-02/2015

Learners”, IES R324A110079 (PI: Landry)

Co-Investigator, “Development of an Empirically Based Intervention for Childcare Teachers to Promote Language Skills in At-Risk Toddlers”, IES R324A110104 (PI: Guttentag) 06/2011-05/2014

Co-Investigator, “Believe to Become (B2B) Baby Scholar Project”, Douglas & Maria DeVous Foundation (PI: Landry) 08/2011-12/2013

Co-Investigator, “Beginning Education: Early Childcare at Home (BEECH)” ARRA-Texas State Advisory Council on Early Childhood, DHHS 90SC0041 (PI: Landry) 09/2011-08/2013

Grant submitted (2017-2019)

Principal Investigator, Development of a New Machine Learning-based Predictive Model for ADHD Diagnosis Using ADHD-200 Brain Imaging Datasets, 2019 International Research and Development Seed Grants, Texas Tech University.

Co-Investigator, Neuroprotection in acute MCA stroke by somatosensory-induced collateral blood flow, National Institute of Health.

Principal Investigator, Developing an Interactive Web-Based Statistical Software Program for Brain Connectivity Research. Ralph E. Powe Junior Faculty Enhancement Awards, Oak Ridge Associated Universities (ORAU).

Principal Investigator, Development of A Web-Based Interactive Institutional Research Analytics Program, Helen Jones Foundation, Inc.

Co-Principal Investigator, Data Science Workshops for Graduate/Undergraduate Assistants, The CH Foundation.

Co-Principal Investigator, Online Interactive FAFSA and College Information Tool, The CH Foundation.

Principal Investigator, Developing A User-friendly Statistical Software Program for Quantitative Modeling and Analysis of Functionally Integrated Brain Connectivity. Global Faculty Research Awards – Google Inc.

Co-Principal Investigator, Helen Jones Foundation Summer Data Science Workshop. Helen Jones Foundation, Inc.

Co-Investigator, The National Rural Education Research Center on Professional Development: A Research-Practitioner Partnership. Institute of Education Sciences.

Co-Investigator, BullyDown: An Innovative Approach to Reducing Bullying Among Middle School Youth. National Institute of Health.

Co-Investigator, Evaluation of the K-5 Second Step Social-Emotional Learning Program & Bully Prevention Teacher training for Youth with and At-Risk for Disability: Impact on Teacher Effectiveness & Student Outcomes. Institute of Education Sciences.

Co-Investigator, Teamwork, Observation, Problem-solving and Exploration - Training Users Realistically in Virtual Environments. National Science Foundation.

PEER-REVIEWED PUBLICATIONS AND SUBMISSIONS

1. Hwang, H., Cho, G., **Jung, K.**, Falk, C., Flake, J., Jin, M & Lee, S. (submitted). An approach to structural equation modeling with both factors and components: Integrated generalized structured component analysis.
2. **Jung, K.**, Cho, S., Lee, J., Kim, S., & Ryoo, J. (2019). An illustrative application of generalized structured component analysis for brain connectivity research, *Behaviormetrika*. <https://doi-org.lib-e2.lib.ttu.edu/10.1007/s41237-019-00080-w>
3. Cho, G., **Jung, K.**, & Hwang, H. (2019). Out-of-bag prediction error: a cross validation index for generalized structured component analysis. *Multivariate Behavioral Research*. <https://doi.org/10.1080/00273171.2018.1540340>
4. **Jung, K.**, Panko, P., Lee, J., & Hwang, H. (2018). A comparative study on the performance of GSCA and CSA in parameter recovery for structural equation models with ordinal observed variables. *Frontiers in Psychology*, 9, 2461.
5. Hwang, H., Takane, Y., & **Jung, K.** (2017). Generalized structured component analysis with uniqueness terms for accommodating measurement error. *Frontiers in Psychology*, 8, 2137.
6. Choi J. Y., Hwang, H., Yamamoto, M., **Jung, K.** & Woodward, T. S. (2017). A unified approach to functional principal component analysis and functional multiple-set canonical correlation, *Psychometrika*. 82, 427-441.
7. **Jung, K.**, Takane, Y., Hwang, H., & Woodward, T. S. (2016). Multilevel dynamic generalized structured component analysis for brain connectivity analysis in functional neuroimaging data. *Psychometrika*, 81, 565-581.
8. Merz, E. C., Landry, S. H., Johnson, U. Y., Williams, J. M. & **Jung, K.** (2016). Effects of a responsiveness-focused intervention in family child care homes on children's executive function, *Early Childhood Research Quarterly*, 34, 128-139.
9. **Jung, K.** & Takane, Y. (2015). Multidimensional Scaling I. In: James D. Wright (editor-in-chief), *International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, Vol 16. Oxford: Elsevier. pp. 34–39.
10. Lavigne, K. M., Rapin, L. A., Metzack, P. D., Whitman, J. C., **Jung, K.**, Dohen, M., Loevenbruck, H.,

- & Woodward, T. S. (2015). Left-dominant temporal-frontal hypercoupling is associated with hallucinations during low cognitive control. *Schizophrenia Bulletin*, 41, 259-267.
11. Woodward, T. S., **Jung, K.**, Smith, G. N., Hwang, H., Barr, A. M., Procyshyn, R. M., Flynn, S. W., van der Gaag, M., & Honer, W. G. (2014). Symptom changes in five dimensions of the positive and negative syndrome scales in refractory psychosis. *European Archives of Psychiatry and Clinical Neuroscience*, 264, 673–682.
 12. Woodward, T. S., **Jung, K.**, Hwang, H., Yin, J., Taylor, L. Menon, M., Peters, E., Kuipers, E., Waters, F., Lecomte, T., Sommer, I., Daalman, K., van Lutterveld, R., Hubl, D., Kindler, J., Homan, P., Badcock, J. E., Chhabra, S., Cella, M., Keedy, S., Allen, P., Mechlli, A., Preti, A., Siddi, S., & Erickson, D. (2014). Symptom dimensions of the Psychotic Symptom Rating Scales (PSYRATS) in psychosis: A multi-site study. *Schizophrenia Bulletin*, 40, S265-S274.
 13. Hwang, H., **Jung, K.**, Takane, Y., & Woodward, T. S. (2013). A unified approach to multiple-set canonical correlation analysis and principal component analysis: an application to functional neuroimaging data. *British Journal of Mathematical and Statistical Psychology*, 66, 308-321.
 14. **Jung, K.**, Takane, Y., Hwang, H., & Woodward, T. S. (2012). Dynamic GSCA (Generalized Structured Component Analysis) with applications to the analysis of effective connectivity in functional neuroimaging data. *Psychometrika*, 77, 827-848.
 15. Hwang, H., **Jung, K.**, Takane, Y., & Woodward, T. S. (2012). Functional multiple-set canonical correlation analysis, *Psychometrika*, 77, 48-64.
 16. Takane, Y., **Jung, K.**, & Hwang, H. (2011). Regularized reduced rank growth curve models. *Computational Statistics and Data Analysis*, 55, 1041-1052.
 17. Takane, Y., **Jung, K.**, & Hwang, H. (2010). An acceleration method for ten Berge et al.'s algorithm for orthogonal INDSCAL. *Computational Statistics*, 25, 409-428.
 18. Lee, S. M., Kim, J. W., & **Jung, K.** (2006). Potential of a self-report measure for intelligence. *The Korean Journal of Educational Psychology*, 20, 931-951.
 19. **Jung, K.** & Lee, J. M. (2005). The effects of types of knowledge and cognitive styles on summarizing and understanding text. *The Korean Journal of Cognitive Science*, 16, 271-285.

CONFERENCES (ORAL AND POSTER PRESENTATIONS)

1. **Jung, K.**, Lee, J., Gupta, V., Kim, S., & Hwang, H. Simulation Based Investigation of Optimal Modeling Approaches for SEMs with Ordinal Variables, **The NCME Annual Meeting**, April 2019, Toronto, Canada.
2. Lee, J., **Jung, K.**, Park, J., & Park, H. Bayesian Latent Class Analysis for Person-Centered Research: Simulation Study on Conditional Dependence and Prior Choice, 2019 AERA Annual Meeting, April

2019, Toronto, Canada

3. Ryoo, J., **Jung, K.**, Hwang, H., & Choi, J. Component-based Item Response Theory utilizing Generalized Structured Component Analysis, 2019 AERA Annual Meeting, April 2019, Toronto, Canada
4. **Jung, K.**, Lee, J., Jung, J., Kim, S., Stickley, J., & Hwang, H. An Advanced Predictive Statistical Model of College Persistence in Higher Education, 2019 TAIR Conference, February 2019, Horseshoe Bay, USA.
5. Jung, J., **Jung, K.**, & Lee, J. Creating advanced analytics and visualizations to understand student persistence using R scripts in Power BI, 2019 TAIR Conference, February 2019, Horseshoe Bay, USA.
6. Jung, J., & **Jung, K.** Creating visualizations with advanced statistical analysis results using R scripts in Power BI, 2019 GCAIR meeting, February 2019, Conroe, USA.
7. **Jung, K.**, Lee, J., Gupta, V., Kim, S., & Hwang, H. Application of Generalized Structured Component Analysis for Brain Connectivity Research, 2018 KSEA West Gulf Coast Regional Conference, October 2018, Houston, USA.
8. Park, J., **Jung, K.** & Lee, J. Evaluation of three types of DIF in multilevel mixture IRT models, **The NCME Annual Meeting**, April 2018, New York, USA.
9. **Jung, K.**, Oh, H., Lee, J., & Barlow, S. M. An efficient modeling approach for brain connectivity analysis of saltatory pneumotactile velocity stimulus, **Society for Neuroscience**, November 2017, Washington, D.C., USA.
10. Schmidt, K. M., **Jung, K.**, Hwang, H., Meyer, J. P., Ryoo, J. H. Person Scoring in 2PL Model Between CB-IRT and FB-IRT, **The International Psychometric Society Meeting**, July 2017, Zurich, Switzerland.
11. C-H, Li & **Jung, K.** Identifying One Credible Referent Variable for Measurement Invariance Testing: A MIMIC-Interaction Modeling, **The International Psychometric Society Meeting**, July 2017, Zurich, Switzerland.
12. **Jung, K.**, Takane, Y., Hwang, H., & Woodward, S. T. Dynamic Generalized Structured Component Analysis, **The 31st International Congress of Psychology**, July 2016, Yokohama, Japan.
13. Ryoo, J. H., **Jung, K.**, Hwang, H., Meyer, J. P., Molfese, V., Brown, T. E., & Shi, D. Application of Generalized Structured Component Analysis to Item Response Theory. **The Annual Meeting of the Modern Modeling Methods Conference**, May 2016, Storrs, USA.
14. Johnson, U. Y. & **Jung, K.** Identifying Distinct Subgroups and Predictors of Change of Family Child Care Providers in a Web-based Training Intervention, **The Society for Research in Human Development (SRHD) Biennial Meeting**, March 2016, Denver, USA.

15. Landry, S.H., Assel, M.A., Carlo, M.S., **Jung, K.**, Li, C.H, Rodriguez, L., & Caldwell, C. Evaluation of a Small-Group Intervention on Young English Language Learners' Cognitive & Social Skills. **The Principal Investigators Meeting of the Institute of Education Sciences**, December 2015, Washington, DC.
16. **Jung, K.** & Borich, M. Path-analytic Structural Equation Modeling to evaluate connections between primary sensorimotor cortical regions in chronic stroke. **Society for Neuroscience**, October 2015, Chicago, USA.
17. Ryoo, J. H., **Jung, K.** & Hwang, H. Component-based Item Response Theory. **The International Psychometric Society Meeting**, July 2015, Beijing, China.
18. Townsend, A., Chevallier, J., Laufer, C., Abdullah, Maryann, **Jung, K.**, Williams, J. M., & Filipek, P. A Comparison of Live Versus Video Modalities for Measurement of Eye Contact in Infants at Age 6 Months As 'Red Flags' for ASD. **The International Meeting for Autism Research (IMFAR)**, May 2015, Salt Lake City, USA.
19. **Jung, K.**, Park, H., & Hwang, H. Latent variable structural equation modeling reveals the importance of MTL and parieto-occipital connections for successful encoding of source memory. **Society for Neuroscience**, November 2014, Washington, D.C., USA.
20. Cho, S., **Jung, K.**, Aminian, K., Abi-Jaoude, E., Hwang, H., & Strafella, A. P. Reorganization of Structural Brain Connectivity in Parkinson's disease Patients with Pathological Gambling: Generalized Structured Component Analysis. **Society for Neuroscience**, November 2014, Washington, D.C., USA.
21. **Jung, K.** Multilevel Dynamic Generalized Structured Component Analysis for brain connectivity analysis in functional neuroimaging data. **The International Psychometric Society Meeting**, July 2014, Madison, USA
22. **Jung, K.** Multilevel Dynamic Generalized Structured Component Analysis. **8th International Conference Partial Least Squares and Related Methods**, May 2014, Paris, France
23. **Jung, K.** Multilevel Dynamic GSCA for brain connectivity analysis in functional neuroimaging data. **Society for Neuroscience**, November 2013, San Diego, USA.
24. **Jung, K.** Dynamic GSCA for multiple-sample brain connectivity analysis. **Korean-American Bio-Medical Scientists Symposium**, November 2013, Houston, USA.
25. Landry, S. H., Assel, M. A., **Jung, K.**, Carlo, M., & Li. C. H. Evaluation of a small group literacy, language, and math curriculum for improving early academic skills of Spanish speaking Pre-K students. **2013 Inaugural Bilingual Research Conference**. May 2013, Houston, USA.
26. **Jung, K.** & Woodward, S. T. Functional connectivity using SEM with fMRI implicates the cerebellum in working memory inefficiency in schizophrenia. **Society for Neuroscience**, October

2012, New Orleans, USA.

27. **Jung, K.**, Woodward, T. S., Smith, G. N., Hwang, H., Barr, A. M., Procyshyn, R. M., Flynn, S. W., van der Gaag, M., & Honer, W. G. Symptom changes in five dimensions of the positive and negative syndrome scales (PANSS) pre- and post-treatment on a refractory psychosis ward. **27th Annual Department of Psychiatry Research Day**, May 2012, Vancouver, Canada.
28. **Jung, K.**, Takane, Y., Hwang, H., & Woodward, T. S. Dynamic GSCA (Generalized Structured Component Analysis): A Structural Equation Model for Analyzing Effective Connectivity in Functional Neuroimaging. **The International Psychometric Society Meeting**, July 2011, Hong Kong, China.
29. **Jung, K.**, Takane, Y., & Hwang, H. A naïve versus non-naïve bootstrap method for testing regression coefficients in multivariate data analysis. **The International Psychometric Society Meeting**, July, 2010, Athens, USA.
30. Takane, Y., **Jung, K.**, & Hwang, H. An acceleration technique for ten Berge et al.'s algorithm for orthogonal INDSCAL. **The International Psychometric Society Meeting**, July 2009, Cambridge, UK.
31. Takane, Y., **Jung, K.**, & Hwang, H. Generalized Reduced-rank Growth Curve Model. **The International Psychometric Society Meeting**, July 2008, Durham, USA.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

Psychometric Society/Society for Neuroscience/American Educational Researchers Association/National Council on Measurement in Education/Korean-American Scientists and Engineers Association

EDITORIAL POSITIONS (INVITED REVIEWER)

Psychometrika/ Journal of Multivariate Analysis/ Journal of Educational Measurement/
Frontiers in Quantitative Psychology and Measurement/ Journal of Applied Statistics/
Pharmacology, Biochemistry and Behavior

PROFESSIONAL CERTIFICATES & OTHER SKILLS

MATLAB, R, SAS, Mplus, Power BI, SQL, R Shiny, ACCESS, C\C++, Python, Software for IRT analyses, Software for Neuroimaging Data Analysis, Meta-analysis Software, SPSS, LISREL, AMOS
Grant Writing and Project Management Skills

STATISTICAL SOFTWARE DEVELOPMENT

GeSCA (<http://www.sem-gesca.com>) – Free web-based software for generalized structured component analysis (Component-based structural equation modeling software)

Hwang, H., **Jung, K.**, & Kim, S. (2019). WEB GESCA (Version 1.5) [Software]. Available from <http://sem-gesca.com/webgesca/>

SERVICE TO THE COMMUNITY

Co-chair/Member , REMS Dissertation Committee, College of Education, Texas Tech University (Candidates: Desiree Walisky, Pavel Panko, Esteban Montenegro, Youngha Oh, Luke Waggenspack)	2018-Present
Member , External Dissertation Review Committee, College of Education, Texas Tech University (Candidate: Rhonda Harmond)	2017-Present
Proctor , 2019 Test of Proficiency in Korean (TOPIK) – Lubbock	04/2019
Judge , 2019 South Plans Regional Science and Engineering Fair	02/2019
Graduate Dean Representative , Dissertation Review Committee, College of Education, Texas Tech University (Candidate: Sheri Warren)	09/2018
Review Panel , Division D - Measurement and Research Methodology & Division I - Education in the Professions, The 2019 AERA Annual Meeting of the American Educational Research Association (AERA)	08/2018
Review Panel , The 2019 NCME Annual Meeting, National Council on Measurement in Education	08/2018
Member , Ad Hoc Standards of Academe Committee, College of Education, Texas Tech University	10/2017-05/2018
Member , External Dissertation Review Committee, College of Education, Texas Tech University	11/2017-05/2018
Reviewer , The 2018 TTU Undergraduate Research Conference (URC)	03/2018
President/President-Elect , Korean-American Scientists and Engineers Association- South Texas Chapter	07/2014-06/2016
Chair/Member , National Mathematics and Science Competition Committee	2014/2015/2016
Member , Korean-American Bio-Medical Scientists Symposium Committee/ Young Professional Forum Committee	2013/2014/2015

REFERENCES

Yoshio Takane, Emeritus Professor at McGill University and Adjunct Professor of Psychology at University of Victoria, Canada

E-mail: yoshio.takane@mcgill.ca Tel: 250-721-7530
https://www.researchgate.net/profile/Yoshio_Takane

Heungsun Hwang, Professor, Department of Psychology, McGill University, Canada
E-mail: heungsun.hwang@mcgill.ca Tel: 514-398-8021
https://www.researchgate.net/profile/Heungsun_Hwang

Todd S. Woodward, Professor, Department of Psychiatry, University of British Columbia, Canada
E-mail: toddswoodward@gmail.com Tel: 604-875-2000 x4724
https://www.researchgate.net/profile/Todd_Woodward2