Daniel Yangsup Lee

Psychometrician

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Education

2019	**Ph.D., Measurement, Statistics, and Evaluation**	University of Maryland, College Park
2013	**M.S., Applied Statistics**	Teachers College Columbia University
2007	**B.S., Business Administration**	Carnegie Mellon University

Work Experience

The College Board · Newtown, PA
Present – July 2019
Psychometrician

- Wrote R script to simulate responses to dependent items for a larger study that was conducted to decide on the type of response model that should be used.
- Conducted a simulation study using R on an item statistical fit criteria called $s - x^2$ to find parameters that could be used to quickly filter through poorly fitting items, reducing item review time by as much as 90%.
- Conducted a simulation study using R to investigate differences on various scoring rules for missing item responses, which served as evidence for using a specific scoring rule over the others.
- Wrote R code to quickly calculate, organize and present statistics from various sources to help leadership make final decisions on raw score to scale score conversions for all 32 AP tests in an extremely short timeline.
- Organized and led training sessions to help psychometricians and statisticians conduct special psychometric tasks.
- Wrote standard operating procedure and job aids to help guide staff conduct item response theory item calibration on trial test items.
- Provided support as needed on various psychometric tasks such as test item analysis, differential item analysis, test security analysis, and test equating.

Center for Applied Linguistics · Washington, DC
July 2019 – June 2017
Senior Research Associate/Psychometrician

- Led the quantitative research team to execute analyses like equating, item calibration, and standard setting for successful submission to the Office of Career and Technical Education for approval of a computer-adaptive speaking, reading, and writing test taken by thousands of second language learners in the United States.
- Developed an R script to automatically configure and execute a test classification accuracy software for 192 different samples of approximately 8,000 students, reducing overall analysis time by 80% .
- Collaborated with the test development team and conducted all quantitative analyses for publication of CAL-EPT test in Mexico, giving approximately 8,000 secondary students access to a reliable and valid English language test since FY 2018.
- Simulated examinee polytomously scored responses to create distributions of possible scores, which served as the main methodology for deciding on the optimal routing criteria for a paper-based version of a multi-stage computer-adaptive test.
- Built a data reshaping package and created a user-friendly procedure to help non-quantitative team members clean messy data in approximately 15 minutes, reducing process time by 75%.
- Developed an R script to automatically configure and execute item calibration software for 80 different subset of items, reducing analysis time by 80%.

May 2017 – August 2015
Psychometrics and Quantitative Research Intern

- Created an R package to conduct item bias analysis (DIF) for use specifically with multi-stage adaptive tests, allowing for the continued delivery of crucial item statistics to one of our major clients.
- Developed an R function to identify the combinations of routes taken by examinees taking a multi-stage adaptive test for reading and listening, providing important ancillary information to help decide how item reliability measures for multi-stage adaptive tests should be calculated.

University of Maryland · College Park, MD
May 2015 – August 2013
Research Assistant

- Compared methods for handling attrition in longitudinal datasets, leading to a journal publication that is currently in press for the Journal of Experimental Education.
- Conducted statistical analysis of linear and non-linear longitudinal models that resulted in a book chapter on handling attrition in longitudinal survey data.

August 2015 – January 2015 | Lecturer
- Taught introductory statistics to approximately 40 students in the spring and summer.
- Wrote tutorials for students to easily learn how to conduct statistical analyses using SPSS.

Maryland Assessment Research Center · College Park, MD

May 2015 – August 2013 | Research Assistant
- Executed a student diagnostic model comparison study that led to an online publication and timely submission to the Maryland State Department of Education
- Drafted a literature review for the Maryland Department of Education on statistics-related issues involving the Maryland Student Achievement test (https://marces.org/current/ExecutiveReport_MARC_2014_CognitiveDiagnosticModels.pdf).

Bronxwood Preparatory High School · Bronx, NY

June 2010 – September 2007 | Teacher
- Helped low-income English language learners, non-English language learners, and special education students pass the NY State Algebra Regents exam, maintaining a 60% pass rate for 3 years.
- Tutored 10 English language learners to help them pass the NY State Algebra Regents exam in Spanish.

Skills

Statistical Analysis	Item Response Theory, Classical Testing Theory, Cognitive Diagnostic Modeling, Multivariate Regression Analysis, Structural Equation Models, Latent Variable Models, Survey Methods
Statistical Software	R, SPSS, SAS, Excel, Python, SQL, Mplus, FlexMIRT, OpenBUGS, Winsteps
Language	English, Spanish, Korean

Publications

Cui, W., **Lee, D. Y.**, Duffy, L. J., and Hendrickson, A. (2020). Irt calibration of paired items on large-scale test. Manuscript submitted for publication

Lee, D. Y. (2019). *Handling of Missing Data with Growth Mixture Models*. PhD thesis, University of Maryland, College Park

Lee, D. Y., Harring, J. R., and Stapleton, L. M. (2019). Choice of sampling weights for longitudinal modeling of panel data. *Journal of Experimental Education*, *87*, 596-615

Stapleton, L. M., Harring, J. R., and **Lee, D. Y.** (2015). Sampling weight considerations for multilevel modeling of panel data. In Harring, J. R., Stapleton, L. M., and Beretvas, N. S., editors, *Advances in multilevel modeling for educational research : Addressing practical issues found in real-world applications*, pages 63–96. Information Age Publishing, Inc., Charlotte, NC

Lissitz, R. W., Jiao, H., Li, M., **Lee, D. Y.**, and Kang, Y. (2014). Cognitive diagnostic models. Technical report, Maryland Assessment Research Center, University of Maryland, College Park, MD. MARC Executive Report

Lissitz, R. W., Jiao, H., Li, M., **Lee, D. Y.**, and Kang, Y. (2013). Issues related to comparing new and old assessments and comparing trends. Technical report, Maryland Assessment Research Center, University of Maryland, College Park, MD. MARC Executive Report

Presentations

Monte, M., **Lee, D. Y.** (2019, March). Best plus 3.0 : Assessing speaking using a multistage adaptive test. Demonstration presented at the Language Testing Research Colloquium, Atlanta, GA

Lee, D. Y. (2016, May). Multiple imputation in finite mixture modeling. Paper presented at the Modern Modeling Methods Conference, University of Connecticut, Storrs, CT

Lee, D. Y., Cassiday, K. and Hancock, G. R. (2016, April). Error covariance structure in a latent quadratic effects model. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC

Stapleton, L. M., **Lee, D. Y.**, and Harring, J. R. (2016, April). Choice of sampling weight for longitudinal modeling of panel data. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC

Lee, D. Y. (2016, April). Utilizing non-ignorable missing data information in item response theory. Poster presented at the National Council on Measurement in Educational, Washington, DC

Stapleton, L. M., Harring, J. R., and **Lee, D. Y.** (2014, November). Sampling weight considerations for multilevel modeling of panel data. Presentation at the conference for Advances in Multilevel Modeling for Educational Research, College Park, MD

Yang, J. S. and **Lee, D. Y.** (2015, July). Utilizing non-ignorable missing data information in item response theory. Poster presented at the International Meeting of the Psychometric Society, Beijing Normal University, Beijing

Lee, D. Y. and Sweet, S. (2014, April). Introduction to computer adaptive formative assessment automatic item generation system. Poster presented at the annual meeting of the American Educational Research Association, Philadelphia, PA