YALE QUAN

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EDUCATION

Exp. Jun 2026 **Ph.D. Measurement & Statistics**
College of Education
University of Washington. Seattle WA
Advisor: Chun Wang, Ph.D.

Dec 2020 **M.S. Applied Statistics**
College of Natural Sciences and Mathematics
California State University, Long Beach. Long Beach CA
Committee: Sung Eun Kim Ph.D. (Chair), Kagba Suaray Ph.D., Jen-Mei Chang Ph.D.,

Thesis Title: A Multivariate Statistical Analysis of Major Change Patterns and Significant Factors That Influence Graduation Rates: A Case Study at California State University, Long Beach

May 2013 **B.S. Criminal Justice**
College of Health and Human Services
California State University, Long Beach. Long Beach CA

INTERESTS

As an educator and researcher, I have a passion for ensuring that assessments provide equitable high-quality measurement. With this objective in mind, my primary research focuses on the development and interpretation of multidimensional nonlinear latent variable models to measure key educational constructs and the refinement and development of statistical models used to perform nonlinear multidimensional clustering with mixed data types. My substantive research focuses on the intersection of psychometrics and effective instructional decision making.

I have a solid understanding of various statistical modeling approaches and proficiency in implementing them using R. I excel in effectively communicating research results to diverse audiences through compelling visualizations and establishing actionable and insightful connections.

AWARDS/HONORS

2022-2024 **Community Partner Doctoral Fellowship Award,**
College of Education, University of Washington. Seattle WA

PROFESSIONAL TRAININGS AND CERTIFICATIONS

2024 **Data Science Methods for Digital Learning Platforms Certification**
University of Pennsylvania. Philadelphia, PA

2023 **The National Assessment of Educational Progress Winter Data Training**
American Institutes for Research. Arlington VA

2020 **National Assessment of Educational Progress Process Data Summer Training Series**
American Institutes for Research. Arlington VA

RESEARCH EXPERIENCE

Sept. 2022 – Present
Community Partner
Doctoral Fellow

Equal Opportunity Schools
Seattle WA
Supervisors: Erin Bogan PhD, Alaina Boyle PhD, Alejandro Torres PhD

Examine the psychometric validity and reliability of the student belonging survey and provide recommendations on areas the survey can be improved. Develop and implement advanced statistical methods including longitudinal item response theory models, multilevel modeling, and structural equation modeling to uncover and understand patterns in student level data to support evidence-based decisions for education policy. Create Tableau dashboards and storyboards that provide insight on equitable distribution of school resources.

Projects:

- Determining Significant Factors of Student Belonging
- Using Categorical Structural Equation Models to Identify Facets of Student Belonging.
- Reliable Measurement of Student Belonging: A Reliability and Validity Study of a Student Belonging Survey.

Summer 2021
Educational Research Consultant

Center for Social Science Computation and Research
University of Washington, Seattle, WA
Supervisor: Jerald Herting, PhD.

Provided statistical and programming consulting services to students and faculty across University of Washington Seattle campus.

TEACHING EXPERIENCE

March 2022 – June 2022
Teaching Assistant

University of Washington. College of Education
Seattle, WA

- Basic Educational Statistics

Aug 2021 – March 2022
Teaching Assistant

University of Washington. Department of Psychology
Seattle, WA

- Fundamentals of Psychological Research

Dec 2020 – Jan 2021
Lecturer

California State University, Long Beach. College of Natural Sciences
Long Beach, CA

- Statistics for Everyday Life*

Aug 2018 – Dec 2020
Teaching Associate

- Statistics for Everyday Life
- Essential Algebra B
- The Power of Mathematics*

Aug 2017 – Aug 2018
Supplemental Instructor

- Business Calculus*
- Calculus I*

* Instructor of Record

PUBLICATIONS

Quan, Y. (2020). *A Multivariate Statistical Analysis of Major Change Patterns and Significant Factors That Influence Graduation Rates: A Case Study at California State University, Long Beach* (Publication No. 28155286) [Master's thesis, California State University Long Beach]. ProQuest Dissertations and Theses Global.

PRESENTATIONS

Quan, Y., & Wang, C. (2024, April 11-14) *Parameter Recovery from Higher Order Item Response Theory Models with Structural Missingness* [Paper Presentation]. National Council on Measurement in Education 2024 Annual Meeting, Philadelphia, PA, United States

Quan, Y., & Wang, C. (2024, April 11-14) *Collapsing or not? A Practical Guide to Handling Sparse Responses for Polytomous Items,* [Poster Presentation] American Educational Research Association 2024 Annual Meeting, Philadelphia, PA, United States

Quan, Y., & Xiao, T. (2024, March 11) *The Effects of Measurement Error on Multilevel Linear Growth Model Parameter Estimates,* [Poster Presentation]. Center for Statistics and the Social Sciences Student Research Conference, Seattle, WA, United Sates

Quan, Y., & Wang, C. (2023, November 16-17). *A Multiple-group Higher-Order IRT Approach to Calibrate Multidimensional Assessments with Structural Missingness* [Paper Presentation]. Second Annual Pacific Northwest Research on Psychometrics and Applied Statistics Conference, Seattle, WA, United States.

Quan, Y., & Wang, C. (2022, April 12-15) *The Effects of Sample Size and Collapse Direction on Parameter Recovery* [Poster Presentation]. National Council on Measurement in Education 2023 Annual Meeting, Chicago, IL, United States

Quan, Y. (2021, December 3). *Clustering Education Data Using K-Medoids with Partitioning Around the Medoids Algorithm* [Seminar Presentation]. Measurement & Statistics Seminar, University of Washington. Seattle, WA, United States

Quan, Y. (2020, November 17). *A Multivariate Statistical Analysis of Major Change Patterns and Significant Factors That Influence Graduation Rates: A Case Study at California State University, Long Beach* [Paper Presentation]. Beyond the First Year, Long Beach, CA, United States

CLASS PROJECTS

EDLPS 560 - Education Policy and Practice - (In)Effective Instructional Decision-Making with Imperfect Information

Using an imperfect information framework, I explored how the 2015 Every Student Succeeds Act provides imperfect information to teachers on best practices to address student learning needs. I proposed that a *continuous feedback assessment* system be researched to determine if incorporating new technology into assessments can improve effective teacher instructional decision making by providing (as close as possible) real-time feedback on student decision making, ability measurements, and problem-solving methods. Potential research into a continuous feedback assessment system using large scale assessment process data and machine learning methodology are also discussed.

EDPSY 558 Generalizability Theory – Using Generalizability Theory with Continuous Latent Random Variables

Presented research on performing Generalizability and Decisions studies with Continuous Latent Random Variables. An initial simulation study was performed using GENOVA and replicated using CFA using observed data and then as a realization of a Continuous Latent Random Variable using the *lavaan* package in R. The simulation study confirmed that GENOVA and CFA provide identical results when using observed data. However, treating the data as a realization of a Continuous Latent Random Variable results in significantly different results.

EDPSY 592 Item Response Theory II – An Introduction to Longitudinal Item Response Theory Analysis Using a Two-Tier Item Response Theory Model

Researched and developed a simulation study on performing a longitudinal item response theory analysis utilizing a two-tier longitudinal item response theory model. This research was used to develop a presentation, with accompanying R code, that can be used to introduce beginning researchers to longitudinal item response theory analysis.

EDPSY 539 Classical Test Theory - A Reliability and Validity Study of EPDSY 490 Spring 2022

Performed a reliability and validity study of assessments administered to Spring 2022 EPDSY 490 students. The goal of this project was to determine if (1) The assessment was a reliable measure of the course content, (2) Determine what, if any, biases may be present in the assessment, and (3) Study the construct validity of the assessment and its underlying factor structure. Methodology primarily consisted of Exploratory Factor Analysis, Chronbach's Alpha, and applications of Classical Test Theory methodology. Analysis was performed using R and SPSS.

CS&SS 544 Event History Analysis - Teacher Retention in Washington, An Event History Analysis

An analysis of teacher retention from 2017-2020 in Washington using data publicly available from the Washington State Office of Superintendent of Public Instruction (OSPI). Specifically, the OSPI S-275 datasets for each year were merged with other publicly available OSPI datasets to create a comprehensive public dataset of Washington teachers. Methodology primarily consisted of non-parametric modeling techniques including Life Tables and using time-varying covariates and coefficients in a Cox regression model. Analysis was performed using R.

EDPSY 591 Item Response Theory I - An Item Response Theory Analysis of Biology Freshman Survey

A psychometric analysis of a survey administered to incoming freshman at California State University, Long Beach who were admitted into the Biological Sciences major. The goal of the analysis was to determine if there is any significant difference between the latent trait estimates of students who were admitted as Biological Sciences Majors to CSULB in 2020 as compared to students admitted in 2021, determine if there is a significant difference in latent trait estimates between male and female students, and determine if there are any significant correlations between latent trait estimates. Analysis was performed using R.

EDPSY 576 Multilevel Modeling – A Multilevel Logistic Model of Growth Mindset

A Multilevel Logistic Model was fit using the 2018 PISA data (students within schools) and focused on the association between student's perception of their school and teachers and growth mindset in the context of students in grades eight through twelve in the United States. Analysis was performed using R.

SERVICE

2023	**Reviewer - 2024 American Educational Research Association (AERA) Annual Meeting Division D Measurement and Research Methodology**
2022	**Reviewer - 2023 National Council on Measurement in Education (NCME) Training Proposal**

MEMBERSHIPS

2022 – Present	**National Council on Measurement in Education (NCME)**
2022 – Present	**American Educational Research Association (AERA), Division D**
2019 – Present	**Phi Kappa Phi Honor Society**