

## YALE QUAN

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### EDUCATION

UNIVERSITY OF WASHINGTON

Ph.D. Measurement & Statistics

*Advisor:* Chun Wang, Ph.D.

Seattle, WA

Expected May 2026

CALIFORNIA STATE UNIVERSITY, LONG BEACH

M.S. Applied Statistics

B.S. Criminal Justice

Long Beach, CA

December 2020

May 2013

### RESEARCH INTERESTS

My research is motivated by the need for fair and rigorous measurement tools. To meet this need, my primary area of research focuses on developing measurement techniques that integrate explainable machine learning and artificial intelligence methods with cutting edge psychometric models to achieve accurate measurement of key educational constructs in small sample sizes. My broader research explores barriers in K-12 education, with a focus on critical issues such as student belonging and chronic absenteeism.

### AWARDS AND HONORS

Three-Year Community Partner Fellowship Award, University of Washington, 2022-2025

### PROFESSIONAL TRAININGS AND CERTIFICATIONS

UNIVERSITY OF PENNSYLVANIA

Data Science Methods for Digital Learning Platforms Certification

Philadelphia, PA

Expected 2025

AMERICAN INSTITUTES FOR RESEARCH

The National Assessment of Educational Progress Winter Data Training

Arlington, VA

January 2023

AMERICAN INSTITUTES FOR RESEARCH

National Assessment of Educational Progress Process Data Training Series

Arlington, VA

August, 2021

### RESEARCH INTERNSHIPS

DATA SCIENCE 4 EVERYONE

Graduate Research Assistant

*Supervisors:* Zarek Drozda, Sarah Miller, Sean Sukol

University of Chicago, IL

June 2024 – August 2024

Conducted a systematic literature review following PRISMA guidelines to support the development of a nationwide assessment for measuring data science and data literacy competencies in K-12 education.

## RESEARCH EXPERIENCE

EQUAL OPPORTUNITY SCHOOLS

Community Partner Doctoral Fellow

*Supervisors:* Erin Bogan Ph.D., Alaina Boyle Ph.D., Jessica Paulson

Seattle, WA

August 2022 – Present

Projects:

- Balancing Accuracy and Equity: Total Scores versus Latent Scores in Measuring Student Needs
- Developing an Equitable Machine Learning Algorithm to Identify Students at Risk of Chronic Absenteeism
- Predicting Advanced Course Enrollment and Success from Measures 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.

CENTER FOR SOCIAL SCIENCE COMPUTATION AND RESEARCH

University of Washington

Seattle, WA

June 2021 – August 2021

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

## TEACHING EXPERIENCE

UNIVERSITY OF WASHINGTON

Teaching Assistant, College of Education

Basic Educational Statistics

Seattle, WA

March 2022 – June 2022

Teaching Assistant, Department of Psychology  
Fundamentals of Psychological Research

August 2021 – March 2022

CALIFORNIA STATE UNIVERSITY, LONG BEACH

Lecturer, Department of Mathematics and Statistics

Statistics for Everyday Life

Long Beach, CA

December 2020 – January 2021

Teaching Associate, Department of Mathematics and Statistics  
Statistics for Everyday Life  
Essential Algebra B  
The Power of Mathematics

August 2018 – December 2020

Supplemental Instructor  
Business Calculus  
Calculus I

August 2017 – August 2018

## PRESENTATIONS AND PUBLICATIONS

**Quan, Y.,** Sager, M. (Under Review) *Identifying Core Formal Assessment Competencies and Informal Learning Outcomes of Data Science and Data Literacy*

**Quan, Y.,** & Wang, C. (Under Review) *Calibrating Multidimensional Assessments with Structural Missingness, An Application of a Multiple-Group Higher-Order IRT Model*

1. **Quan, Y.,** & Wang, C. (In Press) Collapsing or not? A Practical Guide to Handling Sparse Responses for Polytomous Items. *Methodology*
2. **Quan, Y.,** Sager, M. (2025, February 17-20) *Identifying Core Formal Assessment Competencies and Informal Learning Outcomes of Data Science and Data Literacy* [Paper Presentation]. Data Science Education K-12: Research to Practice Annual Conference
3. **Quan, Y.,** & Ren, H. (2024, December 4) *Sample Size and Test Length Recommendations for the Diagnostic Facet Status Model* [Paper Presentation]. Center for Statistics and The Social Sciences Student Research Presentation, Seattle, WA, United States.
4. **Quan, Y.,** & Wang, C. (2024, November 17-18) *A New Item Fit Test for the Diagnostic Facet Test Model (DFSMT)* [Paper Presentation]. Annual Pacific Northwest Research on Psychometrics and Applied Statistics Conference, Pullman, WA, United States.
5. **Quan, Y.** (2024, June 4) *Introduction to Bayesian Item Response Theory*, [Paper Presentation]. Center for Statistics and The Social Sciences Student Research Presentation, Seattle, WA, United States.
6. **Quan, Y.** (2024, October 18) *Item Response Theory (IRT) Model Selection and Applications* [Invited Talk]. University of Washington Behavioral Research Center for HIV, Seattle, WA, United States.
7. **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
8. **Quan, Y.,** & Wang, C. (2024, April 11-14) *Collapsing or not? A Practical Guide to Handling Sparse Responses for Polytomous Items*, [Poster Presentation, Paper Presentation], American Educational Research Association 2024 Annual Meeting, Philadelphia, PA, United States. <https://doi.org/10.3102/2102869>
9. **Quan, Y.,** & Xiao, T. (2024, March 11) *The Effects of Measurement Error on Multilevel Linear Growth Model Parameter Estimates*, [Paper Presentation]. Center for Statistics and The Social Sciences Student Research Presentation, Seattle, WA, United States.
10. **Quan, Y.,** & Wang, C. (2023, November 16-17). *A Multiple-group Higher-Order IRT Approach to Calibrate Multidimensional Assessments with Structural Missingness* [Paper Presentation]. Annual Pacific Northwest Research on Psychometrics and Applied Statistics Conference, Seattle, WA, United States.
11. **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
12. **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
13. **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

## **PROFESSIONAL SERVICE**

### **AMERICAN EDUCATIONAL RESEARCH ASSOCIATION**

Reviewer 2023 - Present

Reviewed paper and poster submissions in the following areas:

- Educational Measurement, Psychometrics, and Assessment
- Measurement and Research Methodology
- Quantitative Methods and Statistical Theory

### **JOURNAL OF EDUCATIONAL MEASUREMENT**

Reviewer 2023 - Present

Reviewed manuscripts for publication

### **NATIONAL COUNCIL ON MEASUREMENT IN EDUCATION**

Reviewer 2022 - Present

Reviewed paper and poster submissions

## **MEMBERSHIPS**

National Council on Measurement in Education 2022 - Present

American Educational Research Association Division D 2022 - Present