Christopher Valle

Curriculum Vitæ

Greater New York City Area
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Education

2015   **Ph.D. Educational Psychology and Methodology**,
University at Albany/State University of New York, GPA: *3.85*,
Focus: Research, Evaluation, and Assessment
Dissertation: *Effects of Criteria-Referenced Formative Assessment on Achievement in Music*
Dissertation Advisor: Heidi L. Andrade

2011   **C.A.S Educational Research**, *University at Albany/State University of New York*
Capstone research: *Sense of Efficacy of Middle School Teachers Working with Struggling Readers*

2010   **M.S. Educational Psychology and Methodology**, *University at Albany/State University of New York*, GPA: *3.9*

2008   **B.M. Music Education**, *College at Fredonia/State University of New York*,
Magna cum laude, GPA: *3.57*

Professional Experiences

Research & Development

May 2019 - Present   **Senior Software Development Engineer**, *Solventum/3M Health Information Systems, Albany, NY*

- Performance Management Benchmarks Solution

  - Develop back-end processing applications that analyze data from national datasets, including from the Centers of Medicare & Medicaid Services, Agency for Healthcare Research and Quality, and state governments, and from Solventum clients to produce benchmarks, norms, and peer group metrics. The metrics empower clients with the ability to assess healthcare organization and individual hospital performance relative to best practice values to identify improvement opportunities in healthcare outcomes.
  - Fully automated the build, deploy, and processing pipelines using AWS technologies, including CloudFormation, Lambda, Glue, S3, and Aurora MySQL.
  - Implemented a solution that displays benchmarks and norms metrics in AWS QuickSight dashboards and automated cross account migration of QuickSight dashboard assets to higher environments.
  - Automated the creation of QuickSight data source and dataset assets from S3 and Aurora MySQL datasets.
  - Replaced legacy Excel based reporting with QuickSight dashboards and automated the dashboard pipeline such that a single dashboard can be used as a template and replicated for any number of clients.
  - Created a push-button automation that migrates legacy data from 70+ tables in on-prem Microsoft SQL Servers to Aurora MySQL, thereby saving many developer hours consumed by the previous manual process.

- Hospital Data Analytics Platform

  - Developed production back-end data processing applications that analyzed hospital inpatient and outpatient claims data and produced performance measures of cost, utilization, and quality outcomes. AWS technologies were used, including AWS Glue, PySpark, Athena, and S3.
  - Implemented Jupyter notebooks into the production data pipeline. The notebooks summarized data validation, quality control, and integrity checks of hospital inpatient and outpatient measures produced by the data pipeline.
  - Led the development and implementation of a prototype surgical operating room optimization solution. The prototype assessed the entire surgical population of a client and existing surgical resources (specialties and availability, patient backlog and trends, etc.) and used linear optimization modeling to produce recommended surgical case load and schedules that efficiently utilize existing resources.

May 2017 - **Product Analytics Supervisor, Senior Analyst**, *3M Health Information Systems,*
March 2019 *Albany, NY*
- Supervised a team of analysts in developing, implementing, delivering, and automating analytical products and services.
- Analyzed and modeled healthcare data for payer and provider clients via Python, R, and SQL.
- Developed causal inference models of relationships between value-based care programs (e.g., accountable care organizations and patient-centered medical homes) and cost, utilization, and quality outcomes.
- Served as a thought leader on research and evaluation methods, statistical techniques, and data visualization.
- Lead the Supportive Analytics Center of Excellence, which includes five knowledge teams: Pharmacy Solutions, Predictive Analytics, Social Determinants of Health, Specialist Solutions, and Strategic Opportunity Analysis.
- Co-lead the predictive analytics knowledge team and provide development support on predictive models.
- Automated a sophisticated, resource intensive analysis delivered to payer clients annually, reducing analyst manual work by 98% and substantially reducing potential errors in processing.

Sep 2016 - **Lead Analyst**, *3M Health Information Systems,*
May 2017 *Albany, NY*
- Analyzed and modeled healthcare data for payer and provider clients via Python, R, and SQL.
- Provided leadership on analysis and report optimization and automation.
- Served as a thought leader on research and evaluation methods, statistical techniques, and data visualization.
- Developed program evaluations to investigate the casual effects of value-based programs using modern statistical techniques (e.g., propensity score analysis and multilevel modeling).
- Developed an internal software application (using C#) that automates the creation of 15 monthly Excel reports for 10 Medicare and Medicaid clients.

Nov 2015 - **Senior Data Analyst**, *Excelsior College,*
Sep 2016 *Albany, NY*
- Developed statistical and machine learning models to estimate the likelihood (as a risk score) that an enrolled student would engage in course, exam, or transfer credit activity in the future. Created a process to automatically generate risk scores in production every day. Risk scores are used internally and by external third party vendors to target daily coaching activities to academically at-risk students.
- Developed a process of integrating statistical and machine learning models into the production environment.
- Worked with application developers and business intelligence developers to produce and revise applications that deliver risk scores and other predictions to staff involved in outreach activities related to learner enrollment, progression, and success.
- Conducted internal evaluations of coaching programs and other initiatives designed to promote student success.
- Developed predictive models to forecast course registration patterns to guide decisions related to academic advising and course section offerings.

Mar 2015 - **Analyst II**, *3M Health Information Systems,*
Nov 2015 *Albany, NY*
- Conducted data analyses via R and SQL of healthcare data for payer and provider clients.
- Delivered Excel-based reports of analyses generated with R.
- Developed internal software applications to streamline, standardize, and automate analyses and data visualizations.
- Conducted program evaluations of value-based programs (e.g., accountable care organizations and patient centered medical homes).
- Led a knowledge team focused on enhancing analyses and processes related to program evaluation.
- Fulfilled internal and external data and analysis requests.
- Performed quality control checks and validations of analyses.

Sep 2014 - **Project Assistant**, *Office of Teacher and Leader Effectiveness,*
Mar 2015 *New York State Education Department*
- Conducted data analyses via R related to the Annual Professional Performance Review (APPR) process and Strengthening Teacher and Leader Effectiveness grant, including generating reports and data visualizations of analyses of trends at state, district, school, teacher, and student levels.
- Received, processed, and fulfilled internal and external data requests.
- Performed quality control checks and validations of analyses, including ensuring the accuracy of data reported in publicly released documentation.
- Assisted in building and maintaining databases of approved APPR plans and staff evaluation data, and developing Access applications to interface with the data.
- Provided technical assistance and support related to program evaluation, research methodology, rubric development, and statistics and statistical programming.

Consulting

Nov 2023 - Present **Computational & Data Science Research Specialist**, *University of California San Diego, San Diego, CA*
- Develop Tableau dashboards that provide various course and student information, including certificate completions, demographics, geographical information, and course, instructor, and alumni satisfaction survey result.
- Developed a data science pipeline to collect, clean, and analyze organizational and student level data.

Apr 2017 - Present **Data Scientist**, *Excelsior College, Albany, NY*
- Assess predictive validity of current credit activity risk models.
- Retrain existing models based on validity assessments.
- Develop models predicting student persistence, retention, and engagement.

Jan 2016 - Sep 2016 **IT Configuration Engineer II**, *3M Health Information Systems, Troy, NY*
- Assist the analyst and research teams in developing and refining analyses for commercial, Medicare, and Medicaid payer and provider clients.
- Conduct program evaluations of value-based programs.
- Develop internal software applications to automate analyses and reporting.

Sep 2011 - Sep 2014 **Assessment Specialist**, *ArtsConnection Inc*
- Provide consultation and technical assistance on assessment theory and practice for the Arts Achieve and Artful Learning Communities grant-funded programs.

Research & Program Evaluation

Sep 2011 - Dec 2015 **Research Assistant**, *Formative Assessment in the Arts Research Team, University at Albany*

Principal investigator: Dr. Heidi Andrade

- Research investigating the effects of a formative classroom assessment process on students' achievement in dance, music, theater, and visual arts.
- Analyzed data of students participating in the Arts Achieve project, a program funded by two-grants: Investing in Innovation (i3) and Arts in Education Development and Dissemination.
- Analyzed qualitative teacher implementation data and quantitative student survey data of feelings about and motivation to engage in art.
- Created statistical programs using R to clean quantitative achievement and demographic data, conduct complex statistical analyses (e.g., multiple imputation and propensity score analysis), and created data visualizations.
- Disseminated research findings in a paper presented at the 2014 conference of the American Education Research Association (AERA), which was nominated for a distinguished paper award by the classroom assessment special interest group of AERA.

Sep 2013 - Jul 2014 **Lead Evaluator**, *Albany Institute of History and Art*
- Led the evaluation of Book Arts 2014, a program incorporating drawing, printmaking, and visual arts instruction into English Language Arts, math, science, and social studies public school curricula.
- Designed the evaluation plan and observational instruments.
- Conducted qualitative analyses using triangulation procedures with observational data and cognitive data from student worksheets.
- Organized and wrote two formative reports and a final summative report to disseminate findings to stakeholders.

May 2013 - Oct 2013 **Research Assistant**, *DTSDE 2.0 Project, University at Albany*
- Revised the New York State Education Department's Diagnostic Tool for School and District Effectiveness (DTSDE), a rubric designed as a formative and summative instrument for turnaround public schools across New York State.
- Reviewed literature on best practices in feedback delivery.
- Embedded formative assessment techniques in the DTSDE evaluator training, created instructional materials for the training, and provided recommendations for improving the DTSDE training effectiveness survey measures.
- Consolidated observation, interview, and focus group data collection instruments.
- Designed classroom visitation protocols for a variety of classroom settings, which are now being used by DTSDE evaluators across New York State.

May 2010 - May 2012	**Research Assistant**, *The Evaluation Consortium,* *University at Albany*

- Evaluated national and state funded programs, including the NYC Striving Readers project funded by the National Science Foundation, the Rensselaer Polytechnic Institute Mobile Studio program, and programs with the Rensselaer Polytechnic Institute Smart Lighting Engineering Research Center.
- Coordinated observations of classrooms across 10 public schools.
- Designed observation and interview protocols and survey measures.
- Analyzed data from observations, interviews, surveys, and cognitive and affective measures using qualitative methods and descriptive and univariate statistics.
- Disseminated program findings through formative and summative reports.

Web Development & Administration

Sep 2012 - Sep 2014	**Webmaster**, *School of Education, University at Albany* Create and manage HTML and CSS based websites and process website maintenance requests for the departments and divisions within the School of Education.

Teaching

Fall 2011	**Instructor**, *University at Albany* EPSY 420: Child and Adolescent Development

- Lectured on theory and research in social, emotional, physical, and intellectual development and its application to instruction. Emphasis on the late childhood through middle adolescence.

Fall 2011	**Teaching Assistant**, *University at Albany* EPSY 630: Statistical Methods II

- Facilitated statistics lab sessions, assessed student work, and assisted in classroom activities.

Aug 2008- Jul 2009	**Music Teacher**, *Hyde Park Central School District, NY*

- Taught 137 elementary and middle school students.
- Directed 3 orchestras, and led violin, viola, cello, and bass individual and group lessons.
- Delivered instruction aligned with the New York State and National Standards for music education.
- Successfully coordinated a district-wide string festival for the community involving over 400 students.
- 7th and 8th orchestra participated in the New York State School Music Association Major Organization Festival, obtaining a "Silver" rating; also obtained 1st place at the Music in the Parks music competition in New Jersey.

Technical skills

Research Methodology	Experimental and quasi-experimental designs, psychometrics and measurement, test development, program evaluation methods, qualitative methods, mixed-methods, observational methods, survey research, summative and formative assessment of institutional, program, and learning outcomes.
Statistics	Correlation, multiple and logistic regression, factorial and repeated measures analysis of variance, multivariate analysis of variance, multilevel (mixed-effects, hierarchical, nested, etc.) modeling, propensity score analysis, multivariate imputation by chained equations, cross-validation, bootstrap sampling, and bootstrap aggregation.
Machine Learning	Classification and regression trees, conditional inference trees, k-nearest neighbor classification, gradient boosting, random forest, and ensemble methods.
Cloud Development	5 years of experience developing serverless/cloud-based applications and data pipelines with Amazon Web Services, including Lambda, Glue, EC2, Athena, Aurora RDS, CloudFormation, QuickSight, and other core infrastructure services. Experience includes application development with python, PySpark, and SQL.
Computational Statistics	Extensive experience with Python and R. Capable of generating reproducible research and reports with LATEX, R Markdown, and R Sweave. Experience developing software applications with C# to interface with R. Experience with the statistical computing and graphics capabilities of Python, including matplotlib, numpy, pandas, and scikit-learn.
Database programming	Extensive experience with Oracle SQL and T-SQL.
General programming	Application development experience with C# and Basic. Cloud development with python. Moderate experience and knowledge of HTML, CSS, C++, Java, and Javascript.
Additional software	Access, Adobe Acrobat, ArcGIS, Dreamweaver, Excel, Jira, Microstrategy, Oracle SQL Developer, MySQL Workbench Outlook, PowerPoint, Publisher, SQL Server Management Studio, Visual Studio, and Microsoft Office Suit.
Operating Environments	Linux, Microsoft Windows, and Unix.

Journal Articles

Brooke, G., Chen, F., Lui, A., & Valle, C. (2013). Using a mixed-methods survey of alumni for program evaluation and improvement: A case study from a doctoral program in education. *The Researcher*, *25*(1), 21-33.

Fei Chen, H. A. C. V. H. M., Angela M. Lui. (2017). Criteria-referenced formative assessment in the arts. *Educational Assessment, Evaluation and Accountability*. doi: 10.1007/s11092-017-9259-z

Valle, C., Andrade, H., Palma, M., & Hefferen, J. (2016). Applications of peer and self-assessment in music. *Music Educators Journal*, *102*(4), 41-49.

Book Chapter

Valle, C., & Andrade, H. L. (2012). Student self-assessment. In R. Gunstone (Ed.), *Encyclopedia of Science Education: SpringerReference.* Berlin Heidelberg: Springer-Verlag.

Conference Presentations

Andrade, H. L., Chen, F., Valle, C., Lui, A., & Mir, H. (2014). *An empirical investigation of criteria-referenced formative assessment in the arts.* (Paper presented at the Annual Meeting of the American Education Research Association)

Andrade, H. L., Lui, A., Valle, C., & Chen, F. (2014). *The central role of students in formative assessment.* (Paper Presented at the Annual Meeting of the National Conference on Student Assessment)

Kundert, D. K., Spaulding, D., Newman, D. L., Clure, G., Deyoe, M. M., Rosecrans, L. M., & Valle, C. (2010). *Adolescent struggling readers: Perception, motivation, and attitudes towards reading.* (Paper Presented at the Annual Meeting of the Eastern Educational Research Association)

Newman, D. L., Morris, M., Murphy, K., & Valle, C. (2011). *Moving the lab into the classroom: The effects of laptop-supported technology on learning.* (Paper Presented at the Annual meeting of the American Education Research Association)

Newman, D. L., Murphy, K., Rodd, J., & Valle, C. (2011). *Real world, real use: The impact of integrating student-centered learning in adult online instruction.* (Paper Presented at the Annual Meeting of the American Education Research Association)

Relevant coursework

- Statistical Methods I (Summer 2010)
- Educational & Psychological Measurement (Fall 2009)
- Statistical Methods II (Spring 2010)
- Education Research and Design (Fall 2010)
- Item Response Theory (Fall 2010)
- Multivariate Methods for Applied Researchers and Evaluators (Spring 2011)
- Theory and Practice of Interviewing (Spring 2011)
- Qualitative Research Field Methods (Spring 2011)
- Hierarchical Linear Modeling (Fall 2011)
- Evaluation of Public Sector Programs (Fall 2011)
- Assessment in Education (Spring 2012)
- Computational Statistics (Spring 2013)
- Regression Analysis (Spring 2014)
- Field Experience in Education Research (Summer 2010-Summer 2011)
- Research Apprenticeship (Fall 2011-Spring 2014)

Honors & Awards

2011-Present University at Albany Carson Carr Graduate Diversity Scholar Assistantship

2014 University at Albany Joshua Smith and Yundih Chia-Smith Scholar Travel Award

2010 University at Albany School of Education Class of 1949 Scholarship

2007 SUNY Fredonia Rudolf Schreck Award

2007 SUNY Fredonia Joseph Gallagher Scholarship

2005-2008 SUNY Fredonia Hillman's Scholarship

Service

2013-2014 Reviewer, Division H 2014 Outstanding Publication, American Education Research Association

2013-2014 Reviewer, Division H 2014 Outstanding Dissertation, American Education Research Association

2013-2014 Committee Member, Measurement Faculty Search Committee, Division of Educational Psychology and Methodology, University at Albany

2013-2014 Vice President, Educational Psychology and Methodology Graduate Student Organization, University at Albany