

**Curriculum Vitae**  
**Ying (“Alison”) Cheng**

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Lab webpage: <http://sites.nd.edu/peml/>**Higher Education**

University of Illinois at Urbana-Champaign	Ph.D. in Quantitative Psychology	2008
University of Illinois at Urbana-Champaign	M.S. in Statistics	2007
University of Science and Technology of China	B.A & B.E.	2003

**Academic Appointments**

2017 – present Program Director, Quantitative Psychology area, University of Notre Dame  
 2014 – present Associate Professor, Department of Psychology, University of Notre Dame  
 2012 – present Fellow, Institute for Educational Initiatives, University of Notre Dame  
 2008– 2014 Assistant Professor, Department of Psychology, University of Notre Dame

**Professional Appointments**

2019 – present Chief Editor, *British Journal of Mathematical and Statistical Psychology*.  
 2018 – present Board of Examiners, *American Institute of Certified Public Accountants*.  
 2014 – present Psychometric Oversight Committee, *American Institute of CPAs*.  
 2016 – present Technical Advisory Board of GRE, *Educational Testing Service*.  
 2018 Member of Board of Trustees, *Psychometric Society*.  
 2017 – 2018 Chair of Editorial Council, *Psychometric Society*.  
 2015 – 2018 Associate Editor, *American Educational Research Journal*.  
 2013 – 2018 Associate Editor, *British Journal of Mathematical and Statistical Psychology*.

**Scholarships and Fellowships**

2004: Slawski Summer Psychometric Fellowship, *Harcourt Assessment*.  
 2000 – 2003: First-class scholarship, *University of Science and Technology of China*.

## **Awards**

**2018:** Best poster award, *American Educational Research Association Division D Research Gala* (My role: Advisor and co-author)

**2017:** Elected Fellow, *Society of Multivariate and Experimental Psychology (SMEP)*  
SMEP is a small elective society of researchers interested in multivariate quantitative methods and their application to substantive problems in psychology and related fields. Its number of fellows is limited to 65.

**2014:** Faculty Early Career Award, *National Science Foundation*

The Faculty Early Career (CAREER) award is the National Science Foundation's most prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research.

**2014:** Best paper award from *European Congress of Methodology*

The award winning paper is entitled "Estimation and Confidence Interval Formation for Reliability Coefficients of Homogeneous Measurement Instruments" (Kelly & Cheng, 2012). The best paper award is a bi-annual award given to the best article published in this journal in the previous two years.

**2014:** Best poster award, *American Educational Research Association Division D Research Gala* (My role: Advisor and co-author)

**2012:** The Jason Millman Promising Scholar Award, *National Council of Measurement in Education*.

The Jason Millman Promising Scholar Award of NCME recognizes a scholar at the early stages of his/her career whose research has the potential to make a major contribution to the applied measurement field.

**2009:** The Bradley Hanson Award for Contributions to Educational Measurement, *National Council on Measurement in Education*.

The Bradley Hanson Award of NCME recognizes a project from a scholar that promises to make a substantive contribution to the field of educational measurement or the development, instruction or mentoring of new professionals in the field.

**2007:** List of Teachers Ranked as Excellent by Their Students, *University of Illinois at Urbana-Champaign*.

## **Books**

**Cheng, Y., & Chang, H. (Eds).** (2014). *Advancing Methodologies to Support Both Summative and Formative Assessments*. Charlotte, NC: Information Age Publishing. ISBN-10:1623965950. ISBN-13: 978-1623965952.

**Referred Journal Articles**

†Cheng's Current/Former Supervisee;

\*Cheng as Corresponding Author.

1. †Yu, X., & \*Cheng, Y. (accepted). A change-point analysis procedure based on weighted residuals to detect back random responding. *Psychological Methods*.
2. Steedle, J. T., †Hong, M., & Cheng, Y. (accepted). The effects of inattentive responding on validity evidence when measuring social-emotional learning competencies. *Educational Measurement: Issues and Practices*.
3. †Patton, J., \*Cheng, Y., †Hong, M., & Diao, Q. (accepted). Detection and treatment of careless responses to improve item parameter estimation. *Journal of Educational and Behavioral Statistics*.
4. Narvaez, D., Wang, L., Cheng, Y., Gleason, T., Woodbury, R., Kurth, A., & Lefever, J. B. (accepted). The importance of early life touch for psychosocial and moral development. *Moral Cognition and Communication*.
5. †Hong, M., & \*Cheng, Y. (in press). Clarifying the effect of test speededness. *Applied Psychological Measurement*. DOI: 10.1177/0146621618817783
6. †Hong, M., & \*Cheng, Y. (in press). Robust maximum marginal likelihood (RMML) estimation for item response theory models. *Behavior Research Methods*. DOI: 10.3758/s13428-018-1150-4
7. †Whitney, B. M., \*Cheng, Y., †Brodersen, A. S., & †Hong, M. R. (in press). The Survey of Student Engagement in Statistics: Initial development and validation. *Journal of Psychoeducational Assessment*. DOI: 10.1177/0734282918769983
8. Polite, B., Cipriano-Steffens, T., Hlubocky, F., Jean-Pierre, P., Cheng, Y., ... Fitchett, G. (2018). Association of externalizing religious and spiritual beliefs on stage of colon cancer diagnosis among a black/white multi-center urban patient population. *Cancer, 124*, 2578-2587. DOI: 10.1002/cncr.31351.
9. Liu, C., & \*Cheng, Y. (2018). An application of the support vector machine for attribute-by-attribute classification in cognitive diagnosis. *Applied Psychological Measurement, 42*, 58-72. doi: 10.1177/0146621617712246.

10. Yuan, K., Jiang, G., & **Cheng, Y.** (2017). More efficient parameter estimates for factor analysis of ordinal variables by ridge generalized least squares. *British Journal of Mathematical and Statistical Psychology*, *70*, 525-564. doi: 10.1111/bmsp.12098.
11. †Lathrop, Q. N., & \***Cheng, Y.** (2017). Item cloning variation and the impact on the parameters of response models. *Psychometrika*, *82*, 245-263. doi: 10.1007/s11336-016-9513-1.
12. \***Cheng, Y.**, Diao, Q., & Behrens, J. (2017). A simplified version of the maximum information per time unit method in computerized adaptive testing. *Behavioral Research Methods*, *49*, 502-512. doi: 10.3758/s13428-016-0712-6.
13. †Shao, C., Li, J., & \***Cheng, Y.** (2016). Detection of speeded responses in linear tests based on change-point analysis. *Psychometrika*, *81*, 1118-1141. doi: 10.1007/s11336-015-9476-7.
14. \***Cheng, Y.** & Liu, H. (2016). A short note on the maximal point-biserial correlation under non-normality. *British Journal of Mathematical and Statistical Psychology*, *69*, 344-351. doi: 10.1111/bmsp.12075.
15. \***Cheng, Y.** & Liu, C. (2016). A note on the relationship between pass rate and multiple attempts. *Journal of Educational Measurement*, *53*, 431-447. doi: 10.1111/jedm.12124.
16. \***Cheng, Y.**, †Shao, C., & †Lathrop, Q. (2016). The mediated MIMIC model for understanding the underlying mechanisms of DIF. *Educational and Psychological Measurement*, *76*, 1-21. doi: 10.1177/0013164415576187.
17. Narvaez, D., Wang, L., & **Cheng, Y.** (2016). Evolved developmental niche history: Relation to adult psychopathology and morality. *Applied Developmental Science*, *20*, 294-309. doi: 10.1080/10888691.2015.1128835.
18. Jean-Pierre, **Cheng, Y.**, Wells, K. J., Freund, K. M. et. al. (2016). Satisfaction with cancer care among underserved racial-ethnic minorities and lower income patients receiving patient navigation. *Cancer*, *122*, 1060-1067. doi: 10.1002/cncr.29902.
19. \***Cheng, Y.**, & Liu, C. (2015). The effect of upper and lower asymptotes of IRT models in computerized adaptive testing. *Applied Psychological Measurement*, *39*, 551-565.
20. \***Cheng, Y.**, Liu, C., & Behrens, J. (2015). Standard error of ability estimates and the classification accuracy and consistency of binary decisions in linear and adaptive testing. *Psychometrika*, *80*, 645-664.
21. \***Cheng, Y.**, †Patton, J., & †Shao, C. (2015).  $\alpha$ -stratified computerized adaptive testing in the presence of calibration error. *Educational and Psychological Measurement*, *75*, 260-283.

22. Yuan, K., **Cheng, Y.** & Maxwell, S. (2014). Moderation analysis using a two-level regression model. *Psychometrika*, 79, 701-732.
23. †Lathrop, Q. N., & \***Cheng, Y.** (2014). A nonparametric approach to estimate classification accuracy and consistency. *Journal of Educational Measurement*, 51, 318-334.
24. Jean-Pierre, **Cheng, Y.**, Paskett, E., †Shao, C. et. al. (2014). Item response theory analysis of the patient satisfaction with cancer-related care measure. *Supportive Care in Cancer*, 22, 2229-2240.
25. †Patton, J., \***Cheng, Y.**, Yuan, K., & Diao, Q. (2014). Bootstrap standard errors for maximum likelihood ability estimates when item parameters are unknown. *Educational and Psychological Measurement*, 74, 697-712.
26. Yuan, K-H., Cheng, Y., & †Patton, J. (2014). Information matrices and standard errors for MLEs of item parameters in IRT. *Psychometrika*. 79, 232-254.
27. Narvaez, D., Gleason, T., Brooks, J., Wang, L., Lefever, J., & **Cheng, Y.** (2013). Longitudinal Effects of Ancestral Parenting Practices on Early Childhood Outcomes. *Early Childhood Research Quarterly*, 28, 759-773.
28. \***Cheng, Y.**, Chen, P-H., Qian, J. & Chang, H. (2013). Equated pooled booklet method in DIF testing. *Applied Psychological Measurement*, 37, 276-288.
29. Narvaez, D., Wang, L., Gleason, T., **Cheng, Y.**, Lefever, J., & Deng, L. (2013). The evolved developmental niche and child sociomoral outcomes in Chinese three-year-olds. *European Journal of Developmental Psychology*, 10, 106-127.
30. †Lathrop, Q. N., & \***Cheng, Y.** (2013). Two approaches to estimation of classification accuracy under the IRT framework. *Applied Psychological Measurement*, 37, 226-241.
31. \***Cheng, Y.**, & Morgan, D. (2013). Classification accuracy and consistency of computerized adaptive testing. *Behavioral Research Methods*, 45, 132 – 142.
32. †Patton, J., \***Cheng, Y.**, Yuan, K., & Diao, Q. (2013). The Influence of item calibration error on variable-length computerized adaptive testing. *Applied Psychological Measurement*, 37, 24-40.
33. Kelly, K., & **Cheng, Y.** (2012). Estimation of and confidence interval formation for reliability coefficients of homogeneous measurement instruments. *Methodology*, 8, 39-50.

34. †Patton, J., \*Cheng, Y., Yuan, K-H., & Diao, Q. (2012). Computerized classification testing with sequential probability ratio test. *Psychological Test and Assessment Modeling*, 54(4), 432-449.
35. \*Cheng, Y., Yuan, K-H, & Liu, C. (2012). Comparison of reliability measures under factor analysis and item response theory. *Educational and Psychological Measurement*, 72, 52-67.
36. \*Cheng, Y. (2010). Improving cognitive diagnostic computerized adaptive testing by balancing attribute coverage: The modified maximum global discrimination index method. *Educational and Psychological Measurement*, 70, 902-913.
37. Yuan, K-H, Cheng, Y., & Zhang, W. (2010). Determinants of standard errors of MLEs in confirmatory factor analysis. *Psychometrika*, 75, 633–648.
38. \*Cheng, Y. & Yuan, K-H. (2010). The impact of fallible item parameter estimates on latent trait recovery. *Psychometrika*, 75, 280-291. (equal contribution authors)
39. \*Cheng, Y. (2009). When cognitive diagnosis meets computerized adaptive testing: CD-CAT. *Psychometrika*, 74, 619-632.
40. \*Cheng, Y., & Chang, H. (2009). The maximum priority index method for severely constrained item selection in computerized adaptive testing. *British Journal of Mathematical and Statistical Psychology*, 62, 369-383.
41. \*Cheng, Y., Chang, H., Douglas, J., & Guo, F. (2009). Constraint-weighted a-stratification for computerized adaptive testing with nonstatistical constraints: Balancing measurement efficiency and exposure control. *Educational and psychological measurement*, 69, 35-49.
42. \*Cheng, Y., Chang, H., & Yi, Q. (2007). Two-phase item selection procedure for flexible content balancing in CAT. *Applied Psychological Measurement*, 31, 467-482.

### **Book Chapters, Reviews and Encyclopedia Entries**

- †: Cheng's Current/Former Supervisee;  
 \*: Cheng as Corresponding Author.

1. †Yu, X., \*Cheng, Y., & Chang, H. (in press). Cognitive diagnostic computerized adaptive testing (CD-CAT). In von Davier & Lee (Eds.), *Handbook of Diagnostic Classification Models*. Springer.

2. †Brodersen, A., †Shao., C., & \*Cheng, Y. (in press). Parameter Random Error. In Frey, B. (Ed), *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*.
3. Gleason, T., Narvaez, D., Cheng, Y., Wang, L., & Brooks, J. (2016). Wellbeing and sociomoral development in preschoolers: The role of maternal parenting attitudes consistent with the evolved developmental niche. In Narvaez, D. et al. (Eds.), *Contexts for Young Child Flourishing: Evolution, Family, and Society*.
4. Gleason, T., Narvaez, D., Cheng, Y., Wang, L., & Brooks, J., (2016). The relation of nurturing parenting attitudes to flourishing in preschoolers. In Narvaez, D. et al. (Eds.), *Contexts for young child flourishing: Evolution, family and society*. New York, NY: Oxford University Press.
5. Narvaez, D., Gleason, T., Lefever, J. B., Wang, L., & Cheng, Y. (2016). Early experience and ethical orientation. In Narvaez, D. (Ed.), *Embodied morality: Protectionism, engagement and imagination*. New York, NY: Palgrave-Macmillan.
6. von Davier, M., & Cheng, Y. (2014). Multistage testing using cognitive diagnostic models. In Yan, D., von Davier, A., & Lewis, C. (Eds.) *Computerized Multistage Testing: Theory and Applications*. Boca Raton, FL: CRC Press.
7. \*Cheng, Y. & Cheng, Y. (2014). Repeated statistical tests in group sequential clinical trial designs and their potential applications in educational assessment. In Cheng, Y., & Chang, H. (Eds). *Advancing Methodologies to Support both Summative and Formative Assessments*. Charlotte, NC: Information Age Publishing.
8. †Patton, J., & \*Cheng, Y. (2014). Effects of item calibration error on applications of item response theory. In Cheng, Y., & Chang, H. (Eds). *Advancing Methodologies to Support both Summative and Formative Assessments*. Charlotte, NC: Information Age Publishing.
9. \*Cheng, Y. (2012). Review of Elements of Adaptive Testing. *Journal of Educational Measurement, 49*, 116-119.
10. \*Cheng, Y., & Keng, L. (2009). Computerized adaptive testing in criterion-referenced testing. In Smith, E. & Stone, G. (Eds.), *Applications of Rasch Measurement in Criterion-Reference Testing: Practice Analysis to Score Reporting*. JAM Press.
11. \*Cheng, Y., & Keng, L. (2009). Book review: H. Wainer, E.T. Bradlow, & X. Wang (2007) *Testlet Response Theory and Its Applications*. *Psychometrika, 74*, 555-557.

12. \*Cheng, Y., & Chang, H. (2007). The modified maximum global discrimination index method for cognitive diagnostic CAT. In D. Weiss (Ed.) *Proceedings of the 2007 GMAC Computerized Adaptive Testing Conference*.
13. Chang, H., & Cheng, Y. (2005). The new developments and future research direction in computerized adaptive testing. *Testing Research*, 2 (Chinese with English Abstract).

### **Invited Lectures and Addresses after Joining ND**

1. Cheng, Y. (2018, July). *Quality control of item response data*. Invited talk given at the Focus Series: Conference on Statistical Methods for Innovative Testing and Learning. Columbia University, NY.
2. Cheng, Y. (2017, July). *Statistical Quality Control in Psychometrics*. Invited talk given at the 2017 International Meeting of Psychometric Society, Zurich, Switzerland.
3. Cheng, Y. (2016, Mar). *Computerized adaptive testing: Its history and development*. Invited talk given at University of Zurich, Zurich, Switzerland.
4. Cheng, Y. (2016, Mar). *Computerized adaptive testing: Its history and development*. Invited talk given at DagStat Conference, German Consortium of Statistics, Gottingen, Germany.
5. Cheng, Y. (2016, Mar). *Alternate item format, pretesting design, data sparseness and test dimensionality*. Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
6. Cheng, Y. (2014, Sept). *The maximum information per time unit method in computerized adaptive testing*. Invited presentation given at the CTB/McGraw-Hill mid-year R&D symposium, Monterey, CA.
7. Cheng, Y. (2014, Aug). *Use Bi-factor modeling for subscore reporting of NCLEX-RN*. Invited presentation given at the Joint Research Council meeting, National Council for State Boards of Nursing, Chicago, IL.
8. Cheng, Y. (2013, Sept). *Detection and treatment of careless responses in pretesting data*. Invited presentation given at CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
9. Cheng, Y. (2013, July). *Classification decisions in testing*. State of the Art invited talk at the 2013 International Meeting of the Psychometric Society, Arnhem, the Netherlands.



10. Cheng, Y. (2012, April). *Uncertainty propagation in testing*. Invited talk given at the Award Winner Session of the annual meeting of National Council of Measurement in Education, San Francisco, CA.
11. Cheng, Y. (2013, Mar). *Invited workshop on computerized adaptive testing*. Friedrich-Schiller-Universität, Jena, Germany.
12. Cheng, Y. (2012, Sept). *Quantitative psychology: Its history, development and future*. Invited talk co-hosted by Beijing Normal University and the National Center of Educational Testing and Evaluation of China, Beijing, China.
13. Cheng, Y. (2012, Sept). *Theoretical development and applications of computerized adaptive testing*. Invited talk given at the 10<sup>th</sup> Cross-Strait Psychometric Conference, Nanchang, China.
14. Cheng, Y. (2011, Oct). *Standard error of latent trait estimates in IRT when item calibration error is present*. Invited presentation given at the CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
15. Cheng, Y. (2011, Mar). *The interaction of exposure control methods and item calibration error in variable-length CAT* Featured speaker at CTB/McGraw-Hill R & D Annual Event, Monterey, CA.
16. Cheng, Y. (2010, Sept). *The impact of fallible item parameters on variable-length CAT*. Invited presentation given at CTB/McGraw-Hill Innovation R & D Symposium, Monterey, CA.
17. Cheng, Y. (2010, June). *Modern psychometrics*. Invited talk series given at College of Education, Soochow University, Suzhou, China.
18. Cheng, Y. (2009, July). *The interface of computerized adaptive testing and diagnostic assessment*. Invited talk given at the Statistical and Applied Mathematical Sciences Institute (SAMSI) 2009 Summer Program on Psychometrics, Research Triangle Park, NC.
19. Cheng, Y. (2009, Jan). *Item pool development in computerized adaptive testing*. Invited talk given at the Center of National Assessment of Education Quality, Ministry of Education of China, Beijing, China.
20. Cheng, Y. (2009, Jan). *Automated test assembly*. Invited talk given at Shanghai Municipal Educational Examinations Authority, Shanghai, China.

21. Cheng, Y. (2008, Dec). *The history, development and prospect of psychometrics*. Invited talk given at the University of Science and Technology of China, Hefei, China.

### **Grants and Sponsored Programs**

#### ***Pending***

**Lead PI.** “Collaborative Research: Innovative Assessment of High-School Computer Science Learning Based on Human-Computer Interactive Process.” NSF.

Total Budget: 3M.  
ND-Portion: \$1.7M.

**PI.** “RR: Stop “Garbage In”: Statistical Quality Control of Low-Stakes Survey and Assessment Data”. *National Science Foundation*.

\$338,856.

**Co-I.** “Multimodal Integrative Assessment of Cancer-related Neurocognitive Dysfunction”. R15, NIH.

ND-Portion: \$84,045.

**PI:** “Collaborative: CPS: Small: Collaborative Research: Exploiting the Topological and Geometric Structures in the Communication, Control and Computing of Cyber-Physical-Human Systems”. *National Science Foundation*.

ND-Portion: \$202,153.

**Co-PI.** “CIF: Small: Collaborative Research: Data Driven Quickest Change Detection: A Framework of Scientific Induction”. *National Science Foundation*.

\$482,217.

#### ***Current***

**PI.** 2018 – 2022. “Intelligent Diagnostic Assessment Platform (i-DAP) for High School Statistics Education”. *Institute of Education Sciences*.

\$1,399,950.

**PI.** 2018 – 2019. “Supplement: CAREER: Cognitive diagnostic computerized adaptive testing for AP Statistics”. *National Science Foundation, DRL-1350787*.

\$71,575.

**PI.** 2014 – 2019. “CAREER: Cognitive diagnostic computerized adaptive testing for AP Statistics”. *National Science Foundation, DRL-1350787*.

\$592,986.

#### ***Completed External Grants***

**PI.** 2016 – 2018. “Pretesting and Dimensionality Assessment of New Prototype Items”. *National Council of State Boards of Nursing*.

\$41,190.

**Co-PI.** 2015 – 2018. “Structural equation modeling for small  $N$  and large  $p$ ” (PI: Dr. Ke-Hai Yuan). *National Science Foundation, Methodology, Measurement and Statistics Program*.

\$349,998.

- PI.** 2015. "Bi-factor modeling for subscore reporting of NCLEX-RN". *National Council of State Boards of Nursing*. \$42,860
- PI.** 2015. Career-Life Balance Initiative Supplemental Funding. *National Science Foundation*.
- PI.** 2014. "A close look at response time in computerized adaptive testing". Innovation R & D Grant from *CTB/McGraw-Hill*. \$51,159
- PI.** 2013. "Careless response in testing: Detection of such responses, and analysis of their propagating impact on item calibration, ability estimation, and examinee classification". Innovation R & D Grant from *CTB/McGraw-Hill*. \$85,059.
- PI.** 2012. "Analysis of the *MyMathTest* data and development of the adaptive version *MyMathTest*". *Pearson, Inc.* \$37,000
- PI.** 2011. "Standard error estimation in IRT: Formula, bootstrap or MCMC?". Innovation R & D Grant from *CTB/McGraw-Hill*. \$83,370.
- PI.** 2010. "Correction of calibration error in computerized adaptive testing". Innovation R & D Grant from *CTB/McGraw-Hill*. \$90,000

### ***Completed Internal Grants***

- PI.** 2013 "Variable-length cognitive diagnostic adaptive testing module for AP statistics". Faculty Scholarship Research Program Initiation Grant from *Office of Research* at University of Notre Dame. \$10,000.
- PI.** 2013 "Pilot Study -- Construction of an Item Bank for Advanced Placement Level Statistics with Cognitive Diagnostic Modeling". Bi-Annual Spring 2013 Large Social Sciences Research Grant, *ISLA*, University of Notre Dame. \$8,000.
- Co-PI.** 2012. "Caregiving for the human developmental niche and child thriving". (PI, Darcia Narvaez). *ISLA*, Notre Dame. \$6,000.
- Co-PI.** 2011. "First Birthday Club". (PI: Darcia Narvaez). *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. \$7,478.
- Co-PI.** 2010. "Caregiving and child social, cognitive and moral development." (PI: Darcia Narvaez). *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. \$15,000
- PI.** 2009. "Computerized adaptive system for cognitive diagnosis: A one-year pilot study of CD-CAT". Pilot funds for research in the social sciences, *Institute for Scholarship in the Liberal Arts*, University of Notre Dame. \$12,844.

**Referred Conference Presentations (†: Current/Former Supervisee as First Author)**

After Tenure

- †Zhang, S., †Hong, M., & **Cheng, Y.** (2018, Nov). *Evaluation of R Packages with IRT 2PL Dichotomous Model*. Paper presented at the Ideas and Testing Conference, Nov 2018, Chicago, IL.
- Cheng, Y.** (2018, Nov). *Measurement Error & Its' Influence on Power, Sample Size Planning, & Replicability*. ND Piers Colloquium of Institute for Educational Initiatives, Notre Dame, IN.
- †Yu, X. & **Cheng, Y.** (2018, July). *Using CPA-based weighted residual method to detect carelessness*. Paper presented at the International Meeting of Psychometric Society, New York, NY.
- †Hong, M. & **Cheng, Y.** (2018, July). *Robust Estimation for Item Response Theory*. Paper presented at the International Meeting of Psychometric Society, New York, NY.
- †Brodersen, A., & **Cheng, Y.** (2018, July). *Change point analysis for backward-random responses*. Paper presented at the International Meeting of the Psychometric Society, New York City, NY.
- †Reboucas, D. & **Cheng, Y.** (2018, July) *DIF Effect Size Measures: Review and Implications for Power of DIF Detection*. International Meeting of Psychometric Society, New York, NY.
- †Yu, X. & **Cheng, Y.** (2018, Apr). *Using CUSUM and CPA to Detect Speededness*. Paper presented at the Annual Meeting of the National Council on Measurement in Education, New York, NY.
- †Campbell, I. & **Cheng, Y.** (2018, Apr). *Bayesian Item Linking Through Informative Priors*. Poster presented at the American Educational Research Association Div D Research Gala, New York City, NY.
- †Reboucas, D. & **Cheng, Y.** (2017, Oct). *Investigating item characteristics and DIF in MIMIC*. 2017 Ideas in Testing Seminar, Chicago, IL.
- †Yu, X. & **Cheng, Y.** (2017, Sept) *Using response time to detect speededness based on CUSUM*. 2017 Ideas in Testing Seminar, Chicago, IL.
- †Hong, M., & **Cheng, Y.** (2017, Sept). *Data quality in assessment*. 2017 Conference on Test Security, Madison, WI.
- †Yu, X. & **Cheng, Y.** (2017, Sept) *Using change point analysis to detect inattentiveness in polytomous survey response data*. 2017 Conference on Test Security, Madison, WI.
- †Brodersen, A., & **Cheng, Y.** (2017, Sept). *Modeling item sharing for high-stakes tests: An epidemiological perspective*. 2017 Conference on Test Security, Madison, WI.
- †Brodersen, A., & **Cheng, Y.** (2017, July). *Modified parallel analysis for data with planned missingness*. International Meeting of Psychometric Society, Zurich, Switzerland.

- †Whitney, B., & **Cheng, Y.** (2017, July). *An Examination of the Individual Differences Of and Between Passive and Active Procrastination*. The 10<sup>th</sup> International Conference on Procrastination, Chicago, IL.
- †Brodersen, A., & **Cheng, Y.** (2017, April). *Impact of item pre-knowledge on measurement outcomes in computerized adaptive testing*. Annual Meeting of National Council for Measurement in Education, San Antonio, TX.
- †Shao, C., & **Cheng, Y.** (2017, April) *Detection of Test Speededness Using Change-Point Analysis with Response Time Data*. Annual Meeting of National Council for Measurement in Education, San Antonio, TX.
- Cheng, Y.**, & †Hong, M. (2016, Oct). *The effect of random guessing on reliability and validity*. Ideas in Testing Seminar, Chicago, IL.
- †Shao, C., & **Cheng, Y.** (2016, Oct). *Detection of test speededness using change-point analysis with response time data*. Ideas in Testing Seminar, Chicago, IL.
- †Brodersen, A., & **Cheng, Y.** (2016, July). *The impact of item pre-knowledge on measurement outcomes of CAT*. International Meeting of Psychometric Society, Asheville, NC.
- †Reboucus, D., & **Cheng, Y.** (2016, April). *Handling missing data on DIF detection under the MIMIC model*. Annual Meeting of National Council for Measurement in Education, Washington DC.
- †Shao, C., & **Cheng, Y.** (2016, April). *A procedure to improve item parameter estimation in presence of test speededness*. Annual Meeting of National Council for Measurement in Education, Washington DC.
- Cheng, Y.**, & Liu, C (2016, April). *The relationship between pass rate and multiple attempts on a test*. Annual Meeting of National Council for Measurement in Education, Washington DC.
- Cheng, Y.**, & Liu, C (2015, November). *Classification accuracy of a test battery under multiple decision rules*. Ideas in Testing Conference, Chicago, IL.
- Liu, C, & **Cheng, Y.** (2015, July). *Cognitive diagnostic assessments using support vector machine – a simulation study*. 2015 International Meeting of Psychometric Society, Beijing, China.
- Liu, C, & **Cheng, Y.** (2015, April). *The use of support vector machine in cognitive diagnostic assessments*. 2015 NCME annual Meeting, Chicago, IL.
- Narvaez, D., Wang, L., **Cheng, Y.**, Gleason, T, & Burke, J. (2015, Mar). *The importance of early life touch for psychosocial and moral development*. 2015 SRCD Biennial Meeting, Philadelphia, PA.
- Kurth, A., Narvaez, D., Wang, L., **Cheng, Y.**, Gleason, T, & Burke, J. (2015, Mar). *Maternal positive and negative touch behaviors longitudinally predict temperament and social-emotional delays*. 2015 SRCD Biennial Meeting, Philadelphia, PA.
- Jean-Pierre, P., †Shao, C., & **Cheng, Y.** (2015, Mar.). *Patient satisfaction with interpersonal relationship with navigators: Item response theory analysis in a multicultural sample of 751 cancer patients*. 2015 International Convention of Psychological Sciences (ICPS), Amsterdam, The Netherlands.

- †Shao, C., Li, J., & **Cheng, Y.** (2014, Nov). *Detection of speeded responses in linear tests based on change-point analysis*. 2014 Ideas in Testing Seminar, Chicago, IL.
- †Shao, C., Kim, D., **Cheng, Y.** & Luo, X. (2014, Oct.) *A Change point-detection based method for warm-up effect detection in computerized adaptive testing*. 2014 Meeting of International Association for Computerized Adaptive testing, Princeton, NJ.
- Cheng, Y.**, & †Patton, J. M. (2014, May). *Detection and treatment of careless responses in survey data*. Poster at the annual convention of the Association for Psychological Science, San Francisco, CA.

#### Before Tenure

- Cheng, Y.**, Behrens, J., & Diao, Q. (2014, April). *Response time in computerized adaptive testing*. 2014 Meeting of National Council of Measurement in Education, Philadelphia, PA.
- †Shao, C., **Cheng, Y.** & Lathrop, Q. (2014, April.) *Anchors selection embedded mediated MIMIC model for understanding DIF mechanism*. 2014 American Educational Research Association Division D Research Gala.
- Narvaez, D., Lawrence, A., **Cheng, Y.**, & Wang, L. (2013, Oct). Adult reports of parenting they received relates to different types of moral orientations. The 39<sup>th</sup> annual meeting of the Association for Moral Education, Montreal, Canada.
- Cheng, Y.** & †Shao, C. (2013, July). *The mediated MIMIC model for understanding the underlying mechanism of DIF*. 2013 APA Convention, Honolulu, HI.
- †Shao, C., Jean-Pierre, P., **Cheng, Y.**, Paskett, E., & Fiscella, K. (2013, June). *Latent trait examination of the patient satisfaction with interpersonal relationship with navigator scale: An item response theory analysis approach*. MASCC/ISOO International Symposium on Supportive Care in Cancer. Berlin, Germany.
- Jean-Pierre, P., **Cheng, Y.**, Patierno, S., Raich, P., ... & Fiscella, K. (2013, April). *Item response theory analysis of the patient satisfaction with cancer-related care measure: Psychometric validation in a multicultural sample of 1,296 participants*. American Association for Cancer Research, Washington, DC.
- Cheng, Y.** (2013, April). *Detection of aberrant responses in survey data in the presence of calibration error*. National Council of Measurement in Education, San Francisco, CA.
- †Lathrop, Q., †Shao, C., †Patton, J., & **Cheng, Y.** (2013, April). *Determining the anchor set in the detection of differential item functioning*. National Council of Measurement in Education, San Francisco, CA.
- Narvaez, D., Gleason, T., **Cheng, Y.**, Lefever, J., & Wang, L. (2013, April). How Do Nurturing Parenting Attitudes Influence Moral Character Development and Flourishing? 2013 SRCDC Biennial Meeting, Seattle, WA.
- Heitzmann, C.A., Merluzzi, T.V., Philip, E.J., †Patton, J., & **Cheng, Y.** (2012, Nov). *A comprehensive methodology for assessing true differences in coping for African American*

*patients with cancer*. International Psycho-oncology Society, Brisbane, Queensland, Australia.

- †Shao, C., & **Cheng, Y.** (2012, Oct). *The mediated MIMIC model for understanding the underlying mechanism of DIF*. Ideas in Testing conference, Chicago, IL.
- †Lathrop, Q., & **Cheng, Y.** (2012, Oct). *Random effect Rasch model and the two parameter logistic model*. Ideas in Testing conference, Chicago, IL.
- Cheng, Y.** (2012, Sept.) *The theoretical development and applications of computerized adaptive testing*. 2012 Cross-strait Psychometric Conference, Nanchang, China.
- Cheng, Y.,** & Liu, C. (2012, April). *Conceptual differences between two IRT-based decision-making approaches in testing*. 2012 meeting of NCME, Vancouver, BC.
- †Patton, J., & **Cheng, Y.** (2012, April). *Standard error estimation in presence of calibration error*. 2012 meeting of NCME, Vancouver, BC.
- †Lathrop, Q., & **Cheng, Y.** (2012, April). *Comparison between two IRT-based approaches in estimating classification accuracy and consistency*. 2012 meeting of NCME, Vancouver, BC.
- †Lathrop, Q., Wang, P., & **Cheng, Y.** (2012, April). *Estimation of classification accuracy and consistency with longitudinal data*. 2012 meeting of AERA, Vancouver, BC.
- Cheng, Y.,** †Patton, J., & Yuan, K-H. (2011, Oct). *Standard error estimation in IRT ability recovery*. Innovation R&D Symposium, CTB/McGraw-Hill, Monterey, CA.
- Cheng, Y.,** & Liu, C. (2011, July). *Decision making in testing using IRT*. 2011 International Meeting of Psychometric Society, Hong Kong.
- Frey, A., **Cheng, Y.,** & Seitz, N. (2011, May). *Content Balancing with the Maximum Priority Index Method in Multidimensional Adaptive Testing*. Presented at the 2011 NCME, New Orleans, LA.
- Yao, L., Kyoto, I. & **Cheng, Y.** (2011, May). *Pre-Conference Training Workshop: An Introduction to the Application of BMIRT and LinkMIRT: Bayesian Multivariate Item Response Theory Software*. 2011 meeting of NCME, New Orleans, LA.
- Narvaez, D., Brooks, J.A., Gleason, T., Wang, L., **Cheng, Y.,** Lefever, J., & Centers for the Prevention of Child Neglect (April, 2011). *Child Outcome Effects of the Environment of Evolutionary Adaptedness: Breastfeeding Experience and Touch at 30 and 36 months*. 2011 Meeting of Society for Research in Child Development (SRCD), Montreal, Canada.
- Heitzmann, C.A., †Patton, J. M., Merluzzi, T., **Cheng, Y.** (2011, April). *Identifying true differences in coping self-efficacy between African American and white cancer patients*. Paper presented at the annual meeting of the Society of Behavioral Medicine, Washington, DC.
- Narvaez, D., Wang, L., **Cheng, Y.,** Burke, J., & Gleason, T. (November, 2010). *Symposium: Early Life Experience and Social and Moral Development*. Association for Moral Education Annual Meeting, St. Louis.

- Frey, A., **Cheng, Y.**, & Seitz, N. (2010, June). *Content Balancing with the Maximum Priority Index Method in Multidimensional Adaptive Testing*. Presented at the 2010 Annual Meeting of International Association on Computerized Adaptive Testing, Arnhem, the Netherlands.
- Cheng, Y.** (2010, May). *To Obtain More Precise Latent-Trait Estimates: Quantification of the Impact of Fallible Item Parameter Estimates on Latent Trait Recovery*. Presented at the 2010 Annual Meeting of the American Educational Research Association, Denver, CO.
- Cheng, Y.** (2010, May). *How to Retain Information in Educational and Psychological Assessments Relations Among Three Reliability Measures*, Presented at the 2010 Annual Meeting of the National Council on Measurement in Education, Denver, CO.
- Cheng, Y.** (2009, April). *Continuous/Virtual  $\alpha$ -Stratification for Computerized Adaptive Testing*. Presented at the 2009 Annual Meeting of the American Educational Research Association, San Diego, CA.
- Cheng, Y.** (2008, September). *Diagnostic Computerized Adaptive Testing*. Presented at the 2008 International Conference on Outcome Measurement, Bethesda, MD.
- Cheng, Y.**, & Morgan, D. (2008, March). *Comparison of methods for constrained CAT item selection in classification accuracy and consistency*. Presented at the 2008 Annual Meeting of the National Council on Measurement in Education, New York, NY.
- Cheng, Y.**, & Chang, H. (2008, March). *A new heuristic for parallel form assembly based on information curve matching*. Presented at the 2008 Annual Meeting of the National Council on Measurement in Education, New York, NY.
- Cheng, Y.**, & Chang, H. (2007, July). *The "selection and allocation" method for automated test assembly*. International Meeting of Psychometric Society, Tokyo, Japan.
- Cheng, Y.**, Chang, H., & Budescu, D. (2007, June). *Item selection in cognitive diagnostic CAT*. GMAC Computerized Adaptive Testing Conference, Minneapolis, MN.
- Cheng, Y.**, Chang, H. & Budescu, D. (2007, April). *The dual information method for item selection in cognitive diagnostic CAT*. Annual Meeting of the National Council on Measurement in Education, Chicago, IL.
- Cheng, Y.**, & Chang, H. (2007, April). *Two item selection methods in computerized adaptive testing for cognitive diagnosis*. Annual Meeting of the American Educational Research Association, Chicago, IL.
- Cheng, Y.**, & Chang, H. (2006, April). *Constraints-weighted information method for item selection of severely constrained computerized adaptive testing*. Annual Meeting of the National Council on Measurement in Education, SF, CA.
- Cheng, Y.**, & Chang, H. (2006, April). *IRT pre-equating with a college admission test: A real data analysis*. Paper presented at the 2006 annual meeting of the American Educational Research Association, SF, CA.
- Cheng, Y.**, & Chang, H. (2005, April). *Customized stratification in CAT: How many strata to use?* Annual Meeting of the National Council on Measurement in Education, Montreal, Canada.



- Chang, H., Chen, P., **Cheng, Y.**, & Qian, J. (2005, April). *Adjustment of BIB data for DIF testing*. Annual Meeting of the American Educational Research Association, Montreal, Canada.
- Cheng, Y.**, Chang, H., & Yi, Q. (2004, June). *Item selection with realistic content balancing constraints in computerized adaptive testing*. International Meeting of Psychometric Society, Pacific Grove, CA.

### **Master's Theses Directed**

Quinn Lathrop (2014). The impact of within-template systematic variation on response models.

### **Doctoral Dissertations Directed**

Jeffrey Patton (2014). Some consequences of response time model misspecification in educational measurement.

Quinn Lathrop (2015). IRT and SVD: Implementing psychometric methods in new and complex situations.

Can Shao (2016). Aberrant response detection using change-point analysis.

### **Doctoral Student (Initial) Placement**

Jeffrey Patton (2014). Tenure-track assistant professor, University of Maryland, College Park.

Quinn Lathrop (2015). Research Scientist, Northwest Evaluation Association.

Can Shao (2016). Psychometrician, National Board of Osteopathic Medical Examiners.

### **Courses Taught**

Psychological Measurement and Test Development

Graduate course. Offered typically every other year. Typical class size: around 10.

Item Response Theory

Upper-level graduate course. Offered typically every other year. Typical class size: around 10.

Psychological Measurement

Cross-listed Grad/Undergrad. Elective for Data Science Minor. Offered once so far (Fall 2018). Class size: 9.

Introduction to Statistics

Required undergrad course for psych majors. Typically offered every year. Typical class size: 25 - 30.

### **Professional Memberships**

Society of Multivariate and Experimental Psychology

Psychometric Society

American Educational Research Association

National Council of Measurement in Education

Association for Psychological Science

## **Professional Services**

1. Editorial Board: *Psychological Test and Assessment Modeling, 2016 – 2018*
2. Ad-hoc Reviewer for journals (fewer than 5 manuscripts a year) :

*American Psychologist*

*Applied Psychological Measurement*

*Behavioral Research Methods*

*British Journal of Mathematical and Statistical Psychology*

*Educational and Psychological Measurement*

*Educational Measurement: Issues and Practices*

*Journal of the American Statistical Association*

*Journal of Educational and Behavioral Statistics*

*Journal of Mathematical Psychology*

*Journal of Educational Psychology*

*Journal for Research in Mathematics Education*

*Multivariate Behavioral Research*

*Psychological Methods*

*Psychometrika*

*Quality of Life Research*

*The Journal of Computerized Adaptive Testing*

Reviewer for conferences for most years:

*American Educational Research Association*

*National Council of Measurement in Education*

*International Meeting of Psychometric Society*

*International Association of Computerized Adaptive Testing*

*American Psychological Association, Div 5 (2018)*

3. Organizer, Invited symposium at the 2011 International Association of Computerized Adaptive Testing (IACAT, Sept 2011);  
Organizer, symposium at the 2013 meeting of the National Council of Measurement in Education (NCME, April 2013).
4. Member, Editorial Council, *Psychometric Society* (2016 – 2018);  
Committee member of the Graduate Student Council (2005, 2006) of AERA Division D;

Committee member of the Dissemination Award Committee (2007, 2008) of NCME;  
 Committee member of the Significant Contribution to Educational Measurement and  
 Research Methodology Award Committee (2011, 2012) of AERA Division D;  
 Committee member, Co-Chair, Chair (2014, 2015, 2016), Bradley Hanson Award for  
 Contributions to Educational Measurement, National Council of Measurement in  
 Education.

5. National Science Foundation DRK-12 panel member, 2018.  
 National Science Foundation DRK-12 panel member, 2016.  
 National Science Foundation ECR panel member, 2015.  
 National Science Foundation DRL panel member, 2014.  
 National Science Foundation REESE panel member, 2010 & 2011.  
 National Science Foundation SBE reviewer, 2012.
6. University and Departmental service:
  - University Online Data Science program, 2016 – present;*
  - Department Executive CAP, 2015 – present;*
  - Graduate Studies Committee, 2017 – present;*
  - PIER program, Institute of Educational Initiatives, 2014 – present;*
  - Grant committee, Department of Psychology, 2014 - 2016;*
  - Undergraduate committee, Department of Psychology, 2009 – 2010;*
  - Colloquium committee, Department of Psychology, 2008 – 2009.*