

## Joseph E. Betts, Ph.D., ED.S., MMIS

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[scholar.google.com/citations?view\\_op=list\\_works&hl=en&hl=en&user=ULK6vIIAAAJ&pagesize=80](https://scholar.google.com/citations?view_op=list_works&hl=en&hl=en&user=ULK6vIIAAAJ&pagesize=80)

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I am an innovative, results-oriented, and decisive leader that does not shy away from risk-taking and new unstructured problems or projects. I am adaptable and find ways to make my teams and organization successful. I have over 20 years of hands-on experience and 13+ years leading and directing high-performing teams in statistical analysis, application development, R&D, and operational work with expertise in multiple areas: experimental/statistical methodologies, predictive analytics, psychometrics, multiple programming languages (e.g., SQL, SAS, Python), process (re)engineering, project management, and customer relationship management. I have over 150 presentations at national and international professional conferences and over 30 peer-reviewed, professional publications related to active research on statistical modeling, psychometric methods, and various analytic methodologies. I have served on four professional journal editorial boards for over 10 years.

### **Summary of Qualifications:**

- Proven record of successful implementation of executive projects and product innovation, for example:
  - Implementing LLMs and ML deep learning models to support multiple aspects of the business.
  - Responsible for all R&D and implementation of the first polytomous computerized adaptive testing (CAT) methodology for licensure examinations using numerous innovative algorithms.
  - Implementation of Data Lake and Delta Lake architecture in Azure to enhance vendor data flows and on-site analytics using Databricks, Unity Catalog, PySpark, and Python while sunsetting legacy SQL/SAS.
  - Implemented analytical dashboards for the board and executive committees using R/R-Shiny, Python/Flask, and PowerBI along with publishing across multiple MS Teams channels for on-demand access.
  - Refactored multiple, legacy desktop applications to modern web applications using HTML/CSS, R/R-Shiny, Python/Flask, and MS Power Apps.
  - Implementing deep learning and transformer models for evaluating content similarity, automated item generation, content generation, and metadata classifications.
  - AI chatbots for interacting with customer inquiries and implementing a knowledge bank for internal uses.
  - Numerous critical data migration projects with ETL process automation to support analytics handling multiple data types (e.g., SQL, CSV, column delimited/fixed width, JSON, XML, etc.)
- ***Non-technical capabilities:*** Creative problem solver, strong analytic skills, effective communicator.
- ***Technical capabilities:*** Python (with NumPy, Pandas, Matplotlib, Scikit-learn, NLTK, Keras/Tensorflow, and others), SQL, SAS, VS Code, Databricks, Unity Catalog,

PySpark, MS products (Azure, Data Lake, Data Studio, Storage Explorer, Power Apps, Power BI, Office Suite, Visio, SQL Server), SPSS, MatLab, Mplus, WinSteps, Bilog MG, TESTFACT, Parscale.

- ***Some Recent Certifications/Training (Provider):*** Google Advanced Data Analytics (Google), Building Transformer-based Natural Language Processing Applications (NVIDIA), Large Language Models (LLMs): Application through Production (Databricks), Data Visualization (University of Illinois, Urban-Champaign).

### Current Positions

#### **Director, Measurement & Testing** (12/2019 - Present)

*Examinations Dept., National Council of State Boards of Nursing (NCSBN), Chicago, IL*

- Responsible for directing psychometric, analytic, and reporting services related to the NCLEX computerized adaptive testing (CAT) examinations (RN & PN) in the United States and Canada, Canadian PN (Rex-PN), Australian NCLEX, Nurse Aide, Medication Aide, Home Health Aide, & state specific contracts.
- Responsible for all aspects of R&D, from requirements development and prototyping to UAT and operational implementation. Some examples:
  - Research agenda of over 20 projects related to clinical judgment in nursing, polytomous item response theory, computerized adaptive testing, applications of LLMs for item development, process automation, NLP, content generation and review, and classification.
  - Launch of Next Generation NCLEX including new HTML based items with enhanced item development capabilities, updating from dichotomous to polytomous CAT, measuring clinical judgment skills, developing and implementing an item writing application for developing clinical judgment items for evolving scenarios, and updated analytics and reporting.
  - Led redesign of panels from face-to-face to virtual using HTML-based and MS PowerApps with MS Teams integration.
  - Innovative work related to remote proctoring including evaluation and validation of AI enhanced facial/voice/object recognition systems, adaptive test driver, and multi-use reporting dashboards.
  - Direct internal application development for exams related needs (standard setting, DIF, NGN item writing, polytomous statistics visualizations for SMEs, internal dashboards for BOD) using MS Power Platforms, Python/Flask, and R/R-Shiny.
- Direct predictive analytics and dashboard development using Azure Data Lake with Databricks, Unity Catalog, Python/PySpark, Dremio, and PowerBI.
- Multiple projects related to migration of legacy CMS and DB systems, application refactoring, & automation of all processes and reporting from legacy systems to modern cloud architecture.
- Direct research and operational groups consisting of 11 PhD level psychometricians and an application developer.
- Led initial launch of Canadian RN exam, Australian RN, & Rex-PN CAT exams.
- Worked with the internal IT department on the development of an Azure Cloud and DataLake strategy for redesigning internal operational processes and data flow automation with vendors and internal business to support continuous predictive analytics.
- Participated in executive team strategy related to on-going corporate goals and acted as executive leader driving multiple projects.

- Direct requirements development for on-going projects internally and with vendors.
- Proposal development for professional conferences and publication submissions.
- Directed and managed the transition of test development and psychometric teams from Pearson VUE to NCSBN.

**Committee Member** (1/2023 – Present)

*Council on Licensure, Enforcement, and Regulation (CLEAR)*

- Testing & Examinations subcommittee (1/2023 – Present)
- Examination Resources & Advisory Committee (1/2023 – Present)
- AI working group member (10/2025 – present)

**Committee Member** (7/2024 – Present)

*Institute for Credentialing Excellence (ICE)*

- Main (voting) member I.C.E. 1100 Standards Committee.

**Committee Member** (10/2025 – Present)

*Association of Test Publishers (ATP)*

- Testing by Doing (TxD) subcommittee of the Licensure & Certification committee focusing on performance-based assessments.

### **Previous Work Experiences**

**Director, Psychometric & Research Services** (10/2013 –12/2019)

*Test Development & Global Psychometric Services, Pearson VUE, Chicago, IL*

- Responsible for directing all psychometric, analytics, and reporting services related to large-scale international licensure and national certification exams (NCLEX, NNAAP, MACE, and state specific contracts).
- Led team on launch of NCLEX in Canada.
- Led over 20 R&D projects with supported funding, for example:
  - Bridging nursing practice and information processing models to operationalize the measurement of nursing clinical judgment.
  - Investigating automated item generation (AIG and GenAI) from clinical judgment templates/prompts to develop evolving clinical judgment scenarios for patient/disease/intervention models.
  - NLP methods for enemy item detection and DIF analysis.
  - Cognitive labs and Usability methods evaluate both GUI design issues and underlying cognitive dimensions of clinical judgment for nursing evaluation.
  - Led research pertaining to dimensionality, polytomous IRT scoring models, and applications of signal-detection theory to clinical judgment
  - Early development of a simulation prototype for assessing nursing knowledge and skills related to clinical judgment
  - Lead research team investigating the usability of new technology enhanced items and measures of clinical judgment.
- Directed group consisting of seven PhD level psychometricians, a senior statistical analyst, system engineer, and an application developer.
- Led large-scale migration of legacy content management system for both existing content and next generation requirements.
- Led transition teams managing the transition of test development staff and processes from Pearson VUE to the acquiring NCSBN.

- Participated in executive team meetings and cross-functional steering committee meetings related to on-going corporate goals and supporting projects.
- Predictive analytic for internal operations and for clients using Python, R, and SAS.
- Work with numerous operational units, e.g. Software Development, Project Management, Test Publishing, Quality Assurance, Results Processing, etc., to complete both on-going operational enhancement projects and bringing R&D projects into operational processes.
- Responsible for migration & automation of all processes and reporting from legacy systems and applications to SAS.
- Maintain strong client relationships and collaborative research with clients.
- Proposal development for professional conferences and publication submissions.
- Develop research agenda, project scope, timelines, budgeting, and planning.
- Proposal development with business development team to support prospecting for new business opportunities and client renewal bids.

### **Director, Research & Measurement Services (6/11 - 10/13)**

*Research & Technology Development Division, Houghton-Mifflin Harcourt Publishing, Riverside Assessment Division, Rolling Meadows, IL*

- Responsible for all research related to educational and clinical assessment products: CogAT, Iowa Assessments, Gates-MacGinitie Reading Test, Batelle Developmental Inventory, Logramos.
- Responsible for new CAT assessment product development: Riverside Interim Assessments, Riverside Early Assessments of Learning.
- Manage research, scoring, and reporting for large district custom assessment solutions: Chicago Public Schools, Fairfax Public Schools, Houston Independent School District, Minneapolis Public Schools, St. Paul Public Schools, Greenville Public Schools.
- Led research initiative to implement the CogAT and Iowa Assessments as computer-based assessments and all on-line reporting.
- Responsible for driving the funding and development of the first computerized-adaptive test of interim assessments for Riverside and writing the technical specifications while working with the delivery vendor.
- Development of a new method for scaling and equating norm-referenced scores into the continual development of learning progressions into score reporting using non-item response models.
- Managed numerous national research projects, including:
  - Technology enhanced item field tests for math and reading
  - Computer-based online comparability studies
  - Calibration and norming studies for achievement and cognitive measures
  - Validity studies for assessment programs.
- Develop research agenda, project scope & timelines, budgeting, and planning.
- Work with authors to complete project objectives.
- Manage a group of two Research Scientists, two Psychometricians, two Statisticians, & a four-person sampling acquisition team.
- Proposal development, estimating costs and resources associated with RFPs for new business opportunities.

### **Senior Measurement Statistician (7/05 – 6/11)**

*Psychometrics & Assessment Division, Renaissance Learning, Madison, WI*

- Psychometric analysis, operational implementation, & management of the largest K-12 computerized adaptive tests (CAT) (over 30 million exams a year for STAR Reading/Mathematics/Early Literacy Assessments) and computer-based formative assessments (over 400 million exams a year for Accelerated Reading/Math programs) in United States, Canada, and United Kingdom
- Led the expansion of all assessments, reporting, and research into the United Kingdom with the U.K. support team.
- Developed automated item generation (AIG) for K-6 formative assessment delivered through Accelerated Math program.
- Developed and implemented National Growth Norms for early literacy, reading, and mathematics.
- Provided predictive analytics for planning purposes related to internal operational teams and to clients for identification of at-risk students.
- Maintained NLP research line on ATOS Readability metric that mapped students reading ability to book reading levels along with oral reading fluency measures.
- Research that led to the development of Book Finder recommender system product and specific state implementations related to AYP exam results.
- Researched learning progressions in early literacy and mathematics using both formative and summative assessment data with latent growth and Bayesian models.
- Led research agenda to provide psychometric support for interim and progress monitoring uses of STAR assessments to national review agencies.
- Numerous professional publications and presentations.
- Utilized IRT models, DIF analysis, reliability/validity studies, scale development, and equating/linking studies to support assessments.
- Sampling design and statistical analysis for large-scale item calibration and norm-referencing studies in the U.S. and U.K.
- Direct summer research internship candidates.

#### **Chief Research Scientist (10/04 – 03/13)**

*Center for Cultural Diversity & Minority Education, Madison, WI*

- Pro-bono Statistical Consulting and Board Member for this non-profit organization
- Research projects:
  - Evaluation of assessments for non-English language and minority students
  - Student cognitive and emotional engagement: Invariance & DIF studies on *The Student Engagement Instrument* (SEI)
  - Early literacy and mathematics development and statistical measurement models.
- Statistical & Measurement Consulting
  - Some clients:
    - James Appleton, PhD, Gwinnett Co. Schools, Suwanee, GA
    - Sara Bolt, PhD, Michigan State University, East Lansing, MI
    - Ben Barbour, PhD, Horry Co. Schools, Conway, SC
    - Sandy Christensen, PhD, University Minnesota Twin Cities, MN
    - Joe Malin, PhD, Lake Forest School District, Lake Forest, IL
    - Amy Reschly, PhD, University of Georgia, Athens, GA
- Applications of latent variable modeling for confirmatory factor analytic studies, moderating effects, and growth curve analysis.

#### **Psychology Intern/Psychometrician (8/04 – 7/05)**

*Research, Evaluation and Assessment, Minneapolis Public Schools, Minneapolis, MN*

- Psychometric work with the Early Measurement Group
  - Tests developed & maintained:
    - Minneapolis Kindergarten Assessment
    - Minneapolis Pre-school Screening Instrument-Revised
      - English, Somali, & Hmong Language Versions
  - Local norming and validity studies
  - Standard setting for identifying at-risk students.
- Longitudinal data analysis with predictive models to identify at-risk status.
- Evaluated numerous methods for evaluating value-added models.
- Survey development, sampling, and analysis.

**Research Assistant/Statistician (10/01 – 8/04)**

*Center for Applied Research and Educational Improvement, University of Minnesota, Minneapolis, MN*

- Worked with Dr. Seppanen and Dr. Freeman on large-scale educational research.
- Program evaluation using qualitative and quantitative methodologies.
- Survey development, sampling, and analysis.
- Developed survey of early mathematics anxiety and interest.
- Field trials and calibration of Minnesota Math Anxiety Scale.
- Provided research design & statistical analysis for longitudinal & cross-sectional data.
- Project management and grant writing.
- Maintained large-scale statistical databases to support projects.

**Research Assistant/Data Analyst (10/01 – 11/02)**

*Department of Educational Psychology, University of Minnesota, Twin Cities*

- Worked with Dr. Ysseldyke, Assistant Dean of Research, on intended and unintended consequences of large-scale assessments of students with disabilities.
- Analyzed effectiveness of Mathematics Information Systems and curriculum-based formative assessments on mathematics outcomes for diverse groups.
- Research on the use of computer-based, formative assessment systems on outcome for Title 1 and Gifted & Talented students.
- Cross-sectional & longitudinal data analysis using general linear & multilevel models.

**School Psychologist/Special Services Facilitator (8/00 – 8/04)**

*East Metro Integration School District 6067, St. Paul & Roseville, MN*

- Directed student disabilities 504 program.
- Managed special education due process procedures.
- Primary investigator on research concerning early indicators and predictors of literacy and mathematics outcomes in a multi-age classroom environment.
- Evaluation of developmental learning continuum in math and science.
- Psychological and educational evaluations.
- Managed project to re-design the pre-referral process and documentation forms to fit within a tiered-preventative model, now known as Response-to-Intervention.

**Psychology Intern (8/99 – 6/00)**

*Decatur City Schools, Decatur, GA*

- Psychological assessment and consulting.

- Worked on a district-based research team which collected and analyzed data for the Reading Recovery Program and early phonological awareness as predictor of later reading problems.
- Analyzed the effectiveness of different reading approaches in early elementary grades for at-risk and reading disabled students.
- Participated in evaluation of special education early intervention program.

#### **Intake Counselor/Needs Assessment Counselor/Shift Supervisor (10/96 - 7/00)**

*Psychological Services, Peachford Hospital, Atlanta, GA*

- Diagnostic, chemical dependency, and psychiatric evaluations of patients ranging in age from child to geriatric.
- Individual, group, and family consultations.
- Crisis intervention and counseling services.
- Treatment planning, case management, and discharge planning.
- Supervised staff of intake counselors.

#### **Residential Counselor/Shift Supervisor (3/95- 10/96)**

*Murphy-Harpst-Vashti Treatment Center, Cedartown, GA*

- Supervised 3-4 behavioral specialists and the daily milieu of a residential unit for children and adolescents with behavioral and developmental disorders. Crisis intervention, group, and one-on-one therapy. Development and implementation of individual treatment plans with weekly progress reports.

#### **Counselor/Behavioral Specialist (10/94- 6/95)**

*Paulding Group Home, Three Rivers Behavioral Center, Dallas, GA*

- Taught social, and daily living skills by one-on-one and group instruction to adult population diagnosed with severe mental illness and developmental disorders. Provided emergency services and crisis intervention.

### **Publications**

#### ***Professional & Scholarly Articles***

1. Betts J., Williams N., Lin C., Kao S.-c., Kim H.J. & Muntean W. (2026). Bringing the NCLEX into the next generation: Results from the first year of measuring clinical judgment. *Journal of Nursing Regulation*, 16(4), 284-288. DOI: <https://doi.org/10.1016/j.jnr.2025.11.005>.
2. **Betts, J.**, & Muntean, W. (2025). Evaluating deep learning and transformer models on SME and GenAI items. *Proceedings of the Artificial Intelligence in Measurement and Education Conference (AIME-Con): Volume 2*, 141-146.
3. Muntean, W., & **Betts, J.** (2025). Addressing few-shot LLM classification instability through explanation-augmented distillation. *Proceedings of the Artificial Intelligence in Measurement and Education Conference (AIME-Con): Volume 2*, 197-203.
4. Muntean, W., **Betts, J.**, Wang, Z., & Jia, H. (2025). Comparing data-driven methods for removing options in assessment forms. *Journal of Educational Measurement*, 62(4), 588-607. DOI: 10.1111/jedm.70003
5. **Betts, J.**, & Muntean, W. (2025). Integrating clinical judgment in entry-level nursing: A confirmatory factor analytic study. *Journal of Nursing Measurement*. 33(1), 131-139. DOI: 10.1891/JNM-2023-0106.

6. **Betts, J., & Muntean, W.** (2024). Data visualizations for polytomous items. *Journal of Testing Technology*, 24(Special Issue): Retrieved from <https://jattjournal.net/index.php/atp/article/view/173202>
7. Kang, H., Arbet, G., **Betts, J., & Muntean, W.** (2024). Location matching adaptive testing for polytomous technology-enhanced items. *Applied Psychological Measurement*, 48(1-2): 57-76.
8. **Betts, J., Muntean, W., & Dickison, P.** (2024). Evaluating the importance of clinical judgment skills in entry-level nursing. *Journal Nursing Education*, 63(3): 156-162.
9. **Betts, J.** (2022). Measuring Student Engagement: New approaches & issues. In A. Reschly & S. Christenson (Eds.), *The handbook of research on student engagement* (2<sup>nd</sup> ed), pp. 647-658. Springer.
10. Kang, H., Han, S., **Betts, J., & Muntean, W.** (2022). Computerized adaptive testing for testlet-based innovative items. *British Journal of Mathematical and Statistical Psychology*, 75(1), 136-157. <https://doi.org/10.1111/bmsp.12252>
11. **Betts, J., Muntean, W., Kim, D., & Kao, S.** (2022). Evaluating different methods for multiple response items providing partial credit. *Educational and Psychological Measurement*, 82(1), 151-176. DOI: 10.1177/0013164421994636
12. **Betts, J., Muntean, W., Kim, D., and Kao, S-c.** (2022). *Next Generation NCLEX: Test Design*. NCSBN Next Generation Newsletter, Winter 2022. National Council of State Boards of Nursing: Chicago, IL.
13. **Betts, J.** (2022). Item authoring. In International Test Commission & Association of Test Publishers (Eds.), *Guidelines for Technology Based Assessments*. International Test Commission and Association of Test Publishers.
14. Albrecht, P., Houk, G., Ruggiero, E., Dockum, M., Czerwinski, M., **Betts, J., Wymer, J., Argoff, C., & Rice, F.** (2021). Keratinocyte biomarkers distinguish painful diabetic peripheral neuropathy patients and correlate with topical lidocaine responsiveness. *Frontiers in Pain Research*. <https://doi.org/10.3389/fpain.2021.790524>
15. **Betts, J., Muntean, W., Kim, D., Jorion, N., & Dickison, P.** (2019). Building a method for writing clinical judgment items for entry-level nursing exams. *The Journal of Applied Testing Technology*, 20(S2), 21-36. Retrieved from <https://jattjournal.net/index.php/atp/article/view/143674>
16. Witmer, S., Duke, N., Billman, A., & **Betts, J.** (2014). Using assessment to improve early elementary students' knowledge and skills for comprehending informational text. *Journal of Applied School Psychology*, 30, 223-253.
17. Reschly, A., **Betts, J., & Appleton, J.** (2014). An examination of the validity of two measures of student engagement. *International Journal of School & Educational Psychology*, 2, 106-114.
18. **Betts, J.** (2012). Issues and methods in the measurement of student engagement: Advancing the construct through statistical modeling. In S. Christenson, A. Reschly, & C. Wylie (Eds.), *The handbook of research on student engagement* (pp. 783-803).
19. **Betts, J., Pickart, M., & Heistad, D.** (2011). Investigating early literacy and numeracy: Exploring the utility of the bifactor model. *School Psychology Quarterly*, 26, 97-107.
20. **Betts, J.** (2010). Expanding school psychology's horizons for understanding and conducting research: Commentary on the special series on statistical analysis. *Journal of School Psychology*, 48, 1-4.
21. **Betts, J., Appleton, J., Reschly, A., Christenson, S., & Huebner, S.** (2010). A study of the factorial invariance of the Student Engagement Instrument (SEI): Results from middle and high school students. *School Psychology Quarterly*, 25, 84-93.
22. Reschly, A., Busch, T., **Betts, J., Deno, S., & Long, J.** (2009). Curriculum-based measurement of oral reading as an indicator of reading achievement: A meta-analysis of the correlational evidence. *Journal of School Psychology*, 47, 427-469.



23. Muyskens, P., **Betts**, J., Lau, M. Y., & Marston, D. (2009). Predictive validity of curriculum-based measures in the reading assessment of students who are English language learners. *The California School Psychologist*, 14, 11-21.
24. **Betts**, J., Bolt, S., Decker, D., Muyskens, P., & Marston, D. (2009). Examining the role of time and language type in reading development for English language learners. *Journal of School Psychology*, 47, 143-166.
25. **Betts**, J., Pickart, M., & Heistad, D. (2009). Construct and predictive validity evidence for curriculum-based measures of early literacy and numeracy skills in kindergarten. *Journal of Psychoeducational Assessment*, 27, 83-95.
26. **Betts**, J., Pickart, M., & Heistad, D. (2009). An investigation of the psychometric evidence of CBM-R passage equivalence: Utility of readability statistics and equating for alternate forms. *Journal of School Psychology*, 47, 1-17.
27. **Betts**, J., Reschy, A., Pickart, M., Heistad, D., Sheran, C., & Marston, D. (2008). An examination of predictive bias for second grade reading outcomes from measures of early literacy skills in kindergarten with respect to English-language learners and ethnic subgroups. *School Psychology Quarterly*, 23, 553-570.
28. McBride, J., & **Betts**, J. (2007). Eleven Years of Assessing K-12 Achievement: Some Longitudinal Research Using STAR Reading, STAR Math, and STAR Early Literacy. *Proceedings of the 2007 GMAC Conference on Computerized Adaptive Testing*. <https://iacat.org/2007-iacat-conference-gmac-minneapolis/>
29. Missall, K., Reschly, A., **Betts**, J., McConnell, S., Heistad, D., Pickart, M., Sheran, C., & Marston, D. (2007). Examination of the predictive validity of preschool early literacy skills. *School Psychology Review*, 36, 433-452.
30. **Betts**, J., Marston, D., & Muyskens, P. (2006). Tracking the progress of students whose first language is not English towards English proficiency: Using CBM with English Language Learners. *MinneTESOL/WITESOL*, 23, 15-37.
31. **Betts**, J. (2005). A longitudinal analysis of special education student math scores: Exploratory analysis. *SASP News*, 6(1), 9-14.
32. Ysseldyke, J., Tardrew, S., **Betts**, J., Thill, T., & Hannigan, E. (2004). Use of an instructional management system to enhance math instruction of gifted and talented students. *Journal for the Education of the Gifted*, 27, 293-310.
33. Ysseldyke, J., **Betts**, J., Thill, E., & Hannigan, E. (2004). Use of an instructional management system to improve mathematics skills for students in Title I programs. *Preventing School Failure* 48(4), 10-14.

### ***Assessment Instruments Technical Manuals***

1. Pickart, M., Sheran, C., **Betts**, J., Heistad, D., & Muyskens, P. (2006). *Minneapolis Kindergarten Assessments: Technical manual*. Minneapolis, MN: Minneapolis Public Schools.
2. Sheran, C., **Betts**, J., Heistad, D., & Pickart, M. (2005). *Minneapolis Pre-School Screener-Revised (MPSI-R): English (ENG) version: Administration and technical manual*. Minneapolis, MN: Minneapolis Public Schools: Research, Evaluation and Assessment.
3. Sheran, C., **Betts**, J., Heistad, D., & Pickart, M. (2005). *Minneapolis Pre-School Screener-Revised (MPSI-R): Non-English (ELL) versions: Administration and technical manual*. Minneapolis, MN: Minneapolis Public Schools: Research, Evaluation and Assessment.
4. Pickart, M., **Betts**, J., Heistad, D., & Sheran, C. (2005). *Beginning and End of Kindergarten Assessment (BKA/EKA): Administration and technical manual*. Minneapolis Public Schools: Research, Evaluation and Assessment.

### ***Other Publications, Technical, & Evaluation Reports***

Over 500 internal and client related technical and research related reports across the following employers: NCSBN, Pearson VUE, HMH Riverside Publishing, Renaissance Learning, Center for Cultural Diversity & Minority Education, Minneapolis Public Schools, Center for Applied Research & Educational Improvement, University of Minnesota, and East Metro Education District.

### **Professional Presentations**

1. Kong, L., Muntean, W., & **Betts, J.** (2026, June). Augmenting LLMs with knowledge seeds for clinical question generation. Paper submitted to the International Conference of the Learning Sciences (ISLS), Irvine, CA.
2. **Betts, J.**, & Muntean, W. (2026, April). *Automated metadata classification in item development using deep learning and transformer architectures*. Paper submitted to the National Council on Measurement in Education (NCME), Los Angeles, CA.
3. Muntean, W., & **Betts, J.** (2026, April). *Visualizing knowledge gaps using semantic latent space models*. Paper submitted to the National Council on Measurement in Education (NCME), Los Angeles, CA.
4. Someshwar, S., Muntean, W., & **Betts, J.** (2026, April). *The impact of disruptions on test scores*. Paper submitted to the National Council on Measurement in Education (NCME), Los Angeles, CA.
5. Wang, Z., Muntean, W., & **Betts, J.** (2026, April). *Improving polytomous item online calibration via random phase tuning*. Paper submitted to the National Council on Measurement in Education (NCME), Los Angeles, CA.
6. Muntean, W., Wang, Z., & **Betts, J.** (2025, November). *A unified latent space item response model for test security*. Paper presented at Conference on Test Security (COTS), Amherst, MA.
7. Kasli, M., & **Betts, J.** (2025, November). *Identifying aberrant behavior in CAT: A hybrid clustering (DBSCAN) and XGBoost classifier approach*. Paper presented at Conference on Test Security (COTS), Amherst, MA.
8. **Betts, J.**, Kasli, M., & Muntean, W. (2025, November). *Using regression and Markov transition matrices for identifying anomalous responses*. Paper presented at Conference on Test Security (COTS), Amherst, MA.
9. **Betts, J.** (2025, November). *Evaluating differential item functioning (DIF): Ensuring NCLEX items are bias free*. Presented to the National Regulatory Boards, Chicago, IL.
10. Muntean, W., & **Betts, J.** (2025, October). *Addressing few-shot LLM classification instability through explanation-augmented distillation*. Paper presented at the Artificial Intelligence in Measurement & Education Conference (AIME-Con), Pittsburgh, PA.
11. **Betts, J.**, & Muntean, W. (2025, October). *Evaluating deep learning and transformer models on SME and GenAI items*. Paper presented at the Artificial Intelligence in Measurement & Education Conference (AIME-Con), Pittsburgh, PA.
12. Cadle, A., **Betts, J.**, & Fung, (2025, September). *Seven things every regulator needs to know about the test development process*. Paper presented at international conference for The Council on Licensure, Enforcement, and Regulation (CLEAR), Chicago, IL.
13. Caro, C., Muenzen, P., & **Betts, J.** (2025, September). *Balancing access and public protection in professional licensure*. Paper presented at international conference for The Council on Licensure, Enforcement, and Regulation (CLEAR), Chicago, IL.
14. Kong, L., Muntean, W., & **Betts, J.** (2025, April). *Augmenting LLMs with knowledge seeds for clinical question generation*. Paper presented at the National Council on Measurement in Education (NCME), Denver, CO.

15. Wang, Z., Muntean, W., & **Betts, J.** (2025, April). *Termination criteria for online calibration of polytomous item sets*. Paper presented at the National Council on Measurement in Education (NCME), Denver, CO.
16. **Betts, J.**, Muntean, W., & Kao, S. (2025, April). *Moving an examination from dichotomous to polytomous CAT*. Paper presented at the National Council on Measurement in Education (NCME), Denver, CO.
17. **Betts, J.** (2025, April). *Future developments: Polytomous CAT*. Presentation at the Virtual REx-PN Conference, Chicago, IL.
18. Muntean, W., Kasli, M., & **Betts, J.** (2024, November). *Efficiency vs. Complexity: Comparing deep learning and machine learning in high-stakes anomaly detection*. Paper presented at the Conference on Test Security (COTS), Salt Lake City, UT.
19. Kasli, M., Muntean, W., & **Betts, J.** (2024, November). *Utilizing XGBoost classifier for detecting abnormal patterns in longitudinal response time data*. Paper presented at the Conference on Test Security (COTS), Salt Lake City, UT.
20. **Betts, J.** (2024, September). *NCLEX Update*. Presentation of the Virtual NCLEX Conference, Chicago, IL.
21. **Betts, J.**, & Muntean, W., Kim, D., & Kao, S-c. (2024, July). *Implementing a polytomous CAT with evolving case studies*. Paper presented at The International Test Commission international conference (ITC), Granada, Spain.
22. **Betts, J.**, & Muntean, W. (2024, July). *Developing and testing scoring and response models for clinical judgment case studies*. Paper presented at The International Test Commission (ITC) international conference, Granada, Spain.
23. Muntean, W., **Betts, J.**, Kim, D., & Kao, S-c. (2024, July). *Development of a conceptual, task, and assessment model for measuring clinical judgment*. Paper presented at The International Test Commission (ITC) international conference, Granada, Spain.
24. **Betts, J.**, Muntean, W., & Zenisky, A. (2024, July). *Implementing a new model for measuring clinical judgment in nursing: The next generation NCLEX*. Symposium discussion at The International Test Commission international conference (ITC), Granada, Spain.
25. **Betts, J.**, & Williams, N. (2024, June). *NCLEX overview and update*. Paper presented at the Missouri League for Nursing (MLN), Quapaw, OK.
26. Hao, J., Muntean, W., **Betts, J.**, & Wang, Z. (2024, April). *Detecting and investigating polytomous items with nonuniform bidirectional drift*. Paper presented at the National Council on Measurement in Education, Philadelphia, PA.
27. Muntean, W., **Betts, J.**, & Wang, Z. (2024, April). *Optimizing online calibrations: Strategies for polytomous item sets in computer adaptive tests*. Paper presented at the National Council on Measurement in Education, Philadelphia, PA.
28. **Betts, J.** (2024, February). *Ensuring NCLEX items are free from bias*. Presentation to Nursing Regulatory Boards, National Council of State Boards of Nursing, Chicago, IL.
29. Svennson, C., Addicott, S., **Betts, J.**, and Chouman, A. (2023, October). *Test security masterclass: Small changes that will make a big impact on your test security*. EXG23: Institute for Credentialing Excellence Conference, Colorado Springs, CO.
30. Svennson, C., Addicott, S., **Betts, J.**, and Chouman, A. (2023, October). *Test security masterclass: Small changes that will make a big impact on your test security*. Conference on Test Security, Tempe, AZ.
31. **Betts, J.** (2023, September). *Next Generation NCLEX (NGN) update*. NCLEX Virtual Conference, Chicago, IL.
32. Kao, S-c., **Betts, J.**, & Lin, C-K. (2023, April). *Challenges in equating an existing item bank to a new scale for a different population: An empirical study*. Paper presented at the National Council on Measurement in Education, Chicago, IL.

33. Wang, Z., Muntean, W., **Betts, J.**, & Jia, H. (2023, April). *Identifying differential item functioning in polytomous items with Logistic Discriminant Analysis*. Paper presented at the National Council on Measurement in Education, Chicago, IL.
34. **Betts, J.** (2022, April). *Next Generation NCLEX (NGN): Test design*. Presented at the annual Canadian NCLEX Conference, Virtual.
35. **Betts, J.** (2022, April). *Next Generation NCLEX (NGN): Clinical judgment measurement model (NCJMM)*. Presented at the annual Canadian NCLEX Conference, Virtual.
36. **Betts, J.** (2021, September). *Next Generation NCLEX (NGN): Test design*. Presented at the annual international NCLEX Conference, Virtual.
37. Muntean, W., **Betts, J.**, & Kao, S-c. (2021, June). *Comparing unfolding medical case studies to their individual single-item counterparts*. Paper presented at the National Council on Measurement in Education, Virtual.
38. **Betts, J.**, Muntean, W., Kim, D., & Kao, S-c. (2021, June). *Evaluating different scoring methods for multiple response items providing partial credit*. Paper presented at the National Council on Measurement in Education, Virtual.
39. Kao, S-c., Muntean, W., & **Betts, J.** (2021, June). *Score-level sample size requirements for technology-enhanced items: A simulation study*. Paper presented at the National Council on Measurement in Education, Virtual.
40. Peabody, M., & **Betts, J.** (2021, April). *The saga of technology-enhanced items: Origin to vision*. Peas in a Pods presented at the Association of Test Publishers virtual conference, Virtual.
41. Davis-Becker, S., Tong, Y., & **Betts, J.** (2020, September). *Linear, LOFT, CAT: The good, the bad, and the ugly*. Paper presented at the Association of Test Publishers virtual conference, Virtual.
42. **Betts, J.** (2020, September). *Next Generation NCLEX (NGN): The NCSBN clinical judgment measurement model (NCJMM)*. Presented at the annual international NCLEX Conference, Virtual.
43. Muntean, W., & **Betts, J.** (accepted for presentation May 2020). *Measuring decision-making with unfolding medical case studies*. Paper submitted to the annual conference of American Psychological Society, Chicago, IL.
44. Muntean, W., & **Betts, J.** (accepted for presentation May 2020). *Exploring effect sizes: A case for latent trait and item-level analyses*. Paper submitted to the annual conference of American Psychological Society, Chicago, IL.
45. Muntean, W., **Betts, J.**, Kao, S-c., & Qian, H. (accepted for presentation April 2020). *Comparing unfolding medical case studies to their individual single-item counterparts*. Paper submitted to the annual conference of the National Council on Measurement in Education, San Francisco, CA.
46. Kao, S-c., & **Betts, J.** (accepted for presentation April 2020). *Score level sample size requirements for technology-enhanced items: A simulation study*. Paper submitted to the annual conference of the National Council on Measurement in Education, San Francisco, CA.
47. **Betts, J.**, Kim, D., Muntean, W., & Kao, S-c. (accepted for presentation April 2020). *Evaluating different scoring methods for multiple response items providing partial credit*. Paper submitted to the annual conference of the National Council on Measurement in Education, San Francisco, CA.
48. Xu, J-R., & **Betts, J.** (accepted for presentation April 2020). *Practical designs of testlet-based CAT within a multidimensional data structure*. Paper submitted to the annual conference of the National Council on Measurement in Education, San Francisco, CA.
49. Kao, S-c., **Betts, J.** (2019, April). *Exploring item scoring methods for technology-enhanced items in computerized adaptive tests*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.

50. Kim, D., **Betts**, J., & Muntean, W. (2019, April). *Developing a task model for clinical judgment in nursing*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.
51. **Betts**, J., Muntean, W., & Kim, D. (2019, April). *Developing clinical judgment items from a task model*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.
52. Jorion, N., **Betts**, J., Kim, D., & Muntean, W. (2019, April). *Evaluating clinical judgment items: Field test results*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.
53. Muntean, W., **Betts**, J., Kim, D., & Jorion, N. (2019, April). *Scaling clinical judgment items using polytomous and super-polytomous models*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.
54. Xu, J-R., & **Betts**, J. (2019, April). *Assessing subscore structure for innovative item types across multiple test forms*. Paper presented at the annual conference of the National Council on Measurement in Education, Toronto, Ontario.
55. Xu, J-R, Muntean, W., & **Betts**, J. (2018, April). *Multidimensional testlet adaptive testing under a higher-order structure design*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
56. Lamsal, S., & **Betts**, J. (2018, April). *Generalized  $S-X^2$  under different response categories with non-normal latent trait using IRT*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
57. Jorion, N., Muntean, W., **Betts**, J., Dickison, P., Woo, A., & Kim, D. (2018, April). *Readability measures for multiple-choice and innovative items*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
58. Muntean, W., **Betts**, J., Kao, S-C, & Woo, A. (2018, April). *A hierarchical framework for response times and signal detection theory*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
59. **Betts**, J. (2018, April). *Measuring Clinical Judgment in Nursing: Integrating Technology Enhanced Items*. Symposium chair paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
60. Woo, A., Kim, D., **Betts**, J., Muntean, W., & Luo, X. (2018, April). *Moving a traditional assessment into the next generation: exploring the road ahead*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
61. **Betts**, J., Woo, A., Muntean, W., & Kim, D. (2018, April). *Defining New Item Types for a Clinical Judgment Construct*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
62. Kim, D., Woo, A., **Betts**, J., & Muntean, W. (2018, April). *Evaluating Scoring Models to Align with Proposed Cognitive Constructs Underlying Item Content*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
63. Muntean, W., **Betts**, J., Luo, X., Kim, D., & Woo, A. (2018, April). *Using Signal-detection Theory to Enhance IRT Methods: A Clinical Judgment Example*. Paper presented at the annual conference of the National Council on Measurement in Education, New York, New York.
64. **Betts**, J. (2017, October). *Assessing clinical judgment skills among entry-level nurses: A cognitive processing approach*. Paper presented at the annual conference of the Sigma Theta Tau Society, Indianapolis, IN.

65. **Betts, J.**, Woo, A., Dickison, P., Muntean, W., & Kim, D. (2017, September). *A new model for measuring clinical judgment in nursing*. Symposium presented at the annual conference of the American Board of Medical Specialties, Chicago, IL.
66. Xu, J-R., **Betts, J.**, Woo, A., & Reckase, M. (2017, August). *Content balancing design for a variable length CAT using a clinical judgment model*. Paper presented at the annual conference of the International Association for Computerized Adaptive Testing, Niigata, Japan.
67. Jorion, N., Becker, K., & **Betts, J.** (2017, April). *Exploratory text analysis of DIF items with common reference groups*. Paper presented at the annual conference of the National Council on Measurement in Education, San Antonio, TX.
68. **Betts, J.**, & Muntean, W. (2017, April). *Using signal detection theory and IRT methods with multiple response items*. Paper presented at the annual conference of the National Council on Measurement in Education, San Antonio, TX.
69. Lamsal, S., & **Betts, J.** (2017, April). *Exploring polytomous IRT estimation methods using SAS procedures*. Paper presented at the annual conference of the National Council on Measurement in Education, San Antonio, TX.
70. Muntean, W., **Betts, J.**, Xu, J-R., & Woo, A. (2016, July). *Stochastic model comparison methods with highly correlated latent traits*. Paper presented at the international conference of the Psychometric Society, Asheville, NC.
71. Muntean, W., **Betts, J.**, & Kim, D. (2016, July). *Exploring the similarities and differences between item response theory and item-level signal detection theory*. Paper presented at the international conference of the Psychometric Society, Asheville, NC.
72. **Betts, J.**, Muntean, W., & Kim, D. (2016, July). *Evaluating sample size requirements for the Partial Credit Model when disordering is present*. Paper presented at the international conference of the International Testing Commission, Vancouver, BC, Canada.
73. Woo, A., Dickison, P., Kim, D., **Betts, J.**, Muntean, W., & Lou, X. (2016, July). *Exploring the road ahead: Moving a traditional assessment into the Next Generation*. Paper presented at the international conference of the International Testing Commission, Vancouver, BC, Canada.
74. Muntean, W., & **Betts, J.** (2016, July). *Detecting differential item functioning in testlets through Bayesian analyses*. Paper presented at the international conference of the International Testing Commission, Vancouver, BC, Canada.
75. **Betts, J.**, Woo, A., Dickison, P., Lindsay, M., Williams, N., & Sutherland, K. (2016, July). *Defining new item types for a clinical judgment construct*. Paper presented at the international conference of the International Testing Commission, Vancouver, BC, Canada.
76. Muntean, W., & **Betts, J.** (2016, July). *Developing and pretesting technology enhanced items: Issues and outcomes*. Paper presented at the international conference of the International Testing Commission, Vancouver, BC, Canada.
77. **Betts, J.** (2016, July). *Measuring clinical judgment in the nursing field: Application of a decision-making model and investigation of technology enhanced items*. Symposium presentation at the international conference of the International Testing Commission, Vancouver, BC, Canada.
78. Muntean, W., **Betts, J.**, Xu, J-R., & Woo, A. (2016, April). *Model comparison in the presence of highly correlated latent traits: A test of dimensionality*. Poster presented at the annual conference of the Association for Psychological Science, Chicago, IL.
79. Muntean, W., **Betts, J.**, & Kim, D. (2016, April). *Exploring the similarities and differences between item response theory and item-level signal detection theory*. Poster presented at the annual conference of the Association for Psychological Science, Chicago, IL.
80. Muntean, W., **Betts, J.**, Qian, H., Sutherland, K., & Lindsay, M. (2016, April). *Comparing think-aloud to a decision-making characteristic questionnaire in clinical judgments*. Poster presented at the annual conference of the Association for Psychological Science, Chicago, IL.

81. Muntean, W., & **Betts**, J. (2016, April). *Investigating sequential item effects in a testlet model*. Paper presented at the national conference of the National Council on Measurement in Education, Washington, DC.
82. Muntean, W., Lindsay, M., **Betts**, J., Kim, D., Dickison, P., & Woo, A. (2016, April). *Separating assessment of subject matter knowledge from assessment of higher-order cognitive constructs*. Paper presented at the national conference of the American Educational Research Association, Washington, DC.
83. **Betts**, J. (2016, February). *Advances in IRT and CAT: Applications to progress monitoring*. Mini-skills presentation at the national conference of the National Association of School Psychologists, New Orleans, LA.
84. Ysseldyke, J., Shinn, M., **Betts**, J., & Hintze, J. (2016, February). *Psychometric and practical comparisons of CBM and CAT assessments*. Symposium presentation at the national conference of the National Association of School Psychologists, New Orleans, LA.
85. **Betts**, J., Kim, D., & Muntean, W. (2015, April). *Investigating sample size requirements for the Partial Credit Model*. Paper presented at the national conference of the National Council on Measurement in Education, Chicago, IL.
86. Muntean, W., & **Betts**, J. (2015, April). *Analyzing multiple response data through a signal-detection framework*. Paper presented at the national conference of the National Council on Measurement in Education, Chicago, IL.
87. **Betts**, J., Becker, K., Wu, X., & Muntean, W. (2015, April). *Evaluating technology enhanced items within the context of innovative assessments*. Co-ordinated set of presentations presented at the national conference of the National Council on Measurement in Education, Chicago, IL.
88. Muntean, W., Lindsay, M., **Betts**, J., Kim, D., Dickison, P., & Woo, A. (2015, April). *Evaluating clinical judgment in licensure tests: Applications of Decision Theory*. Paper presented at the national conference of the American Educational Research Association, Chicago, IL.
89. Amato, A., **Betts**, J., Palomares, R., & Ramirez, E. (2015, February). *Not your everyday School Psychologist job*. Symposium presentation at the national conference of the National Association of School Psychologists, Orlando, FL.
90. Muntean, W., & **Betts**, J. (2014, July). *Using signal detection methodology to evaluate fatigue effects in response time models*. Paper presented at the international conference of the Psychometric Society, Madison, WI.
91. **Betts**, J., & Muntean, W. (2014, July). *Norm-referenced growth measures for individual and group change*. Paper presented at the international conference of the Psychometric Society, Madison, WI.
92. Schwartz, J., **Betts**, J., & Qian, H. (2014, July). *Evaluating the utility and scoring of technology enhanced items for computer-based testing*. Paper presented at the international conference of the International Testing Commission, San Sebastian, Spain.
93. Zara, T., Woo, A., & **Betts**, J. (2014, July). *Contemporary issues in computerized-adaptive testing (CAT)*. Roundtable presentation at the international conference of the International Testing Commission, San Sebastian, Spain.
94. **Betts**, J., & Kim, D. (2014, July). *Sample size requirements for the partial credit model*. Paper presented at the international conference of the International Testing Commission, San Sebastian, Spain.
95. Woo, A., Muntean, W., & **Betts**, J. (2014, July). *Using signal-detection theory to measure cue recognition in multiple response items*. Paper presented at the international conference of the International Testing Commission, San Sebastian, Spain.
96. **Betts**, J. (2014, April). *Comparing Student Growth Percentiles and Growth Norms: Interim/Summative Results*. Paper presented at the national conference of the National Council of Measurement in Education, Philadelphia, PA.

97. Tindal, G., Saven, J., Nese, J., Anderson, D., & **Betts, J.** (2014, April). *An Analysis of Norms for Early Reading Curriculum-based Measures*. Paper presented at the national conference of the National Council of Measurement in Education, Philadelphia, PA.
98. **Betts, J.**, & Ledbetter, M. (2014, February). *Evaluating Early STEM Achievement with IRT: Evidence from the REAL*. Paper presented at the national conference of the National Association of School Psychologists, Washington, DC.
99. **Betts, J.**, & Frey, S. (2014, February). *Exploring the utility of a Screening Test of Cognitive Abilities*. Paper presented at the national conference of the National Association of School Psychologists, Washington, DC.
100. Ledbetter, M., **Betts, J.**, & Custer, M. (2014, February). *Using IRT to Develop a Proficiency Index for the REAL*. Paper presented at the national conference of the National Association of School Psychologists, Washington, DC.
101. **Betts, J.** (2013, April). *Exploring innovative item types on computer-based testing*. Paper presented at the national conference of the American Educational Research Association, San Francisco, CA.
102. Bitnara, J., **Betts, J.**, Alonzo, J., & Tindal G. (2013, April). *Investigation of reading development patterns for students in early grades using latent transition analysis*. Paper presented at the national conference of the American Educational Research Association, San Francisco, CA.
103. **Betts, J.** (2013, February). *Evaluating CBM-OR growth norms for monitoring growth in RTI*. Paper presented at the national conference of the National Association of School Psychologists, Seattle, WA.
104. Ledbetter, M., **Betts, J.**, Boney, T., & Custer, M. (2013, February). *Evaluating growth trajectories and measurement invariance for early developmental domains*. Paper presented at the national conference of the National Association of School Psychologists, Seattle, WA.
105. **Betts, J.**, & Frey, S. (2013, February). *Exploring the use of a cognitive assessment for preventative screening*. Paper presented at the national conference of the National Association of School Psychologists, Seattle, WA.
106. Signatur, D., **Betts, J.**, & Swift, D. (2013, February). *Skills strengths and weaknesses: Comparing at-risk and high performing students*. Paper presented at the national conference of the National Association of School Psychologists, Seattle, WA.
107. **Betts, J.** (2012, April). *Evaluating the assumptions of CBM of mathematics (CBM-M)*. Paper presented at the national conference of the American Education Research Association, Vancouver, British Columbia, Canada.
108. **Betts, J.** (2012, April). *Exploring the assumptions of growth norms for CBM-OR in RTI*. Paper presented at the national conference of the American Education Research Association, Vancouver, British Columbia, Canada.
109. **Betts, J.** (2012, February). *Growth norms for RTI and school-wide reform at Tier I*. Paper presented at the national conference of the National Association of School Psychologists, Philadelphia, PA.
110. Signatur, D., & **Betts, J.** (2012, February). *Using a nationally standardized achievement test to predict students at-risk*. Paper presented at the national conference of the National Association of School Psychologists, Philadelphia, PA.
111. **Betts, J.**, Custer, M., & Ledbetter, M. (2012, February). *Effects of SES and age on key early developmental domains*. Paper presented at the national conference of the National Association of School Psychologists, Philadelphia, PA.
112. Odden, A., **Betts, J.**, Betebenner, D., Milanowski, T., & Kapinus, B. (2011, June). *Helping teachers become more effective while simultaneously measuring teaching effectiveness*. Symposium presented at the Council of Chief State School Officers (CCSSO) National Conference on Student Assessment, Orlando, FL.



113. Ysseldyke, J., Tindal, G., Tilley, W., **Betts, J.**, Foster, T., & Smith, B. (2011, June). *Assessment methodologies used to personalize instruction for diverse learners: Evidence of effectiveness*. Symposium presented at the Council of Chief State School Officers (CCSSO) National Conference on Student Assessment, Orlando, FL.
114. Betebenner, D., Smith, C., D'Brot, J., & **Betts, J.** (2011, June). *Multiple ways to measure student growth: Findings from research & practice*. Symposium presented at the Council of Chief State School Officers (CCSSO) National Conference on Student Assessment, Orlando, FL.
115. **Betts, J.** (2011, April). *Evaluating learning progressions in early numeration and computation development during Elementary school*. Paper presented at the national conference of the American Educational Research Association, New Orleans, LA.
116. **Betts, J.** (2011, April). *Evaluating growth norms and their utility for RTI and School-wide reform: Further validity evidence*. Paper presented at the national conference of the American Educational Research Association, New Orleans, LA.
117. **Betts, J.** (2011, February). *Indexing learning progressions in key early literacy skills: Longitudinal results*. Paper to be presented at the national conference of the National Association of School Psychologists, San Francisco, CA.
118. Lovelace, M., Appleton, J., & **Betts, J.** (2011, February). *Longitudinal reliability and factorial congruence of the Student Engagement Instrument*. Paper to be presented at the national conference of the National Association of School Psychologists, San Francisco, CA.
119. **Betts, J.** (2011, February). *An investigation of the underlying assumptions of growth norms*. Paper to be presented at the national conference of the National Association of School Psychologists, San Francisco, CA.
120. **Betts, J.**, Betebenner, D., Gong, B., Schulte, A., & Ysseldyke, J. (2010, June). *Applications of growth models to making decisions about states, schools, programs, and students*. Papers presented at the Council of Chief State School Officers' National Conference on Student Assessment, Detroit, MI.
121. **Betts, J.** (2010, May). *Measuring academic growth with growth norms: A method for response-to-intervention*. Paper presented at the national conference of the National Council on Measurement in Education, Denver, CO.
122. **Betts, J.**, & McBride, J. (2010, May). *Do different measures of phonics, vocabulary, and comprehension measure the same construct over time?* Paper presented at the national conference of the American Educational Research Association Conference, Denver, CO.
123. **Betts, J.** (2010, May). *Early literacy skills trajectories predict later reading problems: A latent variable growth mixture model investigation*. Paper presented at the national conference of the American Educational Research Association Conference, Denver, CO.
124. Ysseldyke, J., & **Betts, J.** (2010, April). *Progress monitoring, implementation integrity, and guided practice across multiple math curricula*. Paper presented at the national conference of the Council for Exceptional Children National Convention, Nashville, TN.
125. **Betts, J.**, & Ysseldyke, J. (2010, March). *A new evidence-based approach to setting progress monitoring goals*. Paper presented at the national conference of the National Association of School Psychologists, Chicago, IL.
126. **Betts, J.**, & Ysseldyke, J. (2010, March). *Evaluating early literacy trends for prevention: Longitudinal results*. Paper presented at the national conference of the National Association of School Psychologists, Chicago, IL.
127. Ysseldyke, J., & **Betts, J.** (2010, March). *Advantages of computerized-adaptive tests and technology-enhanced progress monitoring*. Paper presented at the national conference of the National Association of School Psychologists, Chicago, IL.
128. **Betts, J.** (2010, February). *A new approach to setting progress monitoring goals within RTI*. Paper presented at the national conference of the Learning Disabilities Association National Convention, Baltimore, MD.

129. **Betts, J.** (2009, June). *Investigating oral reading fluency assessments: Evaluating psychometric claims & Rasch modeling of responses*. Paper presented at the meeting of the Society for the Scientific Study of Reading, Boston, MA.
130. **Betts, J., Decker, D., Muyskens, P., & Marston.** (2009, February). *Oral reading fluency growth rates for three groups of limited English proficiency groups*. Paper presented at the meeting of the National Association of School Psychologists, Boston, MA.
131. Reschly, A., & **Betts, J.** (2009, February). *An empirical examination of student engagement and motivation*. Paper presented at the meeting of the National Association of School Psychologists, Boston, MA.
132. **Betts, J.** (2009, February). *Indexing learning progressions in early mathematics development: Longitudinal results*. Paper presented at the meeting of the National Association of School Psychologists, Boston, MA.
133. Sandberg, K., **Betts, J., & Reschly, A.** (2009, February). *A year-round examination of early literacy skill growth*. Paper presented at the meeting of the National Association of School Psychologists, Boston, MA.
134. **Betts, J., & McBride, J.** (2009, February). *From conceptual to concrete: Creating coherent & balanced assessment systems: Predictive power of interim assessments*. Paper presented at the winter meeting of the Council of Chief State School Officers (CCSSO), State Collaborative on Assessment and Student Standards (SCASS), Technical Issues in Large-Scale Assessments (TILSA), Orlando, FL.
135. Appleton, J., **Betts, J., Reschly, A., & Christenson, S.** (2008, August). *Construct Stability of Student Engagement across Diverse Samples*. Poster presented at the meeting of the American Psychological Association, Boston, MA.
136. **Betts, J., & McBride, J.** (2008, July). *Investigating the Measurement Equivalence and Construct Validity of Tests of Early Reading Skills*. Poster presented at the meeting of the Society for the Scientific Study of Reading, Asheville, NC.
137. **Betts, J.** (2008, March). *Evaluating the claims of form comparability in curriculum-based measurement of reading (CBM-R)*. Paper presented at the meeting of the National Council on Measurement in Education, New York, NY.
138. **Betts, J., & McBride, J.** (2008, March). *Using computerized adaptive testing and an accelerated longitudinal design to index learning progressions in early mathematics development*. Paper presented at the meeting of the American Education Research Association, New York, NY.
139. **Betts, J., & McBride, J.** (2008, February). *Investigating construct validity of four measures of early literacy skills*. Paper to be presented at the meeting of the National Association of School Psychologist, New Orleans, LA.
140. **Betts, J.** (2008, February). *Investigating the claims of equivalence in CBM-R for progress monitoring*. Paper to be presented at the meeting of the National Association of School Psychologists, New Orleans, LA.
141. Decker, D., **Betts, J., Bolt, S., Muyskens, P., & Marston, D.** (2008, February). *Using oral reading fluency to predict long-term statewide assessment performance*. Paper to be presented at the meeting of the National Association of School Psychologists, New Orleans, LA.
142. McBride, J., & **Betts, J.** (2007, June). *Eleven years of assessing K-12 achievement: Some longitudinal research*. Paper presented at the meeting of the Graduate Management Admission Council conference on computer adaptive testing, Minneapolis, MN.
143. **Betts, J.** (2007, May). *Developmental trajectories of early literacy skills predict later reading problems*. Poster presented at the annual meeting of the Association for Psychological Science, Washington DC.
144. **Betts, J., Topping, K., & McBride, J.** (2007, April). *An international linking study of a computerized adaptive test of reading with a traditional paper-and-pencil test of reading comprehension*.

- Paper presented at the meeting of the National Council on Measurement in Education, Chicago, IL.
145. **Betts, J.** (2007, April). *Testing the assumptions of the dual-discrepancy model using a growth mixture model*. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.
  146. **Betts, J., & McBride, J.** (2007, April). *Evidence for the reliability and validity of IRT-based domain scores of early literacy skills*. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.
  147. Bolt, S., **Betts, J.**, & Decker, D. (2007, April). *Using curriculum-based measurement to examine reading development for two groups of English language learners*. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.
  148. **Betts, J.**, Good, R., Cummings, K., Williams, K., Hintze, J., & Ysseldyke, J. (2007, February). *Psychometric adequacy of measures of early literacy skills*. Symposium on the assessment of early literacy presented at the meeting of the National Association of School Psychologists, New York, NY.
  149. **Betts, J.** (2007, February). *Validating the dual-discrepancy model of RtI in a longitudinal sample: A growth mixture modeling approach*. Paper presented at the meeting of the National Association of School Psychologists, New York, NY.
  150. Reschly, A., Appleton, J., Christenson, S., **Betts, J.**, Antaramian, S., Lewis, A., & Huebner, S. (2007, February). *Student engagement: Conceptualization, measurement, and initial findings*. Symposium on student engagement presented at the meeting of the National Association of School Psychologists, New York, NY.
  151. **Betts, J.**, & Reschly, A. (2007, February). *Predictive bias studies: Longitudinal findings spanning kindergarten to second grade*. Paper presented at the meeting of the National Association of School Psychologists, New York, NY.
  152. **Betts, J.** (2006, August). *Measurement issues related to curriculum-based measures and the use of computer adaptive tests for universal screening*. Presented at the meeting of the Response-to-Intervention Summit, University of Utah, Salt Lake City, UT.
  153. **Betts, J.**, McBride, J., & Malone, M. (2006, July). *Tracking students' early literacy development: A three-year study*. Paper presented at the international meeting of the Society for the Scientific Study of Reading, Vancouver, Canada.

### Education

- Ph. D., Educational Psychology, University of Minnesota, Twin Cities
  - Sub-plan: School Psychology (APA & NASP accredited)
  - Supporting Program: Applied Statistics
- MMIS, Management Information Systems, Metropolitan State University, Twin Cities
  - Concentrations: Decision Sciences and System Analysis & Design
- Ed.S., School Psychology, Georgia State University
- MA/BA, Psychology, minor: Sociology, State University of West Georgia

### Professional & Academic Honors

- Honorable Mention, 2009 Article of the Year, *Journal of School Psychology*  
Reschly, A., Busch, T., Betts, J., Deno, S. L., & Long, J. (2009). Curriculum-Based Measurement Oral Reading as an indicator of reading achievement: A meta-analysis of the correlational evidence. *Journal of School Psychology, 47*, 427-469.
- Early Career Scholar, Society for the Study of School Psychology
- Phi Kappa Phi, Academic Honors Society

- Phi Lambda Theta, International Honor Society in Education
- Psi Chi, Honors Society of Psychology

### **Previous Editorial Activities**

- Editorial Board, School Psychology Review, 2009 – 2019
- Editorial Board, Assessment for Effective Intervention, 2010 – 2018
- Associate Editor, School Psychology Review, 2010 – 2014, 2015 – 2017
- Editorial Board, School Psychology Quarterly, 2008 – 2014
- Editorial Board, Journal of School Psychology, 2008 – 2016
- Guest Editor, Journal of School Psychology, 2009
- Ad Hoc Reviewer:
  - Applied Measurement in Education, 2008, 2010, 2011
  - Behaviormetrika, 2022
  - Computers & Education, 2008, 2009, 2010, 2016, 2017, 2018, 2020
  - Exceptional Children, 2006
  - International Journal of Behavioral Development, 2015
  - International Test Commission, Technology-based Assessment Guidelines, 2020
  - Journal of Computerized Adaptive Testing, 2020, 2021, 2022, 2023
  - European Journal of Psychology of Education, 2010, 2011, 2012, 2013
  - Journal of Medical Education and Curricular Development, 2023
  - Journal of Nursing Regulation, 2019, 2020, 2021, 2023
  - Journal of Research in Reading, 2009, 2010, 2011, 2017, 2018
  - Journal of Research on Adolescence, 2010
  - Journal of School Psychology, 2007, 2017, 2018
  - Journal of Speech, Language, and Hearing Research, 2005
  - Measurement & Evaluation in Counseling & Development, 2013, 2014, 2017
  - Metron, 2022
  - School Psychology Quarterly, 2006, 2007, 2015, 2016, 2017, 2018
  - School Psychology Review, 2009, 2010
- AERA conference paper proposal reviewer
- NCME conference paper proposal reviewer

### **Community Service**

- Association of Test Publishers (ATP)
  - Testing by Doing (TxD) subcommittee, 10/2025 – Present
- Institute for Credentialing Excellence (ICE)
  - I.C.E. 1100 Standard review committee member, 7/2024 – Present
- Council on Licensure, Enforcement, and Regulation (CLEAR)
  - Examination Resources and Advisory committee, 2023 – Present
  - Testing and Examinations, 2023 – Present
- Research Board, Center for Cultural Diversity and Minority Education, 2007-2014
- Dissertation Committee Member for Rene' Fetchkan, Indiana University of Pennsylvania, 2013.
  - Dissertation: Evaluating the sensitivity of a computerized-adaptive test of reading comprehension as a predictor of performance on a high-stakes academic assessment for Middle School students

- Council of Chief State School Officers (CCSSO) committee member
  - State Collaborative on Assessment and Student Standards (SCASS), 2006-2008
  - Formative Assessment for Students and Teachers (FAST) Technology & Research Group, 2006-2008
- Metropolitan State University, Minneapolis & St. Paul, MN, 2002-2003
  - Communications and Marketing Department (1/03 – 5/03) – System analysis and design for project/job order process and advertisement tracking system. Developed and implemented prototype using RAD methodology with Visual Basic and MS Access. Presented prototype and final design to management.
  - Human Resources (9/02 – 12/02) – System analysis, design and process flow modeling of personnel status and change actions. Developed and recommended candidate process design changes. Utilized MS Visio for process visualizations and MS Access for database prototype. Presented prototype and final design to management.
  - College of Management (1/02 – 5/02) – System analysis and design of business office's instructional change request forms. System programming in Visual Basic using RAD methodology. Presented on-going project specifications and prototype to management.
- School Psychology Student Association, University of Minnesota (10/01- 8/05) – Provided website development and maintenance. Mentor graduate students.
- Metropolitan Interfaith Council on Affordable Housing (5/01- 8/01) – Provided database & marketing research. Participated in program development and strategic directions for Community Initiatives Project.

### **Professional Memberships**

- Association for Computing Machinery (ACM)
- Association for Psychological Science (APS)
- International Association for Computerized Adaptive Testing (IACAT)
- International Test Commission (ITC)
- National Council on Measurement in Education (NCME)

### **Computer Applications & Programming Experience**

- Microsoft Products
  - Office Suite (Access, Excel, PowerPoint, & Word) with VBA, MS Visio
  - SQL Query Analyzer
  - PowerApps & PowerBI
  - Azure: Azure Data Studio, Azure Storage Explorer, DataLake, Databricks, Unity Catalog
- Statistical/Mathematical Packages
  - SAS, SPSS with SAX Basic, MatLab, Mplus
- Psychometric Packages
  - WinSteps, Bilog MG, TESTFACT, Parscale
- Programming Languages
  - Python, Visual Basic, C, SQL
  - Intermediate level: R, Java, JavaScript

### **On-going Learning Courses Taken & Certifications**

- Amazon Web Services:
  - Cloud essentials for business leaders
  - Cloud practitioner essentials
- Databricks:
  - Large language models (LLMs): Application through production
  - Data analysis with Databricks
- Dremio:
  - Dremio fundamentals, Dremio University
  - Dremio data reflections, Dremio University
- Dremio for data consumers, Dremio University Databricks:
  - Healthcare & life sciences workshop: Improve drug safety with NLP
- Google:
  - Advanced Data Analytics
  - Transformer Models and BERT Model
  - Vector Search & Embeddings
  - Data Analytics
  - Foundations of data science
- IBM:
  - Mastering the Art of Prompting
  - Artificial intelligence fundamentals
- MariaDB:
  - Hybrid data model best practices: JSON + relational, MariaDB
  - R2DBC + MariaDB: Unleashing the power of reactive programming, MariaDB
- Microsoft Power Platform:
  - Building Microsoft Teams integration and workflows, Microsoft
  - DP-600: Implementing Analytic Solutions using MS Fabric, Pragmatic Works
  - PL-900: Microsoft Power Platform Fundamentals, Pragmatic Works
  - Power Apps: Beginner to Pro, Pragmatic Works
  - Power BI: Dashboard in a day, Pragmatic Works
  - Power BI: Go from data to insights in minutes, Pragmatic Works
  - Power BI dataflows, Pragmatic Works
  - Data and insights from anywhere with Power BI mobile apps, Microsoft
  - Building your first Canvas Power App, Pragmatic Works
  - Microsoft Power Platform virtual training: App maker, Microsoft
  - DAX fundamentals, Pragmatic Works
- Microsoft Azure:
  - DP-600: Implementing Analytics Solutions using Microsoft Fabric, Pragmatic Works
  - Career essentials in software development, Microsoft
  - Azure data fundamentals, Microsoft
  - Azure AI fundamentals, Microsoft
  - AZ-900: Microsoft Azure fundamentals, New Horizons Computer Learning Centers
  - DP-100: Designing and implement a data science solution on Azure, New Horizons
  - DP-300: Administering relation databases on Microsoft Azure
  - Designing and implementing a data science solution on Azure, New Horizons Computer Learning Centers

- Designing an Azure data solution, New Horizons Computer Learning Centers
- Administering relational databases on Microsoft Azure, New Horizons Computer Learning Centers
- Azure Synapse (multiple trainings), Microsoft
  - Getting started with your first Azure Synapse project
  - Data Engineering
  - Big data and operational analytics
  - Serverless Data Lake exploration and streamlining analytics
  - Data science and predictive analytics
  - Optimize data warehouse workloads for BI and reporting
- MongoDB:
  - Introduction to MongoDB, MongoDB
  - MongoDB Atlas 101 eWorkshop, MongoDB
- NVIDIA:
  - Building transformer-based natural language processing applications
- Udemy:
  - TensorFlow Developer
  - Artificial intelligence A-Z 2023
  - Data Science bootcamp
  - Docker for the absolute beginner: Hands-on DevOps
  - Docker and Kubernetes: The complete guide
  - Docker essentials for Python developers
  - Python for data science and machine learning bootcamp
  - The web developers bootcamp 2021
  - The complete web developer course 2.0
  - The advanced web developer bootcamp
  - The complete SQL bootcamp
  - The complete 2021 web development bootcamp
  - Python REST APIs with Flask, Docker, MongoDB, and AWS DevOps
  - Build RESTful web applications with Node.js and Express
  - JSON Path
- University of IL, Urbana-Champaign:
  - Data Visualization
  - Text Retrieval and Search Engines