

# ETS Education Research Update

**February 2019**

This is a list of recent ETS research publications. Within each category, citations are alphabetized by the last name of the first author.

Most citations for ETS-published works listed below include links to the full text of the report. Where available, citations to works that appeared in independent publications include links to abstracts provided by the publisher. To find other ETS-published or ETS-authored works, see also:

- the [November 2018](#), [June 2018](#), and [February 2018](#) editions of this newsletter for other recent publications;
- the [ETS ReSEARCHER database](#) and
- the ETS Research Report Series on the [Wiley Online Library](#) for older ETS-authored works.

To learn more about the research in a particular publication, contact the ETS author at the correspondence address provided by the publisher or by emailing us at [RDWeb@ets.org](mailto:RDWeb@ets.org).

## **View lists of ETS-authored works in these areas:**

- [K–12 Teaching, Learning, and Education Policy](#)
- [Cognitive Science](#)
- [Accessibility](#)
- [English Language Learning and Assessment](#)
- [Language Learning and Assessment](#)
- [International and National Large-Scale Assessment](#)
- [Automated Scoring, Natural Language Processing, and Multimodal](#)
- [Higher Education and Workforce Readiness](#)
- [Technology](#)
- [Validity Research](#)
- [Statistics and Psychometrics](#)

## **K–12 Teaching, Learning, and Education Policy**

- [Comparing the Potential Utility of Kindergarten Entry Assessments to Provide Evidence of English Learners' Knowledge and Skills](#)  
Author: D. J. Ackerman  
ETS Research Report No. RR-18-36, ETS Policy Information Report  
2018

- [Qualities of Classroom Observation Systems](#)  
Authors: C. A. Bell, M. J. Dobbelaer, K. Klette, & A. Visscher  
*School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice*, Vol. 30, No. 1, pp. 3–29  
2019
- [A System's View of California's Teacher Education Pipeline](#)  
Authors: C. A. Bell, R. S. White, & M. E. White  
*Getting Down to Facts II: Technical Report*, pp. 1–90  
September 2018
- [The Challenges of Writing in School: Conceptualizing Writing Development Within a Sociocognitive Framework](#)  
Author: P. Deane  
*Educational Psychologist*, Vol. 53, No. 4, pp. 280–300  
2018
- [Writing Processes in Short Written Responses to Questions Probing Prior Knowledge](#)  
Authors: P. Deane, T. O'Reilly, S.-F. Chao, & K. Dreier  
ETS Research Report No. RR-18-39  
December 2018
- [The Development of a Quadratic Functions Learning Progression and Associated Task Shells](#)  
Authors: E. A. Graf, J. H. Fife, H. Howell, & E. Marquez  
ETS Research Report No. RR-18-47  
December 2018
- [Alignment Between the ProEthica® Program and the Model Code of Ethics for Educators](#)  
Authors: T. Hutchings, C. Reese, & J. Stern  
ETS Research Memorandum No. RM-18-12  
November 2018
- [Anchored Graphical Representations: A Graphical Alternative to Traditional Just Qualified Candidate Descriptors for Licensure Tests](#)  
Authors: P. Kannan, R. J. Tannenbaum, & D. Hebert  
ETS Research Report No. RR-18-40  
December 2018
- [Educational Testing Service](#)  
Authors: I. R. Katz & J. P. Johnson  
Editor: B. B. Frey  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*, pp. 574–576  
Publisher: SAGE Publications  
2018
- [Abbott Preschool at 20: Building on Success](#)  
Author: S. Kenyon  
*ETS Policy Notes*, Vol. 25, No. 1  
Summer 2018
- [Investigating Science Content Knowledge and Teaching Practices for Beginning Elementary School Teachers](#)  
Authors: M. Martin-Raugh, J. Mikeska, J. Steinberg, & J. Minsky  
ETS Research Memorandum No. RM-18-08  
July 2018
- [Using Classroom Observations to Evaluate Science Teaching: Implications of Lesson Sampling for Measuring Science Teaching Effectiveness Across Lesson Types](#)  
Authors: J. N. Mikeska, S. Holtzman, D. F. McCaffrey, S. Liu, & T. Shattuck  
*Science Education*, Vol. 103, No. 1, pp. 123–144  
January 2019
- [Assessing the Writing Process: A Review of Current Practice](#)  
Authors: N. Odendahl & P. Deane

- [How Do People Read the Passages During a Reading Comprehension Test? The Effect of Reading Purpose on Text Processing Behavior](#)  
Authors: T. O'Reilly, G. Feng, J. P. Sabatini, Z. Wang, & J. Gorin  
*Educational Assessment*, Vol. 23, No. 4, pp. 277–295  
September 2018
- [Relating Reading Comprehension to Oral Reading Performance in the NAEP Fourth-Grade Special Study of Oral Reading](#)  
Authors: J. P. Sabatini, Z. Wang, & T. O'Reilly  
*Reading Research Quarterly*, Online First  
August 2018
- [An Exploration of Preservice Teachers' Reasoning About Teaching Mathematics to English Language Learners](#)  
Authors: S. Turkan & E. J. de Jong  
*Teacher Education Quarterly*, Vol. 45, No. 2, pp. 37–60  
Spring 2018
- [Decoding and Reading Comprehension: A Test of the Decoding Threshold Hypothesis](#)  
Authors: Z. Wang, J. P. Sabatini, T. O'Reilly, & J. P. Weeks  
*Journal of Educational Psychology*, Online First  
September 2018

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## Cognitive Science

- [Exploring Social and Cognitive Dimensions of Collaborative Problem Solving in an Open Online Simulation-Based Task](#)  
Authors: J. Andrews-Todd & C. M. Forsyth  
*Computers in Human Behavior*, Online First  
October 2018
- [Handbook of Multiple Source Use](#)  
Editors: J. L. G. Braasch, I. Bråten, M. T. McCrudden  
Publisher: Routledge  
2018
- Five ETS staff members contributed to this 29-chapter volume:
  - Assessing Online Collaborative Inquiry and Social Deliberation Skills as Learners Navigate Multiple Sources and Perspectives, Chapter 27, pp. 485–501  
Authors: J. Coiro, J. R. Sparks, & J. M. Kulikowich
  - Scenario-Based Assessment of Multiple Source Use, Chapter 25, pp. 447–465  
Authors: J. P. Sabatini, T. O'Reilly, Z. Wang, & K. Dreier
- [Metacognitive Evaluations During Science Simulations: How Do Ratings of Confidence and Understanding Relate to Science Assessment Inquiry Processes?](#)  
Author: B. Finn  
*Archives of Scientific Psychology*, Vol. 6, No. 1, pp. 117–129  
2018
- [Improving the Measurement of Cognitive Skills Through Automated Conversations](#)  
Authors: G. T. Jackson, K. E. Castellano, D. Brockway, & B. Lehman  
*Journal of Research on Technology in Education*, Vol. 50, No. 3, pp. 226–240  
2018
- [Measures of Agreement to Assess Attribute-Level Classification Accuracy and Consistency for Cognitive Diagnostic Assessments](#)  
Authors: M. S. Johnson & S. Sinharay

- [Personality Assessment](#)  
Author: H. J. Kell  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*,  
pp. 1239–1243  
Editor: B. B. Frey  
Publisher: SAGE Publications  
2018
- [The Great Debate: General Ability and Specific Abilities in the Prediction of Important Outcomes \(Editorial\)](#)  
Authors: H. J. Kell & J. W. B. Lang  
*Journal of Intelligence*, Vol. 6, No. 3, Article 39, pp. 1–8  
September 2018
- [Terman Study of the Gifted](#)  
Authors: H. J. Kell & J. Wai  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*,  
pp. 1665–1667  
Editor: B. B. Frey  
Publisher: SAGE Publications  
2018
- [Deep Comprehension: Multi-Disciplinary Approaches to Understanding, Enhancing, and Measuring Comprehension, 1st Edition](#)  
Editors: K. K. Millis, D. L. Long, J. P. Magliano, & K. Wiemer  
Publisher: Routledge  
2018

Six ETS staff members contribute to this 20-chapter volume:

- Learning Scientific Inquiry from a Serious Game that Uses AutoTutor, Part 2,  
Chapter 14, pp. 180–194  
Authors: K. K. Millis, C. M. Forsyth, K. Wiemer, P. Wallace, & C. Steciuch
- Using Scenario-Based Assessments to Measure Deep Learning, Part 3,  
Chapter 15, pp. 197–208  
Authors: T. O'Reilly, J. P. Sabatini, & Z. Wang
- Eliciting Deeper Evidence through Conversation-Based Assessments, Part 3,  
Chapter 16, pp. 209–223  
Authors: B. Lehman & G. T. Jackson
- [Affordances of Item Formats and Their Effects on Test-Taker Cognition Under Uncertainty](#)  
Authors: J. Moon, M. Keehner, & I. R. Katz  
*Educational Measurement: Issues and Practice*, Online First  
December 2018
- [Essay Items](#)  
Authors: J. A. Rios & T. Wang  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*,  
pp. 602–605  
Editor: B. B. Frey  
Publisher: SAGE Publications  
2018
- [The Influences of Communication and Group Dynamics on Collaborative Problem Solving Task Performance](#)  
Authors: J. Steinberg, J. Andrews-Todd, & C. M. Forsyth  
Paper in *NERA Conference Proceedings 2018*  
October 2018
- [Giftedness](#)  
Authors: J. Wai & H. J. Kell  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*,

p.735  
Editor: B. B. Frey  
Publisher: SAGE Publications  
2018

- [Identifying and Addressing Unexpected Responses in Conversation-Based Assessments](#)  
Authors: D. Zapata-Rivera, B. Lehman, J. R. Sparks, H.-H. Por, & K. James  
ETS Research Memorandum No. RM-18-13  
December 2018

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## Accessibility

- [Trends in Performance and Growth by Students With and Without Disabilities on Five State Summative Assessments](#)  
Authors: H. M. Buzick & J. P. Weeks  
*Applied Measurement in Education*, Vol. 31, No. 4, pp. 269–282  
2018

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## English Language Learning and Assessment

- [Designing a Prototype Tablet-Based Learning-Oriented Assessment for Middle School English Learners: An Evidence-Centered Design Approach](#)  
Authors: C. A. Chapelle, J. Schmidgall, A. Lopez, I. Blood, J. Wain, Y. Cho, A. Hutchison, H.-W. Lee, & A. Dursun  
ETS Research Report No. RR-18-46  
December 2018
- [Domain Description: Validating the Interpretation of the TOEFL iBT® Speaking Scores for International Teaching Assistant Screening and Certification Purposes](#)  
Authors: E. Cotos & Y.-R. Chung  
ETS Research Report No. RR-18-45, TOEFL-RR-85  
December 2018
- [Evaluating English Language Learners' Conversations: Man vs. Machine](#)  
Authors: C. M. Forsyth, C. Luce, D. Zapata-Rivera, G. T. Jackson, K. Evanini, & Y. So  
*Computer Assisted Language Learning*, Online First  
December 2018
- [Examining the Applications and Opinions of the TOEFL ITP® Assessment Series Test Scores in Three Countries](#)  
Authors: J. Golubovich, F. Tolentino, & S. Papageorgiou  
ETS Research Report No. RR-18-44, TOEFL-RR-84  
December 2018
- [An Investigation of the Predictive Validity of the TOEFL iBT® Test at an English-Medium University in Turkey](#)  
Authors: J. O'Dwyer, E. Kantarcioğlu, & C. Thomas  
ETS Research Report No. RR-18-43, TOEFL-RR-83  
December 2018
- [Adding Value to Second-Language Listening and Reading Subscores: Using a Score Augmentation Approach](#)  
Authors: S. Papageorgiou & I. Choi  
*International Journal of Testing*, Vol. 18, No. 3, pp. 207–230  
2018
- [Do the TOEFL iBT® Section Scores Provide Value-Added Information to Stakeholders?](#)  
Authors: Y. Sawaki & S. Sinharay

*Language Testing*, Vol. 35, No. 4, pp. 529–556  
October 2018

- [A Good Fit? Examining the Alignment Between the TOEFL Junior® Standard Test and the English as a Foreign Language Curriculum in Berlin, Germany.](#)  
Author: V. Timpe-Laughlin  
ETS Research Memorandum No. RM-18-11  
October 2018
- [Young Adolescent EFL Students' Writing Skill Development: Insights from Assessment Data](#)  
Authors: M. K. Wolf, S. Oh, Y. Wang, & F. S. Tsutagawa  
*Language Assessment Quarterly*, Vol. 15, No. 4, pp. 311–329  
October 2018
- [Measuring English Language Proficiency Across Subgroups: Using Score Equity Assessment to Evaluate Test Fairness](#)  
Authors: H. Yoo, V. F. Manna, L. F. Monfils, & H.-J. Oh  
*Language Testing*, Online First  
May 2018

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## Language Learning and Assessment

- [Formative Assessment of Mathematics and Language: Applying Companion Learning Progressions to Reveal Greater Insights to Teachers](#)  
Authors: E. C. Wylie, M. I. Bauer, A. L. Bailey, & M. Heritage  
*Language, Literacy, and Learning in the STEM Disciplines: How Language Counts for English Learners*, 1st Edition, Part III, Chapter 8, pp. 143–168  
Editors: A. L. Bailey, C. A. Maher, & L. C. Wilkinson  
Publisher: Routledge  
2018

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## International and National Large-Scale Assessment

- [Data Analytics and Psychometrics: Informing Assessment Practices](#)  
Editors: H. Jiao, R. W. Lissitz, & A. Van Wie  
Publisher: Information Age Publishing  
2018

Two ETS staff members contributed to this 10-chapter volume:

- On Integrating Psychometrics and Learning Analytics in Complex Assessments, Chapter 1, pp. 1–52  
Author: R. J. Mislevy
- Exploring Process Data in Problem-Solving Items in Computer-Based Large-Scale Assessments: Case Studies in PISA and PIAAC, Chapter 2, pp. 53–76  
Authors: Q. He, M. von Davier, & Z. Han
- [Development and Implementation of a Machine-Supported Coding System for Constructed-Response Items in PISA](#)  
Authors: K. Yamamoto, Q. He, H. J. Shin, & M. von Davier  
*Psychological Test and Assessment Modeling*, Vol. 60, No. 2, pp. 145–164  
2018

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## Automated Scoring, Natural Language Processing, and Multimodal

- [Developing an e-rater Advisory to Detect Babel-Generated Essays](#)  
Authors: A. Cahill, M. Chodorow, & M. Flor  
*The Journal of Writing Analytics*, Vol. 2, pp. 203–224  
2018
- [End-to-End Neural Network Based Automated Speech Scoring](#)  
Authors: L. Chen, J. Tao, S. Ghaffarzadegan, & Y. Qian  
Paper in *Proceedings of the IEEE International Conference on Acoustics, Speech & Signal Processing (ICASSP)*, pp. 6234–6238  
April 2018
- [Improvements to an Automated Content Scoring System for Spoken CALL Responses: The ETS Submission to the Second Spoken CALL Shared Task](#)  
Authors: K. Evanini, M. Mulholland, R. Ubale, Y. Qian, R. A. Pugh, V. Ramanarayanan, & A. Cahill  
Paper in *Proceedings of INTERSPEECH 2018, 19th Annual Conference of the International Speech Communication Association*, pp. 2379–2383  
September 2018
- [Evaluating On-Device ASR on Field Recordings From an Interactive Reading Companion](#)  
Authors: A. Loukina, N. Madnani, B. Beigman Klebanov, A. Misra, G. Angelov, & O. Todic  
Paper in *Proceedings of the IEEE Workshop on Spoken Language Technology (SLT)*, pp. 964–970  
2018
- [Using Exemplar Responses for Training and Evaluating Automated Speech Scoring Systems](#)  
Authors: A. Loukina, K. Zechner, J. V. Bruno, & B. Beigman Klebanov  
Paper in *Proceedings of the 13th Workshop on Innovative Use of NLP for Building Educational Applications*, pp. 1–12  
June 2018
- [Writing Mentor: Self-Regulated Writing Feedback for Struggling Writers](#)  
Authors: N. Madnani, J. Burstein, N. Elliot, B. Beigman Klebanov, D. Napolitano, S. Andreyev, & M. Schwartz  
Paper in *Proceedings of the 27th International Conference on Computational Linguistics: System Demonstrations*, pp. 113–117  
August 2018
- [Automated Scoring: Beyond Natural Language Processing](#)  
Authors: N. Madnani & A. Cahill  
Paper in *Proceedings of the 27th International Conference on Computational Linguistics*, pp. 1099–1109  
August 2018
- [FACTS: A Hierarchical Task-Based Control Model of Speech Incorporating Sensory Feedback](#)  
Authors: B. Parrell, V. Ramanarayanan, S. Nagarajan, & J. Houde  
Paper in *Proceedings of INTERSPEECH 2018, 19th Annual Conference of the International Speech Communication Association*, pp. 1497–1501  
September 2018
- [Toward Scalable Dialog Technology for Conversational Language Learning: A Case Study of the TOEFL® MOOC](#)  
Authors: V. Ramanarayanan, D. Pautler, P. Lange, E. Tsuprun, R. Ubale, K. Evanini, & D. Suendermann-Oeft  
Paper in *Proceedings of INTERSPEECH 2018, 19th Annual Conference of the International Speech Communication Association*, pp. 1960–1961  
September 2018
- [Analysis of Speech Production Real-Time MRI](#)  
Authors: V. Ramanarayanan, S. Tilsen, M. Proctor, J. Toger, L. Goldstein, K. S. Nayak, & S. S. Narayanan  
*Computer Speech & Language*, Vol. 52, pp. 1–22  
November 2018



- [Designing, Evaluating, and Deploying Automated Scoring Systems With Validity in Mind: Methodological Design Decisions](#)  
Author: A. A. Rupp  
*Applied Measurement in Education*, Vol. 31, No. 3, pp. 191–214  
2018
- [Simulated Speaking Environments for Language Learning: Insights From Three Cases](#)  
Authors: T. Sydorenko, T. F. H. Smits, K. Evanini, & V. Ramanarayanan  
*Computer Assisted Language Learning*, Online First  
May 2018
- [A Comparison of Grammatical Proficiency Measures in the Automated Assessment of Spontaneous Speech](#)  
Authors: S.-Y. Yoon & S. Bhat  
*Speech Communication*, Vol. 99, pp. 221–230  
May 2018
- [Word-Embedding Based Content Features for Automated Oral Proficiency Scoring](#)  
Authors: S.-Y. Yoon, A. Loukina, C. M. Lee, M. Mulholland, X. Wang, & I. Choi  
Paper in *Proceedings of SemDeep-3, the 3rd Workshop on Semantic Deep Learning*, pp. 12–22  
August 2018

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## Higher Education and Workforce Readiness

- [Social Networks and Minority Male College Access: The “Tip of the Iceberg” Phenomena](#)  
Authors: D. Cardenas Elliott, M. W. Brennenman, L. Carney, & S. B. Robbins  
*Urban Education*, Vol. 53, No. 10, pp. 1210–1237  
December 2018
- [Providing a Context for Interpreting Predictions of Job Performance](#)  
Author: N. J. Dorans  
ETS Research Report No. RR-18-38  
December 2018
- [Shifting Paradigms of Student Success: Integrating Noncognitive Assessment Into Hispanic-Serving Institutions](#)  
Authors: M. Holzman & R. Markle  
ETS Research Memorandum No. RM-18-09  
October 2018
- [Springboard for Success: How Social and Emotional Learning Helps Students in Getting to, Through and Beyond College](#)  
Author: S. Kenyon  
*ETS Policy Notes*, Vol. 25, No. 2  
Fall 2018
- [Inequality, Education, Workforce Preparedness, and Complex Problem Solving](#)  
Author: P. C. Kyllonen  
*Journal of Intelligence*, Vol. 6, No. 3, Article 33, pp. 1–17  
July 2018
- [Assessing College Critical Thinking: Preliminary Results From the Chinese HEIghten® Critical Thinking Assessment](#)  
Authors: O. L. Liu, A. Shaw, L. Gu, G. Li, S. Hu, N. Yu, L. Ma, C. Xu, F. Guo, Q. Su, E. Kardanovaj, I. Chirikov, J. Shi, Z. Shi, H. Wang, & P. Loyalka  
*Higher Education Research & Development*, Vol. 37, No. 5, pp. 999–1014  
2018
- [A Generalizability Theory Study to Examine Sources of Score Variance in Third-Party Evaluations Used in Decision-Making for Graduate School Admissions](#)  
Authors: D. F. McCaffrey, M. E. Oliveri, & S. Holtzman



ETS Research Report No. RR-18-37, ETS GRE-18-03  
December 2018

- [Doesn't Get Better With Age: Predicting Millennials' Disconnection](#)  
Authors: C. M. Millett & M. J. C. Kevelson  
ETS Research Report No. RR-18-42, ETS Policy Information Report  
2018
- [Examining How College Promise Programs Promote Student Academic and Financial Readiness](#)  
Authors: C. M. Millett, S. R. Saunders, & D. Fishtein  
ETS Research Report No. RR-18-41, ETS Policy Information Report  
2018

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## Technology

- [When Should an Adaptive Assessment Care?](#)  
Authors: B. Lehman, J. R. Sparks, & D. Zapata-Rivera  
Paper in *Proceedings of the Intelligent Tutoring Systems, 14th International Conference, ITS 2018 Workshop*, pp. 87–94  
June 2018
- [Preface of Exploring Opportunities for Caring Assessments](#)  
Authors: D. Zapata-Rivera & J. Vassileva  
Paper in *Proceedings of the Intelligent Tutoring Systems, 14th International Conference, ITS 2018 Workshop*, pp. 81–85  
June 2018

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## Validity Research

- [Incorporating Emotional Intelligence Into Assessment Systems](#)  
Authors: H.-H. Por & A. Cahill  
Paper in *Proceedings of the Intelligent Tutoring Systems, 14th International Conference, ITS 2018 Workshop*, pp. 95–103  
June 2018

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## Statistics and Psychometrics

- [Using Response Time Data to Reduce Testing in Cognitive Tests](#)  
Authors: M. Bertling & J. P. Weeks  
*Psychological Assessment*, Vol. 30, No. 3, pp. 328–338  
2018
- [Application of Asymmetric IRT Modeling to Discrete-Option Multiple-Choice Test Items](#)  
Authors: D. M. Bolt, S. Lee, J. Wollack, C. Eckerly, & J. Sowles  
*Frontiers in Psychology: Quantitative Psychology and Measurement*, Online First  
November 2018
- [Score Linking](#)  
Author: N. J. Dorans  
*The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*,  
pp. 1478–1479  
Editor: B. B. Frey  
Publisher: SAGE Publications  
2018

- [Fairness Concerns of Discrete Option Multiple Choice Items](#)  
Authors: C. Eckerly, R. Smith, & J. Sowles  
*Practical Assessment, Research & Evaluation*, Vol. 23, No. 16, pp. 1–10  
November 2018
- [Diagnostic Test Score Validation With a Fallible Criterion](#)  
Author: Paul A. Jewsbury  
*Applied Psychological Measurement*, Online First  
December 2018
- [Measures of Agreement to Assess Attribute-Level Classification Accuracy and Consistency for Cognitive Diagnostic Assessments](#)  
Authors: M. S. Johnson & S. Sinharay  
*Journal of Educational Measurement*, Vol. 55, No. 4, pp. 635–664  
Winter 2018
- [Bias, Type I Error Rates, and Statistical Power of a Latent Mediation Model in the Presence of Violations of Invariance](#)  
Authors: M. Olivera-Aguilar, S. H. Rikoon, O. Gonzalez, Y. Kisbu-Sakarya, & D. P. MacKinnon  
*Educational and Psychological Measurement*, Vol. 78, No. 3, pp. 460–481  
2018
- [A New Person-Fit Statistic for the Lognormal Model for Response Times](#)  
Author: S. Sinharay  
*Journal of Educational Measurement*, Vol. 55, No. 4, pp. 457–476  
Winter 2018
- [Added Value of Subscores and Hypothesis Testing](#)  
Author: S. Sinharay  
*Journal of Educational and Behavioral Statistics*, Vol. 44, No. 1, pp. 25–44  
February 2019
- [An Application of Multidimensional Vertical Scaling](#)  
Author: J. P. Weeks  
*Measurement: Interdisciplinary Research and Perspectives*, Vol. 16, No. 3, pp. 139–154  
2018
- [Introducing Multistage Adaptive Testing Into International Large-Scale Assessments Designs Using the Example of PIAAC](#)  
Authors: K. Yamamoto, L. Khorramdel, & H. J. Shin  
*Psychological Test and Assessment Modeling*, Vol. 60, No. 3, pp. 347–368  
2018

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