

# ROY LEVY

## Contact

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## PROFESSIONAL INFORMATION

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### Education

<i>Doctor of Philosophy</i> May, 2006	Measurement, Statistics & Evaluation Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
<i>Master of Arts</i> May, 2002	Measurement, Statistics & Evaluation Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
<i>Bachelor of Arts</i> May, 2001	Philosophy <i>Honors, Summa cum Laude, Phi Beta Kappa</i> Department of Philosophy College of Arts & Humanities, University of Maryland

### Positions Held

<i>Associate Professor</i> 2012-present	T. Denny Sanford School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
<i>Assistant Professor</i> 2010-2012	School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
<i>Assistant Professor</i> 2009-2010	Division of Advanced Studies in Learning, Technology and Psychology in Education Mary Lou Fulton Institute and Graduate School of Education, Arizona State University
<i>Assistant Professor</i> 2006-2009	Division of Psychology in Education Mary Lou Fulton College of Education, Arizona State University
<i>Harold Gulliksen Psychometric Research Fellow</i> 2005-2006	Educational Testing Service
<i>Research Assistant</i> 2001-2006	Department of Measurement, Statistics & Evaluation College of Education, University of Maryland

	<i>Course Instructor</i> 2003-2004	Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
<b>Affiliations</b>	<i>Research Scientist</i> 2011-present	Learning Sciences Institute Arizona State University
	<i>Member</i> 2010-present	Educational Psychology Graduate Faculty Arizona State University
	<i>Member</i> 2008-present	Department of Speech and Hearing Science Graduate Faculty Arizona State University

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### INSTRUCTIONAL & ADVISING ACTIVITY

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#### **Course Instruction at Arizona State University 2006-present (all graduate-level courses)**

Introduction to Data Analysis  
Multiple Regression and Correlation Methods  
Structural Equation Modeling in Educational Research  
Introduction to Item Response Theory  
Advanced Topics in Item Response Theory  
Bayesian Analyses in the Social Sciences  
Advanced Bayesian Statistical Analyses

#### **Invited Instruction on Additional Topics at Arizona State University (all graduate-level)**

Achievement Testing and Evidentiary Reasoning in Assessment

#### **Course Instruction at University of Maryland 2003-2004 (undergraduate courses)**

Introduction to Educational Statistics

#### **Advising and Mentoring Activities**

##### *Completed Dissertations Chaired*

Dubravka Svetina (2011). Assessing dimensionality in complex data structures: A performance comparison of DETECT and NOHARM methods. (co-chair with Dr. Joanna Gorin.)

### Completed Theses Chaired

Janet Krause. (2012). Assessment of item parameter drift of known items in a university placement exam.

Derek Fay. (2011). Sample size and test length minima for DIMTEST with conditional covariance-based subtest selection.

Lisa Mitchell (2009). Examining the structural properties and competing models for the institutional integration scale.

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## SCHOLARLY ACTIVITY

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### In Refereed Journals ( $\psi$ indicates co-author was an ASU student during part or all of the work)

$\psi$ Svetina, D., & Levy, R. (in press). A framework for dimensionality assessment for multidimensional item response models: A methodological review. *Educational Assessment*.

Gratz, K. L., Tull, M. T., & Levy, R. (in press). Randomized controlled trial and uncontrolled 9-month follow-up of an adjunctive emotion regulation group therapy for deliberate self-harm among women with borderline personality disorder. *Psychological Medicine*.

Levy, R. (2013). Psychometric and evidentiary advances, opportunities, and challenges for simulation-based assessment. *Educational Assessment*, 18, 182-207.

Mislevy, R. J., Behrens, J. T., DiCerbo, K. E., & Levy, R. (2012). Design and discovery in educational assessment: Evidence-centered design, psychometrics, and educational data mining. *Journal of Educational Data Mining*, 4, 11-48.

Rupp, A. A., Levy, R., DiCerbo, K. E., Sweet, S.,  $\psi$ Crawford, A. V., Calico, T., Benson, M.,  $\psi$ Fay, D.,  $\psi$ Kunze, K. L., Mislevy, R. J., & Behrens, J. T. (2012). Putting ECD into practice: The interplay of theory and data in evidence models within a digital learning environment. *Journal of Educational Data Mining*, 4, 49-110.

Green, S. B., Levy, R., Thompson, M. S.,  $\psi$ Lu, M., & Lo, W. J. (2012). A proposed solution to the problem with using completely random data to assess the number of factors with parallel analysis. *Educational and Psychological Measurement*, 72, 357-374.

$\psi$ Svetina, D., & Levy, R. (2012). An overview of software for conducting dimensionality assessment in multidimensional models. *Applied Psychological Measurement*, 36, 660-670.

Gratz, K. L., Levy, R., & Tull, M. T. (2012). Emotion regulation as a mechanism of change in an acceptance-based emotion regulation group therapy for deliberate self-harm among women with borderline personality pathology. *Journal of Cognitive Psychotherapy*, 26, 365-380.

- Levy, R.** (2011). Bayesian data-model fit assessment for structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 18, 663-685.
- Levy, R.,** & <sup>ψ</sup>Svetina, D. (2011). A generalized dimensionality discrepancy measure for dimensionality assessment in multidimensional item response theory. *British Journal of Mathematical and Statistical Psychology*, 64, 208-232.
- Levy, R.,** & Hancock, G. R. (2011). An extended model comparison framework for covariance and mean structure models, accommodating multiple groups and latent mixtures. *Sociological Methods and Research*, 40, 256-278.
- Levy, R.** (2011). Posterior predictive model checking for conjunctive multidimensionality in item response theory. *Journal of Educational and Behavioral Statistics*, 36, 672-694.
- Bornovalova, M. A., Tull, M. T., Gratz, K. L., **Levy, R.,** & Lejuez, C. W. (2011). Extending models of self-harm and suicide to inner-city substance users. *Psychological Trauma: Theory, Research, Practice, and Policy*, 3, 349-359.
- Okun, M. A., Rios, R., <sup>ψ</sup>Crawford, A. V., & **Levy, R.** (2011). Does the relation between volunteering and well-being vary with health and age? *International Journal of Aging and Human Development*, 72, 265-287.
- Wodrich, D. L., Jarrar, R., Buchhalter, J., **Levy, R.,** & <sup>ψ</sup>Gay, C. (2011). Knowledge about epilepsy and confidence in instructing students with epilepsy: Teachers' responses to a new scale. *Epilepsy & Behavior*, 20, 360-365.
- Levy, R.** (2010). SEMModComp: An R package for calculating likelihood ratio tests for mean and covariance structure models. *Applied Psychological Measurement*, 34, 370-371.
- <sup>ψ</sup>Crawford, A. V., Green, S. B., **Levy, R.,** <sup>ψ</sup>Lo, W. J., <sup>ψ</sup>Scott, L., <sup>ψ</sup>Svetina, D., & Thompson, M. S. (2010). Evaluation of parallel analysis methods for determining the number of factors. *Educational and Psychological Measurement*, 70, 885-901.
- Note:** Authorship listed alphabetically.
- Mislevy, R. J., Behrens, J. T., Bennett, R. E., DeMark, S. F., Frezzo, D. C., **Levy, R.,** Robinson, D. H., Rutstein, D. W., Shute, V. J., Stanley, K., & Winters, F. I. (2010). On the roles of external knowledge representations in assessment design. *Journal of Technology, Learning, and Assessment*, 8(2). Available from <http://www.jtla.org>.
- Bornovalova, M. A., **Levy, R.,** Gratz, K. L., & Lejuez, C. W. (2010). Understanding the heterogeneity of BPD symptoms through latent class analysis: Initial results and clinical correlates among inner-city substance users. *Psychological Assessment*, 22, 233-245.
- <sup>ψ</sup>Long, L. A., Wodrich, D. L., **Levy, R.,** Ettl, M. M., & Gieseeking, A. T. (2010). Students with brain tumors: Their post-treatment perceptions of teachers, peers, and academics and retrospective views

on school during treatment. *Journal of Child Health Care*, 14, 111-125.

**Levy, R.**, Mislavy, R. J., & Sinharay, S. (2009). Posterior predictive model checking for multidimensionality in item response theory. *Applied Psychological Measurement*, 33, 519-537.

**Levy, R.** (2009). The rise of Markov chain Monte Carlo estimation for psychometric modeling. *Journal of Probability and Statistics*, vol. 2009, Article ID 537139.

**Levy, R.** (2009). Evidentiary reasoning in diagnostic classification models. *Measurement: Interdisciplinary Research and Perspectives*, 6, 36-41.

**Levy, R.**, & <sup>ψ</sup>Crawford, A. V. (2009). Incorporating substantive knowledge into regression via a Bayesian approach to modeling. *Multiple Linear Regression Viewpoints*, 35, 4-9.

Okun, M. A., **Levy, R.**, Karoly, P., & Ruehlman, L. (2009). Dispositional happiness and college student GPA: Unpacking a null relation. *Journal of Research in Personality*, 43, 711-715.

Bornovalova, M. A., Ouimette, P., <sup>ψ</sup>Crawford, A. V., & **Levy, R.** (2009). Testing gender effects on the mechanisms explaining the association between post-traumatic stress symptoms and substance use frequency. *Addictive Behaviors*, 34, 685-692.

**Levy, R.**, & Hancock, G. R. (2007). A framework of statistical tests for comparing mean and covariance structure models. *Multivariate Behavioral Research*, 42, 33-66.

**Levy, R.**, & Mislavy, R. J. (2004). Specifying and refining a measurement model for a computer-based interactive assessment. *International Journal of Testing*, 4, 333-369.

Behrens, J. T., Mislavy, R. J., Bauer, M., Williamson, D. W., & **Levy, R.** (2004). Introduction to evidence centered design and lessons learned from its application in a global e-learning program. *International Journal of Testing*, 4, 295-301.

**In Edited Volumes** (<sup>ψ</sup> indicates co-author was an ASU student during part or all of the work)

**Levy, R.**, & Choi, J. (2013). Bayesian structural equation modeling. In G.R. Hancock and R.O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 563-623). Charlotte, NC: Information Age Publishing.

Behrens, J. T., DiCerbo, K. E., <sup>ψ</sup>Yel, N., & **Levy, R.** (2013). Exploratory data analysis. In I.B. Weiner, J.A. Schinka, & W.F. Velicer (Eds.), *Handbook of psychology, volume 2: Research methods in psychology* (2nd ed., pp. 33-64). Hoboken, NJ: John Wiley & Sons, Inc.

Behrens, J. T., Mislavy, R. J., DiCerbo, K. E., & **Levy, R.** (2012). Evidence centered design for learning and assessment in the digital world. In M. Mayrath, J. Clarke-Midura, & D.H. Robinson (Eds.), *Technology-based assessments for 21st century skills: Theoretical and practical implications from modern research* (pp. 13-53). Charlotte, NC: Information Age Publishing.

West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., **Levy, R.**, DiCerbo, K. E., <sup>ψ</sup>Crawford, A. V., Choi, Y., Chapple, K., & Behrens, J. T. (2012). A Bayesian network approach to modeling learning progressions. In A.C. Alonzo & A.W. Gotwals (Eds.), *Learning progressions in science: Current challenges and future directions* (pp. 257-292). Rotterdam: Sense Publishers.

**Levy, R.**, Mislevy, R. J., & Behrens, J. T. (2011). MCMC in educational research. In S. Brooks, A. Gelman, G. L. Jones, & X. L. Meng (Eds.), *Handbook of Markov chain Monte Carlo: Methods and applications* (pp. 531-545). London: Chapman & Hall/CRC.

Shute, V.J., **Levy, R.**, Baker, R., Zapata, D., & Beck, J. (2009). Assessment and learning in intelligent educational systems: A peek into the future. In S. D. Craig & D. Dicheva (Eds.), *Proceedings of the Artificial Intelligence and Education (AIED 2009) Workshop on Intelligent Educational Games*, Volume 3: Intelligent Educational Games (pp. 99–108), Brighton, UK.

Mislevy, R. J., **Levy, R.**, Kroopnick, M., & Rutstein, D. (2008). Evidentiary foundations of mixture item response theory models. In G. R. Hancock & K. M. Samuelsen (Eds.), *Advances in latent variable mixture models* (pp. 149-175). Charlotte, NC: Information Age Publishing.

Mislevy, R. J., & **Levy, R.** (2007). Bayesian psychometric modeling from an evidence-centered design perspective. In C. R. Rao and S. Sinharay (Eds.), *Handbook of statistics, Volume 26* (pp. 839-865). Amsterdam: North-Holland/Elsevier.

**Levy, R.**, Behrens, J. T., & Mislevy, R. J. (2006). Variations in adaptive testing and their on-line leverage points. In D. D. Williams, S. L. Howell, & M. Hricko (Eds.), *Online assessment, measurement and evaluation: Emerging practices* (pp. 180-202). Hershey, PA: Information Science Publishing.

Williamson, D. M., Almond, R. G., Mislevy, R. J., & **Levy, R.** (2006). An application of Bayesian networks in automated scoring of computerized simulation tasks. In D. M. Williamson, R. J. Mislevy, & I. I. Bejar (Eds.), *Automated scoring of complex tasks in computer-based testing* (pp. 201-257). Mahwah, NJ: Erlbaum Associates.

#### **Technical Reports** (*ψ* indicates co-author was an ASU student during part or all of the work)

**Levy, R.** (2012). *Psychometric advances, opportunities, and challenges for simulation-based assessment*. Princeton, NJ: Center for K-12 Assessment & Performance Management at ETS.

Chapple, K., Stockford, S., <sup>ψ</sup>Fay, D., <sup>ψ</sup>Crawford, A. V., <sup>ψ</sup>Kunze, K. L., & **Levy, R.** (2011). *An evaluation of students' satisfaction with course features via the Customer Feedback form*. Cisco Technical Report.

Behrens, J. T., Mislevy, R. J., DiCerbo, K. E., & **Levy, R.** (2010). *An evidence centered design for learning and assessment in the digital world*. (CRESST Report 778). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, Student Testing (CRESST). Available online at <http://www.cse.ucla.edu/products/reports/R778.pdf>.

West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., Choi, Y., **Levy, R.**, <sup>ψ</sup>Crawford, A. V., DiCerbo, K. E., Chapple, K., & Behrens, J. T. (2010). *A Bayesian network approach to modeling learning progressions and task performance*. (CRESST Report 776). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, Student Testing (CRESST). Available online at <http://www.cse.ucla.edu/products/reports/R776.pdf>.

DiCerbo, K., **Levy, R.**, & Rutstein, D. W. (2008). *Item and exam analyses for courses: Guidelines and recommendations*. Cisco Learning Institute Technical Report.

**Note:** Authorship listed alphabetically.

Mislevy, R. J., Behrens, J. T., Bennett, R. E., DeMark, S. F., Frezzo, D. C., **Levy, R.**, Robinson, D. H., Rutstein, D. W., Shute, V. J., Stanley, K., & Winters, F. I. (2007). *On the roles of external knowledge representations in assessment design*. (CRESST Report 776). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, Student Testing (CRESST). Available online at <http://www.cse.ucla.edu/products/reports/R722.pdf>.

**Levy, R.**, & Mislevy, R. J. (2004). *Specifying and refining a measurement model for a simulation-based assessment*. (CRESST Report 619). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, Student Testing (CRESST). Available online at <http://www.cse.ucla.edu/products/reports/R619.pdf>.

## Software & Documentation

**Levy, R.** (2009). SEMModComp: Likelihood ratio tests for mean and covariance structure models. R package version 1.0. URL: <http://cran.r-project.org/web/packages/SEMModComp/index.html>.

**Levy, R.** (2009). *SEMModComp 1.0 manual*. URL: <https://sites.google.com/a/asu.edu/roylevy/papers-software>.

## Refereed Presentations ( $\psi$ indicates co-author was an ASU student during part or all of the work)

Green, S. B., Thompson, M. S., **Levy, R.**, & Redell, N. (2013). Accuracy of revised and traditional parallel analyses for assessing dimensionality with binary data. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, May, 2013.

<sup>ψ</sup>Yel, N., <sup>ψ</sup>Xu, Y., & **Levy, R.** (2013). Dimensionality assessment for multidimensional item response models accommodating polytomous and missing data. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, California, April, 2013.

<sup>ψ</sup>Kunze, K. L., <sup>ψ</sup>Fay, D. M., <sup>ψ</sup>Crawford, A. V., Stockford, S. M., Chapple, K., **Levy, R.**, & Kovacs, M. S. (2013). How to say N/A: Illuminating survey responses using missing data patterns and latent class modeling. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April, 2013.

**Note:** For this work, the first author was awarded the 2013 graduate student award by the Survey Research in Education Special Interest Group

- <sup>ψ</sup>Fay, D. M., <sup>ψ</sup>Crawford, A. V., <sup>ψ</sup>Kunze, K. L., **Levy, R.**, Stockford, S. M., Chapple, K., & Kovacs, M. S. (2013). Leveraging factor analysis and item response theory approaches to analyzing a large-scale student satisfaction survey. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California, April, 2013.
- <sup>ψ</sup>Svetina, D., & **Levy, R.** (2012). Dimensionality in compensatory MIRT when complex structure exists: Evaluation of DETECT and NOHARM. Paper presented at the annual meeting of the American Educational Research Association, Vancouver, Canada, April, 2012.
- Green, S. B., Lo, W. J., Thompson, M. S., & **Levy, R.** (2012). A stepwise hypothesis-testing approach to assess the number of underlying factors: Revised parallel analysis as an alternative to maximum likelihood testing. Paper presented at the annual meeting of the American Educational Research Association, Vancouver, Canada, April, 2012.
- <sup>ψ</sup>Fay, D., <sup>ψ</sup>Kunze, K. L., <sup>ψ</sup>Crawford, A. V., & **Levy, R.** (2012). Analysis of PTSBA product data using exploratory dimensionality assessment techniques. Paper presented at the annual meeting of the National Council on Measurement in Education, Vancouver, Canada, April, 2012.
- Sweet, S. J., <sup>ψ</sup>Crawford, A. V., <sup>ψ</sup>Fay, D., <sup>ψ</sup>Kunze, K. L., & **Levy, R.** (2012). Confirmatory modeling and data-model fit techniques for assessments embedded in digital learning environments. Paper presented at the annual meeting of the National Council on Measurement in Education, Vancouver, Canada, April, 2012.
- Gratz, K. L., **Levy, R.**, & Tull, M. T. (2011). Innovative investigations of emotion regulation as a mechanism of change in treatments for BPD and related pathology. Paper presented at the annual convention of the Association for Behavioral and Cognitive Therapies, Toronto, Canada, November, 2011.
- Levy, R.**, <sup>ψ</sup>Crawford, A. V., <sup>ψ</sup>Fay, D., & <sup>ψ</sup>Poole, K. L. (2011). Data-model fit assessment for Bayesian networks for simulation-based assessments. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April, 2011.
- Green, S. B., **Levy, R.**, Thompson, M. S., <sup>ψ</sup>Lu, M., Lo, W. J., <sup>ψ</sup>Svetina, D., <sup>ψ</sup>Crawford, A. V., & <sup>ψ</sup>Scott, L. (2011). Use of completely random data to assess the number of factors with parallel analysis: An empirical evaluation of a conceptual flaw and its correction. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April, 2011.
- Levy, R.**, & <sup>ψ</sup>Svetina, D. (2010). A framework for dimensionality assessment for multidimensional item response models. Paper presented at the annual meeting of the National Council on Measurement in Education, Denver, CO, May, 2010.
- Levy, R.** (2010). Bayesian data-model fit assessment for structural equation modeling. Paper presented at the annual meeting of the American Educational Research Association, Denver, CO, May, 2010.
- Shute, V., **Levy, R.**, Baker, R., Zapata, D., & Beck, J. (2009). Assessment and learning in intelligent educational systems: A peek into the future. Paper presented at the 14<sup>th</sup> International Conference



on Artificial Intelligence in Education, Brighton, England, July, 2009.

West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., **Levy, R.**, DiCerbo, K. E., <sup>‡</sup>Crawford, A. V., Choi, Y., Behrens, J. T. (2009). A Bayes net approach to modeling learning progressions and task performances. Paper presented at the Learning Progressions in Science Conference, Iowa City, IA, June, 2009.

**Note:** Authorship listed in reverse alphabetical order.

**Levy, R.**, & <sup>‡</sup>Sevtina, D. (2009). A new statistic and posterior predictive model checking procedure for assessing dimensionality in multidimensional item response theory. Paper presented at the annual meeting of the National Council on Measurement in Education, San Diego, CA, April, 2009.

**Levy, R.**, & <sup>‡</sup>Crawford, A. V. (2009). Bayesian network modeling for student- and domain-level inferences. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April, 2009.

<sup>‡</sup>Crawford, A. V., Green, S. B., **Levy, R.**, <sup>‡</sup>Lo, W. J., <sup>‡</sup>Scott, L., <sup>‡</sup>Svetina, D., & Thompson, M. S. (2009). Evaluation of parallel analysis methods for determining the number of factors. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April, 2009.

**Note:** Authorship listed alphabetically.

**Levy, R.** (2008). Factors affecting the dimension of best measurement and connections with unidimensional modeling. Paper presented at the annual meeting of the National Council on Measurement in Education, New York, NY, March, 2008.

**Levy, R.**, & Hancock, G. R. (2008). A generalized model comparison framework for covariance and mean structure models, accommodating multiple groups and latent mixtures. Paper presented at the annual meeting of the American Educational Research Association, New York, NY, March, 2008.

**Levy, R.**, Mislevy, R. J., & Sinharay, S. (2007). Posterior predictive model checking for conjunctive multidimensionality in item response theory. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL, April, 2007.

Bornoalova, M. A., **Levy, R.**, Daughters, S. B., Gratz, K. L., & Lejuez, C. W. (2006). Understanding symptom clusters of BPD in and their clinical correlates in a sample of inner-city drug users. Presented at the 40<sup>th</sup> annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL, November, 2006.

Bornoalova, M. A., **Levy, R.**, Lejuez, C.W., & Daughters, S. B. (2006). Using latent class analysis in the diagnosis of BPD; initial results and clinical correlates. Presented at the 20<sup>th</sup> annual meeting for Society for Research in Psychopathology, San Diego, CA, October, 2006.

**Levy, R.**, & Hancock, G. R. (2006). A generalized model comparison framework in structural equation modeling. Paper presented at the annual meeting of the Psychometric Society, Montréal, Canada,

June, 2006.

- Levy, R., Misyevy, R. J., & Sinharay, S. (2006).** Posterior predictive model checking for multidimensionality in item response theory. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, CA, April, 2006.
- Levy, R., & Hancock, G. R. (2006).** Alternative approaches to validity in a modeling framework. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 2006.
- Choi, J., Levy, R., & Hancock G. R. (2006).** Markov chain Monte Carlo estimation method with covariance data for structural equation modeling. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 2006.
- Kroopnick, M., & Levy, R. (2006).** Comparing fully Bayesian and marginal maximum likelihood estimation of multidimensional item response models for polytomous items. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, CA, April, 2006.
- Levy, R. (2005).** Posterior predictive model checking for cognitively-based psychometric models. Paper presented at the annual meeting of the Psychometric Society, Tilburg, The Netherlands, July, 2005.
- Levy, R., & Hancock, G. R. (2005).** A framework of statistical tests for comparing mean and covariance structure models. Paper presented at the annual meeting of the American Educational Research Association, Montréal, Canada, April, 2005.
- Misyevy, R. J., & Levy, R. (2005).** On the roles of knowledge representations in assessment. Paper presented at the annual meeting of the American Educational Research Association, Montréal, Canada, April, 2005.
- Frezzo, D. C., Levy, R., & Kroopnick, M. (2005).** Knowledge representations in curricular and psychometric design. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada, April, 2005.
- Levy, R., & Hancock, G. R. (2004).** A framework of statistical tests for comparing covariance structure models. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April, 2004.
- Levy, R., & Hancock, G. R. (2003).** A statistical test for nonnested covariance models. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL, April, 2003.
- Levy, R., & Misyevy, R. J. (2003).** Specifying and refining a complex measurement model. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL, April, 2003.

## Invited Presentations

- Levy, R.** (2013). Psychometric and evidentiary advances, opportunities, and challenges for simulation-based assessment. Presented at the Learning Sciences Institute, Arizona State University, Tempe, AZ, February, 2013.
- Levy, R.** (2012). Psychometric advances, opportunities, and challenges for simulation-based assessment. Paper presented at Center for K-12 Assessment & Performance Management at ETS Invitational Research Symposium on Technology Enhanced Assessments, National Harbor, MD, May, 2012.
- Levy, R.** (2012). Generalized dimensionality assessment for multidimensional psychometric models. Presented at ETS, Princeton, NJ, January 2012.
- Levy, R.** (2011). Rules for communicating technical material and working with lay audiences. Presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA, April, 2011.
- Levy, R.** (2011). An introduction to Bayesian statistical modeling, or, a short list of reasons I am a Bayesian and you might be too. Presented at Center for Population Dynamics, Arizona State University, Tempe, AZ, February, 2011.
- Levy, R.** (2011). Challenges to evidentiary reasoning and measurement modeling in game- and simulation-based assessment systems. Presented at Center for Advanced Technology in Schools (CATS) Workshop for Research on Games and Learning, the National Center for Research on Evaluation, Standards, & Student Testing (CRESST), University of California, Los Angeles, CA, January, 2011.
- Levy, R.** (2010). Providing diagnostic feedback using Bayesian networks in the Cisco Networking Academy. Presented at the annual meeting of the American Educational Research Association, Denver, CO, May 2010.
- Levy, R.** (2010). Psychometrics of simulations and games. Presented at the National Center for Research on Evaluation, Standards, & Student Testing (CRESST), University of California, Los Angeles, CA, February, 2010.
- Levy, R.** (2009). Posterior predictive model checking for diagnostic classification models. Presented at the Statistical and Applied Mathematical Summer Institute, Research Triangle Park, NC, July 2009.
- Levy, R.** (2009). Markov chain Monte Carlo (MCMC) estimation for diagnostic classification models. Presented at the Statistical and Applied Mathematical Summer Institute, Research Triangle Park, NC, July 2009.
- Levy, R.** (2007). A model comparison framework for structural equation modeling. Presented at the

Department of Management, Arizona State University, Tempe, AZ, March 2007.

**Levy, R.** (2006). Introduction to evidence-centered design with an emphasis on evidence. Presented at the Applied Learning Technologies Institute, Arizona State University, Tempe, AZ, October 2006.

Mislevy, R. J., **Levy, R.**, Kroopnick, M., & Wise, D. (2006). Evidentiary foundations of mixture item response theory models. Paper presented at the 2006 Center for Integrated Latent Variable Research conference, College Park, MD, May 2006.

**Levy, R.** (2005). Posterior predictive model checking for within-item multidimensionality. Presented at the Department of Mathematics and Statistics, Wright State University, Dayton, OH, November 2005.

**Levy, R.** (2005). Introduction to item response theory. Presented at the Basic Process in Addictive Behaviors Laboratory, University of Maryland, College Park, MD, September 2005.

**Levy, R.** (2005). Introduction to structural equation modeling. Presented at the Basic Process in Addictive Behaviors Laboratory, University of Maryland, College Park, MD, September 2005.

**Levy, R.** (2005). Introduction to factor analysis. Presented at the Basic Process in Addictive Behaviors Laboratory, University of Maryland, College Park, MD, September 2005.

**Levy, R.** (2003). Bayesian inference networks. Presented at Educational Testing Service, Princeton, NJ, January 2003.

**Levy, R.** (2003). Markov chain Monte Carlo methods. Presented at Educational Testing Service, Princeton, NJ, January 2003.

**Levy, R.** (2003). WinBUGS software training. Presented at Educational Testing Service, Princeton, NJ, January 2003.

**Levy, R.** (2002). Markov chain Monte Carlo estimation for assessment: Procedures and practices. Presented at Educational Testing Service, Princeton, NJ, June 2002.

## RESEARCH PROJECTS

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### Principal Investigator

*Data Analytic and Psychometric Methods for Innovative Educational Systems*

Pearson  
2012-present

*Psychometrics for Gaming and Simulation-Based Assessment*

National Center for Research on  
Evaluation, Standards, Student Testing  
2011-present

*Hierarchical and Bayesian Analyses for Large Scale Complex Data* Cisco  
2009-present

*Generalized Dimensionality Assessment for Multidimensional Psychometric Models* Institute of Education Sciences  
2010-2012

*Complex Models for Innovative Educational Assessment* Cisco Learning Institute  
2008-2009

*Posterior Predictive Model Checking for Multidimensional Item Response Theory* Arizona State University  
2007-2008

### **Co-Principal Investigator**

*Developing Guidelines for Optimizing Levels of Students' Overt Engagement Activities* Institute of Education Sciences  
2011-present  
PI: Dr. Michelene Chi, Arizona State University

*Posterior Predictive Model Checking for Within-Item Multidimensionality in IRT* Educational Testing Service  
2005-2006  
PI: Dr. Robert J. Mislevy, University of Maryland

### **Co-Investigator**

*National Research and Development Center on Assessment and Accountability for Special Education* Institute of Education Sciences  
2011-present  
Co-PIs: Gerald Tindal (Project Director), University of Oregon,  
Ann Schulte, North Carolina State University,  
Stephen N. Elliott, Arizona State University,  
Joseph Stevens, University of Oregon

### **Key Personnel & Consulting**

*Validating the Use of Growth measures from Statewide Standards-based Summative Assessments for Students with Disabilities* Institute of Education Sciences  
2012-Present  
PI: Heather Buzick, ETS

*Developing an Emotion Regulation Group Therapy for Self-Harm Among Women with BPD* National Institutes of Health  
2008-Present  
PI: Kim Gratz, University of Mississippi Medical Center

*Multilevel Assessments of Science Standards* Institute of Education Sciences  
2008-2011  
PI: Edys Quellmalz, WestED

*Calipers II* National Science Foundation

PI: Edys Quellmalz, WestED

2007-2011

*VentureMap*

US Department of Education

PI: Douglas Weihnacht, MW Productions, Inc.

2006

### **Research Group Affiliations (in addition to those above, not being supported)**

*Promoting Knowledgeable and Confident Teachers of Youth with Epilepsy*

Epilepsy Foundation of America  
2009-2012

PI: David Wodrich, Arizona State University

*21<sup>st</sup> Century Assessment*

John D. & Catherine T.  
MacArthur Foundation  
2008-2010

PI: James Gee, Arizona State University

*Global Resources for Online Education*

2009

PI: Beverly P. Woolf, University of Massachusetts

*Cognitive Diagnosis Models Working Group*

2009

Statistical and Applied Mathematical Summer Institute

PI: Jimmy de la Torre, Rutgers University

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## **SERVICE**

### **Professional Service**

Editorial Board, *Educational Measurement: Issues and Practice*

2013-present

Editorial Board, *Educational Assessment*

2011-present

Editorial Board, *Journal of School Psychology*

2009-2011

Editorial Board, *Journal of Applied School Psychology*

2009-2011

Member, National Council on Measurement in Education Bradley Hanson Award for Contributions to Educational Measurement Awards Committee

2009-2012

Member, American Educational Research Association Division D Quantitative Dissertation Award Committee

2009-2012

Chair, American Educational Research Association  
Structural Equation Modeling Special Interest Group

2008-2009

Co-Chair, American Educational Research Association

2007-2008

## Structural Equation Modeling Special Interest Group

Ad hoc Reviewer 2003-present

(Journals, Funding Agencies, Professional Organizations, Publishers)

*American Educational Research Association*

*Applied Psychological Measurement*

*Cognition and Assessment Special Interest Group*

*Educational and Psychological Measurement*

*Educational Assessment*

*Educational Measurement: Issues and Practice*

*Educational Researcher*

*Educational Statisticians Special Interest Group*

*Elsevier*

*Frontiers in Quantitative Psychology and Measurement*

*IERI Monograph Series*

*International Journal for Quantitative Research in Education*

*Journal of Applied School Psychology*

*Journal of Educational and Behavioral Statistics* (Outstanding Reviewer, 2010)

*Journal of Educational Data Mining*

*Journal of Educational Measurement*

*Journal of School Psychology*

*Measurement: Interdisciplinary Research and Perspectives*

*Multivariate Behavioral Research*

*National Council on Measurement in Education*

National Science Foundation

*Psychological Methods*

*Psychometrika*

*Structural Equation Modeling: A Multidisciplinary Journal*

*Structural Equation Modeling Special Interest Group*

Editorial Assistant for Hancock, G. R., & Mueller, R. O. (Eds.) (2006). *Structural equation modeling: A second course*. Greenwich, CT: Information Age Publishing. 2003-2005

## **Institutional Service at Arizona State University**

Member, Family and Human Development Graduate Committee 2011-present  
T. Denny Sanford School of Social and Family Dynamics

Member, Educational Measurement & Assessment Search Committee 2012  
Learning Sciences Institute

Member, Executive Dean Search Committee 2009  
Mary Lou Fulton Graduate School of Education

Member, Engineering Education Search Committee 2009  
Mary Lou Fulton Graduate School of Education

Member, Awards Committee  
Division of Psychology in Education 2008-2009

Member, Curriculum Committee  
Division of Psychology in Education 2008-2009

### **Institutional Service at University of Maryland**

Member, Department Chair Search Committee  
Department of Measurement, Statistics & Evaluation 2004-2005

Mentor, 5<sup>th</sup> Year B.A./M.A. Program  
Department of Measurement, Statistics & Evaluation 2002-2006

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## **HONORS AND MEMBERSHIPS**

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### **Professional and Academic Honors and Awards**

Early Career Award in  
Measurement and Research  
Methodology American Educational Research Association Division  
D - Measurement and Research Methodology 2012

Presidential Early Career Award  
for Scientists and Engineers Awarded by the President of the United States  
of America 2010

Outstanding Reviewer *Journal of Educational and Behavioral Statistics* 2010

Outstanding New Scholar College of Education  
University of Maryland 2010

Brenda H. Loyd Outstanding  
Dissertation Award National Council on Measurement in Education 2008

Harold Gulliksen Psychometric  
Research Fellow Educational Testing Service 2005-  
2006

Outstanding Doctoral  
Student Award College of Education, University of Maryland 2005

Distinguished Teaching  
Assistant Center for Teaching Excellence, University of  
Maryland 2003

W.E. Schlaretzki Prize Department of Philosophy, University of Maryland 2001



in Philosophy

**Professional Memberships (current and past)**

Psychometric Society  
National Council on Measurement in Education  
American Educational Research Association  
AERA Structural Equation Modeling Special Interest Group  
AERA Educational Statisticians Special Interest Group  
AERA Cognition and Assessment Special Interest Group  
American Psychological Association  
International Society for Bayesian Analysis  
American Statistical Association

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**PROFESSIONAL DEVELOPMENT**

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**Workshops Attended**

<i>National Science Foundation Regional Grants Conference</i> Presenters: National Science Foundation	Tempe, AZ March, 2009
<i>Special Workshop on Grant Writing and Grant Makers: The Washington Context</i> Instructor: Bianca L. Bernstein	Tempe, AZ January-May, 2008
<i>Teaching Educational Measurement</i> Instructors: Deborah Bandalos & Amanda Ferster	Chicago, IL April, 2007
<i>A Nonlinear Mixed Models Approach to IRT</i> Instructors: Paul de Boeck, Mark Wilson, Frank Rijmen, & Francis Tuerlinckx	Montréal, CA April, 2005
<i>Multilevel Modeling in Mplus</i> Instructor: Bengt Muthén	Baltimore, MD March, 2005
<i>Intermediate/Advanced Bayesian Hierarchical Modeling</i> Instructor: David Draper	Washington D.C. March, 2004
<i>Introduction to Structural Equation Modeling</i> Instructors: Gregory R. Hancock & Ralph O. Mueller	College Park, MD November, 2002