ROY LEVY

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PROFESSIONAL INFORMATION

Education	*Doctor of Philosophy* May, 2006	Measurement, Statistics & Evaluation Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
	Master of Arts May, 2002	Measurement, Statistics & Evaluation Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
	Bachelor of Arts May, 2001	Philosophy *Honors*, *Summa cum Laude*, *Phi Beta Kappa* Department of Philosophy College of Arts & Humanities, University of Maryland
Positions Held	*Professor* 2021-present	Department of Psychology College of Liberal Arts and Sciences, Arizona State University
	Professor 2018-2026	T. Denny Sanford School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
	Associate Director 2020	T. Denny Sanford School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
	Associate Professor 2012-2018	T. Denny Sanford School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
	Assistant Professor 2010-2012	School of Social and Family Dynamics College of Liberal Arts and Sciences, Arizona State University
	Assistant Professor 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
	Assistant Professor 2006-2009	Division of Psychology in Education Mary Lou Fulton College of Education, Arizona State University
	Harold Gulliksen Psychometric	Educational Testing Service

Research Fellow 2005-2006	
Research Assistant 2001-2006	Department of Measurement, Statistics & Evaluation College of Education, University of Maryland
Course Instructor 2003-2004	Department of Measurement, Statistics & Evaluation College of Education, University of Maryland

INSTRUCTIONAL & ADVISING ACTIVITY

Courses Taught

Introductory Statistics

Multiple Regression

Advanced Regression & Nonlinear Models

Structural Equation Modeling

Measurement in the Social Sciences

Item Response Theory

Advanced Item Response Theory

Bayesian Statistical Modeling

Advanced Bayesian Statistical Modeling

Stuff You Missed In Stats Class

Advising and Mentoring Activities

Postdoctoral Students

1. Karina Cahill. (2024-2026). T32 NIDA Predoctoral Fellowship.

Completed Dissertations Chaired

12. Karina Cahill. (2024). Perspectives of parent-adolescent conflict and Mexican-origin adolescents' adjustment. (Co-chair with Dr. Kimberly Updegraff)

11. Raymond E. Reichenberg. (2018). The impact of information quantity and quality on parameter estimation for a selection of dynamic Bayesian network models with latent variables. (Co-chair with Dr. Natalie Wilkens)

10. Katerina M. Marcoulides. (2017). A Bayesian synthesis approach to data fusion using augmented data-dependent priors. Department of Psychology. (Co-chair with Dr. Kevin Grimm)

9. Milica Miočević. (2017). Statistical properties of the single mediator model with latent variables In the Bayesian framework. (Co-chair with Dr. David MacKinnon)

8. Katie L. Kunze, K. (2016). Multiple imputation for two-level hierarchical models with categorical variables and missing at random data.

7. Nedim Yel. (2016). Determining appropriate sample sizes and their effects on key parameters in longitudinal three-level models. (Co-chair with Dr. Stephen Elliott)

6. Derek M. Fay. (2015). Model criticism for growth curve models via posterior predictive model checking.

5. Phil Arcuria. (2014). Developing a process for utilizing Bayesian networks to predict stopping out among community college students.

4. Aaron V. Crawford. (2014). Posterior predictive model checking in Bayesian networks.

3. Lietta Scott. (2014). Analytic selection of a valid subtest for DIF analysis when DIF has multiple potential causes among multiple groups.

2. Kara Styck. (2012). Diagnostic utility of the Culture-Language Interpretive Matrix for the WISC-IV among referred students. Doctoral dissertation. Educational Psychology Program, School Psychology Concentration.

1. 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

5. Raymond E. Reichenberg. (2013). A comparison of DIMTEST and generalized dimensionality discrepancy approaches to assessing dimensionality in item response theory.

4. Katie Kunze. (2013). The accuracy of accuracy estimates for single form dichotomous classification exams. (Co-chair with Dr. Joanna Gorin.)

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

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

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

Completed Undergraduate Honors Theses Chaired

1. Emily Lowell. (2020). A psychometric analysis of an operational ASU exam.
   Note: This project was selected to be featured at the Barrett Celebrating Honors Symposium.

SCHOLARLY ACTIVITY

Books

1. **Levy, R.**, & Mislevy, R. J. (2016). *Bayesian psychometric modeling*. Boca Raton, FL: Chapman & Hall/CRC.

In Scholarly Journals (ψ indicates co-author was an ASU student or postdoc during part or all of the work)

79. **Levy, R.** (in press). Bob Mislevy's contributions to Bayesian networks in educational assessment. *Educational Measurement: Issues and Practice*.

78. $^{\psi}$Alvarez-Bartolo, D., $^{\psi}$Cheng, Ch. H., **Levy, R.**, Berkel, C., & Gerwitz, A. (2026). Advantages in Bayesian approaches to confirmatory factor analysis. *Prevention Science*. Published online June 4, 2026. https://doi.org/10.1007/s11121-026-01934-y.

77. **Levy, R.** (2026). Modular item response and structural equation modeling via measurement and uncertainty preserving parametric modeling. *British Journal of Mathematical and Statistical Psychology*. Published online May 22, 2026. https://doi.org/10.1017/psy.2025.10049.

76. **Levy, R.**, & Almond, R. G. (2025). Obituary: Robert J. Mislevy. *Psychometrika, 90,* 1588-1593. Published online September 15, 2025. https://doi.org/10.1017/psy.2025.10049.

75. **Levy, R.**, & McNeish, D. (2025). Measurement and uncertainty preserving parametric modeling for continuous latent variables with discrete indicators and external variables. *Journal of Educational and Behavioral Statistics, 50,* 239-271. Published online July 31, 2024. DOI: 10.3102/10769986241254348.

74. Alt, M., $^{\psi}$Hunter, D. R., **Levy, R.**, $^{\psi}$Neiling, S. L., $^{\psi}$Leon, K., Arizmendi, G. D., Cowan, N., & Gray, S. (2025). Working memory structure in young Spanish-English bilingual children. *Bilingualism: Language and Cognition, 28,* 469-483. Published online December 13, 2024. DOI: 10.1017/S1366728924000580.

73. $^{\psi}$Cahill, K. M, Updegraff, K. A., McHale, S. M., Umaña-Taylor, A. J., Feinberg, M. E., & **Levy, R.** (2024). Parenting of siblings in Latinx families during middle childhood. *Journal of Family Psychology, 38,* 92-103. Published online November 27, 2023. DOI: 10.1037/fam0001167.

72. **Levy, R.** (2023). Precluding interpretational confounding in factor analysis with a covariate or outcome via measurement and uncertainty preserving parametric modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 30,* 719-736. Published online February 23, 2023. DOI: 10.1080/10705511.2022.2154214.

71. **Levy, R.**, & McNeish, D. (2023). Perspectives on Bayesian inference and their implications for data analysis. *Psychological Methods, 28,* 719-739. Published online December 23, 2021. DOI: 10.1037/met0000443.

70. **Levy, R.**, & Enders, C. E. (2023). Full conditional distributions for Bayesian multilevel models with additive or interactive effects and missing data on covariates. *Communications in Statistics - Simulation and Computation, 52,* 2899-2923. Published online May 6, 2021. DOI: 10.1080/03610918.2021.1921799.

69. **Levy, R.**, Behrens, J. T., & Mislevy, R. J. (2023). An extended taxonomy of variants of computerized adaptive testing. *Journal of Computerized Adaptive Testing*, *10*(1), 1–21. https://doi.org/10.7333/2302-100101.

    Reprint, with a new preface by Robert J. Mislevy, of:
    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.

68. ᴪLiu, Y., **Levy, R.**, ᴪYel, N., & Schulte, A. C. (2023). A comparison of methods for evaluating schools with respect to growth of students in subpopulations in three level models. *School Effectiveness and School Improvement, 34,* 1-23. Published online May 10, 2022. DOI: 10.1080/09243453.2022.2071950.

67. ᴪKorous, K. M., Causadias, J. M., Bradley, R. H., **Levy, R.**, ᴪCahill, K. M., ᴪLi, L., & Luthar, S. S. (2023). "More is better" or "better near the middle"? An U.S.-based individual participant data meta-analysis of socioeconomic status and depressive symptoms. *American Psychologist, 78,* 305-320. Published online, November 3, 2022. DOI: 10.1037/amp0001076.

66. **Levy, R.** (2022). Conceptual grounding for Bayesian inference for latent variables in factor analysis. *Measurement: Interdisciplinary Research and Perspectives, 20,* 195-214. Published online November 2, 2022. DOI: 10.1080/15366367.2021.1996819.

65. ᴪReichenberg, R. E., **Levy, R.**, & Clark, A. (2022). Considerations for fitting dynamic Bayesian networks with latent variables: A Monte Carlo study. *Applied Psychological Measurement, 46,* 116-135. Published online February 10, 2022. DOI: 10.1177/01466216211066609.

64. Gray, S., **Levy, R.**, Alt, M., Hogan, T. P., & Cowan, N. (2022). Working memory predicts new word learning over and above existing vocabulary and nonverbal IQ. *Journal of Speech, Language, and Hearing Research, 65,* 1044-1069. Published online February 11, 2022. DOI: 10.1044/2021_JSLHR-21-00397.

63. ᴪFay, D. M., **Levy, R.**, & Schulte, A. C. (2022). Model criticism of growth curve models via posterior predictive model checking. *Journal of Experimental Education, 90,* 191-212. Published online January 29, 2020. DOI: 10.1080/00220973.2020.1711697.

62. Alt, M., Fox, A., **Levy, R.**, Hogan, T. P., Cowan, N., & Gray, S. (2022). Phonological working memory and central executive function differ in children with typical development and dyslexia. *Dyslexia, 28,* 20-39. Published online September 27, 2021. DOI: 10.1002/dys.1699.

61. ᴪKorous, K. M., Causadias, J. M., Bradley, R. H., Luthar, S. S., & **Levy, R.** (2022). A systematic overview of meta-analyses on socioeconomic status, cognitive ability, and achievement: The need to focus on specific pathways. *Psychological Reports, 125,* 55-97. Published online December 24, 2020. DOI: 10.1177/0033294120984127.

60. ᴪKorous, K. M., Bradley, R. H., Luthar, S. L., ᴪLi, L., **Levy, R.**, ᴪCahill, K. M., & Rogers, C. R. (2022). Socioeconomic status and depressive symptoms: An individual participant data meta-analysis on range restriction and measurement in the United States. *Journal of Affective Disorders, 314,* 50-58. Published online July 5, 2022. DOI: 10.1016/j.jad.2022.06.090.

59. ᴪVerma, V., Craig, S. D., **Levy, R.**, Bansal, A., & Amresh, A. (2022). Domain knowledge and adaptive serious games: Exploring the relationship of learner ability and affect adaptability. *Journal of Educational Computing Research, 60,* 406-432. Published online September 22, 2021. DOI: 10.1177/07356331211031287.

58. **Levy, R.**, ᴪXia, Y., & Green, S. B. (2021). Incorporating uncertainty into parallel analysis for choosing the number of factors via Bayesian methods. *Educational and Psychological Measurement, 81,* 466-490. Published online July 22, 2020. DOI: 10.1177/0013164420942806.

57. ᴪMiočević, M., **Levy, R.**, & MacKinnon, D. P. (2021). Different roles of prior distributions in the single mediator model with latent variables. *Multivariate Behavioral Research, 56,* 20-40. Published online January 31, 2020. DOI: 10.1080/00273171.2019.1709405.

56. **Levy, R.** (2020). Implications of considering response process data for greater and lesser psychometrics. *Educational Assessment, 25,* 218-235. Published online August 13, 2020. DOI: 10.1080/10627197.2020.1804352.

55. ᴪKunze, K. L., **Levy, R.**, & Mehta, V. (2020). Leveraging psychometric isomorphism in assessment development. *International Journal of Quantitative Research in Education, 15*, 1-15. DOI: 10.1504/IJQRE.2020.106561.

54. **Levy, R.** (2020). Digital module 11: Bayesian psychometric modeling. *Educational Measurement: Issues and Practice, 39,* 94-95. DOI: 10.1111/emip.12320. Available at https://ncme.elevate.commpartners.com/products/digital-module-11-bayesian-psychometrics

53. Gray, S., ᴪLancaster, H., Alt, M., Hogan, T., Green, S., **Levy, R.**, & Cowan, N. (2020). The structure of word learning in young school-age children. *Journal of Speech, Language, and Hearing*

Research, 63, 1446-1466. Published online April, 28, 2020. DOI: 10.1044/2020_JSLHR-19-00186.

Erratum to "The Structure of Word Learning in Young School-Age Children" published online March 3, 2022. DOI: 10.1044/2022_JSLHR-22-00027.

52. **Levy, R.** (2019). Dynamic Bayesian network modeling of game-based diagnostic assessments. *Multivariate Behavioral Research, 54,* 771-794. Published online April 3, 2019. DOI: 10.1080/00273171.2019.1590794.

51. Bradshaw, L., & **Levy, R.** (2019). Interpreting probabilistic classifications from diagnostic psychometric models. *Educational Measurement: Issues and Practice, 38,* 79-88. Published online March 21, 2019. DOI: 10.1111/emip.12247.

50. ᵠFay, D. M., **Levy, R.**, & Mehta, V. (2018). Investigating psychometric isomorphism for traditional and performance-based assessment. *Journal of Educational Measurement, 55,* 52-77. DOI: 10.1111/jedm.12163.

49. Enders, C. K., ᵠKeller, B. T., & **Levy, R.** (2018). A fully conditional specification approach to multilevel imputation of categorical and continuous variables. *Psychological Methods, 23,* 298-317. Published online May 29, 2017. DOI: 10.1037/met0000148.

48. ᵠJimenez-Arista, L. E., Tracey, T. J. G., & **Levy, R.** (2018). Patterns of symptomatology over time and their relation to outcome. *Canadian Psychology, 59,* 347-360. DOI: 10.1037/cap0000160

47. Chi, M. T. H., ᵠAdams, J., Bogusch, E. B., ᵠBruchok, C, Kang, S., ᵠLancaster, M., **Levy, R.**, Li, N., ᵠMcEldon, K., ᵠStump, G. S., ᵠWylie, R., Xu, D., & Yaghmourian, D. L. (2018). Translating the ICAP theory of cognitive engagement into practice. *Cognitive Science: A Multidisciplinary Journal, 42,* 1777-1832. Published online June 28, 2018. DOI: 10.1111/cogs.12626.

    Note: After the first author, authorship was determined alphabetically.

46. **Levy, R.** (2017). Distinguishing outcomes from indicators via Bayesian modeling. *Psychological Methods, 22,* 632-648. Published online December 21, 2017. DOI: 10.1037/met0000114.

45. Little, T. D., Widaman, K. F., **Levy, R.**, Rodgers, J. L., & Hancock, G. R. (2017). Error, Error in my model, who's the fairest of them all? *Research in Human Development, 14,* 271-286. Published online November 7, 2017. DOI: 10.1080/15427609.2017.1370965.

44. DiCerbo, K. E., ᵠXu, Y., **Levy, R.**, Lai, E., & Holland, L. (2017). Modeling student cognition in digital and nondigital assessment environments. *Educational Assessment, 22,* 275-297. Published online October 13, 2017. DOI: 10.1080/10627197.2017.1382343.

43. Lai, K., Green, S. B., & **Levy, R.** (2017). Graphical displays for understanding SEM model similarity. *Structural Equation Modeling: A Multidisciplinary Journal, 24,* 803-818. Published online July 12, 2017. DOI: 10.1080/10705511.2017.1334206.

42. ψLiu, Y., West, S. G., **Levy, R.**, & Aiken, L. S. (2017). Tests of simple slopes in multiple regression models with an interaction: Comparison of four approaches. *Multivariate Behavioral Research, 52,* 445-464. Published online May 2, 2017. DOI: 10.1080/00273171.2017.1309261.

41. ψMiočević, M., MacKinnon, D. P., & **Levy, R.** (2017). Power in Bayesian mediation analysis for small sample research. *Structural Equation Modeling: A Multidisciplinary Journal, 24,* 666-683. Published online April 25, 2017. DOI: 10.1080/10705511.2017.1312407.

40. Choi, J., & **Levy, R.** (2017). Markov chain Monte Carlo methods for structural equation modeling: A comparison of subject-level data and moment-level data approaches. *Biometrics & Biostatistics International Journal, 6(5)*, 470-482. DOI: 10.15406/bbij.2017.06.00182.

39. **Levy, R.** (2016). Advances in Bayesian modeling in educational research. *Educational Psychologist, 51,* 368-380. DOI: 10.1080/00461520.2016.1207540.

38. ψLai, K., Green, S. B., **Levy, R.**, ψReichenberg, R., ψXu, Y., Thompson, M. S., ψYel, N., Eggum-Wilkens, N. D., ψKunze, K. L., & Iida, M. (2016). Assessing model similarity in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 23,* 491-506. Published online April 8, 2016. DOI: 10.1080/10705511.2016.1154464.

37. ψVerhagen, A. J., **Levy, R.**, Millsap, R., & Fox, J.-P. (2016). Evaluating evidence for invariant items: A Bayes Factor approach to testing measurement invariance in IRT models. *Journal of Mathematical Psychology, 72,* 171-182. Published online August 12, 2015. doi: 10.1016/j.jmp.2015.06.005.

36. ψSvetina, D., & **Levy, R.** (2016). Dimensionality in compensatory MIRT when complex structure exists: Evaluation of DETECT and NOHARM. *Journal of Experimental Education, 84,* 398-420. Published online September 2, 2015. doi: 10.1080/00220973.2015.1048845.

35. Green, S. B., ψRedell, N., Thompson, M. S., & **Levy, R.** (2016). Accuracy of revised and traditional parallel analyses for assessing dimensionality with binary data. *Educational and Psychological Measurement, 76,* 5-21. Published online April 21, 2015. doi: 10.1177/0013164415581898.

34. **Levy, R.**, ψXu, Y., ψYel, N., & ψSvetina, D. (2015). A standardized generalized dimensionality discrepancy measure and a standardized model-based covariance for dimensionality assessment for multidimensional models. *Journal of Educational Measurement, 52,* 144-158. Published online June 2, 2015. doi:10.1111/jedm.12070.

33. Green, S. B., Thompson, M. S., & **Levy, R.**, & Lo, W.-J. (2015). Type I and II error rates and overall accuracy of the revised parallel analysis method for determining the number of factors. *Educational and Psychological Measurement, 75,* 428-457. Published online August 14, 2014. doi:10.1177/0013164414546566.

32. ψLiu, Y., West, S. G., **Levy, R.**, & Aiken, L. S. (2015). Abstract: Probing interactions in multiple regression: Frequentist versus Bayesian approaches. *Multivariate Behavioral Research, 50*, 139. Published online February 17, 2015. DOI: 10.1080/00273171.2014.989004

31. Gratz, K. L., Bardeen, J. R., **Levy, R.**, Dixon-Gordon, K. L., & Tull, M. T. (2015). Mechanisms of change in an emotion regulation group therapy for deliberate self-harm among women with borderline personality disorder. *Behaviour Research and Therapy, 65,* 29-35. Published online December 13, 2014. doi: 10.1016/j.brat.2014.12.005.

30. ψSvetina, D., & **Levy, R.** (2014). A framework for dimensionality assessment for multidimensional item response models. *Educational Assessment, 19,* 35-57. Published online February 20, 2014. doi: 10.1080/10627197.2014.869450.

29. Gratz, K. L., Tull, M. T., & **Levy, R.** (2014). 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, 44,* 2099-2112. Published online August 28, 2013. doi: 10.1017/S0033291713002134.

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

27. ψSvetina, D., ψCrawford, A. V., **Levy, R.**, Green, S. B., ψScott, L., Thompson, M. S., Gorin, J. S., ψFay, D., & ψKunze, K. L. (2013). Designing small-scale tests: A simulation study of parameter recovery with the 1-PL. *Psychological Test and Assessment Modeling, 55,* 335-360.

26. Rupp, A. A., **Levy, R.**, DiCerbo, K. E., Sweet, S., ψCrawford, A. V., Caliço, T., Benson, M., ψFay, D., ψKunze, 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. DOI: 10.5281/zenodo.3554643.

25. 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. DOI: 10.5281/zenodo.3554641.

24. Green, S. B., **Levy, R.**, Thompson, M. S., ψLu, 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.

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

22. 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.

21. **Levy, R.** (2011). Bayesian data-model fit assessment for structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 18,* 663-685.

20. **Levy, R.**, & ψSvetina, 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.

19. **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.

18. **Levy, R.** (2011). Posterior predictive model checking for conjunctive multidimensionality in item response theory. *Journal of Educational and Behavioral Statistics, 36,* 672-694.

17. 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.

16. Okun, M. A., Rios, R., ψCrawford, 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.

15. Wodrich, D. L., Jarrar, R., Buchhalter, J., **Levy, R.**, & ψGay, C. (2011). Knowledge about epilepsy and confidence in instructing students with epilepsy: Teachers' responses to a new scale. *Epilespy & Behavior, 20,* 360-365.

14. **Levy, R.** (2010). SEMModComp: An R package for calculating likelihood ratio tests for mean and covariance structure models. *Applied Psychological Measurement, 34,* 370-371.

13. ψCrawford, A. V., Green, S. B., **Levy, R.**, ψLo, W. J., ψScott, L., ψSvetina, 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.

12. 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.

11. 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.

10. ψLong, L. A., Wodrich, D. L., **Levy, R.**, Etzl, M. M., & Gieseking, 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.

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

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

7. **Levy, R.** (2009). Evidentiary reasoning in diagnostic classification models. *Measurement: Interdisciplinary Research and Perspectives, 6,* 36-41. DOI: 10.1080/15366360802504773.

6. **Levy, R.**, & ψCrawford, A. V. (2009). Incorporating substantive knowledge into regression via a Bayesian approach to modeling. *Multiple Linear Regression Viewpoints, 35,* 4-9.

5. 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.

4. Bornovalova, M. A., Ouimette, P., ψCrawford, 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.

3. **Levy, R.**, & Hancock, G. R. (2007). A framework of statistical tests for comparing mean and covariance structure models. *Multivariate Behavioral Research, 42,* 33-66. DOI: 10.1080/00273170701329112.

2. **Levy, R.**, & Mislevy, R. J (2004). Specifying and refining a measurement model for a computer-based interactive assessment. *International Journal of Testing, 4,* 333-369. DOI: 10.1207/s15327574ijt0404_3.

1. Behrens, J. T, Mislevy, 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. DOI: 10.1207/s15327574ijt0404_1.

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

15. **Levy, R.** (2021). Psychometric principles, opportunities and associated challenges in simulation- and game-based assessment through the lens of a four-space framework of task-design. In H.F. O'Neil, E.L. Baker, R.S. Perez, & S.E. Watson (Eds.). *Theoretical issues of using simulations and games in educational assessment: Applications in school and workplace contexts* (pp. 226–250). London: Routledge.

14. **Levy, R.**, & Mislevy, R. J. (2021). A history of Bayesian inference in educational measurement. In B.E. Clauser & M.B. Bunch (Eds.). *History of educational measurement in the United States* (pp. 292-317). London: Routledge.

13. Miočević, M., **Levy, R.**, & ψSavord, A. (2020). The role of exchangeability in sequential updating of findings from small studies and the challenges of identifying exchangeable data sets. In R. Van de Schoot & M. Miočević (Eds.), *Small sample size solutions: A guide for applied researchers and practitioners* (pp. 13-29). London: Routledge.

12. Miočević, M., **Levy, R.**, & van de Schoot, R. (2020). Introduction to Bayesian statistics. In R. Van de Schoot & M. Miočević (Eds.), *Small sample size solutions: A guide for applied researchers and practitioners* (pp. 3-12). London: Routledge.

11. González-Brenes, J., Behrens, J. T., Mislevy, R. J., **Levy, R.**, & DiCerbo, K. E. (2016). Bayesian networks. In A.A. Rupp and J.P. Leighton (Eds.), *Handbook of cognition and assessment* (pp. 328-353). Hoboken, NJ: John Wiley & Sons, Inc.

10. **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.

9. Behrens, J. T., DiCerbo, K. E., 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.

8. Behrens, J. T., Mislevy, 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.

7. West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., **Levy, R.**, DiCerbo, K. E., 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.

6. **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.

5. 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.

4. 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.

3. 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: Psychometrics* (pp. 839-865). Amsterdam: North-Holland/Elsevier.

2. **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.

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Levy, R., Behrens, J. T., & Mislevy, R. J. (2023). An extended taxonomy of variants of computerized adaptive testing. *Journal of Computerized Adaptive Testing*, *10*(1), 1–21. https://doi.org/10.7333/2302-100101.

1. 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

9. Arcuria, P., **Levy, R.**, & Borst, C. (2019). *Moving beyond grades: Using Bayesian networks to estimate student learning related to course learning objectives*.

8. **Levy, R.** (2014). *Dynamic Bayesian network modeling of game based diagnostic assessments*. (CRESST Report 837). 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/R837.pdf.

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

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

5. 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.

4. West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., Choi, Y., **Levy, R.**, [ψ]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.

3. 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.

2. 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.

1. **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

3. **Levy, R.** (2025). muppet: Measurement and Uncertainty Preserving ParamETric (MUPPET) modeling. R package version 0.1.4, https://roy-levy.github.io/muppet_pub/.

2. **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.

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

Refereed Presentations (ψ indicates co-author was an ASU student or postdoc during part or all of the work)

70. $^{\psi}$Steinberg, H., & **Levy, R.** (2026). Acknowledging uncertainty in reliability when fitting regression models. Poster to be presented at the Modern Modeling Methods Conference, New York, NY, June, 2026.

69. $^{\psi}$Cahill, K. M., García Mesa, J. J., **Levy, R.**, & Updegraff, K. A. (2026, April 15 - 18). Accelerating quantitative methodology using high performance computing in developmental science research. [Poster presentation]. Society for Research on Adolescence 2026 Biennial Meeting, Toronto, Canada.

68. $^{\psi}$Cahill, K. M., Updegraff, K. A., **Levy, R.**, White, R. M. B., Causadias, J. M., Padilla, J., & Umaña-Taylor, A. J (2026, April 15 - 18). Perspectives of Parent-Adolescent Conflict and Mexican-origin Adolescents' Educational Adjustment. In L., Williams (Chair), *Understanding Black and Mexican-Origin Parental Involvement for Youth Educational Outcomes: Multi-Methodological Approaches.* [Symposium presentation]. Society for Research on Adolescence 2026 Biennial Meeting, Toronto, Canada.

67. $^{\psi}$Cahill, K. M., & **Levy, R.** (2025, May). Bayesian IRT data visualization approaches for prevention research [Poster presentation]. Annual Meeting of the Society for Prevention Research, Seattle, Washington.

66. ᴪCahill, K. M., Doane, L. D., **Levy, R.**, & Gonzales, N. A. (2025, May). Latino/a/x adolescents contextual sources of funds of knowledge [Poster presentation]. Biennial meeting of the Society for Research in Child Development, Minneapolis, Minnesota.

65. Alt, M., Gray, S., **Levy, R.**, Hogan, T., & Cowan, N. (2024, July). Word learning models for children: Invariance for Spanish-English bilinguals? Talk as part of the: Associations and dissociations between phonological and semantic aspects of word learning seminar at the XVIth International Congress for the Study of Child Language (IASCL), Prague, Czech Republic.

64. **Levy, R.** (2023). Precluding interpretational confounding in factor analysis via measurement and uncertainty preserving parametric modeling. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL, April, 2023.

63. **Levy, R.**, & Mislevy, R. J. (2023). A history of Bayesian inference in educational measurement. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL, April, 2023.

62. ᴪCahill, K. M., Updegraff, K. A., McHale, S., Umaña-Taylor, A. J, Feinberg, M., & **Levy, R.** (2023). Parenting of siblings in Latinx families during middle childhood. Poster presented at the Biennial meeting of the Society of Research in Child Development, Salt Lake City, Utah, March, 2023.

61. Korous, K. M., Bradley, R. H., Luthar, S. S., **Levy, R.**, ᴪCahill, K. M., Li, L., & Rogers, C. R. (2022). Range restriction and measurement moderate the correlation between socioeconomic status and depressive symptoms. Poster presented at the 43rd Annual Meeting & Scientific Sessions of the Society of Behavioral Medicine, Baltimore, MD.

60. Gray, S., **Levy, R.**, Alt, M. Hogan, T, and Cowan, N. (2021). Working memory predicts new word learning over and above existing vocabulary and nonverbal IQ. Paper presented at the Symposium on Research in Child Language Disorders, Madison, WI, June, 2021.

59. **Levy, R.** (2021). A Bayesian approach to factor scores. Paper presented at the annual meeting of the American Educational Research Association, online, April, 2021.

58. **Levy, R.**, & Mislevy, R. J. (2020). Psychometrics and process data. Paper presentated at the annual meeting of the National Council on Measurement in Education, San Francisco, CA, April, 2020. Paper presented at the National Council on Measurement in Education online session, August, 2020.

57. **Levy, R.**, ᴪXia, Y., & Green, S. B. (2020). Incorporating uncertainty into parallel analysis for choosing the number of factors via Bayesian methods. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA, April, 2020. [Conference canceled]

56. Gray, S., ᵠLancaster, H., Alt, M., Hogan, T., **Levy, R.**, & Cowan, N. (2019). The structure of word learning in young school-age children. Paper presented at the American Speech-Language-Hearing Association Annual Convention, Orlando, FL, November, 2019.

55. Arcuria, P., **Levy, R.**, & Borst, C. (2019). Moving beyond grades: Using Bayesian networks to estimate student learning related to course learning objectives. A pilot study. Presented at the 2019 ASU Data Conference, Tempe, AZ, November, 2019.

54. Miočević, M., **Levy, R.**, & Smid, S. (2018). Inaccurate priors in simulation studies: The impact of simulation study design choices when examining statistical properties of Bayesian methods with inaccurate prior distributions. Presented at the European Congress of Methodology, Jena, Germany, July, 2018.

53. Miočević, M., & **Levy, R.** (2018). Operationalizations of inaccuracy of prior distributions in simulation studies: Implications for recommendations made for applied researchers. Paper presented at the Modern Modeling Methods Conference, Storrs, CT, May, 2018.

52. **Levy, R.** (2018). Psychometric principles, opportunities, and associated challenges for simulation-based assessment. Paper presented at the annual meeting of the American Educational Research Association, New York, NY, April, 2018.

51. ᵠYel, N., **Levy, R.**, Elliott, S. N., Schulte, A. C., & Iida, M. (2018). Determining appropriate sample sizes and their effects on key parameters in longitudinal three-level models. Paper presented at the annual meeting of the American Educational Research Association, New York, NY, April, 2018.

50. **Levy, R.** (2017). Distinguishing outcomes from indicators via Bayesian modeling. Paper presented at the annual meeting of the American Educational Research Association, San Antonio, TX, April, 2017.

49. ᵠArista, L. E. J., **Levy, R.**, & Tracey, T. J. G. (2016). Patterns of symptomatology change using brief measures and their predictive power for final outcome. Poster presented at the annual convention of the American Psychological Association, Denver, CO, August, 2016.

48. ᵠMiočević, M., **Levy, R.**, & MacKinnon, D. P. (2016). Priors for Monte Carlo studies of Bayesian mediation models with latent variables. Poster presented at the International Society for Bayesian Analysis meeting, Sardinia, Italy, June, 2016.

47. ᵠMiočević, M., MacKinnon, D. P., & **Levy, R.** (2016). Bayesian mediation analysis with latent variables in the Bayesian SEM framework. Poster presented at the Modern Modeling Methods conference, Storrs, CT, May, 2016.

46. ᵠXu, Y., **Levy, R.**, DiCerbo, K. E., Lai, E., & Holland, L. (2016). Developing Bayes nets for modeling student cognition in digital and nondigital assessment environments. Poster presented at the annual meeting of the American Educational Research Association, Washington, DC, April, 2016.

45. Bradshaw, L., & **Levy, R.** (2016). Interpreting examinee results from classification-based models. Paper presented at the annual meeting of the National Council on Measurement in Education, Washington, DC, April, 2016.

44. Ψ Miočević, M., MacKinnon, D. P., & **Levy, R.** (2015). Longitudinal mediation models using ML and Bayesian estimation. Poster presented at the 11th International Workshop on Objective Bayes Methodology O-Bayes15, Valencia, Spain, June, 2015

43. Ψ Kunze, K. L., Mehta, V., & **Levy, R.** (2015). Leveraging psychometric isomorphism in assessment development. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL, April 2015.

42. Ψ Yel, N., **Levy, R.**, Ψ Liu, Y., & Schulte, A. C. (2015). Assessing school level performance with differing data points in cohorts. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL, April 2015.

41. Ψ Liu, Y., **Levy, R.**, Ψ Yel, N., & Schulte, A. C. (2015). Evaluating schools with respect to growth of students in subpopulations. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL, April 2015.

40. Ψ Liu, Y., **Levy, R.**, & West, S. G. (2014). Probing interactions in multiple regression: Frequentist versus Bayesian approaches. Poster presented at the 2014 Joint Statistical Meetings, Boston, MA, August, 2014.

39. West, S. G., Ψ Liu, Y., & **Levy, R.** (2014). Testing simple slopes following significant interactions: The Aiken and West (1991) procedure and a Bayesian alternative. Presented at the VI European Congress of Methodology, Utrecht, The Netherlands, July, 2014.

38. Green, S. B., Lai, K., **Levy, R.**, Ψ Xu, Y., Ψ Yel, N., Thompson, M. S., Eggum-Wilkens, N. D., Ψ Kunze, K. L., Iida, M., & Ψ Reichenberg, R. (2014). Assessing model similarity in structural equation modeling. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA, April, 2014.

37. Ψ Fay, D., **Levy, R.**, Frezzo, D., Willis, T., Mehta, V., Angus, D., Benson, M., & Reid, A. (2014). Investigating psychometric isomorphism for traditional and performance-based assessment. Paper presented at the annual meeting of the National Council on Measurement in Education, Philadelphia, PA, April 2014.

36. Ψ Xu, Y., DiCerbo, K. E., & **Levy, R.** (2014). Modeling log data from an online game using exploratory approaches. Paper presented at the annual meeting of the National Council on Measurement in Education, Philadelphia, PA, April 2014.

35. Green, S. B., Thompson, M. S., **Levy, R.**, & Ψ 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, CA, May, 2013.

34. ᴪYel, N., ᴪXu, 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, CA, April, 2013.

33. ᴪKunze, K. L., ᴪFay, D. M., ᴪCrawford, 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, CA, 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

32. ᴪFay, D. M., ᴪCrawford, A. V., ᴪKunze, 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, CA, April, 2013.

31. ᴪSvetina, 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.

30. 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.

29. ᴪFay, D., ᴪKunze, K. L., ᴪCrawford, 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.

28. Sweet, S. J., ᴪCrawford, A. V., ᴪFay, D., ᴪKunze, 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.

27. 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.

26. **Levy, R.**, ᴪCrawford, A. V., ᴪFay, D., & ᴪPoole, 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.

25. Green, S. B., **Levy, R.**, Thompson, M. S., ᴪLu, M., Lo, W. J., ᴪSvetina, D., ᴪCrawford, A. V., & ᴪScott, 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.

24. **Levy, R.**, & ψSvetina, 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.

23. **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.

22. 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 14th International Conference on Artificial Intelligence in Education, Brighton, England, July, 2009.

21. West, P., Rutstein, D. W., Mislevy, R. J., Liu, J., **Levy, R.**, DiCerbo, K. E., ψCrawford, 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.

20. **Levy, R.**, & ψSevtina, 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.

19. **Levy, R.**, & ψCrawford, 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.

18. ψCrawford, A. V., Green, S. B., **Levy, R.**, ψLo, W. J., ψScott, L., ψSvetina, 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.

17. **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.

16. **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.

15. **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.

14. Bornovalova, 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 40th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL, November, 2006.

13. Bornovalova, 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 20th annual meeting for Society for Research in Psychopathology, San Diego, CA, October, 2006.

12. **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.

11. **Levy, R.**, Mislevy, 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.

10. **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.

9. 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.

8. 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.

7. **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.

6. **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.

5. Mislevy, 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.

4. 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.

3. **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.

2. **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.

1. **Levy, R.**, & Mislevy, 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

36. Gray, S., Alt, M., **Levy, R.**, Hogan, T., & Cowan, N. (2024). Structure and Growth of Working Memory in Young Children in the US. Presented at the 4th International Conference on Working Memory 2024, Leeds University, UK, June 2024.

35. **Levy, R.** (2023). Precluding interpretational confounding via measurement and uncertainty preserving parametric modeling. Presented at the Human Development and Family Studies department, Pennsylvania State University, December, 2023.

34. **Levy, R.** (2023). Why Bayes for Measurement? Presented at the Advanced Psychometric Methods for Cognitive Aging Research conference, Tahoe City, CA, August, 2023.

33. **Levy, R.** (2023). Why (and What is) Bayesian Inference? Presented at the Advanced Psychometric Methods for Cognitive Aging Research conference, Tahoe City, CA, August, 2023.

32. **Levy, R.** (2021). Implications of considering response process data for greater and lesser psychometrics. Presented at the Cluster of Global Evidence in Education, Indiana University, March, 2021.

31. **Levy, R.** (2020). Distinguishing outcomes from indicators via Bayesian modeling. Presented at the Department of Psychology, University of Southern California, Los Angeles, CA, March, 2020.

30. **Levy, R.** (2020). Distinguishing outcomes from indicators: A personal journey in answering the panicked question "Wait, what do you mean the loadings changed?!?" Presented at the Department of Psychology, Arizona State University, Tempe, AZ, February, 2020.

29. **Levy, R.** (2018). Challenges, issues, and opportunities in integrating process data with psychometrics. Presented at the annual meeting of the National Council on Measurement in Education, New York, NY, April 2018.

28. **Levy, R.** (2017). Dynamic Bayesian network modeling of game-based diagnostic assessment. Presented at the School of Mathematical and Statistical Sciences, Arizona State University, Tempe, AZ, November 2017.

27. **Levy, R.** (2016). Distinguishing outcomes from indicators: *Or, How to answer: "Wait, what do you mean my loadings changed?!?"* Presented at the Center for Research Methods and Data Analysis, University of Kansas, Lawrence, KS, September, 2016.

26. **Levy, R.** (2016). Developing Bayes nets for modeling student cognition in digital and nondigital assessment environments. Presented at the 2016 CRESST Conference: Prove It, Los Angeles, CA, September, 2016.

25. **Levy, R.** (2014). Dynamic Bayesian network modeling of game based diagnostic assessment. Presented at the 2014 CRESST Conference: Warp Speed, Mr. Sulu: Integrating Games, Technology, and Assessment to Accelerate Learning in the 21st Century, Redondo Beach, CA, April, 2014.

24. **Levy, R.** (2014). Bayesian procedures for evaluating dimensionality assumptions in multidimensional psychometric models. Presented at the annual meeting of the National Council on Measurement in Education, Philadelphia, PA, April 2014.

23. **Levy, R.** (2013). An introduction to Bayesian statistical modeling, or: A short list of reasons I am a Bayesian and you might be too. Presented at the Dunspaugh-Dalton Community & Educational Well-Being Research Center, University of Miami, Coral Gables, November, 2013.

22. **Levy, R.** (2013). An introduction to Bayesian statistical modeling, or: A short list of reasons I am a Bayesian and you might be too. Presented at the Institute of Education Sciences, Washington, D.C., June, 2013.

21. **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.

20. **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.

19. **Levy, R.** (2012). Generalized dimensionality assessment for multidimensional psychometric models. Presented at ETS, Princeton, NJ, January 2012.

18. **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.

17. **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.

16. **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.

15. **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.

14. **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.

13. **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.

12. **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.

11. **Levy, R.** (2007). A model comparison framework for structural equation modeling. Presented at the Department of Management, Arizona State University, Tempe, AZ, March 2007.

10. **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.

9. 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.

8. **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.

7. **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.

6. **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.

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

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

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

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

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

Media & Non-Traditional Outlets

2. **Levy, R.** (Guest). (2020, September 15). *Bayesian wake up call* [Audio podcast]. Hosted and produced by G. R. Hancock & P. J. Curran. Retrieved from https://quantitudepod.org/listen/

1. **Levy, R.** (2020, September 4). Mindful measurement and COVID-19. *Mindful Measurement*. https://www.mindfulmeasurement.com/blog/akvhnquoh0zz7ql5lrfku537udhak2

SPONSORED RESEARCH PROJECTS

Principal Investigator

Data Analytic and Psychometric Methods for Innovative Educational Systems	Pearson 2012-2015
Hierarchical and Bayesian Analyses for Large Scale Complex Data	Cisco 2009-2015
Psychometrics for Gaming and Simulation-Based Assessment	National Center for Research on Evaluation, Standards, Student Testing 2011-2013
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	Arizona State University

Multidimensional Item Response Theory 2007-2008

Co-Principal Investigator

Modeling Student Learning: Prototype & Pilot EdPlus Action Lab
PI: Phil Arcuria, Arizona State University Arizona State University
2019

Developing Guidelines for Optimizing Levels of Students' Overt Engagement Activities Institute of Education Sciences
2011-2014
PI: Michelene Chi, Arizona State University

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

Co-Investigator

Profiles of Working Memory for Educational Research National Institutes of Health
PI: Shelley Gray, Arizona State University 2018-2023

Model-based Multiple Imputation for Multilevel Data: Methodological Extensions and Software Enhancements Institute of Education Sciences
2019-2022
PI: Craig Enders, University of California, Los Angeles

Multiple Imputation Procedures for Multilevel Data Institute of Education Sciences
PI: Craig Enders, University of California, Los Angeles 2015-2018

National Research and Development Center on Assessment and Accountability for Special Education Institute of Education Sciences
2011-2016
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

PISA 2025 Innovative Domain, Learning in the Digital World Organisation for Economic Co-operation and Development
2023-2025

Validating the Use of Growth measures from Statewide Standards-based Summative Assessments for Students with Disabilities Institute of Education Sciences
2012-2014
PI: Heather Buzick, ETS

Developing an Emotion Regulation Group Therapy for Self-Harm Among Women with BPD — National Institutes of Health, 2008-2011
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, 2007-2011
PI: Edys Quellmalz, WestED

VentureMap — US Department of Education, 2006
PI: Douglas Weihnacht, MW Productions, Inc.

Research & Training Group Affiliations (in addition to those above, not being supported)

Research Training in Primary Prevention — Department of Psychology, Arizona State University, 2024-present
Directors: Nancy Gonzales, Cady Berkel, Arizona State University

Promoting Knowledgeable and Confident Teachers of Youth with Epilepsy — Epilepsy Foundation of America, 2009-2012
PI: David Wodrich, Arizona State University

21st 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

SERVICE

Professional Service

Member, Programme for International Student Assessment (PISA) Technical Advisory Group, Organization for Economic Co-operation and Development — 2026-present

Member, American Institute of Certified Public Accountants Psychometric Oversight Committee — 2026-present

Member, Curriculum Associates' Dynamic Measurement Advisory Committee	2025-present
Editorial Board, *Journal of Educational and Behavioral Statistics*	2021-present
Editorial Board, *Structural Equation Modeling: A Multidisciplinary Journal*	2018-present
Editorial Board, *Measurement: Interdisciplinary Research and Perspectives*	2017-present
Editorial Board, *Educational Measurement: Issues and Practice*	2013-present
Editorial Board, *Educational Assessment*	2011-present
Editorial Board, *National Council on Measurement in Education Book Series*	2022-present
Member, APA Division 5 Awards Committee	2025-2026
Member, ETS Global Higher Education Research Technical Advisory Committee	2023-2024
Member, Organizing Committee for the Advanced Psychometric Methods for Cognitive Aging Research Conference	2022-2023
Member, American Educational Research Association Division D Committee on Equity & Inclusion, Learning & Action Supporting Black Lives	2020-2023
Associate Editor, *Journal of Educational Measurement*	2013-2016
Editorial Board, *Journal of Applied School Psychology*	2009-2013
Editorial Board, *Journal of 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 Structural Equation Modeling Special Interest Group	2007-2008
Ad hoc Reviewer (Journals, Funding Agencies, Professional Organizations, Publishers)	2003-present

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

Co-Chair, Tenure-Track Personnel Committee 2024-present
T. Denny Sanford School of Social and Family Dynamics

Member, SSFD Quantitative Methodology (formerly Measurement & Statistical Analysis) Group 2010-present
T. Denny Sanford School of Social and Family Dynamics

Member, Search Committee 2026
Department of Psychology

Member, Tenure-Track Probabationary Review (3rd Year) Committee 2025
Department of Psychology

Member, Career-Track Personnel Committee 2024
T. Denny Sanford School of Social and Family Dynamics

Area Head, Quantitative Research Methods 2023-2024
Department of Psychology

Member, Family & Human Development Search Committee 2022-2023
T. Denny Sanford School of Social and Family Dynamics

Member, Family & Human Development Program Committee 2022-2023
T. Denny Sanford School of Social and Family Dynamics

Member, ASU Psych for All Psi Chi SciTech Chief Science Officer DEIB Program (APPS Program) 2022
Department of Psychology

Member, Personnel Committee 2020-2021
T. Denny Sanford School of Social and Family Dynamics

Coordinator, SSFD Methodology (formerly Measurement & Statistical Analysis) Group 2019-2021
T. Denny Sanford School of Social and Family Dynamics

Associate Director, T. Denny Sanford School of Social and Family Dynamics 2020

Chair, Measurement and Statistical Analysis Postdoc Search Committee 2019-2020
T. Denny Sanford School of Social and Family Dynamics

Member, SSFD Measurement & Statistical Analysis 2010-2019

T. Denny Sanford School of Social and Family Dynamics

Member, Personnel Committee 2015-2019
T. Denny Sanford School of Social and Family Dynamics

Member, Data Science Degree Committee 2017-2018
College of Liberal Arts and Sciences

Member, Quantitative Sociology Search Committee 2017-2018
T. Denny Sanford School of Social and Family Dynamics

Chair, Measurement and Statistical Analysis Postdoc Search Committee 2015-2016
T. Denny Sanford School of Social and Family Dynamics

Member, Research Advisory Committee 2015-2016
College of Liberal Arts and Sciences

Member, Family and Human Development Graduate Committee 2011-2013
T. Denny Sanford School of Social and Family Dynamics

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

Advisor on the curriculum in in Learning, Literacies and Technologies Ph.D. program 2012
Mary Lou Fulton Teachers College

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 2008-2009
Division of Psychology in Education

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

Institutional Service at University of Maryland

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

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

HONORS & MEMBERSHIPS

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 in Philosophy	Department of Philosophy, University of Maryland	2001

Professional Memberships

Psychometric Society

National Council on Measurement in Education

American Educational Research Association

American Psychological Association

International Society for Bayesian Analysis

Society of Multivariate Experimental Psychology