

# CONDENSED VITA

ROBERT MCKINLEY

rmckinley@ku.edu

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## EDUCATIONAL EXPERIENCE

1977 BA, Political Science, University of Missouri, 1977.  
1983 PhD, Educational Psychology, emphasis on Measurement, Statistics, and Computer Science, University of Missouri, 1983.

## PROFESSIONAL EXPERIENCE

### **Work**

2009-Present Senior Psychometrician, University of Kansas, CETE  
2008-2009 Proprietor, Tamabilt Software Solutions.  
2004-2008 Director, Computer-Based Testing, ACT, Inc.  
2001-2004 Group Leader, GPE Operations, ETS  
1998-2001 Group Leader, Technology and Data Analysis, ETS  
1993-1998 Independent Consultant  
1992-1993 Director, Research, Law School Admissions Council  
1986-1992 Senior Measurement Statistician, ETS  
1984-1986 Assistant Professor, Research Design and Statistics, University of Toledo

### **Research**

Development of statistical procedures for GRE computerized testing: Item and test analyses. Funded 1991-94, GRE Board. On-line pretesting. Funded 1991-94, GRE Board.  
Development of a computerized adaptive test for the GRE General Test. Funded 1989-91, GRE Board.  
The development of procedures for resolving irregularities in the administration of the Listening Comprehension section of TOEFL. Funded 1988-89, TOEFL Policy Council.  
The effect of differences in examinee ability distributions on IRT single and multiple part equating of the GRE Subject Test in Mathematics. Funded 1988-89, GRE Board.  
Topic and topic type comparability on the Test of Written English. Funded 1988-90, TOEFL Policy Council.  
Use of the TPAI for the evaluation of student teachers. Funded 1985-86. University of Toledo.  
The relationship between PPST scores and course performance among teacher education students. Funded 1985-86, University of Toledo.  
Item response theory goodness of fit. Funded 1983, Louisiana Department of Education.  
The use of tailored testing with instructional programs. Funded 1982-85, Office of Naval Research.

## SELECTED PUBLICATIONS

### **Journal Articles and Books**

McKinley, Robert L. (1989). An introduction to item response theory. *Measurement and Evaluation in Counseling and Development*, 22, 37-57.  
McKinley, Robert L. (1988). A comparison of six methods for combining multiple IRT item parameter estimates. *Journal of Educational Measurement*, 25, 233-246.  
McKinley, Robert L. (1987). Review of: *Essentials of Educational Measurement*, 4th edition. *Journal of Educational Measurement*, 24, 182-184.  
McKinley, Robert L. (1986). MARGIE: Marginal maximum likelihood estimation of the parameters of the one-, two-, and three-parameter logistic models. *Behavior Research Methods, Instruments, & Computers*, 17, 513-515.  
McKinley, Robert L., & Mills, Craig N., (1989). Item response theory: Advances in achievement and attitude measurement. In B. Thompson (Ed.), *Advances in social science methodology*. Greenwich, CT: Jai Press.

- McKinley, Robert L., & Mills, Craig N., (1985). A comparison of several goodness of fit statistics. *Applied Psychological Measurement*, 9, 49-57.
- McKinley, Robert L., & Reckase, Mark D. (1983). MAXLOG: A computer program for estimating the parameters of a multidimensional extension of the two-parameter logistic model. *Behavior Research Methods and Instrumentation*, 15, 389-390.
- McKinley, Robert L., & Reckase, Mark D. (1980). Computer applications to ability testing. *AEDS Journal*, 13, 193-203.
- Reckase, Mark D., & McKinley, Robert L. (1991). The discriminating power of items that measure more than one dimension. *Applied Psychological Measurement*, 15, 361-373.
- Reckase, Mark D., & McKinley, Robert L. (1985). Some latent trait theory in a multidimensional latent space. In D. J. Weiss (Ed.), *Proceedings of the 1982 item response theory and computerized adaptive testing conference*. Minneapolis: University of Minnesota.

### **Research Reports**

- Fennessy, Lynda, & McKinley, Robert L. (1991). Analysis of the effect of the randomized item selection technique on the accuracy of the  $\theta$  and number-right estimation for the GRE computer adaptive test (RR 91-90). Princeton: Educational Testing Service.
- McKinley, Robert (1993). Summary of self-reported methods of test preparation by LSAT takers for 1990-1991 testing year (SR93-02). Newtown, PA: Law School Admission Council/Law School Admission Services.
- McKinley, Robert L. (1989). Confirmatory analysis of test structure using multidimensional item response theory (RR 89-31). Princeton: Educational Testing Service.
- McKinley, Robert L., & Kingston, Neal M. (1987). Exploring the use of IRT equating for the GRE Subject Test in Mathematics (RR 87-21). Princeton: Educational Testing Service.
- McKinley, Robert L., & Reckase, Mark D. (1984). A latent trait model for use with sequentially arranged units of instruction (RR ONR84-2). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1984). An investigation of the effect of correlated abilities on observed test characteristics (RR ONR84-1). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1983). An application of a multidimensional extension of the two-parameter logistic latent trait model (RR ONR83-3). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1983). An extension of the two-parameter logistic model to the multidimensional latent space (RR ONR83-2). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1983). An evaluation of one- and three-parameter logistic tailored testing procedures for use with small item pools (RR ONR83-1). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1982). The use of the general Rasch model with multidimensional item response data (RR ONR82-1). Iowa City: American College Testing Program.
- McKinley, Robert L., & Reckase, Mark D. (1981). A comparison of procedures for constructing large item pools (RR 81-3). Columbia, MO: University of Missouri-Columbia, Tailored Testing Research Laboratory.
- McKinley, Robert L., & Reckase, Mark D. (1981). A comparison of a Bayesian and a maximum likelihood tailored testing procedure (RR No. 81-2). Columbia, MO: University of Missouri-Columbia, Tailored Testing Research Laboratory.
- McKinley, Robert L., & Reckase, Mark D. (1980). A comparison of the ANCILLES and LOGIST parameter estimation procedures for the three-parameter logistic model using goodness of fit as a criterion (RR 80-2). Columbia, MO: University of Missouri-Columbia, Tailored Testing Research Laboratory.

- McKinley, Robert L., & Reckase, Mark D. (1980). A successful application of latent trait theory to tailored achievement testing (RR No. 80-1). Columbia, MO: University of Missouri-Columbia, Tailored Testing Research Laboratory.
- McKinley, Robert L., & Schaeffer, Gary A. (1989). Reducing test form overlap of the GRE Subject Test in Mathematics using IRT triple-part equating (RR 89-08). Princeton: Educational Testing Service.
- McKinley, Robert L., & Way, Walter D. (1992). The feasibility of modeling secondary TOEFL ability dimensions using multidimensional IRT models (RR 92-16). Princeton: Educational Testing Service.
- Reckase, Mark D., & McKinley, Robert L. (1982). The validation of learning hierarchies (RR ONR82-2). Iowa City: American College Testing Program.
- Reese, Lynda, & McKinley, Robert (1993). The effect of COMC on the stability of LSAT item parameter estimates (SR93-01). Newtown, PA: Law School Admission Council/Law School Admission Services.
- Schaeffer, Gary A., Reese, Clyde M., Steffen, Manfred, McKinley, Robert L., & Mills, Craig N. (1993). Field test of a computer-based GRE General Test (RR 93-07). Princeton: Educational Testing Service.
- Way, Walter D., & McKinley, Robert L. (1992). Development of procedures for resolving irregularities in the administration of the Listening Comprehension section of the TOEFL test (RR 91-6). Princeton: Educational Testing Service.

### **Presentations and Papers**

- Davey, Tim, Stone, Elizabeth, & McKinley, Rob (2003). Robust estimation of IRT item parameters. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.
- Broch, E., & McKinley, Robert L. (1991). An evaluation of item pool calibration sample size requirements for computerized adaptive testing for the NTE successor stage I test. Paper presented at the Annual Meeting of the National Council on Measurement in Education, Chicago.
- Kingston, Neal M., & McKinley, Robert L. (1988). Assessing the structure of the GRE General Test using confirmatory multidimensional item response theory. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.
- McKinley, Robert L. (1988). Assessing dimensionality using confirmatory multidimensional IRT. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.
- McKinley, Robert L. (1983). A multidimensional extension of the two-parameter logistic latent trait model. Paper presented at the Annual Meeting of the National Council on Measurement in Education, Montreal.
- McKinley, Robert L. & Ackerman, Terry (1985). The effects of computer administration on item characteristics. Paper presented at the annual meeting of the American Educational Research Association, Chicago.
- McKinley, Robert L., & Kingston, Neal M. (1988). Confirmatory analysis of test structure using multidimensional IRT. Paper presented at the Annual Meeting of the National Council on Measurement in Education, New Orleans.
- McKinley, Robert L., & Mills, Craig N., (1985). Detecting multidimensionality using a test of local independence. Paper presented at the Annual Meeting of the National Council on Measurement in Education, Chicago.
- McKinley, Robert L., & Mills, Craig N. (1984). The use of analysis of residuals to assess the unidimensionality of data. Paper presented at the Annual Meeting of Psychometric Society, Santa Barbara.
- McKinley, Robert L., & Reckase, Mark D. (1984). Implementing an adaptive testing program in an instructional programs environment. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.

- McKinley, Robert L., & Reckase, Mark D. (1984). A latent trait model for use with sequentially arranged units of instruction. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.
- McKinley, Robert L., & Reckase, Mark D. (1984). An evaluation of one- and three-parameter logistic tailored testing procedures for use with small item pools. Paper presented at the Annual Meeting of the National Council on Measurement in Education, New Orleans.
- McKinley, Robert L., & Reckase, Mark D. (1983). The use of IRT analysis on dichotomous data from multidimensional tests. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal.
- McKinley, Robert L., & Reckase, Mark D. (1982). Multidimensional latent trait models. Paper presented at the National Council on Measurement in Education, New York.
- McKinley, Robert L., Savage, Patricia A. & Secolsky, Charles (1988). The effects of changes in the item Parameters of equating items on the IRT scaling process. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.
- Mills, Craig N., & McKinley, Robert L. (1984). An investigation of the adequacy of several goodness of fit statistics. Paper presented at the Annual Meeting of the National Council on Measurement in Education, New Orleans.
- Reckase, Mark D. & McKinley, Robert L. (1984). The use of adaptive testing for instructional programs. Paper presented at the annual meeting of the American Psychological Association, Toronto.
- Reckase, Mark D., & McKinley, Robert L., (1984). Multidimensional difficulty as a direction and a distance. Paper presented at the Annual Meeting of Psychometric Society, Santa Barbara.
- Reckase, Mark D., & McKinley, Robert L. (1984). Item difficulty reconsidered: an IRT perspective. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans.
- Reckase, Mark D., & McKinley, Robert L. (1983). The definition of difficulty and discrimination for multidimensional item response theory models. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal.
- Reckase, Mark D., & McKinley, Robert L., (1983). The item difficulty concept generalized to the multidimensional latent space. Paper presented at the Annual Meeting of Psychometric Society, Los Angeles.
- Reckase, Mark D., & McKinley, Robert L., (1983). The definition of difficulty and discrimination for multidimensional latent trait models. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal.
- Reckase, Mark D., & McKinley, Robert L. (1982). The feasibility of a multidimensional latent trait model. Paper presented at the Annual Meeting of the American Psychological Association, Washington, DC.
- Schaeffer, Gary A., & McKinley, Robert L. (1988). Reducing test form overlap using IRT triple-part equating. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.
- Way, Walter D., Savage, Patricia A., & McKinley, Robert L. (1989). A comparison of a testlet-based computer mastery test with a paper-and-pencil mastery test. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco.
- Way, Walter D., Savage, Patricia A., & McKinley, Robert L. (1989). The score likelihood procedure: A method for evaluating the equivalency of mastery tests. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco.