

Types of Studies in  
*Structural Equation Modeling*

1994–2011

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# Types of studies in *Structural Equation Modeling* 1994–2011

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An overview is given of so-called original articles that have been published in the *Structural Equation Modeling* journal over the years 1994–2011, followed by a number of summarizing figures and tables. Each article is primarily categorized [in blue] regarding the type of data being used. The inventory was triggered by curiosity to explore the application of Monte Carlo studies in structural equation modeling research. The employed coding is shown in Table 1.

Multiple categorization has been applied. If an article uses both Monte Carlo data [MC] and empirical data [ED], for example, it is categorized as [MC,ED].

If some of our categorizations would be apparently wrong, or if other errors have been made in the overview, we would appreciate to be informed, so that the necessary corrections can be implemented. Our e-mail address is [a.boomsma@rug.nl](mailto:a.boomsma@rug.nl).

**Table 1.** Coding used to categorize articles.

<i>Code</i>	<i>Meaning</i>
AD	Analysis of artificial data, i.e., generated data, but not a Monte study; often single sample cases
AD(P)	Population study, i.e., analysis of self-selected population data
EM	Analysis of empirical data
EM(S)	Secondary analysis of empirical data collected by other researchers
EM(SS)	Analysis of a (sub)sample from an empirical data bank; often primarily collected by other researchers
MC	Monte Carlo study
MC(META)	Meta-modeling applied in a Monte Carlo study
TH	Theoretical study without analysis of empirical or artificial data
TH(R)	Theoretical study having a review character

**1994**

- Marsh, H.W. (1994). Confirmatory factor analysis models of factorial invariance: A multifaceted approach. 1(1), 5–34. [ED(SS)]
- Bagozzi, R.P., & Heatherton, T.F. (1994). A general approach to representing multifaceted personality constructs: Application to state self-esteem. 1(1), 35–67. [ED]
- Short, L.M., & Hennessy, M. (1994). Using structural equations to estimate effects of behavioral interventions. 1(1), 68–81. [AD]
- Heck, R.H., & Johnsrud, L.K. (1994). Workplace stratification in higher education administration: Proposing and testing a structural model. 1(1), 82–97. [ED]
- Gerbing, D.W., & Hamilton, J.G. (1994). The surprising viability of a simple alternate estimation procedure for construction of large-scale structural equation measurement models. 1(2), 103–115. [MC(META)]
- Marsh, H.W., & Grayson, D. (1994). Longitudinal confirmatory factor analysis: Common, time-specific, item-specific, and residual-error components of variance. 1(2), 116–145. [ED(S)]
- Thompson, K.N., & Getty, J.M. (1994). Structural model of relations among quality, satisfaction, and recommending behavior in lodging decisions. 1(2), 146–160. [ED]
- Williams, L.J., & Holahan, P.J. (1994). Parsimony-based fit indices for multiple-indicator models: Do they work? 1(2), 161–189. [MC]
- Benson, J., & El-Zahhar, N. (1994). Further refinement and validation of the revised test anxiety scale. 1(3), 203–221. [ED]
- Bagozzi, R.P. (1994). Effects of arousal on organization of positive and negative affect and cognitions: Application to attitude theory. 1(3), 222–252. [ED]
- Bullock, H.E., Harlow, L.L., & Mulaik, S.A. (1994). Causation issues in structural equation modeling research. 1(3), 253–267. [TH]
- Fraas, J.W., & Newman, I. (1994). A binomial test of model fit. 1(3), 268–273. [ED(S)]
- Brown, R.L. (1994). Efficacy of the indirect approach for estimating structural equation models with missing data: A comparison of five methods. 1(4), 287–316. [MC]
- Marsh, H.W., & Grayson, D. (1994). Longitudinal stability of latent means and individual differences: A unified approach. 1(4), 317–359. [ED(SS)]

Rotzien, A., Vacha-Haase, T., Murthy, K., Davenport, D., & Thompson, B. (1994). A confirmatory factor analysis of the Hendrick-Hendrick Love Attitudes Scale: We may not yet have an acceptable model. 1(4), 360–374. [ED]

**1995**

O'Brien, R.M., & Reilly, T. (1995). Equality in constraints and metric-setting measurement models. 2(1), 1–12. [AD]

Cadigan, N.G. (1995). Local influence in structural equation models. 2(1), 13–30. [ED(S)]

Hershberger, S.L., Corneal, S.E., & Molenaar, P.C.M. (1995). Dynamic factor analysis: An application to emotional response patterns underlying daughter/father and stepdaughter/stepfather relationships. 2(1), 31–52. [ED]

Shen, H., Bentler, P.M., & Comrey, A.L. (1995). A comparison of models of medical school student selection. 2(2), 93–100. [ED]

Kaplan, D., & George, R. (1995). A study of the power associated with testing factor mean differences under violations of factorial invariance. 2(2), 101–118. [AD(P)]

Ding, L., Velicer, W.F., & Harlow, L.L. (1995). Effects of estimation methods, number of indicators per factor, and improper solutions on structural equation modeling fit indices. 2(2), 119–143. [MC(META)]

Duncan, T.E., & Duncan, S.C. (1995). Modeling the processes of development via latent variable growth curve methodology. 2(3), 187–213. [ED]

Stevens, J.J. (1995). Confirmatory factor analysis of the Iowa Tests of Basic Skills. 2(3), 214–231. [ED]

Szeinbach, S.L., Barnes, J.H., & Summers, K.H. (1995). Comparison of a behavioral model of physicians' drug product choice decision with pharmacists' product choice recommendations: A study of the choice for the treatment of panic disorder. 2(3), 232–245. [ED]

Marsh, H.W. (1995).  $\Delta 2$  and  $\chi^2/df$  fit indices for structural equation models: A brief note of clarification. 2(3), 246–254. [TH]

Raykov, T., & Widaman, K.F. (1995). Issues in applied structural equation modeling research. 2(4), 289–318. [TH]

Wang, J., Fisher, J.H., Siegal, H.A., Falck, R.S., & Carlson, R.G. (1995). Influence of measurement errors on HIV risk behavior analysis: A case study examining condom use among drug users. 2(4), 319–334. [ED]

Stankov, L., & Raykov, T. (1995). Modeling complexity and difficulty in measures of fluid intelligence. 2(4), 335–366. [ED]

## 1996

Wright, B.D. (1996). Comparing Rasch measurement and factor analysis. 3(1), 3–24. [ED]

Smith, R.M. (1996). A comparison of methods for determining dimensionality in Rasch measurement. 3(1), 25–40. [MC]

Chang, C.-H. (1996). Finding two dimensions in MMPI-2 Depression. 3(1), 41–49. [ED]

Green, K.E. (1996). Dimensional analyses of complex data. 3(1), 50–61. [ED]

Gerbing, D.W., & Hamilton, J.G. (1996). Viability of exploratory factor analysis as a precursor to confirmatory factor analysis. 3(1), 62–72. [MC]

Robles, J. (1996). Confirmation bias in structural equation modeling. 3(1), 73–83. [TH]

Tremblay, P.F., & Gardner, R.C. (1996). On the growth of structural equation modeling in psychological journals. 3(2), 93–104. [TH(R)]

Austin, J.T., & Calderòn, R.F. (1996). Theoretical and technical contributions to structural equation modeling: An updated annotated bibliography. 3(2), 105–175. [TH(R)]

Anderson, R.D. (1996). An evaluation of the Satorra-Bentler distributional misspecification correction applied to the McDonald fit index. 3(3), 203–227. [MC]

Wang, L., Fan, X., & Willson, V.L. (1996). Effects of nonnormal data on parameter estimates and fit indices for a model with latent and manifest variables: An empirical study. 3(3), 228–247. [MC]

Raykov, T. (1996). Plasticity in fluid intelligence of older adults: An individual latent growth curve modeling application. 3(3), 248–265. [ED(S)]

Jedidi, K., Ramaswamy, V., DeSarbo, W.S., & Wedel, M. (1996). On estimating finite mixtures of multivariate regression and simultaneous equation models. 3(3), 266–289. [ED(SS)]

- Dolan, C. (1996). Principal component analysis using LISREL 8. 3(4), 307–322. [ED(S)]
- Duncan, S.C., & Duncan, T.E. (1996). A multivariate latent growth curve analysis of adolescent substance use. 3(4), 323–347. [ED]
- Burkholder, G.J., & Harlow, L.L. (1996). Using structural equation modeling techniques to evaluate HIV risk models. 3(4), 348–368. [ED]
- Rigdon, E.E. (1996). CFI versus RMSEA: A comparison of two fit indexes for structural equation modeling. 3(4), 369–379. [TH]

**1997**

- Kaplan, D., & Elliott, P.R. (1997). A didactic example of multilevel structural equation modeling applicable to the study of organizations. 4(1), 1–24. [ED]
- Papa, F.J., Harasym, P.H., & Schumacker, R.E. (1997). Evidence of second-order factor structure in a diagnostic problem space: Implications for medical education. 4(1), 25–36. [ED]
- Broome, K.M., Knight, K., Joe, G.W., Simpson, D.D., & Cross, D. (1997). Structural models of antisocial behavior and during-treatment performance for probationers in a substance abuse treatment program. 4(1), 37–51. [ED]
- Grosset, J.M. (1997). Differences in educational outcomes of African American students from different socioeconomic backgrounds. 4(1), 52–64. [ED]
- Finch, J.F., West, S.G., & MacKinnon, D.P. (1997). Effects of sample size and nonnormality on the estimation of mediated effects in latent variable models. 4(2), 87–107. [MC]
- Green, S.B., Akey, T.M., Fleming, K.K., Hershberger, S.L., & Marquis, J.G. (1997). Effect of the number of scale points on chi-square fit indices in confirmatory factor analysis. 4(2), 108–120. [MC]
- Weng, L.-J., & Cheng, C.-P. (1997). Why might relative fit indices differ between estimators? 4(2), 121–128. [ED(S)]
- Dauphinee, T.L., Schau, C., & Stevens, J.J. (1997). Survey of attitudes toward statistics: Factor structure and factorial invariance for women and men. 4(2), 129–141. [ED]

- Bandalos, D.L. (1997). Assessing sources of error in structural equation models: The effects of sample size, reliability, and model misspecification. 4(3), 177–192. [MC(META)]
- Mulaik, S.A., & Quartetti, D.A. (1997). First order or higher order general factor? 4(3), 193–211. [AD(P)]
- Raykov, T. (1997). Simultaneous study of individual and group patterns of latent longitudinal change using structural equation modeling. 4(3), 212–236. [ED(S)]
- Heuchenne, C. (1997). A sufficient rule for identification in structural equation modeling including the null B and recursive rules as extreme cases. 4(3), 237–243. [TH]
- Coenders, G., Satorra, A., & Saris, W.E. (1997). Alternative approaches to structural modeling of ordinal data: A Monte Carlo study. 4(3), 261–282. [MC]
- Raykov, T. (1997). Growth curve analysis of ability means and variances in measures of fluid intelligence of older adults. 4(3), 283–319. [ED(S)]
- Van den Putte, B., & Hoogstraten, J. (1997). Applying structural equation modeling in the context of the theory of reasoned action: Some problems and solutions. 4(3), 320–337. [ED(S)]
- Alsop, R., & Gillespie, D.F. (1997). Stability of attitudes toward abortion and sex roles: A two-factor measurement model at two points in time. 4(3), 338–352. [ED(SS)]

**1998**

- Duncan, T.E., Duncan, S.C., & Li, F. (1998). A comparison of model- and multiple imputation-based approaches to longitudinal analyses with partial missingness. 5(1), 1–21. [ED]
- Marsh, H.W. (1998). Pairwise deletion for missing data in structural equation models: Nonpositive definite matrices, parameter estimates, goodness of fit, and adjusted sample sizes. 5(1), 22–36. [MC]
- Rosén, M. (1998). Gender differences in hierarchically ordered ability dimensions: The impact of missing data. 5(1), 37–62. [ED]
- Oort, F.J. (1998). Simulation study of item bias detection with restricted factor analysis. 5(2), 107–124. [MC]

- Steen, N., Firth, H.W.B., & Bond, S. (1998). Relation between work stress and job performance in nursing: A comparison of models. 5(2), 125–142. [ED]
- Marsh, H.W., Hau, K.-T., Chung, C.-M., & Siu, T.L.P. (1998). Confirmatory factor analyses of Chinese students' evaluations of university teaching. 5(2), 143–164. [ED]
- Tepper, K. (1998). Gender differences in the performance of individuating acts. 5(2), 165–190. [ED]
- Duncan, T.E., Alpert, A., & Duncan, S.C. (1998). Multilevel covariance structure analysis of sibling antisocial behavior. 5(3), 211–228. [ED(SS)]
- Raykov, T., & Penev, S. (1998). Nested structural equation models: Noncentrality and power of restriction test. 5(3), 229–246. [ED(S)]
- Chou, C.-P., Bentler, P.M., & Pentz, M.A. (1998). Comparisons of two statistical approaches to study growth curves: The multilevel model and the latent curve analysis. 5(3), 247–266. [ED]
- Bollen, K.A., & Paxton, P. (1998). Interactions of latent variables in structural equation models. 5(3), 267–293. [AD,ED(SS)]
- Rovine, M.J., & Molenaar, P.C.M. (1998). A LISREL model for the analysis of repeated measures with a patterned covariance matrix. 5(4), 318–343. [AD]
- Hutchinson, S.R., & Olmos, A. (1998). Behavior of descriptive fit indexes in confirmatory factor analysis using ordered categorical data. 5(4), 344–364. [MC(META)]
- Marcoulides, G.A., Drezner, Z., & Schumacker, R.E. (1998). Model specification searches in structural equation modeling using Tabu search. 5(4), 365–376. [MC]
- Gribbons, B.C., & Hocevar, D. (1998). Levels of aggregation in higher level confirmatory factor analysis: Application for academic self-concept. 5(4), 377–390. [ED]
- Dumenci, L., & Windle, M. (1998). A multitrait-multioccasion generalization of the latent trait-state model: Description and application. 5(4), 391–410. [ED]

**1999**

- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. 6(1), 1–55. [MC]



- Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. 6(1), 56–83. [\[MC\(META\)\]](#)
- Tomás, J.M., & Oliver, A. (1999). Rosenberg's self-esteem scale: Two factors or method effects. 6(1), 84–98. [\[ED\]](#)
- Ferrara, F.F. (1999). Validation of the child sex abuse attitude scale through confirmatory factor analysis. 6(1), 99–112. [\[ED\]](#)
- Coenders, G., Saris, W.E., Batista-Foguet, J.M., & Andreenkova, A. (1999). Stability of three-wave simplex estimates of reliability. 6(2), 135–157. [\[MC,ED\]](#)
- Hancock, G.R. (1999). A sequential Scheffé-type respecification procedure for controlling Type I error in exploratory structural equation model modification. 6(2), 158–168. [\[AD\]](#)
- Kumar, A., & Sharma, S. (1999). A metric measure for direct comparison of competing models in covariance structure analysis. 6(2), 169–197. [\[MC,ED\(S\)\]](#)
- Rigdon, E.E. (1999). Using the Friedman method of ranks for model comparison in structural equation modeling. 6(3), 219–232. [\[AD\(P\)\]](#)
- Dolan, C., Bechger, T., & Molenaar, P.C.M. (1999). Using structural equation modeling to fit models incorporating principal components. 6(3), 233–261. [\[ED\(S\)\]](#)
- Manolis, C., Winsor, R.D., & True, S.L. (1999). Purchasing nonprescription contraceptives: The underlying structure of a multi-item scale. 6(3), 262–279. [\[ED\]](#)
- Wolfe, L.M. (1999). Sewall Wright on the method of path coefficients: An annotated bibliography. 6(3), 280–291. [\[TH\(R\)\]](#)
- Kaplan, D., & Ferguson, A.J. (1999). On the utilization of sample weights in latent variable models. 6(4), 305–321. [\[MC\]](#)
- Hennessy, M., Bolan, G.A., Hoxworth, T., Iatesta, M., Rhodes, F., Zenilman, J.M., & Project RESPECT Study Group (1999). Using growth curves to determine the timing of booster sessions. 6(4), 322–342. [\[ED\]](#)
- Marsh, H.W., & Jackson, S.A. (1999). Flow experience in sport: Construct validation of multidimensional, hierarchical state and trait responses. 6(4), 343–371. [\[ED\]](#)

Windle, M., & Dumenci, L. (1999). The factorial structure and construct validity of the Psychopathy Checklist-Revised (PCL-R) among alcoholic inpatients. 6(4), 372–393. [ED]

**2000**

Hayduk, L.A., & Glaser, D.N. (2000). Jiving the four-step, waltzing around factor analysis, and other serious fun. 7(1), 1–35. [TH]

Mulaik, S.A., & Millsap, R.E. (2000). Doing the four-step right. 7(1), 36–73. [TH]

Bollen, K.A. (2000). Modeling strategies: In search of the Holy Grail. 7(1), 74–81. [TH]

Bentler, P.M. (2000). Rites, wrongs, and gold in model testing. 7(1), 82–91. [TH]

Herting, J.R., & Costner, H.L. (2000). Another perspective on "the proper number of factors" and the appropriate number of steps. 7(1), 92–110. [AD]

Hayduk, L.A., & Glaser, D.N. (2000). Doing the four-step, right-2-3, wrong-2-3: A brief reply to Mulaik and Millsap; Bollen; Bentler; and Herting and Costner. 7(1), 111–123. [TH]

Steiger, J.H. (2000). Estimation, hypothesis testing, and interval estimation using the RMSEA: Some comments and a reply to Hayduk and Glaser. 7(2), 149–162. [TH]

Markus, K.A. (2000). Conceptual shell games in the four-step debate. 7(2), 163–173. [TH]

Sivo, S.A., & Willson, V.L. (2000). Modeling causal error structures in longitudinal panel data: A Monte Carlo study. 7(2), 174–205. [MC,ED(S)]

Shipley, B. (2000). A new inferential test for path models based on directed acyclic graphs. 7(2), 206–218. [MC] Kang, C., & Shipley, B. (2009). A correction note on "A new inferential test for path models based on directed acyclic graphs". 16(3), 537–538.

Coenders, G., & Saris, W.E. (2000). Testing nested additive, multiplicative, and general multitrait-multimethod models. 7(2), 219–250. [ED]

Green, S.B., & Hershberger, S.L. (2000). Correlated errors in true score models and their effect on coefficient alpha. 7(2), 251–270. [AD]

Ferrando, P.J. (2000). Testing the equivalence among different item response formats in personality measurement: A structural equation modeling approach. 7(2), 271–286. [ED]

- Gold, M.S., & Bentler, P.M. (2000). Treatments of missing data: A Monte Carlo comparison of RBHDI, iterative stochastic regression imputation, and expectation-maximization. 7(3), 319–355. [MC(META)]
- Fouladi, R.T. (2000). Performance of modified test statistics in covariance and correlation structure analysis under conditions of multivariate nonnormality. 7(3), 356–410. [MC(META)]
- Lee, S.-Y., & Shi, J.-Q. (2000). Bayesian analysis of structural equation model with fixed covariates. 7(3), 411–430. [ED(SS)]
- Raykov, T. (2000). On the large-sample bias, variance, and mean squared error of the conventional noncentrality parameter estimator of covariance structure models. 7(3), 431–441. [AD]
- Cheung, D. (2000). Evidence of a single second-order factor in student ratings of teaching effectiveness. 7(3), 442–460. [ED]
- Li, F., Duncan, T.E., & Acock, A. (2000). Modeling interaction effects in latent growth curve models. 7(4), 497–533. [ED]
- Hancock, G.R., Lawrence, F.R., & Nevitt, J. (2000). Type I error and power of latent mean methods and MANOVA in factorially invariant and noninvariant latent variable systems. 7(4), 534–556. [MC,P]
- Olsson, U.H., Foss, T., Troye, S.V., & Howell, R.D. (2000). The performance of ML, GLS, and WLS estimation in structural equation modeling under conditions of misspecification and nonnormality. 7(4), 557–595. [MC(META)]
- Raykov, T. (2000). On sensitivity of structural equation modeling to latent relation misspecifications. 7(4), 596–607. [AD]
- Billiet, J.B., & McClendon, M.J. (2000). Modeling acquiescence in measurement models for two balanced sets of items. 7(4), 608–628. [ED]

**2001**

- Millsap, R.E. (2001). When trivial constraints are not trivial: The choice of uniqueness constraints in confirmatory factor analysis. 8(1), 1–17. [AD]
- Green, S.B., Thompson, M.S., & Poirer, J. (2001). An adjusted Bonferroni method for elimination of parameters in specification addition searches. 8(1), 18–39. [MC]

- Algina, J., & Moulder, B.C. (2001). A note on estimating the Jöreskog-Yang model for latent variable interaction using LISREL 8.3. 8(1), 40–52. [MC]
- Li, F., Duncan, T.E., Duncan, S.C., McAuley, E., Chaumeton, N.R., & Harmer, P. (2001). Enhancing the psychological well-being of elderly individuals through Tai Chi exercise: A latent growth curve analysis. 8(1), 53–83. [ED]
- Cole, D.A., Cho, S., Martin, J.M., Seroczynski, A.D., Tram, J., & Hoffman, K. (2001). Effects of validity and bias on gender differences in the appraisal of children's competence: Results of MTMM analyses in a longitudinal investigation. 8(1), 84–107. [ED]
- Koutsoulis, M.K., & Campbell, J.R. (2001). Family processes affect students' motivation, and science and math achievement in Cypriot high schools. 8(1), 108–127. [ED]
- Hox, J.J., & Maas, C.J.M. (2001). The accuracy of multilevel structural equation modeling with pseudobalanced groups and small samples. 8(2), 157–174. [MC]
- Li, F., Duncan, T.E., Duncan, S.C., & Hops, H. (2001). Piecewise growth mixture modeling of adolescent alcohol use data. 8(2), 175–204. [ED]
- Jackson, D.L. (2001). Sample size and number of parameter estimates in maximum likelihood confirmatory factor analysis: A Monte Carlo investigation. 8(2), 205–223. [MC(META)]
- Raykov, T. (2001). Testing multivariable covariance structure and means hypotheses via structural equation modeling. 8(2), 224–256. [ED(S)]
- Pomplun, M., & Omar, M.H. (2001). Score comparability of a state reading assessment across selected groups of students with disabilities. 8(2), 257–274. [ED]
- Wang, J., Siegal, H.A., Falck, R.S., & Carlson, R.G. (2001). Factorial structure of Rosenberg's self-esteem scale among crack-cocaine drug users. 8(2), 275–286. [ED]
- Julian, M.W. (2001). The consequences of ignoring multilevel data structures in non-hierarchical covariance modeling. 8(3), 325–352. [MC]
- Nevitt, J., & Hancock, G.R. (2001). Performance of bootstrapping approaches to model test statistics and parameter standard error estimation in structural equation modeling. 8(3), 353–377. [MC(META,B)]
- Song, X.-Y., Lee, S.-Y., & Zhu, H.-T. (2001). Model selection in structural equation models with continuous and polytomous data. 8(3), 378–396. [ED(SS)]

- Bacon, D.R. (2001). An evaluation of cluster analytic approaches to initial model specification. 8(3), 397–429. [MC,ED(S)]
- Enders, C.K., & Bandalos, D.L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. 8(3), 430–457. [MC]
- Raykov, T. (2001). Approximate confidence interval for difference in fit of structural equation models. 8(3), 458–469. [AD]
- Li, F. Duncan, T.E., Duncan, S.C., & Acock, A. (2001). Latent growth modeling of longitudinal data: A finite growth mixture modeling approach. 8(4), 493–530. [ED(SS)]
- Ghisletta, P. McArdle, J.J. (2001). Latent growth curve analyses of the development of height. 8(4), 531–555. [ED(S)]
- Ogasawara, H. (2001). Approximations to the distributions of fit indexes for misspecified structural equation models. 8(4), 556–574. [AD,ED(S)]
- Dormann, C. (2001). Modeling unmeasured third variables in longitudinal studies. 8(4), 575–598. [ED(S)]
- Sivo, S.A. (2001). Multiple indicator stationary time series models. 8(4), 599–612. [TH]

**2002**

- Moulder, B.C., & Algina, J. (2002). Comparison of methods for estimating and testing latent variable interactions. 9(1), 1–19. [MC(META)]
- Wen, Z., Marsh, H.W., & Hau, K.-T. (2002). Interaction effects in growth modeling: A full model. 9(1), 20–39. [AD,ED(S)]
- Schumacker, R.E. (2002). Latent variable interaction modeling. 9(1), 40–54. [AD]
- Cheung, M.W.-L., & Chan, W. (2002). Reducing uniform response bias with ipsative measurement in multiple-group confirmatory factor analysis. 9(1), 55–77. [ED]
- Bandalos, D.L. (2002). The effects of item parceling on goodness-of-fit and parameter estimate bias in structural equation modeling. 9(1), 78–102. [MC(META)]
- Oczkowski, E. (2002). Discriminating between measurement scales using nonnested tests and 2SLS: Monte Carlo evidence. 9(1), 103–125. [MC]

- Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. 9(2), 151–173. [TH]
- Boker, S.M., McArdle, J.J., & Neale, M. (2002). An algorithm for the hierarchical organization of path diagrams and calculation of components of expected covariance. 9(2), 174–194. [TH]
- Raykov, T., & Shrout, P.E. (2002). Reliability of scales with general structure: point and interval estimation using a structural equation modeling approach. 9(2), 195–212. [AD]
- Corten, I.W., Saris, W.E., Coenders, G., Van der Veld, W., Aalberts, C.E., & Kornelis, C. (2002). Fit of different models for multitrait-multimethod experiments. 9(2), 213–232. [ED(S)]
- Cheung, G.W., & Rensvold, R.B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. 9(2), 233–255. [MC]
- Koufteros, X.A., Vonderembse, M.A., & Doll, W.J. (2002). Examining the competitive capabilities of manufacturing firms. 9(2), 256–282. [ED]
- Duncan, T.E., Duncan, S.C., Okut, H., Strycker, L.A., & Li, F. (2002). An extension of the general latent variable growth modeling framework to four levels of the hierarchy. 9(3), 303–326. [ED]
- DiStefano, C. (2002). The impact of categorization with confirmatory factor analysis. 9(3), 327–346. [MC]
- Hamaker, E.L., Dolan, C.V., & Molenaar, P.C.M. (2002). On the nature of SEM estimates of ARMA parameters. 9(3), 347–368. [MC,AD]
- Bunting, B.P., Adamson, G., & Mulhall, P.K. (2002). A Monte Carlo examination of an MTMM model with planned incomplete data structures. 9(3), 369–389. [MC]
- Breithaupt, K., & Zumbo, B.D. (2002). Sample invariance of the structural equation model and the item response model: A case study. 9(3), 390–412. [ED]
- Harlow, L.L., Burkholder, G.J., & Morrow, J.A. (2002). Evaluating attitudes, skill, and performance in a learning-enhanced quantitative methods course: A structural modeling approach. 9(3), 413–430. [ED]
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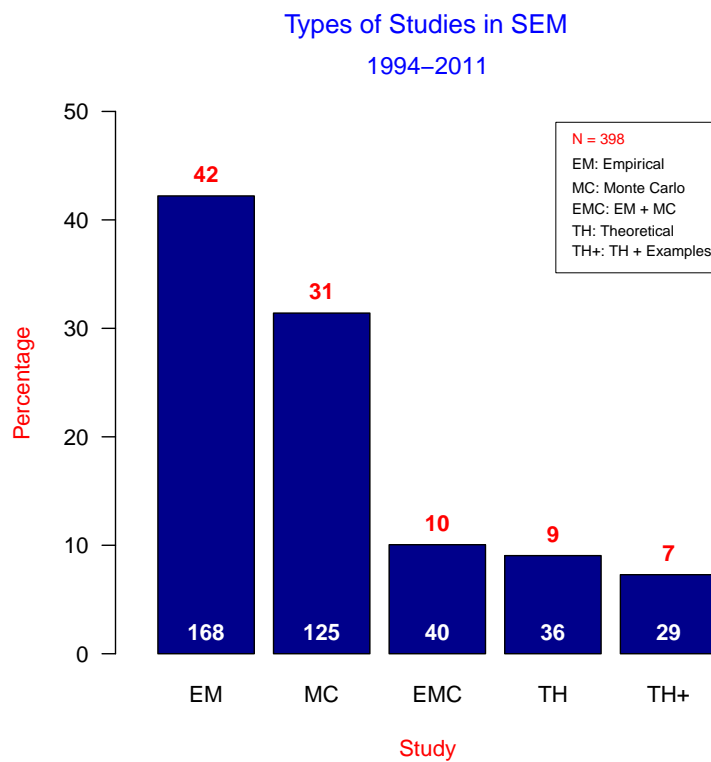
## Overviews

In Table 2 an overview is given of the types of studies in *Structural Equation Modeling* from 1994 through 2011. The overall prevalence of Monte Carlo studies and empirical data applications, summarized over 1994–2011, is shown in Figure 1. Yearly information of publication is also displayed in Figures 2 and 3.

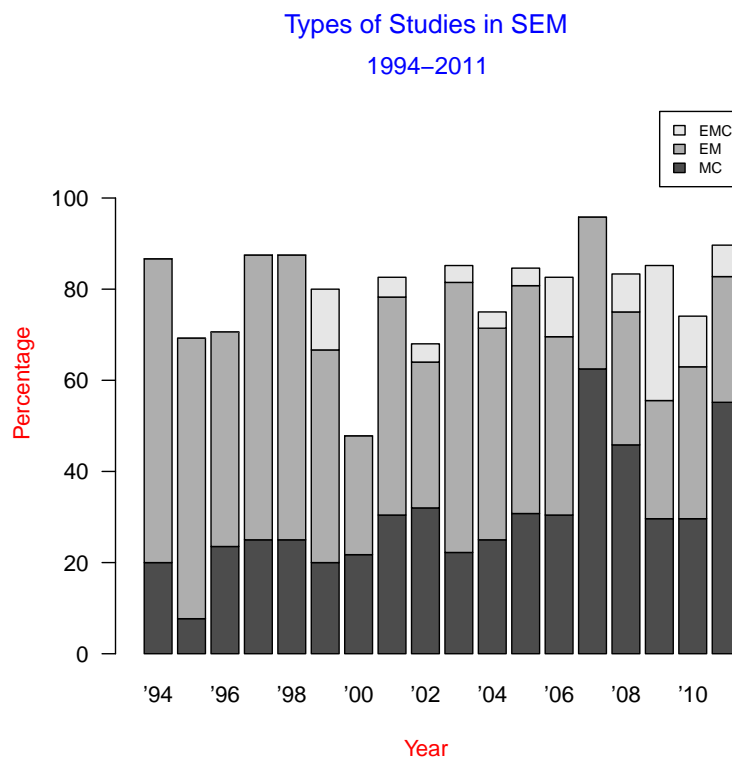
**Table 2.** Frequency of Monte Carlo studies and empirical data applications published in the *Structural Equation Modeling* journal over the period 1994–2011.

Year	Articles	EM (S, SS)	MC	EMC (MC, AD, S, SS)	AD	P	TH (R)	META
1994	15	10 (2, 2)	3		1		1	1
1995	13	8 (1, 0)	1		1	1	2	1
1996	17	8 (2, 1)	4				5 (2)	
1997	16	10 (4, 1)	4			1	1	1
1998	16	10 (1, 1)	4	1 (0, 1, 0, 1)	1			1
1999	15	7 (1, 0)	3	2 (2, 0, 1, 0)	1	1	1 (1)	1
2000	23	6 (0, 1)	5	1 (0, 1, 1, 0)	4		7	3
2001	23	11 (3, 2)	7	2 (1, 1, 2, 0)	2		1	2
2002	25	8 (1, 1)	8	2 (1, 1, 1, 1)	2		5	3
2003	27	16 (7, 1)	6	1 (1, 0, 1, 0)		1	3 (2)	1
2004	28	13 (3, 3)	7	3 (1, 2, 3, 0)	3		2 (1)	1
2005	26	13 (5, 4)	8	2 (1, 1, 2, 0)	2		1	3
2006	23	9 (2, 2)	7	6 (3, 3, 2, 1)	1			3
2007	24	8 (2, 2)	15				1	5
2008	24	7 (4, 1)	11	3 (2, 1, 0, 3)		1	2	3
2009	27	7 (1, 0)	8	10 (8, 2, 4, 1)		1	1	3
2010	27	9 (3, 3)	8	3 (3, 0, 1, 2)	4	1	2	2
2011	29	8 (3, 2)	16	4 (2, 2, 3, 1)			1	2
Total	398	168 (45, 27)	125	40 (25, 15, 21, 10)	22	7	36 (6)	36

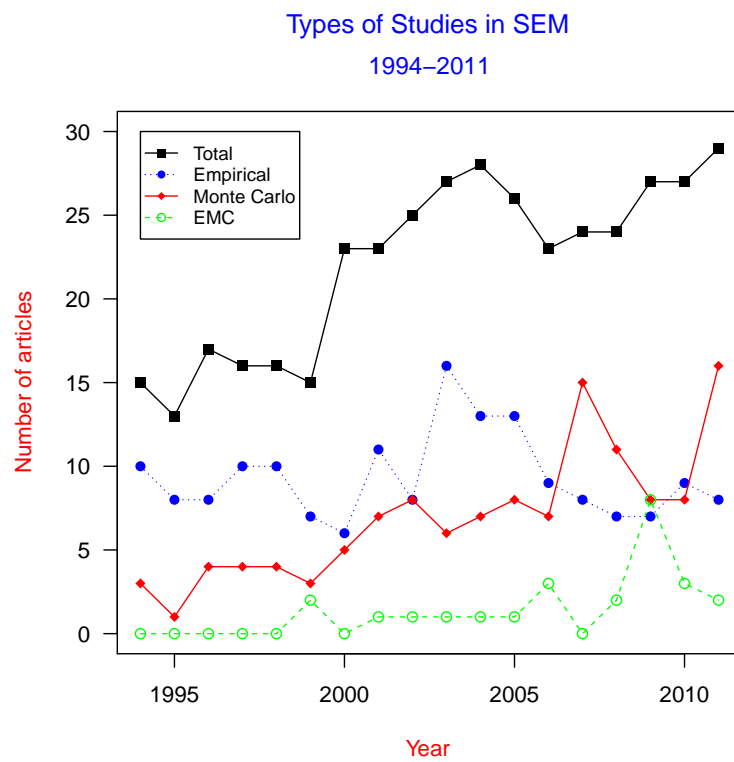
*Note.* EM (S): empirical data only (S: secondary analysis of data, SS: subsample from empirical data base), MC: strict Monte Carlo only; EMC (MC, AD, S, SS): both empirical data and broad Monte Carlo (MC: strict Monte Carlo, AD: artificial data); AD: artificial data only; P: population study; TH: theoretical only (R: review study); META: meta-modeling in a strict MC study.



**Figure 1.** Monte Carlo studies and empirical data applications in *Structural Equation Modeling* over the years. EMC: both empirical and broad Monte Carlo data; EM: empirical data only; MC: strict Monte Carlo data only.



**Figure 2.** Monte Carlo studies and empirical data applications in *Structural Equation Modeling* over the years. EMC: both empirical and broad Monte Carlo data; EM: empirical data only; MC: strict Monte Carlo data only.



**Figure 3.** Publications of Monte Carlo studies and empirical data applications in *Structural Equation Modeling* over the years.

*Types of studies in Structural Equation Modeling*

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