MKT 791--Research II
Spring '96
R. Kleine

SESSION 7

Measure Quality Assessment III:
More Confirmatory Factory Analysis and MTMM Madness

READINGS

Hatcher, Larry (1994), *A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structural Equation Modeling*, Cary, NC: The SAS Institute. **Review** pp. 325-339.

Loehlin, John C. (1992), *Latent Variable Models: An Introduction to Factor, Path, and Structural Analysis*, 2nd ed., Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 9-36

Khattree, Ravindra and Dayanand N. Naik (1995), *Applied Multivariate Statistics with SAS Software*, Cary, NC: Sas Institute, pp. 9-12, 16.

Partitioning Systematic Variance with CFA

Gerbing, David W. and John C. Anderson (1984), "On the Meaning of Within-Factor Correlated Measurement Errors," *Journal of Consumer Research*, 11, 572-580.

Kleine, Robert E., III, Susan S. Kleine, and Jerome B. Kernan (1993), AMundane Consumption and the Self: A Social Identity Perspective, *Journal of Consumer Psychology*, 2 (3), 209-235.

Partitioning Trait, Method (Systematic), and Error Variance: MTMM Analysis via CFA

Bagozzi, Richard P. and Youjae Yi (1991), "Multi trait-Multi method Matrices in Consumer Research," *Journal of Consumer Research*, 17 (March), 426-439.

Kenny, David A. and Deborah A. Kashy (1992), "Analysis of the Multi trait-Multi method Matrix by Confirmatory Factor Analysis," *Psychological Bulletin*, 112 (1), 165-172.

Another way to Analyze MTMM Data

Lastovica, John L. John P. Murry, Jr., and Erich A. Joachimsthaler (1990), "Evaluating the Measurement Validity of Lifestyle Typologies With Qualitative Measures and Multiplicative Factoring,"*Journal of Marketing Research*, 27 (February), 11-23.

Kumar, Ajith and William R. Dillon (1992), "An Integrative Look at the Use of Additive and Multiplicative Covariance Structure Models in the Analysis of MTMM Data," *Journal of Marketing Research*, 19 (February), 51-64.

CFA with Multiple-Informants

Kumar, Ajith and William R. Dillon (1990), "On the Use of Confirmatory Measurement Models in the Analysis of Multiple-Informant Reports," *Journal of Marketing Research*, 27 (February), 102-111.

ADDITIONAL RESOURCES YOU MAY FIND USEFUL . . . SOMEDAY

Cudeck, Robert (1989), "Analysis of Correlation Matrices Using Covariance Structure Models," *Psychological Bulletin*, 105 (2) 317-327.

Howell, Roy D. (1987), "Covariance Structure Modeling and Measurement Issues: A Note on 'Interrelations Among a Channel Entity's Power Sources,'" *Journal of Marketing Research*, 14 (February), 119-126.

Rigdon, Edward E. and Carl E. Ferguson, Jr. (1991), "The Performance of the Polychoric Correlation Coefficient and Selected Fitting Functions in Confirmatory Factor Analysis With Ordinal Data," *Journal of Marketing Research*, 28 (November), 491-497.

Tanaka, J. S. (1987), "'How Big Is Big Enough?': Sample Size and Goodness of Fit in Structural Equation Models with Latent Variables," *Child Development*, 58, 134-146.

YOUR TURN

Continue tweaking your CFA model. Apply insights from class. Get daring--try different specifications. Play! Practice breeds familiarity. Familiarity fosters confidence in your skills.

Begin thinking ahead. We will soon be ready to test between-construct (i.e., structural) relations beyond simple correlations. Among what constructs would you like to test relations? Identify them. Include their indicators in a CFA and do the analysis. Strive for good model fit. You'll be glad you did.

> Also, test for skewness or kurtosis in your data (insert the KURTOSIS option in your PROC CALIS line).
>
> ***Brain teaser***: What might you take as evidence that the assumption of multivariate normality is violated?
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> Outliers identified? See what happens if you remove one or more of them. Should you use an estimation procedure other than maximum likelihood?
>
> Feeling particularly daring? See what the Lagrange Multiplier and the Wald tests suggest in the way of model changes. This is accomplished by inserting the MODIFICATION option in your PROC CALIS line. Remember--a thinking scientist is required with these things!
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> ***Brain teaser***: What can you glean from the Legrange multiplier? The Wald test?
>
> ***Brain teaser***: How does the diagnostic information provided by the residuals compare with/differ from the diagnostic information provided by the legrangian multipliers or Wald tests?

Can you posit a method or trait factor(s) that may be present in your data? What might it (they) be? Modify your CFA and test for the presence of these method or trait influences (think "nested models").

Bring your explorations to class.