**Syllabus**

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| **Instructor's name:** | Deana Desa |
| **Course title:** | Measurement Invariance for Cross-Cultural Comparison |
| **Course type:** | Workshop |
| **Number of credit hours per edition:** | 30 x 45 min (workshop) |
| **ECTS** | 3ECTS |
|  | Workshop:30h |
| **Software to be used:** | SPSS, Mplus, R |
| **Teaching day schedule preferences:** | *Day 1*  *3 x 90 min – sessions with 1 x 15 min breaks and 1 x 90 min lunch break*  *Day 2-4*  *4 x 90 min – sessions with 2 x 15 min breaks and 1 x 90 min lunch break* |
| **Knowledge** | After this workshop, students will possess **knowledge** regarding:   * Fundamentals of measurement invariance testing in cross-cultural research * Continuous and categorical approaches using multiple-group confirmatory factor analysis (MGCFA) and their approach within the SEM framework * Significance difference testings (Satorra-Bentler (SB), and DIFFTEST) |
| **Abilities** | After the course students will have the **abilities** to:   * Measurement invariance testing using Mplus (and Mplus Automation) from large-scale assessment * Interpret invariance results in Mplus * Guidelines for writing invariance or cross-cultural research paper for publication |
| **Social competences** | * Understanding of cultural differences in measurement and assessment * Understand the fundamentals of measurement invariance * Cross-cultural comparisons using large scale assessment * Knowledge and application on cross-cultural comparison within SEM framework |
| **Course objectives:** | The workshop will provide the fundamentals of measurement invariance testing in cross-cultural research. Moreover, it will demonstrate the procedures within the latent traits framework for more than two groups. Both, the continuous and categorical approach using multiple-group confirmatory factor analysis (MG-CFA) will be reviewed. |
| **Prerequisites:** | Knowledge in basic statistics and latent trait analysis  This training is well suited for participants with basic understanding on statistics and latent trait analysis (e.g., factor analysis, structural equation modeling). Knowledge of the software is a plus but not required. |
| **Pass requirements:** | Actively participate in the workshop  Actively participate in the analytical exercises  Oral presentation from the analysis and exercises |
| **Recommended reading:** | ***Compulsory Readings***  Byrne, B. M., & Watkins, D. (2003). The Issue Of Measurement Invariance Revisited. Journal of Cross-Cultural Psychology, 34(2), 155–175.  Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, *14* (3), 464–504.  Little, T. D., & Slegers, D. W. (2005). Factor analysis: Multiple groups. *Encyclopedia of statistics in behavioral science*.  Lubke, G., & Muthén, B. (2004a). Applying multigroup confirmatory factor models for continuous outcomes to likert scale data complicates meaningful group comparisons. *Structural Equation Modeling.*, *11* , 514–534.  Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, *58* (4), 525–543. Retrieved 2013-06-10  Millsap, R. E. (1995). Measurement invariance, predictive invariance, and the duality paradox. *Multivariate Behavioral Research*, *30* (4), 577–605.  Millsap, R. E., & Olivera-Aguilar, M. (2012). Investigating measurement invariance using confirmatory factor analysis. In *Handbook of structural equation modeling.* New York: Guilford.  ***Additional Readings***  Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural equation modeling*, *9* (2), 233–255.  Davidov, E. (2008). A cross-country and cross-time comparison of the human values measurements with the second round of the european social survey. In *Survey research methods* (Vol. 2, pp. 33–46).  Lubke, G., & Muthén, B. (2004b). Factor-analyzing likert scale data under the assumption of multivariate normality complicates a meaningful comparison of observed groups or latent classes. *Structural Equation Modeling*, *11* , 514–534.  Muthén, L. K., & Muthén, B. O. (2012). *Mplus user’s guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.  Muthén, B., & Asparouhov, T. (2002). Latent variable analysis with categorical outcomes:Multiple-group and growth modeling in mplus. *Mplus web notes*, *4* (5), 1–22.  Millsap, R. E., & Yun-Tein, J. (2004). Assessing factorial invariance in ordered-categorical measures. *Multivariate Behavioral Research*, *39* (3), 479–515. |
| **Course plan:** | **Exercise 1**  Aim: Implementation of the continuous MGFCA in Mplus  Outcome: Participants have applied knowledge gained from the workshop, and applied it to continuous invariance testing using LSA data in Mplus  Form: colloquium/group-work  **Exercise 2**  Aim: Implementation of the categorical MGFCA in Mplus  Outcome: Participants have applied knowledge gained from the workshop, and applied it to categorical invariance testing using LSA data in Mplus  Form: colloquium/group-work  **Exercise 3**  Aim: Interpretation of invariance analyses and oral presentation  Outcome: Participants have applied theoretical and contextual knowledge for the interpretation of the results, as well as how to present invariance results in research paper  Form: group-work/individually |
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