

Jorge N. Tendeiro

Curriculum Vitae

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Education

- 2006–2010 **PhD**, *Faculty of Behavioral and Social Sciences*, UNIVERSITY OF GRONINGEN.
- 2002–2005 **Masters of Science, Applied Statistics and Modelation**, *Faculty of Engineering*, UNIVERSITY OF PORTO, *Master thesis – ‘Very Good’*.
- 1996–2001 **Bachelor of Mathematics**, *Faculty of Sciences*, UNIVERSITY OF PORTO, *average 18 (scale 0–20)*.
Specialized in Educational track

Masters Thesis

- Title *Comparison of dendrograms: Obtaining empirical distributions for some coefficients*
- Supervisors Professor Fernanda Sousa
- Description Dendrograms are graphical representations commonly used in the field of hierarchical classification. In this thesis, empirical distributions for coefficients that allow comparing dendrograms are developed, based on algorithms of random generation of dendrograms.

PhD Thesis

- Title *Some mathematical results on three-way component analysis*
- Supervisors Professor Jos M. F. ten Berge & Professor Henk A. L. Kiers
- Description This thesis presents mathematical developments for models that extend Component Analysis to three-way data (3PCA, CANDECOMP/PARAFAC, INDSCAL).

Employment

- 2012–Present **Assistant Professor**, *Faculty of Behavioral and Social Sciences*, UNIVERSITY OF GRONINGEN.
Both teaching and research duties.
- 2010–2012 **Postdoc position**, *Faculty of Behavioral and Social Sciences*, UNIVERSITY OF GRONINGEN.
Both teaching and research duties.
- 2005–2006 **Lecturer**, *School of Science*, UNIVERSITY OF MINHO, Portugal.
- 2004–2005 **Lecturer**, *Escola Superior de Educação*, INSTITUTO POLITÉNICO DE BRAGANÇA, Portugal.
- 2002–2004 **Lecturer**, *Centro Regional das Beiras*, UNIVERSIDADE CATÓLICA, Portugal.

2001–2002 **Lecturer**, *Escola ES/3 Dr. Bento da Cruz*, Portugal.

2000–2001 **Lecturer**, *Escola Secundária de Valongo*, Portugal.
Traineeship

Languages

Portuguese Mother tongue

English Advanced

Dutch Intermediate

Japanese Introductory

Both written and spoken

Reading more advanced than speaking

Currently ongoing JLPT N3 course

Computer skills

Intermediate Maple, Mathematica, Matlab, SPSS, IRTPRO

Advanced MS Windows, MS Office, Linux, R, \LaTeX

Research interests

PhD Three-way principal component analysis, Candecomp/Parafac, Indscal, Tucker3, simplicity, maximal simplicity.

Currently Item response theory: Person-fit analysis, unfolding models. Bayesian statistics.

Teaching skills

2013 University Teaching Qualifications certification (BKO/UTQ), UNIVERSITY OF GRONINGEN.

2000–2001 Traineeship to enhance pedagogic skills.

Research grants

2018 Law School Admission Council Research Grant (U.S.A). Project: “A Bayesian approach to admission testing”. Project applicants: R. R. Meijer, A. S. M. Niessen, and J. N. Tendeiro. Value: \$64,000. Duration: 12 months.

2013 Law School Admission Council Research Grant (U.S.A). Project: “Diagnostic statistics to evaluate response behavior for individual test takers”. Project applicants: R. R. Meijer, J. N. Tendeiro, and C. Albers. Value: \$100,000. Duration: 12 months.

2012 Law School Admission Council Research Grant (U.S.A). Project: “Assessment of the validity of total scores in high-stakes testing through nonparametric statistical techniques”. Project applicants: R. R. Meijer and J. N. Tendeiro. Value: \$100,000. Duration: 12 months.

2006 Fundação para a Ciência e a Tecnologia (Portugal): Ph.D research grant. Project: “Some mathematical results on three-way component analysis”. Project applicant: J. N. Tendeiro. Duration: 4 years.

Academic honors and awards

- 2011 “Dissertation Award” given by the Classification Society for a second place *ex-aequo* (\$500 money prize).
- 2010 “IOPS Best Paper Award 2010” for the best published paper by members of the IOPS society (€600 money prize).
- 2000 “Eng. António de Almeida” award for ending the Bachelor program with the best grades average (*ex-aequo*).
- 2000 Merit scholarship of €1591.17 delivered by Faculty of Sciences, UNIVERSITY OF PORTO, for excellent academic achievements during the Bachelor’s 4th program year.
- 1995 Participation in the event “Euroscola” at Strasbourg, France, promoted by the European Parliament.

Communications

- 2019 Workshop entitled “Bayesian statistics as a therapy for frequentist problems”, at the SHARE Day, Graduate School of Medical Sciences, University Medical Center Groningen, 14 November. Working material here: <https://github.com/jorgetendeiro/SHARE-UMCG-14-Nov-2019/>
- 2019 Oral presentation entitled “My current views over the Bayes factor”, at the Graduate School of Education, Tokyo University (prof. dr. Kensuke Okada). Slides here: <https://osf.io/5djrv/>
- 2019 Workshop entitled “From Frequentist Problems Towards Bayesian Solutions”, at the Graduate School of Education and Human Development, Nagoya University (prof. dr. Takashi Murakami), August 10. Working material here: <https://github.com/jorgetendeiro/Nagoya-Workshop-10-Aug-2019>
- 2019 Oral presentation entitled “Implications of teaching Bayesian statistics to undergraduate psychology students”, at the Science for Improving Psychological (SIPS), Rotterdam, The Netherlands. Joint work with Henk Kiers, Rink Hoekstra, Don van Ravenzwaaij.
- 2018 Oral presentation entitled “Elaborating on issues with Bayes factors”, at the Psychometrics Society (IMPS), New York, USA.
- 2017 Oral presentation entitled “Three-mode Principal Component Analysis (3MPCA) and Item Response Theory”, at the 25th Data Science Seminar, Faculty of Human Sciences, Osaka University (prof. dr. Kohei Adachi).
- 2017 Oral presentation entitled “Three-mode Principal Component Analysis (3MPCA) and Item Response Theory”, at the 83rd Open Seminar of Data Science, Division of Mathematical Science, Graduate School of Engineering Science, Osaka University (prof. dr. Yutaka Kano).
- 2017 Oral presentation entitled “Unfolding IRT Models: Do They Always Fit When Expected?”, at the Psychometrics Society (IMPS), Zurich, Switzerland.
- 2017 Oral presentation entitled “Cumulative versus unfolding IRT models: How practice may defy theory” at the European Conference on Psychological Assessment, Lisbon, Portugal.

- 2014 Oral presentation entitled “Detecting misfitting response patterns in educational testing. An empirical application” at the International Test Conference, San Sebastian, Spain.
- 2012 Oral presentation entitled “Detecting cheating in unproctored internet testing settings using CUSUMs (and more)” at the International Test Conference, Amsterdam, The Netherlands.
- 2011 Oral presentation entitled “Simplicity transformations for three-way arrays with symmetric slices” at the Classification Society Annual Meetings, Carnegie Mellon University, Pittsburgh, USA.
- 2010 Oral presentation entitled “Simplicity transformations for three-way arrays with symmetric slices” at the 20th IOPS Winter Conference, Utrecht, The Netherlands.
- 2010 Oral presentation entitled “First and second order derivatives for CP and INDSCAL” at the 25th IOPS Summer Conference, Amsterdam, The Netherlands.
- 2010 Oral presentation entitled “Three-way PCA” at the 17th JOCLAD, Lisbon, Portugal.
- 2009 Oral presentation entitled “Simplicity transformations for three-way arrays with symmetric slices” at the 6th TRICAP, N ria, Spain.
- 2007 Oral presentation entitled “Simplicity transformations for three-way arrays with symmetric slices” at the 17th IOPS Winter Conference, Groningen, The Netherlands.
- 2005 Oral presentation entitled “A Validation Methodology in Hierarchical Clustering” at the ASMDA meeting, Brest, France.
- 2004 Oral presentation entitled “Statistical Tests for Coefficients of Comparison of Dendrograms” at the 11th JOCLAD, Lisbon, Portugal.
- 2003 Oral presentation entitled “Comparison of dendrograms: Obtaining empirical distributions for some coefficients” at the 13th Annual SPE meeting, Ericeira, Portugal.

Publications

- Acevedo-Mesa, A., Tendeiro, J. N., Roest, A., Rosmalen, J. G. M., & Monden, R. (2020). *Improving the measurement of functional somatic symptoms with item response theory*. Manuscript under review.
- Crisan, D. R., Tendeiro, J. N., & Meijer, R. R. (2020a). *On the practical consequences of misfit in Mokken scaling*. In press. Preprint: <https://psyarxiv.com/kgc3a/>.
- Crisan, D. R., Tendeiro, J. N., & Meijer, R. R. (2020b). *The Crit value as an effect size measure for violations of model assumptions in Mokken scale analysis for binary data*. An adapted version of this manuscript will be submitted for review in a special issue on nonparametric IRT in *Quality of Life Research*, by invitation. Preprint: <https://psyarxiv.com/8ydmr/>.
- Kiers, H. A. L., & Tendeiro, J. N. (2020). *With Bayesian Estimation One Can Get All That Bayes Factors Offer, and More*. Manuscript under review. Preprint: <https://psyarxiv.com/zbpmy/>.
- Tendeiro, J. N., Kiers, H. A. L., & van Ravenzwaaij, D. (2020). *Mathematical evidence for the adequacy of bayesian optional stopping*. Manuscript under review. Preprint: <https://psyarxiv.com/9t2e7/>.

- Crisan, D. R., Tendeiro, J. N., Wanders, R. B. K., van Ravenzwaaij, D., Meijer, R. R., & Hartman, C. A. (2019). Practical consequences of model misfit when using rating scales to assess the severity of attention problems in children. *International Journal of Methods in Psychiatric Research*, *28*, e1795. Preprint: <https://osf.io/4qnjg/>. doi:10.1002/mpr.1795
- Li, J., Tendeiro, J. N., & Harrold, M. (2019). Guilt in bereavement: Its relationship with complicated grief and depression. *International Journal of Psychology*, *54*, 454–461. doi:10.1002/ijop.12483
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2019). Gender-based differential prediction by curriculum samples for college admissions. *Educational Measurement: Issues and Practice*, *38*, 33–45. doi:10.1111/emip.12266
- Tendeiro, J. N., & Castro-Alvarez, S. (2019). GGUM: An R package for fitting the Generalized Graded Unfolding Model. *Applied Psychological Measurement*, *43*, 172–173. doi:10.1177/0146621618772290
- Tendeiro, J. N., & Kiers, H. A. L. (2019). A review of issues about null hypothesis bayesian testing. *Psychological Methods*, *24*, 774–795. Preprint: <https://osf.io/t5xfd/>. doi:10.1037/met0000221
- Tendeiro, J. N., Niessen, A. S. M., Crisan, D. R., & Meijer, R. R. (2019). *Predicting future academic success: How a bayesian approach can be of help in analyzing and interpreting admission test scores* (Research Report No. 19-01). Law School Admission Council.
- van Ravenzwaaij, D., Monden, R., Tendeiro, J. N., & Ioannidis, J. P. A. (2019). Bayes factors for superiority, non-inferiority, and equivalence designs. *BMC Medical Research Methodology*, *19*(71). Preprint: <https://osf.io/8br5g/>. doi:10.1186/s12874-019-0699-7
- Meijer, R. R., Boevé, A. J., Tendeiro, J. N., Bosker, R. J., & Albers, C. J. (2018). Corrigendum: The use of subscores in higher education: When is this useful? *Frontiers in Psychology*, *9*(873). doi:10.3389/fpsyg.2018.00873
- Meijer, R. R., & Tendeiro, J. N. (2018). Unidimensional item response theory. In P. Irwing, T. Booth, & D. J. Hughes (Eds.), *The Wiley handbook of psychometric testing: A multidisciplinary reference on survey, scale and test development* (Chap. 15, pp. 413–443). doi:10.1002/9781118489772
- Meijer, R. R., Tendeiro, J. N., & Niessen, A. S. M. (2018). *The influence of the psychometric quality of a test when making admission decisions* (Research Report No. 18-04). Law School Admission Council.
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2018). Admission testing for higher education: A multi-cohort study on the validity of high-fidelity curriculum-sampling tests. *PLoS ONE*, *13*, e0198746. doi:10.1371/journal.pone.0198746
- Watson, R., Egberink, I. J. L., Kirke, L., Tendeiro, J. N., & Doyle, F. (2018). What are the minimal sample size requirements for Mokken scaling? An empirical example with the Warwick-Edinburgh Mental Well-Being Scale. *Health Psychology and Behavioral Medicine*, *6*, 203–213. Code: <https://osf.io/j27te/>. doi:10.1080/21642850.2018.1505520

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- Meijer, R. R., Boevé, A. J., Tendeiro, J. N., Bosker, R. J., & Albers, C. J. (2017). The use of subscores in higher education: When is this useful? *Frontiers in Psychology, 8*(305). doi:10.3389/fpsyg.2017.00305
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2017a). Applying organizational justice theory to admission into higher education: Admission from a student perspective. *International Journal of Selection and Assessment, 25*, 72–84. doi:10.1111/ijsa.12161
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2017b). Measuring non-cognitive predictors in high-stakes contexts: The effect of self-presentation on self-report instruments used in admission to higher education. *Personality and Individual Differences, 106*, 183–189. doi:10.1016/j.paid.2016.11.014
- Tendeiro, J. N. (2017). The $Iz(p)^*$ person-fit statistic in an unfolding model context. *Applied Psychological Measurement, 41*, 44–59. doi:10.1177/0146621616669336
- van Bebber, J., Wigman, J. T. W., Wunderink, L., Tendeiro, J. N., Wichers, M., Broeksteeg, J., ... Meijer, R. R. (2017). Identifying levels of general distress in first line mental health services: Can GP- and eHealth clients' scores be meaningfully compared? *BMC Psychiatry, 17*(382). doi:10.1186/s12888-017-1552-3
- Albers, C. J., Meijer, R. R., & Tendeiro, J. N. (2016). Derivation and applicability of asymptotic results for multiple subtests person-fit statistics. *Applied Psychological Measurement, 40*, 274–288. doi:10.1177/0146621615622832
- Meijer, R. R., Niessen, A. S. M., & Tendeiro, J. N. (2016). A practical guide to check consistency of item response patterns in clinical research through person-fit statistics: Examples and a computer program. *Assessment, 23*, 52–62. doi:10.1177/1073191115577800
- Mousavi, A., Tendeiro, J. N., & Younesi, J. (2016). Person fit assessment using the PerFit package in R. *Quantitative Methods for Psychology, 12*, 232–242. doi:10.20982/tqmp.12.3.p232
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2016a). Detecting careless respondents in web-based questionnaires: Which method to use? *Journal of Research in Personality, 63*, 1–11. doi:10.1016/j.jrp.2016.04.010
- Niessen, A. S. M., Meijer, R. R., & Tendeiro, J. N. (2016b). Predicting performance in higher education using proximal predictors. *PLoS ONE, 11*, 1–14. doi:10.1371/journal.pone.0153663
- Sun, H., Steinkrauss, R., Tendeiro, J. N., & Bot, K. (2016). Individual differences in very young children's English acquisition in China: Internal and external factors. *Bilingualism: Language and Cognition, 19*, 550–566. doi:10.1017/S1366728915000243
- Tendeiro, J. N., Meijer, R. R., & Niessen, A. S. M. (2016). PerFit: An R package for person-fit analysis in IRT. *Journal of Statistical Software, 74*, 1–27. doi:10.18637/jss.v074.i05
- van Tuijl, L. A., Glashouwer, K. A., Bockting, C. L. H., Tendeiro, J. N., Penninx, B. W. J. H., & de Jong, P. J. (2016). Implicit and explicit self-esteem in current, remitted, recovered,

and comorbid depression and anxiety disorders: The NESDA study. *PLoS ONE*, *11*, 1–18. doi:10.1371/journal.pone.0166116

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- Egberink, I. J. L., Meijer, R. R., & Tendeiro, J. N. (2015). Investigating measurement invariance in computer-based personality testing: The impact of using anchor items on effect size indices. *Educational and Psychological Measurement*, *75*, 126–145. doi:10.1177/0013164414520965
- Meijer, R. R., Egberink, I. J. L., Albers, C. J., Tendeiro, J. N., & Niessen, A. S. M. (2015a). *Verantwoording onderzoek werkgroep meijer: Aanvullingen COTAN beoordelingssysteem wat betreft normering referentieniveaus en computer adaptief toetsen van andere eindtoetsen (deel 1)*. NIP en Ministerie OCW.
- Meijer, R. R., Egberink, I. J. L., Albers, C. J., Tendeiro, J. N., & Niessen, A. S. M. (2015b). *Verantwoording onderzoek werkgroep meijer: Aanvullingen COTAN beoordelingssysteem wat betreft volg-aspect van leerlingen onderwijsvolgsystemen (deel 2)*. NIP en Ministerie OCW.
- Meijer, R. R., & Tendeiro, J. N. (2015). *The effect of item and person misfit in selection decisions: An empirical study* (Research Report No. 15-05). Law School Admission Council.
- Meijer, R. R., Tendeiro, J. N., & Wanders, R. B. K. (2015). The use of nonparametric item response theory to explore data quality. In S. P. Reise & D. A. Revicki (Eds.), *Handbook of item response theory modeling: Applications to typical performance assessment* (Chap. 5, pp. 85–110). doi:10.4324/9781315736013
- Tendeiro, J. N., & Meijer, R. R. (2015). *How serious is IRT misfit for practical decision-making?* (Research Report No. 15-04). Law School Admission Council.
- Tendeiro, J. N., Meijer, R. R., & Albers, C. J. (2015). *Detection of invalid test scores on admission tests: A simulation study using person-fit statistics* (Research Report No. 15-03). Law School Admission Council.
- Meijer, R. R., & Tendeiro, J. N. (2014). *The use of person-fit scores in high-stakes educational testing: How to use them and what they tell us* (Research Report No. 14-03). Law School Admission Council.
- Tendeiro, J. N., & Meijer, R. R. (2014). Detection of invalid test scores: The usefulness of simple nonparametric statistics. *Journal of Educational Measurement*, *51*, 239–259. doi:10.1111/jedm.12046
- Sousa, F., & Tendeiro, J. N. (2013). Sobre a comparação de estruturas de classificação: Coeficientes e suas distribuições. In H. Bacelar-Nicolau, F. Sousa, & C. Ferreira (Eds.), *Classificação e Análise de dados: Métodos e aplicações* (pp. 1–14). Lisbon: CLAD.
- Tendeiro, J. N., & Meijer, R. R. (2013a). *Detection of invalid test scores: The usefulness of simple nonparametric statistics* (Research Report No. 13-05). Law School Admission Council.
- Tendeiro, J. N., & Meijer, R. R. (2013b). *The probability of exceedance as a nonparametric person-fit statistic for tests of moderate length* (Research Report No. 13-06). Law School Admission Council.

- Tendeiro, J. N., & Meijer, R. R. (2013c). The probability of exceedance as a nonparametric person-fit statistic for tests of moderate length. *Applied Psychological Measurement, 37*, 653–665. doi:10.1177/0146621613499066
- Tendeiro, J. N., Meijer, R. R., Schakel, L., & Maij-de Meij, A. M. (2013). Using cumulative sum statistics to detect inconsistencies in unproctored Internet testing. *Educational and Psychological Measurement, 73*, 143–161. doi:10.1177/0013164412444787
- Tendeiro, J. N., Ten Berge, J. M. F., & Choulakian, V. (2013). Direct transformations yielding the knight's move pattern in $3 \times 3 \times 3$ arrays. *Chemometrics and Intelligent Laboratory Systems, 129*, 10–14. doi:10.1016/j.chemolab.2013.05.014
- Meijer, R. R., & Tendeiro, J. N. (2012). The use of the l_z and l_z^* person-fit statistics and problems derived from model misspecification. *Journal of Educational and Behavioral Statistics, 37*, 758–766. doi:10.3102/1076998612466144
- Tendeiro, J. N., & Meijer, R. R. (2012). A CUSUM to detect person misfit: A discussion and some alternatives for existing procedures. *Applied Psychological Measurement, 36*, 420–442. doi:10.1177/0146621612446305
- Bennani Dosse, M., Ten Berge, J. M. F., & Tendeiro, J. N. (2011). Some new results on orthogonally constrained Candecomp. *Journal of Classification, 28*, 144–155. doi:10.1007/s00357-011-9086-8
- Tendeiro, J. N., Bennani Dosse, M., & Ten Berge, J. M. F. (2011). First and second-order derivatives for CP and INDSCAL. *Chemometrics and Intelligent Laboratory Systems, 106*, 27–36. doi:10.1016/j.chemolab.2010.05.013
- Tendeiro, J. N. (2010). *Some mathematical results on three-way component analysis* (Doctoral dissertation, University of Groningen).
- Ten Berge, J. M. F., & Tendeiro, J. N. (2009). The link between sufficient conditions by Harshman and by Kruskal for uniqueness in Candecomp/Parafac. *Journal of Chemometrics, 23*, 321–323. doi:10.1002/cem.1204
- Tendeiro, J. N., Ten Berge, J. M. F., & Kiers, H. A. L. (2009). Simplicity transformations for three-way arrays with symmetric slices, and applications to Tucker-3 models with sparse core arrays. *Linear Algebra and its Applications, 430*, 924–940. doi:10.1016/j.laa.2008.09.020