[ΨΣ] interuniversity graduate school of iops Psychometrics and Sociometrics

Annual report 2015

- Leiden University
- University of Amsterdam
- University of Groningen
- Tilburg University
- University of Twente
- Utrecht University
- KUL University of Leuven
- Statistics Netherlands (CBS)
- Psychometric Research Center (Cito)

Contents

Foreword

The early months of 2015 were marked by the NWO Graduate Programme Grant competition at our graduate school. Thirteen candidates submitted a proposal, written under the supervision of IOPS staff members, and an international jury was asked to give the board of IOPS a ranking of these projects, only four of which could actually be granted. This jury consisted of Carolyn Anderson (University of Illinois at Urbana-Champaign), Matthias von Davier (Educational Testing Service), Ken Kelley (University of Notre Dame), Sophia Rabe-Hesketh (University of California at Berkeley), and Chun Wang (University of Minnesota). On June 22th, the winners were announced: Beibei Yuan (Leiden Un.), Johnny van Doorn (UvA), Joost Kruis (UvA), and Lisa Wijsen (UvA).

Even though the word 'winners' implies that there were losers too, at this competition there were no losers at all. Thanks to the very high quality of the proposals, all remaining candidates found other means of funding their project shortly after the competition, eight of which became members of IOPS in 2015 or 2016. Altogether, the number of new PhD projects in 2015 was impressive: we were happy to welcome no less than 21 new students.

We congratulate the eleven students who defended their thesis successfully. With two projects left unfinished, the number of IOPS students in 2015 increased with eight.

The IOPS Best Paper of 2014 Award was won by Xin Gu, with his paper *"Bayesian Evaluation of Inequality Constrained Hypothesis"* published in Psychological Methods. The two winners of the Best Poster Award were Jed Cabrieto and Sanne Willems.

The transfer of the IOPS secretariat in 2014 has had a slightly retarding effect on the organization of the courses, so a renewed focus on the curriculum was important this year. Firstly, the website information has been expanded significantly to meet the students' need for more clarity concerning the curriculum and the requirements for the IOPS certificate. Secondly, the board initiated the redesign of existing courses and the development of new ones to achieve a wider range of different topics. In 2015 the mandatory course *What is psychometrics?* was newly designed by Denny Borsboom and new courses are scheduled for 2016 and 2017.

On behalf of the IOPS board,

Rob Meijer

1 Organization

1.1 Board

The IOPS Board consists of seven members delegated by the participating universities and two representatives of the participating research institutes. The institute director is also chairman, he/she Is elected from the representatives of the seven participating universities.
Board meetings are also attended by two representatives of the IOPS PhD students, appointed by the IOPS PhD students for a period of two years.

Members IOPS Board

On 31 December 2015 the IOPS Board consisted of:

- Prof. R.R. (Rob) Meijer, Chair, University of Groningen
- Prof. D. (Denny) Borsboom, University of Amsterdam
- Prof. M.J. (Mark) de Rooij, Leiden University
- Dr G.J.A. (Jean-Paul) Fox, University of Twente
- Dr J.M. (Jelte) Wicherts, Tilburg University
- Prof. H.J.A. (Herbert) Hoijtink, Utrecht University
- Prof. F. (Francis) Tuerlinckx, KU Leuven, University of Leuven
- Dr A.A. (Anton) Béguin/Prof. G.K.J. (Gunter) Maris, CITO (National Institute for Educational Measurement)
- Prof. A.G. (Ton) de Waal, CBS (Statistics Netherlands)

PhD representatives

Michèle Nuijten (Tilburg University) was appointed first representative, after being assistant representative in 2014.
Paulette Flore (Tilburg University) was appointed assistant PhD student representative.

Changes in the IOPS Board

In December 2015, the board was happy to welcome Prof. Ton de Waal, successor of Dr Barry Schouten (CBS). We thank Barry Schouten for his commitment to our graduate school.

Board meetings

In 2015 board meetings were held on 23 March, 18 June, 10 December and one Autumn session by email.

1.2 Office

The secretariat is accommodated at:
Faculty of Social and Behavioral Sciences, Psychometrics and Statistics
Grote Kruisstraat 2/1, 9712 TS Groningen, The Netherlands

Secretary:	**Drs. Edith Ruisch-de Vries**
E-Mail:	secretariaat.iops@rug.nl
Web:	www.iops.nl
Phone:	050 36 36 367

1.3 Participating institutes

Leiden University Faculty of Social and Behavioural Sciences	
Methodology and Statistics Unit Institute of Psychology	P.O. Box 9555, 2300 RB Leiden Secretary: Jacqueline Hartman 071 527 3761 j.hartman@fsw.leidenuniv.nl
Education and Child Studies Institute of Education	P.O. Box 9555, 2300 RB Leiden Secretary: Esther Peelen 071 527 3434 peelene@fsw.leidenuniv.nl
Statistical Science for the Life and Behavioral Sciences Mathematical Institute	P.O. Box 9512, 2300 RA Leiden Secretary: Martine Goderie-Vliegenthart m.l.goderie@math.leidenuniv.nl +31 71 527 7047
University of Amsterdam Faculty of Social and Behavioural Sciences	
Psychological Methods Department of Psychology	Nieuwe Achtergracht 129-B, Postbus 15906, 1001 NK Amsterdam Secretary: Ineke van Osch 020 525 6870 mlsecretariaat-fmg@uva.nl
Developmental Psychology Department of Psychology	Postbus 15916, 1001 NK Amsterdam Secretary: Ellen Buijn 020 525 6830 e.buijn@uva.nl
Work and Organizational Psychology Department of Psychology	Nieuwe Achtergracht 129 B, Amsterdam Postbus 15919, 1001 NK Amsterdam Secretary: Joke Vermeulen 020 525 6860 j.h.vermeulen@uva.nl
Methods and Statistics Department of Child Developemnt and Education	Nieuwe Achtergracht 127, Amsterdam Postbus 15906, 1001 NK Amsterdam Secretary: Mariëlle de Reuver 020 525 6050 j.m.dereuver@uva.nl
University of Groningen Faculty of Behavioural and Social Sciences	
Psychometrics and Statistics Department of Psychology	Grote Kruisstraat 2/1, 9712 TS Groningen Secretary: Hanny Baan 050 363 63 66 j.m.baan@rug.nl
Theoretical Sociology Department of Sociology	Grote Kruisstraat 2/1, 9712 TS Groningen Secretary: Saskia Simon 050 363 6469 s.simon@rug.nl

University of Twente Faculty Behavioural, Management and Social Science (BMS)	
Department of Research Methodology, Measurement and Data Analysis (OMD)	P.O. Box 217, 7500 AE Enschede Secretary: Birgit Olthof-Regeling, T. 053 489 3555 Birgit.Olthof@utwente.nl
Tilburg University Tilburg School of Social and Behavioral Sciences	
Methodology and Statistics	P.O. Box 90153, 5000 LE Tilburg Secretary: Marieke Timmermans 013 466 2544 m.c.c.timmermans@tilburguniversity.edu
Utrecht University Faculty of Social and Behavioural Sciences	
Methodology and Statistics	P.O. Box 80.140, 3508 TC Utrecht Secretary: Chantal Molnar-van Velde 030 253 4438 c.molnar@uu.nl
KU Leuven, University of Leuven, Belgium Faculty of Psychology and Educational Sciences	
Research Group of Quantitative Psychology and Individual Differences	Tiensestraat 102 box 3713, B-3000 Leuven, Belgium Secretary: Jasmine Vanuytrecht +32 16 32 60 12 Jasmine.Vanuytrecht@ppw.kuleuven.be
Statistics Netherlands (CBS), Den Haag	
	P.O. Box 24500, 2490 AH Den Haag Secretary: 070 337 3800
Psychometric Research Center (Cito), Arnhem	
	P.O. Box 1034, 6801 MG Arnhem Secretary: Rianne van der Werff (T 026-3521075) Rianne.vanderWerff@cito.nl

1.4 Cooperating institutes

University of Groningen Faculty of Behavioural and Social Sciences	
Department of Education	Grote Rozenstraat 38, 9712 TJ Groningen Secretary: M.J. Kroeze-Veen 050 363 6540 M.J. Kroeze-Veen@rug.nl

VU University Amsterdam Faculty of Psychology and Education	
Department of Clinical Psychology	Van der Boechorststraat 1, 1081 BT Amsteram Secretary: Sherida Slijmgaard 020 598 8951, s.r.slijmgaard@vu.nl
Department of Biological Psychology	Van der Boechorststraat 1, 1081 BT Amsteram Secretary: Stephanie van de Wouw 020-598 8792 s.b.vande.wouw@vu.nl
Maastricht University Faculty of Health, Medicine and Life Sciences & Faculty of Psychology & Neuroscience	
Department of Methodology and Statistics	P.O. Box 616, 6200 MD Maastricht Secretary: Marga Doyle & Ria Lumeij 043 388 2395 marga.doyle@maastrichtuniversity.nl, ria.lumeij@maastrichtuniversity.nl
Erasmus University Rotterdam	
Department of Econometrics	P.O. Box 1738, 3000 DR Rotterdam Secretary: Tineke Kurtz 010 408 1370 / 1377 kurtz@ese.eur.nl
Department of Psychology, Education & Child Studies	P.O. Box 1738, 3000 DR Rotterdam Secretariat D-PECS 010 408 8789 / 8799 sec-dpecs@fsw.eur.nl
Wageningen University	
Research Methodology Group	P.O. Box 8130, 6700 EW, Wageningen Secretary: Nicolette Tauecchio 0317 48 5702 nicolette.tauecchio@wur.nl

2 Staff

The members of the staff belong to the participating institutes. There are two categories of staff members: junior and senior staff members. Both require acknowledgment in their field according to, among others, international publications. Junior staff members have obtained their PhD less than five years ago, and do not necessarily have (co-)responsibility of dissertation research. Senior staff members do have (co-)responsibility of dissertation research.

Associated staff

In 1994, the establishment of graduate schools and the rearrangement of staff members as a result of this, caused IOPS to introduce a new category of staff for those who - for formal reasons - could not be a regular IOPS staff member. The requirements for associated staff members are identical to those of regular staff members. PhD students of these associated staff members can be admitted to IOPS as an external dissertation student.

2.1 Professorships

Irene **Klugkist** was appointed professor at Utrecht University on October 1st. Chair: Methods and techniques for the social and behavioural sciences. As of January 1st, she is also professor by special appointment at the University of Twente for a period of three years. Chair: *Bayesian modelling using informative priors.*

As of April 1st 2015, **Andries van der Ark** was appointed endowed professor: Kohnstamm chair, Vereniging ter Bevordering van de Studie der pedagogiek (VBSP). Chair mission: *"Kwantitatieve onderzoeksmethodologie ter bevordering van de academisering van het onderwijs."*

2.2 Staff meetings

Plenary meetings for all IOPS members (staff and PhD students) are held twice a year during the IOPS conferences. In 2015 two plenary meetings took place, one on 18 June, and one on 10 December.

2.3 Staff changes

Junior staff members admitted to IOPS in 2015

- Dr Marjan **Bakker**, Tilburg University
- Dr Terrence **Jorgensen**, University of Amsterdam
- Dr Thomas **Klausch**, Utrecht University

Senior staff members admitted to IOPS in 2015

- Prof. Ton **de Waal**, CBS
- Dr Elise **Dusseldorp**, Leiden University
- Dr Don van **Ravenzwaaij**, University of Groningen

Junior staff members leaving IOPS in 2015

- Dr Rudy **Ligtvoet**, University of Amsterdam
- Dr Jorre **Vannieuwenhuyze**, Utrecht University
- Dr Wobbe **Zijlstra**, Tilburg University

Senior staff members leaving IOPS in 2015

- Dr Hennie **Boeije,** Utrecht University
- Dr Alwin **Stegeman**, University of Groningen

Emeritus status

No staff members entered the emeritus status in 2015.

	1 Januari 2015	31 December 2015
Junior staff members	29	29
Senior staff members	67	68
Honorary emeritus members	20	20

2.4 Staff members

Leiden University

Institute of Psychology, Methodology and Statistics Unit

- Prof. Mark **De Rooij** (senior): rooijm@fsw.leidenuniv.nl
- Dr Elise **Dusseldorp** (senior): elise.dusseldorp@fsw.leidenuniv.nl
- Dr Marian **Hickendorff** (junior): hickendorff(at)fsw.leidenuniv.nl
- Prof. Henk **Kelderman** (senior): h.kelderman@fsw.leidenuniv.nl
- Dr Kees **Van Putten** (senior): putten@fsw.leidenuniv.nl

Institute of Education and Child Studies

- Dr Joost **Van Ginkel** (junior): jginkel@fsw.leidenuniv.nl

Mathematical Institute

- Prof. Jacqueline **Meulman** (senior): jmeulman@math.leidenuniv.nl

University of Amsterdam

Department of Psychology - Methodology

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- Dr Angélique **Cramer** (junior): a.o.j.cramer@uva.nl
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- Prof. Gunter **Maris** (senior): g.k.j.maris@uva.nl

- Dr Dylan **Molenaar** (junior): d.molenaar@uva.nl
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- Dr Josine **Verhagen** (junior): a.j.verhagen@uva.nl
- Prof. Eric-Jan **Wagenmakers** (senior): e.m.wagenmakers@uva.nl
- Dr Lourens **Waldorp** (junior): l.j.waldorp@uva.nl

Department of Psychology - Developmental Psychology

- Dr Hilde **Huizenga** (senior): h.m.huizenga@uva.nl
- Dr Brenda **Jansen** (senior): b.r.j.jansen@uva.nl
- Dr Maartje **Raijmakers** (senior): m.e.j.raijmakers@uva.nl
- Dr Ingmar **Visser** (senior): i.visser@uva.nl

Department of Psychology - Work and Organizational Psychology

- Dr Arne **Evers** (senior): a.v.a.m.evers@uva.nl

Department of Education - Methods and Statistics

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University of Groningen

Department of Psychology

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- Dr Don **Van Ravenzwaaij** (senior): d.van.ravenzwaaij@rug.nl

Department of Sociology

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Department of Educational Measurement and Data Analysis

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- Dr Wilco **Emons** (senior): w.h.m.emons@tilburguniversity.edu
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KU Leuven, University of Leuven

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Psychometric Research Center (Cito), Arnhem

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- Dr Anton **Béguin** (senior), anton.beguin@cito.nl
- Dr Bas **Hemker** (senior), bas.hemker@cito.nl

2.5 Associated staff members

- Prof. Lidia **Arends** (senior), Psychology Institute, Erasmus University Rotterdam: arends@fsw.eur.nl
- Dr Samantha **Bouwmeester** (senior), Psychology Institute, Erasmus University Rotterdam: bouwmeester@fsw.eur.nl
- Dr Math **Candel** (senior), Methodology and Statistics, Maastricht University: math.candel@maastrichtuniversity.nl
- Prof. Conor **Dolan** (senior), Faculty of Psychology and Education, Dept. Biological, VU University Amsterdam: c.v.dolan@vu.nl
- Prof. Patrick **Groenen** (senior), Faculty of Economics, Erasmus University Rotterdam: groenen@ese.eur.nl
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- Dr Sophie **Van der Sluis** (junior), VU University Amsterdam: sophie.van.der.sluis@cncr.vu.nl
- Dr Floryt **Van Wesel** (junior), Dept. of Educational Neuroscience & Dept. of Methods, VU University Amsterdam: f.van.wesel@vu.nl
- Dr Wolfgang **Viechtbauer** (senior), Methodology and Statistics, Maastricht University: wolfgang.viechtbauer@maastrichtuniversity.nl
- Dr Matthijs **Warrens** (junior): m.j.warrens@rug.nl, Dept. of Education, University of Groningen

2.6 Honorary emeritus members

- Prof. Martijn **Berger**, martijn.berger@maastrichtuniversity.nl
- Prof. Jelke **Bethlehem**, jelkeb@xs4all.nl
- Prof. Paul **De Boeck**, deboeck.2@osu.edu
- Prof. Wil **Dijkstra,** w.dijkstra@fsw.vu.nl
- Prof. Paul **Eilers**, p.eilers@erasmusmc.nl
- Prof. Cees **Glas**, c.a.w.glas@utwente.nl
- Prof. Jacques **Hagenaars,** jacques.a.hagenaars@tilburguniversity.edu
- Prof. Willem **Heiser,** heiser@fsw.leidenuniv.nl
- Prof. Joop **Hox**, j.hox@uu.nl
- Prof. Pieter **Kroonenberg,** kroonenb@fsw.leidenuniv.nl
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- Prof. Robert **Mokken,** mokken@science.uva.nl
- Prof. Ivo **Molenaar**, molenaarivo@gmailcom
- Prof. Ab **Mooijaart,** mooijaart@fsw.leidenuniv.nl
- Prof. Willem **Saris**, w.saris@telefonica.net
- Prof. Tom **Snijders,** t.a.b.snijders@rug.nl
- Prof. Jos **Ten Berge,** j.m.f.ten.berge@rug.nl
- Prof. Wim **Van der Linden,** wim_vanderlinden@ctb.com
- Prof. Hans **Van der Zouwen,** j.van.der.zouwen@fsw.vu.nl
- Dr Norman **Verhelst,** norman.verhelst@gmail.com

3 Scientific awards and grants

3.1 Awards and grants honored to IOPS staff members

3.1.1 Scientific awards

3.1.2 NWO Grants

NWO Veni, Vidi, Vici grants These are part of the NWO Innovational Research Incentives Scheme [*Vernieuwingsimpuls*]				
Hamaker, E. (2010), Utrecht Un.	Time for change: Studying individual differences in dynamics	Vidi	1 May 2011 – 1 May 2016	€ 600.000
Huizenga, H. (2013), UvA Amsterdam	Why speeding on your scooter is a good idea: decision strategies in childhood and adolescence	Vici	1 Sept 2013 – 31 Aug 2019	€ 1.500.000
Klugkist, I. (2013), Utrecht Un.	A Different Angle: New Tools for Circular Data	Vidi	November 2013 – November 2018	€ 800.000
Molenaar, D. (2015)	Within-subjects Approaches to the Analysis of Responses and Response Times to Psychometric Tests	Veni	1 Oct. 2015 – 1 Oct. 2019	€ 250.000
Mulder, J. (2013), Tilburg University	Testing competing theories	Veni	2013 - 2018	€ 250.000
Oberski, D. (2014), Tilburg University	Developing novel latent variable techniques that open up a treasure trove of register data for social science	Veni	1 January 2015 – 31 December 2017	€ 250.000
Van de Schoot, R. (2011), Utrecht Un.	Integrating background knowledge about traumatic stress experienced after trauma into statistical models assessing individual change over time	Veni	January 2011 – January 2016	€ 250.000
Vermunt, J.K. (2010), Tilburg University	Stepwise model-fitting approaches for latent class analysis and related methods	Vici	23 June 2011 – 22 June 2016	€ 1.500.000
Wicherts, J.M. (2012), Tilburg University	Human Factors in statistics	Vidi	September 2012 – September 2017	€ 800.000

NWO Aspasia grants With the Aspasia grants, NWO stimulates the promotion of female researchers in higher ranking.		
Hamaker, E. (2011), Utrecht Un.	2011-2016	€ 100.000

NWO Open Competition grants

The Open Competition is subsidy program for the advancement of innovative and high-quality scientific research in the social and behavioral sciences.

Wagenmakers, E.J., **Forstmann**, B., **Nieuwenhuis**, S. & **Van der Maas**, H. (2011), UvA Amsterdam	A dynamic and formal account of what people do before and after they make an error	PhD student: H. Steingroever	1 Sept. 2011 - 1 Sept. 2015	€ 208.193

NWO Research Talent grants

NWO Research Talent is a responsive mode funding scheme, which offers talented and ambitious young researchers a platform to pursue a scientific career and carry out high-quality PhD research.

Ark, A. van der (2013), Tilburg University	Improving norms for psychological and educational tests	PhD student Hannah **Oosterhuis**	1 Sept. 2012 – 1 Sept. 2016	€ 168.735
Assen, M. van (2013), Tilburg University	Meta-analysis in the presence of publication bias and researcher degrees of freedom	PhD student Robbie van **Aert**	1 Sept. 2013 – 1 Sept. 2017	€ 165.000
Borsboom, D. (2012), UvA Amsterdam	Network psychometrics	PhD student Sacha **Epskamp**	1 Aug. 2012 - 1 Aug. 2016	€ 167.576
Hamaker, E. & Van der Heijden, P. (2015), Utrecht Un.	Not straightforward: Mediation and networks in continuous time	PhD student Oísin **Ryan**	1 Sept. 2015 - 1 Sept. 2019	€ 219.170
Hoijtink, H. (2013), Utrecht Un.	Processing within person experimental and longitudinal data using Bayesian updating	PhD student Anouck **Kluytmans**	1 Sept. 2013 – 1 Sept. 2016	€ 168.735
Hoijtink, H. (2015), Utrecht Un.	How to hedge our bets in educational testing: combining test results with teacher expertise	PhD student Kimberly **Lek**	1 Sept. 2015 - 1 Sept. 2019	€ 219.170
Snijders, T.A.B., Wittek, R. & **Van Duijn, M**. (2015), Un. of Groningen	The co-evolution of well-being and the kinship network after parental divorce.	PhD student De Bel, V.	1 Sep 2015 - 1 Sep 2019	€ 219.170
Timmerman, M.E. & **Meijer**, R.R. (2012), Un. of Groningen	Understanding human behavioural processes with Bayesian dynamic models	PhD student: Tanja **Krone**	1 July 2012 – 1 March 2016	€ 161.363
Van der Maas, H.L.J. (2012), UvA Amsterdam	Analyzing developmental change with time-series data of a large scale educational monitoring system	PhD student: Abe **Hofman**	1 Sep. 2012 – 1 Sep. 2016	€ 168.576
Van Duijn, M.A.J., **Snijders**, T.A.B., & Niezink, N.M.D. (2013), Un. of Groningen	Co-Evolution of networks and real-valued actor attributes	PhD student: Niezink, N.M.D.	2013 – 2016	€ 166.235
Vermunt, J.K. (2012), Tilburg University	Power analysis for simple and complex mixture models	PhD student Dereje **Gudicha**	1 Sept. 2012 – 1 Sept. 2015	€ 165.000
Vermunt, J.K. (2013), Tilburg University	Multiple imputation of nested missing data using extended latent class models	PhD student Davide **Vidotto**	1 Sept. 2013 – 1 Sept. 2016	€ 165.000
Wicherts, J.M. (2013) Tilburg University	The psychometrics of stereotype threat	PhD student Paulette **Flore**	1 Sept. 2013 – 1 Sept. 2017	€ 165.000

Other NWO grants				
Hoijtink, H. as one of a group of 20 principal investigators (2015)	Individual development: why some children thrive and others don't.	NWO-Gravity Scheme	2012-2016	€540.000 Of total € 27.600000
Schmand, B., **Huizenga**, H. & Murre, J. (2013), UvA Amsterdam	Advanced Neuropsychological Diagnostics Infrastructure (ANDI)	Investment Subsidy NWO Medium	1 Sept 2013-31 Aug 2017	€ 450.000
Van Putten, K. (Leiden University) & **Béguin** A. (Cito)	Mathematics education in the classroom and students' strategy use and achievement in primary education	NWO-PROO	1 Sept. 2011 – 1 Sept. 2015	€ 299.850
Veenstra, R., Dijkstra, J.K., Vollebergh, W., Harakeh, Z., **Van Duijn, M.,** & Steglich,C. (2013)	Social networks processes and social development of children and adolescents	NWO-PROO	2013 -	€ 717.326

3.1.3 International grants

International grants				
Altinisik, Y., **Kuiper**, R.M. & **Hoijtink**, H. (2014), Utrecht Un.	Research replication through the evaluation of prior knowledge in the form of informative hypotheses and sparse big data models	Turkish Government	2014-2018	€ 50.000
Borsboom, D. (2015) UvA	ERC Consolidator grant for the project "Psychosystems: Consolidating Network Approached to Psychopathology"	European Research Council (ERC)	2016-2020	€2.000.000
Gu Xin and **Hoijtink**, H. (2011), Utrecht Un.	Bayesian Evaluation of Inequality Constrained Hypotheses	Chinese Scholarship Council	2011-2015	€ 65.000
Lugtig, P. (2012), Utrecht Un.	Subsidy for three year research project 'Trade-offs between nonresponse and measurement error in a panel survey'	ERSC Future Leaders Grant (United Kingdom)	2012 – 2015	€ 163.000
Meijer, R.R., **Tendeiro**, J.N.**& Albers**, C.J. (2014), University of Groningen	Diagnostic Statistics to Evaluate response behavior for individual test takers	Research grant obtained from the Law School Admission Council (USA)	June 2014 – June 2015	€ 96.666
Wagenmakers, E.J. (2011), UvA Amsterdam	Bayes or Bust: Sensible hypothesis tests for social scientists	Consolidator grant by the European Research Council	May 2012-May 2017	€1.500.000
Wagenmakers, E.J., (2011), UvA Amsterdam	Engineering and Physical Sciences Research Council project "Decision making in an unstable world" (investigators: Iain Gilchrist, Roland Baddeley, Rafal Bogacz, Simon Farrell, David Leslie, Casimir Ludwig, and John McNamara).	External advisor	2011-2015	£1.858.354

Grants awarded to KU Leuven, University of Leuven				
Bartlema, E., **Vanpaemel**, W. (2012)	PhD position	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2012-30 Sept 2016	4 years PhD salary
Bulteel, K., **Ceulemans**, E. & **Tuerlinckx**, F. (2013)	PhD position	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2013-30 Sept 2017	4 years PhD salary
Ceulemans, E., **Bosmans**, G.. & **Tuerlinckx**, F. (2015)	De studie van dyadische interactiepatronen: Een Booleaanse netwerkbenadering	Fund Scientific Research (FWO), Flanders, Belgium	1 Jan 2016 – 31 Dec 2019	€ 219.367
Ceulemans, E., **Kuppens**, P., & **Tuerlinckx**, F. (2013)	Switching component models for capturing emotional response patterning and synchronization processes	Fund Scientific Research (FWO), Flanders, Belgium	1 Jan 2014 – 31 Dec 2017	€ 310.000
Coomans, F., **Tuerlinckx**, F., **Vanpaemel**, W. (2015)	Kwantumkansrekening in cognitie: Een casestudie in beslissingsmodellen	Special Research Fund, KU Leuven	1 Oct 2015-31 Aug 2016	1 year of postdoc salary
De Roover, K., **Ceulemans**, E. (2013)	postdoc grant	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2013-30 Sept 2016	3 years of postdoc salary
Mestdagh, M., **Tuerlinckx**, F., **Kuppens**, P. & **Borsboom**, D., (2013)	PhD position	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2013-30 Sept 2017	4 years PhD salary
Tuerlinckx, F. (2012)	Understanding the dynamics of the individual through network analyses of Experience Sampling data	Grant by The National Fund for Scientific Research-Belgium [Fonds voor Wetensch. Onderzoek-Vlaanderen]	1 Jan. 2013 - 31 Dec. 2016	€ 296.518
Tuerlinckx, F., **Ceulemans**, E., **Kuppens**, P., **Van Mechelen**, I., & **Vanpaemel**, W. (2013)	Formal models of the affective system: Dynamics, exogenous inputs and relation to subjective well-being.	GOA grant. Special Research Fund, KU Leuven	1 Jan 2015 – 31 Dec 2019	€ 1.250.000
Tuerlinckx, F. (co-promotor) (2015)	TquanT	UK National Agency for Erasmus+	1 Sept 2015-31 Aug 2018	€ 27.765
Tuerlinckx, F. (co-promotor) (2012)	Steunpunt Toetsontwikkeling en Peilingen	Flemish Governement	1 Jan 2013-31 Dec 2017	€ 6.631.250
Van Mechelen, I. (2012)	Developing crucial Statistical methods for Understanding major complex Dynamic Systems in natural, bio-medical and social sciences	Grant by Belgian Science Policy [Federaal Wetenschapsbeleid]	2012 - 2017	€ 430.000
Van Mechelen, I. (2011)	Disentangling the innate and adaptive response to	GSK (contract research) Van Mechelen -GSK	2011-2015	€ 200.000

	vaccines	Biologicals		
Vanpaemel, W. (2011)	The use of the prior predictive in modelling cognition	OT (Onderzoekstoelage) and CREA; Research Council KU Leuven	2011-2015	€ 294.240
Verdonck, S., **Tuerlinckx**, F. (2015)	postdoc grant	Special Research Fund, KU Leuven	7 Oct 2015-6 Oct 2016	1 year of postdoc salary
Verduyn, P., **Van Mechelen**, I. (2012)	postdoc grant	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2012-31 Oct 2018	6 years of postdoc salary
Wilderjans, T., **Ceulemans**, E. (2012)	postdoc grant	Fund Scientific Research (FWO), Flanders, Belgium	1 Oct 2012-30 Sept 2015	3 years of postdoc salary

Other Grants

Boeije, H. & Leferink, S. (2012), Utrecht University	Kwaliteitsverbetering in de hulpverlening aan slachtoffers door innovatie in effectmeting	Grant for PhD-project, funded by Fonds slachtofferhulp and Dept. of Methodology and Statistics, Utrecht Un.	Aug. 2012 – Aug. 2016	€ 120.000 by Fonds Slachtofferhulp and €120.000 by Dept. M&S, Utrecht Un.
Boersma, P., **Raijmakers**, M. & Bögels, S. (2009), UvA Amsterdam	Models and tests of early category formation: interactions between cognitive, emotional, and neural mechanisms	Cognition Program, Cognitive Science Center Amsterdam	2009 – 1 Sep 2015	€ 470.000
Candel, M. (2011), Maastricht Un.	Sample size calculation for nested cost-effectiveness RCTs (PhD student project)	ZonMw (The Nether-lands Organization for Health Research and Development)	April 2012 - April 2016	€ 115.000
Hoijtink, H. & **Maris**, G. (2011), Utrecht Un. / CITO	Unmixing Rasch Models	PhD project, funded by CITO and Dept. of Methodology and Statistics, Utrecht Univ.	2011-2015	€ 87.500 by CITO and € 87.500 by Dept. M&S, Utrecht Un.
Hox, J., Snijkers, G. (CBS)	Motivation of Respondents in Business Surveys	Grant for PhD-project, funded by CBS	Sept. 2010 – Sept. 2015	€ 238.000
Jansen, B.R.J., Salemink, E., & Wiers, R. (2014), UvA Amsterdam	The missing factor in math anxiety: The role and modification of cognitive biases and executive functioning	Interne AIO-competitie Ontwikkelingspsychologie	2014-2018	€ 200.000
Keijsers, L., Ter Hillegers, M. Bogt, T., **Van de Schoot, R.,** Vollebergh, W., Cahn, W.	Grant for Post-doc on disentangling normative irritability from early signs of depression among adolescents with cell-phone micro-measures of daily mood swings	Utrecht University, Youth & Identity Seed Project	2013 - 2016	€ 96.000
Klugkist, I., Nielen, M. (DGK, Utrecht University)	Bayesian statistics applied to clinical trials from veterinary medicine	Grant for PhD-project, funded by Faculty of Veterinary Medicine, Utrecht Un. and Dept. of	Sept. 2013 – Sept. 2017	€ 97.500 by Fac. Veterinary Medicine, UU and € 97.500

		Methodology and Statistics, Utrecht Un.		by Dept. M&S, UU.
Meijer, J., Imandt, M., Snoek, M., Van Blankenstein, F.M. & **Van der Ark**, L.A. (2015)	Voorspellende waarde, effecten en onderliggende mechanismen van selectieprocedures in de lerarenopleidingen	Research fund granted by Nationaal Regieorgaan Onderwijsonderzoek (NRO)	1 Feb 2016 31 Jan 2020	€598.200
Raijmakers, M. **Van der Maas,** H. & Haarhuis H. (2011), UvA Amsterdam	1. Mental models: Guiding knowledge development in the individual child 2. Optimizing materials for experimentation	Research Grant from the Platform Beta Techniek [TalentenKracht]	1 Jan 2012 – 1 jan 2016	€ 417.000
Toepoel, V. (2014), Utrecht Un.	Facultaire subsidie voor tijdelijk meer onderzoekstijd	Utrecht University	Jan. 2014 – Dec. 2015	€ 17.830
Van der Heijden, P., Bakker, B. (CBS), (main appl); **Cruyff, M.**, Whittaker, J. (Lancaster Un.)	The estimation of population size and population characteristics using incomplete registries	Grant for PhD project, funded by CBS and Dept. of Methodology and Statistics, Utrecht Un.	Jan. 2012 – Jan. 2016	€ 100.000 by CBS and € 100.000 by Dept. M&S, Utrecht Un.
Van der Heijden, P. & **Cruyff,** M. (Utrecht Un.)	Event history analysis for population size estimation of elusive populations	Grant for International PhD project, funded by the faculty of Social and Behavioural Sciences	1 Sept. 2015 1 Sept. 2019	€ 200.000

3.2 Awards and grants honored to IOPS PhD students

3.2.1 Scientific awards

In 2015, the following IOPS PhD students were honored with a scientific award:

- Zsuzsa **Bakk**: Classifictaion Societies Distinguished Dissertation Award
- Jed **Cabrieto: IOPS Best Poster Award (S**ummer 2015). Comparing the performance of non-parametric change point detection methods for capturing response concordance
- Sacha **Epskamp**: Travel Award for the International Meeting of the Psychometric Society (IMPS) in Beijing, July 2015
- Xin **Gu: IOPS Best Paper of 2014 Award**
  Gu, X. & Deković, M. (2014). *Bayesian Evaluation of Inequality Constrained Hypothesis.* Psychological Methods, 19 (4), 511-527
- Lianne **Ippel**: Travel Award for the International Meeting of the Psychometric Society (IMPS) in Beijing, July 2015
- Riet **Van Bork** (2015). Psychology Master Thesis Prize.
- Claudia **Van Borkulo:** Travel Award for the International Meeting of the Psychometric Society (IMPS) in Beijing, July 2015
- Sanne **Willems: IOPS Best Poster Award** (Winter 2015): Optimal scaling in survival analysis

3.2.2 Grants

- Robbie **Van Aert**, Jelte **Wicherts** & Marcel **Van Assen**: Social Science Meta-Analysis and Research Transparency Grant (SSMART) of 30,000 dollars by the Berkeley Initiative for Transparency in the Social Sciences (BITSS).

4 Students and projects

4.1 Introduction

Applicants for the IOPS dissertation training must have a Master's degree in one of the following disciplines. Behavioral Sciences, Technical Sciences, Mathematics or Econometrics. They are appointed as PhD student, or as an indirectly financed PhD student. PhD students within IOPS are financed by the participating universities or by NWO (Netherlands Foundation of Scientific Research).

PhD student projects in progress on 1 January 2015	60
New projects	21
Dissertations	11
Projects left unfinished	2
PhD student projects in progress on 31 December 2015	62
Projects that exceeded the project time limit	11

Dissertations

1. Zsussa **Bakk** (Tilburg University) - *Contributions to bias adjusted stepwise latent class modelling*
2. Mariska **Barendse** (University of Groningen) - *Dimensionality Assessment with Factor Analysis Methods*
3. Rivka **de Vries** (University of Groningen) - *Bayes Factor Tests for Intervention Effects*
4. Marjolein **Fokkema** (VU University Amsterdam) - *Psychometric Contributions to Improving the Efficiency and Fidelity of Clinical Assessment and Research*
5. Dereje **Gudicha** (Tilburg University) - *Power Analysis Methods for Tests in Latent Class and Latent Markov Models*
6. Khurrem **Jehangir** (University of Twente) - *Methodological Issues in Large-Scale Educational Surveys*
7. Renske **Kuijpers** (Leiden University) - *Applications of Categorical Marginal Models in Test Construction*
8. Tam Thi Thanh **Lam** (University of Groningen) - *Some new methods for three-mode factor analysis and multi-set factor analysis*
9. Maryam **Safarkhani** (Utrecht University) - *Optimal Designs for Discrete-time Survival Analysis with Heterogeneity*
10. Gerko **Vink** (Utrecht University) - *Restrictive imputation of incomplete survey data*
11. Ingrid **Vriens** (Tilburg University) - *Two of a Kind? Comparing Ratings and Rankings for Measuring Human Values using Latent Class Modeling*

New projects

1. Yasin **Altinisik** (Utrecht University) - *Research replication through the evaluation of prior knowledge in the form of informative hypotheses and sparse big data models*
2. Frank **Bais** (Utrecht University) - *Respondent profiles and questionaire profiles in mixed-mode surveys*
3. Nitin **Bhushan** (University of Groningen) - *PhD Network dynamics of households' energy consumption after interventions*
4. Laura **Boeschoten** (Tilburg University) - *Consistent Estimates for Categorical Data based on a Mix of Administrative Data Sources and Surveys*
5. Giulio **Flore** (Leiden University) - *Predictive Unfolding Models for Single-Peaked Items with Binary and Graded Response Data*
6. Chris **Hartgerink** (Tilburg University) - *Detecting potential data fabrication in the social sciences*
7. Robert **Hillen** (Tilburg University) - *Latent categories versus latent dimensions*
8. Thomas **Husken** (Utrecht University) - *Event history analysis for population size estimation of elusive populations*
9. Fayette **Klaassen** (Utrecht University) - *Hypotheses formulation, evaluation, updating and replication for experimental univariate within person data*
10. Joost **Kruis** (University of Amsterdam) - *Developing Process Measurement Models with Broad Applicability*
11. Kimberley **Lek** (Utrecht University) - *How to hedge our bets in educational testing: combining test results with teacher expertise*
12. Xinru **Li** (Leiden University) - *Meta-CART: An integration of classifcation and regression trees into meta-analysis*
13. Annemiek **Punter** (University of Twente) - *Psychometric modeling of cultural bias in International Large-Scale Assessments*
14. Oisin **Ryan** (Utrecht University) - *Not straightforward: Mediation and networks in continuous time*
15. Alexander **Savi** (University of Amsterdam) - *Experimentation in online education: Increasing return on investment through A/B testing*
16. Riet V**an Bork** (University of Amsterdam) - *Empirical methods to distinguish network from latent variable constructs*
17. Johnny **van Doorn** (University of Amsterdam) - *Bayesian inference for ordinal data in psychology*
18. Sara **van Erp** (Tilburg University) - *Advancing structural equation modeling with unbiased Bayesian methods*
19. Lisa **Wijsen** (University of Amsterdam) - *The History of Psychometrics: Tools, Trends and Turning points*
20. Sanne **Willems** (Leiden University) - *New Approaches in Survival Analysis*
21. Eva **Zijlmans** (Tilburg University) - *Solutions for some psychometric problems of the reliability of psychological measurements*

Projects in progress beyond project time limits

On 13 December 2015, the projects of the following PhD students are still in progress, but have exceeded the project time limit. Therefore, these projects are no longer mentioned in the summary of projects.

1. Maria **Bolsinova** (Utrecht University) - *New applications of Rasch modelss in educational measurement*
2. Laura **Bringmann** (KU Leuven) - *Networks! New insights into time series data*
3. Sebastiaan **De Klerk** (University of Twente/ECABO) - *Multimedia-Based Performance Assessment (MBPA) in Vocational Education and Training (VET) in The Netherlands*
4. Marije **Fagginger Auer** (Leiden University) - *Mathematics instruction in the classroom and students' strategy use and achievement in primary education*
5. Xin **Gu** (Utrecht University) - *Bayesian evaluation of informative hypotheses in general statistical models*
6. Joke **Heylen** (KU Leuven) - *Modeling multilevel time-resolved emotion data*
7. Marianne **Hubregtse** (University of Twente) - *Competence based assessment in vocational education in The Netherlands*
8. Joran **Jongerling** (Utrecht University) - *Modelling individual differences in intraindividual change and variability*
9. Pieter **Oosterwijk** (Tilburg University) - *Improving global and local reliability estimation in nonparametric item response theory*
10. Noémi **Schuurman** (Utrecht University) - *Time for a change: Studying individual differences in dynamics with multilevel multivariate autoregressive models*
11. Hail Michael **Worku** (Leiden University) - *Multivariate logistic regression using the ideal point classification model*

Projects left unfinished

1. Annelies **Bartlema** (KU University Leuven) - *Modeling Iindividual differences: A Bayesian hierarchical mixture approach*
2. Susan **Boerma** (University of Groningen) - *Investigating opinion dynamics using the FreqNet model - An agent based approach using dynamic networks*

4.2 Dissertations

Zsussa Bakk
Contributions to bias adjusted stepwise latent class modelling

16 October 2015
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University

Supervisors:
Prof. J.K. Vermunt & Dr F.B. Tekle

Project financed by NWO, part of Vici grant Prof. Vermunt
15 September 2011 - 15 March 2015

Summary of thesis
Latent class analysis (LCA) is used by social and behavioral scientists as a statistical method for building typologies, taxonomies, and classifications based on a set of observed characteristics. Examples include atitudinal typologies of citizens based on survey questions measuring their attitudes toward freedom of speech, subtypes of schizophrenia patients derived from recorded mood symptoms, or taxonomies of temporal project networks based on characteristics of these projects and the related organizations.
The project focuses on developing and testing correction methods for the stepwise LCA. This is an approach to extend the latent class model to include external variables. First the underlying latent construct is estimated based on a set of observed indicator variables, then in the second step individuals are assigned to the latent classes, and in the third step the class assignments from step two are used in further analyses. In the thesis we propose 3 approaches to build a stepwise LCA model, test them, and give practical recommendations which of the approaches to use under different circumstances.

Mariska Barendse
Dimensionality Assessment with Factor Analysis Methods

16 February 2015
Heijmans Institute, Faculty of Behavioural and Social Sciences, University of Groningen

Supervisors :
Prof. R.R. Meijer, Prof. M.E. Timmerman

Project financed by NWO, Open Competition Grant
Period: 1 September 2010 – 1 September 2014

Project description
Dimensionality assessmentof polytomous items
Personality scales are popular instruments to measure individual's traits. As important decisions on individuals are based on such measurements, scales of good quality are essential. Scale evaluation critically depends on appropriately assessing the number of traits measured, that is, the dimensionality of the items. For personality scales, which commonly consist of polytomous items, it is unclear which dimensionality assessment method

should be used. A comparative study, including various methods associated with factor analysis and nonparametric item response theory, will be performed. The ultimate goal is to provide proper, well-founded guidelines for the dimensionality assessment of polytomous items in personality scales..

Rivka de Vries
Bayes Factor Tests for Intervention Effects

5 February 2015
Heijmans Institute, Faculty of Behavioural and Social Sciences, University of Groningen

Supervisor:
Prof. R.R. Meijer, Dr R.D. Morey & Dr M. Huisman

Project financed by University of Groningen
Period: 1 September 2010 - 1 September 2014

Project description

A Bayesian approach to the analysis of individual change

It is clear that NHST has serious shortcomings in hypothesis testing, and that the Bayesian approach can ameliorate many if not all of the problems inherent to NHST. Because applied researchers in the field of individual change seem to be unaware of the existence or benefits of the Bayesian approach, we consider it to be useful to introduce them to the benefits of Bayesian statistics. Therefore, in the first part of the dissertation we will discuss NHST and the Bayesian approach as outlined above. We will provide examples with emprical and simulated data to show how results from NHST can be misleading and compare them with Bayesian results, in the context of single subject research.

In the second part, we will adapt existing statistics and tests for single-subject data to simple Bayes factor formulae and compare them using emprical and simulated data. Empirical data are available from several projects in which our research group is involved. Examples of statistics and tests already used in single subject studies are the percentage of non-overlapping data (the percentage of observations in a post-intervention phase exceeding the highest point in a pre-intervention phase), Cohen's *d*, permutation tests, and time series analysis. Rouder et al. (2009) already presented a Bayes factor for Cohen's *d* for group studies and provided a Web-based program that performs the calculations. A similar interface for single subject Bayes factors would make computing Bayes factors convenient even for researchers without deep knowledge of Bayesian statistics.

In the third part of the dissertation, we will adapt existing statistics and tests for individual change within group data to Bayes factor formulae. Again, the classical and Bayes factor statistics will be compared using empirical and simulated data. An example is the RCI of Jacobson & Truax (1991) which was already discussed for this type of data, and several variations of this measure have been developed (e.g., Bruggemans, Van de Vijver, & Huysmans, 1997; Chelune, Naugle, Lüders, Sedlak, & Awad, 1993; Hageman & Arrindell, 1999; McSweeny, Naugle, Chelune, & Lüders, 1993; for a comparison of measures, see Maassen, Bossema, & Brand, 2009). If possible, online toolkits will be provided where researchers can easily calculate the Bayesian variants of their statistics.

In sum, we hope to show researchers in the field of individual change the merits of the Bayesian approach and will provide them with tools to use it. The Bayesian approach will give researchers the odds of their hypotheses, rather than the probabilities of observed and unobserved data.

Marjolein Fokkema
Psychometric Contributions to Improving the Efficiency and Fidelity of Clinical Assessment and Research

17 June 2015
VU University Amsterdam, Clinical Psychology

Supervisors:
Prof. H. Kelderman, Prof. P. Cuijpers & Dr N. Smits

Project financed by VU University Amsterdam
Period: 1 April 2010 – 1 December 2014

Summary of thesis

In clinical practice, assessments are often performed for making decisions: for example, assessment may be aimed at deciding which treatment should be provided to a patient. By taking the decision for which assessment is performed into account, the accuracy and efficiency of assessment can often be improved (Cronbach & Gleser, 1965).
In Chapter 1, I discussed and applied curtailment, an algorithm that allows for early stopping of item administration when questionnaires are used for binary classification decisions. Application of curtailment to three mental health questionnaires was found to result in substantial test length reductions, without reducing diagnostic accuracy.
In Chapter 2, I presented a new algorithm for assessment length reduction of tests batteries: CART-SC. CART-SC combines a classification tree (CART) with application of stochastic curtailment (SC) in every node of the tree, allowing for reduction of both the number of tests administered within a battery, as well as the number of items administered within tests. By simulating application of CART-SC on an existing dataset of responses to a psychological test battery, substantial assessment length reductions could be obtained, without reducing diagnostic accuracy.
The CART algorithm is a powerful method for selecting relevant attributes for decision-making in clinical practice, because CART trees provide sequential testing plans. In addition, CART can deal with a large number of potential predictor variables, can be used for subgroup detection, and allows for automatic detection of interactions between predictor variables. These characteristics are shared by all recursive partitioning methods (RPMs). Therefore, RPMs seem preeminently suited for improving the efficacy of clinical assessment, and more appropriate than many of the data-analytic methods traditionally used in clinical research. In Chapters 3 and 4, I further discussed the potential of RPMs for improving the efficacy of clinical assessment.
Clinical decisions are often based on predictions of future behavior. Therefore, in Chapter 3, I show that by deriving rules from decision trees, we can create a prediction rule ensemble. By reanalyzing a dataset from an earlier study, I show that a prediction rule ensemble allows for more efficient decision making in clinical practice, while providing predictive accuracy similar to that of logistic regression analysis, which was originally applied to the dataset.
In Chapter 4, I introduce an algorithm that can automatically detect patient characteristics that are predictive of treatment outcome in datasets in which the results of several clinical trials have been pooled. The results of the algorithm can be represented as a tree, and in a simulation I show that the algorithm performs very accurately in recovering patients characteristics that are predictive of treatment outcome.
Finally, the accuracy of predictions of treatment effects depends not only on the data-analytic method used, but also on the accuracy with which treatment outcomes are measured. Biased measurement of treatment outcomes will likely introduce bias in the estimation of a predictive model. Therefore, in Chapter 5, I discussed response-shift bias: changes in the measurement models underlying total scores on self-report inventories. As an illustration, I examined the measurement models underlying a self-report inventory from an influential trial comparing the effects of four treatments for depression. Results show that, compared to before treatment, after treatment, item scores overestimate depressive symptomatology, measurement errors are smaller and

there is a stronger association between the underlying constructs. These effects were more apparent in psychotherapy groups, than in pharmacotherapy groups. These changes indicate that response shifts have occurred, and that observed-score comparisons over time yield confounded measures of treatment efficacy.

Dereje Gudicha
Power Analysis Methods for Tests in Latent Class and Latent Markov Models

10 July 2015
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg Univesity

Supervisors: Prof. J.K. Vermunt & Dr F.B. Tekle

Financed by NWO
Period: 1 September 2012 - 1 September 2015

Summary of thesis
Reviewers of journal publications and research grant proposals often request to justify the number of observations and measurement occasions used in the study. These are in fact questions about the statistical power of the performed tests; that is, about the probability of rejecting a particular null hypothesis when it is false. Whereas power analysis methods have been developed for many statistical techniques, these are currently lacking for mixture models.
This dissertation aimed to fill in this important gap in the literature by developing power analysis methods for the most important tests applied when using mixture models for categorical response variables.
Methods are described for a) determining the data requirements to achieve a certain (acceptable) power level (for example, for determining the necessary sample size or number of measurement occasions to achieve a power of .8 or larger) and b) performing power calculations to evaluate whether a specific study design yields an appropriate power level for the statistical tests of interest.
An additional objective is to learn more about the design factors affecting the power of statistical tests in latent class and latent Markov analysis, which will make it easier to design studies with sufficient power, and thus to use available resources more efficiently.

Khurrem Jehangir
Methodological Issues in Large-Scale Educational Surveys

29 October 2015
OMD, University of Twente

Supervisors: Prof. C.A.W. Glas & Dr A.A. Béguin

Financed by University of Twente
Period: 1 May 2006 - 1 September 2011

Project description
The use of item response theory for scaling in educational surveys
This project focuses on the application of item response theory (IRT) in the context of large-scale international educational surveys, such as PISA, TIMSS, CIVICS and PEARLS. Although IRT methodology has been widely used in educational applications such as test construction, norming of examinations, detection of item bias, and computerized adaptive testing, large scale education surveys present a number of specific problems. A

number of these problems are addressed in the present proposal.
The first problem relates to the detection of cultural bias over countries. Statistical tests to detect item bias are available, but the sheer numbers of students (over 10.000) and countries (between 30 and 70) present feasibility problems related to the power of the tests and the presentation of the tests results, which has to be concise and meaningful. Therefore, test statistics will probably need to be redefined and functions for these statistic need to be defined that give information with respect to the seriousness of model violations in relation to the inferences that need to be made.
The second problem relates to modeling of item bias. One of the possibilities in this respect that will be investigated is modeling item bias by adding country-specific item parameters or item parameters which are random over the countries. A related problem is the definition of test statistics which support the appropriateness the bias model.
The third problem relates to the combination of the results of IRT measurement models with multilevel structural models that relate cognitive outcomes with background variables. Several procedures are available (concurrent and two-step procedures, maximum likelihood, Bayesian procedures and plausible value imputation). A study will be made of the relative merits and disadvantages of these methods. The fourth problem relates to linking surveys, predominantly over cycles within a survey, but possibly also between surveys. The possibility of linking arises because a survey as PISA retained a number of cognitive items and background questions over the cycles (2000, 2003, 2006 and 2009). The possibility of linking over surveys may be supported by such occasions as common items and questions or a common framework. In the latter case, a dedicated linking design may be called for. The psychometric problems related to these forms of linking, both pertaining to the measurement model and the structural model will be investigated.
The supervisors of this research project are involved in a consortium led by Cito to implement Core B (background questionnaires) of the fourth cycle of the PISA by OECD. The proposed methods will be evaluated using examples of the various PISA cycles. However, the method will also be evaluated using data from the TIMSS project, and using data from national assessments as PPON and NAEP.

Renske Kuijpers
Applications of Categorical Marginal Models in Test Construction

16 January 2015
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg

Supervisors:
Prof. K. Sijtsma, Dr M.A. Croon & Dr L.A. Van der Ark

Financed by NWO, Open Competition grant
Period: 1 September 2010 - 1 September 2014

Project description

Test construction using marginal models

Mokken scale analysis is an important statistical tool for the construction of psychological tests. For parts of the tool no statistical significance tests were available until recently, but Van der Ark, Croon, and Sijtsma (2007) showed that marginal models provided these tests. Marginal models substantially increase the possibilities of Mokken scale analysis but are available only for short tests consisting of dichotomous items. The proposal aims at extending the approach to longer tests and polytomous items, and developing it into user-friendly software tool for test construction.

Tam Thi Thanh Lam
Some new methods for three-mode factor analysis and multi-set factor analysis

19 February 2015
Psychometrics & Statistics, Heijmans Institute, Fac. BSS, University of Groningen

Supervisors: Prof. R.R. Meijer & Dr A. Stegeman

Financed by NWO, part of the *Vidi* grant of Dr. Alwin Stegeman
Period: 1 February 2011 – 1 February 2015

Project description
Multi-way decompositions: Existence and uniqueness
Over the last 10 years the interest in multi-way data representations has increased exponentially. There is growing awareness that if data are not 2-way (e.g., subjects multi-way (e.g., subjects is often desirable. Such representations are given by multi-way generalizations of Principal Component Analysis (PCA) or, equivalently, of the Singular Value Decomposition (SVD), and are called multi-way decompositions or tensor decompositions. This research project concerns the existence (main project) and uniqueness (PhD project) of an important class of multi-way decompositions and is expected to greatly bene t the application of multi-way models.

Maryam Safarkhani
Optimal Designs for Discrete-time Survival Analysis with Heterogeneity

27 March 2015
Methods & Statistics, Faculty of Social Sciences, Utrecht University

Supervisors: Prof. P.G.M. Van der Heijden & Dr M. Moerbeek

Financed by NWO
Period: 1 January 2011 - 1 January 2015

Project description
Heterogeneity in studies with discrete-time survival endpoints: Implications for optimal designs and statistical power analysis
The main research question in studies on event occurrence is whether and when subjects experience a particular event, such as the onset of daily smoking or the shift to adulthood. The experience of such an event and its timing can be related to explanatory variables such as gender, socio-economic status, educational level, and, in the case of an experiment, treatment condition. Such a variable's effect should be identifiable with sufficient probability, so the power of a study on event occurrence should be controlled in the design phase.
In studies on event occurrence subjects may be monitored continuously, or be measured at intervals. Interval measurement is often used in the behavioural sciences. The sample sizes that should be used to achieve a desired power level are often large and not always feasible in social science research. It is therefore worthwhile to study to what extent covariates can improve statistical power and reduce sample size. The costs of taking such covariates is also taken into account. We will also study optimal designs where treatment and covariates are used as predictor variables in the statistical model.
Furthermore we study trials where part of the heterogeneity is unobserved. To what extent does ignoring

unobserved heterogeneity result in incorrect conclusions with respect to the treatment effect and its significance? How large should sample size be if unobserved heterogeneity is taken into account?

Gerko Vink
Restrictive imputation of incomplete survey data

13 March 2015
Methodology and Statistics, Faculty of Social Sciences, Utrecht University

Supervisors: Prof. S. Van Buuren, Dr J. Pannekoek, Dr L.E. Frank

Financed by Utrecht University and Statistics Netherlands (CBS)
Period: 1 September 2009 - 1 September 2013

Project description

Restrictive imputation of incomplete survey data

Imputation is a method to correct for missing data by using various models to estimate missing values whilst adding the estimated data to the original dataset. The completed dataset can then be analyzed by methods for complete data. To estimate the reliability of estimates on imputed data, however, special techniques are needed, because standard methods for complete data do not discriminate between real and imputed data. Imputations are predictions for the values that could have been encountered, if the missing data would have been observed. Because imputations are, to some extent, used as real observations, these predictions have to be as accurate as possible. In order to obtain accurate estimates, models have to be constructed that optimally represent the properties of the various variables and their internal coherence. In addition to the quality of predictions, plausible imputations also have to meet certain a priori knowledge, such as variable restrictions (e.g. an income must be greater than or equal to zero) or restrictions conform to known population distributions (e.g. the known amount of cars in a country).
Three research topics will be distinguished in this research proposal: imputing variables that have to meet restrictions (§A), imputing semi-continuous variables (§B) and measuring the quality of imputation models and the accuracy and reliability of estimations on imputed data (§C). These research questions can be answered within a PhD position, resulting in a dissertation, as well as new software. Expected results include answering the following general research questions:
– How can imputations under row and column restrictions be executed?
– How can imputations on semi-continuous data best be done?
– How can imputations most effectively and plausibly be evaluated?
Furthermore, based on the research in this PhD-project, recommendations for routinely use of imputation methods at Statistics Netherlands will be made.

Ingrid Vriens

Two of a Kind? Comparing Ratings and Rankings for Measuring Human Values using Latent Class Modeling

20 November 2015
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University

Supervisors: Prof. J.K. Vermunt, Dr J.P.T.M. Gelissen & Dr G.B.D. Moors

Financed by NWO
Period: 1 March 2011 - 1 March 2015

Summary of thesis

The study of values is an important topic within the social sciences. After years of conducting research still uncertainty exists whether these values can be measured best by using a ranking approach or a rating approach.
In the ranking approach respondents are being asked to rank-order a number of alternatives based on importance of each of the alternatives relative to the other alternatives presented (for example: choose top 3 most important alternatives), while in the rating approach respondents are being asked to rate each of the alternatives on a predefined scale (like for example a 5-point Likert scale ranging from 1 “not important” to 5 “very important”).
Ideally results obtained by both methods should be similar, however there are method-specific features that may be biasing the results which have nothing to do with the content of the question (like the tendency in a rating scale to assign the same value to (almost) all alternatives).
The main finding in this dissertation is that, when controlling for method-specific features of each response format and by using a latent class modeling approach, the results obtained by the ranking and rating approach are more similar than previously assumed.

4.3 New projects

Yasin Altinisik - *Research replication through the evaluation of prior knowledge in the form of informative hypotheses and sparse big data models*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Prof. H. Hoijtink, Prof. T. Oldenhinkel, Dr R. Kuiper & Dr R. Klein Entink
Financed by NWO
20 February 2014 – 20 March 2018

Summary
Research replication is increasingly becoming an important topic. It has two main goals: to reduce the probability of false positives and false negatives; and, to test the generalizability of research conclusions to other (sub)populations and related (but not necessarily exactly the same as in the original study) contexts. Currently the methodologies that are available for research replication are rather limited. In this project a new methodology will be developed, evaluated, and applied. Knowledge derived from existing animal studies, completed waves of cohorts, and expert elicitation will be formalized into informative hypotheses. Subsequently the support in new data for these hypotheses will be quantified using a new model selection criterion: a generalization of the GORIC. The performance of this new approach will be evaluated by means of a simulation study and through its use (in cooperation with other CID researchers) in three case studies: translating the results of animal studies into hypotheses with respect to the development of children; replication of results from a study with respect to attention style as conditional adaptation with different subpopulations and contexts; and, replication of expert expectations with respect to the relation between exposure to stories and the development of social competence and self-regulation.

Frank Bais - *Respondent profiles and questionaire profiles in mixed-mode surveys*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Prof. J.J. Hox, Dr J.G. Schouten & Dr V. Toepoel
Financed by Utrecht University
1 January 2014 – 1 January 2018

Summary
More and more surveys use multiple modes (web, mail, phone, face-to-face); they supplement or replace traditional interviewer modes by web. In multi-mode questionnaire design, usually some consideration is given to mode-specific measurement error. Despite this consideration, however, these measurement effects are frequently unexpectedly large and hamper publication. For this reason, there is a strong incentive to better predict measurement effects. Measurement effects are determined by the interplay between characteristics of the questionnaire and characteristics of the respondents, which we will refer to as questionnaire profiles and respondent profiles, respectively. In this project, we will construct a typology of characteristics of questionnaires and respondents to identify such profiles. When these profiles appear to explain variation in answering behaviour, these profiles may function as a bridge between anticipating measurement effects and purposeful consideration of survey mode.

Nitin Bhushan - *PhD Network dynamics of households' energy consumption after interventions*

Psychometrie & Statistiek, Fac. BSS, University of Groningen
Supervisors Prof. E.M. Steg, Dr C.J. Albers & Prof. R.R. Meijer
Financed by NWO and University of Groningen
1 September 2015 – 1 September 2018

Summary

The global consensus on climate change today agrees that climate warming trends are very likely due to human activities. Households account for 26% of the total primary energy consumption in Europe (eurostat) and there is a rising interest in behaviour based interventions aimed at targeting household energy efficiency.

Traditionally, the outcome of these interventions have been given more importance than the underlying process that is assumed to lead to the outcome. We argue that to gain better insight into the process of behaviour change and to help inform future behavioural interventions, it is imperative to examine the patters and transitions reflected in household energy savings over time. Or more specifically, we intend to model the dynamics (process) of household energy consumption after intervention.

Additionally, due to the lack of theory explaining the psychological mechanisms underlying household energy consumption (and savings), it is necessary to resort to empirical models to understand the phenomena. This thesis will follow an exploratory research methodology. We refrain from testing concrete predictions and aim at better understanding a phenomena which ideally, will lead to a theory (whose predictions can later be tested on new data). We begin by choosing a class of models (based on domain expertise) which we feel is useful to understand the phenomena of interest. State Space Models (SSM) is chosen as our general class of models and we aim to identify if a certain subclass provides a better (adequate, but parsimonious) description of the process.

Laura Boeschoten - *Consistent Estimates for Categorical Data based on a Mix of Administrative Data Sources and Surveys*

MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Prof. A.G. De Waal, Prof. J.K. Vermunt & Dr D.L. Oberski
Financed by Tilburg University
1 March 2015 – 1 March 2019

Summary

National Statistical Institutes (NSIs) often use large datasets to estimate population tables on many different aspects of society. A way to create these rich datasets is by utilizing already available register data and supplement them with survey data. A major challenge with the use of combined datasets is to obtain consistent population estimates. Therefore, the main goal of this project is to develop an approach for combining different data sources as effectively and efficiently as possible that can easily be implemented and applied in practice.

In the first project, the focus is on constructing a general class of imputation models that can be used to model the *truth*, the variable that gives the true value of the conceptual phenomenon that one aims to measure, by making use of multiple indicators within a combined dataset. In the second project, more attention is paid on the relation of the conceptual phenomenon with other variables. The third project focusses on using the models to impute other missing values within the combined dataset as well. Other projects focus on

comparing the imputation models with other methods for obtaining consistent estimates within combined datasets and on extensions for longitudinal data.

Giulio Flore - *Predictive Unfolding Models for Single-Peaked Items with Binary and Graded Response Data*

Methodology and Statistics, Social and Behavioural Sciences, Leiden University
Supervisors Prof. W.J. Heiser & Prof. M.J. de Rooij
Financed by Leiden University
14 February 2015 – 14 February 2019

Summary

The project will develop and extensively test new models for the prediction of individual attitudinal responses, preferences, emotional and behavioral tendencies as measured in questionnaires. A common basic assumption of unfolding models is that the probability of endorsement of an attitude item or the occurrence of a behavioral tendency is a single-peaked function of the underlying scale being measured.
When background variables for persons and/or design characteristics for items are available, we can incorporate them in the model and then predict and potentially explain the response of new persons with known background profiles and/or interpolate their response tendency to items not previously measured. The explanatory version of this approach represents an alternative to Structural Equation Modelling (SEM) in problems characterized by a unidimensional Latent Variable (LV) data structure.
This approach will improve the assessment of items in attitudinal and diagnostic assessment for item bank building and optimization, as items can be screened to meet ad-hoc specifications (such as a regular coverage of the LV dimension). In marketing and opinion survey research this approach can be used to rank items in terms of appeal to different types of audiences. Person response assessment is also improved by a more accurate and flexible specification of item features.
A common simulation framework for experimental testing is used for all models and estimation strategies, and the software developed for model estimation and hypothesis testing will be integrated in a user-friendly R-package.

Chris Hartgerink - *Detecting potential data fabrication in the social sciences*

MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Prof. J.K. Vermunt, Prof. J.M. Wicherts, Dr M.A.L.M. Van Assen
Financed by Tilburg University
1 September 2014 – 1 September 2018

Summary

Data fabrication and other forms of research misconduct present major threats to the validity of empirical findings and to the trust in science. The goal of the proposed research is to develop methods for the examination of signs of potential data fabrication using statistical tools. In four projects we (i) review statistical tools, (ii) do empirical research on data fabrication, (iii) develop and apply software on a large scale to detect signs of data fabrication in published results, and (iv) validate the tools and software. The projects' results will advance future detection of misconduct and increase trust in science.

Robert Hillen - *Latent categories versus latent dimensions*

MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Dr W.H.M. Emons, Dr J. M. Wicherts, Prof. K. Sijtsma
Financed by Tilburg University
2012 - 2016

Summary
The question whether constructs are dimensions or categories is a long-standing and on-going debate in psychology. As psychological constructs cannot be directly observed, they are commonly measured by means of psychometric models that formalize and analyze the responses to problems, questions, statements, and so on. Many psychometric models and other statistical procedures have been developed over the past century that either assume a dimensional latent variable, a categorical latent variable, or both.

Thomas Husken - *Event history analysis for population size estimation of elusive populations*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Dr M.J.L.F. Cruyff & Prof. P.G.M van der Heijden
Financed by Utrecht University
1 September 2015 – 1 September 2019

Summary
The size of an elusive population is often of interest to social scientists and policy makers. Elusive populations such as drug addicts and delinquents are often stigmatized, leading to a lack of knowledge about the size and composition of such a population. With the use of registration files, for example police arrests or hospital admissions, a list of events counts of observed individuals from an elusive population can be generated. Population members who are not apprehended by the police or admitted to the hospital, are not in the registration file. The data are therefore truncated at zero; only population members that where seen at least once are registered. The statistical challenge is to estimate the number of unobserved individuals, which is then added to the number of observed individuals to obtain an estimate of the total population size.

The basic model for the analysis of event count data is the zero-truncated Poisson regression model.
This model uses the summary information of event counts of each individual in the estimation procedure. In this PhD project, the frequently used Poisson model is extended to the more flexible and less restrictive recurrent events model for the purpose of population size estimation. Rather than using the summary information of events counts, the recurrent events model also incorporates *when* each apprehension takes place. This approach is also termed event history analysis and allows for the inclusion of time-varying covariates and periodic effects (eg. seasonal variation in capture probabilities), which is the focus of the first paper in this PhD project.

Other projects in this PhD will focus on more extensions to the models for population size estimation from a single dataset. These extensions consist of the inclusion of detention times, unobserved heterogeneity and latent subpopulations in the analysis. By including these factors in the population size estimation framework, we are able to get a more realistic reflection of reality and hence improved estimates.

Fayette Klaassen - *Hypotheses formulation, evaluation, updating and replication for experimental univariate within person data*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Prof. Herbert Hoijtink & Prof. Irene Klugkist
Financed by NWO Talent Grant and Utrecht University
1 September 2015 – 1 September 2019

Summary

Different projects that concern aspects of the formulation of informative hypotheses.
The Bayes factor can be used to evaluate informative hypotheses. However, little is known about the frequentist properties of a Bayes factor. Furthermore, it is important to consider what conclusion is made based on the Bayes factor. Different decision strategies result in differences in the minimally required sample size, relevant (error) probabilities and conclusions that can be drawn.
Additionally, if multiple people are evaluated consecutively, how can the evidence be aggregated and what information does this provide us?

Joost Kruis - *Developing Process Measurement Models with Broad Applicability*

Psychological Methods, Faculty of Social and Behavioural Sciences, University of Amsterdam
Supervisors Prof. Han Van der Maas, Prof. Gunter Maris & Dr Dylan Molenaar
Financed by NWO Graduate Programme 2013 (IOPS)
1 September 2015– 1 September 2020

Summary

Some important process measurement models assume that a response is triggered after an information accumulation process. In the current project we validate these process measurement models and extend them for broad applicability. The project consists of four subprojects: Subproject one focuses on extending the existing models for multiple-choice items, thereby accounting for alternative attractiveness of the response categories. In subproject two we develop models for response processes that require multiple stages. Subproject three investigates how group differences in these models can be traced. In the final subproject an R package is developed that allows fitting and evaluation of our models.

Kimberley Lek - *How to hedge our bets in educational testing: combining test results with teacher expertise*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Dr Rens Van de Schoot & Prof. Herbert Hoijtink
Financed by NWO Talent Grant
1 September 2015 – 1 September 2019

Summary

In the Netherlands, educational testing is heatedly debated. In specific, there is disagreement whether to use objective test results or expert knowledge (i.e., teacher expertise) for many school-track related decisions. To prevent placing one's "bet" on *either* test results *or* teacher expertise, we propose hedging our bets using a

Bayesian methodology that based judgements on the ability of children on both teacher expertise and test results. To make this possible, the following issues are investigated in my PhD:

1. Experts (i.e., teachers, educational practitioners, test takers, et cetera) need to be able to express their knowledge in such a way that it can be used in statistical modelling (i.e., expert elicitation);
2. The quality of test results and expert knowledge has to be evaluated to avoid inaccuracy and/or bias;
3. Test results and expert knowledge need to be combined taking the relative quality of both sources into account;
4. Possible conflicts between expert knowledge and test results need to be checked and the cause for these conflicts need to be evaluated.

The CITO-LVS and WISC-III IQ-test are used as case studies to provide a strong test and potential demonstration of the advantages and pitfalls of the Bayesian method in educational testing.

Xinru Li - *Meta-CART: An integration of classifcation and regression trees into meta-analysis*

Mathematical Institute, Leiden University
Supervisors Prof. Jacqueline J. Meulman & Dr Elise Dusseldorp
Financed by Leiden University
1 November 2014 – 1 November 2018

Summary

Meta-CART: integrate classification and regression tree into meta-analysis
Meta-analysis is an important tool to synthesize results from multiple studies in a systematic way. Interaction effects play a central role in assessing conditions under which the relationship between study features and effect size (the outcome variable) changes in strength and/or direction. However, within the framework of meta-analysis, interaction effects between moderators are barely investigated due to the lack of theories for confirmatory studies and methods with enough power for exploratory studies. To detect interaction effects in exploratory studies, a new approach named "meta-CART" introduced Classification and Regression Trees (CART) in the field of meta-analytic data to identify interactions. The current version of meta-CART has several shortcomings: 1) when applying CART, the sample sizes of studies are not taken into account; 2) the effect size is dichotomized around the median value; 3) the method is a stepwise approach. In this PhD project, we will propose new extensions for meta-CART to overcome its shortcomings and to improve its performance. Furthermore, Monte Carlo simulation studies will be carried out to valuate the performance of (extended) meta-CART. As a result, software will be developed for researchers to apply meta-CART for interaction detection in real-world data

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Annemiek Punter - *Psychometric modeling of cultural bias in International Large-Scale Assessments*

Research Methodology, Measurement and Data Analysis, Faculty of Behavioural Sciences, University of Twente
Supervisors Prof. C.A.W. Glas, Prof. T.J.H.M. Eggen & Dr M.R.M. Meelissen
Financed by IEA (Int. Association for Evaluation of Educational Achievement)
1 January 2015 – 1 January 2018

Summary

International Large-scale Assessment Surveys, such as TIMSS, PIRLS, and ICILS, play a major role in the evaluation of the state of educational systems, in guiding educational policy and in more theory oriented educational effectiveness research. Statistical issues of such surveys are complicated by the sheer size of the

data, the multilevel structure of the data, complex test administration designs, and possible cultural bias. Though the statistical methodology for tackling these issues has become more and more sophisticated over the years, criticism of the used statistical methodology is eminent. An example that has attracted wide attention is the article by Kreiner and Christensen (2014) which criticizes the use of the Rasch model and the handling of cultural bias across countries.
This project aims at providing new orientations for the analyses and comparing them with existing solutions. Components are developing and comparing of different ways of handling cultural differential item function and developing methods to combine these models with between-scales multidimensional population models and with multilevel latent regression models.

Oisin Ryan - *Not straightforward: Mediation and networks in continuous time*

Methodology and Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Dr E.L. Hamaker & Prof. P.G.M. Van der Heijden
Financed by NWO Research Talent
1 September 2015 – 1 September 2019

Summary

The advent of smartphone technology has led to a huge increase in the availability of intensive longitudinal (also known as time series, ambulatory assessment, experience sampling methodology or ESM) data. In psychology in particular this type of data is increasingly being used to model psychological processes or disorders as dynamic systems. There a wide range of models used to do this, but the most popular models are based on the analysis of lagged relationships between variables measured at different occasions. Such approaches form the core of both *longitudinal mediation analysis* and *dynamical network modeling*.

However, it is well-known that these relationships depend on the amount of time that elapses between measurements, such that, among other problems, results cannot be generalized to other lags. An innovative and elegant solution to this problem is to adopt a continuous time (CT) modelling approach, based on the use of differential equation models. This shift to a CT modelling approach however also entails a shift in the perspective with which the dynamic systems we are interested in are viewed. This leads to many major implications regarding the calculation and interpretation of for instance path-specific effects, and other causal or quasi-causal notions. The current project is concerned with developing a CT approach to dynamical network analysis, and tackling the most urgent problems that arise when applying the CT perspective to mediation and network analysis.

Alexander Savi - *Experimentation in online education: Increasing return on investment through A/B testing*

Psychological Methods, Social and Behavioural Sciences, University of Amsterdam
Supervisors Prof. Gunter J.K. Maris & Prof. Han L.J. van der Maas
Financed by NWO
1 February 2014 – 1 February 2018

Summary

This PhD project is part of a larger project that involves two professors (my promoters), three post-docs, and a programmer. It is a joint effort of the University of Amsterdam (UvA), CITO, and OefenWeb (a spin-off from the UvA Psychological Methods department that delivers gamified math and language practice to primarily primary school children). The aim of the joint research project is to increase the return of investment (ROI) of

online learning. In order to accomplish this goal, we develop methods to track children's math abilities through time and study learning interventions that potentially increase the ROI. Ultimately, a framework that enables us to relatively easily deploy and experiment with learning interventions, and an ability tracker that enables the evaluation of the interventions' effectiveness, must result in insights in which learning interventions are most effective. My PhD project targets experimentation (i.e., A/B testing) with learning interventions in large-scale online learning systems.

Riet Van Bork - Empirical methods to distinguish network from latent variable constructs

Psychological Methods, Social and Behavioural Sciences, University of Amsterdam
Supervisors Dr Mijke Rhemtulla & Prof. Denny Borsboom
Financed by UvA and European Research Council
1 November 2014 – 1 November 2018

Summary

Psychological research aims to understand constructs that exist in the minds of individuals and that affect individuals and their societies, such as anxiety, racism, intelligence, and happiness. Researchers use statistical models to study these constructs, and the models they choose affect the conclusions that are made and future research questions.
The current standard in psychology is to construe and model psychological constructs as *latent causal variables* that give rise to measurable variables. This standard is being challenged by a new movement to construe psychological phenomena as *networks of interrelated variables* in a causal system. The two approaches are radically different in what they imply about the nature and structure of psychological constructs and their causes and effects. Until now, the network and latent variable methods for representing and modeling psychological constructs have been developed and studied independently. The proposed research aims to integrate these fields of methodological research.
The main research objectives are, first, to develop and test ways of comparing the statistical models implied by each framework in terms of parsimony; second, to develop and test ways of comparing the models in terms of fit; and third, to develop and test statistical methods for comparing the validity of the two frameworks in terms of their ability to situate the construct within the larger theoretical space. The overarching project goal is to provide guidance to applied researchers in the social sciences as to how to choose a statistical model for their data based on both theoretical and empirical considerations.

Johnny Van Doorn - Bayesian inference for ordinal data in psychology

Psychological Methods, Social and Behavioural Sciences, University of Amsterdam
Supervisors Prof. E.J. Wagemakers & Dr M. Marsman
Financed by NWO Graduate Programme
1 September 2015 – 1 March 2020

Summary

Many statistical methods do not respect the ordinal scale that is typical of measurement in psychology; even when they do, classical hypothesis tests have several drawbacks. Bayesian inference offers a promising alternative framework but has not often been applied to ordinal measurements. The current project aims to harmonize these traditionally disparate fields of statistical inquiry. We propose to model test statistics and use parametric yoking in order to obtain a complete Bayesian inference framework for five nonparametric tests. This framework allows researchers to quantify evidence in favor of the null hypothesis or in favor of the alternative hypothesis, and monitor such evidence continually, as the data accumulate. This flexible method of

evidence monitoring is both ethical and efficient. The proposed tests will be incorporated in R and in JASP, an open source GUI for Bayesian analyses. In sum, we propose to bring together the advantages of Bayesian inference and ordinal data analysis, and disseminate these techniques among a wide audience.

Sara Van Erp - *Advancing structural equation modeling with unbiased Bayesian methods*

Methodology and Statistics, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Prof. J.K. Vermunt, Dr J. Mulder & Dr D.L. Oberski
Financed by NWO Research Talent Grant
1 September 2015 – 1 September 2019

Summary

Bayesian structural equation modeling (SEM) is becoming increasingly popular in applied research as an alternative to *classical* SEM. In the Bayesian approach, a prior needs to be specified. When appropriately chosen, the prior yields higher statistical power, prevents technical problems occurring in classical SEM, such as nonconvergence and inadmissible solutions, and allows the researcher to incorporate state-of-the-art substantive knowledge. When inappropriately chosen, however, priors cause bias. The goal of this project is to develop novel priors for Bayesian SEM that overcome the technical limitations of classical SEM while avoiding bias. The new methodology will be implemented in user-friendly statistical software.

Lisa Wijsen - *The History of Psychometrics: Tools, Trends and Turning points*

Psychological Methods, Social and Behavioural Sciences, University of Amsterdam
Supervisors Prof. Denny Borsboom & Prof. Willem Heiser
Financed by NWO Graduate Programme
1 September 2015 – 1 March 2020

Summary

The field of psychometrics has had an eventful history, yet surprisingly little has been written about its origins and its development over the years. In this project, we aim to write an integrated history of psychometrics. To achieve this goal, we will i) interview prominent psychometricians on important inventions in psychometrics, ii) create a timeline and genealogical tree that describes the origins and development of psychometrics and iii) explore important turning points, such as the development of the factor model. This project will ultimately result in a book proposal for the first book on the *History of Psychometrics*.

Sanne Willems - *New Approaches in Survival Analysis*

Mathematical Institute, Statistical Science for the Life and Behavioral Sciences, Leiden University
Supervisors Prof. Dr. J.J. Meulman & Dr. M. Fiocco
Financed by
1 September 2014 – 1 September 2018

Summary

Optimal scaling with regularization and survival analysis are two research elds in statistics. In the history of the

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methodology for the social and behavioral sciences, there has been a strong demand for approaches that deal with categorical data. Classical statistical methods had to be adapted to suit particular characteristics of research in, for example, psychology, education, political science, and market research. These adaptations were aimed at the optimal assignment of quantitative values to qualitative scales, and have been actively developed in the area of psychometrics.
In the medical sciences, there is ample opportunity of application of optimal scaling as well. In survival analysis, the predictor is usually a composite variable derived from a large number of categorical variables, for example measuring depression. The basic data are non-numerical, with measurements recorded on scales having an uncertain unit of measurement. Such qualitative or categorical variables describe the objects (patients) in a limited number of categories. Ignoring the particular characteristics of the data, the typical approach in survival analysis it to simply compute a sum score as a composite variable. The incorporation of optimal scaling in survival analysis seems to have been given very little attention. This situation motivates the PhD research described in this proposal. Quite recently optimal scaling has been combined with regularization to improve the prediction accuracy of regression models. Our ultimate aim is to combine the two elds to improve the prediction accuracy of the proportional hazards model.
In the sequel, I will rst brie y describe the basics of classic survival analysis and introduce notation. Then, I will describe the data set that will be used, being an example of a typical data set used in survival analysis. This data example will show the relevance of the envisaged research, since it will become clear that optimal scaling is extremely appropriate for the type of data under consideration. Finally, a time line will be given which gives an impression of my activities during my PhD.

Eva Zijlmans - *Solutions for some psychometric problems of the reliability of psychological measurements*

MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Prof. Dr. K. Sijtsma, Dr. J. Tijmstra & Dr. L.A. van der Ark
Financed by Tilburg University
1 September 2014 – 1 September 2018

Summary

Measurement instruments, such as tests and questionnaires, for psychological attributes, such as intelligence and personality traits, must be reliable and valid. In classical test theory, reliability refers to the degree to which a measurement value is repeatable under precisely the same test administration conditions (Lord & Novick, 1968). Validity refers to the attribute the test measures and also to practical use of tests, such as prediction of educational and job success and suitability for therapy (Lissitz, 2009). In this project, we concentrate on psychometric issues and problems of reliability, and we provide solutions.

1. The first project provides an overview of the different approaches to reliability and the varying methods for estimating the reliability coefficients that are associated with these approaches.
2. The second project assesses estimating the reliability of single items.. The reliability of a single item may provide a more direct and interpretable contribution to the test--score reliability.
3. In the third project, standard errors are obtained for a variety of reliability methods, such as the lambda coefficients, the MS--statistic, and stratified alpha (Cronbach, Schönemann, & McKie, 1965; Rae, 2007). Additionally, the bias of these estimation methods is investigated.
4. The fourth project deals with reliability of nominal data, by focusing on the degree to which nominal scores are replicable over repeated observations.
5. The final project extends the framework developed in the previous project such that it can be applied to item scores having an ordinal level of measurement.

4.4 Running projects

Joost Agelink van Rentergem Zandvliet
Advanced Neuropsychological Diagnostics Infrastructure (ANDI)
Brain & Cognition / Psychology, Fac. Social and Beh. Sc., University of Amsterdam
Supervisors**:** Prof. Ben Schmand, Prof. Hilde Huizenga, Prof. Jaap Murre
Financed by NWO/MaGW
Period: 1 September 2013 – 1 September 2017

Florian Böing-Messing
Testing order-constrained hypotheses on variance components
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Financed by Tilburg University
Period: 1 September 2012 - 1 September 2016
Supervisors : Prof. J.K. Vermunt & Dr J. Mulder

Kirsten Bulteel
Dynamic network models for dyadic data
Faculty of Psychology and Educational Sciences, Methodology of Educational Sciences Research Group, KU Leuven
Financed by FWO
Period: 1 October 2013 - 1 October 2017
Supervisors: Dr E. Ceulemans, Prof. F. Tuerlinckx

Jed Cabrieto
Capturing time-varying response patterning and synchronicity through Switching PCA model
Methodology of Educational Research, Fac. of Psychology and Educational Sc., KU Leuven
Supervisors Dr Eva Ceulemans, Prof. Francis Tuerlinckx, Dr Peter Kuppens
Financed by
Period: 1 October 2014 – 1 October 2018

Jolien Cremers
Circular data in longitudinal designs
Methods & Statistics, Faculty of Social Sciences, Utrecht University
Supervisors Prof. Herbert Hoijtink & Dr Irene Klugkist
Financed by NWO Vidi
Period: September 2014 – 1 September 2018

Janneke De Kort
Do our genes pave our way? Modeling GE-covariance, GxE interaction and moderated GE-covariance in longitudinal twin-models
Department of Biological Psychology, Faculty of Psychology and Education, VU University Amsterdam
Financed by NOW Social Sciences, Research Talent Grant
Period: 1 October 2013 – 1 October 2017
Supervisors: Prof. C.V. Dolan & Prof. D.I. Boomsma

Dries Debeer
Psychometric models for differential item performance
Quantitative Psychology and Individual Differences, Faculty of Psychology and Educational Sciences, KU Leuven,
Financed by KU Leuven
Period: 1 October 2010 - 1 October 2016
Supervisor: Prof. R. Janssen

Mathijs Deen
Resampling methodology for longitudinal data analysis
Methodology and Statistics Unit, Institute of Psychology, Faculty of Social and Behavioural Sciences, Leiden University
Financed by Leiden University / Parnassia Groep
Period: 1 August 2013 - 1 August 2019
Supervisors: Dr M. De Rooij & Prof. W.J. Heiser

Laura Dekkers
Why speeding on your scooter is a good idea: Decision strategies in childhood and adolescence
Psychology, Faculty of Social and Behavioural Sciences, University of Amsterdam
Supervisors Prof. H.M. Huizenga, Dr B.R.J. Jansen
Financed by
Period: 1 September 2013 – 1 September 2017

Dino Dittrich
Social network modeling using Bayesian statistics
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors: Prof. J.K. Vermunt, Prof. R.T.A.J. Leenders, Dr J. Mulder
Financed by Tilburg University
Period: 1 June 2014 – 1 June 2017

Lisa Doove
Methodology for detecting treatment-subgroup interactions
Faculty of Psychology and Educational Sciences, Quantitative Psychology and Individual Differences, KU Leuven
Financed by KU Leuven
Period: 1 October 2012 - 1 October 2016

Supervisors: Prof. I. Van Mechelen, Dr E. Dusseldorp & Dr K. Van Deun

Sacha Epskamp
Network psychometrics
Department of Methodology, University of Amsterdam
Financed by NWO, Research Talent Grant
Period: 15 August 2012 - 15 August 2016
Supervisors: Prof. D. Borsboom & Prof. P.A.L. de Boeck

Paulette C. Flore
The psychometrics of stereotype threat
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Dr J.M. Wicherts & Prof. J.K. Vermunt
Financed by NWO Talent Grant
Period: 1 September 2013 – 1 September 2017

Susanna Gerritse
The estimation of population size and population characteristics using incomplete registries
Methods & Statistics, Faculty of Social Sciences, Utrecht University
Financed by Utrecht University / Statistics Netherlands (CBS)
Period: 15 January 2012 - 15 January 2016
Supervisors: Prof. P.G.M. Van der Heijden & Prof. B.F.M. Bakker

Abe Hofman
Analyzing developmental change with time-series data of a large scale monioring system
Psychological Methodology,Department of Psychology, FMG, University of Amsterdam
Financed by NWO, Research Talent grant
Period: 1 September 2012 - 1 September 2016
Supervisors: Prof. H.L.J. Van der Maas, Dr I. Visser & Dr B. R. J. Jansen

Lianne Ippel
Streaming estimation of response heterogeneity
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors Dr M.C. Kaptein and Prof. J.K. Vermunt
Financed by Tilburg University
Period 1 October 2013- 31 August 2017

Ruslan Jabrayilov
Improving assesment of individual change in clinical, medical and health psychology
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Financed by NWO, Open Competition grant
Period: 1 December 2011 - 1 December 2016
Supervisors: Dr W.H.M. Emons, Prof. K. Sijtsma & Dr F.B. Tekle

Maarten Kampert
Distance based analysis on (gen)omics data
Mathematical & Applied Statistics Group, collaboration with Netherlands Metabolomics Center (Leiden Univ.), Dept. of Biological Psychology (VU Univ. Amsterdam), Biometris (Wageningen University & Research Center; WUR)
Financed by IBM / SPSS Leiden

Period: 1 December 2012 - 1 December 2017
Supervisor: Prof. J.J. Meulman

Tanja Krone
Understanding human behavioural processes with Bayesian dynamic models
Psychometrie & Statistiek, Fac. BSS, University of Groningen
Financed by NWO, Research Talent grant
Period: 1 July 2012 - 1 March 2016
Supervisors: Prof. R.R. Meijer & Dr M.E. Timmerman

Jurian Meijering
The Delphi method: methodological issues and its application to the development of rankings
Research Methodology Group, Wageningen University
Supervisors: Prof. Adri Van den Brink, Prof. Kristine Kern, & Dr Hilde Tobi
Financed by
Period: 1 September 2011 – 1 September 2016

Merijn Mestdagh
Modeling and control of dynamical within-person networks
Faculty of Psychology and Educational Sciences, Quantitative Psychology and Individual Differences, KU Leuven
Financed by FWO
Period: 1 October 2013 – 1 October 2017
Supervisors: Prof. F. Tuerlinckx, Prof. D. Borsboom & Dr P. Kuppens

Camelia Minica
On modeling genetic association with addiction phenotypes
VU University Amsterdam, Department of Biological Psychology, Faculty of Psychology and Education, Room 2b-03
Supervisors: Prof. D.I. Boomsma, Prof. C.V. Dolan & Dr J. Vink
Financed by VU University Amsterdam
Period: 1 January 2012 - 1 January 2016

Kees Mulder
Bayesian analysis of circular data in between-subjects designs
Methods & Statistics, Faculty of Social Sciences, Utrecht University
Supervisors: Prof. Herbert Hoijtink & Dr Irene Klugkist
Financed by NWO-Vidi
Period: 1 September 2014 – 1 September 2018

Erwin Nagelkerke
Diagnostics for latent class models with dependent univariate and multivariate observations
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Supervisors: Prof. J.K. Vermunt & Dr D. Oberski
Financed by NWO, Research Talent Grant
Period: 1 February 2013 – 1 Febrauary 2017

Michèle Nuyten
Human factors in statistics
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Supervisors: Dr J.M. Wicherts, Dr M.A.L.M. Van Assen & Prof. J.K. Vermunt
Financed by NWO, Vidi grant nr 452-11-004
Period: 1 December 2012 - 1 December 2016

Hannah Oosterhuis
Improving norms for psychological and educational tests
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Supervisors: Dr L.A. Van der Ark & Prof. K. Sijtsma
Financed by NWO, Research Talent Grant
Period: 1 September 2012 - 1 September 2016

Silvia Rietdijk
Time for a change: Studying individual differences in dynamics
Methods & Statistics, Utrecht University
Financed by NWO, part of Vidi grant of Dr. Ellen Hamaker
Period: 1 September 2012 - 1 September 2016
Supervisors: Prof. H. Hoijtink & Dr E. Hamaker

Inga Schwabe
Nurturing natural talents: A twin study
Department of Research Methodology, Measurement and Data Analysis, Faculty of Behavioural Sciences, University of Twente
Supervisors: Prof. C.A.W Glas, Dr S.M. Van den Berg, Dr A.A. Beguin & Prof. D.I. Boomsma
Financed by NWO, PROO grant
Period: 1 January 2013 - 1 January 2016

Florian Sense
Bayesian inferential methods for state-trace plots
Heijmans Institute, Faculty of Behavioural and Social Sciences, University of Groningen
Supervisors: Prof. R.R. Meijer & Dr R.D. Morey
Financed by NWO
Period: 1 September 2012 – 1 September 2016

Aniek Sies
Developing a statistical methodology for optimal treatment assignment
Quantitative Psychology and Individual Differences, Faculty of Psychology and Educational Sciences, KU Leuven, Belgium
Supervisor: Prof. Iven van Mechelen
Financed by
Period: No exact data available

Robbie Van Aert
Meta-analysis in the presence of publication bias and researcher degrees of freedom
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors: Prof. K. Sijtsma, Dr M.A.L.M. van Assen & Dr J.M. Wicherts
Financed by NWO (Research Talent Grant)
Period: 1 September 2013 – 1 September 2017

Claudia Van Borkulo
A network approach to mood disorders
Psychological Methods, Psychology/Psychiatry, University of Amsterdam & Medical University Center Groningen
Supervisors: Prof. Robert A. Schoevers (UMCG) & Prof. Denny Borsboom (UvA)
Financed by
Period: 1 November 2012 – 1 November 2016

Mattis van den Bergh
Divisive latent class modeling
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Supervisors: Prof. J.K. Vermunt, Dr V.D. Schmittmann
Financed by NWO – Vici
Period: 1 May 2014 – 1 September 2017

Leonie Van Grootel
Not as we know it: Developing and evaluating synthesis methods that incorporate quantitative and qualitative research
Methods & Statistics, Faculty of Social Sciences, Utrecht University
Financed by Utrecht University
Period: 1 August 2011 - 1 August 2017
Supervisors: Dr H.R. Boeije, Dr F. van Wesel & Prof. J. Hox

Geert Van Kollenburg
Diagnostics for latent class models
MTO, Tilburg School of Social and Behavioral Sciences, Tilburg University
Financed by NOW, part of Vici grant Prof. dr J.K. Vermunt
Period: 1 July 2012 - 1 July 2017
Supervisors: Prof. J.K. Vermunt & Dr J. Mulder

Eva Van Vlimmeren
The mapping of national cultures: Examining the robustness of measurements of cross-national cultural dimensions
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Financed by NWO
Period: 1 January 2012 – 1 January 2017
Supervisors: Prof. J.K. Vermunt & Dr G.D.B. Moors

Coosje Veldkamp
Human factors in statistics
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Supervisors: Dr J.M. Wicherts, Dr M.A.L.M. Van Assen & Prof. J.K. Vermunt
Financed by NWO, Vidi grant nr 452-11-004
Period: 1 December 2012 - 1 December 2016

Mathilde Verdam
Using Structural Equation Modeling to detect measurement bias in patient-reported quality-of-life outcomes to improve their interpretation
Department of Child Development and Education, University of Amsterdam
Supervisors: Prof. F.J. Oort & Prof. M.A.G. Sprangers
Financed by Dutch Cancer Society (KWF)
Period: 1 June 2012 - 1 June 2016

Marlies Vervloet
Model construction in (multilevel) regression analysis
Methodologie van het Pedagogisch Onderzoek, Faculty of Psychology and Educational Sciences, KU Leuven
Financed by KU Leuven
Period: 1 October 2010 - 1 October 2016
Supervisors: Dr W. Vanpaemel

Davide Vidotto
Multiple imputation of nested missing data using extended latent class models
MTO, Tilburg School of Social and Behavioral Sciences, Universiteit van Tilburg
Supervisor: Prof. J.K. Vermunt
Project financed by NWO, Research Talent Grant
Period: 1 September 2013 - 1 September 2017

Mariëlle Zondervan-Zwijnenburg
Formalization and evaluation of prior knowledge based on prior/posterior predictive inference
Methods & Statistics, Faculty of Social Sciences, Utrecht University
Supervisors: Prof. H. Hoijtink, Dr A. G. J. Van de Schoot
Financed by NWO Gravitation
Period: 1 July 2014 – 1 July 2018

5 Graduate training program

5.1 Courses in the IOPS curriculum

In 2015 five courses of the IOPS curriculum were organized:

1. **Generalized latent variable modeling** (elective)
   Tilburg University
   Instructor: Prof. J.K. Vermunt
   Dates: 14 – 15 January 2015
2. **What is Psychometrics?** (mandatory)
   University of Amsterdam
   Coordinator: Prof. D. Borsboom
   Dates: 17 – 19 February 2015
3. **Advising on Research Methods** (mandatory)
   University of Amsterdam
   Instructors Dr Herman Adèr & Prof. Don Mellenbergh
   Dates: 3, 10, 17, 24 and 31 March 2015
4. **Applied Bayesian Statistics** (elective)
   Utrecht University
   Instructors: Herbert Hoijtink, Irene Klugkist and Rens Van de Schoot
   Dates: 20 – 24 April 2015
5. **Optimization & Numerical Methods in Statistics** (elective)
   KU University of Leuven
   Instructors: Francis Tuerlinckx, Geert Molenberghs, Katrijn van Deun and Tom Wilderjans
   Dates: 18 - 19 November 2015

5.2 Conferences

5.2.1 30th IOPS Summer Conference

The 30th IOPS Summer Conference was held at Utrecht University on 18-19 June 2015.

Invited speakers

- **Eric-Jan Wagenmakers** (University of Amsterdam) - *JASP: A Fresh Way to do Bayesian Hypothesis Testing*
- **Daniel Oberski** (Utrecht University) - *Model fit evaluation by sensitivity analysis*

PhD student presentations

- **Noémi Schuurman** - *Multilevel autoregressive modeling with measurement error*
- **Xin Gu** - *Controlling for error probabilities when using default Bayes factors*
- **Dereje Gudicha** - *Power Analysis for the Likelihood Ratio Test in Latent Markov Models: Short-cutting the bootstrap p-value based method*
- **Joke Heylen** - *Two-mode K-Spectral Centroid analysis for studying multivariate dynamical processes*

- **Maria Bolsinova -** *Testing conditional independence and modeling conditional dependence between response time and accuracy*
- **Ruslan Jabrayilov** - *Comparison of classical and modern testing methods in change assessment*
- **Pieter Oosterwijk** - *Reliability estimation and coefficient alpha revisited*
- **Marije Fagginger Auer** - *Exploring relations between instruction, strategies and achievement in mathematics: latent variable modeling of large-scale assessment data and experiments*
- **Xinru Li** - *Meta-Cart:Integrating Classification and Regression Trees into Meta-analysis*

PhD student poster presentations

- **Jedelyn Cabrieto** - *Comparing the performance of non-parametric change point detection methods for capturing response concordance*
- **Jolien Cremers** - *Bayesian Longitudinal Modelling of Circular Data: Application and Interpretation*
- **Laura Dekkers** - *Decision Making in a Sequential Context :A Drift Diffusion Model Study*
- **Dino Dittrich** - *Bayesian Analysis of the Network Autocorrelation Model*
- **Paulette Flore -** *Publication bias in practice: The case of Stereotype Threat*
- **Frank Bais -** *Intercoder Reliability: Coding Surveys on their Item Characteristics for Constructing Questionnaire Profiles*
- **Robert Hillen -** *A Critical Assessment of Taxometrics*
- **Jurian Meijering -** *The Delphi method: methodological issues and its application to the development of rankings*
- **Camelia Minica -** *Family-based genetic association analysis: methods and applications to addiction phenotypes*
- **Kees Mulder -** *Extending Bayesian analysis of circular data to comparison of multiple groups*
- **Aniek Sies** - *Comparing four methods for estimating tree-based treatment regimes*
- **Mariëlle Zondervan-Zwijnenburg** - *Development and evaluation of a belief elicitation procedure*

5.2.2 25th IOPS Winter Conference

The 25th IOPS Winter Conference was held on 10 and 11 December 2015 at Leiden University.

Invited speakers

- **Carolin Strobl** - *Detecting differential item and differential step functioning by means of model-based recursive partitioning*
- **Xin Gu** (winner of the IOPS Best Paper of 2014 Award) - *Bayesian evaluation of inequality constrained hypotheses*
- **Tom Wilderjans -** *Combining cluster analysis techniques and three-way component models to account for heterogeneity in the components underlying three-way data*

PhD student presentations

- **Marlies Vervloet** - *Model selection for principal covariates regression*
- **Mathilde Verdam** - *Investigating change in health-related quality of life: What are we measuring?*
- **Susanna Gerritse -** *How implied coverage affects capture-recapture estimation for administrative data*
- **Tanja Krone** - *A Bayesian Dynamic Model to analyse Emotion Dynamic Features in Intensive Longitudinal Data*
- **Camelia Minica** - *The Weighting Is The Hardest Part: On The Behavior of the Likelihood Ratio Test and Score Test Under a Data-Driven Weighting Scheme in Rare Variant Association Studies*
- **Erwin Nagelkerke** - *Goodness-of-fit of Multilevel Latent Class Models*
- **Michèle Nuijten** - *Meta-Science in Psychology: An Overview of 3 Years of Research*
- **Claudia van Borkulo** - *A method for constructing networks from binary data*
- **Sacha Epskamp** - *Generalized Network Psychometrics: Combining Network and Latent Variable Models*
- **Florian Böing-Messing** - *Automatic Bayes Factors for Testing Equality and Inequality Constrained Hypotheses on Variances*

PhD student poster presentations

- **Yasin Altinisik** - *The GORICA method and its application to a multilevel regression model*
- **Mattis van den Bergh** - *Building Latent Class Trees, applied to Social Capital*
- **Riet van Bork** - *Two Tests for Comparing Network Models and Unidimensional Factor Models*
- **Chris Hartgerink** - *Too good to be false: Nonsignificant results revisited*
- **Jolanda Kossakowski** – (1) *Is this the Real Quality of Life? A Comparison of Health-Related Quality of Life Networks in Healthy Adults and Cancer Patients*
- **Jolanda Kossakowski** – (2) *A Bifurcation Awakens: Investigating the Detection Quality of the Mean Field Approximation in a Random Graph and Small-World Graph*
- **Sanne Willems** - *Optimal scaling in survival analysis*
- **Eva Zijlmans** - *Estimating Reliability for Single Items*

6 Research output

6.1 Scientific publication

6.1.1 Dissertations by IOPS PhD students

Bakk, Z. (2015, October 16). *Contributions to bias adjusted stepwise latent class modelling.* Tilburg University. Prom/coprom. Prof. J.K. **Vermunt** & Dr D.L. **Oberski**

Barendse, M. (2015, February 16). *Dimensionality Assessment with Factor Analysis Methods.* University of Groningen. Prom./coprom. Prof. M.E. **Timmerman** & Prof. R.R. **Meijer**

De Vries, R.M. (2015, February 5). *Bayes Factor Tests for Intervention Effects.* University of Groningen. Prom./coprom. Prof. R.R. **Meijer** & Dr R.D. **Morey**

Fokkema, M. (2015, June 17). *Psychometric Contributions to Improving the Efficiency and Fidelity of Clinical Assessment and Research.* VU University Amsterdam. Prom/coprom. Prof. H. **Kelderman**, Prof. P. Cuijpers & Dr N. **Smits**

Gudicha, D.W. (2015, October 7). *Power Analysis Methods for Tests in Latent Class and Latent Markov Models.* Tilburg University. Prom./coprom. Prof. J.K. Vermunt & Dr. F.B. **Tekle**

Jehangir, K. (2015, October 29) - *Methodological Issues in Large-Scale Educational Surveys.* University of Twente. Prom./coprom. Prof. C.A.W. **Glas**, Dr A.A. **Béguin**

Kuijpers, R.E. (2015, January 16). *Applications of Categorical Marginal Models in Test Construction.* Leiden University. Prom./coprom. Prof. K. **Sijtsma**, Dr M.A. **Croon** & Dr L.A. **Van der Ark**

Lam, T.T.T. (2015, February 19). *Some new methods for three-mode factor analysis and multi-set factor analysis.* University of Groningen. Prom./coprom. Prof. R.R. Meijer & Dr. A.W. **Stegeman**

Safarkhani, M. (2015, March 27). *Optimal Designs for Discrete-time Survival Analysis with Heterogeneity.* Utrecht University. Prom/coprom. Prof. P.G.M. **Van der Heijden** & Dr. M. **Moerbeek**

Vink, G. (2015, March 13). *Restrictive imputation of incomplete survey data.* Utrecht University. Prom./coprom. Prof. S. **Van Buuren**, Dr J. Pannekoek & Dr L.E. Frank

Vriens, I. (2015, November 20) - *Two of a Kind? Comparing Ratings and Rankings for Measuring Human Values using Latent Class Modeling.* Tilburg University. Prom./coprom. Prof. J.K. **Vermunt**, Dr J.P.T.M. **Gelissen** & Dr G.B.D. **Moors**

6.1.2 Other dissertations under supervision of IOPS staff members

Barrett, M.L.D. (2015, Oktober 07). *Response model parameter linking.* UT Universiteit Twente (184 pag.) (Enschede: Universiteit Twente). Prom./coprom.: Prof.dr. W.J. **Van der Linden**

Kappelhof, J.W.S. (2015, June 19). Surveying ethnic minorities: the impact of survey design on data quality. The Hague: SCP. Prom./coprom. Prof. E.D. **De Leeuw** & Dr. I.A.L. Stoop

Schonbeck, Y. (2015, November 13). Changing curves. Monitoring growth of children and adolescents in The Netherlands. Utrecht University. Prom./coprom.: Prof. S. **Van Buuren,** Prof. R.A. HiraSing & Dr P. Van Dommelen

Torres van Grinsven, V. (2015, August 24). Motivation in Business Survey Response Behavior: Influencing motivation to improve survey outcome. Utrecht University. Prom/coprom.: Prof. J.J. **Hox** & Prof. G.J.M.E. Snijkers

Zwitser, R.J. (2015, April 22). Contributions to latent variable modeling in educational measurement. Universiteit van Amsterdam (114 pag.). Prom./coprom.: Prof. G.K.J. **Maris**

6.1.3 Refereed article in a journal

Aarts, A.A., et al, ., **Borsboom**, D., Columbus, S., Den Bezemer, B., Deserno, M.K., **Epskamp**, S., Jonas, K., Kleinberg, B., Kossakowski, J.J., Kunkels, Y.K., Rahal, R.M., Sahin, O., Skorinko, J.L.M., Tio, P., **Van Bork**, R., Van den Bergh, D., Van Renswoude, D.R., **Van Doorn**, J.B., & **Wagenmakers**, E.-J. (2015). Estimating the reproducibility of psychological science. *Science, 349* (6251), aac4716-1-aac4716-8

Aarts, E., **Dolan**, C.V., Verhage, M., **Van der Sluis,** S. (2015). Multilevel analysis quantifies variation in the experimental effect while optimizing power and preventing false positives. *BMC Neuroscience*. 16, p. 94. doi: 10.1186/s12868-015-0228-5

Abebe, H.T., **Tan**, F.E.S., **Van Breukelen**, G.J.P., **Berger**, M.P.F. (2015). Bayesian design for dichotomous repeated measurements with autocorrelation. *Statistical Methods in Medical Research*, 24(5), p. 594-611

Agula, J., Barrett, J.B. & **Tobi**, H. (2015). The other side of rapport: data collection mode and interviewer gender effects on sexual health reporting in Ghana. *African Journal of Reproductive Health, 19*(3), 111 - 117. ISSN 1118-4841

Albers, C.J., Boevé, A.J., & **Meijer**, R.R. (2015). A critique to Akdemir and Oguz (2008): Methodological and statistical issues to consider when conducting educational experiments. *Computers & Education*, 87, 238-242. 10.1016/j.compedu.2015.07.001

Andraszewicz, S., Scheibehenne, B., Rieskamp, J., **Grasman**, R., **Verhagen**, J., & **Wagenmakers**, E.-J. (2015). An introduction to Bayesian hypothesis testing for management research. *Journal of Management, 41*(2), 521-543

Assink, M., Van der Put, C.E., Hoeve, M., De Vries, S.L.A., Stams, G.J.J.M., & **Oort**, F.J. (2015). Risk factors for persistent delinquent behavior among juveniles: A meta-analytic review. *Clinical Psychology Review*, 42, 47-61. DOI: 10.1016/j.cpr.2015.08.002

Assink, M., Van der Put, C.E., **Oort**, F.J., & Stams, G.J.J.M. (2015). The development and validation of the Youth Actuarial Care Needs Assessment Tool for Non-Offenders (Y-ACNAT-NO). *BMC Psychiatry*, 15, [36]. DOI: 10.1186/s12888-015-0421-1

Baas, M. & **Van der Maas**, H.L.J. (2015). De (on)mogelijkheid van een valide meting van creatief potentieel voor selectiedoeleinden. *Gedrag en Organisatie, 28*(2), 78-97

Bachrach, N., **Croon**, M.A. & Bekker, M.H.J. (2015). The role of sex, attachment and autonomy-connectedness in personality functioning. *Personality and Mental Health*. 9(4), p. 330–344

Bain, P.G., **Kroonenberg**, P.M. & Kashima, Y. (2015). Cultural beliefs about societal change: A three-mode principal component analysis in China, Australia, and Japan. Cultural beliefs about societal change. *Journal of Cross-Cultural Psychology, 46, 635–651.* (doi: 10.1177/0022022115578005)

Bakker, B.F.M., **Van der Heijden**, P.G.M. & Scholtus, S. (2015). Preface to Special Issue on Coverage Problems in Administrative Sources. *Journal of Official Statistics*, 31(3), 349-355. DOI: 10.1515/JOS-2015-0021

Bakker, M. (Dec 2015). Power problems: n > 138. *Cortex*. 73, p. 367-368

Barendse, M.T., **Oort**, F.J., & **Timmerman**, M.E. (2015). Using exploratory factor analysis to determine the dimensionality of discrete responses. *Structural Equation Modeling*, 22(1), 87-101. DOI: 10.1080/10705511.2014.934850

Bechger, T.M., & **Maris**, G. (2015). A statistical test for differential item pair functioning. *psychometrika*, *80*(2), 317-340

Bennink, M., **Croon**, M.A. & **Vermunt**, J.K. (2015). Stepwise latent class models for explaining group-level putcomes using discrete individual-level predictors.: *Multivariate Behavioral Research*. 50(6), p. 662-675

Boekel, W., **Wagenmakers**, E.-J., Belay, L., **Verhagen**, J., Brown, S., & Forstmann, B.U. (2015). A purely confirmatory replication study of structural brain-behavior correlations. *Cortex, 66*, 115-133

Boevé, A.J., **Meijer**, R.R., **Albers**, C.J., Beetsma, Y., & Bosker, R.J. (2015). Introducing Computer-Based Testing in High-Stakes Exams in Higher Education: Results of a Field Experiment. *PLoS ONE*, 10(12), [e0143616]. 10.1371/journal.pone.0143616

Böhning, D., & **Van der Heijden**, P.G.M. (2015). Correspondence: Some general points regarding Ledberg and Wennberg, BMC Medical Research Methodology 2014 April 27;14:58. *BMC Medical Research Methodology* [E], 15(51). DOI: 10.1186/s12874-015-0043-9

Böhning, D., & **Van der Heijden**, P.G.M. (2015). Erratum to: Correspondence: Some general points regarding Ledberg and Wennberg, BMC Medical Research Methodology 2014 April 27;14:58. *BMC Medical Research Methodology* [E], 15 (76). DOI: 10.1186/s12874-015-0065-3

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6.2.1 Article in journal

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6.2.2 Report

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Luyten, H., **Veen**, D. & Meelissen, M. (2015). *De relatie tussen leerling- en schoolkenmerken en digitale geletterdheid van 14-jarigen: secundaire analyses op de data van ICILS-2013.* (Extern rapport). : Universiteit Twente

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Vink, G., & **Van Buuren**, S. (2015). Multiple imputation of Parent Management Training Oregon model data. Maastricht: Maastricht University
Wissink, I.B., Moonen, X.M.H., **Zand Scholten**, A., Stams, G.J.J.M., Bindels, A., Lekkerkerker, L., & Van der Wal, M. (2015). Rapport onderzoek: De ontwikkeling en validering van een LVB-screeningsinstrument voor toepassing in het basisonderwijs. Amsterdam: Universiteit van Amsterdam

6.3 Popular publications

Albers, C. (2015, September 23). NOW, Gender bias and Simpson's paradox [blog] Available on http://blog.casperalbers.nl/science/nwo-gender-bias-and-simpsons-paradox/
Albers, C. (Contributor) (2015). Discriminatie? Check je statistiek! [Column], Universiteitskrant Groningen Date: 24-Sep-2015 Link: http://www.ukrant.nl/universiteit/discriminatie-check-je-statistiek.html
Tarakci, M., Greer, L.L. & **Groenen**, P.J.F. (2015, Oktober 18). Why aspiring leaders should cultivate skill over charm. *Financial Times*

6.4 Other results

6.4.1 Editorial activities

Albers, C.J. (Associate Editor). Computers & Education. Date: 1-Nov-2015 → 31-Oct-2017
Bronner, F., Dekker, P., **De Leeuw**, E., Paas, L., De Ruyter, K., Schmidts, A., & Wieringa, J. (2015). Ontwikkelingen in het Marktonderzoek 2015. Haarlem: Spaarenhout
Kiers, H.A.L. (editor). Psychometrika. Date: 1994 → …
Maris, G.K.J. (Ed.). (2015) Psychometrika
Meijer, R.R. (Editor). Journal of Personality Assessment. Date: 2014 → 2015
Molenaar, D. (Ed.). (2015) Intelligence
Parvinen, P., Oinas-Kukkonen, H. & **Kaptein**, M.C. (2015). Special section on e-selling and online engagement In: ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS. 14(4), p. 213-213

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Van Breukelen, G.J.P., **Candel**, M. (2015). Efficient design and sample size calculation for trials with clustered data. *Statistical Methods in Medical Research* (Editorial Material), 24(5), p. 491-493

Van de Schoot, A.G.J., Schmidt, P., & De Beuckelaer, A. (2015). Measurement Invariance. Lausanne, Switzerland: Frontiers Media. DOI: 10.3389/978-2-88919-650-0

Wagenmakers, E.-J. (Ed.). (2015) Psychonomic Bulletin & Review

Waldorp, L.J. (Ed.). (2015) PLoS One

6.4.2 Software and test manuals

Moerbeek, M. (Author). (2015). SPA-ML. A software package for power analysis of trials with mulitlevel data. Department of Methodology and Statistics, Faculty of Social and Behavioral Sciences, Utrecht University. To be found at tinyurl.com/spaml.

6.4.3 (Paper) presentation

Albers, C.J., & Gower, J.C. (2015). ***(Interactive) visualisation of threeway data***. 74-77. Abstract from CLADAG 2015: 10th Scientific Meeting of the Classification and Data Analysis Group of the Italian Statistical Society, Santa Margherita di Pula, Italy

Armenta Gutiérrez, B., Stroebe, K., Scheibe, S., Van Yperen, N.W., **Stegeman**, A., & Postmes, T. (2015). Permeability of group boundaries: Development of a scale. Paper presented at ASPO conference 2015, Netherlands

Borsboom, D. (2015). Inaugural lecture: Bodemschatten: Wat grondslagenonderzoek de psychologie te bieden heeft (2015, november 25). Amsterdam: Universiteit van Amsterdam

Borsboom, D. (2015, december 03). Netwerkbenaderingen van psychopathologie [Network approaches to psychopathology]. Zwolle, 11th Phrenos Psychosis Conference

Borsboom, D. (2015, februari 10). Netwerkbenaderingen van psychopathologie [Network approaches to psychopathology]. Den Haag, Parnassia symposium psychiatrische diagnostiek en netwerkmodellen

Borsboom, D. (2015, juni 02). Netwerkbenaderingen van psychopathologie [Network approaches to psychopathology]. Den Bosch, Voorjaarsdag Subvereniging Assistenten Psychiatrie

Borsboom, D. (2015, november 27). Netwerkbenaderingen van psychopathologie [Network approaches to psychopathology]. Bunnik, Symposium 15 Jaar Gedachten Uitpluizen

Borsboom, D. (2015, oktober 15). The theoretical status of mental disorders: A network perspective. Leuven, Leuven Philosophy of Medicine Conference: Pathologizing Mind and Body

Borsboom, D. (2015, september 09). Mental disorders, network models, and dynamical systems. Copenhagen, International Conference on Pychometric Nosology

De Waal, A.G. (2015). Integratie van databronnen: Het combineren van meerdere legpuzzels. Tilburg: Tilburg University. Inaugural speech

Den Otter, D. & **Veldkamp**, B.P. (2015, juni 19). *De kwaliteit van examinering.* Leiden, ORD 2015

Heitink, M.C. & **Veldkamp**, B.P. (2015, juni 17). *Formatief computer adaptief toetsen in een virtuele leeromgeving.* Leiden, ORD 2015

Heitink, M.C., Van der Kleij, F.M., Kippers, W.B., Schildkamp, K., **Veldkamp**, B.P., Hoogland, I.L. & Dijkstra, A.M. (2015, november 06).*Prerequisites for formative assessment in practice.* Glasgow, AEA Europe 2015, Glasgow (GB)

Hickendorff, M. (2015), Students' use of number-based and digit-based strategies: A comparison of Dutch and Flemish elementary school children. EARLI 2015. Limassol, Cyprus

Hickendorff, M. (2015), Using latent class analysis (LCA) to analyze individual differences in children's strategy use. EARLI 2015. Limassol, Cyprus

Hickendorff, M. (2015), Dutch and Flemish children's strategy use on multi-digit subtraction and division. Seventh Expert Meeting Mathematical Thinking and Learning, Radboud University Nijmegen. Nijmegen, The Netherlands

Hickendorff, M. (2015), Oplossingsstrategieën van Nederlandse en Vlaamse leerlingen bij meercijferig aftrekken tot 1000. ORD 2015. Leiden, The Netherlands

Huisman, M. (2015), Invited speaker Social Network Analysis (MIRES SSNA), *Missing data in social networks*, 7 January 2015

Keuning, T., Van Geel, M.J.M., Visscher, A. & **Fox**, G.J.A. (2015, juni 17). *De ontwikkeling van leerkrachtkwaliteit gedurende een training OGW gemeten door middel van leerlingpercepties.* Leiden, ORD 2015: Onderwijs Research Dagen

Keuning, T., Van Geel, M., Visscher, A. & **Fox**, G.J.A. (2015, april 16). *The development of teaching quality during a DBDM intervention.* Chicago, Illinois, AERA 2015 Annual Meeting: Toward justice: culture, language, and heritage in education research and praxis

Keuning, T., Van Geel, M.J.M., Visscher, A., **Fox**, G.J.A. & Moolenaar, N. (2015, april 17). *The transformation of schools' social networks during a data-based decision making reform.* Chicago, Illinois, AERA 2015 Annual Meeting: Toward justice: culture, language, and heritage in education research and praxis

Kroonenberg, P.M. (2015). Factorial invariance of two-way rating designs using three-way methods Conference on Three-way Methods in Chemistry and Psychology (TRICAP2015). Pecol Alta (Bel), Italia, 31 May – 5 June 2015

Kroonenberg, P.M. (2015). The use of deviance plots for non-nested model selection in loglinear models, structural equations, and three-mode analysis. International Meeting of the Psychometric Society, Beijing, 12 – 16 July , 2015

Kroonenberg, P.M. (2015). Multiway extensions of the SVD. Workshop on the Singular Value Decomposition (SVD). Isola di Procida, Italia, 24 – 25 September (Invited)

Lamers, S.M.A., Westerhof, G.J., **Glas**, C.A.W. & Bohlmeijer, E.T. (2015). *The bidirectional relation between positive mental health and psychopathology in a longitudinal representative panel study.* Orlando, USA, World Congress of the International Positive Psychology Association

Lombardo, R., **Kroonenberg**, P.M., & Beh, E.J. (2015). Three-way polynomial correspondence analysis for ordered contingency tables. Conference on Correspondence Analysis and Related Methods (CARME), Napoli, Italia, 20 – 23 September

Lumino, R., & **Van Duijn, M.** (2015). Analysing social support personal networks of single mothers. Paper presented at SIS 2015 Statistical Conference , Treviso, Italy

Maassen, N.A.M., Den Otter, D., Wools, S., **Hemker**, B.T., Straetmans, G.J.J.M. & **Eggen**, T.J.H.M. (2015, juni 17). *Kwaliteit van toetsen binnen handbereik: Reviewstudie van onderzoek en onderzoeksresultaten naar de kwaliteit van toetsen.* Leiden, ORD 2015

Meelissen, M.R.M. & **Punter**, R.A. (2015). Secondary analyses on gender differences in the computer- and information literacy test. In *ECER 2015: Education and transition - Contributions from educational research* . Budapest: European Educational Research Association (EERA)

Meelissen, M.R.M. & **Punter**, R.A. (2015, november 04). *Digital native of digitaal naïef? Digitale geletterdheid van 14-jarigen in internationaal perspectief.* Amersfoort, NRO-congres voor onderwijs en onderzoek

Meijer, R.R., & Niessen, A. (2015). ***Selection for higher education: New rules, new tools***. Paper presented at 13th conference on European Conference on Higher Education, Zurich, Germany

Molenaar, D. & **Rhemtulla**, M. (2015, maart 13). A procedure to test for gene-by-latent environment interactions with multiple indicators. Amsterdam, International Convention of Psychological Science

Molenaar, D., Oberski, D., **Vermunt**, J. & **De Boeck**, P. (2015, juli 14). Response mixture modeling of responses and response times. Beijing, The 80th annual meeting of the Psychometrics Society

Molenaar, D., Oberski, D., **Vermunt**, J. & **De Boeck**, P. (2015, oktober 06). A Latent Markov IRT Modeling Approach to the Analysis of Responses and Response Times. Enschede, The 6th RCEC workshop on IRT

Netten, A., Meelissen, M., **Punter**, A., Droop, M. & Verhoeven, L. (2015, juni 24). *Differential Predictors of 4th Grade Reading and Mathematics Achievement.* Cape Town, 6th IEA International Research Conference, 24–26 June 2015, Cape Town, South Africa

Pijnenborg, G., **Timmerman**, M.E., Derks, E. M., Fleischhacker, W. W., Kahn, R. S., & Aleman, A. (2015). Differential effects of antipsychotic drugs on insight in first episode schizophrenia. Paper presented at EPA-2015, Vienna, Austria

Rambaran, J.A., Veenstra, R., Dijkstra, J. K., & Van Duijn, M.A.J. (2015). Who Bullies Whom?: Level and Direction in Single- and Multi-Grade Classrooms. Paper presented at 2015 SRCD Biennial Meeting, Philadelphia, Pennsylvania, United States

Savi, O.A. (2015, februari 20). Back to the Future. Hoorn, College Tour.

Sense, F., **Meijer**, R., & van Rijn, H. (2015). Stability of individual parameters in a model of optimal fact learning. Poster session presented at BCN New Year's Meeting 2015, Haren, Netherlands

Van Borkulo, C.D. (2015, december 11). Network Comparison Test: A validation study. Leiden, Presentation at conference of Interuniversity Graduate School of Psychometrics and Sociometrics (IOPS)

Van Borkulo, C.D. (2015, juni 01). Do symptom expression patterns matter? Groningen, Presentation for a Masterclass with Professor Kenneth Kendler

Van Borkulo, C.D. (2015, oktober 02). Do symptom expression patterns matter? Amsterdam, 6th Lab meeting Network and time series models

Van der Bles, A.M., Postmes, T., & **Meijer**, R. (2015). Reconciling collective discontent with individual affluence: A social psychological approach to measuring Zeitgeist. Abstract from 2015 Political Psychology Preconference of the 16th Annual Meeting of SPSP, Long Beach, CA, United States

Van der Bles, A.M., Postmes, T. & **Meijer**, R.R. (2015). Reconciling collective discontent with individual affluence: A social psychological approach to measuring Zeitgeist. Poster session presented at 16th Annual Meeting of SPSP, Long Beach, CA, United States

Van der Bles, A.M., Postmes, T. & **Meijer**, R.R. (2015). Understanding collective discontent: A social psychological approach to measuring Zeitgeist. Abstract from Workshop on Identity, Emotion and Intergroup Conflict organized by Interdisciplinary Center Herzliya and the University of Groningen, Tel-Aviv-Jaffa, Israel

Van der Scheer, E.A., **Glas**, C.A.W. & Visscher, A.J. (2015, juni 19). *De effecten van een intensieve training opbrengstgericht werken voor leerkrachten van groep 6 op de didactische vaardigheden van leerkrachten.* Leiden, ORD 2015

Van Duijn, M. (2015). Ethics & Statistics: Lessons from the Stapel Investigation Workshop at the Statistics Department, 26 August.

Van Geel, M.J.M., Keuning, T., Visscher, A. & Fox, G.J.A. (2015, juni 17). *Hef effect van een training Opbrengstgericht werken op prestaties van leerlingen [The effects of a schoolwide data-based decision making intervention on student achievement].* Leiden, ORD 2015: Onderwijs Research Dagen

Van Geel, M.J.M., Keuning, T., Visscher, A. & **Fox**, G.J.A. (2015, juni 17). *Het effect van een training Opbrengstgericht werken op data literacy in het basisonderwijs [The effect of a data-based decision making intervention on data literacy in primary education].* Leiden, ORD 2015: Onderwijs Research Dagen

Van Geel, M.J.M., Keuning, T., Visscher, A. & **Fox**, G.J.A. (2015, juni 17). *Schoolleiderschap en schoolcultuur: ontwikkeling en onderlinge relatie gedurende een OGW-interventie [School leadership and school culture: development and interrelationships during a data-based decision making intervention].* Leiden, ORD 2015: Onderwijs Research Dagen

Van Geel, M.J.M., Keuning, T., Visscher, A. & **Fox**, G.J.A. (2015, april 16). *The effects of a schoolwide data-based decision making intervention on student achievement in primary schools.* Chicago, Illinois, AERA 2015 Annual Meeting: Toward justice: culture, language, and heritage in education research and praxis

Visser, I. & **Jansen**, B.R.J. (2015). Chair in symposium "Criteria and validity of dual systems models in cognition" - International Convention of Psychological Science

Waldorp, L.J. (2015, december 10). Dynamics of networks and the mean field approximation. London, UK, ERCIM conference

Zeguers, M.H.T., Snellings, P., **Huizenga**, H.M. & Van der Molen, M.W. (2015). Time course analyses of orthographic and phonological priming effects during word recognition in a transparent orthography. In The annual conference of the Society for the Scientific Studies of Reading

6.4.4 In press

He, Q., **Veldkamp**, B.P., **Glas**, C.A.W. & De Vries, T. (in press). Automated assessment of patients' self-narratives for posttraumatic stress disorder screening using natural language processing and text mining. *Assessment* . 10.1177/1073191115602551

6.4.5 Miscellaneous

Bais, F., Schouten, B., Lugtig, P. J., Toepoel, V., Douhou, S., Kieruj, N., ... Vis, C. (2015). Can survey item characteristics relevant to mode-specific measurement error be coded reliably? (Discussion Paper / CBS; Vol. 2015, No. 22). The Hague: Statistics Netherlands

Dovis, S., **Agelink van Rentergem Zandvlie**, J.A., & **Huizenga**, H.M. (2015). Does Cogmed working memory training really improve inattention in daily life? A reanalysis [Letter to the editor]. *PLoS One*.

Dovis, S., **Agelink van Rentergem**, J & **Huizenga**, H.M. (2015, Juli 25). Does brain training really help ADHD? New scientist (Media action)

Eusebi, P., Reitsma, J.B. & **Vermunt**, J.K. (2015). On mixture models for diagnostic meta-analyses. *Journal of Clinical Epidemiology*. 68(2), p. 1523-1523 (Comment/Letter to the editor)

Fokkema, M., **Smits**, N., Zeileis, A., Hothorn, T., & **Kelderman**, H. (2015), Detecting treatment-subgroup interactions in clustered data with generalized linear mixed-effects model trees. Working paper. Working Papers in Economics and Statistics University of Innsbruck

Halman, L.C.J.M. & **Gelissen**, J.P.T.M. (2015). European profiles of religious beliefs and practices (Paper)

Hartgerink, C.H.J. (25 Jun 2015) In : Speed translation of misconduct reports. *Nature*. 522, 7557, p. 417-417. Comment/Letter to the editor

Hoijtink, H.J.A. (Author). (2015). Informative Hypotheses (website): http://informative-hypotheses.sites.uu.nl/

Jansen, B.R.J. (2015). Nieuwsgierigheid als 21st century skill (Beschrijving UvA-onderzoek naar nieuwsgierigheid)? Web publication

Korsnakova, P., Throndsen, I., Loi, M., Gudmundsdottir, G.B., Hatlevik, O.E., Ihme, J.M., Senkbeil, M., Goldhammer, F., Gerick, J., Meelissen, M. & **Punter**, A. (2015). Students' computer and information literacy from a European perspective. Findings from ICILS 2013. Part 2. In *ECER 2015: Education and transition - Contributions from educational research* (pp. 1-3). Budapest: European Educational Research Association (EERA)

Meijer, R.R. (Interviewer). Debat op radio 1 over nieuwe vormen van personeelsselectie *Psychometrics & Statistical Techniques, Psychometrics and StatisticsDetails.* Event: Radio 1 : 02/07/2015 - 26/07/2015. Date: 20-Aug-2015 *Activity: Public engagement and outreach › Public lecture/debate/seminar*

Open Science Collaboration (2015). Estimating the reproducibility of psychological science . In : *Science*. 349, 6251

Paap, M.C.S., **He**, Q. & **Veldkamp**, B.P. (2015). Selecting testlet features with predictive value for the testlet effect: an empirical study. *SAGE Open* , 1-12. 10.1177/2158244015581860

Smits, N. (2015). On the effect of adding clinical samples to validation studies of patient-reported outcome item banks: a simulation study. *Quality of Life Research*. DOI: 10.1007/s11136-015-1199-9

Van Borkulo, C.D. (2015, December 22). Wat zegt de netwerkstructuur van symptomen over het verloop van depressie? NESDA Kerstnieuwsbrief 2015

Zondervan-Zwijnenburg, M.A.J. (Photographer). (2015). Ongelijke groepen vergelijken met voorkennis

7 Finances

7.1 Financial statement 2015

Receipts
The participating institutes of Leiden University, University of Amsterdam, VU University of Amsterdam, University of Groningen, University of Twente, Tilburg University, Utrecht University, KU Leuven, University of Leuven, Statistics Netherlands (CBS), and Cito Arnhem contributed financially according to the number of their PhD students that participated in IOPS on 1 July 2015. The participation fee for 2015 was € 700 per PhD student. Associated institutes with PhD students in the IOPS Graduate School, participated on the same terms.
Apart form the above mentioned annual contributions, no other funds are available for the IOPS Interuniversitary Graduate School.

This resulted in a credit balance for the year 2015 of € 26.682,42

7.2 Summary of receipts and expenditures in 2015

Receipts		**Expenditures**		
		Salaries IOPS office		
		Secretary, 18 hours per week	28.134,16	
Contribution participating institutions	35.800,00	Salary director	26.429,16	
Graduate Program 2013	190.000,00	College	2.400,00	
Leiden University	-142.500,00	Course	3.600,00	
University of Amsterdam	-47.500,00	Subtotal		60.563,32
		Office supplies	125,95	
		Printed matter	38,67	
		Hosting website	133,96	
		Travel	550,13	
		Catering	705,00	
		Representation costs	130,99	
		Research	234,40	
Subtotal Receipts	35.800,00	Subtotal		1.919.10
Negative financial outcome 2015	26.682,42			
Total receipts (include result 2014)	62.482,42	**Total expenditures**		62.482,42

7.3 Balance sheet 2015

IOPS Own Funds 2014			
Debet	**Euro**	**Credit**	**Euro**
Own Funds 31-12-2015	70.062,87	Own Funds 01-01-2015	96.745,29
		Results 2015	-26.682,42
Total Debet	70.062,87	Totaal Credit	70.062,87