IRTPRO Version 2.0
Output generated by IRTPRO estimation engine Version 4.54 (32-bit)

Project:	
Description:	
Date:	31 May 2018
Time:	10:43 AM

Table of Contents

Graded Model Item Parameter Estimates, logit: $a\theta + c$

Item	Label	a	s.e.	c_1	s.e.	c_2	s.e.	c_3	s.e.	c_4	s.e.	c_5	s.e.	c_6	s.e.
1	tol1	[7] 3.96	0.27	[1] 2.61	0.25	[2] -0.09	0.20	[3] -2.44	0.24	[4] -3.83	0.28	[5] -5.26	0.35	[6] -6.93	0.45
2	tol2	[14] 4.21	0.30	[8] 2.41	0.25	[9] -0.68	0.22	[10] -2.66	0.26	[11] -3.99	0.30	[12] -5.78	0.39	[13] -7.30	0.48
3	tol3	[21] 4.33	0.31	[15] 2.56	0.26	[16] -0.52	0.22	[17] -2.61	0.26	[18] -3.98	0.31	[19] -5.47	0.38	[20] -6.93	0.46
4	tol4	[28] 2.51	0.16	[22] 1.65	0.16	[23] -0.38	0.15	[24] -1.40	0.16	[25] -2.29	0.18	[26] -3.68	0.22	[27] -5.38	0.32
5	tol5	[35] 2.93	0.20	[29] 0.89	0.17	[30] -1.16	0.17	[31] -2.31	0.20	[32] -3.25	0.22	[33] -4.32	0.26	[34] -6.04	0.37

Graded Model Item Parameter Estimates for Group 1, logit: $a(\theta - b)$ (Back to TOC)

Item	Label	a	s.e.	b_1	s.e.	b_2	s.e.	b_3	s.e.	b_4	s.e.	b_5	s.e.	b_6	s.e.
1	tol1	[7] 3.96	0.27	-0.66	0.06	0.02	0.05	0.62	0.05	0.97	0.06	1.33	0.07	1.75	0.10
2	tol2	[14] 4.21	0.30	-0.57	0.06	0.16	0.05	0.63	0.05	0.95	0.06	1.37	0.08	1.73	0.10
3	tol3	[21] 4.33	0.31	-0.59	0.06	0.12	0.05	0.60	0.05	0.92	0.06	1.26	0.07	1.60	0.09
4	tol4	[28] 2.51	0.16	-0.66	0.07	0.15	0.06	0.56	0.06	0.91	0.07	1.47	0.09	2.15	0.13
5	tol5	[35] 2.93	0.20	-0.30	0.06	0.39	0.06	0.79	0.06	1.11	0.07	1.47	0.09	2.06	0.12

Summed-Score Based Item Diagnostic Tables and X^2s for Group 1 (Back to TOC)

S-X^2 Item Level Diagnostic Statistics

Item	Label	X^2	d.f.	Probability
1	tol1	179.93	73	0.0001
2	tol2	123.13	70	0.0001
3	tol3	117.64	70	0.0003
4	tol4	170.93	88	0.0001
5	tol5	164.94	84	0.0001

Graded Model Item Parameter Estimates, logit: $a\theta + c$

Item	Label	a	s.e.	c_1	s.e.	c_2	s.e.	c_3	s.e.	c_4	s.e.	c_5	s.e.	c_6	s.e.
1	tol1	[42] 2.97	0.26	[36] 5.15	0.31	[37] 2.16	0.18	[38] -0.11	0.15	[39] -1.24	0.16	[40] -2.69	0.21	[41] -5.36	0.37
2	tol2	[49] 3.49	0.31	[43] 5.58	0.37	[44] 2.31	0.22	[45] -0.13	0.17	[46] -1.50	0.19	[47] -2.91	0.23	[48] -6.30	0.45
3	tol3	[56] 3.19	0.29	[50] 5.37	0.34	[51] 2.12	0.20	[52] -0.13	0.16	[53] -1.48	0.17	[54] -2.96	0.22	[55] -5.57	0.38
4	tol4	[63] 2.38	0.23	[57] 3.75	0.25	[58] 1.33	0.16	[59] 0.07	0.14	[60] -1.03	0.14	[61] -2.42	0.18	[62] -4.57	0.29
5	tol5	[70] 2.57	0.26	[64] 2.91	0.22	[65] 0.58	0.15	[66] -0.90	0.15	[67] -1.85	0.16	[68] -3.09	0.21	[69] -5.20	0.34

Graded Model Item Parameter Estimates for Group 2, logit: $a(\theta - b)$ (Back to TOC)

Item	Label	a	s.e.	b_1	s.e.	b_2	s.e.	b_3	s.e.	b_4	s.e.	b_5	s.e.	b_6	s.e.
1	tol1	[42] 2.97	0.26	-1.74	0.15	-0.73	0.08	0.04	0.05	0.42	0.06	0.91	0.09	1.81	0.18
2	tol2	[49] 3.49	0.31	-1.60	0.14	-0.66	0.08	0.04	0.05	0.43	0.06	0.84	0.08	1.81	0.17
3	tol3	[56] 3.19	0.29	-1.68	0.15	-0.67	0.08	0.04	0.05	0.46	0.06	0.93	0.09	1.75	0.16
4	tol4	[63] 2.38	0.23	-1.58	0.15	-0.56	0.08	-0.03	0.06	0.43	0.07	1.02	0.10	1.92	0.18
5	tol5	[70] 2.57	0.26	-1.13	0.11	-0.23	0.06	0.35	0.06	0.72	0.09	1.20	0.12	2.02	0.20

Summed-Score Based Item Diagnostic Tables and X^2s for Group 2 (Back to TOC)

S-X^2 Item Level Diagnostic Statistics

Item	Label	X^2	d.f.	Probability
1	tol1	129.10	72	0.0001
2	tol2	106.55	69	0.0025
3	tol3	135.14	70	0.0001
4	tol4	151.05	81	0.0001

5	tol5	154.86	79	0.0001

Group Parameter Estimates (Back to TOC)

Group	Label	μ	*s.e.*	σ^2	*s.e.*	σ	*s.e.*
1	G1	0.00	-----	1.00	-----	1.00	-----
2	G2	[71] -0.46	0.07	[72] 1.32	0.22	[72] 1.15	0.09

Marginal fit (X^2) and Standardized LD X^2 Statistics for Group 1 (Back to TOC)

Item	Label	Marginal X^2	1	2	3	4
1	tol1	5.7				
2	tol2	7.0	10.1			
3	tol3	6.1	7.7	6.5		
4	tol4	3.9	12.2	12.7	13.9	
5	tol5	4.8	22.4	15.3	15.9	16.4

Marginal fit (X^2) and Standardized LD X^2 Statistics for Group 2 (Back to TOC)

Item	Label	Marginal X^2	1	2	3	4
1	tol1	2.1				
2	tol2	3.8	6.8			
3	tol3	2.6	2.7	7.7		
4	tol4	4.1	13.6	8.1	13.7	
5	tol5	3.1	10.3	9.4	8.8	15.4

Item Information Function Values for Group 1 at 15 Values of θ from -2.8 to 2.8 (Back to TOC)

Item	Label	θ: -2.8	-2.4	-2.0	-1.6	-1.2	-0.8	-0.4	-0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.8
1	tol1	0.00	0.02	0.08	0.36	1.48	3.70	4.09	4.40	4.42	4.84	4.86	4.64	3.17	1.04	0.24
2	tol2	0.00	0.01	0.04	0.23	1.09	3.57	4.51	4.63	5.21	5.49	5.37	5.29	3.33	0.95	0.19
3	tol3	0.00	0.01	0.04	0.23	1.17	3.87	4.71	4.99	5.45	5.82	5.81	5.26	2.42	0.56	0.10
4	tol4	0.03	0.08	0.20	0.49	1.03	1.60	1.81	1.90	2.00	2.01	1.97	1.93	1.83	1.47	0.86
5	tol5	0.01	0.02	0.06	0.18	0.54	1.33	2.22	2.49	2.64	2.75	2.74	2.64	2.45	1.72	0.79
Test Information:		1.04	1.13	1.42	2.50	6.32	15.06	18.34	19.40	20.71	21.90	21.75	20.77	14.20	6.74	3.19
Expected s.e.:		0.98	0.94	0.84	0.63	0.40	0.26	0.23	0.23	0.22	0.21	0.21	0.22	0.27	0.39	0.56

Marginal Reliability for Response Pattern Scores: 0.90

Item Information Function Values for Group 2 at 15 Values of θ from -2.8 to 2.8 (Back to TOC)

Item	Label	θ: -2.8	-2.4	-2.0	-1.6	-1.2	-0.8	-0.4	-0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.8
1	tol1	0.34	0.95	1.91	2.31	2.16	2.43	2.49	2.65	2.76	2.66	2.38	2.36	2.07	1.11	0.42
2	tol2	0.18	0.66	1.94	3.14	2.80	3.19	3.34	3.59	3.78	3.57	2.79	3.00	2.74	1.21	0.36
3	tol3	0.27	0.85	2.00	2.64	2.34	2.70	2.87	3.04	3.16	3.08	2.77	2.74	2.20	1.01	0.33
4	tol4	0.28	0.61	1.12	1.50	1.56	1.62	1.75	1.79	1.79	1.75	1.67	1.61	1.49	1.05	0.55
5	tol5	0.09	0.24	0.58	1.18	1.72	1.83	1.91	2.03	2.09	2.09	2.01	1.90	1.80	1.34	0.70
Test Information:		1.92	4.07	8.31	11.53	11.34	12.54	13.11	13.86	14.33	13.90	12.38	12.37	11.06	6.47	3.12
Expected s.e.:		0.72	0.50	0.35	0.29	0.30	0.28	0.28	0.27	0.26	0.27	0.28	0.28	0.30	0.39	0.57

Marginal Reliability for Response Pattern Scores: 0.93

Likelihood-based Values and Goodness of Fit Statistics (Back to TOC)

Statistics based on the loglikelihood	
-2loglikelihood:	18288.01
Akaike Information Criterion (AIC):	18432.01
Bayesian Information Criterion (BIC):	18804.37

Statistics based on the full item x item x ... classification
The table is too sparse to compute the general multinomial goodness of fit statistics.

Statistics based on one- and two-way marginal tables
The M_2 statistics were not requested.

Summary of the Data and Control Parameters (Back to TOC)

Group:	Group 1	Group 2
Sample Size	657	645
Number of Items	5	5
Number of Dimensions	1	1

Group 1

Item	Label	Categories	Model
1	tol1	7	Graded
2	tol2	7	Graded
3	tol3	7	Graded
4	tol4	7	Graded
5	tol5	7	Graded

Group 2

Item	Label	Categories	Model
1	tol1	7	Graded
2	tol2	7	Graded
3	tol3	7	Graded
4	tol4	7	Graded
5	tol5	7	Graded

Parameter Estimation Control Values

Bock-Aitkin EM Algorithm		
Maximum number of cycles:	500	
Convergence criterion:	1.00e-005	
Maximum number of M-step iterations:	50	
Convergence criterion for iterative M-steps:	1.00e-006	
Number of rectangular quadrature points:	49	
Minimum, Maximum quadrature points:	-6.00	6.00
SEM algorithm tolerance:	1.00e-003	
Standard error computation algorithm:	Supplemented EM	

Miscellaneous Control Values

Print parameter numbers?	Yes
Z tolerance, max. abs. logit value:	50.00
Number of processor cores used:	8
Number of cycles completed:	140
Maximum parameter change:	0.00e+000
Number of free parameters:	72

Processing times (in seconds)

E-step computations:	0.12
M-step computations:	0.50
Standard error computations:	1.08
Goodness-of-fit statistics:	0.03
Total:	1.73

Output Files

HTML results and control parameters: E:\Scale Construction\DIF analyses\medinc.Test1-irt.htm

Convergence and Numerical Stability

Engine status:	Normal termination
SEM algorithm status:	Normal
First-order test:	Convergence criteria satisfied
Condition number of information matrix:	3.77e+002
Second-order test:	Solution is a possible local maximum