Summary of Generalized Partial Credit Model

May 30, 2018

1 Checking Assumptions

Table 1: Goodness of fit statistics related to the test of unidimensionalityin the GPCM-based instrument for measuring gains in the skills and knowledge of participants in the pilot empirical study

data	df	chisq	AGFI	TLI	CFI	DETECT	ASSI	RATIO
Pre-test	2	4.133	0.579	0.846	0.949	0.020	0.333	0.995
Post-test						0.007	0.146	0.986

df: degree of freedom; AGFI: Adjusted Goodness of Fit Index; CFI: Comparative Fit Index; TLI: Tucker-Lewis Index;

Table 2: Item residual correlation statisticsrelated to the test of local independencein the GPCM-based instrument for measuring gains in the skills and knowledge of participants in the pilot empirical study

data	max.chisq	maxaQ3	MADaQ3	SRMSR	p.value
Pre-test	5.539	0.271	0.101	0.093	0.954
Post-test	1.637	0.317	0.108	0.093	0.598

aQ3: adjusted correlation of item residuals; maxaQ3: maximum aQ3; MADaQ3: Median Absolute Deviation of aQ3;

Table 3: Test of monotonicity in the GPCM-based instrument for measuring gains in the skills and knowledge of participants in the pilot empirical study

data	ItemH	ac	vi	vi/ac	maxvi	sum	sum/ac	zmax	zsig	crit
Pre-test.P1s0	1.00	0	0		0	0		0	0	0
Pre-test.P2s0	1.00	0	0		0	0		0	0	0
Pre-test.P3s2	0.86	0	0		0	0		0	0	0
Pre-test.P4s0	0.77	0	0		0	0		0	0	0
Post-test.PAs0		0	0		0	0		0	0	0
Post-test.PBs0		0	0		0	0		0	0	0
Post-test.PCs0	1.00	0	0		0	0		0	0	0
Post-test.PDs2	1.00	0	0		0	0		0	0	0

2 Estimating Item Parameters

Table 4: Estimated parameters in the GPCM-based instrument for measuring the Pre-test

estimated	P1s0	P2s0	P3s2	P4s0
xsi.item	−0.607	0.426	4.279	4.033
B.Cat0	0.000	0.000	0.000	0.000
B.Cat1	1.000	1.000	1.000	1.000
B.Cat2	0.000	0.000	2.000	0.000
B.Cat3	0.000	0.000	3.000	0.000
AXsi.Cat0	0.000	0.000	0.000	0.000
AXsi.Cat1	0.607	−0.426	−3.887	−4.033
AXsi.Cat2			−7.521	
AXsi.Cat3			−12.836	
max.Outfit	0.671	0.513	1.295	0.400
max.Infit	0.851	0.772	1.494	0.976

Table 5: Estimated parameters in the GPCM-based instrument for measuring the Post-test

estimated	PAs0	PBs0	PCs0	PDs2
xsi.item	−3.734	−2.766	−0.695	3.497
B.Cat0	0.000	0.000	0.000	0.000
B.Cat1	1.000	1.000	1.000	1.000
B.Cat2	0.000	0.000	0.000	2.000
B.Cat3	0.000	0.000	0.000	3.000
AXsi.Cat0	0.000	0.000	0.000	0.000
AXsi.Cat1	3.734	2.766	0.695	−4.043
AXsi.Cat2				−6.043
AXsi.Cat3				−10.490
max.Outfit	0.834	0.828	0.819	0.974
max.Infit	0.949	0.998	0.972	1.105

3 Latent Trait Estimates

Table 6: Latent trait estimates and person model fit of the GPCM-based instrument for measuring gains in the skills and knowledge of participants in the pilot empirical study

	Pre-test.theta	Pre-test.error	Pre-test.Outfit	Pre-test.Infit	Post-test.theta	Post-test.error	Post-test.Outfit	Post-test.Infit
10116	3.468	0.951	0.162	0.133	2.326	1.142	0.111	0.364
10119	−1.850	1.945	0.099	0.223	−4.988	1.957	0.197	0.226
10120	4.852	1.054	0.115	0.107	2.326	1.142	0.111	0.364
10121	2.789	1.296	0.175	0.339	−3.250	1.456	0.616	0.616
10122	2.789	1.296	0.175	0.339	−1.659	1.435	0.279	0.310
10126	2.375	1.288	0.157	0.199	−1.657	1.430	0.210	0.307
10127	2.789	1.296	0.175	0.339	−3.250	1.456	0.616	0.616
10128	2.375	1.288	0.157	0.199	2.326	1.142	0.111	0.364
10129	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10130	−0.087	1.432	0.404	0.573	0.423	2.046	0.128	0.262
10131	−2.047	2.123	0.237	0.237	−1.659	1.435	0.279	0.310
10132	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10133	2.375	1.288	0.157	0.199	−3.278	1.365	0.436	0.551
10134	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10135	2.375	1.288	0.157	0.199	−1.657	1.430	0.210	0.307
10136	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10137	−1.848	1.954	0.132	0.225	2.326	1.142	0.111	0.364
10138	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10139	−2.047	2.123	0.237	0.237	−1.659	1.435	0.279	0.310
10140	−0.087	1.432	0.404	0.573	3.529	1.007	0.024	0.076
10141	−1.850	1.945	0.099	0.223	2.961	0.944	0.011	0.013
10143	2.789	1.296	0.175	0.339	−4.457	2.521	0.486	0.486
10144	4.100	0.916	0.297	0.364	−1.657	1.430	0.210	0.307
10145	4.852	1.054	0.115	0.107	2.326	1.142	0.111	0.364
10146	−0.090	1.409	0.307	0.556	3.529	1.007	0.024	0.076
10148	−1.850	1.945	0.099	0.223	5.254	1.920	0.107	0.421
10149	−1.850	1.945	0.099	0.223	2.326	1.142	0.111	0.364
10152	4.852	1.054	0.905	1.531	−1.657	1.430	0.210	0.307
10153	−0.087	1.432	0.404	0.573	2.326	1.142	0.111	0.364
10154	−2.047	2.123	0.237	0.237	−4.457	2.521	0.486	0.486