Article: "On the Quality and Validity of Course Evaluation Questionnaires Used in Tertiary Education in Greece"

Supplementary Material

This report includes all the factor analyses performed for the article: "On the quality and validity of course evaluation questionnaires used in tertiary education in Greece". The datasets on which Exploratory and Confirmatory Factor Analyses were conducted are the following.

a) No Lab-No AS/NT-No TS (3 factors, courses without laboratory, assignments and support teaching)
b) No Lab-No AS/NT -TS (4 factors, courses without laboratory and assignments)
c) No Lab- AS/NT - No TS (4 factors, courses without laboratory and support teaching)
d) No Lab- AS/NT - TS (5 factors, courses without laboratory)
e) Lab- No AS/NT – No TS (4 factors, courses without assignments and support teaching)
f) Lab- No AS/NT –TS (5 factors, courses without assignments)
g) Lab- AS/NT – No TS (5 factors, courses without support teaching)
h) Lab- AS/NT –TS (all (6) factors)

The technical report is divided into two sections:
a) Exploratory Factor analysis with two analyses, per dataset (Based on eigenvalues and on number of factors expected)
b) Confirmatory factor analysis

Exploratory Factor analysis

No Lab- No AS/NT – No TS dataset

Based on eigenvalues>1

	Factor		
	1	**2**	**Uniqueness**
var1	0.873		0.289
var2	0.877		0.328
var3	0.935		0.261
var4	0.901		0.278
var5	0.503		0.709
var6	0.732		0.433
var7	0.318		0.854
var8	0.339		0.806
var9	0.327		0.731
var10		0.166	0.98
var13	0.139		0.948
var14	0.573		0.64
var22	0.962		0.195
var23	0.868		0.229
var24	0.906		0.241
var25	0.828		0.364
var26	0.748		0.485
var27	0.782		0.393
var28	0.612		0.59
var33		0.579	0.659
var34		0.556	0.517
var35		0.657	0.533
var36		0.809	0.364
var37		0.589	0.686

Based on number of factors expected (3)

	Factor			
	1	2	3	Uniqueness
var1	0.812			0.29
var2	0.809			0.328
var3	0.899			0.262
var4	0.816			0.273
var5	0.359			0.644
var6	0.613			0.404
var7	0.162			0.767
var8	0.139			0.665
var9			0.642	0.496
var10			0.369	0.899
var13			0.273	0.909
var14	0.493			0.632
var22	0.942			0.191
var23	0.876			0.209
var24	0.927			0.213
var25	0.884			0.311
var26	0.74			0.479
var27	0.846			0.33
var28	0.571			0.591
var33		0.629		0.619
var34		0.545		0.517
var35		0.678		0.509
var36		0.805		0.348
var37		0.536		0.692

No Lab- No AS/NT – TS dataset

Based on eigenvalues>1

	Factor		
	1	**2**	**Uniqueness**
var1	0.819		0.319
var2	0.856		0.276
var3	0.916		0.249
var4	0.877		0.305
var5	0.479		0.727
var6	0.632		0.5
var7	0.353		0.772
var8		0.41	0.622
var9		0.347	0.655
var10		0.443	0.855
var11		0.666	0.688
var12		0.528	0.75
var13		0.326	0.733
var14	0.548		0.577
var22	0.963		0.198
var23	0.937		0.22
var24	0.967		0.196
var25	0.928		0.267
var26	0.787		0.446
var27	0.931		0.281
var28	0.677		0.541
var33		0.253	0.825
var34	0.35		0.637
var35		0.403	0.751
var36		0.578	0.585
var37		0.566	0.688

Based on number of factors expected (4)

	Factor				
	1	2	3	4	Uniqueness
var1	0.651				0.3209
var2	0.643				0.2704
var3	0.77				0.2521
var4	0.67				0.3007
var5			0.679		0.5833
var6			0.723		0.354
var7			0.689		0.6206
var8			0.411		0.6063
var9			0.359		0.6469
var10				0.244	0.8627
var11				1.092	0.0585
var12				0.803	0.4339
var13			0.317		0.7133
var14	0.478				0.5629
var22	0.907				0.1874
var23	0.914				0.1916
var24	0.935				0.1752
var25	0.925				0.2395
var26	0.738				0.4385
var27	0.955				0.2409
var28	0.616				0.5305
var33		0.525			0.7058
var34		0.637			0.4821
var35		0.654			0.6018
var36		0.908			0.2784
var37		0.635			0.6046

No Lab- AS/NT – No TS dataset

Based on eigenvalues>1

	Factor		
	1	**2**	**Uniqueness**
var1	0.856		0.268
var2	0.912		0.243
var3	0.949	-0.117	0.21
var4	0.912		0.236
var5	0.574	0.143	0.558
var6	0.729		0.402
var7	0.477		0.717
var8	0.489	0.19	0.622
var9	0.402	0.264	0.651
var10		0.162	0.982
var13	0.186		0.942
var14	0.64		0.533
var15	0.666		0.493
var16	0.694		0.475
var17	0.529		0.669
var18	0.902		0.235
var19	0.932		0.194
var20	0.71		0.491
var21	0.82		0.264
var22	0.965	-0.124	0.186
var23	0.93		0.205
var24	0.955	-0.119	0.201
var25	0.892		0.289
var26	0.826		0.362
var27	0.876		0.276
var28	0.666		0.519
var33		0.5	0.69
var34	0.213	0.65	0.379
var35		0.681	0.459
var36		0.648	0.501

Based on number of factors expected (4)

	Factor				Uniqueness
	1	**2**	**3**	**4**	
var1	0.776				0.263
var2	0.913				0.225
var3	1				0.18
var4	0.943				0.206
var5			0.362		0.509
var6	0.572				0.346
var7			0.768		0.377
var8			0.403		0.544
var9			0.417		0.559
var10			0.266		0.939
var13			0.214		0.921
var14	0.395				0.529
var15				0.561	0.394
var16				0.697	0.3
var17			0.655		0.396
var18	0.521				0.185
var19	0.663				0.176
var20	0.397				0.472
var21	0.49				0.249
var22	1.047				0.144
var23	1.02				0.16
var24	1.05				0.156
var25	0.855				0.271
var26	0.678				0.339
var27	0.769				0.243
var37	0.561				0.519
var33		0.626			0.498
var34		0.787			0.395
var35		0.67			0.362
var36		0.664			0.591

No Lab- AS/NT – TS dataset

Based on eigenvalues>1

	Factor		
	1	**2**	**Uniqueness**
var1	0.862		0.258
var2	0.875		0.243
var3	0.899		0.223
var4	0.88		0.236
var5	0.654		0.483
var6	0.756		0.344
var7	0.531		0.546
var8	0.518		0.477
var9	0.522		0.472
var10		0.801	0.422
var11		0.719	0.449
var12	0.676		0.397
var13	0.771		0.379
var14	0.766		0.391
var15	0.59		0.476
var16	0.879		0.24
var17	0.898		0.216
var18	0.704		0.419
var19	0.811		0.293
var20	0.941		0.177
var21	0.904		0.223
var22	0.933		0.2
var23	0.904		0.249
var24	0.862		0.313
var25	0.896		0.262
var26	0.65		0.451
var27	0.422		0.715
var28	0.52		0.583
var33	0.458		0.649
var34		0.422	0.598
var35		0.495	0.618
var36	0.5		0.491
var37		0.524	0.642

Based on number of factors expected (5)

Factor

	1	2	3	4	5
var1	0.719				0.238
var2	0.759				0.214
var3	0.861				0.181
var4	0.77				0.206
var5	0.387				0.419
var6	0.539				0.274
var7		0.282			0.391
var8	0.329				0.439
var9	0.364				0.448
var10				0.386	0.618
var11				0.975	0.123
var12				0.851	0.246
var13				0.255	0.488
var14	0.366				0.393
var15		0.787			0.257
var16		0.859			0.233
var17		0.673			0.327
var18		0.684			0.157
var19		0.611			0.151
var20		0.656			0.343
var21		0.67			0.221
var22	0.896				0.137
var23	0.91				0.157
var24	0.932				0.142
var25	0.834				0.211
var26	0.69				0.308
var27	0.787				0.229
var28	0.402				0.453
var33			0.745		0.437
var34			0.712		0.348
var35			0.809		0.311
var36			0.704		0.44
var37			0.568		0.563

Lab- No AS/NT – No TS dataset

Based on eigenvalues>1

	Factor		
	1	2	Uniqueness
var1	0.852		0.305
var2	0.762		0.405
var3	0.915		0.235
var4	0.867		0.267
var5	0.466		0.692
var6	0.654		0.494
var7	0.346		0.787
var8	0.355		0.764
var9	0.224		0.842
var10		0.312	0.913
var13		0.224	0.945
var14	0.616		0.505
var22	0.901		0.242
var23	0.925		0.248
var24	0.952		0.202
var25	0.842		0.326
var26	0.676		0.539
var27	0.845		0.394
var28	0.522		0.665
var29		0.682	0.63
var30		0.733	0.257
var31		0.689	0.259
var32		0.656	0.479
var33	0.344		0.904
var34		0.533	0.761
var35		0.246	0.851
var36	0.231		0.905
var37	0.196		0.925

Based on number of factors expected (4)

	Factor				Uniqueness
	1	**2**	**3**	**4**	
var1	0.874				0.293
var2	0.759				0.398
var3	0.93				0.229
var4	0.858				0.266
var5	0.48				0.672
var6	0.633				0.478
var7	0.267				0.762
var8				0.501	0.575
var9				0.475	0.69
var10				0.66	0.616
var13				0.251	0.913
var14	0.594				0.493
var22	0.887				0.244
var23	0.895				0.241
var24	0.955				0.172
var25	0.831				0.32
var26	0.716				0.485
var27	0.813				0.372
var28	0.525				0.664
var29		0.463			0.609
var30		0.859			0.142
var31		0.856			0.119
var32		0.718			0.428
var33			0.372		0.787
var34		0.579			0.719
var35			0.338		0.768
var36			0.911		0.242
var37			0.711		0.518

Lab- No AS/NT – TS dataset

Based on eigenvalues>1

	Factor			
	1	**2**	**3**	**Uniqueness**
var1	0.761			0.365
var2	0.759			0.316
var3	0.859			0.256
var4	0.801			0.322
var5	0.46			0.715
var6	0.574			0.532
var7		0.318		0.84
var8		0.508		0.636
var9		0.457		0.589
var10		0.54		0.707
var11		0.61		0.655
var12		0.474		0.565
var13		0.321		0.792
var14	0.452			0.606
var22	0.89			0.173
var23	0.899			0.21
var24	0.91			0.225
var25	0.832			0.33
var26	0.724			0.454
var27	0.848			0.325
var28	0.552			0.581
var29		0.536		0.691
var30	0.491			0.392
var31	0.536			0.404
var32		0.457		0.61
var33			0.663	0.431
var34			0.231	0.869
var35			0.517	0.622
var36			0.66	0.459
var37			0.534	0.67

Based on number of factors expected (5)

	Factor					Uniqueness
	1	**2**	**3**	**4**	**5**	**Uniqueness**
var1	0.666					0.3622
var2	0.745					0.315
var3	0.777					0.257
var4	0.741					0.3206
var5					0.575	0.5747
var6					1.029	0.0285
var7					0.274	0.7906
var8			0.634			0.5734
var9			0.59			0.5006
var10			0.647			0.6586
var11			0.681			0.5859
var12			0.465			0.5115
var13			0.26			0.7769
var14	0.376					0.6092
var22	0.893					0.1631
var23	0.911					0.2009
var24	0.908					0.2227
var25	0.931					0.2946
var26	0.837					0.3971
var27	0.929					0.2988
var28	0.531					0.5701
var29		0.465				0.6532
var30		0.787				0.2096
var31		0.826				0.176
var32		0.651				0.5278
var33				0.727		0.3903
var34				0.467		0.6707
var35				0.717		0.4496
var36				0.646		0.4775
var37				0.496		0.685

Lab- AS/NT – No TS dataset

Based on eigenvalues>1

	Factor			Uniqueness
	1	**2**	**3**	
var1	0.869			0.256
var2	0.873			0.28
var3	0.911			0.24
var4	0.919			0.227
var5	0.506			0.592
var6	0.611			0.407
var7	0.453			0.683
var8	0.367			0.68
var9			0.299	0.687
var10	-0.252			0.943
var13			0.111	0.956
var14	0.654			0.488
var15	0.716			0.45
var16	0.729			0.437
var17	0.532			0.624
var18	0.846			0.253
var19	0.888			0.2
var20	0.695			0.458
var21	0.838			0.27
var22	0.934			0.193
var23	0.927			0.204
var24	0.941			0.184
var25	0.841			0.285
var26	0.881			0.303
var27	0.871			0.307
var28	0.518			0.513
var29		0.604		0.686
var30		0.835		0.124
var31		0.812		0.161
var32		0.842		0.267
var33			0.647	0.522
var34		0.561		0.576
var35			0.617	0.576
var36			0.718	0.517
var37			0.516	0.779

Based on number of factors expected (5)

	Factor					Uniqueness
	1	2	3	4	5	
var1	0.783					0.252
var2	0.781					0.277
var3	0.987					0.2
var4	0.847					0.219
var5		0.5				0.52
var6	0.386					0.383
var7		0.882				0.414
var8		0.399				0.622
var9		0.337				0.635
var10					-0.221	0.912
var13			0.1452			0.954
var14	0.43					0.482
var15					0.676	0.264
var16					0.773	0.19
var17		0.874				0.366
var18	0.522					0.237
var19	0.656					0.2
var20		0.351				0.417
var21	0.421					0.227
var22	1.03					0.149
var23	1.028					0.161
var24	1.01					0.143
var25	0.93					0.244
var26	0.823					0.297
var27	0.974					0.265
var28	0.387					0.51
var29			0.558			0.68
var30			0.836			0.105
var31			0.863			0.105
var32			0.83			0.257
var33				0.8		0.429
var34			0.568			0.491
var35				0.772		0.5
var36				0.584		0.633
var37				0.462		

Lab- AS/NT –TS dataset

Based on eigenvalues>1

	Factor			
	1	2	3	Uniqueness
var1	0.907			0.231
var2	0.896			0.205
var3	0.985			0.18
var4	0.911			0.206
var5	0.495			0.446
var6	0.616			0.337
var7		0.538		0.434
var8	0.414			0.423
var9		0.434		0.449
var10		0.689		0.574
var11		0.987		0.419
var12		0.841		0.385
var13		0.576		0.453
var14	0.554			0.331
var15	0.692			0.327
var16	0.708			0.329
var17		0.462		0.375
var18	0.904			0.2
var19	0.924			0.175
var20	0.684			0.33
var21	0.779			0.237
var22	1.018			0.152
var23	1.001			0.181
var24	1.044			0.142
var25	0.97			0.199
var26	0.892			0.256
var27	0.968			0.22
var28	0.522			0.363
var29		0.655		0.509
var30	0.484			0.369
var31	0.517			0.348
var32		0.379		0.513
var33			0.83	0.362
var34			0.735	0.496
var35			0.806	0.362
var36			0.748	0.387
var37			0.444	0.616

Based on number of factors expected (6)

	Factor						Uniqueness
	1	**2**	**3**	**4**	**5**	**6**	
var1	0.725						0.203
var2	0.693						0.176
var3	0.852						0.152
var4	0.772						0.174
var5					0.656		0.35
var6					0.641		0.245
var7					0.564		0.375
var8					0.459		0.384
var9					0.449		0.405
var10	0.341						0.328
var11				0.661			0.223
var12				0.688			0.213
var13				0.481			0.325
var14	0.546						0.144
var15	0.606						0.13
var16				0.512			0.276
var17				0.51			0.187
var18						0.504	0.456
var19						0.834	0.143
var20						0.809	0.129
var21						0.705	0.365
var22		0.822					0.348
var23		0.691					0.475
var24		0.815					0.328
var25		0.748					0.377
var26		0.456					0.603
var27			0.465				0.546
var28			1.005				0.282
var29			0.884				0.274
var30			0.332				0.452
var31	0.933						0.131
var32	0.979						0.142
var33	0.98						0.113
var34	0.896						0.178
var35	0.78						0.246
var36	0.923						0.189
var37	0.363						0.36

Confirmatory factor analysis

No Lab- No AS/NT – No TS dataset

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.8647	0.00947	91.34	<.0001
	var2	0.8751	0.00929	94.19	<.0001
	var3	0.9956	0.01013	98.24	<.0001
	var4	0.9708	0.01050	92.44	<.0001
	var5	0.6621	0.01358	48.75	<.0001
	var6	0.8015	0.01137	70.5	<.0001
	var7	0.4513	0.01495	30.19	<.0001
	var8	0.3910	0.01136	34.43	<.0001
	var9	0.4874	0.01310	37.2	<.0001
	var10	-0.0286	0.00959	-2.98	0.0029
	var13	0.1181	0.00943	12.52	<.0001
	var14	0.6359	0.01133	56.1	<.0001
teacher	var22	0.9903	0.01020	97.11	<.0001
	var23	1.1243	0.01127	99.77	<.0001
	var24	1.0227	0.01032	99.05	<.0001
	var25	0.9037	0.01060	85.28	<.0001
	var26	0.7401	0.01049	70.58	<.0001
	var27	0.9031	0.01070	84.42	<.0001
	var28	0.7207	0.03049	23.64	<.0001
student	var33	0.5736	0.01146	50.05	<.0001
	var34	0.7307	0.01150	63.55	<.0001
	var35	0.7007	0.01198	58.51	<.0001
	var36	0.8949	0.01314	68.12	<.0001
	var37	0.5718	0.01319	43.34	<.0001

No Lab- No AS/NT – TS dataset

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.933	0.0142	65.54	< .0001
	var2	0.949	0.0136	69.57	< .0001
	var3	1.07	0.015	71.41	< .0001
	var4	1.048	0.0154	68.12	< .0001
	var5	0.693	0.0189	36.59	< .0001
	var6	0.811	0.0158	51.41	< .0001
	var7	0.558	0.0189	29.55	< .0001
	var8	0.545	0.0177	30.88	< .0001
	var9	0.564	0.0187	30.11	< .0001
	var10	0.126	0.0165	7.62	< .0001
	var13	0.466	0.0158	29.5	< .0001
	var14	0.74	0.0167	44.15	< .0001
supporting teaching	var11	0.188	0.0792	2.38	0.0175
	var12	9.17	3.8426	2.39	0.017
teacher	var22	1.098	0.0152	72.42	< .0001
	var23	1.22	0.0163	74.83	< .0001
	var24	1.137	0.0152	74.75	< .0001
	var25	1.08	0.0158	68.34	< .0001
	var26	0.847	0.0156	54.31	< .0001
	var27	1.048	0.0157	66.81	< .0001
	var28	0.809	0.024	33.78	< .0001
student	var33	0.638	0.0177	36.14	< .0001
	var34	0.777	0.0168	46.28	< .0001
	var35	0.748	0.0177	42.29	< .0001
	var36	0.96	0.0188	51.09	< .0001
	var37	0.687	0.0192	35.84	< .0001

No Lab- AS/NT – No TS dataset

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.8646	0.00806	107.21	< .0001
	var2	0.8959	0.00801	111.86	< .0001
	var3	0.9855	0.00861	114.39	< .0001
	var4	0.9789	0.00887	110.36	< .0001
	var5	0.7093	0.01141	62.16	< .0001
	var6	0.8173	0.00966	84.62	< .0001
	var7	0.5466	0.01287	42.48	< .0001
	var8	0.5324	0.01056	50.43	< .0001
	var9	0.5719	0.01128	50.68	< .0001
	var10	-0.0641	0.00815	-7.87	< .0001
	var13	0.1059	0.00821	12.9	< .0001
	var14	0.6655	0.00942	70.66	< .0001
assignments	var15	0.6606	0.00854	77.32	< .0001
	var16	0.6468	0.00842	76.8	< .0001
	var17	0.6517	0.01281	50.89	< .0001
	var18	1.0345	0.0088	117.6	< .0001
	var19	1.0699	0.00883	121.13	< .0001
	var20	0.9452	0.01217	77.67	< .0001
	var21	0.8918	0.00909	98.15	< .0001
teacher	var22	1.002	0.0087	115.12	< .0001
	var23	1.1186	0.00947	118.09	< .0001
	var24	1.0504	0.00882	119.07	< .0001
	var25	0.8901	0.00871	102.24	< .0001
	var26	0.7359	0.00836	88.02	< .0001
	var27	0.8764	0.00869	100.79	< .0001
student	var37	0.6238	0.01262	49.44	< .0001
	var36	0.8453	0.0111	76.19	< .0001
	var35	0.5052	0.00821	61.51	< .0001
	var34	0.6909	0.00941	73.42	< .0001
	var33	0.4751	0.00901	52.72	< .0001

No Lab- AS/NT – TS dataset

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
course	var1	1.018	0.00718	141.7	< .0001
	var2	1.041	0.00707	147.2	< .0001
	var3	1.117	0.00754	148.3	< .0001
	var4	1.102	0.00757	145.7	< .0001
	var5	0.887	0.00864	102.7	< .0001
	var6	0.997	0.00789	126.3	< .0001
	var7	0.785	0.00903	87	< .0001
	var8	0.809	0.00869	93.1	< .0001
	var9	0.824	0.00879	93.8	< .0001
	var10	0.483	0.0087	55.6	< .0001
	var13	0.702	0.00831	84.5	< .0001
	var14	0.893	0.00815	109.6	< .0001
supporting teaching	var11	1.232	0.0153	80.5	< .0001
	var12	1.721	0.01711	100.6	< .0001
assignments	var15	0.978	0.00777	125.8	< .0001
	var16	0.985	0.00783	125.7	< .0001
	var17	0.914	0.00916	99.8	< .0001
	var18	1.192	0.00773	154.2	< .0001
	var19	1.203	0.00778	154.7	< .0001
	var20	1.119	0.00923	121.2	< .0001
	var21	1.11	0.00798	139.1	< .0001
TEACHER	var22	1.164	0.00762	152.8	< .0001
	var23	1.236	0.0081	152.5	< .0001
	var24	1.178	0.00758	155.4	< .0001
	var25	1.096	0.00757	144.8	< .0001
	var26	0.984	0.00766	128.4	< .0001
	var27	1.097	0.00779	140.9	< .0001
	var28	0.93	0.00955	97.4	< .0001
student	var33	0.739	0.00763	96.9	< .0001
	var34	0.851	0.00755	112.7	< .0001
	var35	0.791	0.00739	107.1	< .0001
	var36	0.955	0.00867	110.3	< .0001
	var37	0.8	0.01097	72.9	< .0001
supporting teaching	var11	1.232	0.0153	80.5	< .0001
	var12	1.721	0.01711	100.6	< .0001

Lab- No AS/NT – No TS dataset

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.8993	0.0181	49.7	< .0001
	var2	0.8275	0.0171	48.27	< .0001
	var3	1.0459	0.0192	54.56	< .0001
	var4	1.0164	0.0193	52.59	< .0001
	var5	0.5525	0.0234	23.66	< .0001
	var6	0.7394	0.0199	37.08	< .0001
	var7	0.4747	0.0274	17.3	< .0001
	var8	0.3818	0.0226	16.88	< .0001
	var9	0.4223	0.025	16.9	< .0001
	var10	-0.1362	0.017	-7.99	< .0001
	var13	0.0708	0.016	4.42	< .0001
	var14	0.6132	0.0213	28.78	< .0001
teacher	var22	1.0311	0.0191	54.12	< .0001
	var23	1.1839	0.0213	55.6	< .0001
	var24	1.0796	0.0199	54.32	< .0001
	var25	1.0147	0.0213	47.71	< .0001
	var26	0.7701	0.0201	38.38	< .0001
	var27	0.9939	0.0212	46.99	< .0001
	var28	0.497	0.0606	8.2	< .0001
lab	var29	0.4867	0.0221	22.03	< .0001
	var30	1.1539	0.0213	54.07	< .0001
	var31	1.2135	0.0212	57.22	< .0001
	var32	0.9495	0.0258	36.86	< .0001
student	var33	0.6293	0.0218	28.84	< .0001
	var34	0.6314	0.0274	23.01	< .0001
	var35	0.6177	0.0217	28.47	< .0001
	var36	0.7534	0.027	27.87	< .0001
	var37	0.4755	0.0262	18.18	< .0001

Lab- No AS/NT – TS dataset

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.9785	0.0301	32.55	< .0001
	var2	0.95	0.0281	33.84	< .0001
	var3	1.1471	0.0321	35.78	< .0001
	var4	1.136	0.0336	33.77	< .0001
	var5	0.6727	0.0398	16.89	< .0001
	var6	0.7735	0.034	22.72	< .0001
	var7	0.4222	0.0429	9.83	< .0001
	var8	0.4703	0.0364	12.92	< .0001
	var9	0.5825	0.0379	15.35	< .0001
	var10	0.0774	0.0324	2.39	0.017
	var13	0.3434	0.0333	10.32	< .0001
	var14	0.7084	0.034	20.86	< .0001
supporting teaching	var11	0.8054	0.0693	11.62	< .0001
	var12	2.0678	0.1298	15.93	< .0001
teacher	var22	1.1744	0.032	36.65	< .0001
	var23	1.2751	0.0346	36.83	< .0001
	var24	1.2268	0.0336	36.51	< .0001
	var25	1.0916	0.0333	32.75	< .0001
	var26	0.9173	0.035	26.18	< .0001
	var27	1.0824	0.0336	32.17	< .0001
	var28	0.7228	0.0533	13.57	< .0001
lab	var29	0.5799	0.036	16.13	< .0001
	var30	1.2284	0.0355	34.63	< .0001
	var31	1.2322	0.0356	34.6	< .0001
	var32	0.8901	0.042	21.2	< .0001
student	var33	0.7744	0.0341	22.72	< .0001
	var34	0.5736	0.0387	14.83	< .0001
	var35	0.764	0.0351	21.77	< .0001
	var36	0.8221	0.0388	21.2	< .0001
	var37	0.6609	0.0426	15.52	< .0001

Lab- AS/NT – No TS dataset

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p
course	var1	0.8851	0.0138	64.35	< .0001
	var2	0.8926	0.0136	65.67	< .0001
	var3	1.0223	0.0148	69.07	< .0001
	var4	1.0168	0.015	67.84	< .0001
	var5	0.7159	0.0183	39.14	< .0001
	var6	0.8295	0.0168	49.42	< .0001
	var7	0.5679	0.0216	26.31	< .0001
	var8	0.4934	0.0175	28.26	< .0001
	var9	0.5141	0.0186	27.69	< .0001
	var10	-0.1014	0.0132	-7.66	< .0001
	var13	0.0871	0.0131	6.65	< .0001
	var14	0.6916	0.0163	42.34	< .0001
assignments	var15	0.7186	0.0149	48.18	< .0001
	var16	0.72	0.0151	47.84	< .0001
	var17	0.715	0.0218	32.78	< .0001
	var18	1.0869	0.0156	69.89	< .0001
	var19	1.1368	0.0157	72.53	< .0001
	var20	0.9808	0.0201	48.74	< .0001
	var21	0.9577	0.0157	60.86	< .0001
teacher	var22	1.0311	0.0151	68.19	< .0001
	var23	1.115	0.0159	70.12	< .0001
	var24	1.0572	0.015	70.6	< .0001
	var25	0.9338	0.0148	62.96	< .0001
	var26	0.8152	0.0149	54.74	< .0001
	var27	0.9573	0.0151	63.53	< .0001
	var28	0.7776	0.0349	22.27	< .0001
lab	var29	0.5507	0.0176	31.25	< .0001
	var30	1.212	0.0165	73.27	< .0001
	var31	1.2419	0.0168	73.79	< .0001
	var32	1.0284	0.0193	53.2	< .0001
student	var33	0.5904	0.0153	38.63	< .0001
	var34	0.581	0.0207	28.00	< .0001
	var35	0.509	0.014	36.44	< .0001
	var36	0.7132	0.019	37.59	< .0001
	var37	0.5043	0.0235	21.46	< .0001

Lab- AS/NT –TS dataset

Factor Loadings					
Factor	**Variable**	**Estimate**	**SE**	**Z**	**p-value**
	var1	**1.075**	**0.0145**	**74.2**	**< .0001**
	var2	1.083	0.0140	77.1	< .0001
	var3	1.162	0.0152	76.5	< .0001
	var4	1.152	0.0152	75.8	< .0001
	var5	0.938	0.0174	54.0	< .0001
	var6	1.015	0.0158	64.1	< .0001
Course	var7	0.867	0.0186	46.7	< .0001
	var8	0.862	0.0168	51.2	< .0001
	var9	0.855	0.0170	50.1	< .0001
	var10	0.442	0.0164	26.9	< .0001
	var13	0.689	0.0167	41.3	< .0001
	var14	0.964	0.0162	59.4	< .0001
Supporting teaching (if applicable	var11	0.596	0.0233	25.6	< .0001
	var12	0.882	0.0225	39.2	< .0001
	var15	1.016	0.0154	66.0	< .0001
	var16	1.026	0.0154	66.8	< .0001
Assignments (if applicable)	var17	0.975	0.0183	53.3	< .0001
	var18	1.271	0.0158	80.5	< .0001
	var19	1.290	0.0158	81.7	< .0001
	var20	1.176	0.0181	64.8	< .0001
	var21	1.183	0.0162	73.1	< .0001
	var22	1.220	0.0153	79.8	< .0001
	var23	1.274	0.016	79.6	< .0001
Teaching staff	var24	1.247	0.0152	81.9	< .0001
	var25	1.165	0.0155	75.1	< .0001
	var26	1.071	0.0154	69.7	< .0001
	var27	1.172	0.0156	75.0	< .0001
	var28	0.984	0.0196	50.1	< .0001
	var29	0.750	0.0177	42.5	< .0001
Laboratory (if applicable)	var30	1.260	0.0158	79.6	< .0001
	var31	1.282	0.0159	80.8	< .0001
	var32	1.057	0.0184	57.3	< .0001
	var33	0.842	0.0152	55.4	< .0001
	var34	0.778	0.0171	45.4	< .0001
Student self-assessment	var35	0.812	0.0146	55.8	< .0001
	var36	0.891	0.0163	54.7	< .0001
	var37	0.735	0.0215	34.2	< .0001