

Validation of a German Version of Kelley's (1992) Followership Questionnaire.

ESM 5. Local misspecification detection.

Potential local misspecifications of the followership model were detected based on Mplus modification indices (MI), expected parameter change (EPC) and a power test for MI, as proposed by Saris et al., 2009. The test was computed with the software Jrule (Oberski, 2010).

Decision rules:

Minimum misspecification	Alpha	"High" power
0.2	0.05	0.8

Results for Study 1:

Parameter	Jrule Decision for potential misspecification	MI	EPC	Power	NCP
FL_ICT BY FL_11	Misspecified	16.477	0.432	0.468	3.532
FL_AE BY FL_19	Misspecified	10.904	-0.436	0.328	2.294
FL_AE BY FL_17	Misspecified	17.219	0.535	0.342	2.406
FL_16 WITH FL_15	Misspecified (EPC \geq delta)	67.320	0.334	0.998	24.139
FL_06 WITH FL_05	Misspecified (EPC \geq delta)	34.177	0.216	1.000	29.301
FL_06 ON FL_05	Misspecified (EPC \geq delta)	34.177	0.216	1.000	29.301
FL_18 ON FL_19	Misspecified (EPC \geq delta)	25.100	0.247	0.982	16.457
FL_19 ON FL_18	Misspecified (EPC \geq delta)	25.100	0.247	0.982	16.457
FL_19 WITH FL_18	Misspecified (EPC \geq delta)	25.100	0.247	0.982	16.457
FL_15 ON FL_16	Misspecified (EPC \geq delta)	67.323	0.334	0.998	24.140
FL_05 ON FL_06	Misspecified (EPC \geq delta)	34.178	0.216	1.000	29.302
FL_16 ON FL_15	Misspecified (EPC \geq delta)	67.319	0.334	0.998	24.138
FL_ICT ON FL_17	Not misspecified (EPC $<$ delta)	17.218	-0.185	0.994	20.123
FL_17 WITH FL_AE	Not misspecified (EPC $<$ delta)	17.219	0.117	1.000	50.315
FL_ICT ON FL_11	Not misspecified (EPC $<$ delta)	16.479	0.107	1.000	57.574

Parameter	Jrule Decision for potential misspecification	MI	EPC	Power	NCP
FL_AE ON FL_19	Not misspecified (EPC < delta)	10.905	-0.095	1.000	48.332
FL_AE ON FL_17	Not misspecified (EPC < delta)	17.220	0.117	1.000	50.318
FL_ICT ON FL_19	Not misspecified (EPC < delta)	10.907	0.151	0.992	19.134
FL_AE ON FL_11	Not misspecified (EPC < delta)	16.478	-0.149	1.000	29.689
FL_17 ON FL_16	Not misspecified (EPC < delta)	10.059	0.134	0.997	22.408
FL_17 ON FL_12	Not misspecified (EPC < delta)	14.118	0.177	0.989	18.025
FL_11 WITH FL_AE	Not misspecified (EPC < delta)	16.479	-0.149	1.000	29.691
FL_19 WITH FL_ICT	Not misspecified (EPC < delta)	10.906	0.150	0.993	19.388
FL_10 ON FL_08	Not misspecified (EPC < delta)	10.819	0.142	0.996	21.462
FL_10 WITH FL_08	Not misspecified (EPC < delta)	10.818	0.142	0.996	21.460
FL_11 ON FL_20	Not misspecified (EPC < delta)	11.002	0.106	1.000	39.167
FL_11 WITH FL_ICT	Not misspecified (EPC < delta)	16.478	0.107	1.000	57.570
FL_19 WITH FL_AE	Not misspecified (EPC < delta)	10.905	-0.095	1.000	48.332
FL_17 WITH FL_ICT	Not misspecified (EPC < delta)	17.219	-0.185	0.994	20.124
FL_08 ON FL_10	Not misspecified (EPC < delta)	10.819	0.142	0.996	21.462

Results for Study 2:

Parameter	Jrule Decision for potential misspecification	MI	EPC	Power	NCP
FL_ICT BY FL_16	Misspecified	55.454	0.647	0.634	5.299
FL_ICT BY FL_07	Misspecified	12.009	-0.326	0.566	4.520
FL_ICT BY FL_15	Misspecified	63.725	-0.773	0.542	4.266
FL_06 ON FL_05	Misspecified (EPC \geq delta)	48.949	0.222	1.000	39.728
FL_15 ON FL_18	Misspecified (EPC \geq delta)	43.381	-0.277	0.997	22.615
FL_15 WITH FL_AE	Misspecified (EPC \geq delta)	63.725	0.361	0.993	19.559
FL_06 WITH FL_05	Misspecified (EPC \geq delta)	48.949	0.222	1.000	39.728
FL_15 ON FL_17	Misspecified (EPC \geq delta)	38.620	-0.207	1.000	36.052

Parameter	Jrule Decision for potential misspecification	MI	EPC	Power	NCP
FL_18 ON FL_15	Misspecified (EPC \geq delta)	33.016	-0.244	0.997	22.182
FL_18 WITH FL_15	Misspecified (EPC \geq delta)	27.839	-0.240	0.993	19.333
FL_15 WITH FL_1CT	Misspecified (EPC \geq delta)	63.725	-0.207	1.000	59.488
FL_20 WITH FL_17	Misspecified (EPC \geq delta)	16.153	-0.210	0.969	14.651
FL_05 ON FL_06	Misspecified (EPC \geq delta)	48.949	0.222	1.000	39.728
FL_17 ON FL_20	Misspecified (EPC \geq delta)	16.153	-0.210	0.969	14.651
FL_12 ON FL_08	Misspecified (EPC \geq delta)	37.173	0.215	1.000	32.167
FL_08 ON FL_12	Misspecified (EPC \geq delta)	37.173	0.215	1.000	32.167
FL_15 ON FL_20	Misspecified (EPC \geq delta)	38.967	-0.210	1.000	35.344
FL_1CT ON FL_15	Misspecified (EPC \geq delta)	63.725	-0.207	1.000	59.488
FL_AE ON FL_16	Misspecified (EPC \geq delta)	55.453	-0.302	0.999	24.320
FL_16 WITH FL_AE	Misspecified (EPC \geq delta)	55.453	-0.302	0.999	24.320
FL_20 ON FL_17	Misspecified (EPC \geq delta)	16.153	-0.210	0.969	14.651
FL_12 WITH FL_08	Misspecified (EPC \geq delta)	37.173	0.215	1.000	32.167
FL_AE ON FL_15	Misspecified (EPC \geq delta)	63.725	0.361	0.993	19.559
FL_17 WITH FL_15	Not misspecified (EPC $<$ delta)	20.256	-0.195	0.996	21.308
FL_10 WITH FL_09	Not misspecified (EPC $<$ delta)	14.590	0.135	1.000	32.022
FL_20 WITH FL_11	Not misspecified (EPC $<$ delta)	11.387	0.127	1.000	28.240
FL_07 ON FL_20	Not misspecified (EPC $<$ delta)	10.902	-0.106	1.000	38.811
FL_1CT ON FL_07	Not misspecified (EPC $<$ delta)	12.010	-0.087	1.000	63.469
FL_20 ON FL_15	Not misspecified (EPC $<$ delta)	15.650	-0.174	0.995	20.676
FL_11 ON FL_20	Not misspecified (EPC $<$ delta)	10.663	0.094	1.000	48.271
FL_16 ON FL_17	Not misspecified (EPC $<$ delta)	37.243	0.179	1.000	46.494
FL_AE ON FL_07	Not misspecified (EPC $<$ delta)	12.011	0.152	0.995	20.795

Parameter	Jrule Decision for potential misspecification	MI	EPC	Power	NCP
FL_07 WITH FL_AE	Not misspecified (EPC < delta)	12.011	0.152	0.995	20.795
FL_16 ON FL_19	Not misspecified (EPC < delta)	39.361	0.187	1.000	45.024
FL_10 ON FL_09	Not misspecified (EPC < delta)	14.589	0.135	1.000	32.020
FL_17 ON FL_15	Not misspecified (EPC < delta)	16.067	-0.169	0.997	22.502
FL_15 WITH FL_11	Not misspecified (EPC < delta)	14.781	0.151	0.999	25.930
FL_07 WITH FL_ICT	Not misspecified (EPC < delta)	12.010	-0.087	1.000	63.469
FL_19 WITH FL_16	Not misspecified (EPC < delta)	24.168	0.178	1.000	30.511
FL_ICT ON FL_16	Not misspecified (EPC < delta)	55.454	0.174	1.000	73.265
FL_09 ON FL_10	Not misspecified (EPC < delta)	14.589	0.135	1.000	32.020
FL_16 WITH FL_ICT	Not misspecified (EPC < delta)	55.454	0.174	1.000	73.265
FL_19 ON FL_16	Not misspecified (EPC < delta)	15.959	0.132	1.000	36.637
FL_17 ON FL_16	Not misspecified (EPC < delta)	23.147	0.169	1.000	32.418
FL_20 WITH FL_15	Not misspecified (EPC < delta)	19.463	-0.199	0.993	19.659
FL_11 ON FL_15	Not misspecified (EPC < delta)	14.781	0.151	0.999	25.930
FL_07 ON FL_19	Not misspecified (EPC < delta)	11.085	-0.111	1.000	35.987
FL_10 ON FL_07	Not misspecified (EPC < delta)	12.511	0.147	0.998	23.159
FL_07 ON FL_10	Not misspecified (EPC < delta)	12.512	0.147	0.998	23.161
FL_10 WITH FL_07	Not misspecified (EPC < delta)	12.511	0.147	0.998	23.159
FL_15 ON FL_11	Not misspecified (EPC < delta)	14.780	0.151	0.999	25.929
FL_16 ON FL_20	Not misspecified (EPC < delta)	21.453	0.136	1.000	46.395
FL_15 ON FL_19	Not misspecified (EPC < delta)	17.001	-0.141	1.000	34.206
FL_17 WITH FL_16	Not misspecified (EPC < delta)	21.280	0.174	1.000	28.115
FL_20 ON FL_11	Not misspecified (EPC < delta)	13.123	0.123	1.000	34.696

References:

Oberski, D. L. (2010). *Jrule for Mplus* (Version 0.91) [Computer software].

<http://wiki.github.com/daob/JruleMplus>

Saris, W. E., Satorra, A., & van der Veld, W. M. (2009). Testing structural equation models or detection of misspecifications. *Structural Equation Modeling, 16*, 561-582.

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