1   Supplementary

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Supplementary

Factor Analysis with Unmerged Response Option

Horn's parallel analysis with 500 iterations indicated a five-factor solution. However, Scree plot and the MAP method suggested 6-factor solution. five-factor solution . As a result, we tested both five-factor and six-factor solutions.

Table 1

Factor loadings and communality of the retained items(Minmum Residual)

item	MR1	MR2	MR3	MR4	MR5	Communality	Uniqueness
item16	1					0.996	0.004
item36	0.94					0.897	0.103
item17	0.8					0.658	0.342
item11		0.79				0.642	0.358
item10		0.76				0.592	0.408
item12		0.65				0.465	0.535
item7		0.5				0.267	0.733
item8		-0.49				0.252	0.748
item9		0.32				0.113	0.887
item27			0.8			0.659	0.341
item3			0.8			0.683	0.317
item40			0.65			0.464	0.536
item30			0.45			0.353	0.647
item41			0.36			0.329	0.671
item33				0.74		0.555	0.445
item32				0.73		0.623	0.377
item35				0.66		0.455	0.545
item37				-0.39		0.175	0.825
item38				0.38		0.178	0.822
item46					0.6	0.422	0.578
item45					0.59	0.374	0.626
item25					0.41	0.193	0.807
item4					0.41	0.219	0.781
item1					0.4	0.17	0.83
item26					0.35	0.165	0.835
% of Variance	0.1	0.1	0.09	0.08	0.06		

Note. Only loading higher than .30 is reported

Table 2

Factor loadings and communality of the retained items(six factor)

item	PA1	PA4	PA2	PA3	PA5	PA6	Communality	Uniqueness
item19	1.78						3.318	-2.318
item5							0.11	0.89
item16		1					1.004	-0.004
item36		0.91					0.86	0.14
item17		0.81					0.691	0.309
item11			0.83				0.71	0.29
item10			0.79				0.638	0.362
item12			0.63				0.465	0.535
item8			-0.5				0.269	0.731
item7			0.47				0.268	0.732
item9			0.32				0.163	0.837
item33				0.83			0.698	0.302
item32				0.75			0.666	0.334
item35				0.64			0.446	0.554
item31				0.48			0.331	0.669
item38				0.39			0.191	0.809
item37				-0.35			0.153	0.847
item3					0.85		0.748	0.252
item27					0.8		0.644	0.356
item40					0.68		0.507	0.493
item46						0.6	0.431	0.569
item45						0.56	0.341	0.659
item4						0.43	0.265	0.735
item25						0.4	0.178	0.822
item1						0.36	0.142	0.858
item26						0.36	0.173	0.827
item13							0.087	0.913
item29							0.108	0.892

Table 3

Descriptive Statistics for Unmerged response options

	Mean	SD	Skew	Kurtosis	Shapiro-Wilk Statistics	Item-Total Correlation
Item1	2.16	1.51	0.49	-0.86	0.90*	.21
Item2	2.76	1.75	-0.10	-1.42	0.88*	.20
Item3	3.34	1.43	-0.58	-0.77	0.88*	.18
Item4	1.30	1.31	1.93	2.92	0.62*	.32
Item5	3.95	1.56	-1.42	0.75	0.70*	.19
Item6	2.70	1.66	0.02	-1.33	0.90*	.18
Item7	2.23	1.28	0.60	-0.59	0.89*	.18
Item8	2.95	1.24	-0.19	-0.70	0.93*	-.07
Item9	2.92	1.09	-0.37	0.11	0.91*	.14
Item10	2.73	1.07	-0.03	-0.52	0.92*	.27
Item11	2.17	0.93	0.44	0.20	0.89*	.25
Item12	2.34	1.26	0.46	-0.58	0.91*	.24
Item13	2.71	1.49	0.14	-1.29	0.89*	.28
Item14	2.11	1.34	0.68	-0.78	0.84*	.24
Item15	3.26	1.11	-0.34	-0.21	0.91*	.11
Item16	1.46	1.31	1.71	1.90	0.65*	.33
Item17	1.43	1.30	1.76	2.12	0.64*	.30
Item18	0.92	0.67	2.00	9.41	0.62*	.32
Item19	0.85	0.56	1.71	10.74	0.55*	.34
Item20	0.83	0.54	1.76	13.92	0.53*	.31
Item21	0.94	0.75	2.46	10.66	0.58*	.27
Item22	3.57	1.08	-0.72	0.08	0.88*	.19
Item23	2.53	1.31	0.22	-0.91	0.92*	.11

Table 3 continued

	Mean	SD	Skew	Kurtosis	Shapiro-Wilk Statistics	Item-Total Correlation
Item24	4.13	1.01	-1.39	2.01	0.78*	.19
Item25	2.57	1.43	0.22	-1.23	0.88*	.17
Item26	2.23	1.30	0.59	-0.63	0.88*	.16
Item27	3.78	1.34	-1.01	0.08	0.82*	.18
Item28	3.75	1.16	-0.78	-0.10	0.86*	.01
Item29	2.38	1.40	0.20	-1.04	0.92*	.11
Item30	0.94	1.42	1.66	1.69	0.68*	.24
Item31	2.91	1.76	-0.24	-1.41	0.87*	.45
Item32	3.49	1.76	-0.71	-1.06	0.78*	.43
Item33	3.56	1.75	-0.79	-0.95	0.77*	.32
Item34	3.30	2.00	-0.54	-1.50	0.74*	.34
Item35	3.80	1.79	-1.07	-0.59	0.67*	.24
Item36	1.36	1.38	1.75	2.05	0.65*	.38
Item37	1.30	0.94	2.79	7.65	0.48*	-.01
Item38	4.27	1.18	-2.07	4.01	0.65*	.23
Item39	1.94	1.01	0.85	0.61	0.86*	.05
Item40	2.13	1.24	0.56	-0.54	0.89*	.16
Item41	0.87	1.08	1.68	2.74	0.73*	.21
Item42	3.90	1.55	-1.15	-0.12	0.72*	.17
Item43	1.59	1.23	1.59	1.70	0.69*	.22
Item44	3.46	1.41	-0.92	-0.01	0.86*	.38
Item45	2.04	1.66	0.46	-1.12	0.87*	.29
Item46	1.57	1.40	0.97	-0.07	0.82*	.38
Item47	2.07	1.23	0.59	-0.42	0.89*	.34

Table 3 continued

	Mean	SD	Skew	Kurtosis	Shapiro-Wilk Statistics	Item-Total Correlation
Item48	2.57	1.30	0.14	-0.74	0.93*	.31

Note. *p<.001

Table 4

Factor loadings and communality of the retained items [Unmerged Responses]

item	PA1	PA2	PA5	PA3	PA4	Communality	Uniqueness	Complexity
item19	0.99					1.007	-0.007	1.058
item20	0.91					0.874	0.126	1.114
item18	0.82					0.711	0.289	1.123
item21	0.8					0.683	0.317	1.163
item4	0.47					0.25	0.75	1.298
item11		0.83				0.687	0.313	1.007
item10		0.81				0.67	0.33	1.031
item12		0.56				0.371	0.629	1.374
item8		-0.44				0.206	0.794	1.106
item7		0.42				0.226	0.774	1.614
item9		0.33				0.115	0.885	1.1
item16			0.95			0.946	0.054	1.097
item17			0.74			0.595	0.405	1.168
item36	0.3		0.73			0.653	0.347	1.431
item3				0.85		0.746	0.254	1.048
item27				0.78		0.624	0.376	1.028
item40				0.71		0.512	0.488	1.05
item35					0.58	0.351	0.649	1.091
item48					0.57	0.354	0.646	1.144
item33					0.55	0.32	0.68	1.085
item47					0.52	0.294	0.706	1.186
item44					0.45	0.216	0.784	1.145
item31					0.41	0.206	0.794	1.477

Table 4 continued

item	PA1	PA2	PA5	PA3	PA4	Communality	Uniqueness	Complexity
item38					0.33	0.129	0.871	1.317
% of Variance	0.15	0.09	0.09	0.08	0.08			

Note. Only loading higher than .30 is reported

Five Factor Solution[Unmerged Responses] (24 Items)

F1

I use light therapy applying a blue light box.

I use light therapy applying a light visor.

I use light therapy applying a white light box.

I use light therapy applying another form of light device.

I use an alarm with a dawn simulation light.

F2

I spend more than 3 hours per day (in total) outside.

I spend between 1 and 3 hours per day (in total) outside.

I spend as much time outside as possible.

I spend 30 minutes or less per day (in total) outside.

I go for a walk or exercise outside within 2 hours after waking up.

I spend between 30 minutes and 1 hour per day (in total) outside.

F3

I look at my mobile phone screen immediately after waking up.

I use my mobile phone within 1 hour before attempting to fall asleep.

I check my phone when I wake up at night.

F4

I use a blue-filter app on my computer screen within 1 hour before attempting to fall asleep.

I seek out knowledge on how to improve my light exposure.

I dim my computer screen within 1 hour before attempting to fall asleep.

I discuss the effects of light on my body with other people.

I modify my light environment to match my current needs.

I dim my room light within 1 hour before attempting to fall asleep.

Five Factor Solution[Unmerged Responses] (24 Items)

I use as little light as possible when I get up during the night.

F5

I wear blue-filtering, orange-tinted, and/or red-tinted glasses indoors during the day.

I wear blue-filtering, orange-tinted, and/or red-tinted glasses outdoors during the day.

I wear blue-filtering, orange-tinted, and/or red-tinted glasses within 1 hour before attempting to fall asleep.
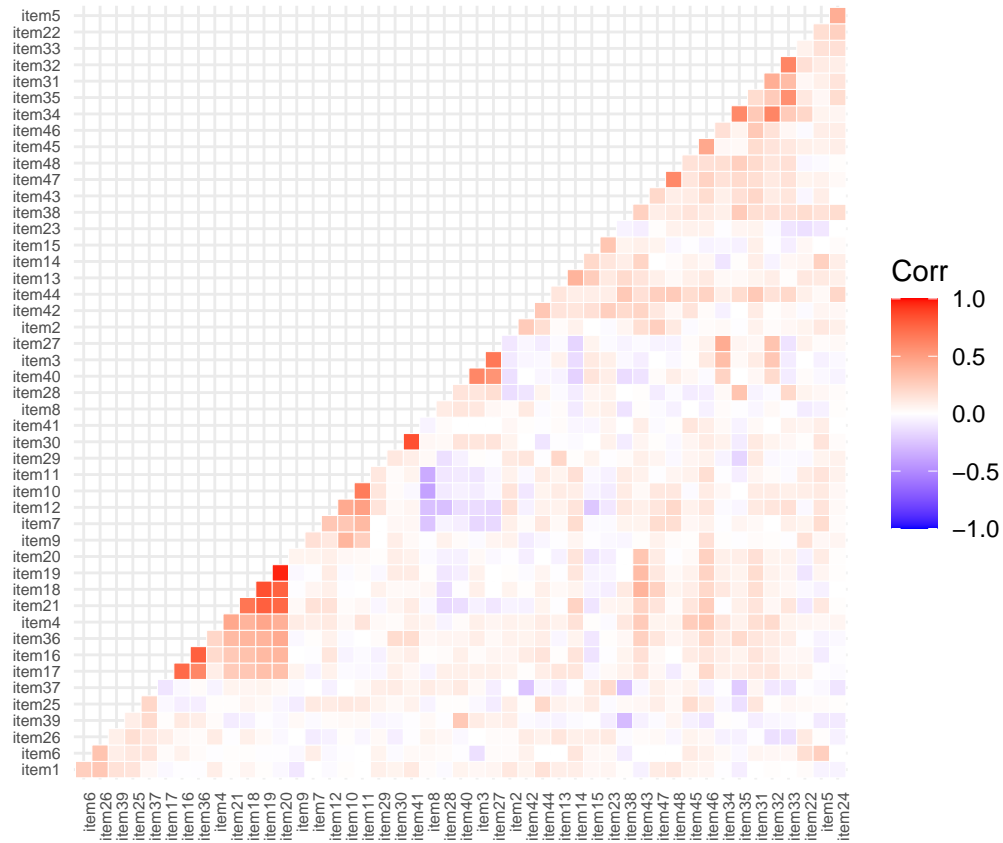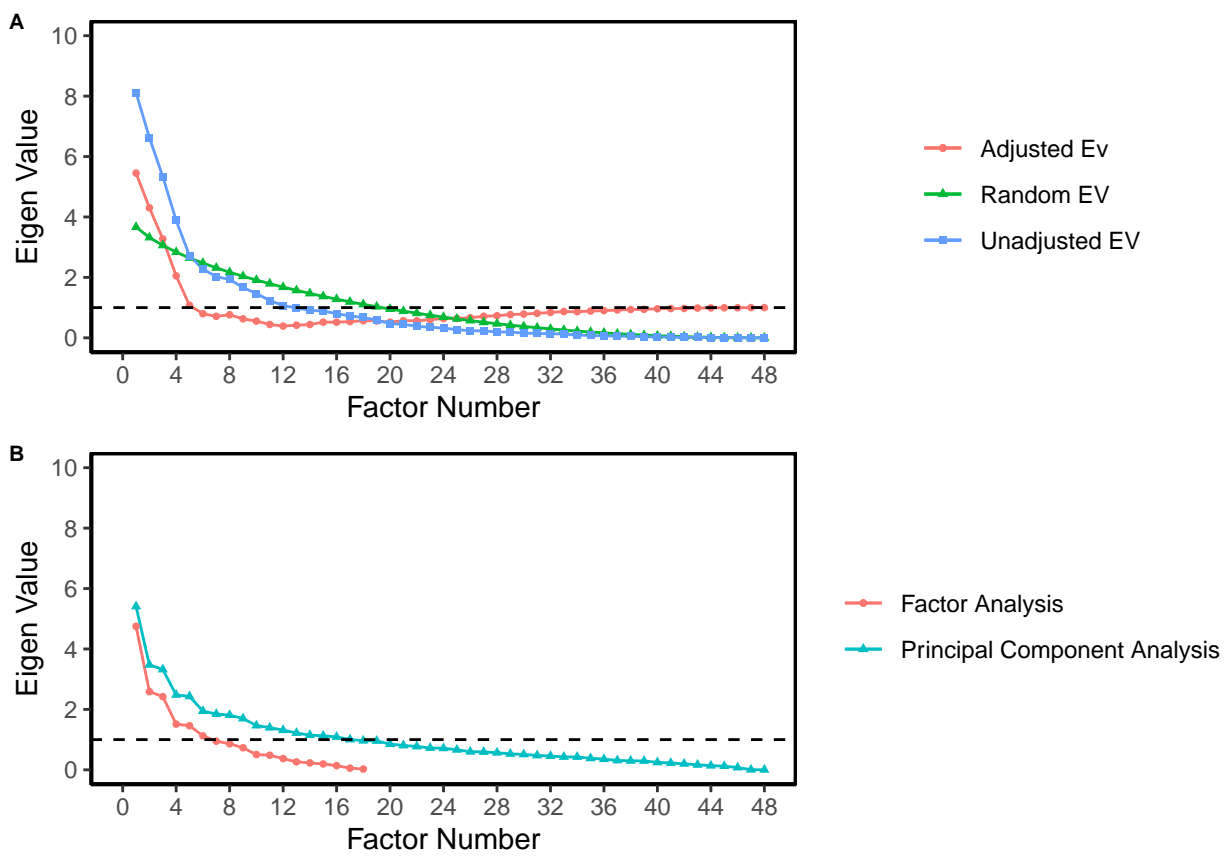
Figure 1. Correlation plot of the items

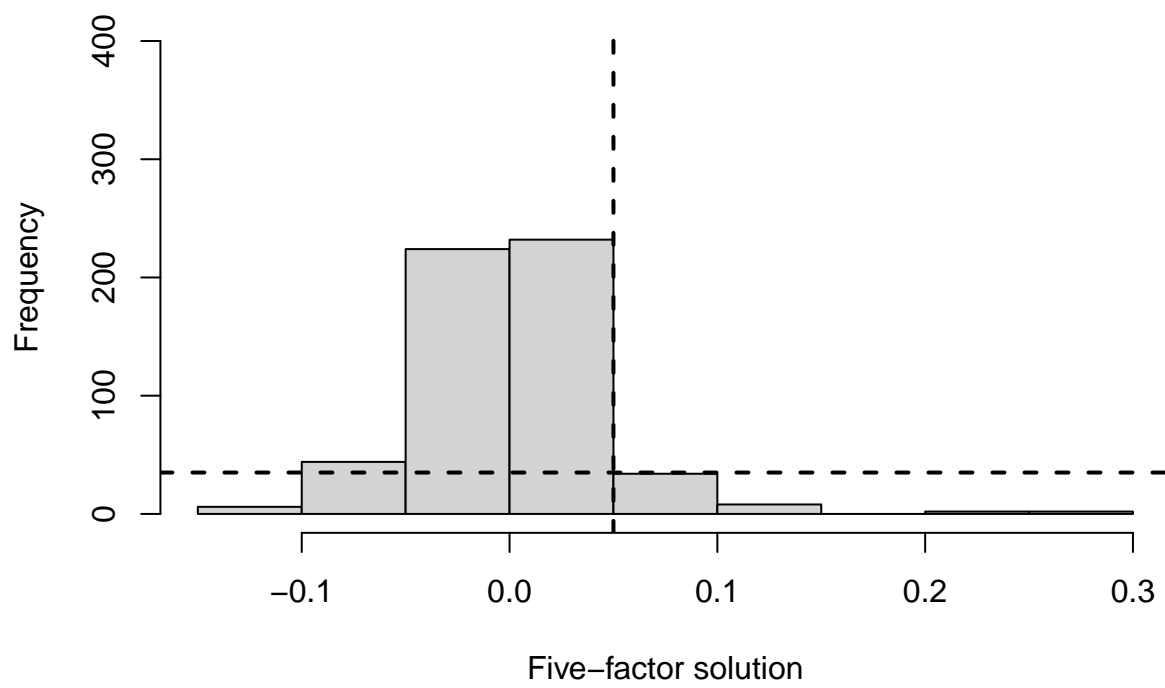*Figure 2*. Factor Identification (A) Parallel analysis (B) Scree Plot

Figure 3. Histogram of residulas: five-factor solution