

Appendix

to

Validation of the SIC (Single Item Chronotyping) against 11 scales of three questionnaires

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Supplementary Tables S1-S10

Supplementary Figures S1-S3

Supplementary Tables

Table S1. Subsample-averaged scores on 11 scales of three chronotype questionnaires.

Questionnaire	Time of the day	Number of items	Scale Name and its abbreviation	Age 18-25 yrs			Age > 25 yrs		
				N	Mean	SD	N	Mean	SD
VJT	Morning	4	KSS score, 8:00-11:00 MSI	4940	4.278	1.744	594	3.594	1.792
	Afternoon	6	KSS score, 12:00-20:00 DSI	4940	4.234	1.513	594	4.490	1.538
	Evening	5	KSS score, 21:00-4:00 NSI	4940	6.204	1.690	594	6.915	1.776
SWAT	Morning	10	Morning Sleepability MS	4940	1.950	5.310	594	-0.480	5.916
	Afternoon	10	Daytime Wakeability DW	4940	1.890	4.988	594	2.630	4.719
	Afternoon	10	Daytime Sleepability DS	4940	-0.460	5.095	594	-1.670	5.506
	Evening	10	Nighttime Wakeability NW	4940	-0.150	4.758	594	-2.480	5.297
SWPAQ	Morning	12	Morning Lateness M	2647	1.970	5.758	313	-0.520	6.577
	Afternoon	12	Daytime Wakeability V	2647	-0.680	5.528	313	0.650	5.831
	Afternoon	12	Anytime Sleepability F	2647	0.800	6.120	313	0.030	6.886
	Evening	12	Evening Lateness E	2647	1.300	6.044	313	-1.120	7.048

Notes. Three questionnaires for assessing chronobiological for chronobiological assessment were the 72-item SWPAQ (Sleep-Wake Pattern Assessment Questionnaire; Putilov, 2007), the 60-item SWAT (Sleep-Wake Adaptability Test; Putilov, 2016; Putilov et al., 2021), and the 19-item VJT (Visuo-verbal Judgment Task; Marcoen et al., 2015), and 11 scales of these questionnaires were 12-item M (Morning Lateness), V (Daytime Wakeability), F (Anytime Sleepability), and E (Evening Lateness) of the SWPAQ, 10-item MS (Morning Sleepability), DW (Daytime Wakeability), DS (Daytime Sleepability), NW (Nighttime Sleepability) of the SWAT, and 10-step KSS score averaged within time interval between clock hours: MSI (Morning, 8:00-11:00), DSI (Daytime, 12:00-20:00), and NSI (Nighttime, 21:00-04:00) of the VJT. Scores on the Karolinska Sleepiness Scale (Åkerstedt, Gillberg, 1990). A higher KSS score denotes a higher sleepiness level on verbally anchored Likert scale: 1- Extremely alert, 2- Very alert, 3- Alert, 4- Rather alert, 5- Neither alert nor sleepy, 6- Some signs of sleepiness, 7- Sleepiness, but no effort to keep awake, 8- Sleepiness, but some effort to keep awake, 9- Very sleepy, great effort to keep awake, fighting sleep, 10- Extremely sleepy, can't keep awake). A positive score on sleepability or wakeability scale denotes sleepability or wakeability, respectively. SD: Standard Deviation. Age 18-25 yrs and Age > 25 yrs: Students and lecturers.

Table S2. Inter-correlations among morning, afternoon, and evening scales.

Subset Time # Scale	2 nd 1. Morning			2. Evening			3. Afternoon		
	M	MS	MSI	E	NW	NSI	V	DW	DSI
1. M	1	0.744	0.433	0.127	0.136	0.007	-0.490	-0.385	0.223
MS		1	0.451	0.115	0.120	0.018	-0.414	-0.431	0.266
MSI		0.422	1	0.076	0.120	-0.088	-0.354	-0.372	0.440
2. E				1	0.643	-0.429	0.065	0.089	-0.146
NW		0.169	0.136		1	-0.451	-0.065	0.009	-0.068
NSI		0.039	-0.009		-0.435	1	-0.015	-0.042	0.213
3. V		-0.417	-0.373				1	0.610	-0.364
DW		-0.387	-0.403		0.087	-0.135		1	-0.477
DSI		0.126	0.419		-0.114	0.303		-0.443	1
Subset	1 st								

Notes. Subset, 1st and 2nd: The whole set of 4940 university students was subdivided into two subsets with, n = 2647, and without assessments on the SWPAQ's scales, and 2293, respectively (see Table S1). Scales of questionnaires for assessing abilities/sleepiness included the following: In the SWPAQ: M (Morning Lateness), E (Evening Lateness), V (Daytime Wakeability), the SWAT: MS (Morning Sleepability), NW (Nighttime Sleepability), DW (Daytime Wakeability), and the VJT, Sleepiness during (hours): MSI (Morning, 8:00-11:00), NSI (Nighttime, 21:00-04:00), and DSI (Daytime, 12:00-20:00). Time #: Time of the day # 1. Morning; 2. Evening; and 3. Afternoon.

Table S3. Correlations between scales for assessing sleepability and sleepiness/wakeability.

Sub-set	Time # Scale	1. Morning			2. Evening			3. Afternoon		
		M	MS	MSI	E	NW	NSI	V	DW	DSI
1 st	3. F	0.161	0.136	0.036	0.112	0.058	-0.034	-0.291	-0.191	0.074
	DS	0.158	0.154	0.090	0.105	0.021	-0.039	-0.282	-0.272	0.147
2 nd	3. DS		0.066	0.033		0.110	-0.075		-0.200	0.145

Notes. Subset, 1st and 2nd: The whole set of 4346 university students was subdivided into two subsets with and without assessments on the SWPAQ's scales, n = 2334 and 2606, respectively (see Table S1). Scales of questionnaires for assessing abilities/sleepiness included the following: In the SWPAQ: M (Morning Lateness), E (Evening Lateness), V (Daytime Wakeability), the SWAT: MS (Morning Sleepability), NW (Nighttime Sleepability), DW (Daytime Wakeability), and the VJT, Sleepiness during (hours): MSI (Morning, 8:00-11:00), NSI (Nighttime, 21:00-04:00), and DSI (Daytime, 12:00-20:00). The correlation between one other SWPAQ's scale, F (Anytime Sleepability), and one other SWAT's scale, DS (Daytime Sleepability), attained the value of 0.750. 3.: Time #: Time of the day # 3. Afternoon.

Table S4. Cronbach's alphas, mean values and standard deviations for 11 scales.

Scales or sleep times (1-6)			Cronbach's α		Mean	SD	Mean	SD
Time #, scale's abbreviation and name			1 st subset	2 nd subset	1 st subset		2 nd subset	
Four 12-item scales of the SWPAQ:								
1	M	Morning Lateness	0.716		2.34	5.80		
2	E	Evening Lateness	0.760		1.27	6.17		
3	V	Daytime Wakeability	0.680		-1.28	5.43		
3	F	Anytime Sleepability	0.759		1.05	6.04		
Four 10-item scales of the SWAT								
1	MS	Morning Sleepability	0.796	0.791	2.04	5.13	1.90	5.41
2	NW	Nighttime Sleepability	0.638	0.723	0.28	4.27	-0.40	5.00
3	DW	Daytime Wakeability	0.745	0.752	1.94	4.80	1.87	5.09
3	DS	Daytime Sleepability	0.800	0.789	-0.19	5.29	-0.62	4.97
Three 4- to 6-item scales of the VJT, Sleepiness (hours):								
1	SM	Morning (8:00-11:00)	0.761	0.839	4.20	1.58	4.32	1.83
2	SN	Nighttime (21:00-04:00)	0.789	0.852	6.12	1.54	6.25	1.77
3	SD	Daytime (12:00-20:00)	0.791	0.733	4.08	1.42	4.32	1.56

Notes. Subset, 1st and 2nd: The whole set of 4346 university students was subdivided into two subsets with and without assessments on the SWPAQ's scales, n = 2334 and 2606, respectively (see Table S1). Cronbach's α : Cronbach's alpha; Questionnaire tools for assessing abilities/sleepiness included 4 12-item scaled from the 72-item SWPAQ (Sleep-Wake Pattern Assessment Questionnaire), 4 10-item scaled from the 60-item SWAT (Sleep-Wake Adaptability Test), and 4 4- to 6-item scales from the 19-item VJT (Visuo-verbal Judgment Task). Clock time is given in decimal hours. SD: Standard Deviation. Time #: Time of the day # 1. Morning; 2. Evening; and 3. Afternoon.

Table S5. *Post hoc* pairwise Bonferroni comparisons of relative scores on morning, afternoon, and evening scales of the VJT (the whole sample, n = 4940).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time	CI		
		Mean	-95%	+95%		Mean	-95%	+95%
Morning N=756 15.30%	Morning	0.775	0.671	0.879	Morning Afternoon	0.733***	0.614	0.853
	Afternoon	0.042	-0.050	0.133	Afternoon Evening	1.305***	1.112	1.498
	Evening	-0.530	-0.640	-0.420	Afternoon Evening	0.572***	0.418	0.725
Evening N=1292 26.20%	Morning	-0.775	-0.871	-0.679	Morning Afternoon	-0.747***	-0.870	-0.623
	Afternoon	-0.028	-0.113	0.056	Afternoon Evening	-1.364***	-1.527	-1.200
	Evening	0.589	0.496	0.681	Afternoon Evening	-0.617***	-0.743	-0.491
Vigilant N=501 10.10%	Morning	0.994	0.856	1.132	Morning Afternoon	0.256***	0.112	0.401
	Afternoon	0.738	0.611	0.865	Afternoon Evening	0.395***	0.154	0.635
	Evening	0.599	0.443	0.756	Afternoon Evening	0.138	-0.061	0.338
Lethargic N=595 12.00%	Morning	-0.408	-0.555	-0.261	Morning Afternoon	-0.099	-0.252	0.054
	Afternoon	-0.309	-0.443	-0.174	Afternoon Evening	-0.056	-0.279	0.166
	Evening	-0.352	-0.493	-0.210	Afternoon Evening	0.043	-0.135	0.221
Napping N=689 13.90%	Morning	0.161	0.043	0.279	Morning Afternoon	0.707***	0.556	0.859
	Afternoon	-0.546	-0.658	-0.434	Afternoon Evening	0.346***	0.148	0.544
	Evening	-0.185	-0.301	-0.069	Afternoon Evening	-0.361***	-0.518	-0.205
Afternoon N=867 17.60%	Morning	0.020	-0.083	0.123	Morning Afternoon	-0.198***	-0.334	-0.063
	Afternoon	0.218	0.127	0.310	Afternoon Evening	0.486***	0.315	0.657
	Evening	-0.466	-0.562	-0.370	Afternoon Evening	0.684***	0.549	0.819
Inconclusive N=240 4.90%	Morning	0.131	-0.085	0.347	Morning Afternoon	0.104	-0.127	0.336
	Afternoon	0.027	-0.170	0.224	Afternoon Evening	-0.204	-0.522	0.115
	Evening	0.335	0.113	0.557	Afternoon Evening	-0.308***	-0.589	-0.027

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of relative scores on three

VJT scales in each of 7 subsamples of LIVEMAN chronotypes. Scores on VJT scales: three 10-step

KSS scores averaged within time interval between clock hours: -MSI (Morning, 8:00-11:00), -DSI

(Daytime, 12:00-20:00), and -NSI (Nighttime, 21:00-04:00). A higher KSS score denotes a higher

sleepiness level on verbally anchored Likert scale: 1- Extremely alert, 2- Very alert, 3- Alert, 4-

Rather alert, 5- Neither alert nor sleepy, 6- Some signs of sleepiness, 7- Sleepiness, but no effort to

keep awake, 8- Sleepiness, but some effort to keep awake, 9- Very sleepy, great effort to keep

awake, fighting sleep, 10- Extremely sleepy, can't keep awake). Therefore, the sign of deviation of

individual score from age-averaged score was changed. Mean: chronotype-averaged relative score

for Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence

interval. Level of significance for differences between scores: * P < 0.05, ** P < 0.01, *** P < 0.001.

Table S6. *Post hoc* pairwise Bonferroni comparisons of relative scores on morning, afternoon, and evening scales of the VJT (a subsample with assessments on the SWPAQ's scales, n = 2647).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time		CI		
		Mean	-95%	+95%			Mean	-95%	+95%
Morning N=451 17.00%	Morning	0.812	0.681	0.942	Morning Afternoon	0.707***	0.550	0.865	
	Afternoon	0.105	-0.012	0.221	Afternoon Evening	1.365***	1.119	1.611	
	Evening	-0.553	-0.692	-0.414	Afternoon Evening	0.658***	0.460	0.855	
Evening N=738 27.90%	Morning	-0.604	-0.728	-0.479	Morning Afternoon	-0.636***	-0.802	-0.469	
	Afternoon	0.032	-0.081	0.144	Afternoon Evening	-1.152***	-1.369	-0.935	
	Evening	0.548	0.427	0.670	Afternoon Evening	-0.516***	-0.681	-0.351	
Vigilant N=299 11.30%	Morning	0.962	0.770	1.153	Morning Afternoon	0.249**	0.048	0.451	
	Afternoon	0.713	0.544	0.881	Afternoon Evening	0.370*	0.045	0.695	
	Evening	0.592	0.386	0.798	Afternoon Evening	0.120	-0.140	0.381	
Lethargic N=231 8.70%	Morning	-0.256	-0.500	-0.012	Morning Afternoon	0.088	-0.162	0.338	
	Afternoon	-0.344	-0.549	-0.140	Afternoon Evening	0.253	-0.126	0.632	
	Evening	-0.509	-0.733	-0.286	Afternoon Evening	0.165	-0.126	0.455	
Napping N=275 10.40%	Morning	0.134	-0.054	0.321	Morning Afternoon	0.669***	0.415	0.924	
	Afternoon	-0.536	-0.714	-0.357	Afternoon Evening	0.236	-0.085	0.557	
	Evening	-0.102	-0.285	0.080	Afternoon Evening	-0.433***	-0.682	-0.185	
Afternoon N=522 19.70%	Morning	0.083	-0.053	0.220	Morning Afternoon	-0.140*	-0.315	-0.035	
	Afternoon	0.224	0.105	0.342	Afternoon Evening	0.441***	0.210	0.671	
	Evening	-0.357	-0.482	-0.232	Afternoon Evening	0.581***	0.404	0.758	
Inconclusive N=131 4.90%	Morning	0.461	0.184	0.738	Morning Afternoon	0.202	-0.101	0.506	
	Afternoon	0.258	0.010	0.507	Afternoon Evening	0.155	-0.283	0.593	
	Evening	0.306	0.022	0.590	Afternoon Evening	-0.047	-0.440	0.345	

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of relative scores on three

VJT scales in each of 7 subsamples of LIVEMAN chronotypes. Scores on VJT scales: three 10-step

KSS scores averaged within time interval between clock hours: -MSI (Morning, 8:00-11:00), -DSI

(Daytime, 12:00-20:00), and -NSI (Nighttime, 21:00-04:00). A higher KSS score denotes a higher

sleepiness level on verbally anchored Likert scale. Therefore, the sign of deviation of individual

score from age-averaged score was changed. Mean: chronotype-averaged relative score for

Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence interval.

Level of significance for differences between scores: * P < 0.05, ** P < 0.01, *** P < 0.001. See mean

values with standard deviation in Figure S3.

Table S7. *Post hoc* pairwise Bonferroni comparisons of relative scores on morning, afternoon, and evening scales of the SWAT (the whole sample, n = 4940).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time	CI		
		Mean	-95%	+95%		Mean	-95%	+95%
Morning N=756 15.30%	Morning	3.353	3.004	3.702	Morning Afternoon	2.236***	1.777	2.695
	Afternoon	1.117	0.859	1.375	Afternoon Evening	6.529***	5.946	7.112
	Evening	-3.176	-3.471	-2.881	Evening Morning	4.293***	3.806	4.780
Evening N=1292 26.20%	Morning	-2.468	-2.717	-2.219	Morning Afternoon	-1.924***	-2.270	-1.577
	Afternoon	-0.544	-0.763	-0.326	Afternoon Evening	-5.357***	-5.801	-4.914
	Evening	2.889	2.654	3.124	Evening Morning	-3.434***	-3.822	-3.045
Vigilant N=501 10.10%	Morning	3.535	3.097	3.972	Morning Afternoon	1.027***	0.459	1.595
	Afternoon	2.508	2.227	2.789	Afternoon Evening	2.780***	2.028	3.533
	Evening	0.754	0.350	1.159	Evening Morning	1.753***	1.151	2.356
Lethargic N=595 12.00%	Morning	-0.611	-1.048	-0.173	Morning Afternoon	-0.038	-0.590	0.514
	Afternoon	-0.573	-0.897	-0.249	Afternoon Evening	0.272	-0.459	1.004
	Evening	-0.883	-1.243	-0.523	Evening Morning	0.310	-0.286	0.906
Napping N=689 13.90%	Morning	-0.376	-0.751	-0.001	Morning Afternoon	2.171***	1.655	2.687
	Afternoon	-2.547	-2.835	-2.259	Afternoon Evening	-0.353	-1.003	0.297
	Evening	-0.023	-0.369	0.323	Evening Morning	-2.524***	-3.066	-1.982
Afternoon N=867 17.60%	Morning	-0.661	-0.994	-0.328	Morning Afternoon	-1.473***	-1.925	-1.021
	Afternoon	0.812	0.557	1.067	Afternoon Evening	0.901***	0.351	1.451
	Evening	-1.562	-1.837	-1.287	Evening Morning	2.374***	1.909	2.839
Inconclusive N=240 4.90%	Morning	0.317	-0.326	0.960	Morning Afternoon	0.290	-0.535	1.115
	Afternoon	0.027	-0.470	0.525	Afternoon Evening	-0.439	-1.450	0.571
	Evening	0.757	0.188	1.325	Evening Morning	-0.729	-1.664	0.205

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of relative scores on three

VJT scales in each of 7 subsamples of LIVEMAN chronotypes. Scores on SWAT scales: 10-item - MS (Morning Sleepability) and NW (Nighttime Sleepability), and score obtained by averaging scores on DW (Daytime Wakeability) and -DS (Daytime Sleepability). A higher score MS or DS scale denotes a higher sleepability. Therefore, the sign of deviation of individual score from age-averaged score was changed for these two scales. Mean: chronotype-averaged score for Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence interval. Level of significance for differences between scores: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Table S8. *Post hoc* pairwise Bonferroni comparisons of relative scores on morning, afternoon, and evening scales of the SWAT (a subsample with assessments on the SWPAQ's scales, n = 2647).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time	CI		
		Mean	-95%	+95%		Mean	-95%	+95%
Morning N=451 17.00%	Morning	3.402	2.954	3.849	Morning Afternoon	2.200***	1.590	2.809
	Afternoon	1.202	0.871	1.533	Afternoon Evening	6.092***	5.332	6.852
	Evening	-2.690	-3.066	-2.315	Afternoon Evening	3.892***	3.276	4.509
Evening N=738 27.90%	Morning	-1.915	-2.244	-1.587	Morning Afternoon	-1.431***	-1.881	-0.980
	Afternoon	-0.485	-0.778	-0.191	Afternoon Evening	-4.822***	-5.378	-4.265
	Evening	2.906	2.615	3.197	Afternoon Evening	-3.391***	-3.885	-2.898
Vigilant N=299 11.30%	Morning	3.348	2.820	3.877	Morning Afternoon	0.755*	0.060	1.451
	Afternoon	2.593	2.223	2.963	Afternoon Evening	1.936***	1.010	2.861
	Evening	1.413	0.906	1.919	Afternoon Evening	1.180**	0.430	1.931
Lethargic N=231 8.70%	Morning	0.123	-0.547	0.792	Morning Afternoon	0.176	-0.715	1.068
	Afternoon	-0.054	-0.580	0.473	Afternoon Evening	0.805	-0.282	1.891
	Evening	-0.682	-1.231	-0.132	Afternoon Evening	0.628	-0.263	1.519
Napping N=275 10.40%	Morning	-0.161	-0.774	0.452	Morning Afternoon	2.252***	1.400	3.105
	Afternoon	-2.414	-2.895	-1.932	Afternoon Evening	-0.676	-1.653	0.302
	Evening	0.514	0.015	1.014	Afternoon Evening	-2.928***	-3.737	-2.119
Afternoon N=522 19.70%	Morning	-0.295	-0.720	0.131	Morning Afternoon	-1.217***	-1.802	-0.632
	Afternoon	0.922	0.584	1.260	Afternoon Evening	0.653	-0.043	1.348
	Evening	-0.947	-1.288	-0.607	Afternoon Evening	1.869***	1.284	2.455
Inconclusive N=131 4.90%	Morning	0.734	-0.157	1.625	Morning Afternoon	0.231	-0.903	1.366
	Afternoon	0.502	-0.198	1.203	Afternoon Evening	-0.449	-1.801	0.903
	Evening	1.183	0.431	1.935	Afternoon Evening	-0.68	-1.964	0.603

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of relative scores on three

VJT scales in each of 7 subsamples of LIVEMAN chronotypes. Scores on SWAT scales: 10-item - MS (Morning Sleepability) and NW (Nighttime Sleepability), and score obtained by averaging scores on DW (Daytime Wakeability) and -DS (Daytime Sleepability). A higher score MS or DS scale denotes a higher sleepability. Therefore, the sign of deviation of individual score from age-averaged score was changed for these two scales. Mean: chronotype-averaged score for Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence interval. Level of significance for differences between scores: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. See mean values with standard deviation in Figure S3.

Table S9. *Post hoc* pairwise Bonferroni comparisons of relative scores on morning, afternoon, and evening scales of the SWPAQ (a subsample with assessments on the SWPAQ's scales, n = 2647).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time	CI		
		Mean	-95%	+95%		Mean	-95%	+95%
Morning N=451 17.00%	Morning	3.366	2.877	3.856	Morning Afternoon	2.126***	1.456	2.795
	Afternoon	1.241	0.838	1.644	Afternoon Evening	8.666***	7.805	9.526
	Evening	-5.299	-5.785	-4.813	Afternoon Evening	6.540***	5.763	7.317
Evening N=738 27.90%	Morning	-2.516	-2.895	-2.138	Morning Afternoon	-1.459***	-1.967	-0.950
	Afternoon	-1.058	-1.404	-0.712	Afternoon Evening	-6.689***	-7.397	-5.982
	Evening	4.173	3.809	4.537	Afternoon Evening	-5.231***	-5.858	-4.603
Vigilant N=299 11.30%	Morning	3.403	2.812	3.993	Morning Afternoon	0.450	-0.380	1.279
	Afternoon	2.953	2.455	3.452	Afternoon Evening	1.310***	0.288	2.332
	Evening	2.093	1.542	2.644	Afternoon Evening	0.860	-0.058	1.779
Lethargic N=231 8.70%	Morning	-0.465	-1.163	-0.232	Morning Afternoon	0.085	-0.787	0.957
	Afternoon	-0.550	-1.154	-0.053	Afternoon Evening	1.096	-0.098	2.290
	Evening	-1.561	-2.228	-0.895	Afternoon Evening	1.011	-0.003	2.024
Napping N=275 10.40%	Morning	-0.869	-1.570	-0.168	Morning Afternoon	1.881***	0.984	2.778
	Afternoon	-2.750	-3.266	-2.233	Afternoon Evening	-0.639	-1.828	0.551
	Evening	-0.230	-0.898	0.439	Afternoon Evening	-2.520***	-3.538	-1.501
Afternoon N=522 19.70%	Morning	-0.740	-1.213	-0.267	Morning Afternoon	-1.192***	-1.810	-0.574
	Afternoon	0.452	0.054	0.850	Afternoon Evening	1.029**	0.189	1.869
	Evening	-1.769	-2.217	-1.320	Afternoon Evening	2.221***	1.495	2.946
Inconclusive N=131 4.90%	Morning	0.421	-0.571	1.413	Morning Afternoon	0.509	-0.843	1.862
	Afternoon	-0.088	-0.837	0.661	Afternoon Evening	0.223	-1.542	1.989
	Evening	0.198	-0.832	1.228	Afternoon Evening	-0.286	-1.860	1.288

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of relative scores on three

VJT scales in each of 7 subsamples of LIVEMAN chronotypes. Scores on 12-item -M (Morning Lateness) and E (Evening Lateness) of the SWPAQ, and score obtained by averaging relative scores on V (Daytime Wakeability) and -F (Anytime Sleepability). A higher score M or F scale denotes a higher sleepability. Therefore, the sign of deviation of individual score from age-averaged score was changed for these two scales. Mean: chronotype-averaged relative score for Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence interval. Level of significance for differences between scores: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. See mean values with standard deviation in Figure S3.

Table S10. *Post hoc* pairwise Bonferroni comparisons of relative morning, afternoon, and evening scores (a subsample with assessments on the SWPAQ's scales, n = 2647).

LIVEMAN type	Time of the day	CI			Difference between one time of the day & another time	CI		
		Mean	-95%	+95%		Mean	-95%	+95%
Morning N=451 17.00%	Morning	2.527	2.218	2.836	Morning Afternoon	1.678***	1.275	2.080
	Afternoon	0.849	0.609	1.089	Afternoon Evening	5.374***	4.834	5.914
	Evening	-2.847	-3.134	-2.561	Afternoon Evening	3.697***	3.239	4.154
Evening N=738 27.90%	Morning	-1.678	-1.912	-1.445	Morning Afternoon	-1.175***	-1.488	-0.862
	Afternoon	-0.504	-0.716	-0.291	Afternoon Evening	-4.221***	-4.639	-3.803
	Evening	2.543	2.332	2.753	Afternoon Evening	-3.046***	-3.403	-2.689
Vigilant N=299 11.30%	Morning	2.571	2.198	2.944	Morning Afternoon	0.485*	0.004	0.966
	Afternoon	2.086	1.799	2.373	Afternoon Evening	1.205***	0.570	1.841
	Evening	1.366	1.026	1.705	Afternoon Evening	0.720**	0.190	1.251
Lethargic N=231 8.70%	Morning	-0.200	-0.660	-0.261	Morning Afternoon	0.117	-0.437	0.670
	Afternoon	-0.316	-0.691	-0.058	Afternoon Evening	0.718	-0.029	1.464
	Evening	-0.917	-1.312	-0.523	Afternoon Evening	0.601	-0.003	1.205
Napping N=275 10.40%	Morning	-0.299	-0.723	0.125	Morning Afternoon	1.601***	1.041	2.161
	Afternoon	-1.900	-2.232	-1.568	Afternoon Evening	-0.360	-1.063	0.344
	Evening	0.061	-0.318	0.440	Afternoon Evening	-1.960***	-2.547	-1.374
Afternoon N=522 19.70%	Morning	-0.317	-0.610	-0.024	Morning Afternoon	-0.850***	-1.233	-0.467
	Afternoon	0.533	0.288	0.777	Afternoon Evening	0.707**	0.207	1.208
	Evening	-1.024	-1.280	-0.769	Afternoon Evening	1.557***	1.133	1.982
Inconclusive N=131 4.90%	Morning	0.539	-0.083	1.160	Morning Afternoon	0.314	-0.476	1.105
	Afternoon	0.224	-0.252	0.700	Afternoon Evening	-0.023	-1.040	0.993
	Evening	0.562	-0.042	1.166	Afternoon Evening	-0.338	-1.290	0.615

Notes. *Post hoc* pairwise Bonferroni comparisons following rANOVAs of scores in each of 7

subsamples of LIVEMAN chronotypes. Relative scores were obtained by rANOVAs of relative scores on scales of the VJT, SWAT, and SWPAQ. Mean: chronotype-averaged relative score for Morning, Afternoon, and Evening or the difference between paired means. CI: Confidence interval. Level of significance for differences between scores: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. See mean values with standard deviation in Figure 2.

Figure S1. Relative morning, afternoon, and evening scores on 11 scales: E, M, N, and A types.

The first step of calculation of scores on 11 scales of three questionnaires. Four of 7 LIVEMAN types are E(vening): low in the morning, middle in the afternoon, high in the evening; M(orning): high in the morning, middle in the afternoon, low in the evening (A); N(apping): high in the morning, low in the afternoon, middle in the evening; A(fternoon): low in the morning, high in the afternoon, middle in the evening (B). Before averaging within each of these types, individual scores were expressed as deviation from age-averaged score (18-25 or > 25 yrs). The sign of deviation was changed for scores on sleepiness and sleepability scales, denoted as -MSI, -DSI, -NSI, -MS, -DS, -M, and -F, and the sign was left unchanged for wakeability scores, DW, NW, V, and E.

Figure S2. Relative morning, afternoon, and evening scores on 11 scales: L, V, and I types.

The first step of calculation of scores on 11 scales of three questionnaires. Three of 7 LIVEMAN types are L(ethargic): low in the morning, afternoon, and evening; V(igilant): high in the morning, afternoon, and evening (A); I(nconclusive): none of 6 other options; Averaged: averaged over 7 types (B). See also the legend to Figure S1.

Figure S3. Relative morning, afternoon, and evening scores on scales and combined afternoon scores (averaged scores on wakeability and sleepability scales).

The second step of calculation of relative scores on scales of three questionnaires. Relative scores on afternoon wakeability and sleepability scales (Figures S1 and S2) were averaged to reduce the number of scores in each of three questionnaires to three for further averaging over ages (this figure) and questionnaires (Figure 2). As illustrated in the graphs, 7 LIVEMAN types are (A) M(orning), E(vening), N(apping), A(fternoon), (B) V(igilant), L(ethargic), and, additionally, I(nconclusive) type. Averaged: averaged over 7 types. See these mean values, confidence intervals, and pairwise differences between relative morning, afternoon, and evening scores in Tables S6, S8, and S9.

Supplementary Figures S1-S3

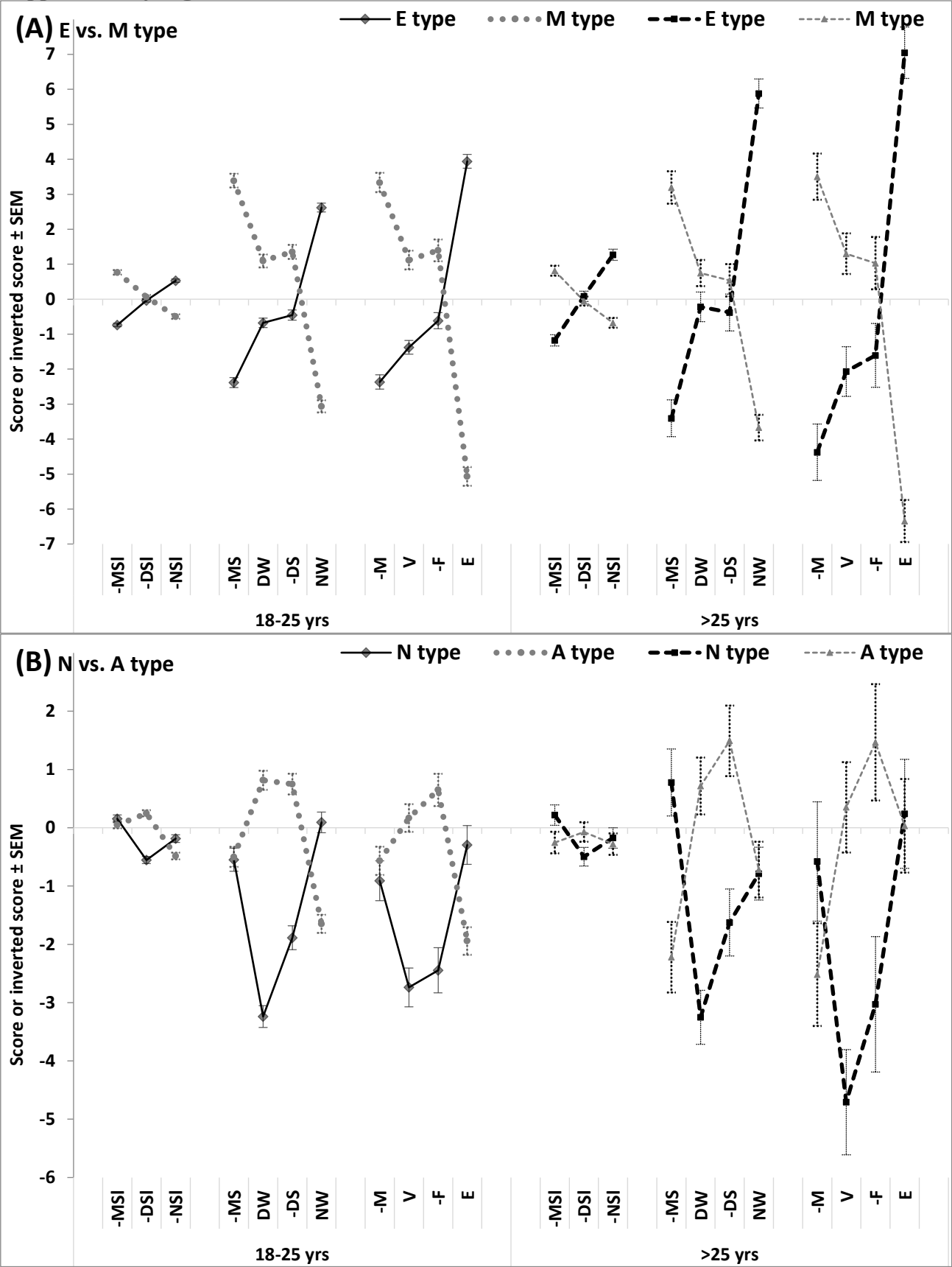


Figure S1

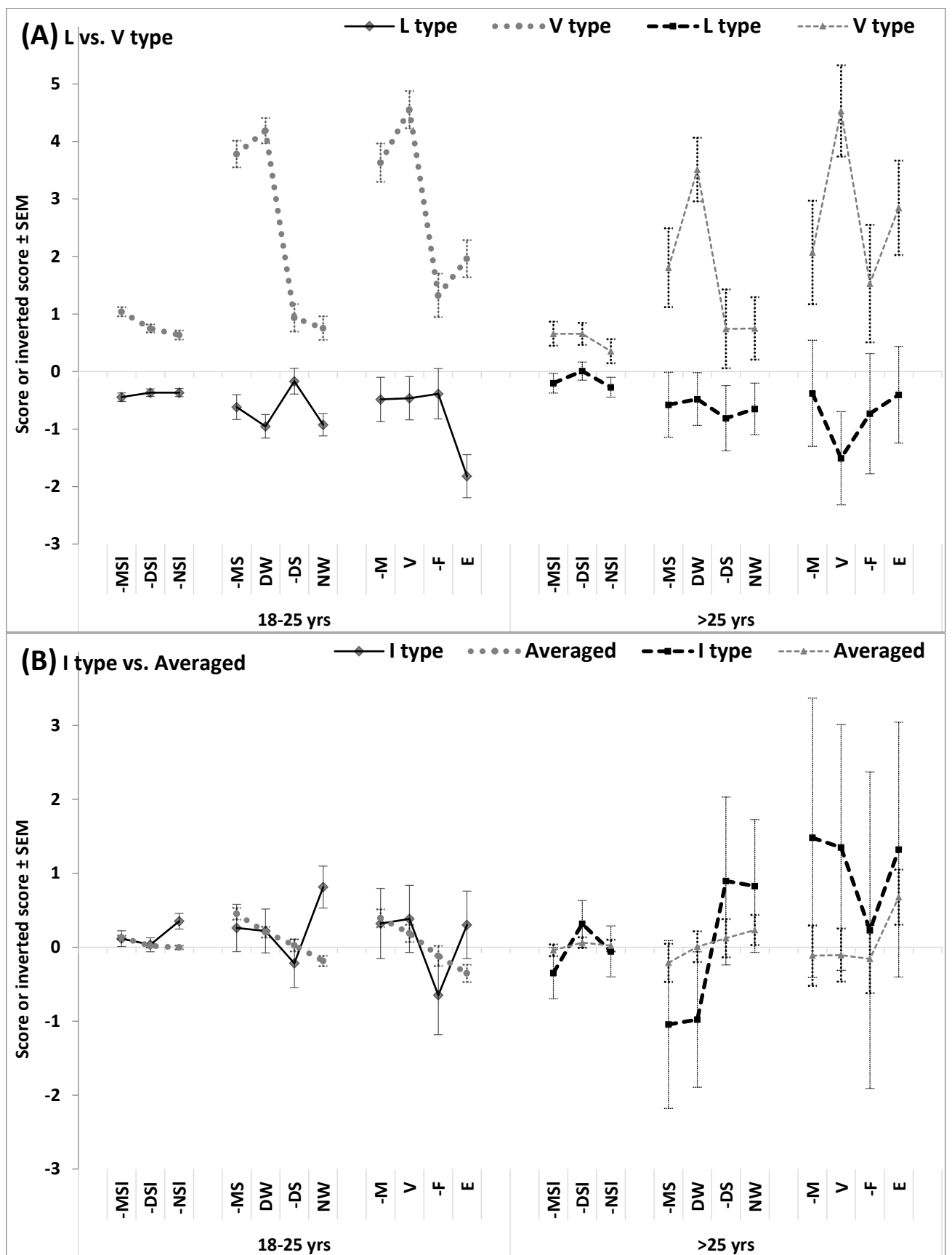


Figure S2

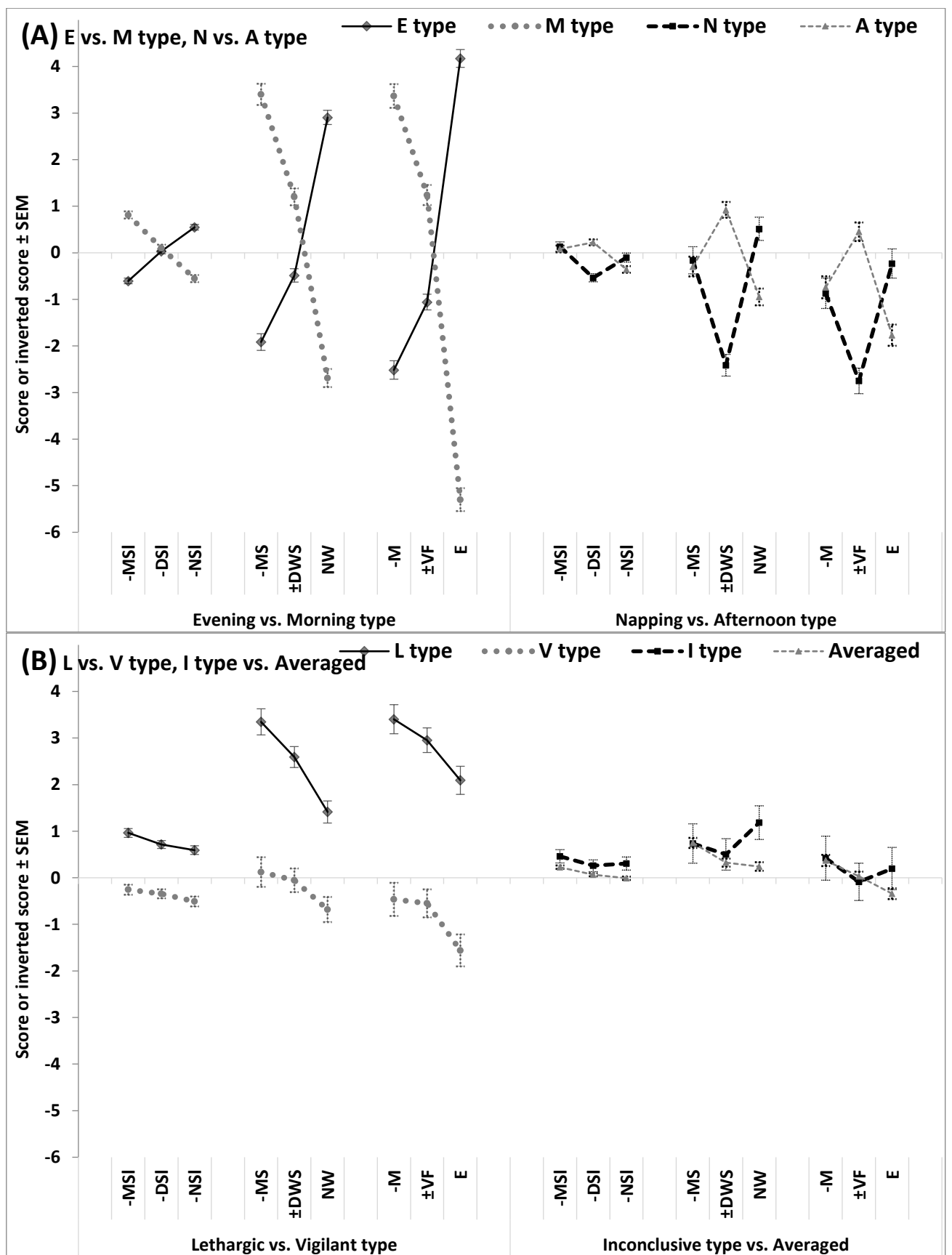


Figure S3