

Supplementary Material

The Interplay between Sleep Patterns, Social Habits, and Environmental Cues: Insights from the Spanish Population and implications on circadian health

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1 Supplementary Figures and Tables

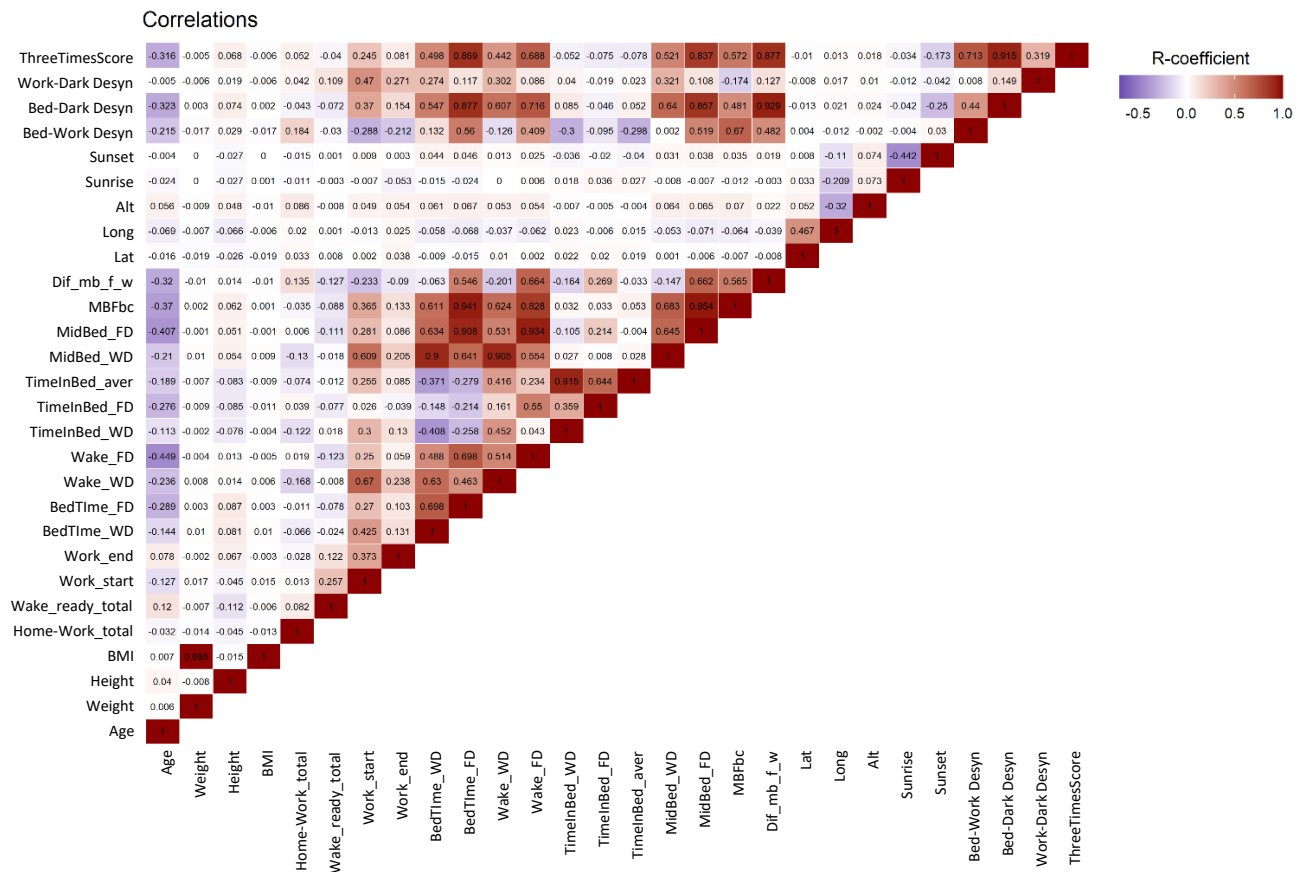


Figure S1. Spearman's correlation heatmap with R-coefficient values indicated in each cell. BMI: Body Mass Index (kg/m^2); wd: work day; fd: free day; MBFbc: modified version of the sleep corrected midsleep in free days (MSFsc); FD: free day; WD: work day. Dif_mb_f_w: difference in bed time free day – work day; Lat: latitude; Long: longitude; Alt: altitude; Bed-Work Desyn: Bed-

Work desynchronization; Bed-Dark Desyn: Bed-Natural Darkness desynchronization; Work-Dark Desyn:: Work-Natural Darkness desynchronization.

Table S1. Sleep habits during work days and free days split by gender. Values are represented as mean \pm SEM, both in decimal and hh:mm format, where appropriate.

	Women		Men	
	Free day	Work day	Free day	Work day
Bed Onset Time (h)	24.65 \pm 0.02	23.68 \pm 0.02	24.91 \pm 0.02	23.92 \pm 0.02
(hh:mm)	00:39 \pm 00:01	23:40 \pm 0:01	00:54 \pm 00:01	23:55 \pm 00:01
Wake-Up Time (h)	9.28 \pm 0.02	7.18 \pm 0.02	9.21 \pm 0.03	7.17 \pm 0.02
(hh:mm)	09:16 \pm 0:01	07:10 \pm 0:01	09:12 \pm 0:01	07:10 \pm 0:01
Time in Bed (h)	8.63 \pm 0.02	7.50 \pm 0.01	8.30 \pm 0.02	7.25 \pm 0.01
(hh:mm)	8:37 \pm 0:01	07:30 00:00	8:18 \pm 00:01	07:15 \pm 00:00
Mid-Bed Time (h)	4.97 \pm 0.02	3.43 \pm 0.01	5.06 \pm 0.02	3.54 \pm 0.02
(hh:mm)	04:58 \pm 0:01	03:25 \pm 0:01	05:03 \pm 0:01	03:32 \pm 0:01

Table S2. Other sleep parameters and social habits related to work schedules split by gender. Desynchronization indexes and three times score. Values are represented as mean \pm SEM, both in decimal and hh:mm format, where appropriate.

	Women	Men
	BMI	22.95 \pm 0.06
Averaged Time in Bed (h)	7.81 \pm 0.01	7.54 \pm 0.01
(hh:mm)	7:48 \pm 0:00	7:32 \pm 0:00
MBFbc (h)	4.53 \pm 0.02	4.65 \pm 0.02
(hh:mm)	04:31 \pm 0:01	04:39 \pm 0:01
Difference Mid Bed Time (FD-WD), social jet lag (h)	1.53 \pm 0.01	1.51 \pm 0.02
(hh:mm)	01:31 \pm 0:00	01:30 \pm 0:01
Commute time (min)	29.00 \pm 0.29	26.52 0.30
Time to get ready (min)	56.54 \pm 0.46	47.95 0.50
Work Start (h)	9.17 \pm 0.03	8.97 \pm 0.03
(hh:mm)	09:10 \pm 0:01	08:58 \pm 0:01
Work End (hh:mm)	16.58 \pm 0.04	17.04 \pm 0.04
(hh:mm)	16:34 \pm 0:02	17:02 \pm 0:02
Work-Natural Darkness Desynchronization (h)	0.10 \pm 0.01	0.12 \pm 0.01

Bed-Natural Darkness Desynchronization (h)	2.75 ± 0.02	2.93 ± 0.02
Bed-Work Desynchronization (h)	0.77 ± 0.01	0.80 ± 0.01
Three Times Score (A.U.)	0.10 ± 0.00	0.11 ± 0.00

BMI: Body Mass Index (kg/m^2); MBFbc: modified version of the sleep corrected midsleep in free days (MSFsc); FD: free day; WD: work day.

Table S3. Sleep habits during work days and free days split by age group. Values are represented as mean \pm SEM, both in decimal and hh:mm format, where appropriate.

	Work Day					
	13-17 years/old	18-30 years/old	31-40 years/old	41-50 years/old	51-64 years/old	65-80 years/old
Bed Onset Time (h)	23.65 \pm 0.04	24.10 \pm 0.02	23.71 \pm 0.02	23.52 \pm 0.02	23.67 \pm 0.04	23.66 \pm 0.15
(hh:mm)	23:39 \pm 00:02	00:06 \pm 00:01	23:42 \pm 00:01	23:31 \pm 00:01	23:40 \pm 00:02	23:39 \pm 00:09
Wake-Up Time (h)	7.14 \pm 0.02	7.60 \pm 0.02	7.13 \pm 0.02	6.84 \pm 0.02	6.74 \pm 0.03	7.09 \pm 0.17
(hh:mm)	07:08 \pm 0:01	07:36 \pm 0:01	07:07 \pm 0:01	06:50 \pm 0:01	06:44 \pm 0:01	07:05 \pm 0:10
Time in Bed (h)	7.48 \pm 0.04	7.49 \pm 0.02	7.42 \pm 0.02	7.31 \pm 0.02	7.07 \pm 0.03	7.43 \pm 0.15
(hh:mm)	7:28 \pm 0:02	7:29 \pm 0:01	7:25 \pm 0:01	7:18 \pm 0:01	7:04 \pm 0:01	7:25 \pm 0:09
Mid-Bed Time (h)	3.40 \pm 0.03	3.85 \pm 0.02	3.42 \pm 0.02	3.18 \pm 0.02	3.21 \pm 0.03	3.38 \pm 0.14
(hh:mm)	03:24 \pm 0:01	03:51 \pm 0:01	03:25 \pm 0:01	03:10 \pm 0:01	03:12 \pm 0:01	03:22 \pm 0:08

	Free Day					
	13-17 years/old	18-30 years/old	31-40 years/old	41-50 years/old	51-64 years/old	65-80 years/old
Bed Onset Time (h)	24.92 \pm 0.05	25.33 \pm 0.03	24.64 \pm 0.03	24.26 \pm 0.02	24.32 \pm 0.04	24.03 \pm 0.14
(hh:mm)	00:55 \pm 00:03	01:19 \pm 00:01	00:38 \pm 00:01	00:15 \pm 00:01	00:19 \pm 00:02	00:01 \pm 00:08
Wake-Up Time (h)	10.16 \pm 0.05	10.06 \pm 0.03	9.04 \pm 0.03	8.53 \pm 0.03	8.25 \pm 0.04	7.80 \pm 0.19
(hh:mm)	10:09 \pm 0:03	10:03 \pm 0:01	09:02 \pm 0:01	08:31 \pm 0:01	08:15 \pm 0:02	07:48 \pm 0:11
Time in Bed (h)	9.24 \pm 0.04	8.72 \pm 0.02	8.39 \pm 0.02	8.27 \pm 0.02	7.93 \pm 0.04	7.77 \pm 0.17
(hh:mm)	9:14 \pm 0:02	8:43 \pm 0:01	8:23 \pm 0:01	8:16 \pm 0:01	7:55 \pm 0:02	7:46 \pm 0:10
Mid-Bed Time (h)	5.54 \pm 0.05	5.70 \pm 0.02	4.84 \pm 0.02	4.39 \pm 0.02	4.29 \pm 0.04	3.91 \pm 0.14
(hh:mm)	05:32 \pm 0:03	05:42 \pm 0:01	04:50 \pm 0:01	04:23 \pm 0:01	04:17 \pm 0:02	03:54 \pm 0:08

Table S4. Other sleep parameters and social habits related to work schedules split by age group. Desynchronization indexes and three times score. Values are represented as mean \pm SEM, both in decimal and hh:mm format, where appropriate.

	13-17 years/old	18-30 years/old	31-40 years/old	41-50 years/old	51-64 years/old	65-80 years/old
BMI	21.04 \pm 0.69	22.92 \pm 0.12	24.18 \pm 0.07	24.85 \pm 0.08	25.77 \pm 0.09	27.10 \pm 0.13
Averaged Time in Bed (h)	7.95 \pm 0.04	7.84 \pm 0.02	7.69 \pm 0.02	7.58 \pm 0.02	7.31 \pm 0.03	7.53 \pm 0.15
MBFbc (h)	4.88 \pm 0.04	5.22 \pm 0.02	4.46 \pm 0.02	4.02 \pm 0.02	3.94 \pm 0.03	3.76 \pm 0.14
(hh:mm)	04:52 \pm 0:02	05:13 \pm 0:01	04:27 \pm 0:01	04:01 \pm 0:01	03:56 \pm 0:01	03:45 \pm 0:08
Difference Mid Bed Time (FD-WD), social jet lag (h)	2.14 \pm 0.04	1.84 \pm 0.02	1.42 \pm 0.02	1.21 \pm 0.02	1.08 \pm 0.03	0.54 \pm 0.07
% with SJL (Difference Mid Bed Time (FD-WD)) > 2 hours	50.41	36.44	20.10	13.11	9.27	1.67
Commute time (min)	20.11 \pm 0.59	30.68 \pm 0.41	27.29 \pm 0.39	28.33 \pm 0.43	25.81 \pm 0.60	19.77 \pm 2.42
Time to get ready (min)	43.27 \pm 0.74	49.61 \pm 0.60	52.64 \pm 0.67	57.15 \pm 0.76	59.71 \pm 1.10	59.52 \pm 4.81
Work Start (h)	8.41 \pm 0.03	9.65 \pm 0.04	9.00 \pm 0.04	8.72 \pm 0.03	8.76 \pm 0.05	9.28 \pm 0.20
(hh:mm)	08:24 \pm 0:01	09:39 \pm 0:02	09:00 \pm 0:02	08:43 \pm 0:01	08:45 \pm 0:03	09:16 \pm 0:12
Work End (hh:mm)	14.93 \pm 0.06	16.89 \pm 0.05	17.20 \pm 0.05	16.76 \pm 0.05	16.77 \pm 0.09	16.80 \pm 0.44
(hh:mm)	14:55 \pm 0:03	16:53 \pm 0:03	17:12 \pm 0:03	16:45 \pm 0:03	16:46 \pm 0:05	16:48 \pm 0:26
Work-Natural Darkness Desynchronization (h)	0.01 \pm 0.00	0.13 \pm 0.01	0.13 \pm 0.01	0.08 \pm 0.01	0.11 \pm 0.01	0.09 \pm 0.04
Bed-Natural Darkness Desynchronization (h)	2.93 \pm 0.04	3.46 \pm 0.02	2.72 \pm 0.02	2.30 \pm 0.02	2.26 \pm 0.04	2.22 \pm 0.15
Bed-Work Desynchronization (h)	1.26 \pm 0.03	0.90 \pm 0.01	0.73 \pm 0.01	0.62 \pm 0.01	0.61 \pm 0.02	0.29 \pm 0.06
Three Times Score (A.U.)	0.12 \pm 0.00	0.12 \pm 0.00	0.10 \pm 0.00	0.08 \pm 0.00	0.08 \pm 0.00	0.07 \pm 0.01

BMI: Body Mass Index; MBFbc: modified version of the sleep corrected midsleep in free days (MSFsc); FD: free day; WD: work day.