

## 1. Basic variables

$BT_{W/F}^{M/E/N}$  (Local time of going to bed);

$Sprep_{W/F}^{M/E/N}$  (Local time of preparing to sleep);

$SLat_{W/F}^{M/E/N}$  (Sleep latency, “I need ... min to fall asleep”);

$$* SO_{W/F}^{M/E/N} \text{ (Sleep onset)} = Sprep_{W/F}^{M/E/N} + SLat_{W/F}^{M/E/N}$$

$SE_{W/F}^{M/E/N}$  (Sleep end, local time of waking up);

$TGU_{W/F}^{M/E/N}$  (Time to get up, “after ... min, I get up”);

$$* GU_{W/F}^{M/E/N} \text{ (Local time of getting out of bed)} = SE_{W/F}^{M/E/N} + TGU_{W/F}^{M/E/N}$$

$$SD_{W/F}^{M/E/N} \text{ (Sleep duration)} = SE_{W/F}^{M/E/N} - SO_{W/F}^{M/E/N};$$

$$* TBT_{W/F}^{M/E/N} \text{ (Total time in bed)} = GU_{W/F}^{M/E/N} - BT_{W/F}^{M/E/N}$$

$NapO_{W/F}^{M/E/N}$  (Local time of nap onset);

$NapE_{W/F}^{M/E/N}$  (Local time of nap end);

$$* NapD_{W/F}^{M/E/N} \text{ (Nap duration)} = NapE_{W/F}^{M/E/N} - NapO_{W/F}^{M/E/N}$$

$$SD24_{W/F}^{M/E/N} \text{ (24 h sleep duration, i.e., including napping duration)} =$$

$$SD_{W/F}^{M/E/N} + NapD_{W/F}^{M/E/N};$$

$n_{W/F}^{M/E/N}$  = number of days worked in a particular shift within a shift cycle;

$$* \emptyset SD^{M/E/N} = \frac{(SD_W^{M/E/N} \times n_W^{M/E/N} + SD_F^{M/E/N} \times n_F^{M/E/N})}{(n_W^{M/E/N} + n_F^{M/E/N})}$$

Overall sleep duration is the weighted average of the shift-specific mean sleep durations.

## 2. Chronotyping Shift-Workers

The basis for estimating chronotype in shift-workers is the Mid-Sleep Time on Free days after Evening shifts ( $MSF^E$ ). Please note that, just as in day-workers, only participants who wake up without an alarm clock on free days after evening shifts can be chronotyped!

In case work schedules do not comprise evening shifts, the algorithms for converting  $MSF^M$  and  $MSF^N$  to  $MSF^E$  can be found in the main article.

$$MSF^E = SO_F^E + \frac{SD_F^E}{2}$$

For individuals who do **not** sleep longer on free days after evening shifts, than on evening shifts, chronotype is:

$$MSF_{sc}^E = MSF^E$$

For individuals who sleep longer on free days than on workdays, MSF is corrected for “oversleep” on free days that participants use to compensate sleep debt accumulated during the workweek:

$$MSF_{sc}^E = MSF^E - \frac{(SD_F^E - \emptyset SD^E)}{2}$$

## 3. Social Jetlag

The relative social jetlag ( $SJL_{rel}$ ) is the difference between the Mid-Sleep on work- and on free days.

$$\text{Mid-Sleep Computation: } MSW / MSF^{M/E/N} = SO_{W/F}^{M/E/N} + \frac{SD_{W/F}^{M/E/N}}{2} ;$$

$$\text{Shift-specific Social Jetlag Computation: } SJL_{rel}^{M/E/N} = MSF^{M/E/N} - MSW^{M/E/N}$$

For studies, that compare individual average social jetlag levels (*i.e.*, across shift systems or different working times), absolute social jetlag across all shifts needs to be computed:

$$\emptyset SJL_{weighted} = \frac{(|SJL^M| \times n_W^M + |SJL^E| \times n_W^E + |SJL^N| \times n_W^N)}{(n_W^M + n_W^E + n_W^N)}$$