

CHRIS Study

Touchscreen – Munich Chronotype Questionnaire

Version 1.1
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Authors: LB, MG

1. Introduction

This module stores information related to the circadian rhythm of the participants, that was collected with the self-assessment questionnaire on a touchscreen.

Participants book a morning appointment at the CHRIS study center, ranging from 7.45 to 8.45 a.m. Each study participant is assigned a workflow at the reception. If there are ten study participants (maximum capacity), there are ten different workflows, marked with the letters from “A” to “K”. The current workflow is as follows: A-B-C-D-E-F-G-H-I-K. All the workflows can be found in the documentation of CHRIS Baseline/General information/Administrative data, in the file named “Workflows at baseline assessment”. The self-administered questionnaire is filled in always after the blood draw, for most before the interview (workflows B, C, E, F, H, I, L). For the remainder, the self-administered questionnaire is filled in just after the interview (workflows A, G) or after the interview and the ECG measurement (workflow D).

The Munich ChronoType Questionnaire (MCTQ) was developed by Roenneberg and colleagues to assess the circadian rhythm and has been in use since 2000. Since then, the MCTQ has been progressively optimized. It consists of a core module that determines the chronotype and other optional modules on personal data, time spent outdoors, stimulants, work commute, etc. The version used in the CHRIS study is a readaptation of the MCTQ full, with the exclusion of topics overlapping with other modules covered in the interview (e.g., personal data, stimulants). The German and Italian versions were already available and validated.

The self-assessment questionnaires and the guide for MCTQ evaluation are available at CHRIS Baseline/Self-Assessment/Touchscreen/Munich Chronotype Questionnaire and online (see References section).

2. History version changes

Version 1 of this module was in use between August 24th, 2011 and has never been changed.

The cleaning process added the variables x0mc05a, x0mc06a, x0mc08a, x0mc11a, x0mc12a, x0mc14a, x0mc21, x0mc22, x0mc23, x0mc24, x0mc25, and x0mc26.

3. Data cleaning

1. The main CHRIS dataset was loaded.
2. The variables measured in minutes, x0mx07, x0mc10, x0mc13, x0mc16, had their missing observations set to “Unexpected missing” (-89).
3. A copy of all the variables of type time (i.e., HH:MM:SS) was created and saved with an “a” at the end of the variable name.
4. Consistency between bedtime, minutes needed to fall asleep, waking up time and getting up time was checked as follows.
 - a) If the workday bedtime (x0mc05a) coincided with the workday waking up time (x0mc08a) and it was between 03:00 and 12:00, the bedtime variable x0mc05a was set to missing,

- b) If the workday preparing to sleep time (x0mc06a) coincided with the workday waking up time (x0mc08a) and it was between 03:00 and 12:00, the preparing to sleep time variable x0mc06a was set to missing,
 - c) If the workday bedtime (x0mc05a) coincided with the workday waking up time (x0mc08a) and x0mc05a was between 20:00 and 23:59 or between 0:00 and 1:00, the waking up time variable x0mc08a was set to missing,
 - d) If the workday preparing to sleep time (x0mc06a) coincided with the workday waking up time (x0mc08a) and x0mc06a was between 20:00 and 23:59 or between 0:00 and 1:00, the waking up time variable x0mc08a was set to missing,
 - e) If the free day bedtime (x0mc11a) coincided with the free day waking up time (x0mc14a) and it was between 03:00 and 13:00, the bedtime variable x0mc11a was set to missing,
 - f) If the free day preparing to sleep time (x0mc12a) coincided with the free day waking up time (x0mc14a) and it was between 03:00 and 13:00, the preparing to sleep time variable x0mc12a was set to missing,
 - g) If the free day bedtime (x0mc11a) coincided with the free day waking up time (x0mc14a) and x0mc11a was between 20:00 and 23:59 or between 0:00 and 3:00, the waking up time variable x0mc14a was set to missing,
 - h) If the free day preparing to sleep time (x0mc12a) coincided with the free day waking up time (x0mc14a) and x0mc12a was between 20:00 and 23:59 or between 0:00 and 3:00, the waking up time variable x0mc14a was set to missing.
5. To correct variables of type time (i.e., HH:MM:SS) where a.m. was mixed up with p.m., the procedure was as follows:
- a) 12 hours were added to the workday bedtime (x0mc05a) if it was between 7:00 and 12:00, the workday preparing to sleep time x0mc06a was between 7:00 and 13:00, and the workday waking up time x0mc08a was between 03:00 and 11:00,
 - b) 12 hours were added to the free day bedtime (x0mc11a) if it was between 7:00 and 12:00, the free day preparing to sleep time x0mc12a was between 7:00 and 13:00, and the free day waking up time x0mc14a was between 03:00 and 11:00,
 - c) 12 hours were removed from the workday bedtime (x0mc05a) if it was between 12:00 and 13:00, the workday preparing to sleep time x0mc06a was between 7:00 and 13:00, and the workday waking up time x0mc08a was between 03:00 and 11:00,
 - d) 12 hours were removed from the free day bedtime (x0mc11a) if it was between 12:00 and 13:00, the free day preparing to sleep time x0mc12a was between 7:00 and 13:00, and the free day waking up time x0mc14a was between 03:00 and 11:00,
 - e) 12 hours were added to the workday bedtime (x0mc05a) if it was between 7:00 and 12:00, the workday preparing to sleep time x0mc06a was between 19:00 and 03:00, and the workday waking up time x0mc08a was between 03:00 and 12:00,
 - f) 12 hours were added to the free day bedtime (x0mc11a) if it was between 7:00 and 12:00, the free day preparing to sleep time x0mc12a was between 19:00 and 03:00, and the free day waking up time x0mc14a was between 03:00 and 11:00,
 - g) 12 hours were removed from the workday bedtime (x0mc05a) if it was between 12:00 and 13:00, the workday preparing to sleep time x0mc06a was between 19:00 and 03:00, and the workday waking up time x0mc08a was between 03:00 and 11:00,

- h) 12 hours were removed from the free day bedtime (x0mc11a) if it was between 12:00 and 13:00, the free day preparing to sleep time x0mc12a was between 19:00 and 03:00, and the free day waking up time x0mc14a was between 03:00 and 11:00,
 - i) Similar corrections of x0mc05a and x0mc11a were done using the variable x0sq01a of the Pittsburgh Sleep Quality Index instead of x0mc06a and x0mc12a.
 - j) Consequently, also the preparing to sleep times x0mx06a and x0mc12a were corrected to be close in time to x0mc05a and x0mc11a, respectively.
6. Other special cases that needed to be corrected are the following:
- a) 12 hours were added to the workday bedtime (x0mc05a) if it was between 7:00 and 12:00, the preparing to sleep time x0sq03a from PSQI was not between 12:00 and 18:00, and the workday waking up time x0mc08a was between 18:00 and 06:00,
 - b) 12 hours were added to the workday preparing to sleep time (x0mc06a) if it was between 7:00 and 12:00, the preparing to sleep time x0sq03a from PSQI was not between 12:00 and 18:00, and the workday waking up time x0mc08a was between 18:00 and 06:00,
 - c) 12 hours were removed from the workday bedtime (x0mc05a) if it was between 12:00 and 13:00,
 - d) 12 hours were removed from the workday preparing to sleep time (x0mc06a) if it was between 12:00 and 13:00,
 - e) 12 hours were added to the free day bedtime (x0mc11a) if it was between 7:00 and 12:00, the preparing to sleep time x0sq03a from PSQI was not between 12:00 and 18:00, and the free day waking up time x0mc14a was between 18:00 and 06:00,
 - f) 12 hours were added to the free day preparing to sleep time (x0mc12a) if it was between 7:00 and 12:00, the preparing to sleep time x0sq03a from PSQI was not between 12:00 and 18:00, and the free day waking up time x0mc14a was between 18:00 and 06:00,
 - g) 12 hours were removed from the free day bedtime (x0mc11a) if it was between 12:00 and 13:00,
 - h) 12 hours were removed from the free day preparing to sleep time (x0mc12a) if it was between 12:00 and 13:00.
7. The difference in hours between the various time variables, divided into workday and free day, was computed to check for further errors.
8. The sleep onset on workdays was computed as the workday preparing to sleep time (x0mc06a) plus the number of minutes needed to fall asleep on workdays (x0mc07) converted in milliseconds, then transformed into HH:MM:SS.sss format, and saved as SOw. The sleep duration on workdays was computed as the difference between the workday waking up time and the sleep onset on workdays, converted into hours, and saved as SDw. The workdays getting up time was computed as the sum of the workdays waking up time (x0mc08a) and the time needed to get up on workdays (x0mc10) converted in milliseconds, then transformed into HH:MM:SS.sss, and saved as GUw. The workdays total time in bed was computed as the difference between the workdays getting up time GUw and the workdays bedtime x0mc05a, transformed in hours, and saved as TBTw. The same quantities were computed for free days and saved as SOf, SDF, GUF, TBTf. The total time in bed was computed also for PSQI, tbt_psqi.

9. Further corrections were performed to correct cases where the hours were likely missing 20 hours, e.g. the MCTQ workdays bedtime x0mc05a was between 02:00 and 02:59 and instead the PSQI bedtime x0sq01a was between 22:00 and 22:59 and the PSQI getting up time x0sq03a was between 01:00 and 08:00. In this specific case, 20 hours were added to the MCTQ workdays bedtime x0mc05a. Similar corrections were done for the free days bedtime x0mc11a, the workdays preparing to sleep time x0mc06a, and the free days preparing to sleep time x0mc06a.
10. Other special cases that needed to be corrected are the following:
 - a) 12 hours were added to the workday bedtime (x0mc05a) if the free day bedtime x0mc11a was between 19:00 and 02:00 and the PSQI bedtime x0sq01a was 12 hours more than the MCTQ workday bedtime x0mc05a,
 - b) 12 hours were added to the workday preparing to fall asleep time (x0mc06a) if the free day preparing to fall asleep time x0mc12a was between 19:00 and 02:00 and the PSQI bedtime x0sq01a was between 10 and 12 hours more than the MCTQ workday preparing to fall asleep time x0mc06a,
 - c) The workday bedtime x0mc05a was set to missing if x0mc05a was between 04:00 and 18:00 and bedtime duration was less than 3 hours, or if the workdays waking up time x0mc08a was between 04:00 and 11:00 and bedtime duration above 14 hours, or if x0mc05a was between 00:00 and 18:00, bedtime duration above 14 hours and the PSQI getting up time x0sq03a was between 03:00 and 11:00,
 - d) The workdays preparing to fall asleep time x0mc06a was set to missing if the time x0mc05a was between 2 and 12 hours later than x0mc06a and the difference between x0mc05a and x0sq01a are between 0.5 and 2 hours, or if x0mc05a was between 1 and 12 hours later than x0mc06a and the difference between x0mc05a and x0sq01a are between 0.1 and 1 hour, or if x0mc06a was between 03:00 and 18:00 and the waking up time was between 04:00 and 11:00 and sleep duration SDw was not between 4 and 11 hours, or if x0mc05a was between 20:00 and 23:59 and the time to switch lights is at least 2 hours.
 - e) The time it takes to get asleep on workdays after lights are off, x0mc07, was set to its equivalent in PSQI x0sq02a, if values of x0mc07 were too high with respect to x0sq02a and consisted of duplicated numbers (e.g.: 110, 88, 55); x0mc07 was set to "Out of range" (-86) if it was above 120 minutes and sleep duration SDw was between 3 and 12 hours and the difference between sleep duration SDw and x0mc07 was below 3 hours; x0mc07 was also set to "Out of range" (-86) if it was above 120 minutes and the PSQI average sleep duration x0sq04a was between 4 and 11 hours and x0mc07 plus average sleep duration x0sq04a is bigger than PSQI total time in bed, or if x0mc07a was above 75 minutes and its PSQI equivalent x0sq02a was between 0 and 30 minutes and its MTCQ free days equivalent x0mc13 was between 0 and 30 minutes.
 - f) The work days waking up time x0mc08a was set to missing if x0mc05a was between 19:00 and 02:00 and x0mc08a was between 19:00 and 02:00 and the difference between x0mc05a and x0mc08a was not between 3 and 12 hours and the difference between x0mc06a and x0mc08a was not between 3 and 12 hours; x0mc08a was also set to missing if x0mc05a was between 20:00 and 13:59 and x0mc08a was between 10:00 and 14:00 and its PSQI equivalent x0sq03a was between 04:00 and 08:00 and the difference between x0mc06a and x0mc08a was not between 4 and 11 hours; x0mc08a

was also set to missing if x0mc05a was between 20:00 and 23:59 and x0mc08a was between 10:00 and 14:00 and the PSQI waking up time x0sq03a was between 04:00 and 08:00 and the workdays sleep duration SDw was not between 4 and 11 hours. The workdays waking up time variable x0mc08a was also set to missing if x0mc05a was between 21:00 and 23:59 and x0mc08a was between 00:00 and 03:00 and the difference between TBTw and PSQI average sleep duration x00sq04a was more than 2 hours.

- g) The workdays time needed to get up x0mc10 was corrected from 88 minutes to 8 minutes if the free days equivalent x0mc16 was below 10. Instead, x0mc10 was set to "Out of range" (-86) if it was above 85 minutes and the difference between x0sq03a and x0mc08 in minutes was less than x0mc10 and not an early wake up time (x0mc08a not between 01:00 and 03:00).
 - h) Similar procedures were done for the free days times x0mc11a, x0mc12a, x0mc13, x0mc14a, and x0mc16.
11. The MCTQ workdays bedtime x0mc05a was imputed as the same as the MCTQ free days bedtime x0mc11a if both the preparing to fall asleep time and the waking up time coincided between workdays and free days (x0mc06a=x0mc12a and x0mc08a=x0mc14a) and in free days the preparing to sleep differed of no more than 15 minutes from bedtime and instead in workdays the preparing to sleep differed of more than 30 minutes. Similarly, the MCTQ workdays preparing to fall asleep time x0mc06a was imputed as the same as the free days preparing to fall asleep time x0mc12a if similar conditions as above applied. A similar correction was done to free days bedtime x0mc11a and free days preparing to fall asleep time x0mc12a.
 12. The workdays bedtime x0mc05a was set to missing if the actual sleep duration (x0mc08a-x0mc06a-x0mc07/60) was less than 1 hour and x0mc05a was not between 18:00 and 01:00. The workdays preparing to fall asleep time x0mc06a was set to missing if the actual sleep duration (x0mc08a-x0mc06a-x0mc07/60) was less than 1 hour and x0mc06a was not between 18:00 and 01:00. The time needed to fall asleep on workdays x0mc07 was set to missing if both x0mc05a and x0mc06a were missing and x0mc07 was above 120 minutes.
 13. The workdays bedtime x0mc05a was set to missing if the difference between x0mc05a and x0mc06a was below -1 hour or above 3 hours and the difference between the MCTQ bedtime x0mc05a and the PSQI one x0sq01a was more than 1 hour and x0mc06a was not missing and x0mc05a and x0mc06a differed of more than 30 minutes. The workdays preparing to fall asleep time x0mc06a was also set to missing if the difference between x0mc05a and x0mc06a was below -1 hour or above 3 hours and the difference between the MCTQ bedtime x0mc05a and the PSQI one x0sq01a was more than 1 hour and x0mc05a was not missing and x0mc05a and x0mc06a differed of more than 30 minutes. Similar corrections were applied to the free days times x0mc11a and x0mc12a.
 14. The free days waking up time x0mc14a was set to missing if the free days sleep duration SDF was not missing and not in the range 3-12 hours, the PSQI equivalent sleep average duration x0sq04a was between 3 and 11 hours or "Out of range" and x0mc14a was not between 3:00 and 13:00. The free days bedtime x0mc11a was set to missing if the free days total time in bed was not in the range 3-12 hours and x0mc11a and x0mc12a differed of more than 1 hour and the time needed to fall asleep on free days x0mc13 was below 150 minutes and the waking up time differed of more than 1 hours between work days and free days (i.e. |x0mc08a-x0mc14a|>1).

The free days bedtime x0mc11a was set to missing if the free days preparing to fall asleep time x0mc12a was more than 1 hours before x0mc11a and the bedtime differed of more than 1.5 hour between workdays and free days and the waking up time differed of less than 1 hours between workdays and free days. The free days preparing to fall asleep time x0mc12a was set to missing if x0mc12a was more than 1 hour before x0mc11a and the bedtime differed of at most 1 hour between workdays and free days and the waking up time differed of less than 1 hour between workdays and free days. Similar corrections were performed comparing the PSQI times with MCTQ times.

15. If the bedtime duration on free days was above 14 hours and the waking up time was in the afternoon, then the free days waking up time x0mc14a was set to missing.
16. If the time difference between x0mc05a and x0mc06a was at least 2 hours and x0mc05a differed from its PSQI equivalent x0sq01 of more than 1 hour and instead the difference between x0mc11a and x0mc12a was up to 1 hour, than x0mc05a was set to missing. The same was done to x0mc11a if instead the time difference between x0mc05a and x0mc06a was up to 1 hour and the difference between x0mc11a and x0mc12a was longer than 2 hours.
17. Furthermore, the workdays bedtime x0mc05a was set to missing if the difference between x0mc05a and x0ms06a was at least 3 hours, but the difference between x0mc6a and x0sq01a was up to 1 hour. The workdays preparing to fall asleep time x0mc06a was set to missing if the difference between x0mc05a and x0ms06a was at least 3 hours, but the difference between x0mc5a and x0sq01a was up to 1 hour. Also, the workdays bedtime x0mc05a was set to missing if the difference between x0mc05a and x0ms06a was at least 2 hours, but the difference between x0mc6a and x0sq01a was up to 30 minutes. The workdays preparing to fall asleep time x0mc06a was set to missing if the difference between x0mc05a and x0ms06a was at least 2 hours, but the difference between x0mc5a and x0sq01a was up to 30 minutes. Similar corrections were applied to the free days times x0mc11a and x0mc12a.
18. Consistencies with respect to the time to get asleep were checked between MCTQ and PSQI variables, i.e. between x0mc06a-x0mc05a-x0mc07 and x0sq02. If these two quantities differed of more than 90 minutes, and SDw was bigger than x0sq04a, and x0mc05a and x0mc06a had a difference of more than 30 minutes, then x0mc05a and x0mc06a were set to missing. Similar corrections were done to x0mc11a and x0mc12a.
19. The workdays bedtime x0mc05a was set to missing if x0mc05a was later than x0mc06a of more than 30 minutes and x0mc06a coincided with x0sq01a. The workdays preparing to fall asleep time x0mc06a was set to missing if x0mc05a was later than x0mc06a of more than 30 minutes and later than x0sq01a and x0mc06a did not coincide with x0sq01a and the workdays sleep duration SDw was longer than PSQI total time in bed (tbt_psqi) and tbt_psqi was greater than the PSQI average sleep duration. Similar corrections were done to x0mc11a and x0mc12a.
20. The workdays waking up time x0mc08a was set to missing if the PSQI total time in bed tbt_psqi was longer than MCTQ workdays total time in bed TBTw plus 1 hour, and tbt_psqi was longer than the free days total time in bed TBTf plus 1 hour and the PSQI getting up time x0sq03a was between 04:00 and 10:00 and the difference between x0mc08a and its PSQI equivalent x0sq03a was more than 2 hours and x0sq03a differed from GUw of more than 1 hour. A similar correction was applied to x0mc14a.
21. The workdays bedtime x0mc05a was assigned the value of free days bedtime x0mc11a if x0mc05a was missing and x0sq01a coincided with x0mc11a and x0mc06a coincided with

x0mc12a. The workdays preparing to fall asleep time x0mc06a was assigned the value of free days preparing to fall asleep time x0mc12a if x0mc06a was missing and x0mc08a coincided with x0mc14a and x0mc05a coincided with x0mc11a and x0mc11a differed from x0mc12a of no more than 2 hours. The workdays waking up time x0mc08a was assigned to value of free days waking up time x0mc14a if x0mc08a was missing, x0mc05a coincided with x0mc11a, x0mc06a coincided with x0mc12a and x0mc14a coincided with the PSQI equivalent x0sq03a. A similar correction was done to x0mc11a, x0mc12a, and x0mc14a.

22. The quantities of differences between different times were updated to include all the occurred changes. The quantities SOw, SDw, GUw, TBTw, SOf, SDf, GUf, and TBTf were also updated.
23. Outliers in the distribution of x0mc05a, x0mc06a, and x0mc08a were checked compared to the SDw and tbt_psqi values. The workdays bedtime x0mc05a and the preparing to fall asleep time x0mc06a were set to missing if x0mc05a was later than x0mc06a of more than 30 minutes, the workdays sleep duration SDw was longer than the PSQI average sleep duration x0sq04a but TBTw was shorter than the PSQI total time in bed tbt_psqi, or if SDw was shorter than x0sq04a but TBTw longer than tbt_psqi. The workdays bedtime x0mc05a was set to missing if x0mc05a was later than x0mc06a of more than 30 minutes, and SDw coincided with x0sq04a or tbt_psqi was missing and SDw was shorter than x0sq04a. The workdays preparing to fall asleep time x0mc06a was set to missing if x0mc05a was later than x0mc06a of more than 30 minutes, and x0sq04a was "Out of range", or TBTw coincided with tbt_psqi, or tbt_psqi was missing and SDw was longer than x0sq04a, or x0mc05a and x0sq01a differed of less than 15 minutes. The workdays preparing to fall asleep time x0mc06a was also set to missing if x0mc06a was later than x0mc05a of more than 2 hours. The waking up time x0mc08a was set to missing if more than 13 hours spanned between x0mc05 and x0mc08a or between x0mc06a and x0mc08a. The workdays preparing to fall asleep time x0mc06a was then set to missing if less than 3 hours spanned between x0mc06a and x0mc08a.
24. The workdays bedtime x0mc05a was set to missing if the workdays total time in bed TBTw was not in the range 3.5 to 13.5 hours and x0mc05a differed from x0sq01a of more than 30 minutes. The workdays waking up time x0mc08a was set to missing if the workdays total time in bed TBTw was not in the range 3.5 to 13.5 hours, x0mc08a differed from x0sq03a of more than 30 minutes and the time needed to get up on workdays xmc10 was less than 90 minutes. The workdays preparing to fall asleep time x0mc06a was set to missing if the workdays total sleep duration SDw was not in the range 3 to 12 hours and x0mc06a differed from x0sq01a of more than 30 minutes. The workdays waking up time x0mc08a was set to missing if SDw was not in the range 3 to 12 hours, x0mc08a differed from x0sq03a of more than 30 minutes, and the time needed to get up on workdays xmc10 was less than 90 minutes. Similar corrections were applied to x0mc11a, x0mc12a, and x0mc14a. Furthermore, the time needed to fall asleep on free days, x0mc13, was set to missing if the free days sleep duration was below 3 hours and x0mc13 exceeded 60 minutes.
25. The workdays bedtime x0mc05a was assigned the value of x0sq01a if x0mc05a was missing, x0sq01a coincided with x0mc06a and the original x0mc05 value was equal to x0sq01a plus 1 hour. The workdays preparing to fall asleep time x0mc06a was assigned the value of x0mc05a if x0mc06a was missing, x0sq01a coincided with x0mc05a, x0sq02a coincided with x0mc07, and the original x0mc05 value was equal to x0mc06a plus 1, 2, or 3 hours. Similar corrections were applied to x0mc11a and x0mc12a.

26. The mid-sleep time on free days and workdays were computed and saved as x0mc21 and x0mc24, respectively. The formula used was $MS = SO + \frac{SD}{2}$, which for free days meant $SO = x0mc12a + x0mc13$, and $SD = x0mc14a - (x0mc12a + x0mc13)$; whereas for workdays $SO = x0mc06a + x0mc07$, $SD = x0mc08a - (x0mc06a + x0mc07)$.
27. The mid-sleep time on free days was also computed adjusting for oversleep on free days, with the use of the formula $MSF_{sc} = MSF - \frac{SD_{week} - SD_f}{2}$, where
 MSF = mid-sleep on free days = x0mc21,
 $SD_{week} = \frac{1}{7} (SD_w * x0mc04 + SD_f * (7 - x0mc04))$,
 $SD_w = x0mc08a - (x0mc06a + x0mc07)$,
 $SD_f = x0mc14a - (x0mc12a + x0mc13)$.
 It was saved as x0mc22.
28. The mid-sleep time on free days was also computed per sex-age cohort and saved as x0mc23.
29. The relative social jet lag was computed as the difference between the mid-sleep time on free days and the mid-sleep time on workdays. It was saved as x0mc25.
30. The absolute social jet lag was computed as the absolute value of x0mc25. It was saved as x0mc26.
31. The baseline dataset was saved.

4. Advices for the analysis

The cleaning process tried to solve most of the inconsistencies among the different times that were filled in (e.g. bedtime occurring after switching of the lights), as well as typos and a.m. times inserted instead of p.m. times. However, 1 hour margin of inconsistency was tolerated.

Additional information related to sleep patterns was measured with the Pittsburgh Sleep Quality Index and the REM Sleep Behavior Disorder instruments in the self-administered questionnaire, i.e. in the modules x0sq and x0rb, respectively.

Furthermore, sleep disorders were reported in the neurology module of the interview, and they can be found in the variables x0ne11, x0ne11b, x0ne11c, and x0ne11d.

5. References

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MCTQ text in English. <https://www.thewep.org/documentations/mctq/item/english-mctq-full>

MCTQ text in German: <https://www.thewep.org/documentations/mctq/item/german-mctq-full>

MCTQ evaluation guide: <https://www.thewep.org/documentations/mctq/item/mctq-variables>