Supplementary Table 1. All narrative question items presented as described in table 5.

Domain	Sub-domain (s)	Question	Answer type	Option
At-home sleep	Total sleep time	Actigraphy: The total time spent in sleep according to the epoch-by-epoch wake/sleep categorisation. Sleep diary: Last night I went to bed at…And turned the lights out (tried to go to sleep at)…	Drop down on Sleep diary	hh:mm
	Sleep onset latency	Actigraphy: The time between 'Lights Out' and 'Fell Asleep'. Sleep diary: After turning the lights out I fell asleep in … minutes (estimate)	NA	
	Sleep efficiency	Actigraphy: Total sleep time expressed as a percentage of time in bed.	NA	
	Central phase measure	Actigraphy: This is the midpoint between "Fell asleep" and "Wake up", expressed as the number of minutes past midnight. For ease of normal use, it will be negative for phase times prior to midnight but after midday.	NA	
	Sleep fragmentation (Mid-sleep wake)	Actigraphy: The sum of the 'Mobile time (%)' and the 'Immobile bouts <=1min (%)'. This is an indication of the degree of fragmentation of the sleep period, and can be used as an indication of sleep quality (or the lack of it). Sleep diary: How many times did you wake up, not counting your final awakening?	Drop down on Sleep diary	No. of instances
	Sleep variability	Actigrapy: Quantifies the degree of regularity in the Activity-Rest pattern with a range of 0 to 1 where a value of 0 indicates a total lack of rhythm and a value of 1 indicates a perfectly stable rhythm. Each stage regularity degree will be extrated separately	N/A	N/A
	Sleep satisfaction	How would you rate the quality of your sleep?	MC	Very poor (1) Poor (2) Average (3) Good (4) Very good (5)
	Morning vitality	Do you feel energetic and well-rested after getting up? (Feelings within 10 minutes of waking up)	MC	Very tired (1) Tired (2) Average (3) Energetic (4) Very energetic (5)
	Sleepiness	Select the number that best describes your current state	MC	Feeling active, vital, alert, and wide awake (1) Functioning at a high level, but not at peak. Able to concentrate (2) Awake and relaxed, responsive but not fully alert (3) Feeling a little foggy and not at my peak (4) Foggy, slowing down, and having difficulty staying awake (5) Feeling sleepy, prefer to lie down, and on the verge of falling asleep (6) Almost in a dream-like state, struggling to stay awake (7) Asleep (8)
Trait sleep	Chinese Pittsburgh Sleep Quality Index	1. During the past month, what time have you usually gone to bed at night?	Drop down	hh:mm
		2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?	Type	minutes
		3. During the past month, what time have you usually gotten up in the morning?	Drop down	hh:mm
		4. During the past month, how many hours of actual sleep did you get at night?	Drop down	Hours
		5. a) Cannot get to sleep within 30 minutes	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. b) Wake up in the middle of the night or early morning	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. c) Have to get up to use the bathroom	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. d) Cannot breathe comfortably	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. e) Cough or snore loudly	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. f) Feel too cold	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. g) Feel too hot	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. h) Had bad dreams	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. i) Have pain	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		5. j) Other reason(s), please describe (How often during the past month have you had trouble sleeping because of this?)	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		6. During the past month, how would you rate your sleep quality overall?	MC	Very good (3) Fairly good (2) Fairly bad (1) Very bad (0)
		7. During the past month, how often have you taken medicine to help you sleep?	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?	MC	Not during the past month (0) Less than once a week (1) Once or twice a week (2) Three or more times a week (3)
		9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?	MC	No problem at all (0) Only a very slight problem (1) Somewhat of a problem (2) A very big problem (3)
	Bedtime Procrastination Scale	1. I go to bed later than I had intended. 2. I go to bed early if I have to get up early in the morning (R). 3. If it is time to turn off the lights at night I do it immediately (R). 4. Often I am still doing other things when it is time to go to bed. 5. I easily get distracted by things when I actually would like to go to bed. 6. I do not go to bed on time. 7. I have a regular bedtime which I keep to (R). 8. I want to go to bed on time but I just don't. 9. I can easily stop with my activities when it is time to go to bed (R).	MC	(Almost) never (1) Rarely (2) Sometimes (3) Often (4) (Almost) always (5)
	Chronic Sleep Reduction Questionnaire	1. Do you have trouble getting up in the morning?	MC	No (1), Sometimes (2), Yes (3)
		2. Do you feel well rested at school?*	MC	No (1), Sometimes (2), Yes (3)
		3. Do you feel sleepy during the day?	MC	No (1), Sometimes (2), Yes (3)
		4. Do you often yawn throughout the day?	MC	No (1), Sometimes (2), Yes (3)
		5. Are you immediately wide awake when you wake up?*	MC	No (1), Sometimes (2), Yes (3)
		6. I oversleep in the morning (e.g. continuing to sleep even though I need to get up)	MC	Never (1), once in a while (2), often (3)
		7. At noon I feel as energetic as in the morning	MC	this is true for me (1), I feel less alert at noon (2), I feel a lot less alert at Noon (3)
		8. When I am at school for a while I have trouble keeping my eyes open	MC	No (1), Sometimes (2), Yes (3)
		9. Do other people think that you react angrily when they ask you for something or say something to you?	MC	No (1), Sometimes (2), Yes (3)
		10. When I do not get enough sleep it is more likely that I start an argument	MC	no, this is not true for me (1) yes, that is true for me once in a while (2) yes, that is often true for me (3)
		11. Do you have enough energy during the day to do everything?*	MC	No (1), Sometimes (2), Yes (3)
		12. I am active during the day	MC	Agree (1), partly agree (2), do not agree (3)
		13. I have to struggle to stay awake in class	MC	Never (1), once in a while (2), often (3)
		14. Do other people say that you seem annoyed?	MC	No (1), Sometimes (2), Yes (3)
		15. I don't feel like going to school because I feel too tired	MC	this never happens (1) this happens once a week (2) this happens more often than twice a week (3)
		16. I feel very alert at school	MC	Agree (1), partly agree (2), do not agree (3)
		17. I am a person who does not get enough sleep*	MC	Agree (1), partly agree (2), do not agree (3)
		18. I would like to sleep longer	MC	no, I sleep exactly enough (1) no, I would like to sleep shorter (2) yes, I would like to sleep longer (3)

		19. Others think that I am easily irritated	MC	this is not true for me (1) this is partly true for me (2) this is true for me (3)
		20. Do you think that you behave unkindly towards your friends or parents without a reason?	MC	No (1), Sometimes (2), Yes (3)
	Composite Scale of Morningness	1. Considering only your own "feeling best" rhythm, at what time would you get up if free to plan your day?	MC	) a.m. (5) 6:30-7:45 a.m. (4) 7:45-9:45 a.m. (3) 9:45-11:00 a.m. (2) 11:00 a.m.-'
		2. Considering your "feeling best" rhythm, at what time would you go to bed if free to plan your evening?	MC	m. (5) 9:00-10:15 p.m. (4) 10:15 p.m.-12:30 a.m. (3) 12:30-1:45 a.m. (2) 1:45-3
		3. How easy do you find getting up in the morning?	MC	Not at all easy (1) Slightly easy (2) Fairly easy (3) Very easy (4)
		4. How alert do you feel during the first half hour after awakening?	MC	Not at all alert (0) Slightly alert (2) Fairly alert (3) Very alert (4)
		5. During the first half hour after awakening, how tired do you feel?	MC	Very tired (1) Fairly tired (2) Fairly refreshed (3) Very refreshed (4)
		6. If engaging in physical exercise at 7:00-8:00 a.m., how do you think you would perform?	MC	l form (4) Would be in reasonable form (3) Would find it difficult (2) Would find i
		7. At what time in the evening do you feel tired and in need of sleep?	MC	m. (5) 9:00-10:15 p.m. (4) 10:15 p.m.-12:30 a.m. (3) 12:30-1:45 a.m. (2) 1:45-3
		8. Which ONE of the four testing times would you choose for peak performance?	MC	:00-10:00 a.m. (3) 11:00 a.m.-1:00 p.m. (2) 3:00-5:00 p.m. (1) 7:00-9:00 p.m. (0
		9. Which ONE type do you consider yourself: morning or evening?	MC	re a morning than an evening type (3) More an evening than a morning type (2
		10. When would you prefer to rise if free to arrange your time?	MC	Before 6:30 a.m. (4) 6:30-7:30 a.m. (3) 7:30-8:30 a.m. (2) 8:30 a.m. or later (1)
		11. If you always had to rise at 6:00 a.m., what do you think it would be like?	MC	1) Rather difficult and unpleasant (2) A little unpleasant but no great problem (3
		12. How long does it usually take before you "recover your senses" in the morning?	MC	0-10 minutes (4) 11-20 minutes (3) 21-40 minutes (2) More than 40 minutes (1)
		13. To what extent are you a morning or evening active individual?	MC	(4) To some extent, morning active (3) To some extent, evening active (2) Pro
	Epworth Sleepiness Scale	How likely are you to doze off (fall asleep) in the following situations? If you haven't encountered any of these situations recently, please try to estimate their effect on you. 1. Sitting and reading 2. Watching TV 3. Sitting inactive in a public place (e.g., a theater or a meeting) 4. As a passenger in a car for an hour without a break 5. Lying down to rest in the afternoon when circumstances permit 6. Sitting and talking to someone 7. Sitting quietly after a lunch (without alcohol) 8. In a car, while stopped for a few minutes in traffic	MC	no chance of dozing (0) slight chance of dozing (1) moderate chance of dozing (2) high chance of dozing (3)
	Sleep Hygiene Practice Scale	Indicate how often these happen last week. 1. Take a nap 2. Go to bed hungry 3. Doing things that may keep me awake before sleep (e.g., playing video games, browsing the internet, or cleaning) (R). 4. Consuming stimulating substances (e.g., nicotine) within 2 hours before bedtime (R). 5. Using a mobile phone within half an hour before bedtime (R). 6. Drink beverages containing caffeine (e.g., coffee, tea, colas) within 4 hours of bedtime 7. Drink more than 3 ounces of alcohol (e.g., 3 mixed drinks, 3 beers, or 3 glasses of wine) within 2 hours of bedtime 8. Wake up approximately the same length of time each morning 9. Worry as you prepare for bed about your ability to sleep 10. Worry during the day about your ability to sleep at night 11. Use alcohol to facilitate sleep 12. Exercise strenuously within 2 hours of bedtime 13. Sleep disturbed by light 14. Sleep disturbed by noise 15. Sleep disturbed by your roommate 16. Sleep approximately the same length of time each night 17. Set aside time to relax before bedtime 18. Let bright light in during the morning to signal your body to wake up (R). 19. Have a comfortable nighttime temperature in your bed/bedroom	MC	days of past week
	Sleep Knowledge Questionnaire	We are interested in what you know and do not know about sleep. For each statement below, please indicate whether you know it is true or false by making the appropriate selection. If you don't know, then indicate this by selecting the "don't know" option. 1. Drinking three standard glasses of alcohol has no effect on sleep 2. Watching television in bed disrupts sleep 3. Smoking more than 1 pack of cigarettes a day has no effect on sleep 4. Going to bed hungry benefits sleep 5. Going to bed thirsty has an effect on sleep 6. If you cannot fall asleep in 20 min, you should get out of bed and try again later 7. Waking up at the same time each day has no effect on sleep 8. Going to bed at the same time each night disrupts sleep 9. You should spend 2 h longer in bed than you need for sleep to give yourself the best opportunity 10. Consuming food, beverages or medications containing caffeine has no effect on sleep 11. Exercising strenuously within 2 h of bedtime disrupts sleep 12. Setting aside time to relax before bedtime benefits sleep 13. If you wake during the night and cannot fall back to sleep within 20 min, you should stay in bed and try harder 14. Sleeping approximately the same length of time each night has no effect on sleep 15. To achieve the amount of sleep needed (e.g. 8 h), you should lie in bed for longer (e.g. 10 h)	MC	True (1) False (0) Don't know (0)
At-home cognitive-affective functions	Positive affect	Now I feel... 1.determined? 2. happy? 3. active/Vital ? 4. attentive?	MC	very slightly or not at all (1) a little (2) moderately (3) quite a bit (4) extremely (5)
	Negative affect	Now I feel... 1. anxious ? 2. depressed ? 3. annoyed? 4. bored? 5. lonely?	MC	very slightly or not at all (1) a little (2) moderately (3) quite a bit (4) extremely (5)
	emotion regulation strategy (adapted from McMahon & Naragon-Gainey, 2019)	Since the last response, 1. "I accepted the way I was feeling without judging myself" 2. "I engaged in activities to distract myself from my feelings" 3. "I tried to get rid of negative thoughts, feelings, or sensations" 4. "I avoided expressing my feelings" 5. "I changed the way I thought about what caused my feelings" 6. "I couldn't stop thinking about my feelings (how bad I felt, why I felt that way)"	MC	Strongly Disagree (1) Disagree (2) Unsure/ Neutral (3) Agree (4) Strongly Agree (5)
	emotional well-being	1. I have felt cheerful and in good spirits. 2. I have felt calm and relaxed. 3. I have felt active and vigorous. 4. I have felt healthy and well. 5. I have woken up feeling fresh and rested.	MC	Not at all (0) A little (1) Moderately (2) Quite a bit (3) Extremely (4)
	Overall functioning	In what ways did the quality and quantity of your sleep affect your work, studies, or social interactions today?	MC	No impact (0) Mild impact (1) Considerable impact (2) Extreme impact (3)
	Memory	How would you rate your memory today?	MC	Excellent (5) Good (4) Average (3) Poor (2) Extremely poor (1)
	Concentration	Is your mind wandering away from your current task?	MC	My mind is blanking (1) I'm thinking about the future (2) I'm thinking about the past (3) I'm distracted by things around me (4) I'm focused on the task (5)
	Depression Anxiety Stress Scale	1. I found it hard to wind down 2. I was aware of dryness of my mouth 3. I couldn't seem to experience any positive feeling at all 4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion) 5. I found it difficult to work up the initiative to do things 6. I tended to over-react to situations 7. I experienced trembling (e.g. in the hands) 8. I felt that I was using a lot of nervous energy 9. I was worried about situations in which I might panic and make a fool of myself 10. I felt that I had nothing to look forward to 11. I found myself getting agitated 12. I found it difficult to relax 13. I felt down-hearted and blue 14. I was intolerant of anything that kept me from getting on with what I was doing 15. I felt I was close to panic 16. I was unable to become enthusiastic about anything 17. I felt I wasn't worth much as a person 18. I felt that I was rather touchy 19. I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat) 20. I felt scared without any good reason 21. I felt that life was meaningless	MC	Did not apply to me at all (0) Applied to me to some degree, or some of the time (1) Applied to me to a considerable degree or a good part of time (2) Applied to me very much or most of the time (3)

Trait cognitive-affective functions	Perth Emotional Reactivity Scale-Short Form	1. I tend to get happy very easily 2. I tend to get upset very easily 3. When I'm happy, the feeling stay with me for quite a while 4. When I'm upset, it takes me quite a while to snap out of it 5. When I am joyful, I tend to feel it very deeply 6. If I'm upset, I feel it more intensely than everyone else 7. I feel good about positive things in an instant 8. I react to good news very quickly 9. I experience positive mood very strongly 10. When I'm enthusiastic about something, I feel it very powerfully 11. When I'm feeling positive, I can stay like that for a good part of the day 12. I can remain enthusiastic for quite a while 13. I tend to get disappointed very easily 14. I tend to get pessimistic about negative things very quickly 15. Once in a negative mood, it's hard to snap out of it 16. Normally, when I'm unhappy I feel it very strongly 17. My negative feelings feel very intense 18. It's hard for me to recover from frustration	MC	Very unlike me (1) (2) (3) (4) Very like me (5)
	Difficulties in Emotional Regulation Scale for Adults	How often do the following happen/ apply to you? 1. I pay attention to how I feel. [reverse code] 2. I care about what I am feeling. [reverse code] 3. When I'm upset, I acknowledge my emotions. [reverse code] 4. I have no idea how I am feeling. 5. I have difficulty making sense out of my feelings. 6. I am confused about how I feel. 7. When I'm upset, I believe that I will end up feeling very depressed. 8. When I'm upset, I believe there is nothing I can do to make myself feel better. 9. When I'm upset, it takes me a long time to feel better. 10. When I'm upset, I become embarrassed for feeling that way. 11. When I'm upset, I feel guilty for feeling that way. 12. When I'm upset, I become irritated at myself for feeling that way. 13. When I'm upset, I become out of control. 14. When I'm upset, I have difficulty controlling my behavior. 15. When I'm upset, I lose control over my behavior. 16. When I'm upset, I have difficulty getting work done. 17. When I'm upset, I have difficulty focusing on other things. 18. When I'm upset, I have difficulty concentrating.	MC	almost never (1) sometimes (2) about half the time (3) most of the time (4) almost always (5)
Trait psychological characteristics for behavior change	Beliefs on short and long term outcomes of short sleep	Q1: If you cannot sleep continuously for 7 to 9 hours every day, how likely do you think you are to experience the following problems: Q2: Assuming the following long-term consequences of sleep deprivation occur to you, how much impact would they have on you? Short-term: 1. Weight gain 2. Stress 3. Pain 4. Inflammation 5. Accidents and injuries 6. Neurocognitive function problems, such as inattention, memory issues, decreased alertness 7. Becoming more emotional 8. Decreased energy 9. Poor work or academic performance 10. Other, please specify Ultimately developing into (long-term): 11. Obesity 12. Cardiovascular disease 13. Diabetes 14. Neurocognitive dysfunction 15. Mental disorders, such as depression, anxiety, etc. 16. Death 17. Other, please specify	MC	Extremely unlikely (1) Unlikely (2) Neutral (3) Possible (4) Extremely likely (5)
	Health Belief items on perceived benefits of sleep	Q: How beneficial to you is sleeping 7 to 9 continuous hours each day for . . . " "your energy levels," "your work productivity," "your quality of life." "your emotional well-being"	MC	Completely unbeneficial (1) Slightly beneficial (2) Moderately beneficial (3) Very beneficial (4) Extremely beneficial (5)
	Sleep Self-Efficacy Scale	For the following 9 items, please rate (by circling a number from 1 to 5) your ability to carry out each behavior. If you feel able to accomplish a behavior some of the time but not always, you should indicate a lower level of confidence. Indicate how confident you are that you can: 1. Lie in bed, feeling physically relaxed. 2. Lie in bed, feeling mentally relaxed. 3. Lie in bed with your thoughts "turned off'. 4. Fall asleep at night in under 30 minutes. 5. Wake up at night fewer than 3 times. 6. Go back to sleep within 15 minutes of waking in the night. 7. Feel refreshed upon waking in the morning. 8. Wake after a poor night's sleep without feeling upset about it. 9. Not allow a poor night's sleep to interfere with daily activities.	MC	Not confident (1) (2) (3) (4) Very confident (5)
	Internal cues to sleep	How likely are you to get 7 to 9 continuous hours of sleep each day because you feel . . 1. up-to-date with your school/work responsibilities 2. up-to-date with your personal responsibilities 3. Physically tired 4. mentally tired 5. others, specify	MC + text entry	not at all likely (1) (2) (3) (4) extremely likely (5)
	Subjective norms - Injunctive and descriptive norms	Injunctive norms: 1. My friend(s) want me to sleep 7 to 9 hours every night 2. My parent(s)/guardian(s) want me to sleep 7 to 9 hours every night 3. My supervisors (e.g. professors/employers) want me to sleep 7 to 9 hours every night 4. Most people who are important to me want me to sleep 7 to 9 hours every night Descriptive norms: 1. My friend(s) sleep 7 to 9 hours every night 2. My parent(s)/guardian(s) sleep 7 to 9 hours every night 3. My supervisors (e.g. professors/employers) sleep 7 to 9 hours every night 4. Most people like me sleep 7 to 9 hours every night	MC	Strongly Disagree (1) Disagree (2) Slightly disagree (3) Unsure/ Neutral (4) Slightly agree (5) Agree (6) Strongly Agree (7)
	Attitude of changing sleep behavior	Starting to change my sleep habits makes me feel... 1. Dull-exciting 2. Painful-enjoyable 3. Unpleasant-pleasant 4. Aggravating-satisfying 5. Boring-fun 6. Detrimental-constructive	MC	1-5 eg Dull (1) (2) (3) (4) Exciting (5)
	Motivation toward changing sleep behavior	1. I am interested in finding new ways to better manage my health problems 2. I am ready to do more to better manage my health problems now. 3. I want to find a better way to take care of my health problems. 4. I see little or no benefit to putting time and energy into managing my health problems now 5. Working to manage my health problems has only a little payoff or benefit 6. It is not really worth it to do all the things that I am asked to do to manage my health problems 7. I am able to make the changes in my life that are needed to improve my health. 8. I don't have enough time to take care of my health problems the way I think I should 9. I am able to fit the tasks of managing my health problems into my life.	MC	Strongly disagree (1) Disagree (2) Unsure (3) Agree (4) Strongly agree (5)
	Sleep behavior change intention	I intend to implement healthy sleep practices/extend my sleep everyday	MC	Strongly disagree (1) Disagree (2) Unsure (3) Agree (4) Strongly agree (5)
	Action and Coping plan	Action Planning 1. I have made a detailed plan regarding when to perform sleep hygiene behaviors over the next phase. 2. I have made a detailed plan regarding where to perform sleep hygiene behaviors over the next phase. 3. I have made a detailed plan regarding how to perform sleep hygiene behaviors over the next phase. 4. I have made a detailed plan regarding how often to perform sleep hygiene behaviors over the next phase. Coping Planning 1. I have made a detailed plan regarding what to do if something interferes with my plans 2. I have made a detailed plan regarding how to cope with possible setbacks 3. I have made a detailed plan regarding what to do in difficult situations to act according to my intentions 4. I have made a detailed plan regarding how to motivate myself 5. I have made a detailed plan regarding which good opportunities for action to take	MC	Strongly disagree (1) Disagree (2) Unsure (3) Agree (4) Strongly agree (5)