Case study: Cognitive Behavioral Therapy for Insomnia (CBTI)

Course: IoT

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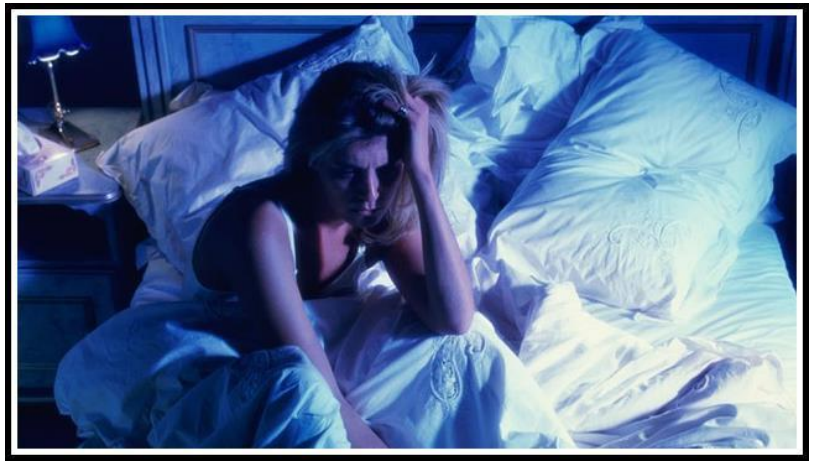
Defining insomnia

- Diagnosis of insomnia made by self-report
- No overnight sleep study required to diagnose insomnia
- However, sleep studies might be conducted to rule-out other sleep disorders that might cause or coexist with the insomnia



Sleep Disorders in the DSM-5

DSM: Diagnostic and Statistical Manual of Mental Heath

- Insomnia Disorder
- Hypersomnia Disorder
- Narcolepsy
- Obstructive Sleep Apnea
- Central Sleep Apnea
- Sleep-Related Hypoventilation
- Circadian Rhythm Sleep Wake Disorders
- Non-REM Sleep Arousal Disorders
- Nightmare Disorder
- REM Sleep Behavior Disorder
- Restless Legs Syndrome
- Substance/Medication – Induced Sleep Disorder

Non-Sleep Disorders in the DSM-5 that Involve Sleep

- Manic/hypomanic Episodes
- Major Depressive Episode
- Premenstrual Dysphoric Disorder
- Melancholic Features
- Generalized Anxiety Disorder
- Posttraumatic Stress Disorder
- Alcohol Withdrawal
- Caffeine Intoxication
- Cannabis Withdrawal
- Opioid Withdrawal
- Sedative, Hypnotic, Anxiolytic Withdrawal
- Stimulant Withdrawal
- Tobacco Withdrawal

DSM-5 Definition of Insomnia Disorder

DSM: Diagnostic and Statistical Manual of Mental Heath

- Complaint of sleep quantity or quality associated with problems **falling asleep**, **staying asleep**, and/or **early morning awakenings**
- The sleep problem causes **distress** and/or some sort of **problem** at work, with others, etc.
- The sleep problem occurs **at least 3 nights/week** and has been going on for **at least 3 months**
- The sleep problem occurs **despite adequate opportunity** for sleep
- The insomnia is not better explained by another sleep disorder, is not caused by the effects of a substance, and is not adequately explained by coexisting mental disorders or medical conditions

ICSD-3 “Chronic Insomnia Disorder”

ICSD: International Classificaltion of Sleep Disorders

- One or more difficulty
  - Initiating sleep
  - Maintaining sleep
  - Waking too early
  - Resistance to appropriate bedtime
  - Difficulty sleeping without parent or caregiver intervention
- Related to sleep difficulty, one or more
  - Fatigue
  - Attention/concentration/memory impairment
  - Social/family/occupational/academic impairment
  - Mood disturbance
  - Daytime sleepiness
  - Behavioral problems
  - Reduced motivation
  - Error proneness
  - Dissatisfaction with/concerns about sleep
- Not explained by inadequate sleep opportunity
- 3 times per week
- 3 months
- Not better explained by another sleep disorder

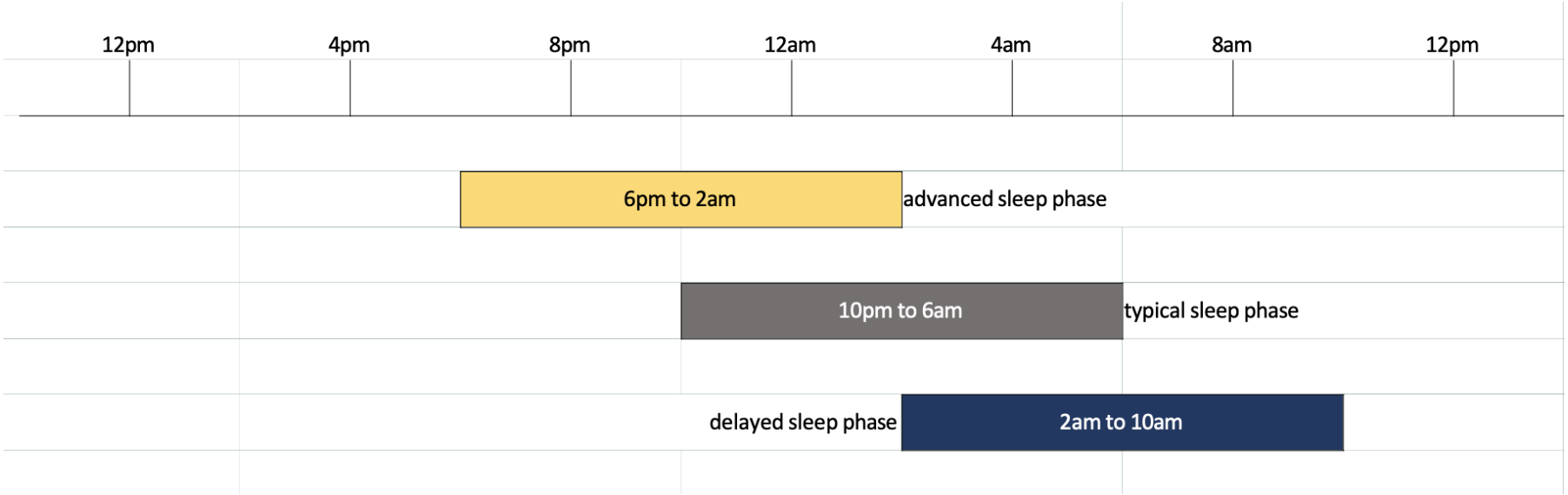
Other Sleep Disorders & Insomnia Symptoms

- Sleep Apnea
  - Problems with staying asleep can be associated with sleep apnea
  - Part of CBT-I – sleep restriction – is contraindicated in patients with untreated sleep apnea
- Restless Legs Syndrome
  - Problems falling and staying asleep are associated with RLS
- Periodic Limb Movement Disorder
  - Problems falling asleep, staying asleep, or unrefreshing sleep attributable to the PLMS is required for a diagnosis of PLMD
- Narcolepsy
  - Sleep disruption with frequent awakenings may be present

Other Sleep Disorders & Insomnia Symptoms

- Isolated Symptoms & Normal Variants (NOT insomnia)
  - Excessive Time in Bed
  - Short Sleeper
- Insufficient Sleep Syndrome
  - Daytime sleepiness caused by too little sleep due to reduced time in bed
- Circadian Rhythm Disorders

Delayed & Advanced Sleep Phases



- Problems falling asleep can be due to a delayed sleep phase
- Problems waking up too early can be due to an advanced sleep phase

Spielman's 3 Factor Model of Insomnia

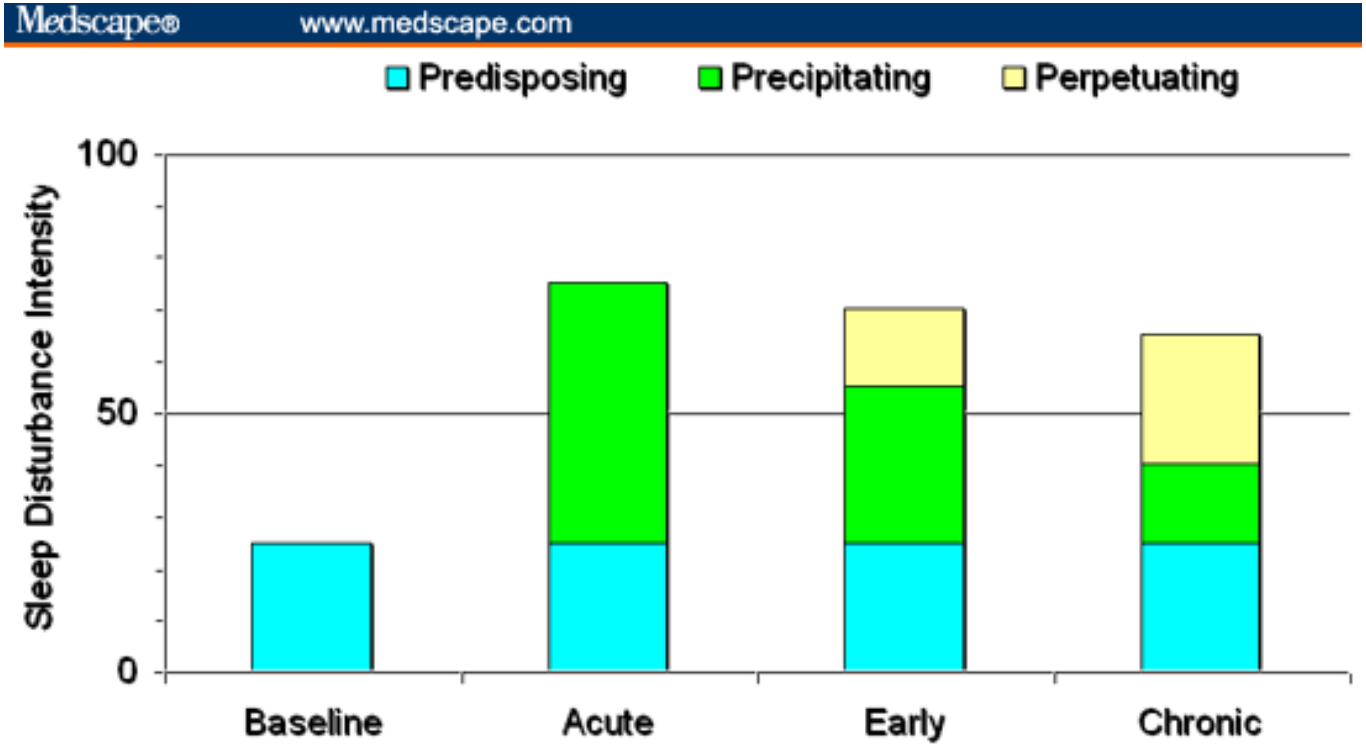
(1) Predisposing factors
- Traits or conditions (e.g., high emotional reactivity) that increase one's vulnerability to developing insomnia

(2) Precipitating factors
- Situational conditions (e.g., stressful life events) that trigger the onset of insomnia

(3) Perpetuating factors
- Behaviors and cognitions that contribute to the transition from acute to chronic insomnia and maintain the disorder long term

Spielman et al. A behavioral perspective on insomnia treatment. Psychiatr Clin of North Am 1987, 10(4), 541-553.

Spielman's 3 Factor Model of Insomnia

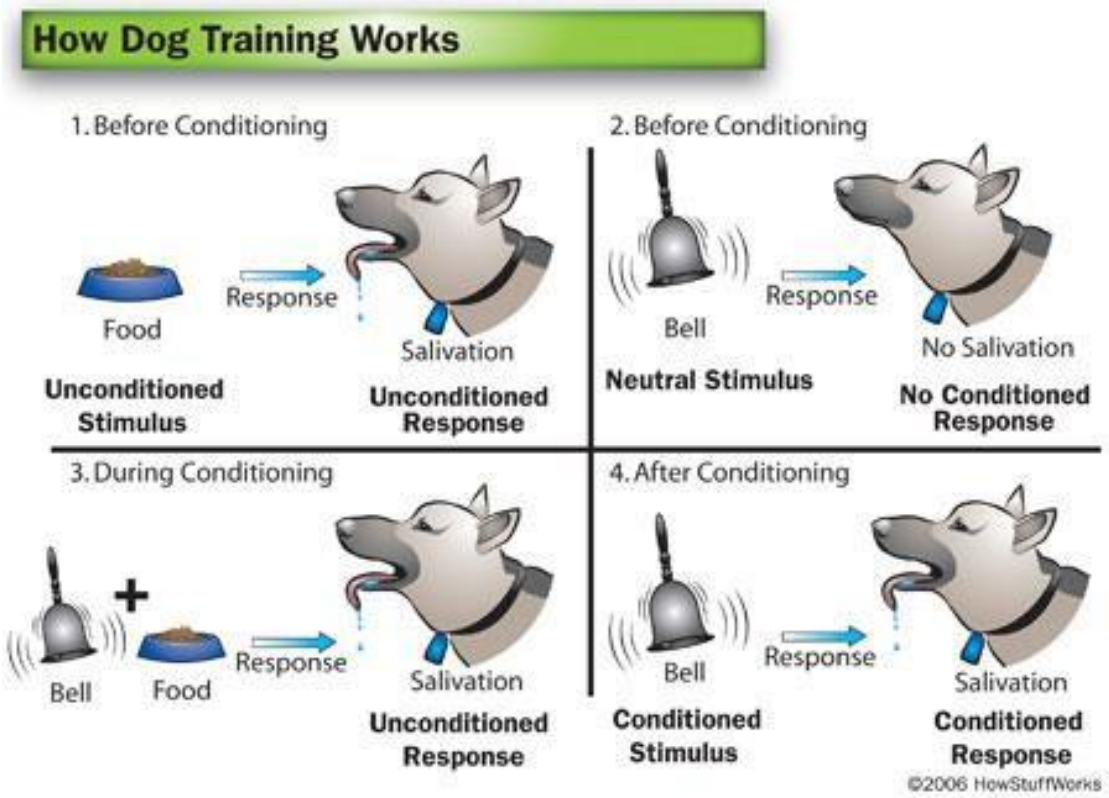


Spielman et al. A behavioral perspective on insomnia treatment. Psychiatr Clin of North Am 1987, 10(4), 541-553.

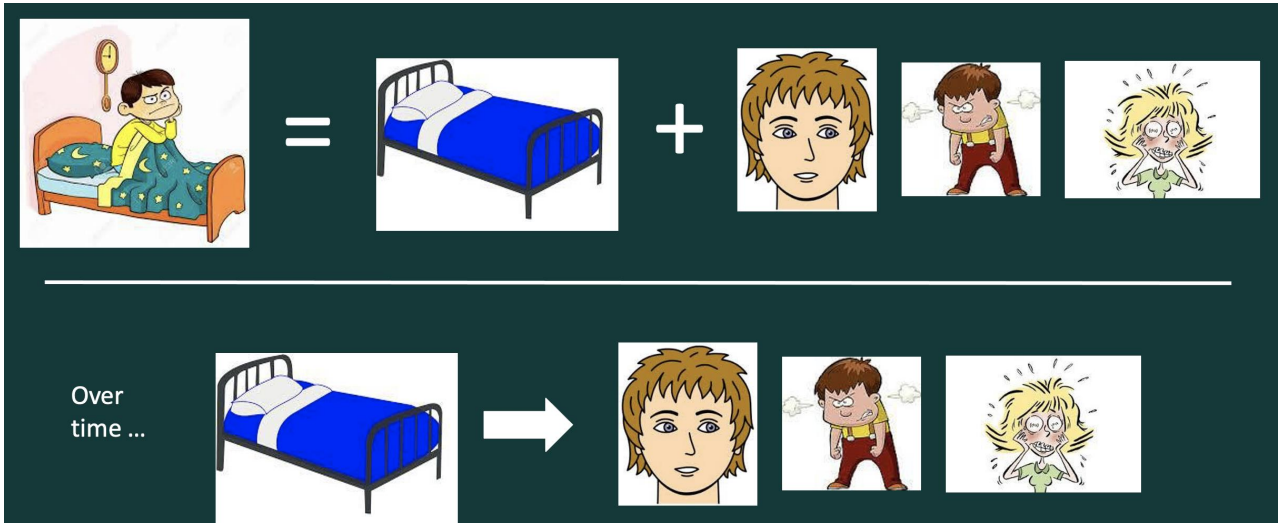
Chronic insomnia & CBT-I

- Insomnia can be maintained long after the life stressor or precipitating event has resolved
- Other factors serve to perpetuate insomnia over time (e.g., going to bed earlier to compensate for sleep loss, worrying about daytime functioning)
- Cognitive Behavioral Therapy for Insomnia (CBT-I)
  - Primary focus on perpetuating factors

Classical Conditioning



Conditioned arousal



- Associating being in bed with wakefulness, anxiety and frustration

Insomnia Diagnosis

- Clinical interview, includes sleep history and rule out of other sleep disorders
- Data collection – sleep diary
- Actigraph
- Standardized measures: e.g., **Insomnia Severity Index**, Dysfunctional Attitudes and Beliefs about Sleep

Insomnia Severity Index

- Screening tool for insomnia
- Seven-item questionnaire asks respondents to rate the nature and symptoms of their sleep problems
- Responses can range from 0 to 4, where higher scores indicate more acute symptoms of insomnia
- Guidelines for interpreting scale results with total score
  - 0–7 “no clinically significant insomnia”
  - 8–14 “subthreshold insomnia”
  - 15–21 “clinical insomnia (moderate severity)”
  - 22–28 “clinical insomnia (severe)”

https://www.med.upenn.edu/cbti/assets/user-content/documents/Insomnia%20Severity%20Index%20(ISI).pdf

Insomnia Severity Index (ISI)

1. Please rate the current (i.e., last 2 weeks) **SEVERITY** of your insomnia problem(s).

	None	Mild	Moderate	Severe	Very
Difficulty falling asleep:	0	1	2	3	4
Difficulty staying asleep:	0	1	2	3	4
Problem waking up too early:	0	1	2	3	4

2. How **SATISFIED**/dissatisfied are you with your current sleep pattern?

Very Satisfied				Very Dissatisfied
0	1	2	3	4

https://www.med.upenn.edu/cbti/assets/user-content/documents/Insomnia%20Severity%20Index%20(ISI).pdf

Insomnia Severity Index (ISI)

3. To what extent do you consider your sleep problem to **INTERFERE** with your daily functioning (e.g. daytime fatigue, ability to function at work/daily chores, concentration, memory, mood, etc.).

Not at all Interfering	A Little	Somewhat	Much	Very Much Interfering
0	1	2	3	4

4. How **NOTICEABLE** to others do you think your sleeping problem is in terms of impairing the quality of your life?

Not at all Noticeable	Barely	Somewhat	Much	Very Much Noticeable
0	1	2	3	4

https://www.med.upenn.edu/cbti/assets/user-content/documents/Insomnia%20Severity%20Index%20(ISI).pdf

Insomnia Severity Index (ISI)

5. How **WORRIED**/distressed are you about your current sleep problem?

Not at all	A Little	Somewhat	Much	Very Much
0	1	2	3	4

https://www.med.upenn.edu/cbti/assets/user-content/documents/Insomnia%20Severity%20Index%20(ISI).pdf

Discussion on ISI

- Which of these elements could be calculated or at least supported by some kind of wearables or IT applications?

Sleep metrics

- Bedtime
  - Definition: the time when you go to bed
  - Early (early bird type) o late (night owl type)
  - Recommended to consistently go to bed at the same time every night, even during the weekends, to improve other sleep metrics

Sleep metrics

- Sleep Onset Latency
  - Definition: how long it takes to fall asleep after closing your eyes
  - Normal Sleep Latency is between 2 – 15 minutes, even though the numbers may vary from night to night
  - Factors such as stress, anxiety, pain, or changes in Bedtime will affect this metric

Sleep metrics

- Wake Up Time
  - Definition: the time when you wake up without falling asleep again
  - This is the sleep metric everyone pays the most attention to whenever they set up their alarm clocks for the following day
  - As a general rule, it is recommended to consistently wake up at the same time every day, even during the weekends, to improve other sleep metrics.

Sleep metrics

- Time Attempting to Sleep After Final Awakening (T.A.S.A.F.A.)
  - Definition: how long you spend trying to fall back asleep after waking up for the last time during the night.
  - A healthy individual who wakes up when the alarm clock goes off in the morning and gets up without intending to fall asleep again has these metrics:
    - T.A.S.A.F.A. ≈ 0 minutes.
    - Wake Up Time ≈ Get Up Time.
  - Individuals suffering from Early Morning Awakening Insomnia will likely spend lots of time trying to fall asleep before finally deciding to get out of bed. In these cases:
    - T.A.S.A.F.A. > 0 minutes
    - Wake Up Time ≠ Get Up Time.

Sleep metrics

- Get Up Time
  - Definition: the time when you get out of bed
  - As mentioned previously, for people with no sleep problems, the Get Up Time is usually the same as the Wake Up Time.

Sleep metrics

- Time Spent in Bed
  - Definition: how much time you spend in bed, starting counting from Bedtime up until Get Up Time.
  - Time Spent in Bed is not the same as Time Spent Asleep because there are instances where you will be in bed awake (e.g. Sleep Onset Latency and Wakefulness After Sleep Onset).
  - So, the formula for time spent in bed is the following:
    - Time Spend in Bed = Get Up Time – Bedtime

Sleep metrics

- Number of Awakenings
  - Definition: number of sleep interruptions that occur after the initial sleep onset
  - Waking up during the night is common among people, but it usually happens for just a few seconds, and the person will not remember it. This can be considered a normal occurrence, just a consequence of going through a lighter sleep phase.

Sleep metrics

- Wakefulness After Sleep Onset (W.A.S.O.)
  - Definition: how much time you spend awake during the night after falling asleep.
  - This sleep metric is related to the previous one. The difference is that the Number of Awakenings refers to the number of sleep disruption occurrences, and W.A.S.O. is the total duration of those occurrences.
  - A high value means that you are showing signs of sleep fragmentation. Generally, the average healthy individual spends less than 30 minutes awake during the night.

Sleep metrics

- Total Sleep Duration
  - Definition: the amount of time you actually spend sleeping.
  - Generally, the average healthy adult's recommended total sleep duration is between 7 and 9 hours per night (but this is just an average!)
  - The formula for the total sleep duration per night is:
  - Total Sleep duration = (Wake Up Time – Bedtime) – Sleep Onset Latency – Wakefulness After Sleep Onset

Sleep metrics

- Sleep Efficiency
  - Definition: the ratio between the time you spend asleep and the total time you spend in bed
  - The formula for the total sleep duration per night is:
  - Sleep Efficiency = Total Sleep Duration / Time Spent in Bed

Insomnia Treatment

- Medication
- Cognitive-Behavioral Treatment of Insomnia (CBTI)
- Cognitive-Behavioral treatment with complementary therapies
  - Behavior Activation
  - Activity-Rest-Pacing
  - Multiple relaxation methods
  - Bright light therapy/melatonin
  - Mindfulness
- Online Cognitive-Behavioral Treatment

Insomnia Treatment: Medication

- Chronic patients report **decreasing efficacy** of most hypnotics and sedating medications and they often prefer not to take them
- **Psychological dependence** is frequently an issue; **rebound** insomnia can be an issue in discontinuation
- Medication issues complicated by **comorbid psychiatric treatments**
- Most commonly prescribed are benzodiazepine receptor agonists
- Sedating antidepressant drugs are widely used

What is CBT-I?

- CBT-I is a multi-component treatment for insomnia that targets difficulties with initiating and/or maintaining sleep
- Standard treatment is delivered over the course of six to eight sessions
  - Each session typically has a specific agenda (e.g., evaluation, rationale, delivery of individual interventions, adherence management, relapse prevention, etc.)
- Sessions most often occur in person or via telehealth on a weekly or bi-weekly schedule and can be delivered in either individual or group format
- Synonyms: Online CBT-I, digital CBT-I, internet CBT-I (iCBT-I)
  - Can be done exclusively online or blended (in combination with face-to-face treatment)
  - Modern approaches use artificial intelligence

When should CBT-I be applied?

- Is the patient motivated to try CBT-I? Do they just want a pill?
- Does the patient have sufficient intellect to benefit from CBT-I?
- CBT-I is intended for adult patients
- A major component of CBT-I (sleep restriction) is contraindicated for those with bipolar disorder, untreated sleep apnea, parasomnias, and seizure disorder, so CBT-I should be modified in these cases

Elements of CBT-I

- Two core components (Behavioural):
  - Sleep Restriction Therapy (SRT)
  - Stimulus Control Therapy (SCT)
- Two adjunctive components (Beh. + Cognitive):
  - Sleep Hygiene (SH)
  - Cognitive Therapy (CT)

CBT-I sessions protocol

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
- Tx Session #2: Review, titrate, sleep hygiene
- Tx Session #3: Review, titrate, relaxation training
- Tx Session #4: Review, titrate, cognitive therapy I
- Tx Session #5: Review, titrate, cognitive therapy II
- Tx Session #6: Review, titrate, insomnia relapse prevention

Disclaimer

- There are other ways of organizing the sessions
- Some practitioners have more sessions, more time between sessions
- Most practitioners adapt the therapy depending on the intermediate success of the introduced elements
- How to extract this “expert” knowledge for adaptative CBT-I?

Intake Session: Assessment

Assessment should include:

- History of insomnia symptoms and past treatments
- Present sleep complaints
- Other sleep disorders, any past sleep studies
- General sleep schedule (remember weekend vs. weekday, naps)
- Sleep hygiene factors (environment, caffeine intake, exercise, etc.)
- Sleep-related anxiety/stress/frustration, evidence of conditioned arousal
- Psychiatric & medical history
- Medications

Sleep Diaries / Journal / Log

- There are different variations of the sleep diaries
  - Some standardization initiatives
- Typically include one part to be filled in before going to bed and one part to be filled in after awakening
- Important: The patients should not look at the watch/clock during the night
  - Watching the time increases the arousal and worsens the insomnia

Sleep Diaries / Journal / Log

Fill out before going to bed

Today's date:	June 13*
Number of caffeinated drinks (coffee, tea, cola) and time when I had them today:	1 drink, 8 p.m.
Number of alcoholic drinks (beer, wine, liquor) and time when I had them today:	2 drinks, 9 p.m.
Naptimes and lengths today:	3:30 p.m., 45 minutes
Exercise times and lengths today:	None
How sleepy did I feel during the day today? 1—So sleepy I had to struggle to stay awake during much of the day 2—Somewhat tired 3—Fairly alert 4—Alert	1

https://www.nhlbi.nih.gov/resources/sleep-diary

Sleep Diaries / Journal / Log

Fill out in the morning

Today's date:	June 14*
• Time I went to bed last night: • Time I got out of bed this morning: • Hours spent in bed last night:	11 p.m. 7 a.m. 8
Number of awakenings and total time awake last night:	5 times, 2 hours
How long I took to fall asleep last night:	30 minutes
Medicines taken last night:	None
How alert did I feel when I got up this morning? 1—Alert 2—Alert but a little tired 3—Sleepy	2

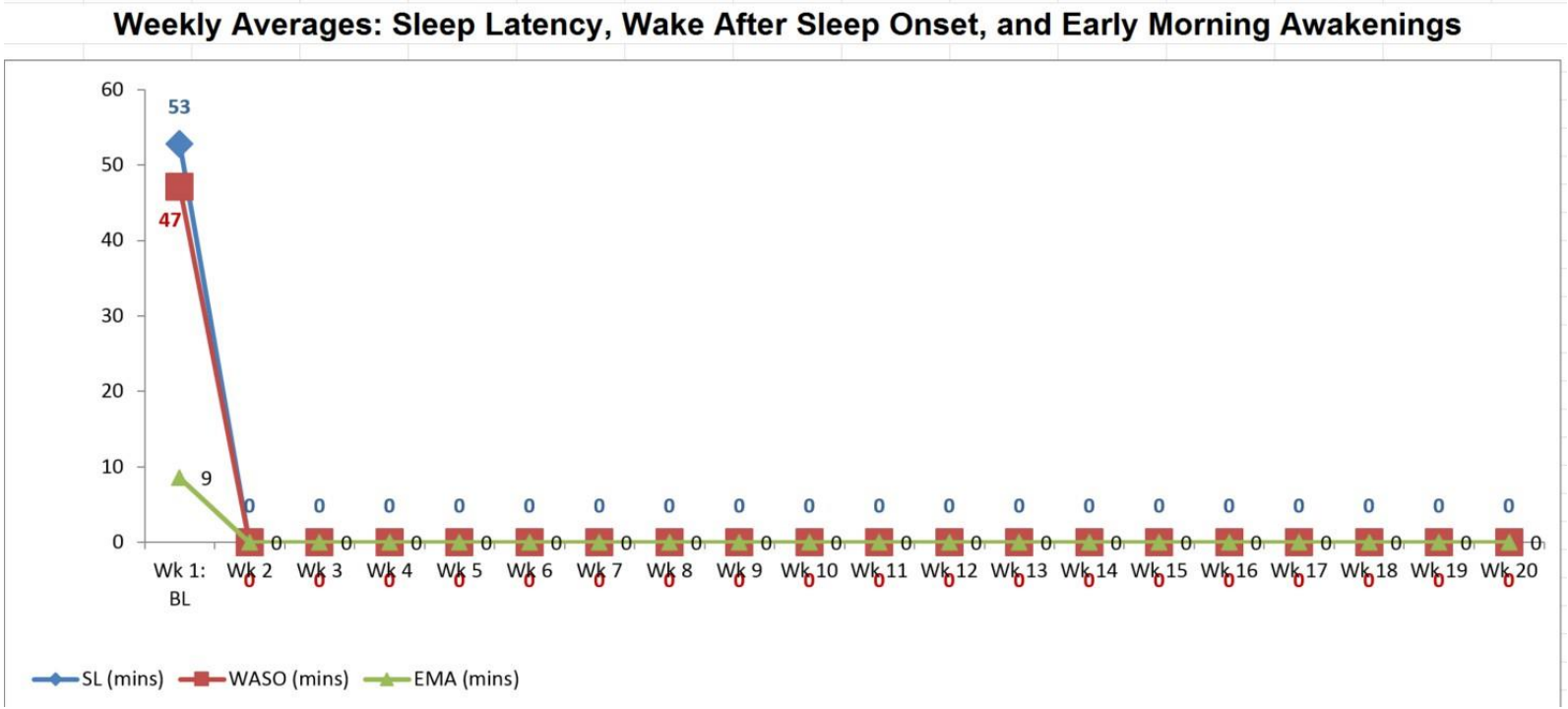
Session #1

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
- Tx Session #2: Review, titrate, sleep hygiene
- Tx Session #3: Review, titrate, relaxation training
- Tx Session #4: Review, titrate, cognitive therapy I
- Tx Session #5: Review, titrate, cognitive therapy II
- Tx Session #6: Review, titrate, insomnia relapse prevention

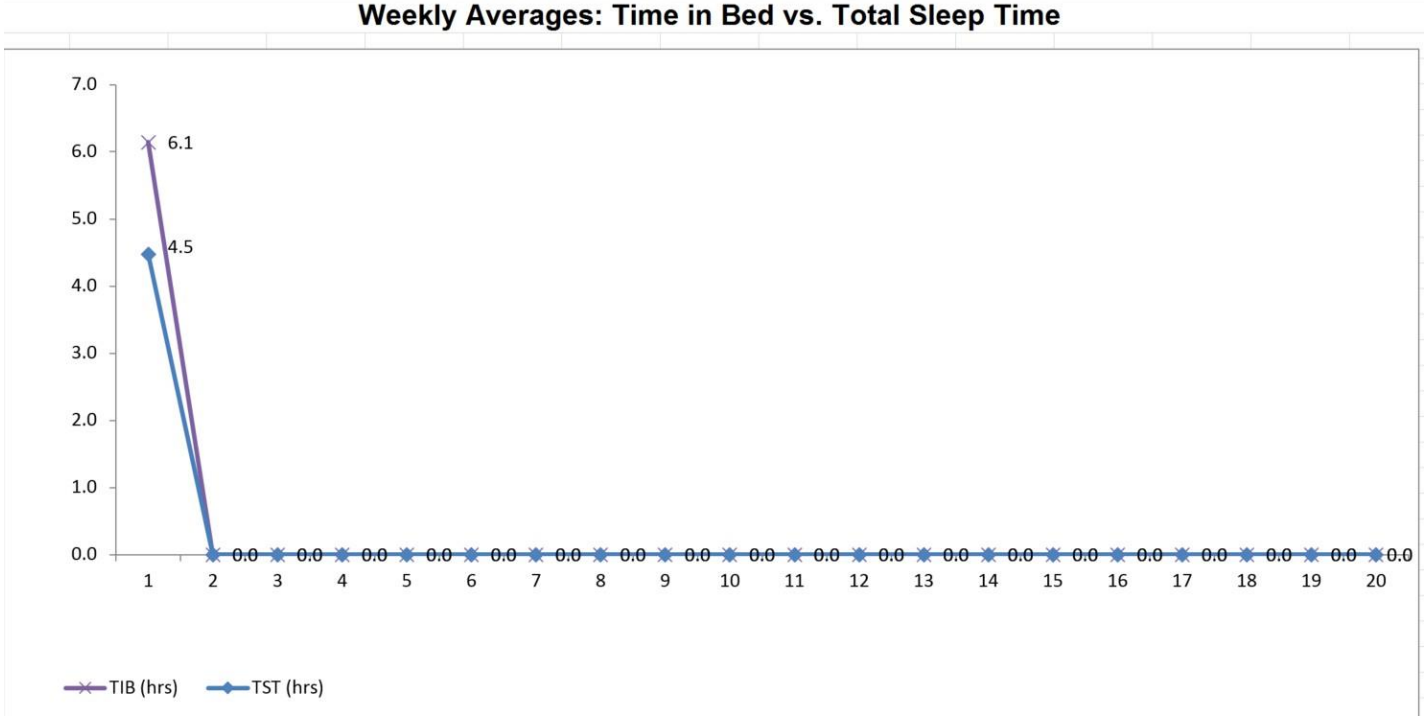
Example Sleep log after one week

	Week 1	day 1	day 2	day 3	day 4	day 5	day 6	day 7		
	Date	10/7/2014	10/8/2014	10/9/2014	10/10/2014	10/11/2014	10/12/2014	10/13/2014		
complete before bedtime	**Medication(s) taken at bedtime** (med name, dose, & time)	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish	mel 3.75 - 10pm, klon .0625 - 12am	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish	mel 3.75 - 10pm, klon .0625 - 12am, .0625 3am'ish		
	Naps (time & duration)	13:00 - 60 min	0	0	0	0	15:15 - 25 min	1:30 - 20 min	AVERAGE	
	Fatigue Rating (0-10) for the day	9.0	8.0	7.0	7.0	5.0	5.0	4.0	6.4	**Fatigue Rating**
	Bedtime (time went into bed)	21:00	23:00	23:00	23:30	23:30	23:30	0:00	23:04	**Bedtime**
	"Lights out" (time tried to go to sleep)	1:30	1:30	1:30	1:30	1:30	1:30	1:00	1:25	**Lights out**
complete right after waking up	**Mins to fall asleep intially**	60	20	30	60	80	60	60	52.9	**Mins to fall asleep**
	# of awakenings	2	2	1	0	2	1	2	1.4	**# of awakenings**
	Mins awake in middle of night/early morning (how long awakenings lasted)	120	60	45	0	60	30	15	47.1	**Mins awake after sleep onset**
	Wake time (time of final awakening)	8:00	7:00	7:30	6:30	8:30	7:30	8:00	7:34	**Wake time**
	If final wake-up time earlier than desired, mins awake too early	0	0	0	60	0	0	0	8.6	**Mins wake too early**
	Time physically got out of bed	8:00	7:00	7:30	6:30	8:30	7:30	8:00	7:34	**Out of bed**
	Sleep Quality Rating (0-10)	2.0	5.0	6.0	6.0	7.0	8.0	7.0	5.9	**Sleep Quality**
	Time in Bed (TIB)	6.50	5.50	6.00	5.00	7.00	6.00	7.00	6.14	**Time in Bed**
	Total Sleep Time (TST)	3.50	4.17	4.75	4.00	4.67	4.50	5.75	4.48	**Total Sleep Time**
	Sleep Efficiency (SE)	53.85%	75.76%	79.17%	80.00%	66.67%	75.00%	82.14%	72.87%	**Sleep Efficiency**

Sleep metrics evolution



Sleep metrics evolution



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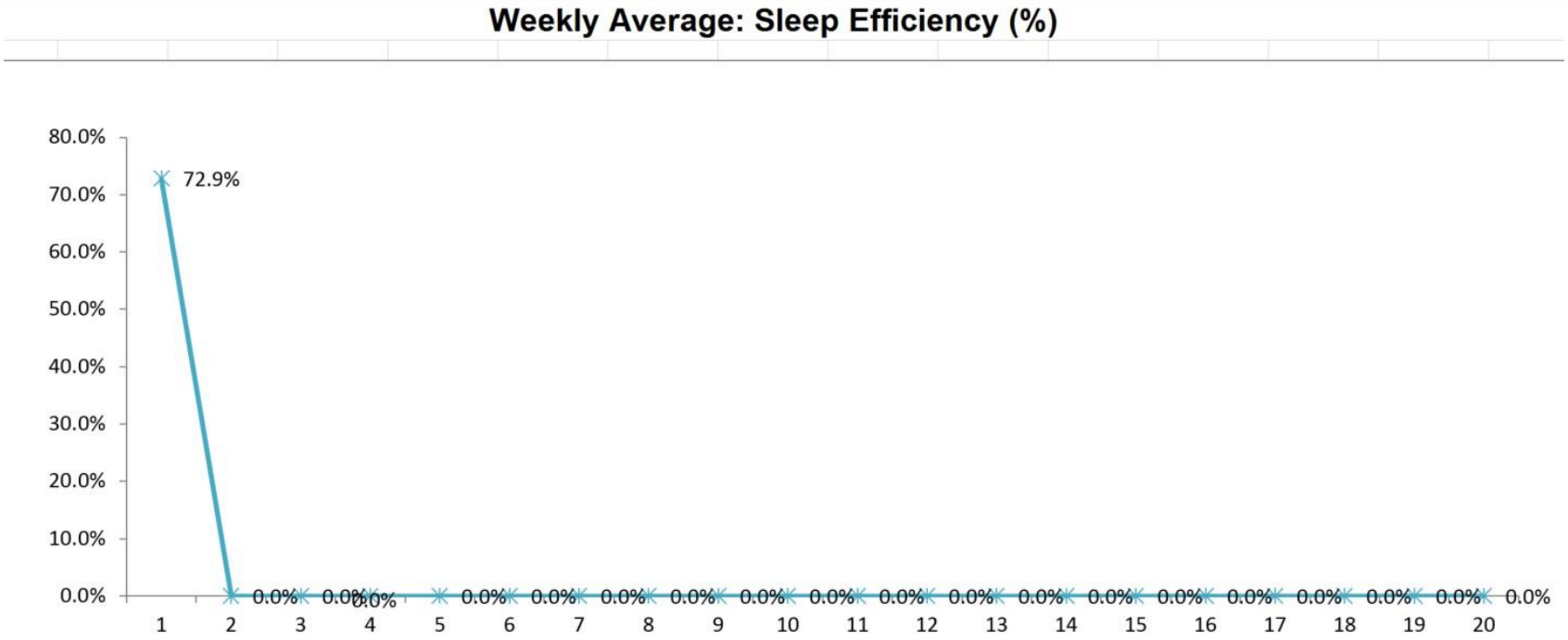
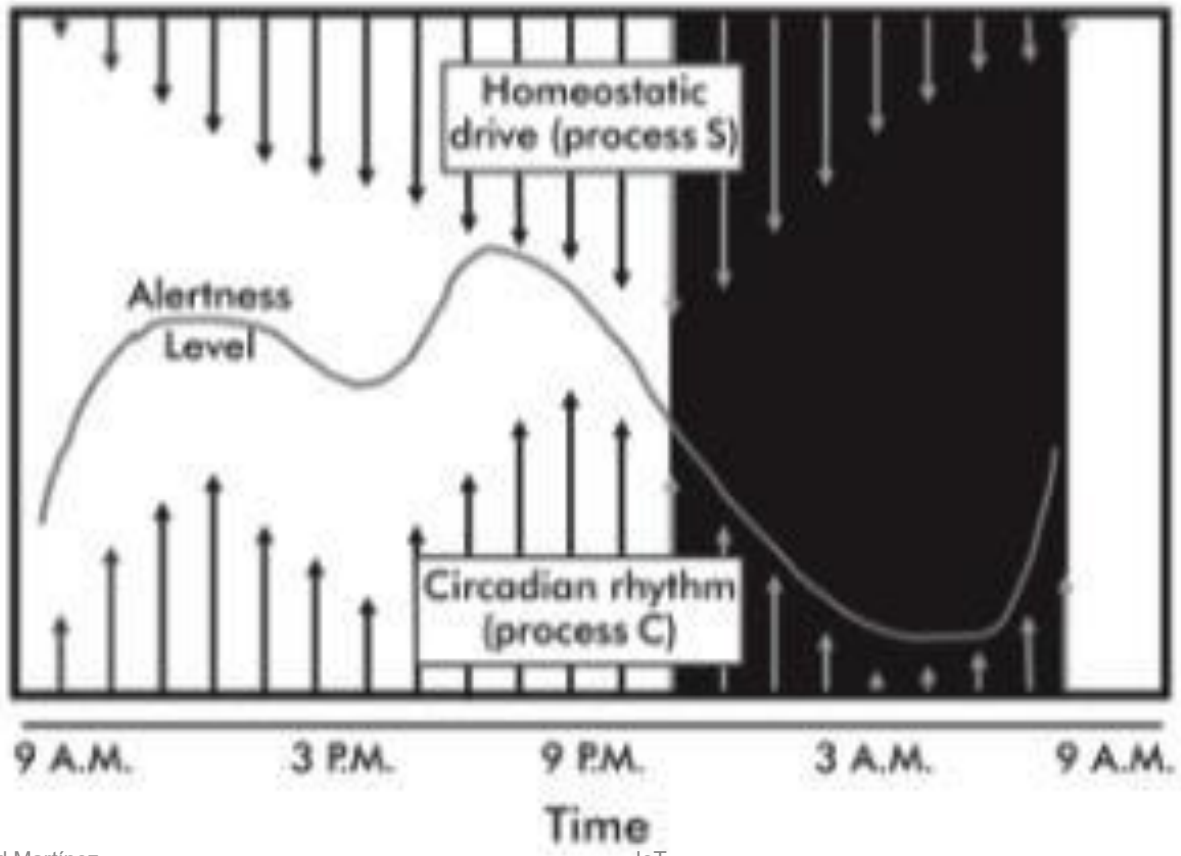


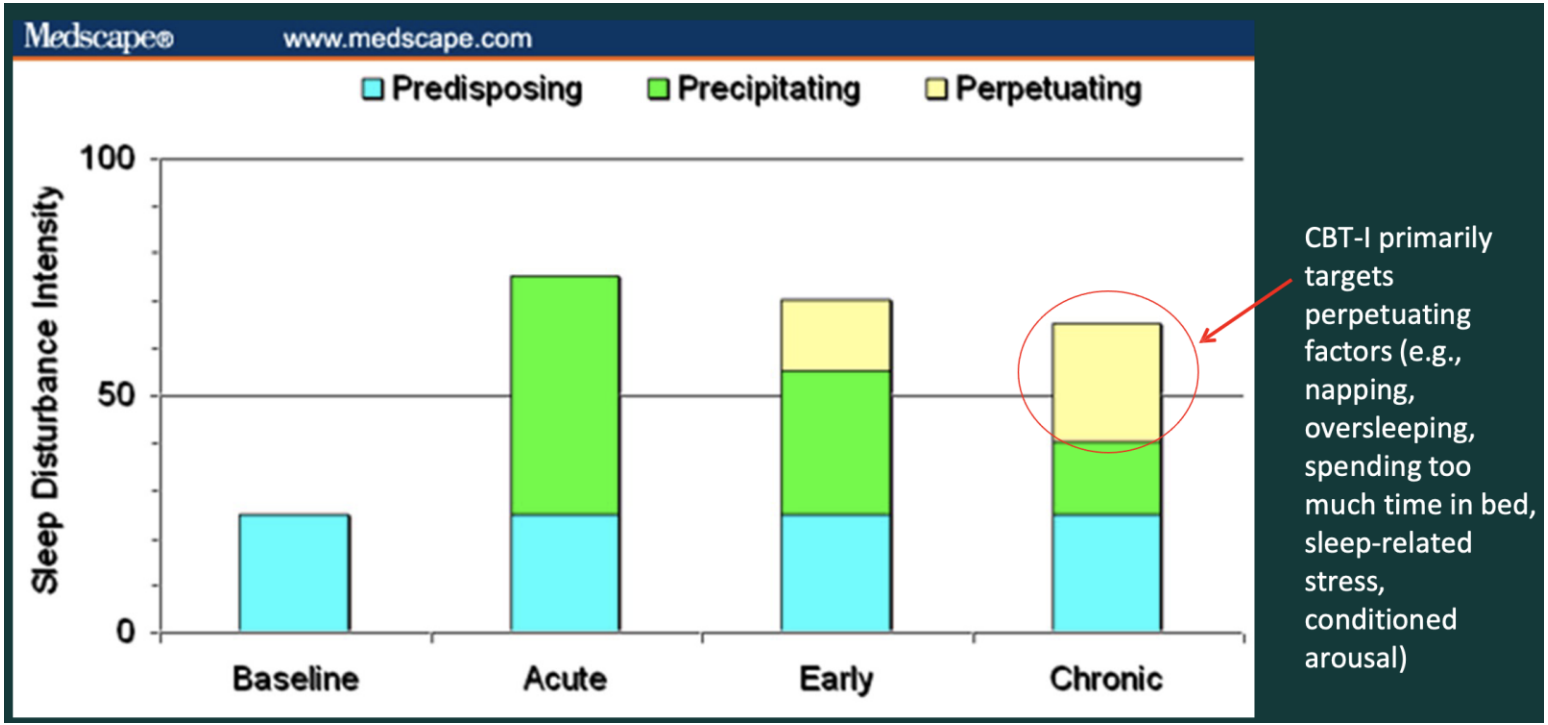
Sleep education

- Provide the patient some education about sleep to demonstrate the rationale behind CBT-I strategies
  - Some recommendations will seem counterintuitive, might make sleep worse before it gets better
- At a minimum should include background about:
  - Homeostatic sleep drive & circadian rhythm
  - 3 P Factor Model

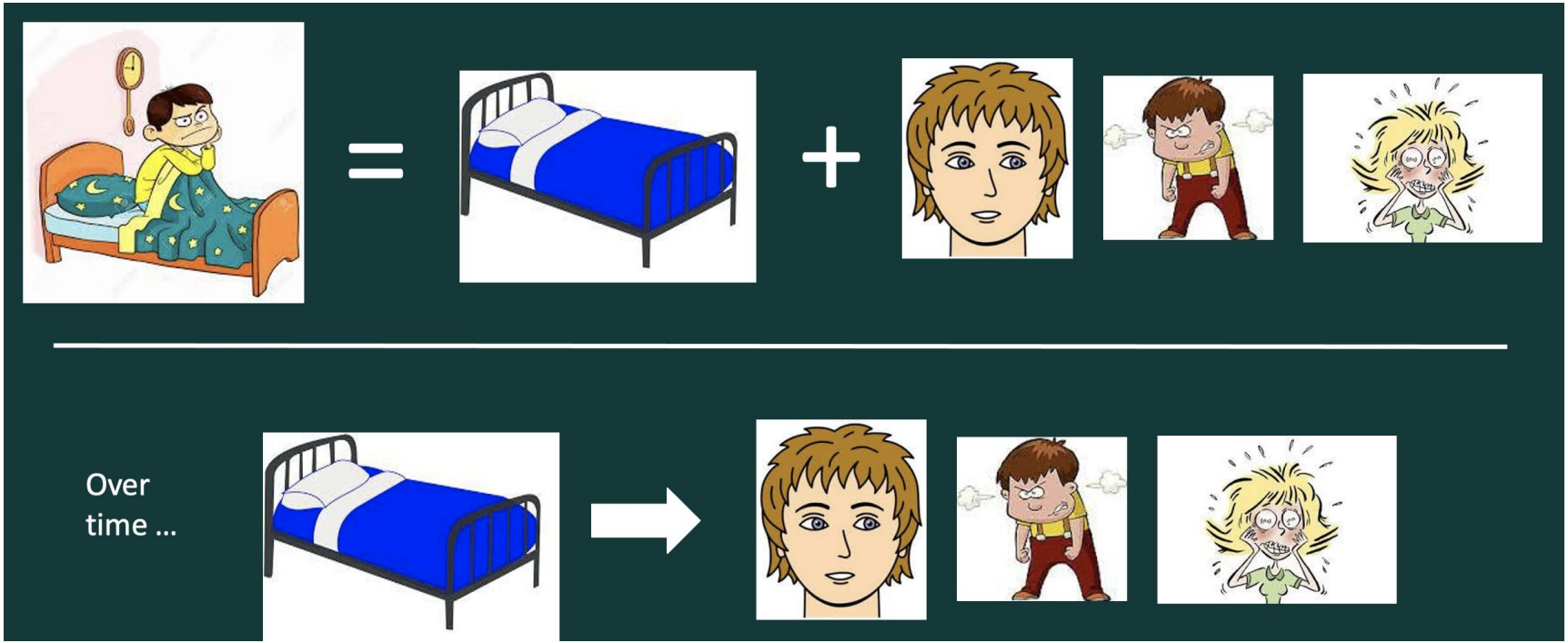
Sleep Regulation: Internal Mechanisms



3 P Model & CBT-I



Stimulus control to reduce conditioned arousal (Remember)



Classical conditioning

- Lying awake in bed night after night essentially “pairs” the bed/bedroom with wakefulness and possibly also anxiety and frustration
- This pairing, over time, can cause the bed/bedroom to **automatically trigger** feelings of wakefulness, anxiety, frustration
- “**Conditioned arousal**”
- Stimulus control attempts:
  (1) to **break this pairing of bed with wake**
  (2) to **strengthen the pairing of bed with sleep** and falling asleep quickly

Stimulus Control Instructions

1. Do not use your bed for anything except sleep; that is, **do not read, watch TV, use your smartphone, eat, or worry in bed**. Sexual activity is the only exception to this rule. On such occasions, the instructions are to be followed afterward when you intend to go to sleep.

Stimulus Control Instructions

2. If you find yourself unable to fall asleep within about 15-20 minutes, **get up and go into another room.**
   - Since I do not want you to watch the clock, just estimate how long you have been lying awake
   - Remember, the goal is to associate your bed with falling asleep quickly! Return to bed intending to go to sleep only when you are very sleepy, or after a predetermined amount of time.

Stimulus Control Instructions

3. While out of bed during the night, you can engage in **quiet, sedentary activities** (e.g., reading, TV viewing, etc. – but make sure content of such is not too engaging or activating)
   - Do not exercise, eat, smoke, or take warm showers or baths
   - Try not to fall asleep when not in bed.
4. If you return to bed but still cannot fall asleep within 15-20 minutes, **repeat step 2**. Do this as often as necessary throughout the night.

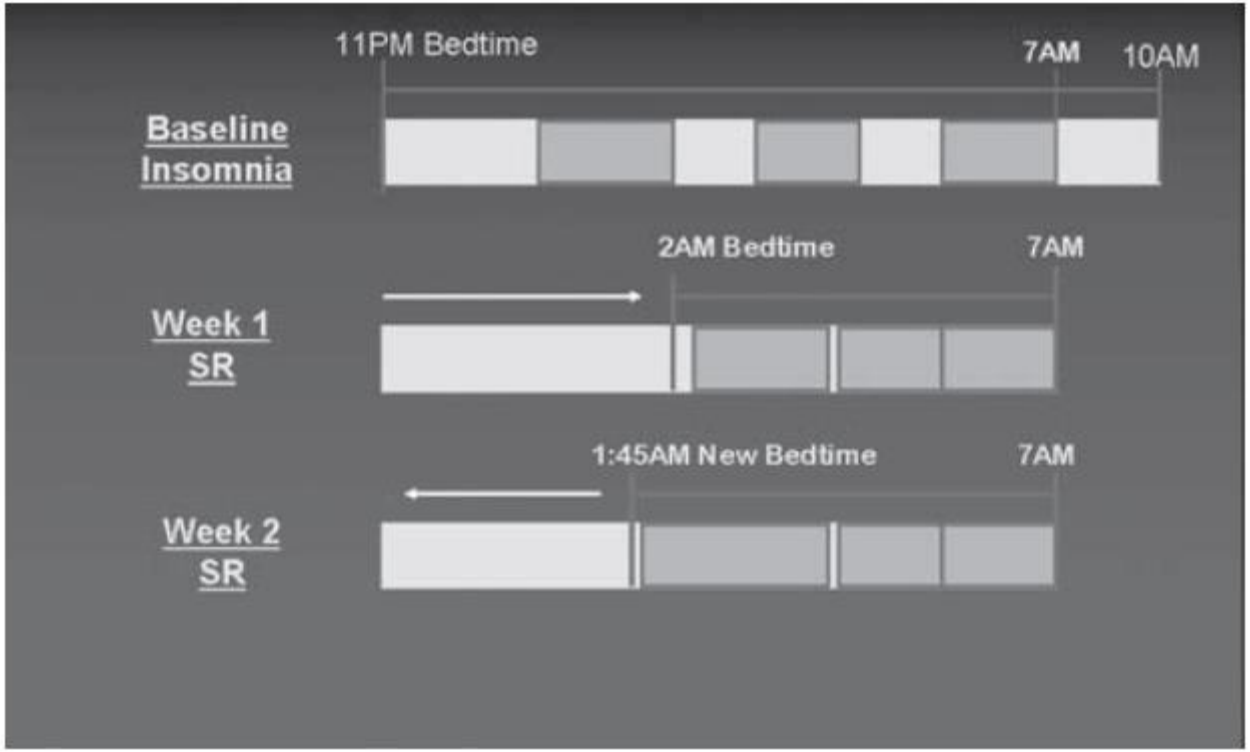
Sleep Restriction Therapy

- SRT is based on the notion that the most important perpetuating factor for chronic insomnia is sleep extension. Sleep extension is the tendency for individuals to compensate for “lost” sleep by increasing their time in bed (e.g., going to bed earlier, sleeping in later, or napping)
  - A consequence of sleep extension, however, is the mismatch between sleep ability (i.e., how much time the person actually sleeps) and sleep opportunity (i.e., how much time the patient spends in bed)
- The primary goal of SRT is to address this mismatch by **limiting sleep opportunity to the person’s average sleep ability**
- SRT is effective because it increases the homeostatic sleep drive and consequently reduces the time it takes to fall asleep or the amount of time spent awake at night

Sleep Restriction Therapy

- Steps:
  - (1) determine the patient's baseline sleep ability in terms of average sleep duration (as assessed with daily sleep diaries)
  - (2) set the patient's prescribed time in bed (PTIB, i.e., the patient's "sleep window") equal to their average sleep duration during the baseline period
  - (3) determine a morning rise time that the patient can closely adhere to on a daily basis, given their work schedule or other life style constraints
  - (4) set the prescribed time to bed (PTTB) by subtracting PTIB from the desired wakeup time (e.g., if PTIB is 6 hours and rise time is set to 7:00 a.m., than PTTB equals 1:00 a.m.)

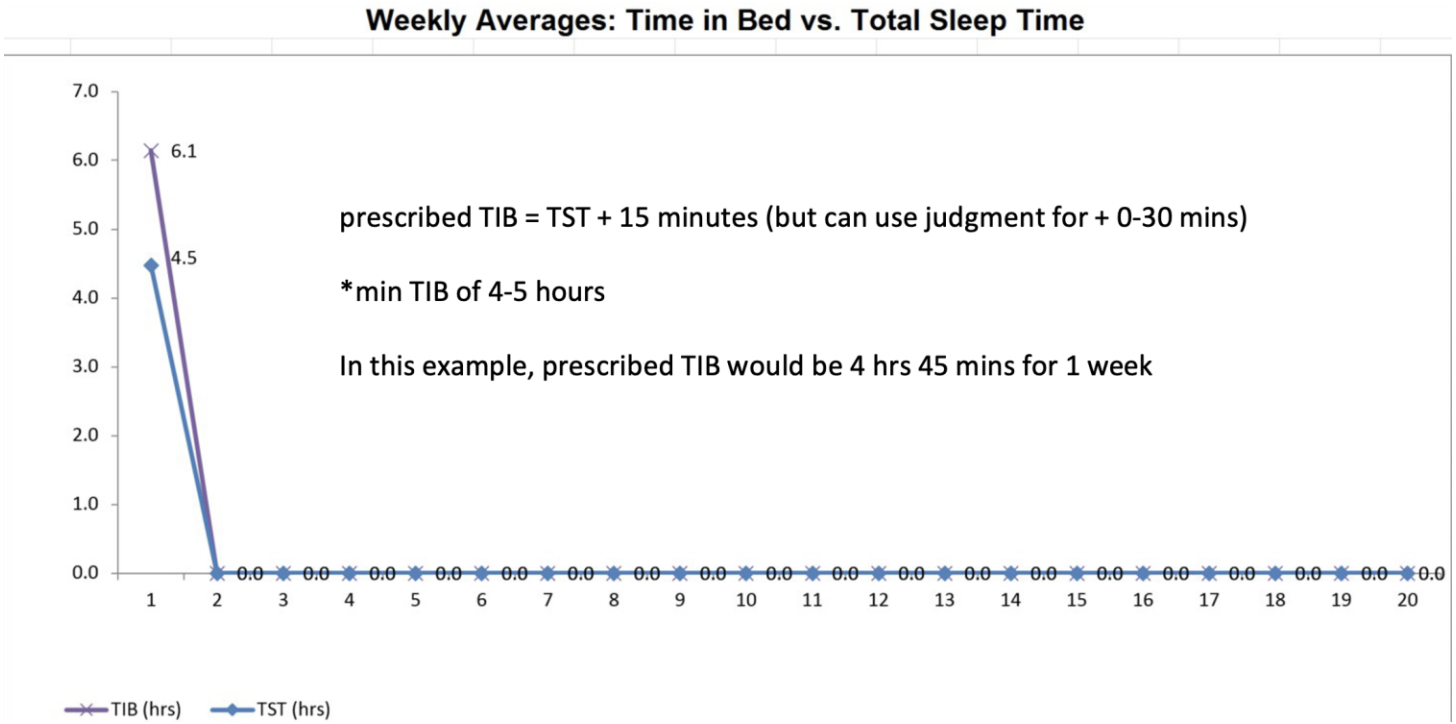
Sleep Restriction Therapy



White boxes: wake

Dark boxes: sleep

Sleep Restriction Therapy



Sleep Restriction Instructions

1. Your bedtime is XXX
2. Set your alarm and get up at the same time every morning, regardless of how much sleep you got during the night. Your wake time is YYY.
3. Do not nap during the day

- In cases where sleepiness might cause harm to self or others, go ahead and nap, go to bed earlier, sleep in, etc.
- In elderly, scheduling a nap might be beneficial, but try to limit to 30 minutes (and track this!).

Session #2

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
- Tx Session #2: Review, titrate, sleep hygiene
- Tx Session #3: Review, titrate, relaxation training
- Tx Session #4: Review, titrate, cognitive therapy I
- Tx Session #5: Review, titrate, cognitive therapy II
- Tx Session #6: Review, titrate, insomnia relapse prevention

Titration rules in Sleep Restriction

- This sleep schedule is maintained or altered based upon how consolidated the patient's sleep is
  - If the patient's sleep efficiency (SE%; the percent of time in bed spent actually sleeping) is less than 85%, then Prescribed Time in Bed (PTIB) is reduced by 15-30 minutes
  - If SE% is between 85% and 90%, PTIB remains as prescribed
  - If SE% is greater than 90%, PTIB is increased by 15-30 minutes.
- Adjustments to the sleep schedule or PTTB are completed each week after reviewing the patient's sleep diary from the previous week.

Sleep hygiene

- Cut down on caffeine (no caffeine after noon)
- Don’t go to bed hungry
- Avoid moderate to heavy alcohol use in the late evening
- Avoid smoking before bed or during the night
- Avoid excessive liquids in the evening
- Don’t exercise within 3 hours of bedtime
- Make sure bedroom is quiet (except perhaps for some white noise), very dark, and comfortable in terms of mattress, pillow, and temperature

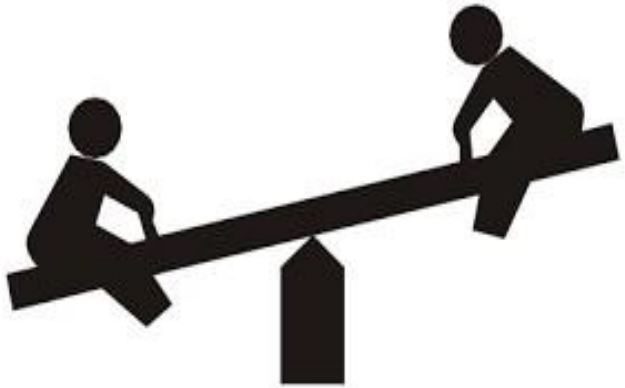
Session #3

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
- Tx Session #2: Review, titrate, sleep hygiene
- Tx Session #3: Review, titrate, relaxation training
- Tx Session #4: Review, titrate, cognitive therapy I
- Tx Session #5: Review, titrate, cognitive therapy II
- Tx Session #6: Review, titrate, insomnia relapse prevention

“Seesaw” of Sleep-Wake

Wake-Promoting Factors

- Anxiety/Stress (sleep- related or otherwise)
- Noise
- Pain/Body Discomfort
- Caffeine
- Exercise 3 hours before
- Circadian Rhythm
- Conditioned Arousal



WAKE

SLEEP

Sleep-Promoting Factors

- ↑ Sleep Drive
- Sleeping Pills
- Exercise during day
- Circadian Rhythm
- Conditioned Sleepiness

Relaxation training

- Diaphragmatic Breathing
- Progressive Muscle Relaxation
- Imagery
- Mindfulness
- Many others

Sessions #4 & #5

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
- Tx Session #2: Review, titrate, sleep hygiene
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- Tx Session #6: Review, titrate, insomnia relapse prevention

Cognitive Therapy (CT)

- The primary goal of CT is to help patients develop realistic sleep expectations by

1. Identifying dysfunctional thoughts about sleep that perpetuate insomnia or contribute to pre-sleep arousal
2. Examining these thoughts for accuracy, and, if necessary
3. Modifying them to be more rational and/or realistic

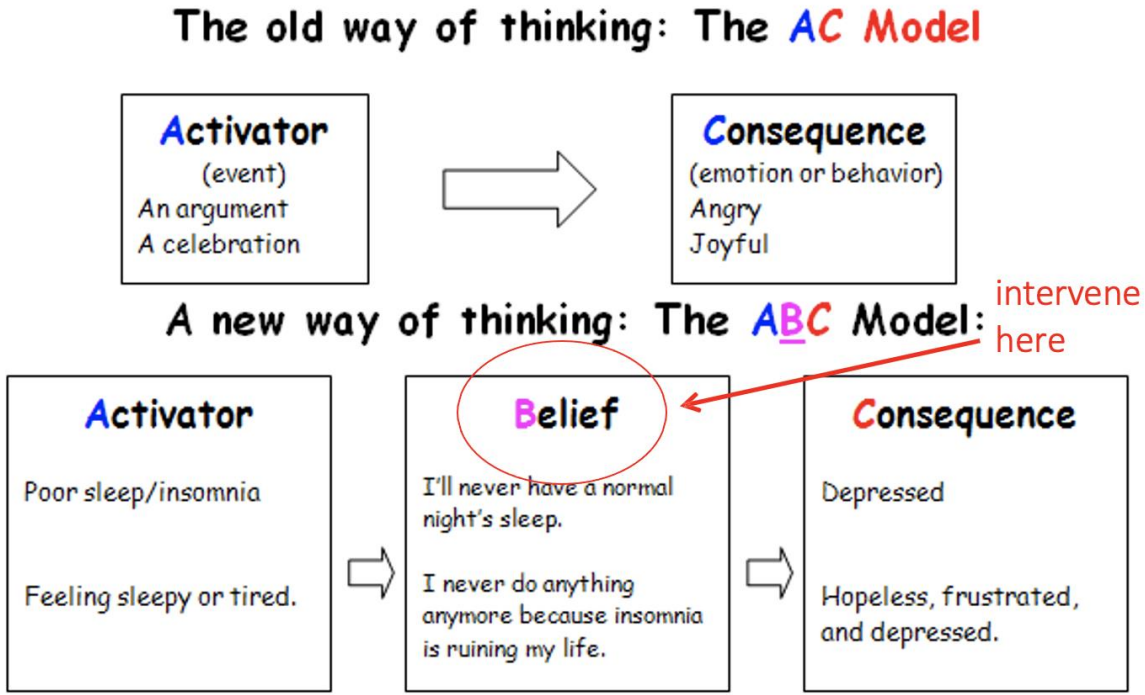
Cognitive Therapy (CT)

- CBT-I follows the traditional cognitive therapy approach by using **thought records** to identify **maladaptive sleep-related cognitions** and the **resulting emotional reactions**.
- The patient is then instructed to
  - describe the situation that produced the thought
  - the content of the thought
  - the emotional reaction
  - its intensity in detail

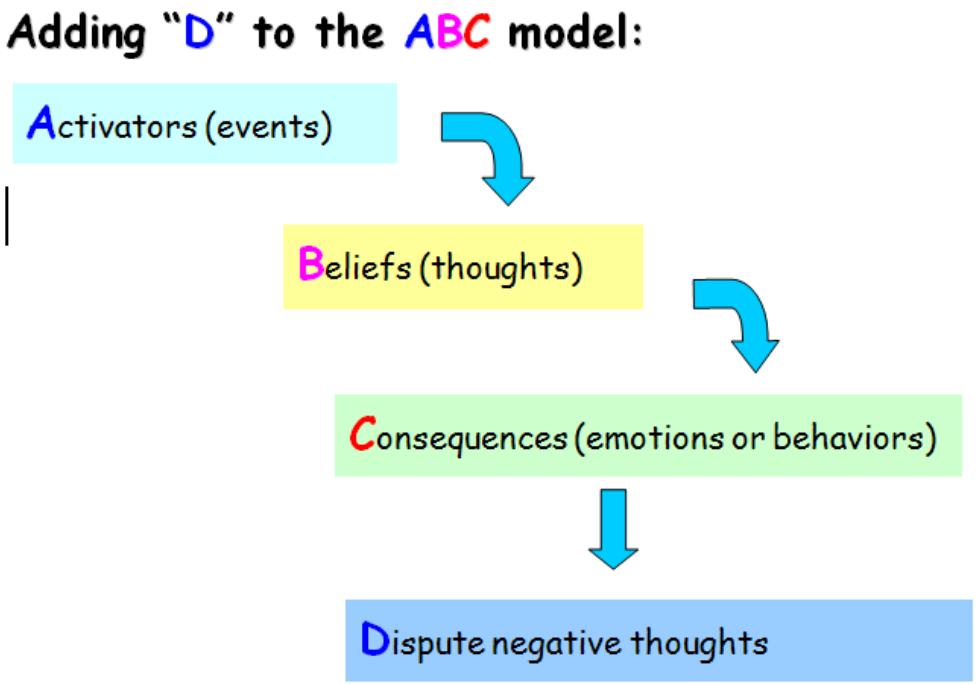
Cognitive Therapy (CT)

- These beliefs are evaluated with **cognitive restructuring techniques** including, but not limited to, **disputation of dysfunctional belief**s and **decatastrophization**, and replacing them with more adaptive sleep-promoting thoughts.
- The patient is instructed to **apply their revised thought** to the situation and notes the change in emotion.
- These cognitive therapy techniques allow the patient to go through a **process of guided discovery** to realize that their beliefs may not be accurate or helpful, which in turn helps them to better manage their problematic sleep beliefs and cognitive responses.

Cognitive Therapy



Cognitive Therapy



Cognitive Therapy II

Example:

- Disputing beliefs about negative consequences of sleep by examining the evidence
- "**I won't be able to do well at work if I don't sleep well tonight**."

- Compare estimated # of poor nights of sleep with # of days where you actually didn't do well at work (or record this prospectively)

  - Insomnia for 5 years, 3x/week = 780 "bad" nights
  - Days of poor work performance in the past 5 years = 100? 100/780 = 13% chance of doing poorly at work due to sleep

Common dysfunctional thoughts about sleep

- "I need 8 hours of sleep to feel refreshed and function well during the day."
- "When I don't get a proper amount of sleep on a given night, I need to catch up the next day by napping or the next night by sleeping longer."
- "Chronic insomnia may have serious consequences for my physical health"
- "I may lose control over my abilities to sleep."
- "A poor night's sleep will interfere with my daily activities on the next day."
- "In order to be alert and function well during the day, I believe I would be better off taking a sleeping pill rather than having a poor night's sleep."

- etc.

https://cbtiweb.org/ResourceFiles/CBTI-MTherapistMaterials_03232020170216354.pdf

Example: “I need 8 hours of sleep…”

Generating alternative thoughts:

- What are some possible alterative thoughts to this thought?
- What is the evidence for this thought?
- What is the evidence against this thought?
- While it would be nice to get 8 hours of sleep, have there been times in your past where you have received less sleep and felt refreshed and high functioning the next day?

Psychoeducation:

- Remember, we all have different sleep needs that may be less during times of stress.
- Your sleep log over the past few weeks says that you probably only need about __ hrs of sleep on average [insert average from past week or two].

Possible alternative thoughts:

- Not everyone needs to get 8 hours of sleep. I seem to get by fine with less.
- I wish I could get 8 hours of sleep per night, but I seem to get by OK with less.

Sessions #6

- Intake Session: Assessment, start sleep diaries
- Tx Session #1: Review sleep diaries, educate about sleep drive & circadian rhythm, present 3P model, start stimulus control & sleep restriction
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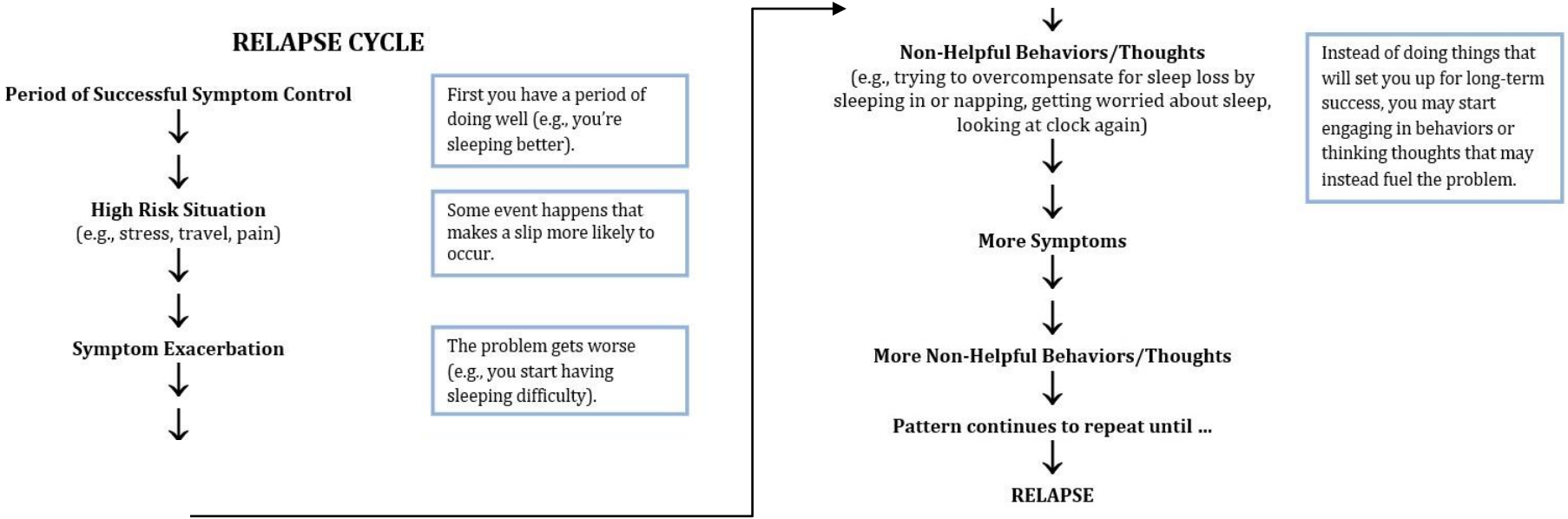
Insomnia Relapse Prevention

- Setting Realistic Expectations
- Slip vs. Relapse
- Understanding the Relapse Cycle

Relapse cycle



Insomnia Relapse Prevention

- Brainstorm (and write down!) with patient:
  - High risk situations
  - Signs/symptoms that mean the problem should be addressed now
  - Strategies for preventing a slip from becoming a relapse

Questions