**Light Therapy Researcher Guide**

This guide will cover key components when discussing light and dark therapy with participants during the face to face session. The goals are to:

* assess current sleep/wake patterns and individualise light/dark exposure;
* explain the functions of light therapy so participants understand *how* to apply strategies in their daily experiences; and
* discuss potential barriers to using light glasses and engaging in light therapy more generally, collaboratively brainstorming solutions.

*Note*: Participants with very advanced (habitual bedtime before 8pm and risetime before 4am) sleep timing, or have irregular/non-24-hour sleep/wake patterns are excluded based the Duke Structured Interview for Sleep Disorders.

**Introduction**

1. Introduce yourself and describe the purpose of the session.
2. Explain that participants will get a handout of all information covered in the session, but could make notes for themselves.
3. Explain that some of this information covered will also be reinforced in the emails they will receive.

**Part One: Bright Light Therapy (LT) – Daytime**

1. **Assess habitual bedtime, risetime, and morning fatigue and sleepiness.**

* Review habitual sleep timing using information already obtained from Duke and confirm this with the participant that these still apply.
* Ask participant how they feel when wake up (e.g., morning drowsiness/fatigue). Note that LT could assist these symptoms.

1. **Explain the two main functions of LT.**

“*We will work out how you could apply LT based on your current experiences. But as your sleep and other experiences may change in the future, I would like you to understand how LT works, so you can adjust how you use it, just like you are your own sleep doctor.*

*We all have an internal body clock that sends our body signals to determine how sleepy or awake we feel across the 24-hour day. Light helps us keep our body clocks in tune with the outside world so that we feel awake during the day and sleepy at night.*

*Bright light can also help reduce the feelings of grogginess and fatigue, and increase your feelings of alertness. Using bright light as soon as you wake up in the morning can make it easier to start your day and boost your feelings of energy and mood by sending a message to your brain that it’s time to ‘wake up’. We ask that you use the light glasses for* ***20 minutes*** *but not more than 30 minutes at your usual wake up time. There’s no need to wear glasses more than this duration each time you wear them, because after this time, there are little added benefits. You can continue doing your usual activities when you’re wearing your glasses, like eating breakfast or reading the paper. It is important to keep your eyes open though, and not wear the glasses while driving, and be extra careful when the surroundings are dim – the bright light could make it difficult to see! Also, it’s important not to use the glasses in the evening (after sunset or approximately 5pm) so that you’re not alert when it’s time for you to sleep.”*

*Try to get up around the same time every day because this will help promote a consistent body clock.*

1. **Develop individualised LT plan based on current sleep/wake patterns**

* Provide instructions of using the device (i.e., removing film over hologram before use, battery life, charging the device and keeping it on charge when not in use, used only in a well-lit room). Have participant try the glasses on, and instruct her the correct wearing angle. Check that she is comfortable with brightness. Do not proceed if the participant is not comfortable with brightness or the device itself.
* Explain that there is information in the Participant Guide on how to use the glasses, and that they may consult the Luminette User Manual for more detailed information and instructions.
* Discuss with the participant LT usage.
  + For most individuals (not too early in habitual rise time and do not mind potentially advancing sleep timing), bright light for 20-30 minutes upon awakening at habitual bedtime would be helpful.
  + Acknowledge natural fluctuation of sleep/wake timing. If she gets up much earlier than habitual rise time (e.g., > 2hrs earlier), ask to wait till their usual risetime before using the glasses.
  + For the small number of participants who have somewhat advanced sleep timing (but are not excluded via Duke) AND do not wish to further advance sleep timing AND do not have any morning grogginess/fatigue: ask them to use the glasses two hours after awakening, and when fatigued during the day. For example, someone who consistently gets up around 5am feeling alert and energetic, and does not wish to get up any earlier could delay light exposure.
  + Reinforce to participant to NOT wear the light glasses whilst driving
  + To consult with Dr Bei Bei if unsure.
* Discuss **natural sources of light** which may also be beneficial during the morning and daytime:

1. Opening shades in the morning so that sunlight may enter the house;
2. Exercising/being outdoors after the sun has risen.

Encourage the participant to seek natural light during the morning and day. Explain to participants that the effects will be larger on a sunny vs. overcast day.

**Part Two: Dark Therapy – Nighttime**

1. **Explain how bright light at night affects alertness/sleep and strategies to avoid nighttime light exposure**

“*Bright light is great during the morning and day, but at night, it suppresses the important sleep hormone called ‘melatonin’ which is responsible for making you sleepy. Bright light at night could make you more alert, making it harder to sleep. You may have experienced this yourself, for example, when you go to the toilet in the middle of night turning bright ceiling lights on, then finding yourself fully awake and unable to get back to sleep. Remembering that light in the morning tells you to ‘wake up’, light at night tells you to ‘stay up’.”*

* Instruct the participant to use dim lights and lamps in the evening (after 5:00pm) as this will minimise nighttime bright light exposure and reduces interference with body clock.

1. **Advice for using electronic devices**

* Explain to the participant that light from electronic devices may hinder sleep. “*Electronic devices such as computers, mobile phones, tablets, emit a frequency of light (blue light) that alerts us and can influence our body clocks. You might have experienced that it’s harder to get to sleep after using your phone or computer in bed.”*
* Explain how the filter f.lux for computers and Android devices helps block blue light according to the time of day and should be used when using electronic devices.
* Explain how the Night Shift mode on Apple products (e.g. iPads, iPhones and laptops, using the highest setting) similarly block out blue light according to time of day
* Instruct participant to use the **lowest brightness** setting when use of electronic devices if unavoidable during the night. Ask them if they know how to turn the brightness down on their devices – if they are unsure, guide them through it.

1. **Encourage adherence of LT use**

* Explain that some benefits of LT use may be noticeable soon after they commence LT, however substantial benefits arise after regular and consistent usage e.g. “*You may notice that you start to feel more energised soon after you begin using the glasses, but people get the most benefits from LT when they do it consistently, every day, making it part of their routine. It is very important for you to keep this routine to improve your chances of the program working for you.”*

**Part Three: Brainstorm anticipated barriers to LT use and trouble-shoot ways to overcome them**

1. Ask the participant about any obstacles they may see getting in the way of their engagement with the program

“*Now that you are aware of how to use the light glasses and strategies for both the day and night, can you think of any potential barriers or difficulties in undertaking these steps? It will be good for us to talk about these so that you’re able to get the most out of the program.”*

The researcher will need to address the participant’s potential concerns in a manner that motivates and empowers them to undertake the LT protocol for the duration of the project, as well as encouraging them to think of ways that they can address barriers on their own if and when they arise.

Potential barriers and ways of overcoming the may include:

1. Forgetting to wear the glasses in the morning – set an alarm/reminder on your phone, have a reminder note next to your bed.
2. Not getting enough time in the morning to use the light glasses – explain that they can still undertake their daily activities as usual and the glasses will generally not interfere with their tasks.
3. Tendency to use electronic devices at night (e.g., checking social media, using their phone to listen to music, reading on their ereader) – explain how this interferes with alertness and sleep, but encourage the use of appropriate settings to reduce blue light. Ask them if there is another activity that could replace this with (e.g. reading a book). Behavioural experimental, try it for a week.
4. Turning on many lights during the night (e.g., to care for their baby or children, go to the toilet, reading when they can’t get to sleep) – explain how the use of bright lights will alert them and encourage the use of dimmable lights or lamps instead of downlights whenever possible.

**Concluding the session**

1. **Give a brief summary of major points covered:**

* Bright light exposure is best in the morning, and should be avoided at night
* LT has many benefits for improving sleep and mood
* Opening blinds or being outside in the daylight (e.g. exercising) is great in the morning and natural light should be sought during the day
* Electronic devices/bright light at inappropriate times ‘trick’ our body clocks
* Glasses should be used immediately in the morning – 30 minutes every morning
* Install f.lux or use Night Shift mode to block out alerting blue light
* Reminder to not wear the light glasses whilst driving

1. Thank the participant for their attention
2. At the end of the session, the researcher should explain to the participant that if they experience any negative side effects (such as nausea, headaches) at any point during the project to stop using LT immediately and let the researchers know as soon as they experience them.
3. Ask the participant if they have any questions about the program. Reinforce that they may contact us at any point during their involvement.
4. Wish them all the best with the program