

Light Exposure Behavior Assessment (LEBA): Long and Short Form

Mushfiqul Anwar Siraji^{*}, Rafael Robert Lazar^{*}, Juliëtte van Duijnhoven, Luc Schlangen,
Shamsul Haque, Vineetha Kalavally, Céline Vetter, Gena Glickman, Karin Smolders, &
Manuel Spitschan^{**}

^{*} Joint first authors

^{**} Corresponding author: manuel.spitschan@psy.ox.ac.uk

Light Exposure Behavior Assessment (LEBA): Long and Short Form

Disclaimer: This is a non-public version of LEBA (dated October 30, 2021) and still a work in progress. Please do not distribute!

LEBA captures light exposure-related behaviours on a 5 point Likert type scale ranging from 1 to 5 (Never/Does not apply/I don't know = 1; Rarely = 2; Sometimes = 3; Often = 4; Always = 5). The score of each factor is calculated by the summation of scores of items belonging to the corresponding factor. The following instruction is given before displaying the items: "Please indicate how often you performed the following behaviours in the past 4 weeks."

LEBA Long Form (23 Items)

| | Items | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|---|---|-----------------------------------|--------|-----------|-------|--------|
| 1 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses indoors during the day. | | | | | |
| 2 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses outdoors during the day. | | | | | |
| 3 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses within 1 hour before attempting to fall asleep. | | | | | |
| 4 | I spend 30 minutes or less per day (in total) outside. | | | | | |

| | Items | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|---|-----------------------------------|--------|-----------|-------|--------|
| 5 | I spend between 1 and 3 hours per day (in total) outside. | | | | | |
| 6 | I spend between 30 minutes and 1 hour per day (in total) outside. | | | | | |
| 7 | I spend more than 3 hours per day (in total) outside. | | | | | |
| 8 | I spend as much time outside as possible. | | | | | |
| 9 | I go for a walk or exercise outside within 2 hours after waking up. | | | | | |
| 10 | I use my mobile phone within 1 hour before attempting to fall asleep. | | | | | |

| | Items | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|---|-----------------------------------|--------|-----------|-------|--------|
| 11 | I look at my mobile phone screen immediately after waking up. | | | | | |
| 12 | I check my phone when I wake up at night. | | | | | |
| 13 | I look at my smartwatch within 1 hour before attempting to fall asleep. | | | | | |
| 14 | I look at my smartwatch when I wake up at night. | | | | | |
| 15 | I dim my mobile phone screen within 1 hour before attempting to fall asleep. | | | | | |
| 16 | I use a blue-filter app on my computer screen within 1 hour before attempting to fall asleep. | | | | | |

| | Items | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|--|-----------------------------------|--------|-----------|-------|--------|
| 17 | I use as little light as possible when I get up during the night. | | | | | |
| 18 | I dim my computer screen within 1 hour before attempting to fall asleep. | | | | | |
| 19 | I use tunable lights to create a healthy light environment. | | | | | |
| 20 | I use LEDs to create a healthy light environment. | | | | | |
| 21 | I use a desk lamp when I do focused work. | | | | | |
| 22 | I use an alarm with a dawn simulation light. | | | | | |
| 23 | I turn on the lights immediately after waking up. | | | | | |

Latent Structure, Reliability and Structural Validity

The long form of LEBA consists 23 items with five factors.

| Factor names | Items | Reliability Coefficients |
|--|--------------------------|--------------------------|
| F1: Wearing blue light filters | 1-3 | .93 |
| F2: Spending time outdoors | 4-9 (Item 4 is reversed) | .80 |
| F3: Using phone and smartwatch in bed | 10-14 | .61 |
| F4: Using light before bedtime | 15-18 | .72 |
| F5: Using light in the morning and during daytime | 19-23 | .45 |

LEBA -long form showed satisfactory structural validity (CFI =.97; TLI = .96; RMSEA = .05[.04-.06, 90% CI]; SRMR = .09).

How to cite:

LEBA Short Form (17 Items)

| | Short Form (17 Items) | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|---|-----------------------------------|--------|-----------|-------|--------|
| 01 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses indoors during the day. | | | | | |
| 02 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses outdoors during the day. | | | | | |
| 03 | I wear blue-filtering, orange-tinted, and/or red-tinted glasses within 1 hour before attempting to fall asleep. | | | | | |
| 04 | I spend 30 minutes or less per day (in total) outside. | | | | | |

| | Short Form (17 Items) | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|---|-----------------------------------|--------|-----------|-------|--------|
| 05 | I spend between 1 and 3 hours per day (in total) outside. | | | | | |
| 06 | I spend more than 3 hours per day (in total) outside. | | | | | |
| 07 | I spend as much time outside as possible. | | | | | |
| 08 | I go for a walk or exercise outside within 2 hours after waking up. | | | | | |
| 09 | I use my mobile phone within 1 hour before attempting to fall asleep. | | | | | |
| 10 | I look at my mobile phone screen immediately after waking up. | | | | | |
| 11 | I check my phone when I wake up at night. | | | | | |

| | Short Form (17 Items) | Never/Does not apply/I don't know | Rarely | Sometimes | Often | Always |
|----|---|-----------------------------------|--------|-----------|-------|--------|
| 12 | I dim my mobile phone screen within 1 hour before attempting to fall asleep. | | | | | |
| 13 | I use a blue-filter app on my computer screen within 1 hour before attempting to fall asleep. | | | | | |
| 14 | I dim my computer screen within 1 hour before attempting to fall asleep. | | | | | |
| 15 | I use tunable lights to create a healthy light environment. | | | | | |
| 16 | I use LEDs to create a healthy light environment. | | | | | |
| 17 | I use an alarm with a dawn simulation light. | | | | | |

Latent Structure, Reliability and Structural Validity

The short form of LEBA consists 23 items with five factors.

| Factor names | Items |
|--|--------------------------|
| F1: Wearing blue light filters | 1-3 |
| F2: Spending time outdoors | 4-8 (Item 4 is reversed) |
| F3: Using phone and smartwatch in bed | 9-11 |
| F4: Using light before bedtime | 12-14 |
| F5: Using light in the morning and during daytime | 15-17 |