



# Group-based Cognitive Behavioural Therapy and Bright Light Therapy in Youths with Insomnia and Evening Chronotype: Interim Analysis of a Randomised Controlled Trial



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## Introduction & Objectives

Insomnia and eveningness frequently co-occur in youths. Using bright light therapy (BLT) as an adjunctive treatment with cognitive behavioural therapy for insomnia (CBT-I) may effectively address both issues. This study aimed to assess the efficacy of CBT-I and CBT-I plus BLT in improving various sleep, circadian, and mood outcomes.

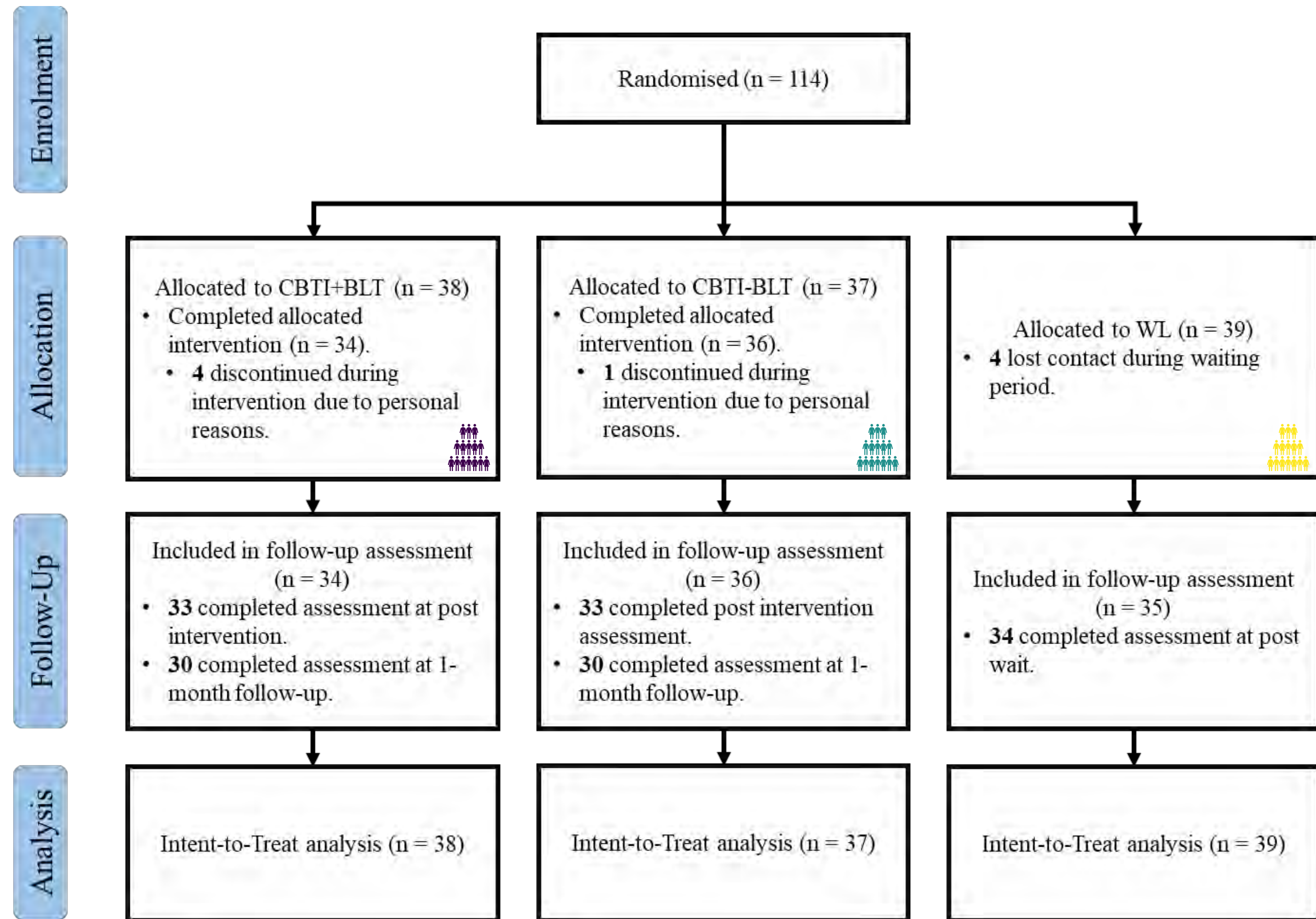
## Hypotheses

- Both CBTI+BLT and CBTI-BLT groups will reduce insomnia symptoms by the end of the treatment compared to waitlist control.
- CBTI+BLT will show added benefits in advancing the circadian rhythm and reducing insomnia symptoms as compared to CBTI-BLT

## Methods

114 participants (age: 19.8 ± 3.3, 53.5% female) with insomnia symptoms with significant impairments or distress AND eveningness were randomised into one of the three groups:

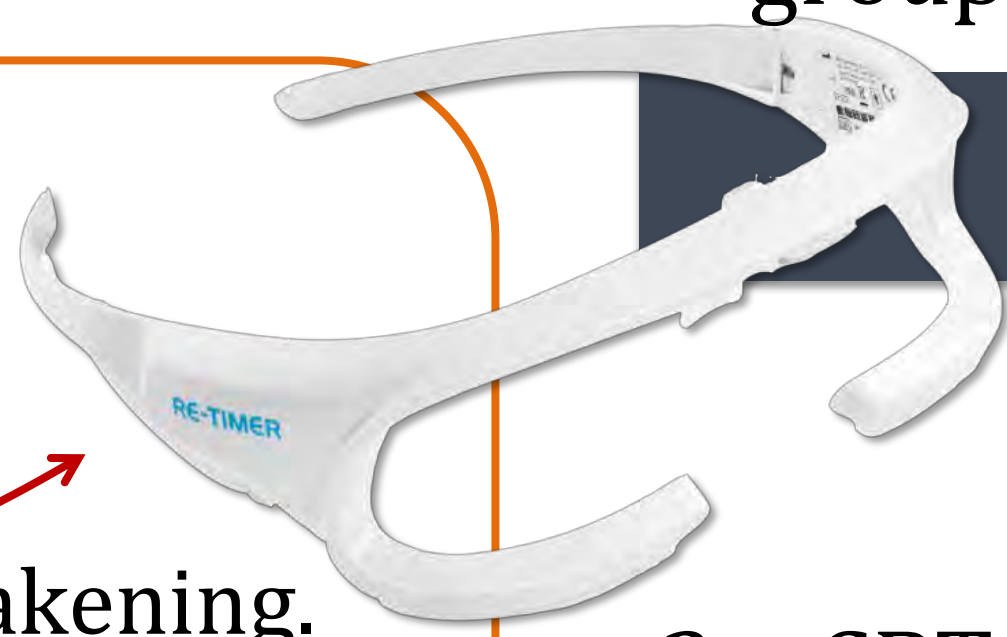
1. CBT-I with active BLT (CBTI+BLT)
2. CBT-I with placebo BLT (CBTI-BLT)
3. Waitlist control (WL)



Attrition Rate: CBTI+BLT = 10.5%; CBTI-BLT = 2.7%; WL = 10.2%

## Intervention

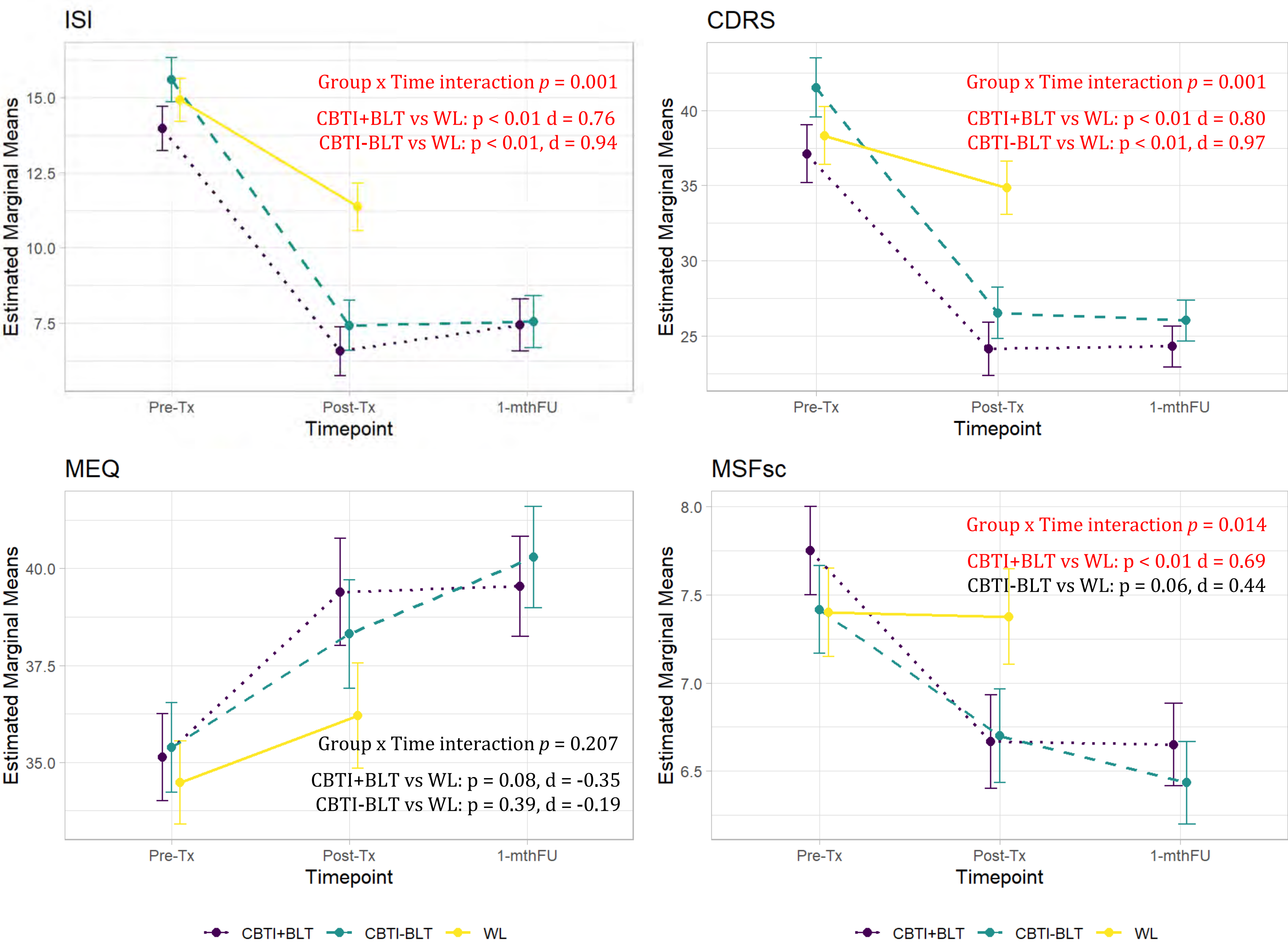
- Six weekly group CBT-I sessions.
- Light therapy glasses (Re-Timer™) for 30 minutes daily immediately after awakening.
- CBTI+BLT: blue-green light (500 nm) at 506 lux.
- CBTI-BLT: LEDs covered by red colour cellophane filters and cardboard paper (< 10 lux).



## Results

**Table 1:** Baseline sociodemographic and clinical characteristics.

Variables	Randomised Group		
	CBTI+BLT N = 38	CBTI-BLT N = 37	WL N = 39
<b>Demographics</b>			
Age (at enrolment), years	20.3 (1.7)	20.0 (2.3)	19.1 (4.9)
Female, n (%)	25 (65.8)	16 (43.2)	20 (51.3)
Diagnosis of insomnia disorder	12 (31.6)	20 (54.1)	12 (30.8)
Diagnosis of DSWPD	26 (68.4)	17 (45.9)	27 (69.2)
<b>Psychiatric comorbidities, n (%)</b>			
Depressive disorders	14 (36.8)	17 (45.9)	21 (53.8)
Anxiety disorders	13 (34.2)	15 (40.5)	21 (53.8)
Data is presented as mean (standard deviation) unless otherwise specified			



## Summary of results:

- Outcome measures analysed using multilevel modelling.
- Compared to the WL group at post-treatment...
  - both intervention groups demonstrated significant improvements in insomnia severity and clinician-rated depressive severity.
  - both intervention groups also showed significant treatment effects in self-report sleep quality and measures on daytime functioning.
  - only the CBT-I+BLT group showed significant advance in chronotype (MCTQ) but not on circadian preference (MEQ).
- There were no significant differences between the two intervention groups at 1-month follow-up.

## Conclusion

- CBT-I effectively improves insomnia severity and mood outcomes in youths with insomnia and eveningness.
- CBT-I with adjunct BLT **additionally advanced the circadian phase**. However, there was no superior effect on improving insomnia symptoms as compared to CBT-I alone.

## Future research direction:

- Investigate the possibility of a delayed treatment effect with longer follow-up.
- Including objective measurement of circadian biomarkers.

## Abbreviations:

CDRS = Children depressive rating scale; DSWPD = delayed sleep-wake phase disorder; ISI = insomnia severity index; MCTQ = Munich chronotype questionnaire; MEQ = morningness-eveningness questionnaire



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