



Luís Miguel da Silva Pires (Portugal)

A-1071 Evening screen time, sleep and diurnal type in preschool and primary school children



THE BEST OF SLEEP MEDICINE & RESEARCH

CONFLICT OF INTEREST DISCLOSURE

With respect to this CME activity,

No, I (nor my spouse/partner) do not have a relevant financial relationship.

Yes, I (and/or my spouse/partner) do have a relevant financial relationship.

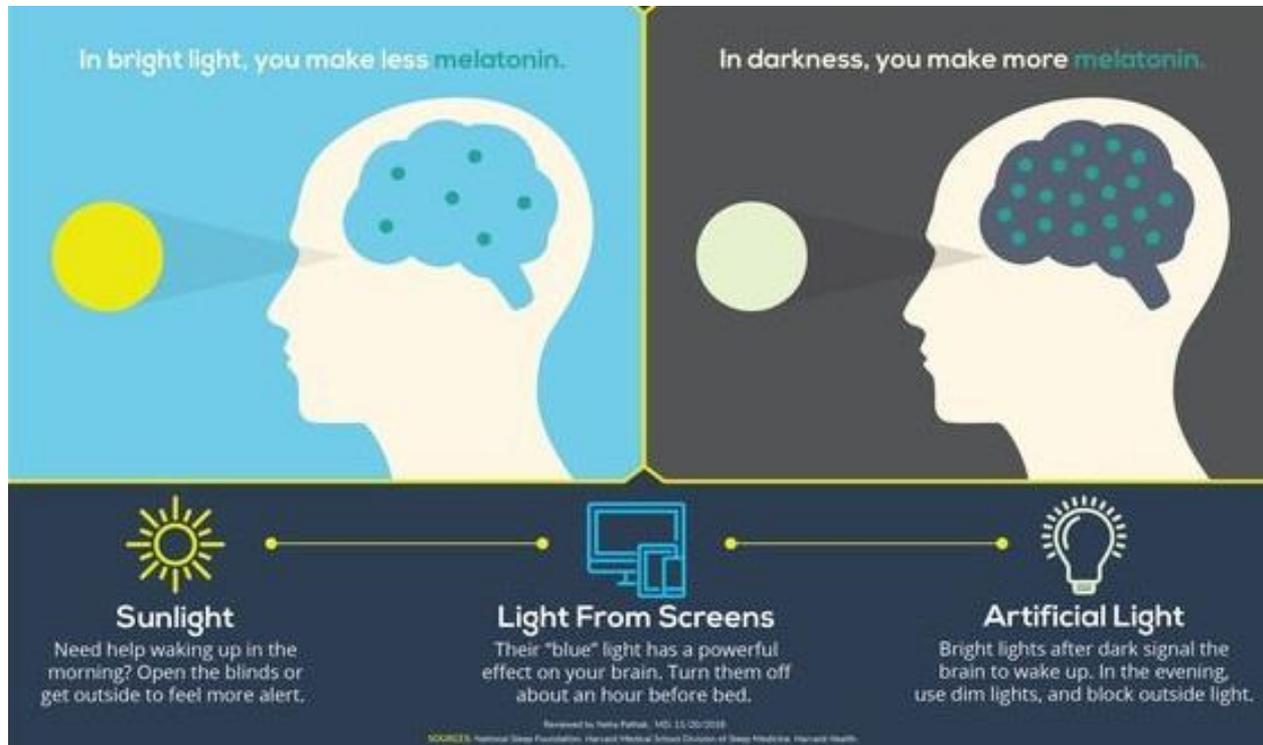
Nature of Relevant Financial Relationship (choose all that apply)	Name(s) of Company or Companies
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"Screenless" is the 15th episode of the 31st season of the animated television series "The Simpsons"

It aired in the United States on March 8, 2020

- Light is considered the main synchronizer of the circadian rhythm (Bathory & Tomopoulos, 2017).
- It can advance or delay the clock, depending on the timing and duration of exposure to light (Verwey & Amir, 2016).



- Blue light emitted by Screens may lead to the suppression of melatonin, at a time when the body should be naturally releasing it to prepare for the night's sleep (Foster, 2021; Touitou & Point, 2020).

- Screen time during the day is not in itself necessarily disruptive to the sleep-wake rhythm or to wakefulness itself (Foster, 2021; Hale et al., 2018; Touitou & Point, 2020).



H1: Can evening Screen time impair children's sleep?

H2: Can it be associated with emotional and behavioural problems?



Morning-types



----- Intermediate-types -----



Evening-types

≈ 60 to 70%

H3: Can Screen time be able to predict changes in sleep variables when controlling for other relevant variables such as the diurnal type?

Sample: Preschool and primary school children (4 to 9 years old)



605
Participants

186
Preschool
Children

55 M-types
88 I-types
40 E-types

419
Primary
School
Children

97 M-types
200 I-types
108 E-types



Parents/
Guardians

- **Diurnal type** | Children's ChronoType Questionnaire - Morningness/Eveningness Scale (Werner et al., 2009; Couto et al., 2014)
- **Evening Screen Time** | Questionnaire on the use of screens in the evening time, after dinner (Gomes et al., 2018).
- **Sleep parameters and Sleep problems** | Child Sleep-Waking Questionnaire (Clemente, 1997; Bos et al., 2009)
- **Emotional and behavioural symptoms** | Strengths and Difficulties Questionnaire (Goodman, 1997; Fleitlich et al., 2005).

Preschool Children

(*N*=186; 48.4% girls, *M* = 4.82 years old)



Primary school Children

(*N*=419; 49.5% girls, *M* = 8.13 years old)



Evening Screen Time

Screen Time	89.8% Every night or almost every night 58.5%
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Type of Screen	Many times – TV - 62% At least a few times - Phone - 57.1% At least a few times - Tablet - 46.3% Never - Console, Laptop, Computer
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Screen Time Duration	<i>M</i> ± <i>SD</i> = 56±35min Min= 7 mins / Max =3.5 hours
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Type Screen Time	Mainly passive – 77.2%
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Reduce Screen Light intensity	33.1%
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Stop Screen time 1hour before bedtime	19.8%
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Evening Screen Time

Screen Time	91.5% Every night or almost every night 61.7%
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Type of Screen	Many times – TV – 67.3% At least a few times - Phone - 55.8% At least a few times - Tablet - 47.8% Never - Console, Laptop, Computer
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Screen Time Duration	<i>M</i> ± <i>SD</i> = 61±33min Min= 10 mins / Max =3.8 hours
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Type Screen Time	Mainly passive – 64.7%
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Reduce Screen Light intensity	31.1%
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Stop Screen time 1hour before bedtime	16.1%
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No differences in Evening Screen Time between M-types, I-Types and E-Types preschool and primary school children (Eid et al., 2020).



Too much Evening Screen Time

Screen Time after dinner - Close to 1 hour in average for children (4 to 9 years old).

Higher than recommended. (Rodrigues et al., 2020)

Evening Screen Time, a predictor of Sleep, even considering diurnal type



Screen Time associated to ↓ Sleep period on weekdays ($\beta = -.17, p < .001$)

Later bedtime ($\beta = .10, p < .05$) and Get up time on free days ($\beta = .13, p = .001$). (Higuchi et al. 2014; Touitou & Point, 2020)



Association between Evening Screen Time, emotional and behavioural problems

Active use associated to ↓ prosocial behavior ($p < .001$).

(Saunders and Vallance, 2017)

Thank you for staying awake!

Or, you may now wake up and ask questions!



Inês Marques, **Luís Pires**, Catarina Bettencourt, Filipa Gomes, Rita Almeida, Daniel Ruivo Marques, & Ana Allen Gomes

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Summary of Hierarchical Regression analysis for variables predicting **Sleep Period on weekdays**

Variables	β	R ²	ΔR^2
Step 1		.061	.061
Diurnal type	-.23***		
School level	-.08		
Sex	-.03		
Step 2		.089	.027
Diurnal type	-.22***		
School level	-.07		
Sex	-.02		
Evening Screen Time	-.17***		

a * $p < .05$ ** $p < .01$ *** $p < .001$

Summary of Hierarchical Regression analysis for variables predicting **Get Up Time on free days**

Variables	β	R ²	ΔR^2
Step 1		.221	.221
Diurnal type	.43***		
School level	.10*		
Sex	-.14**		
Step 2		.239	.018
Diurnal type	.42***		
School level	.09*		
Sex	-.14***		
Evening Screen Time	.13**		

a * $p < .05$ ** $p < .01$ *** $p < .001$

Summary of Hierarchical Regression analysis for variables predicting **Bedtime on free days**

Variables	β	R ²	ΔR^2
Step 1		.204	.204
Diurnal type	.39***		
School level	.20***		
Sex	.05		
Step 2		.213	.009
Diurnal type	.39***		
School level	.19***		
Sex	.05		
Evening Screen Time	.10*		

a *p < .05 **p < .01 *** p < .001

Summary of Hierarchical Regression analysis for variables predicting Bedtime on weekdays

Variables	β	R ²	ΔR^2
Step 1		.192	.192
Diurnal type	.41***		
School level	.11**		
Sex	.08*		
Step 2		.200	.008
Diurnal type	.41***		
School level	.10**		
Sex	.08		
Evening Screen Time	.09*		

a * $p < .05$ ** $p < .01$ *** $p < .001$