



Increase your cognition using light

When do you feel more creative or efficient? Like most things in life, your ability to solve problems, remember certain things or learn a new skill, varies from time to time and can depend on multiple factors.

One such factor is your exposure to light. Light has been shown to not only impact your mood and health, but your cognition too. Cognition describes higher-level mental processes, such as problem-solving, thinking, attention, memory, and learning.

Whether you notice it directly or indirectly, your surrounding light environment is crucial when it comes to supporting your cognitive performance.

How can light be used to increase cognition?

- ✓ A balanced circadian rhythm is vital for cognitive performance
- ✓ Light can be used as an alternative to caffeine or taking a nap during the day
- ✓ Especially blue-enriched light controls cognition

Biocentric lighting is a lighting system that simulates the most important aspects of daylight indoors. The light is designed to support a stable circadian rhythm with many benefits for our health and well-being, including cognitive performance.

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Light outperforms coffee

Many of us experience dips at some point throughout the day. Scientists have tested the impact of light in comparison to other common strategies to improve cognitive function. One hour of 40 lux blue light has been shown to be as effective as 240 mg caffeine in a reaction test. The blue light outperformed caffeine when distractions were presented¹. Taking a nap or receiving a light boost of blue-enriched light is better than not taking a nap and remaining under standard lighting².

Cognitive performance varies naturally throughout the day and is sensitive to the circadian rhythm, which is dependent on blue light exposure.



Light influences our cognitive performance from our early years to later in life.

1. Beaven, C. M. & Ekstrom, J. A comparison of blue light 13. and caffeine effects on cognitive function and alertness in humans. PLoS One 8, e76707, doi:10.1371/journal.pone.0076707 (2013).
2. Zhou, Y. et al. Does Bright Light Counteract the Post-lunch Dip in Subjective States and Cognitive Performance Among Undergraduate Students? Frontiers in Public Health 9, doi:10.3389/fpubh.2021.652849 (2021).
3. Correa, A., Barba, A. & Padilla, F. Light Effects on Behavioural Performance Depend on the Individual State of Vigilance. PLoS One 11, e0164945, doi:10.1371/journal.pone.0164945 (2016).
4. Hartstein, L. E., LeBourgeois, M. K. & Berthier, N. E. Light correlated color temperature and task switching performance in preschool-age children: Preliminary insights. PLoS One 13, e0202973, doi:10.1371/journal.pone.0202973 (2018).



We are all different

The way each of us responds to light is influenced by our age, light history, and other factors. Vigilance levels prior to light exposure have been shown to influence how light affects cognitive performance. Individuals with a higher basal vigilance level benefited more from blue-enriched lighting in a task assessing reaction times³.

Light influences our cognitive performance from our early years to later in life. A study in preschool-age children showed that using LEDs with higher color temperatures was associated with greater improvements in a task switching test for children, indicating that light is linked to executive function early on in cognitive development⁴.