

THE PSYCHOLOGY OF DAYLIGHT: **SUPPORTING MENTAL WELL-BEING THROUGH DESIGN**

A White Paper on Daylighting and Human Health

Executive Summary

Daylight does more than illuminate a space -it can influence mood, emotional well-being, and how people experience the environments around them. A growing body of peer-reviewed research shows that insufficient access to natural daylight is linked to elevated stress, anxiety, depressive symptoms, and a diminished quality of life. Conversely, well-designed daylighting may support circadian rhythms, psychological comfort, and positive experiences of indoor environments. This white paper synthesizes the most compelling current evidence and draws out the key implications for anyone seeking to create spaces that genuinely support mental health.



The Biological Basis of Daylight and Mood

Human beings evolved under the open sky, and our brains and bodies remain calibrated to respond to the temporal variations associated with natural daylight. Serotonin -a neurotransmitter involved in mood regulation-showed higher turnover during periods of greater bright sunlight.¹

Melatonin, the hormone that promotes sleep, is suppressed by daylight and plays a critical role in regulating the circadian rhythm, the internal 24-hour biological clock that coordinates many physiological processes.² Cortisol, a hormone involved in the stress response, follows a natural circadian pattern influenced by morning light exposure.³

When individuals spend their days in buildings that fail to provide adequate daylight as a source for interior illumination (as is the case for the estimated 87 to 90 percent of time modern people spend indoors⁴) these biological systems may receive weaker circadian timing cues. The consequences may extend beyond physical health to psychological well-being.

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Daylight and Mood: The Evidence

Research has identified associations between daytime daylight exposure and mood. A comprehensive review found that higher daytime daylight exposure is generally associated with better mood and lower depressive symptomatology, while greater exposure to artificial light at night is associated with worse mood outcomes.⁵ A study examining sunlight exposure and mental health found a statistically significant negative association between sunlight hours and poor mental health scores, suggesting that sunlight exposure may be one factor associated with mental well-being.⁶

One proposed mechanism is that bright light stimulates specialized retinal cells that project directly to the brain's mood-regulating centers, including the primary site of serotonin production.² This pathway may help explain why bright light therapy has evidence of benefit for seasonal depression and, as an adjunctive treatment, for some cases of non-seasonal depression.⁷

Beyond neurochemistry, daylight satisfies a deeper psychological need: the human desire for connection with the natural world. Research consistently shows that access to natural daylight and views of the outdoors provides psychological comfort and a higher perceived quality of the indoor environment, whether that environment is a living room or a corporate boardroom.⁸ A review of biophilic design literature identified natural daylight as one of several design elements associated with stress reduction, improved mood, and psychological restoration.⁹

Daylight and Stress Reduction

Research reviews suggest that access to daylight and windows may contribute to occupant health and well-being, although the evidence varies by outcome.¹⁰ A small case-control pilot study published in the Journal of Clinical Sleep Medicine found that workers without window access reported poorer overall sleep quality and lower vitality.¹¹

A small crossover study examined 30 office workers under two daylight conditions. Participants in an optimized daylight-and-views condition slept 37 minutes longer than they did in an otherwise similar office with traditional windows with blinds.¹²



Although this study focused on sleep and cognitive performance rather than mental-health outcomes, it adds to the evidence that daytime light conditions can affect occupant well-being.

Daylight also modulates the body's physiological stress response. A healthy cortisol pattern involves a sharp peak in the morning - the Cortisol Awakening Response - that promotes alertness and energy, followed by a gradual decline throughout the day. Light exposure is one of several factors that can influence circadian timing and daily alertness.³ Insufficient daytime light may contribute to fatigue and less stable sleep-wake timing. Ensuring occupants receive adequate bright light in the morning- whether in a residential kitchen or a commercial office - supports a healthier emotional baseline throughout the day.

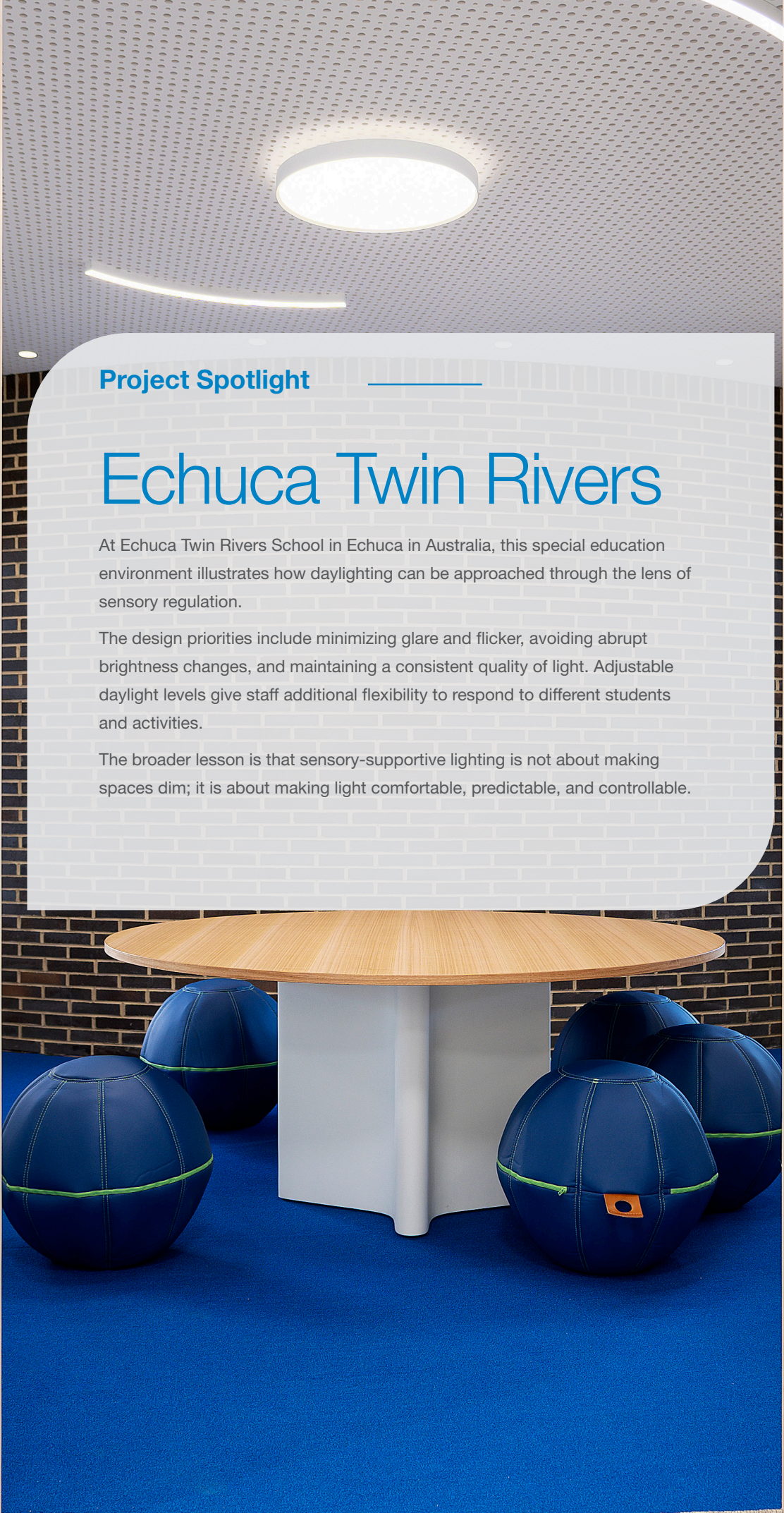
Seasonal Affective Disorder

Seasonal Affective Disorder (SAD) is a clinically recognized form of recurrent depression with a seasonal pattern; prevalence varies with latitude and the method used to measure it.¹³ Its causes are not fully understood, but seasonal changes in light, circadian timing, and neurotransmitter systems are among the leading explanations. An established first-line treatment is bright light therapy, commonly using a 10,000-lux light box according to a clinician-directed schedule.¹⁴

In winter months, individuals who commute before sunrise and after sunset may receive virtually no natural daylight during the day. Maximizing natural daylight penetration and utilization as a source for effective interior illumination in buildings can help increase daytime light exposure.



Daylight satisfies a deeper psychological need: the human desire for connection with the natural world



Project Spotlight

Echuca Twin Rivers

At Echuca Twin Rivers School in Echuca in Australia, this special education environment illustrates how daylighting can be approached through the lens of sensory regulation.

The design priorities include minimizing glare and flicker, avoiding abrupt brightness changes, and maintaining a consistent quality of light. Adjustable daylight levels give staff additional flexibility to respond to different students and activities.

The broader lesson is that sensory-supportive lighting is not about making spaces dim; it is about making light comfortable, predictable, and controllable.

Mental Restoration

Attention Restoration Theory, developed by environmental psychologists Rachel and Stephen Kaplan, proposes that the capacity for directed attention is a finite resource that becomes depleted over the course of the day.¹⁵ Natural environments may be restorative because they engage a gentle, effortless form of attention that allows the directed attention system to recover. Research suggests that even brief exposure to natural elements can support restoration and reduce mental fatigue.¹⁶

The practical implication is that buildings should not only provide daylight for functionality but should create opportunities for passive psychological restoration. Living rooms, break rooms, corridors, and common areas flooded with natural light provide the micro-restorative experiences occupants need to sustain emotional well-being throughout the day.

Conclusion

The evidence supports treating access to daylight as an important consideration in environments designed for human well-being. Buildings that provide little daylight may miss an opportunity to support occupant comfort, circadian health, and well-being. Conversely, thoughtful, human-centric daylighting can help create environments that feel more comfortable, engaging, and supportive. For architects, designers, and homeowners alike, the integration of natural daylight is a meaningful investment in human well-being.



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