

Exposure to Outdoor and Indoor Light

CHRONODISTURBANCE

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Chronodisturbance, a term or rather a description of an unphysiological state caused by overdosage of outdoor and indoor lighting: Untimely lighting - light at the wrong time, at wrong allocations, light with the wrong colour, wrong intensity and shining into wrong directions, beaming into narrowing pupils, uninvited glare (1). Phototoxic light. Light gone astray.

In the good old days, before the advent of daytime running (DRL)-chaos the 'lighting up time' was obligatory, 'the time after which vehicles on road had to show the prescribed lights'. The idea behind this reasonable regulation rooted in the 'signal to noise' principle. At the time point, when daylight faded, just in time before 'traffic relevant objects' threatened to become less (insufficient) visible in the shadows of dawn the street lighting cut in and the headlights were turned on. Whenever the retinal images of these objects appeared to be above threshold (perceptible, recognizable) any kind of additional artificial lighting was redundant, superfluous, a nuisance, - in the good old days.

Times have changed, maybe, but the rules, the principles and limitations of sensory physiology and cognition psychology will remain unchanged - until the end of all times. Overload of cognitive processing, short term memory etc. causes serious functional deficits and failures: Inattentional Blindness e.g. The number of injured and killed children climbs up. Though, this fact, published again and again, keeps falling on deaf ears. Another aspect, an 'unexplained' fatigue, emerges as serious risk factor.

Overdosed lights, 'stressors' for our system, mobilise stress hormones - nonstop, ubiquitously . There is no escape, fatigue seems inevitable. Body and mind need recreation, recovery, regeneration, requesting it imperatively. 'You realize tiredness but not falling asleep' (worst case - behind the steering wheel). Eye tracking studies show how the eyes of test drivers can move up and outwards (Bell's phenomenon) until drooping lids block the visual axis - a phenomenon UNNOTICED subjectively, affecting even young, highly motivated and experienced drivers. More bluish overdosed light in order to improve your vigilance and powerdrinks to keep you alert will not keep their promise.

The only remedy against deadly fatigue: 'Power nap'(2) (in time), avoidance of stressors, reduction of light intensities and light load - back to physiological dosage thus preventing chronodisturbance, chronodisruption etc. Last but not least: DRL OUT ('lethal light').

Ref

1. Schreuder D: The human observer; physical and anatomical aspects of vision, in Schreuder D (2008) Outdoor Lighting: Physics, vision, and Perception, Springer, pp187 - 305

2. Komada, Yoko J (2000) Effects of bright light pre-exposure on sleep onset process. Psychiatry and clinical neurosciences [1323-1316] 54 :3, 365 -366