

M-1 Effects of Visual Stimulation of the Color&Shape on the Autonomic and the Central Nervous System

Kikuhiko Ota, Hiroyuki Ishikawa and Shigeki Watanuki
Department of Physiological Anthropology, Kyushu Institute of Design

This study attempted to examine the effects of various color&shape combinations on the autonomic and the central nervous system (CNS) in our physiological living systems. Subjects were eight healthy male university students. Stimulus were five different colors (blue, green, yellow, red and white) and 4 different shapes (circular, squared, triangular and reversed triangular) afforded 20 color&shape facets for testing.

The present study suggests that a combined color&shape stimulus may exert marked influences on cardiac autonomic and CNS activities. The effects of red color on the autonomic activity decayed while the influence on CNS intensified with time, suggesting the probable central role of this color on the left cerebral hemisphere in humans.

M-2 Influence of Bright Light during Daytime on Sleep Parameters with Elderly Patients in Hospital

Tomoko WAKAMURA, and Hiromi TOKURA
Department of Environmental Health, Nara Women's University

Our previous study with young adults has shown that bright light exposure during daytime was effective nocturnal sleep. The present study was performed to know whether similar findings could be observed with elderly patients in hospital.

Seven patients (mean age 67) in hospital were studied. The bright light near their bed was turned on 10:00-15:00 for 1 week. The data after bright light exposure were compared with those before exposure. They were measured activities using Actiwatch, and melatonin hormone at midnight. Our this study disclosed that bright light during daytime prolonged "time in bed" and delayed "get up time", but naptime during daytime was not different.

It is concluded that diurnal bright light exposure may favor clinically an induction of deeper sleep with elderly patients in hospital.

M-3 Effects of Simulated Dawn Lighting on Awakening

Hiroki NOGUCHI¹⁾, Shuichi SHIRAKAWA²⁾,
Yoko KOMADA³⁾, Toshihiko SAKAGUCHI¹⁾

1) Matsushita Electric Works, Ltd

2) National Institute of Mental Health, N.C.N.P.

3) Graduate School of Human Sciences, Waseda University

The effects of dawn lighting simulated morning sunrise that increased gradually the illumination from 0 lx to 100 lx during 30 minutes just before awakening time was investigated. Eight healthy men, aged 24-27 years old, were polysomnographically recorded with sleep feelings, alpha attenuation tests and blood pressure which examined the carried out effects after awakening. Sleep feelings in the simulated dawn lighting condition was better than that on no lighting condition. Time of stage 2 during 30 minutes just before awakening decreased significantly ($p < 0.05$; paired t-test), and time of stage W increased significantly ($p < 0.05$). These results suggest that simulated dawn lighting enhances brain activity and causes light sleep as a preparation of rising. Consequently, light sleep in morning prevents sudden awakening from sleep and produces good sleep feeling.

M-4 Effects of Vertical Distribution of Illumination and Luminance on ANS(Autonomic Nervous System)

Takayuki ISEKI and Akira YASUKOUCHI

Department of Physiological Anthropology, Kyushu Institute of Design

The purpose of this study was to clarify the physiological effects of vertical distribution of illumination and luminance on ANS. 12 healthy male subjects participated in this study. 2 lighting apparatus were employed in this experiment(A and B). The condition A-Low, A-Mid and A-High were presented by adjusting the installation height of the apparatus A(0m,1m,2m). With apparatus B, the condition B-Low, B-Mid and B-High were presented on the wall ahead by adjusting the irradiation range in 3 positions(0-70cm,70-140cm,140-210cm). Heart Rate Variability(HRV), Heart Rate(HR) and blood pressure were used as a parameter to observe the ANS reaction.

HR and Blood pressure decreased at A-Low condition. At B-Low condition, LF/HF of HRV, HR and blood pressure decreased. It was concluded that the effects of vertical distribution of illumination and luminance were significant on ANS reaction. In addition, condition A-Low and B-Low were reported as comfortable response in subjective evaluation. These results suggested that the activity of parasympathetic nerves tends to be active under the lighting condition such as the range of higher illumination and luminance distribution in low position in the interior of a room.

M-5 The Effect of Bellows Action on Heat Transfer in Clothing System

Yukiko ITO¹⁾ Yae HASEBE¹⁾ Yayoi SATSUMOTO¹⁾ and Masaaki TAKEUCHI²⁾

1)Ochanomizu University 2)Toin University of Yokohama

Bellows action is one of the most effective mechanisms to exchange air and heat inside clothing. The effect of bellows action on heat transfer in clothing system has been investigated with experimental model, whose number of opening was three patterns,[0],[1],[2]. Contrary to our expectation, the effect of permeability was small. In regard to the effect of entrance number on the bellows action, from opening position to middle position, model[1] had larger effect than model[2]. That was explained as follows. While one entrance made the air movement smooth, two entrances made the air movement turbulent. So in model[2], the air became stagnant at middle point. In conclusion, model[2] has large effect on bellows action as a whole, but at a part of position, model[1] has larger effect than [2].

M-6 Functional Comparisons between Synthetic -Fiber Wear and Cotton-Fiber Wear

Yoko NAKASHIMA Motoko FUKUZAWA
Fukuoka University of Education

The characteristics of underwear composed of polyester were investigated aiming to produce comfortable underwear from functional and psychological aspects. The following results were obtained:

- 1)In summer,the recovery rate of intra-clothes moisture was markedly higher for cotton underwear than that of polyester one in both regions of the chest and the back, showing that the former is more suitable as summer wear.
- 2)The recovery rate of intra-clothes moisture was lower when compared with the rate of intra-clothes temperature. This would be due to that after the sweat excreted from the skin is once absorbed into a fiber,complete evaporation of the moisture is difficult.