IEA VE NEWS

IEA Visual Ergonomics Technical Committee Newsletter December 2020

From the chair

Dear Readers,

Age transforms the risk taking, high performant youngest into a prudent, poorly performing elderly. I took all kind of risks as a young researcher. I investigated the effects of drugs(1) repeatedly on my vision, measured the spectral reflectance of my retina which required me to fixate a super bright Xe gas pressure lamp, scanned my retina with my own, uncertified laser setups, and recorded the effect of alcohol on my ACA gradient within a terribly large range of blood alcohol concentration. At a young age my vision was highly performant, top acuity, contrast sensitivity, accommodation amplitude and speed. It's good that I survived all my self-experiments with (probably) no irreversible impacts to my body and mind. I was not lucky with experiments about effects of age on visual functions.

Age has irreversibly affected my body and mind. Although one can cope with effects of age on vision by applying technical and organizational means, I am continuously surprised how presbyopia reminds me about the burden of age, as for instance when soldering, housekeeping or when eating an unknown dish. As a presbyope, I discovered I am released from some burdens, such as the hard to overcome cross-link of accommodation and vergence when using stereoscopic displays in virtual reality (VR). The release of the cross-link burden made me much fitter in VR than my kids and I do not develop visual symptoms, even after a prolonged duration of gaming.

A huge body of research on presbyopia is reported in the literature. Important developments and measures have been put in place to overcome handicaps caused by presbyopia at work and leisure. However, important questions about presbyopia remain unanswered. Since the 1930s we have known, although contested, that presbyopes tend to be exophoric (Eames TH, Arch Ophthalmol, 1933;9(1): 104 -105) but little is known about the causes of this phenomenon (see also debates on the Hess-Gullstrand and Duane-Fincham theories). Do neural motor patterns involved in the cross-link degenerate with age and if so, can we re-learn such patterns? Replacing the crystalline lens with an accommodative intraocular lens is not an effective means to cope with presbyopia if re-learning of neural patterns is not possible. Could part of the symptoms in presbyopes be related to the exophoric tendency? We need to learn more about presbyopia to improve visual ergonomics, especially considering the demographic change in our society and in the working population.

With best regards for the festive season and for 2021.

Marino Menozzi

IEA VE TC Chair

(1): Phenylephrine, Cyclopentolathydrochloride

Recent publications

Journal articles

- Alhusuny A, Cook M, Khalil A, Treleaven J, Hill A, Johnston V (2020) **Impact of accommodation, convergence and stereoacuity on perceived symptoms and surgical performance among surgeons.** *Surgical Endoscopy.* DOI: 10.1007/s00464-020-08167-2

- Alhusuny A, Cook M, Khalil A, Thomas L, Johnston V (2020) **Characteristics of headaches among surgeons and associated factors: A cross-sectional study.** *The Surgeon.* DOI: 10.1016/j.surge.2020.07.012

- Narayanan A, Vendkadesan M Krishnamurthy SS, Hussaindeen JR, Ramani KK (2020) **Dalton's pseudo-isochromatic plates and congenital colour vision deficiency.** *Clinical and Experimental Optometry.* DOI: 10.1111/cxo.13034

- Renzi-Hammond LM, Buch JR, Hacker L, Cannon J, Hammond BR (2020) **The effect of a photochromic contact lens on visual function indoors: A randomized, controlled trial.** *Optometry and Vision Science 97(7): 526—530.* DOI: 10.1097/OPX.0000000000001537

Conferences

Mark your calendar for the International **Ergonomics Association IEA2021 triennial congress.** It will be held in Vancouver, Canada, June 13-18, 2021, but will also include a virtual component. There will be several visual ergonomics tracks, including one in conjunction with the Ergonomics and Design for All TC, and a visual ergonomics lighting workshop. **Registration details are available at https://iea2021.org/**

The 3rd International Iranian Ergonomics Webinar and the 4th Biennial Iranian Webinar on Ergonomics will be held online on March 3-4, 2021. **http://bice4.sums.ac.ir**
The conference theme is Ergonomics and Emerging Challenges: Mobile and teleworking. One of the main themes of this conference is visual ergonomics. For more information, please contact Dr Kazemi: rezakazemi2007@gmail.com

Congratulations

Jennifer Long was recently awarded Fellow of the Human Factors and Ergonomics Society of Australia (HFESA) for her outstanding contribution to the HFESA and to the human factors and ergonomics profession. In particular, Jennifer was recognized for her work within visual ergonomics.

It's a sign of the times that the award was presented during a virtual ceremony, so this photograph was taken after the certificate arrived in the post!

Watch this space…

Visual Ergonomics Guidelines for Occupational Health

A team of researchers and practitioners in Sweden are working on visual ergonomics guidelines for occupational health. Due to be published in 2021.

Visual Ergonomics and Digital Display Use

The International Commission on Illumination recently commenced a project *CIE 3-58 Visual Ergonomics and Digital Device Use (http://cie.co.at/technicalcommittees/visual-ergonomics-and-digital-display-use).* The purpose of this project group is to revise and update a now-archived 1984 document about vision and visual display units.

Visual Ergonomics Risk Assessment Method (VERAM)

A method has been developed in Sweden to train assessors to conduct visual ergonomics risk assessments. The development of the online method has been performed with personnel from occupational health services such as ergonomists. They were invited to participate, free of charge, in a course in visual ergonomics risk assessment in exchange for using and testing the method in 10 workplaces. The last of four courses has just finished, with a total of 98 people educated. Feedback has been positive, and the trained assessors report that they find it easier to give recommendations regarding lighting and luminaire issues and placement, as well as reducing strain and headache.

There are two publications describing the reliability and validity of the method. So far it is only in Swedish, but the researches hope to expand it to other languages.

Conference report

Society of Light and Lighting Symposium – Applying Light for Human Health

Report by Jennifer Long

A 5-day virtual symposium was hosted by the Society of Light and Lighting (SLL) in England in November 2020. The virtual symposium consisted of a 1.5 hour session each day for 5 days. This meant that someone like me could attend from Australia without having to get on a plane and travel to the other side of the world – important since we are not permitted international travel from Australia due to COVID-19.

The excellent line up of speakers included Peter Thorns and Arnold Wilkins, who are members of this IEA VE TC. Topics included light and sleep; flicker, headaches and migraines; circadian function; lighting for specific environments such as schools, homes, people with dementia, and nightshift work.

The strength of the symposium was that it included both researchers and lighting practitioners, with a significant amount of discussion about the application of research to practice. Well done, SLL.

NEXT NEWSLETTER DEADLINE: 30th March 2021

Please send any visual ergonomics news or announcements to Jennifer Long at jlong@visualergonomics.com.au