Benefits of e-prescription in elderly care

T. Lindeman, J. Maijala
Mediweb Oy, Finland; e-mail: tommi.lindeman@mediweb.fi

Healthcare systems have always been considered as one of the most reluctant to the information technology. It has been estimated that near 100,000 deaths in U.S. hospitals are caused by mistakes in administering medicines. If the medical history of a patient could be available for the doctor during prescription, he could check the existing medication, known allergies and other information, which might effect the choice of the medication. The more people are having correct medical treatment, the less they are visiting the hospital. The elderly people are a special target group because they are the ones who fill up the hospitals and take most of the drugs. In U.S. it has been estimated that there are 20,000 fatal or life-threatening adverse drug events per year among the nursing home population. It has been calculated that 80% of these fatal events are preventable. Using information technology in nursing homes to track the medication given to elderly people would probably have the same effect as the public availability of the patient records. This technology could be expanded to home care and extended in such a manner that hospital visits would be reduced. Mediweb Oy has created ELRES which is open platform for e-prescription. It will increase patient safety and information security. It will also save time at all the levels from doctors to pharmacies all the way to insurance institutes and companies. This allows healthcare workers to use their time efficiently and focus on nursing instead of handling medical administration and fixing problems caused by wrongly given medicines.

PAPER SESSION 'VISION AND AGING'; CHAIR: SOHEI AKITA (JAPAN)

Aging effects of contrast sensitivity and visual function

M. Omori*, H. Ishigaki**, S. Hasegawa*, M. Miyao
*Information Technology Center, Nagoya University; Kobe Women's University;
**Aichi Institute of Technology, Japan; e-mail: masako@med.nagoya-u.ac.jp

Visual acuity declines with aging for the reasons of elastic degradation of an eyeball lens, cataract cloudiness. Moreover, it is reported that contrast sensitivity declines in a high frequency domain in connection with aging. However, in the preceding study, there have been a few studies that consider the relation between contrast sensitivity and cataract cloudiness. In the present study, we examined the subject's cataract cloudiness and 50cm near visual acuity as well as contrast sensitivity. The subjects consisted of one hundred people aged twenty to seventy-nine years, with normal or corrected-to-normal vision. The indication of cataract cloudiness had 256 levels, where 0 indicated no cloudiness and 255 maximum cloudiness. The result of 50cm near visual acuity is deteriorated after forty-five years of age. Due to presbyopia, middle-aged and elderly subjects had weaker near visual acuity than younger subjects. Similarly for near visual acuity, cataract cloudiness was severer in middle-aged and elderly subjects groups. It is show the relation between cataract cloudiness and 50cm near visual acuity. The result of cataract cloudiness became severer as visual acuity deteriorated. Contrast sensitivity was deteriorated with 100 or more the cataract cloudiness in the domain of high frequency.

Visibility of graphic text on mobile phones among elderly people

S. Hasegawa*, M. Omori**, S. Matsunuma***, M. Miyao**
*Department of Information Culture, Nagoya Bunri University; **Information Technology Center, Nagoya University; ***Telecom Express Co., Ltd, Japan;
e-mail: hasegawa@nagoya-bunri.ac.jp

Although image e-mail systems in mobile phones (MPs) are usually used for sending natural images, they are also useful for graphic text. Text with unsupported fonts can be displayed on the liquid crystal displays (LCDs) in MPs by using graphic characters. Graphic text also makes it easy to send text within graphics such as maps or comics. For example, multilingual information for foreign residents of a country, disaster maps, or typhoon information with weather charts, etc. can be send by using graphic text. Disaster prevention information or other important information sent by graphic text is necessary for persons of all age groups, including elderly people. However, small characters on LCDs in MPs are hard for elderly people to read. We researched the visibility of graphic text by measuring the variables of reading time, number of misreadings, and visual distance while subjects read aloud graphic text in MPs. We also recorded subjects' subjective evaluations every after. The subjects' visual functions of cataract cloudiness and near vision for a 50 cm distant target were also measured. The relationship between visibility of graphic text and visual functions as well as subjects' age is shown in this study.

Character size and background color in automobile display: Designing automobile display for older adults

M. Moriwaka, A. Murata
Department of Computer and Media Technologies, Hiroshima City University, Japan; e-mail: moriwaka@hfce.cs.hiroshima-cu.ac.jp

We investigated how the character size and background color affected the performance. The experimental factors were character size (small and large), background color (red and blue), and age (young and older adults). The participants were required to simultaneously carry out a primary tracking task and a secondary task such as control of an air conditioner using steering wheel mounted switches. The performance included mean task completion time and error in the secondary task, tracking error, NASA-TLX score, and psychological rating on usability. As for the young adults, the NASA-TLX score did not differ among four experimental conditions (small/red, large/red, small/blue, and large/blue). The NASA-TLX score of the older adults for the small/red condition was significantly higher than that for other conditions. For both age groups, the psychological rating of usability tended to be rated lower for the small/red condition than for other conditions. The mean task completion time of the young adults was not affected by background color and character size. On the other hand, the analysis of mean task completion time of the older adults showed a significant character size by background color interaction. The task completion time for the small/red condition was significantly longer than that for other conditions.

Arrangement of display and control in man-vehicle system: Comparison between young and older adults

A. Murata, M. Moriwaka
Department of Computer and Media Technologies, Hiroshima City University, Japan; e-mail: murata@cs.hiroshima-cu.ac.jp

The applicability of location compatibility principle to the design of display and control was discussed as a function of age. The primary experimental task was a first-order tracking task. The secondary experimental tasks included the control of an air conditioner, the operation of a radio, and the operation of a CD/MD by means of either a modal steering wheel mounted switch or a function-specific consol mounted switch. The display was arranged either in front of or on the left side of a participant. Participants were required to perform the secondary task while conducting the tracking task using a steering wheel. The performance data of the young group did not completely obey to the compatibility principle. In particular, the principle did not apply to the left-side display condition. Different from the prediction by this principle, the steering wheel mounted switch was more effective than the left-side switch even for the left-side display. The compatibility principle was applicable to both front and left-side displays for the older adults. For the front display, the steering wheel mounted switch was more effective. The left-side switch combined with the left-side display was more effective than the steering wheel mounted switch combined with the left-side display.

Comparative study of skin colour between elderly and young female under different light sources

S. Kanaya
Department of Environmental and Urban Design, Kanazawa Institute of Technology, Japan; e-mail: suekok@neptune.kanazawa-it.ac.jp

The aims of this study are to investigate the colour appearance of skins between elderly and young female under different light sources. A series of experiments have been conducted under several fluorescent lamps and LEDs of different correlated colour temperature. 10 elderly subjects and 10 young subjects were employed. The observers were asked to rate their impressions of female model' skin color on the Semantic Differential Rating Scale consisting of 22 pairs of objectives. As a result, it is clear there are some significant differences between elderly and young female.

Fatigue and visibility when reading with LED fluorescent light: Comparison between young and older adults

A. Murata*, S. Takashi*, W. Yuriko*, M. Makoto*, S. Misoroku**, N. Masanori**
*Department of Computer and Media Technologies, Hiroshima City University;
**Toyota Gosei Co., Ltd., Japan; e-mail: murata@cs.hiroshima-cu.ac.jp

Using ERP and psychological rating of visibility, the fatigue and visibility when reading with four types of individual reading lights was evaluated as a function of age. For each reading light, the reading was continued for one hour. Four types of lights were (i) white LED with short wavelength, (ii) white LED, (iii) incandescent light with dispersing film, and (iv) fluorescent light with ND film and dispersing film. As for the older adults, the rating of visibility or readability of texts was high for the white LED with short wavelength. On the other hand, for the young group, the rating was not different among four types of lights. Concerning the older adults, the evaluation of fatigue induced during a one-hour reading by means of ERP, especially P300 amplitude and latency, showed that the fatigue was less for the white LEDs than for the incandescent and fluorescent lights. On the other hand, as for the young adults, the fatigue did not differ significantly among four types of lights. The white LED with short wavelength was found to be effective for the older adults from the viewpoint of psychological evaluation and ERP measurement.