

2013 International Students Academic Conference

○ **March 20, 2013**

○ **Location**

Yuanpei University, Hsinchu, Taiwan

International Conference Hall, Kuang-En Building

Organizer

Yuanpei University, Hsinchu, Taiwan

Co-organizers

Environmental Protection Bureau of Hsinchu County, Taiwan

Department of Education, Hsinchu City, Taiwan

Environmental Protection Bureau of Hsinchu City, Taiwan

Importance of Children's Vision Screening in the Development of Vision: My Practical Experience in Vision Screening for Children

Manami Hirayama

Department of Orthoptics and Visual Sciences, School of Health Sciences,
International University of Health and Welfare,

At birth our eye structures and neural system, through which the eye sends visual information to the visual cortex, is not complete enough. They develop through the accumulation of visual learning and experiences during early childhood. Visual functions, such as form, color, motion perception, stereopsis and so on, depend on normal development during childhood. However, there exists a "sensitive" or "critical" period during which neural development can be affected by abnormal visual experiences. This period continues from birth until about 8 years of age, although the period length varies depending on visual function. Therefore, it is important to detect and treat eye conditions, such as strabismus and/or ametropia, which interfere with the visual input necessary in order to develop normal function in the visual neural system during the sensitive period.

In this presentation, I will describe our program and the results of vision screening of children 4-5 years of age which was conducted by our 3rd and 4th year students during practicum training. Our vision-screening program included (1) a single Landolt test, (2) an eye-alignment check, and (3) a stereoscopic vision test (the Titmus stereotest). The subjects were 211 children of 4-5 years of age who were attending several kindergartens in our city. The results were the following. For test (1) 86% out of all the children had a visual acuity (V.A.) score of 1.0 or more, which is considered normal for children 4-5 years of age. However, the remaining 14% had a V.A. score of 0.9 or less, which indicates the possibility of poorly developing eyesight. For test (2) some types of abnormal eye alignment (exotropia, intermittent exotropia, vertical strabismus, etc.) were detected in 2% of the children. For test (3) the overwhelming majority of the children had good stereoscopic vision, while 4% of the children exhibited poor results. A poor result in any one of the three tests indicated the possibility that the child might suffer from the underlying condition of amblyopia, which spoils normal development of the neural system involved in vision.

Over the past seven years our vision-screening program for 1,352 children has identified a total of 121 children with poor results whom an eye doctor should check in further detail. These results suggest that vision screening for children is important in ensuring normal vision development. Since 1965, Japanese law has required that every child receive health examinations at ages 3 and 7 which include a vision screening. Nevertheless, there has not yet been thorough enough implementation of vision screening for children nationwide, especially in regions outside of big cities. One of the reasons may be that there is not yet a sufficient number of orthoptists in Japan; at present there are only about 10,000. In the near future when I become an orthoptist, I hope to perform vision screenings for children in order to help them develop normal vision.

Keywords: development of vision, a sensitive period, children's vision screening