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Influence of Readability of Paper-Based Braille on Vertical and Horizontal Dot Spacing in Braille Beginners

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Abstract : The number of people who become visually impaired and do not have sufficient tactile experiences has increased by various disease. Especially, many acquired visually impaired persons due to accidents, disorders, and aging cannot adequately read Braille. It is known that learning Braille requires a great deal of time and the acquisition of various skills. In our previous studies, we reported one of the problems in learning Braille. Concretely, the standard Braille size is too small for Braille beginners. And also we are short of the objective data regarding easily readable Braille size. Therefore, it is necessary to conduct various experiments for evaluating Braille size that would make learning easier for beginners. In this study, for the purpose of investigating easy-to-read conditions of vertical and horizontal dot spacing for beginners, we conducted one Braille reading experiment. In this our experiment, we prepared test pieces by use of our original Braille printer with controlling function of Braille size. We specifically considered Braille beginners with acquired visual impairments who were unfamiliar with Braille. Therefore, ten sighted subjects with no experience of reading Braille participated in this experiment. Size of vertical and horizontal dot spacing was following conditions. Each dot spacing was 2.0, 2.3, 2.5, 2.7, 2.9, 3.1mm. The subjects were asked to read one Braille character with controlled Braille size. The results of this experiment reveal that Braille beginners can read Braille accurately and quickly when both vertical and horizontal dot spacing are 3.1 mm or more. This knowledge will be helpful data in considering Braille size for acquired visually impaired persons.

Keywords : paper-based Braille, vertical and horizontal dot spacing, readability, acquired visual impairment, Braille beginner
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