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Design for Visually Impaired People Based on Their Functional and Emotional Requirements

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Abstract

Human beings depend on vision to obtain external information from their surroundings. It is, therefore, difficult for visually impaired people to perceive visual sensations in their daily lives. Currently, there are many related designs for the convenience of visually impaired people in urban construction and daily use. Still, little research has been done on their clothing design, especially designs that combine their functional and emotional requirements. In this study, interviews were conducted to examine the difficulties visually impaired people face in dressing and their functional and emotional requirements for clothing. Based on the design investigation of visually impaired people and the interview survey on their requirements for clothing, this study also explored the application of the sensory compensation design concept (mainly tactile compensation) in clothing design. As a result, four clothing styles were designed to meet their physical and psychological needs. It is hoped that the study will provide a way of thinking about clothing design for visually impaired people and call for more attention and help.

Keywords: Functional Requirements; Emotional Requirements; Visual Impairment; Tactile Identification; Sensory Compensation

1 Introduction

According to data from The Second China National Sample Survey On Disability [1], about 85 million disabled people in China, among which 1.2 million are visually impaired, accounting for 14.86% of the total population. Visual impairment refers to those who are blind and those with poor vision [2]. Most people lose their vision due to macular degeneration, glaucoma, and diabetes, while a small percentage are born without sight. Human acquisition of external information relies heavily on vision, and about 80%-90% of the information captured and perceived from the surrounding environment depends on vision [3]. Therefore, visually impaired people have

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many physical and psychological obstacles daily. Products tailored for them need to take into consideration their respective requirements.

Currently, the research and the design of products related to the disabled are gradually developing domestically and overseas, most of which are designed specifically for the physically disabled and hearing impaired [4]. The design for the visually impaired initially focused on studying urban safety and facilities [5-7], and later, daily necessities appeared. However, few studies have been on clothing design for the visually impaired. The study developed a range of clothing by investigating and analysing visually impaired people's functional and emotional needs. It is expected to facilitate the daily wear of the visually impaired and, to some extent, improve their self-esteem and confidence.

2 Methodology

2.1 Design Investigation for Visually Impaired People

Firstly, this study investigated the market of existing blind products, including infrastructure, daily products and clothing-related products, to understand product characteristics, design ideas, and methods.

2.2 Requirements Investigation of Visually Impaired People

Visually impaired people crave acceptance just as sighted people do. We can design for them by incorporating their needs into the corresponding products. In this paper, a group of visually impaired people were interviewed to investigate the problems they encountered while wearing clothing and their requirements for clothing. Interviews were conducted with 18 people, ten males and eight females, aged 28 to 60.

3 Results and Analysis of Product and Requirements Investigation

3.1 Analysis of the Design Method of Products for Visually Impaired People

The most common example of a product used by the visually impaired is the blind road (Fig. 1). The surface of the road is secured by specialised floor tiles on footpaths and other areas of importance to help provide a reference point and guide their direction using blind guides and the touch of the foot [8]. The Blind Water Cup [9] and door handle (Fig. 2) are other designs that rely on tactile recognition of braille or an extended form. A Blind Adapter (Fig. 3) designed by Ching-Tzu Tsai [10] is equipped with a circular magnetic electrode, non-directional, and can be easily inserted using magnetic force. The magnetic plugs can prevent the blind from being tripped by the cord. Meanwhile, the plugs have Braille labels that tell visually impaired people what kind of appliance they are using. This design is completed by combining Braille tactile and