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RESEARCH OF DESIGN OF WEARABLE DEVICES FOR THE ELDERLY

LIU Yi[1,2], RUBANKA Alla[1]

[1] Kyiv National University of Technologies and Design, Kyiv, Ukraine
[2] Shaanxi University of Science & Technology, People's Republic of China
1033970367@qq.com,

With the gradual aging of the population, the health management of the elderly has been increasingly emphasized, and smart wearable devices provide effective product service solutions with their convenience and interactivity. The reaseach explores the psychological and physiological needs of the elderly population through the literature analysis method, which must give full consideration to the changes in the visual perception of elderly users, and proposes a design strategy from the color and interaction design level of the product to ensure that the product is both practical and able to meet the personalized and emotional needs of the elderly.

Key words: *Smart Wearable Devices, Elderly Health Management, Humanized Design Principles, Interactivity, Visual Perception.*

INTRODUCTION

Older adults are challenged by the increased incidence of chronic diseases and often need to manage multiple health issues, which makes it particularly important to regularly monitor their health status. The emergence of smart wearable devices provides a convenient and interactive health management tool for the elderly to effectively monitor their health conditions[1]. Therefore, the design of wearable healthcare products for the elderly must take into full consideration the physiological and psychological needs of the elderly, in addition to meeting functional needs, in order to achieve deep care for the elderly. This is not only a display of technological innovation, but also a full embodiment of humanized design.

PURPOSE

This study proposes scientific and humanized design guidelines for smart wearable products for the elderly population to ensure that the designed smart wearable products meet the actual use needs of the elderly and are easy to operate and accept. By achieving these design goals, this study expects to effectively improve the health management ability and quality of life of the elderly, and provide more optimized design solutions for elderly health products.

RESULTS AND DISCUSSION

In this study, we adopted the literature analysis method and comprehensively analyzed the relevant academic papers in the past five years, and

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came to the following conclusions: firstly, the physiological functions and visual capture ability of the elderly continue to decline with age, and they show stronger visual sensitivity to colors with higher saturation[2]. In addition, the decline in physiological functions is accompanied by a weakening of cognitive comprehension, which leads to a higher cognitive load[3-4]. Therefore, the interactivity and visual cognitive characteristics of products need to be considered comprehensively in design to ensure that the product design can be adapted to the specific needs of elderly users.

In terms of product interactivity, products need to be based on ease of use, closely integrating the four core elements of intuitiveness, error-proofing, personalization and emotional connectivity. Intuitiveness reduces the difficulty of operation for older users by simplifying the interface layout and providing clear instructions. Error-proofing refers to strategies designed to prevent user errors, such as clear feedback signals and simplified operating procedures, to ensure a safe and reliable process. Personalization allows products to provide customized services based on the personal preferences and habits of older users to enhance user satisfaction, such as skeuomorphism of the usage interface and dialectalization of voice processing. Emotional connectivity promotes interactions and connections with family, friends and society through product design to reduce loneliness and enhance social engagement. The common goal of these design principles is to provide elderly users with an emotionally rich product experience that is convenient to use and meets their individual needs, thus playing an active role in improving their quality of life and health management efficiency. As an example, the HUAWEI WATCH GT-3 is designed with an intuitive and clear interface layout, featuring large icons and a concise customized menu structure, thus reducing the cognitive burden on elderly users during use. In addition, the watch provides instant feedback through visual and auditory signals, reducing the possibility of misuse. In terms of emotional connectivity, WATCH GT-3 has a built-in health monitoring system and SOS remote assistance system, which enhances the caring and emotional attributes of the product.

Finally, accounting for the altered visual perception of older users, the design should refrain from utilizing low contrast and subtle color gradations, opting instead for pronounced color contrasts to enhance the prompt recognition of information[5]. In particular, the application of bright colors to key operating buttons or prominent display areas not only attracts users' attention and prompts correct operation, but also effectively reduces the risk of misuse, thereby enhancing operational efficiency. By meticulously configuring colors and incorporating visual cues, this color design strategy strives to enhance the readability and usability of the product. Simultaneously, it fulfills the emotional resonance and aesthetic preferences of elderly users, resulting in a design solution that is both visually appealing and functionally effective.

CONCLUSIONS

In this study, the physiological and psychological needs of the elderly group are identified and analyzed in depth by employing the literature analysis method, in order to propose specific interaction design principles for smart wearable products that meet the needs of this group. Through a case study focusing on the HUAWEI

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WATCH GT-3, the research illustrates how wearable device design integrates intuitive operations, error-proof features, personalization options, and emotional elements to reduce the cognitive burden on elderly users and boost both efficiency and satisfaction in their use. In addition, the study emphasizes the importance of visual perception for older users, recommending the use of clear color contrasts and user-oriented designs to improve the readability and ease of use of the product, thereby satisfying the aesthetic and emotional needs of older users and enhancing their quality of life as well as the efficiency in health management.

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ЛЮ І., РУБАНКА А.
ДОСЛІДЖЕННЯ ДИЗАЙНУ НОСИМИХ ПРИСТРОЇВ ДЛЯ ЛІТНІХ ЛЮДЕЙ

З поступовим старіння населення все більше уваги приділяється управлінню здоров'ям людей похилого віку, а носимі смарт-пристрої забезпечують ефективні рішення для вирішення цієї задачі завдяки своїй зручності та інтерактивності. У дослідженні проаналізовано психологічні та фізіологічні потреби людей похилого віку на основі літературних джерел, встановлено, що смарт-пристрої повинні повністю враховувати зміни у візуальному сприйнятті літніх користувачів. Запропонована стратегія дизайну на рівні кольору та взаємодії продукту з метою гарантування одночасної практичності виробу та його здатності задовольнити персоналізовані та емоційні потреби людей похилого віку.

***Ключові слова:** розумні пристрої, управління здоров'ям людей похилого віку, гуманізовані принципи дизайну, інтерактивність, візуальне сприйняття.*