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COLOR PSYCHOLOGY IN INTERFACE DESIGN

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Color in interface design is not only an aesthetic expression, but also a bridge between applied function and personal emotional expression. This paper aims to explore the application of color in the interface design and the influence on the user's cognition and emotion. By analyzing the characteristics of color temperature, weight, association and crowd preferences, analyzing the applicability and application methods of color from the perspectives of functional level of interface, icon semantics and adaptation field, aiming to put forward reasonable and diversified color application strategies for the interface design.

Key words: human-machine interface, interface design, color, psychology, icon design, graphic design

INTRODUCTION

Color exists in people's daily life. When observing a thing, the sensory organs first respond to color, followed by the object itself. In the first 20 seconds of the response, 80% of the time is in the color perception stage, while only 20% is in the perception of object form. In the process of human-computer interaction, in addition to the normal sense of touch, auditory interaction, the visual color psychology and color aesthetic characteristics will also affect the interaction behavior, the influence of color perception not like body movements bring fatigue so intuitive, but in the user in the process of subtle influence [1,2]. British art psychologist Blumer believes: "Color can arouse people's various emotions, express people's inner emotions through color, and can even affect people's physiological feelings through color." Therefore, in interface design, color It will directly affect the overall effect of the interface. Reasonable use and distribution of colors can not only bring diversified expression styles to the interface, but also ensure the rationality and applicability of interface operations [3].

PURPOSE

In the current interface design, designers use diversified colors to beautify the interface style, which is easy to ignore the influence of color on human-machine interaction experience. This paper aims to explore the application of color in the interface design and the influence on the user's cognition and emotion.

RESULTS AND DISCUSSION

The relationship between the basic concept of color and users' psychological cognition mainly includes the following four points:



1. The colors can be divided into warm colors, cold colors and neutral colors. The use of cold and warm colors are not only reflected in the overall style of the interface, but also covered in the design of each functional icon.

2. The weight of color is not the traditional sense of the higher the color purity, the heavier the visual sense, the lower the purity, the lighter the visual sense, but the comprehensive consideration of comparison according to different color phase, lightness and purity.

3. The association of color refers to the effect of their own cognition and the correlation of color corresponding objects, and can change their own emotions according to the corresponding objects of association. Red can remind users of the sun, flame, enthusiasm, danger. Green can be associated with nature, environmental protection, safety, quiet. Blue can be associated with the ocean, the sky, stability, calm. Yellow can associate with wealth, harvest, reminder, lively. And purple can be associated with noble, mysterious, negative and so on. The semantic associations of color also vary in different regions and countries.

4. The user's age and gender will affect the perception and preference of the interface color.

According to the basic characteristics of color, combined with the interface design method, the following three points can be obtained.

The relationship between color and the hierarchical division of interface functions. In interface design, color can not only add rich changes to the interface, but also divide the layout effect of the whole interface and the functional level of information. On the information level classification, mainly using different saturation or lightness color to distinguish different interface area and icon controls. For the important main function icon, will use the high saturation bright color design, have an obvious visual effect. For secondary function icon, will use low saturation dark design, to distinguish it.

The relationship between color and cognitive semantics of interface icons. The color collocation can help users to understand the information or the condition of the device, and simplify the corresponding operation. In the icon design, the bright color with high saturation when the trigger is triggered while the trigger is gray with low saturation, which reduces the cognitive compliance of the operator in human-computer interaction. Combining the association angle of color with the interface elements, can serve as a reminder of information through color, such as red is often reminiscent of failure and danger, is used to indicate the occurrence of a current device error or emergency. Correspondingly, in the icon design is usually in the form of alarm lights. Yellow indicates the warning, abnormal conditions. Green indicates a continuous, normal situation, no additional operations are required.

The relationship between color and interface application field adaptation. Business application interface design, the page covers a large number of rich product categories and information, usually use high saturation warm color design, create active interface atmosphere, at the same time, warm color can not only provide more eye-catching information, but also can stimulate the user's



consumption desire, so buy or pay controls usually designed into red or orange, such as China's Jingdong, Pingduoduo and Taobao app design (Fig. 1).



Fig. 1. Chinese e-commerce platform app interface design:
a – Jingdong, b – Pingduoduo, c – Taobao

Medical application interface, usually with light blue, white, light green color design, white in the medical field represents a clean, sterile, blue represents the calm, green represents the hope and healthy psychological feelings, can make itself is in a state of tension or medical staff to relieve anxiety and tension, provide a sense of relaxation and trust. At the same time, the overall indoor equipment and architectural design style of the hospital have been mainly white and light gray, which can be better integrated into the overall environment and reduce the visual conflict caused by the color difference of the equipment.(Fig. 2).



Fig. 2. Medical application interface design (ZHOU Tianyu, 2024)

Complex information application interface, such as monitoring interface, industrial system, etc., usually in the form of gray, blue collocation design, thus reflects the sense of science and technology and the rigorous state, at the same time the color of the overall interface with dark background with white text information, make the interface color brightness and the night environment, reduce the screen brightness to the user eye stimulation, give full consideration to the user needs to work at the screen for a long time, so as to reduce the visual fatigue (Fig. 3).



Fig. 3. Complex information system interface design (ZHOU Tianyu, 2024)

CONCLUSIONS

Based on the analysis of the basic characteristics of color, and discusses the role of color in the interface function information level, can enhance the user for the overall perception of the interface, and the color and the icon semantic cognition, can improve the icon recognition and significance, finally analyze the application of color and performance effect, so that the color can be configured according to the different usage situation, from the interface designers to provide practical guidance and suggestions.

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ПСИХОЛОГІЯ КОЛОРУ В ДИЗАЙНІ ІНТЕРФЕЙСУ

Колір в дизайні інтерфейсу – це не тільки естетичне вираження, але і сполучник між прикладною функцією і особистим емоційним сприйняттям. Ця стаття має на меті дослідити застосування кольору в дизайні інтерфейсу та вплив на сприйняття та емоції користувача. Проаналізовано характеристики колірної температури, ваги, асоціацій та маси, висвітлено методи застосування кольору з точки зору функціонального рівня інтерфейсу, семантики іконок та області адаптації, запропоновано приклади різноманітних стратегій застосування кольорів для дизайну інтерфейсу.

Ключові слова: людино-машинний інтерфейс, дизайн інтерфейсу, колір, психологія, дизайн іконок, графічний дизайн.