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Human-Computer Interface Design Based on Design Psychology

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Abstract: **In this new era of rapid development, product design not only needs to meet some mechanical and practical needs, but also needs to meet people's emotional and psychological design needs. In the past, the traditional human-computer interaction interface can not meet the needs of people for human-computer interaction interface in the current era, so it is necessary to integrate some psychological design content. Therefore, in order to improve the user's experience of human-computer interaction interface, this paper puts forward the research method of human-computer interaction interface design based on design psychology. On some related problems of psychology, this paper analyzes some practical problems in the design of human-computer interaction interface based on design psychology from the aspects of human action and perception, and according to the design psychology After that, the proportion of different feelings in human-computer information received by human beings and the factors concerned by Chinese users in the process of human-computer interface operation are investigated. The results show that people have new requirements for human-computer interaction interface design The experimental data and results, so as to develop a set of suitable for the new era of human-computer interaction interface design research based on design psychology.**

Keywords: Core Competitiveness, Design Psychology, Human-computer Interaction Interface, Philosophy Law

I. Introduction

Design psychology [1-3] is a discipline of human psychological needs through the role of consciousness in design. Explore the psychological reaction of designers in the process of creation and explore society. For example, people's psychological reaction in creative practice is a continuous improvement method in design science. It promotes the continuous improvement of design theory and makes it reflect and meet people's psychological needs.

Human computer interaction (HCI) is a subject that makes computer-based systems most easily used by human beings through design and evaluation. It is a science that studies the design, evaluation and implementation of interactive computing systems and related phenomena. Human computer interaction is a comprehensive science, involving computer science, psychology, sociology, industrial design and graphic design. Human computer interaction interface, also known as user interface, refers to the way and method of human and product interaction. In reference [7], Chen Hong proposed an interactive design method of self-service terminal interface based on user cognitive ability. In this method, designers need to study the users first, determine the user groups that need to be concerned, and then analyze the cognitive ability, establish the user cognitive load model, describe the user interaction behavior, determine the basic interaction framework, and then use the general usability design model to establish the interaction design matrix and propose the interaction design scheme. In reference [8], Jiahao Wang studied how to improve the existing human-computer interaction design by considering self-efficacy to make users more willing to interact with a new system. This paper reviews the theory of self-efficacy and the existing display design principles. Then, by improving the user's self-efficacy, the paper puts forward suggestions for improving the user interface design, and evaluates the changes of user's feelings in the process of interaction. In the design of human-computer interaction interface, scholars have considered user experience, but it is not too deep. Therefore, based on design psychology, this paper focuses on the application of user experience in human-computer interaction interface design.

This paper mainly studies the design method of human-computer interaction interface [9-10] Based on design psychology, in order to cope with the impact of the new era on the development of human-computer interaction interface design of design psychology. This paper puts forward the research method of human-computer interaction interface design based on design psychology. On some related problems of psychology, this paper analyzes some practical problems in the design of human-computer interaction interface based on design psychology from the aspects of human action and perception, and plans according to the general design rules of design psychology, so as to formulate a set of suitable for the new era This paper presents a new project of human-computer interface design based on design psychology. Through the analysis, the research method proposed in this paper provides a new development idea for the research of human-computer interaction interface design based on design psychology.

II. Research Method of Human-computer Interface Design Based on Design Psychology

A. Design Psychology

Design psychology began to rise in the 1940s. Its original goal was ergonomics, but it was limited to war. Now, of course, the scope is very narrow. Therefore, from the 1960s to the 1990s, design psychology has been more and more accepted by the public, and has been widely used in general design, and gradually developed into design psychology with modern significance. The theoretical basis of design psychology mostly comes from related disciplines, which is an interdisciplinary subject. People gradually found the relationship between its research content and many psychological schools. Only when they are combined organically can design psychology become a professional and

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systematic tool discipline.

B. Research Method of Human-computer Interface Design

In the beginning, users are striving for higher, faster and safer computers. However, with the development of information technology and the popularization of an information application system, users have been committed to seeking more suitable, easy-to-use and satisfactory computers. They hope that in the process of communicating with computers, they will gradually understand the needs, hobbies and degrees of users, and the knowledge of users will develop together with computers. The improvement of the technology level and application effect of this kind of man-machine intelligence cooperation is an important sign that computer and artificial intelligence technology has entered a new stage. In the era of computer-centered electronic products, human-computer interaction technology has become one of the national research hotspots.

III. Experimental Correlation Analysis

A. Experimental Background

From the perspective of design psychology, the occurrence of human consumption behavior is caused by three factors: demand, motivation and behavior, among which demand leads to the engine and then dominates the behavior. Demand is a group's desire for a certain goal, and also the most fundamental reason for certain behavior. Therefore, when exploring the research methods of human-computer interaction interface design based on design psychology, we should first grasp the needs of consumers.

B. Experimental Design

Because some consumer groups have common goals and needs, design psychology divides different individuals into the same group according to the same needs. In order to design excellent human-machine interface design products based on design psychology, it is necessary to conduct research on the market of colleges and universities in the early stage. The main object of study is the vast number of College consumer groups. According to the actual situation, this paper first classifies the consumer groups, and then according to the classification results, makes a detailed and in-depth analysis of different consumer groups in the form of a questionnaire, so as to grasp the consumer market more accurately and comprehensively. The specific results are shown in Table 1:

Table 1. Consumer groups of man-machine products in Colleges and universities in China

Consumer groups	age group	University activities	Degree of cultural participation in Colleges and Universities
Students in school	18-34	Entertainment, learning	Cultural experience and creation
Faculty	25-62	Teaching and research work, office	Cultural experience, guidance and creation
Alumni	21-85	Independent lifestyle	The plot, memory and memory of alma mater
Tourist	16-90	Independent lifestyle	Sightseeing

IV. Discussion

A. Analysis of Human-computer Interface Design Based on Design Psychology

According to the research of design psychology, the user's action thinking mode can be divided into four modules: perception, emotion, thinking, and action. From the beginning of consumer discovery to the completion of consumer behavior, the formula can be expressed as S-O-R, that is, stimulating information processing response. It can be explained that under the stimulation of certain sensory organs, a person's commodity and human brain's analysis and processing, and the user's action thinking mode can be divided into four modules: perception, emotion, thinking, and action. We can judge whether the goods meet their own needs and cope with consumption. Therefore, whether a product can effectively stimulate the consumer's sensory organs, make its brain function into the cognitive stage of attention, perception, memory, and association, and then trigger the emotional and psychological activities such as memory, is the key for consumers to judge whether to buy the product. The proportion of different senses received by human senses was investigated. The results are shown in Figure 1:

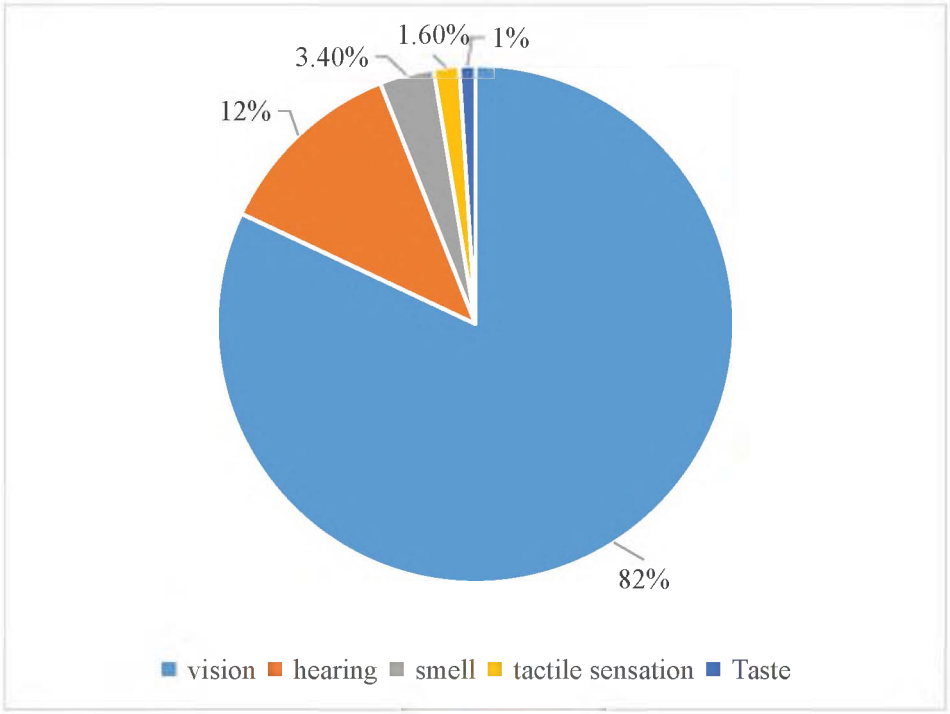

Figure 1. The proportion of different senses in the information received by human senses

As can be seen from Figure 1, the proportion of vision is 82%, which accounts for a large part of the sensory system. It is very important to use visual stimulation to attract consumers' attention. We can use unique colors to attract consumers' attention. In the process of product design, products play a decisive role in the visual stimulation of consumers, because no matter the shape, color, graphics, and materials, products are transmitted to consumers through human eyes. Without the visual stimulation of products, the subsequent consumption process cannot be discussed. Therefore, in the future, when it comes to the design of human-computer interaction interface based on design psychology, the more visual design should be integrated.

Although the research on the design of human-computer interaction interface is not as prosperous as that of software and network products, with the development of the times, people's pursuit of the quality of household electrical appliances, which is closely related to the quality of life, will surely make the design of human-computer interaction interface of home appliances get due attention, and encourage more enterprises to invest resources in the research of home appliance interface information and interaction mode, This will greatly improve the research level of user research, interface information transmission factors and user experience in the future. The proportion of factors that Chinese users pay attention to in the operation of the human-computer interaction interface is investigated. The results are shown in Figure 2. I represents appearance, II indicates the function, III represents color matching, IV represents the human-machine size, and V represents interface layout.

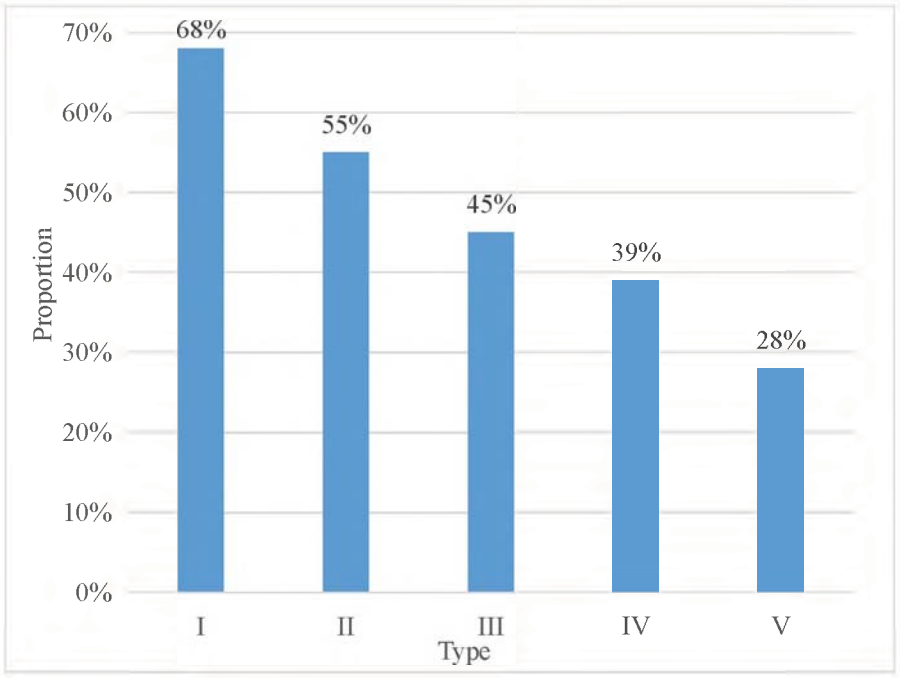

Figure 2. User's attention to the above factors during operation

As can be seen from Figure 2, the user's attention to the appearance and shape is 68%, the user's attention to the function is 55%, the user's attention to the color matching is 45%, the user's attention to the man-machine size is 39%, and the user's attention to the interface layout is 28%. It can be seen from the above data that the user's attention on the human-computer interaction interface is mainly focused on the appearance and function. Therefore, when designing the human-computer interaction interface based on design psychology, the enterprise must conduct more design research on the content shown in Figure 2, so as to increase the user's experience of the human-computer interaction interface and enhance the core competitiveness of the enterprise.

B. Prospect of Human-computer Interface Design Based on Design Psychology

In recent years, the design method of the human-computer interface has changed a lot, including vision and interaction. The design of these products is no longer just mechanical and cold-blooded, but gives more connotations to the products, and the way to communicate with users is also more diverse. Designers should not only consider innovative forms, but also design products on the basis of "people-oriented". The designed products should meet the emotional needs of users, so as to have a good user experience.

Human-computer interaction is diverse, desktop and non-desktop interface, visible interface and invisible interface will coexist at the same time. The virtual world will be more natural and "seamless" embedded into people's real world. Desktop interaction research will no longer occupy the mainstream; mobile product interaction research will gradually become the focus. Network and computing will enter the family and life, and people can interact with each other simply and naturally.

The concept of "human" is very important for contemporary design works. When designing a new work, it is not enough to focus on the work itself. We should also stand in the audience's position to think about how to influence consumers' ideas and how to stimulate consumers' thinking. That's why we should learn design psychology because based on the theory of design psychology, we can expand our thinking and let designers understand key points and design from different angles. This is the development direction and trend of our times.

In the design of modern human-computer interaction interface, people's feelings and experience are injected into the design theory course. Different from the traditional design concept, modern design has more and more requirements and restrictions, and people have become the most important determinant of design. The higher the level of design education, the more theoretical support of design psychology is needed. Therefore, we should introduce personal psychology, consumer psychology, design thinking, user research, and other aspects of design psychology into the design art education teaching reform. Using the knowledge of design psychology to carry out the teaching reform of design art education has practical significance for students' professional courses learning and future employment. The reform of education and teaching can make the trainees better face the challenges of different cultures, different regions, and diversified market demands, better understand the interaction between people and products, design marketable products, and formulate appropriate publicity, promotion and promotion means, so as to improve the design efficiency, usability, usability, and purpose, and improve the market competitiveness of enterprises.

Generally speaking, the field of human-computer interaction is still a comprehensive subject. Its development needs the joint efforts of computer hardware, software, network, psychology, ergonomics, linguistics, and other disciplines. In the future intelligent natural interactive environment, because the computer has intelligent learning ability, we expect that the future usability evaluation process is the process of computer continuous learning, and also the process of improving the interactive interface of the computer, so as to better understand the user's intention and improve the user's satisfaction. The future research direction of this paper is not only to analyze how to follow the design principles to improve usability and user experience, but also to change the design of the existing interactive interface to improve usability under the guidance of design principles.

V. Conclusions

This paper mainly introduces the research methods of human-computer interaction interface design based on design psychology. With the continuous development of China's economy and the continuous progress of the times, the traditional research methods of human-computer interaction interface design have already lagged behind the times. People's demand for human-computer interaction interface is more and more inclined to emotional, psychological, and other aspects. Therefore, in order to adapt to the new requirements of human-computer interaction interface in the new era, this paper puts forward the research method of human-computer interaction interface design based on design psychology. This paper investigates and studies the development status of human-computer interaction interface design research methods based on design psychology in China, and understands the frontier demand of human-computer interaction interface in the new era, so as to formulate a set of research methods of human-computer interaction interface design based on design psychology which is most suitable for the development of the new era.

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