Research on Sleep APP Design Based on Visual Communication Analysis

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DOI: 10.32629/memf.v3i6.1060

Abstract: This research focused on the current demand for sleep products, analyzed the demand for healthy sleep products in today's society and recognized the importance of further visual communication for users of sleep products. This research also analyzed the function and structure of sleep hardware and software products, quantitatively analyzing their TGI index and penetration rate. The relationship between them and the visual communication of information was explored. The current situation of the visual communication part of the sleep APP products was analyzed. The design strategy of highlighting the visual communication focus, fitting the usage scenario and enhancing the branding of the product was proposed. This research provided a future direction for the design of health software and hardware products.
***Keyword*:** sleep products, APP, visual communication, health design

1. Background of the research

In recent years, as sleep problems become more and more prominent, the market for sleep products also become larger[1]. The middle-aged and elderly groups have a prominent demand for sleep-related products. Sleep products are a combination of hardware and software, and APP is one of the important part of sleep products[2]. The use of APP to communicate with the user have become a major concern. Most of the existing research on sleep health has been conducted from a medical and technical perspective, few research has been conducted in the direction of visual communication[3]. Therefore, the analysis and study of health mobile APP interface design based on visual communication is very important.

2. Function classification of healthy sleep products APP

Nowadays, mobile smart terminals are becoming indispensable products for people, and APP for healthy sleep products have become unique products in today's era [4]. At present, sleep smart products can be roughly divided into three categories: independent use of APP, hardware use, APP combined with hardware[5]. It can be seen that the sleep product APP is not only a medium to communicate with the internet, but also a bridge to communicate with the information of hardware products.

According to the sorting and summary of the core functions, the function can be subdivided into five types: sleep monitoring, sleep situation display, timing setting, hardware control, and sleep assistance. Figure 1 is the analysis of the product usage. Figure 2 is the analysis of questionnaire survey results related to permeability and TGI index. The penetration rate and TGI index of each sleep APP were calculated. The penetration rate and TGI index of the main functions were deduced according to the function occupancy rate (the number of people over 45 years old in China has reached 509 million). The product influence analysis in Figure 3 and function influence analysis in Figure 4 were carried out.

	蜗牛睡眠	Sleep cycle	Sleep better	小米运动	C-life 睡眠
Level of evaluation	4+	4+	4	4	4+
Frequency of use	20/30 Month/session	18/30 Month/session	15/30 Month/session	22/30 Month/session	20/30 Month/session
Number of users	3900W+	2000W+	1000W+	3000W+	500W+
With or without hardware	Yes/ No	No	No	Yes	Yes
Hardware equipment	Smart Pillow	No	No	Bracelets, watches, scales, smart running shoes	Aromatherapy Diffusers, Smart Lamps, Smart Air Conditioners, Sleep Monitors
Product price	0 - 699 RMB	0-12 RMB	0	150-700 RMB	0-2099 RMB

Figure 1. Product usage

	蜗牛睡眠	Sleep cycle	Sleep better	小米运动	C-life 睡眠
Occupancy rate among those using the Sleep APP	50.00%	25.00%	8.33%	25.00%	4.16%
Occupancy rate among those aged 45+ using sleep APP	44.82%	17.24%	6.90%	20.69%	5.17%
Occupancy rate among those surveyed	14.28%	5.95%	2.38%	7.14%	1.78%

Figure 2. Analysis of questionnaire survey results related to permeability and TGI index

Figure 3. Product influence analysis

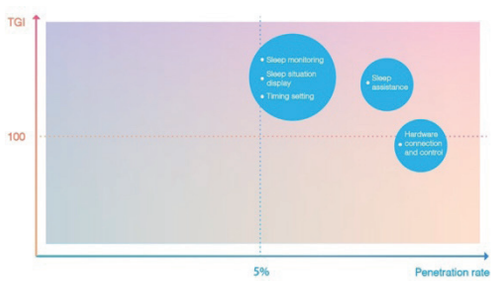

Figure 4. Function influence analysis

The survey was conducted among the middle-aged and elderly people (over 45 years old) who use sleep APP. The penetration rate, and TGI index of different sleep APP were obtained. The above tables were obtained by analyzing the proportion of the main functions of each APP. The current popularity of the main functions can be seen from the above figures. In general, these functions are preferred in sleep APP. The TGI index of sleep assist function is high, but the penetration rate is not high, the need of sleep assist function among the middle-aged and elderly people are higher than other age groups. In further research, it was found that most design feature are so similar, so the users will gradually lose interest in them. Therefore, it is necessary to enhance the characteristics of its functional blocks and optimize the user experience. Although the penetration rate of hardware control functions is high, the TGI index is low, it can be seen that most users have a positive attitude towards hardware devices, the middle-aged and elderly people have a low degree use of them. According to a survey of the middle-aged and elderly peoples, most respondents said that they would not use products connected with hardware devices. The APP is used to connect with hardware devices, which is more troublesome and expensive than using APP directly. As a result, some unnecessary hardware equipment is unwilling to purchase. This has limited the use of users to a certain extent. Therefore, such functional products should highlight product features and brand image, expand promotion efforts, enhance marketing means.

Through the use of sleep health software and hardware smart devices, APP can provide more professional and accurate data information for the user. The current process of processing user data, can be summarized into three stages: data collection, data analysis and data feedback.

The APP interface will clearly and uniformly express the operating information of the corresponding device, it can quickly and easily find and operate on the APP interface. On the other hand, the intelligent device expresses the data monitored through the APP interface in an easy-to-understand visual form.

3. Visual communication requirements of APP interface of sleep intelligent hardware devices

In the process of using sleep smart products, users often need to perform some operations on the device [6]. When users use sleep products, they are usually ready to rest, the easy use is better. On the other hand, sleep monitoring of sleep smart products is a very important function in APP interface. The interface information of sleep monitoring can be divided into two types:

(1) For real-time data, because of real-time changes, most of these data adopt a dynamic way.

(2) The information for statistical analysis, most products transfer such information through the APP interface.

The interface style is the image embodiment of the brand, conveys the emotion of the product to consumers, shows the characteristics of the product. In the performance of interface style, color and typesetting, as macro visual elements, affect the overall situation of interface visual feeling.

As a visual symbol, color is one of the most widely used symbols in interface visual communication. The expression of any element in the interface needs the assistance of color, so the use of color in the interface controls design of the interface. As shown in Figure 5, the color classification of sleep APP interface surveyed is roughly divided into background color, brand color and auxiliary color. The background color occupies most of the area of the interface and affects the tone of the product. According to the survey results, about 80% of the products using dark black as main background color. Brand colors are mainly divided by the product logo, the primary color and the background color. More than half of the products are dominated by dark blue, which caters to the color of the night sky, so it is more consistent with the theme of sleep.

Figure 5. Color classification of sleep APP Interface

The panel design of the interface plays a key role in guiding the user's visual process. The horizontal and grid layout are mainly for the display of multiple parallel information. The free-form layout usually leaves a lot of "blank", it can highlight the main information, so it has a strong and clear operational guidance for users. It often layout the beginning of recording sleep, or the layout design for the operation of the sleep aid function. This design can highlight the main function of the APP. Interactive cross-page columnar layout often appears in page interaction, which is usually hidden, they mainly used to help users manage personal account information.

4. Conclusion

In summary, the main design points for visual communication in sleep APP design are summarized in the following three points:

(1) Highlight the focus of visual communication. Strengthen the visual contrast and make it stand out. People will see similar visual elements as a whole, thus the differential visual elements generated by contrast can stand out.

(2) The interface design is appropriated to the situation. Visual perception can be affected in a specific objective environment, it can be disturbed by objective factors, then resulting in visual bias. In the design of sleep APP, the visual form of the design adjusted to suit the needs of users' behavior before sleep, during sleep and after waking up in the process of using the product.

(3) Focus on the branding of the product. The brand image of the product can enhance the recognition of the product and attract more users. The branding in the visual communication of the product is the shaping of the atmosphere, resonating

with the user's emotions. For the theme of sleep, the interface expresses the emotional need for calmness and warmth. The design in conjunction with the emotional needs of the user.

As the design of sleep products have greater scope for development, the corresponding APP play an even more important role as a bridge between the user and the hardware product. Therefore, in order for the product to be recognized by the majority of users and stand out from the many competing products, more attention must be paid to visual communication design. This research has great significance and guidance for related fields.

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