

Design proposals for people with sensory hypersensitivity based on survey and interview

Mio OTAKE, Ming ZHANG, ChiWei KAO, Kentaro MATSUURA, Shinichi KOYAMA
Faculty of Art and Design, University of Tsukuba

ABSTRACT

Although there are many types of designs for people with declining sensory abilities (Baldwin C L., 2002), there are only a few examples of designs for people with sensory hypersensitivity. Therefore, we have tried to develop designs for people with sensory hypersensitivity. We conducted a survey and some interviews on hypersensitivity, and based on this research, we proposed various product designs, service designs, and visual designs for people with sensory hypersensitivity.

1. INTRODUCTION

Sensory hypersensitivity can also be viewed as sensory processing disorder, which is a condition in which the brain has trouble receiving and responding to information that comes in through the senses. Some people with sensory hypersensitivity are over-sensitive to things in their environment (Smitha Bhandari, 2017). For instance, they may find it difficult to endure common sounds or lights in daily life. In this study, we conducted interviews and a survey to learn more about sensory hypersensitivity, and tried to devise ways of improving the quality of life of sufferers through design.

2. METHOD

The survey was conducted online through “SurveyMonkey.” Forty-one undergraduate students participated in the survey. The questions included “Do you have any symptoms of sensory hypersensitivity?” and “Have you ever searched for information about your symptoms?” We also asked the participants to contact us if they were willing to participate in an interview. In the survey, for example, although eight participants (20%) reported symptoms such as feeling unbearable pain after reading for a long time, none had searched for information or consulted anyone about the problem. Following the survey, we conducted semi-structured interviews with three students who contacted us. In the interviews, we included questions on sensory hypersensitivity in their daily lives, such as “Please describe in detail the conditions of your sensory hypersensitivity in your daily life.” Examples of the answers we received are as follows: “I refuse to use the public facilities because they are noisy,” “My eyes hurt when I go to supermarkets or convenience stores because the lights are too bright,” and “I feel confused when purchasing food because I have no idea how sweet the food is.” Meanwhile, we found that the respondents tended to have negative attitudes toward seeking help with their symptoms and preferred “To endure the symptoms” and “Avoid things that can cause discomfort.”

3. DESIGN PROPOSALS

According to the above results, we proposed three product and system designs as follows:

1. Optimizing shopping experiences for people with visual hypersensitivity using intelligent sensing devices.

2. A visual communication design in which the basic taste sensations such as sweetness and bitterness of the food are indicated in stages with scales.
3. A verification system for people with sensory hypersensitivity.

3.1 Shopping experience optimization for people with visual hypersensitivity

People who suffer from visual hypersensitivity face many challenges in their daily lives. According to the interview, one such challenge is posed by the bright lights of freezers in supermarkets or lights in appliance stores. Therefore, we will attempt to implement a simple design that can be utilized in supermarkets and stores such that people with visual hypersensitivity are offered a better shopping experience without being viewed as “special.”

3.1.1 Concept of the system

There are already supermarkets working on providing lower sensory environments for people with sensory hypersensitivity. For example, COLE supermarkets have established a “quiet hour” for people on the autism spectrum. They dim the lights and turn down the volume in their supermarket once a week at a specified time range.

Based on this idea, we would like to expand the target group and provide them with a better experience without creating a “special space” or a “special time.”

3.1.2 Framework of the system

Using Internet of Things (IoT) technology such as the iBeacon protocol, the beacon device is able to sense the information sent by a mobile device at a certain distance (Figure 1). Taking the freezers in the supermarket as an example, when people with their smart devices get close to the freezers in a supermarket, the freezer lights turn 50% darker and the color of the light becomes warmer. Furthermore, stores that install the system also share the information with the application. People with visual hypersensitivity can use the application to find locations that offer them better shopping experiences, and the government or certain institutions can put more effort into building better environments for more people according to their database.

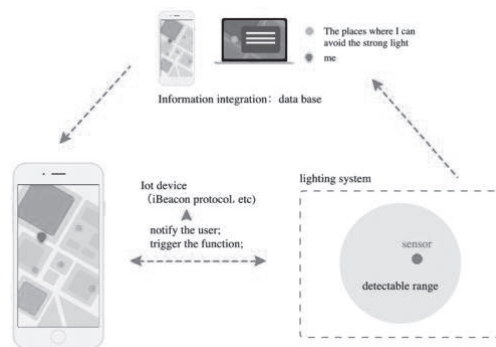


Figure 1: Framework of the system

3.2 A visual communication design that indicates basic taste sensations with scales

Following the survey, people with taste hypersensitivity were invited for an interview. When asked about the details of her sensory hypersensitivity in daily life, one interviewee pointed out that she is sensitive to "sweetness" and always regrets her food purchase decisions for the reason that they are often too sweet. As a result, it is not only loss of money and food

that affects the consumer, but it also affects them mentally. The act of eating is one of the fundamentals of life. Eating stress may be a small stress, but it can lead to bigger problems if it accumulates every day.

3.2.1 Concept of the system

To address this issue, there needs to be a system in place for consumers that indicates the degree of taste of foods before they make purchase decisions. From this perspective, we have proposed a product package design that can visually indicate the taste of food. Considering there are various kinds of foods, we focused on snacks, which are common in our daily lives. The most salient points of this system are as follows:

1. Display of taste rather than ingredient display (Kiyoshi Toko, 2017).
2. Easy to understand for everyone, a display with little visual stimulation.

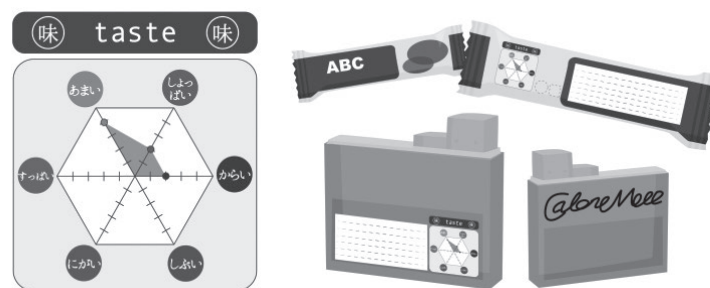


Figure 2: Example of package design

3.3 Verification system of design for people with sensory hypersensitivity

A verification system with visual recognition (Logo, see Figure 3) is designed for sensory hypersensitive people. It is called “sensory hypersensitivity friendly” (SHF). It is aimed at helping people with sensory hypersensitivity to experience better day-to-day environments, and at the same time, raising other people’s awareness of this problem.

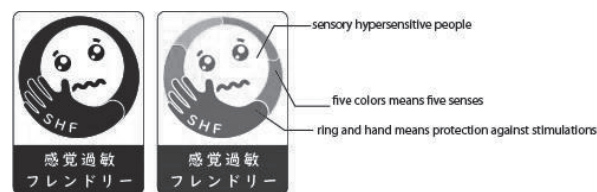


Figure 3: Logo for sensory hypersensitivity friendly

3.3.1 Concept of sensory hypersensitivity friendly (SHF)

According to the survey, people with sensory hypersensitivity stay away from unfavorable conditions as a way of dealing with their disorder. However, it is hard for them to recognize harmful environments before being exposed to them. For example, if the illumination is too bright, or the background music is too loud. Most existing solutions address problems arising from a single sensory stimulus only (Haruhiko Shimoyama, 2015). However, people with hypersensitivity are usually sensitive to more than one type of sensory stimulus. With the use of our proposed system, low-stimulation environments and SHF services can be readily offered. Moreover, not only sensory sensitive people, but also ordinary people can choose more favorable environments in their daily lives. It is also hoped that SHF will be beneficial

to store operators in helping them to provide low-stimulation products. It can also be applicable to public spaces such as supermarkets, restaurants, and grocery stores.

3.3.2 Standard of recognition

Main principle: All employees understand the condition of sensory hypersensitivity and try their best to satisfy their request. The other details of our proposed standard are shown in Figure 4.

Visual stimulation:
1. Colorful or dense-patterned wallpaper should not be used for interior decoration.
2. Illumination should be adjusted separately for consumer.

Sound stimulation:
1. Background music with high volume should not be used.
2. Noisy customers should be warned by staff.
3. Individual rooms with quiet spaces should be offered.

Taste stimulation:
1. Customers should be notified if sweetener or vetsin is contained in the dish.
2. If customers are sensitive to some ingredients, they should be changed or removed.

Smell stimulation:
1. The dining place should be separated from the place of cooking.
2. Fragrance should not be used anywhere in the store.

Figure 4: Details of Standard of recognition

4. CONCLUSIONS

Based on the results of our survey, we discussed various designs for people with sensory hypersensitivity. We proposed shopping experience optimization for people with visual hypersensitivity using an intelligent sensing device, a visual communication design in which the basic taste sensations such as sweetness and bitterness of the food are indicated in stages with scales. Further, a verification system of a design for people with sensory hypersensitivity was proposed. In the future, we will further investigate the feasibility of our proposals and will work on improving our designs through prototyping and evaluation of mock scenarios.

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*Address: Shinichi KOYAMA, Faculty of Art and Design, University of Tsukuba
1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8574, JAPAN
E-mails: skoyama@geijutsu.tsukuba.ac.jp*