THE EFFECTS OF STORE DISPLAY AND CONSUMER'S PERSONALITY ON INFORMATION-SEEKING BEHAVIOR FOR OVER-THE-COUNTER DRUGS

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ABSTRACT

Japanese Revised Pharmaceutical Affairs Law emphasizes self-medication, where consumers are expected to choose an OTC drug at their own risk. For this reason, consumers should carefully read the information on OTC drug packages. In the present study, we examined whether store display of OTC drugs can influence information-seeking behavior such as reading information on the boxes. We performed a shopping-simulation experiment and a survey. In the shopping-simulation experiment, we displayed 16 OTC cold medicines on a shelf, and asked participants to choose one drug for themselves, assuming that they had a cold and high fever. On the shelf, the drugs were displayed by brand or symptom. During the experiment, we recorded the participants' behavior using two video recorders. In the questionnaire survey, participants evaluated their own personality by Cognitive Reflection and Impulsivity Scale. The results from t-test indicated no significant differences between the two display types. However, in the 2-way ANOVA (display type x personality), the results indicated significant interaction between the two factors. While the participants with high score in Cognitive Reflection and Impulsivity Scale box-reading behavior did not change significantly between the two display types, participants with low score in Cognitive Reflection and Impulsivity Scale read boxes more frequently and for a longer time when the drugs were displayed by brand than symptom. The results suggested influence of store display and personality on information-seeking behavior.

Keywords: *Information Design, Store Display, Personality Test*

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1. BACKGROUND

An over-the-counter (OTC) drug is a drug that can be purchased without a doctor's prescription. In Japan, the Pharmaceutical Affairs Law was revised in June 2009 so as to emphasize "self-medication" and the consumer's "own risk." The implication is that consumers should read drug information on the package carefully when buying an OTC drug. However, our previous study using eye-tracking showed that Japanese consumers read risk-related information on the drug package only briefly (Choi et al. 2012a). The lack of information-seeking behavior was also demonstrated by a study by Kawase et al. (2011, 2016), in which Japanese consumers paid more attention to the drug names whereas U.S. consumers paid more attention to ingredients and risks.

In order to promote information-seeking behavior, revision of labeling design was proposed in the subsequent study. For example, a study by Choi et al. (2012b) on the package design of Japanese OTC drugs demonstrated that emphasizing risk category signs in red color and bold square frame increases viewing durations for not only the risk category sign per se but also for the other important information such as ingredients and warning.

The revision of the design of online shopping sites for OTC drugs was also proposed. Mukai et al. (2015) demonstrated that indicating a warning message and a pictures of serious side effects increases viewing time for "precautions", "advice before taking", and "side effects".

In the present study, we examined whether store display of OTC drugs can influence information-seeking behavior such as reading information on the boxes. We performed a shopping-simulation experiment and a survey.

2. METHODS

2.1. Participants

Forty-two undergraduate and graduate students participated in the experiment and survey. The experiment and survey were conducted at Chiba University, based on the declaration of Helsinki. The study was approved by the ethical committee of Graduate School of Engineering, Chiba University (approval number 28-07). Written informed consent was obtained from all participants.

2.2. PROCEDURES OF THE EXPERIMENT AND SURVEY

The participants participated in the shopping-simulation experiment and survey. In the experiment, sixteen OTC cold medicines were used in the experiment. They were all sold from 4 major brands (Benza, Lulu, Stona, and Estac). We used 4 types of cold medicine (one comprehensive cold medicine, one for nose, one for sore throat, and one for high fever) from

each brand (4 type x 4 brand = 16 drugs). The drugs were displayed on the shelf. The participants were asked to imagine that they were having a high fever (38 degree Celsius) and that they had to go to a drug store and choose a drug which they thought was the best for their symptom. The were also told that they could spend as much time as they wanted in order to choose a drug. The drugs were displayed either by brand or by symptom (Figure 1). When the drugs were displayed by brand, 4 drugs of the same brand were displayed on the same shelf. When the drugs were displayed by symptom, 4 drugs for the same symptom were displayed on the same shelf. Twenty-one participants chose a drug from the display by brand and the other twenty-one participants chose a drug from the display by symptom. Participants' behavior was recorded by two video cameras, and the video images were analyzed by 3 students. In the video analysis, information-seeking behaviors such as "frequency of box-reading" and "time spent before choosing a drug" were coded.

After the shopping-simulation experiment, the participants performed Cognitive Impulsive-Reflective Scale (Takigiku & Sakamoto, 1991). The personality test aims to measure tendency to make a decision after carefully collecting information vs. tendency to make a quick decision before collecting sufficient amount of information. The top 25% in the test were considered as "reflective participants" whereas the bottom 25% were considered as "impulsive participants".

Display by Brand

Display by Symptom

Figure 1: Two types of the shopping-simulation displays.

3. RESULTS

The results from t-test indicated no significant differences between the two display types. However, in the 2-way ANOVA (display type x personality), the results indicated significant interaction between the two factors. While in the participants with high score in Cognitive

Reflection and Impulsivity Scale (= reflective participants) box-reading behavior did not change significantly between the two display types, participants with low score in Cognitive Reflection and Impulsivity Scale (=impulsive participants) read boxes more frequently (p <.05) and for a longer time (p <.05) when the drugs were displayed by brand than symptom.

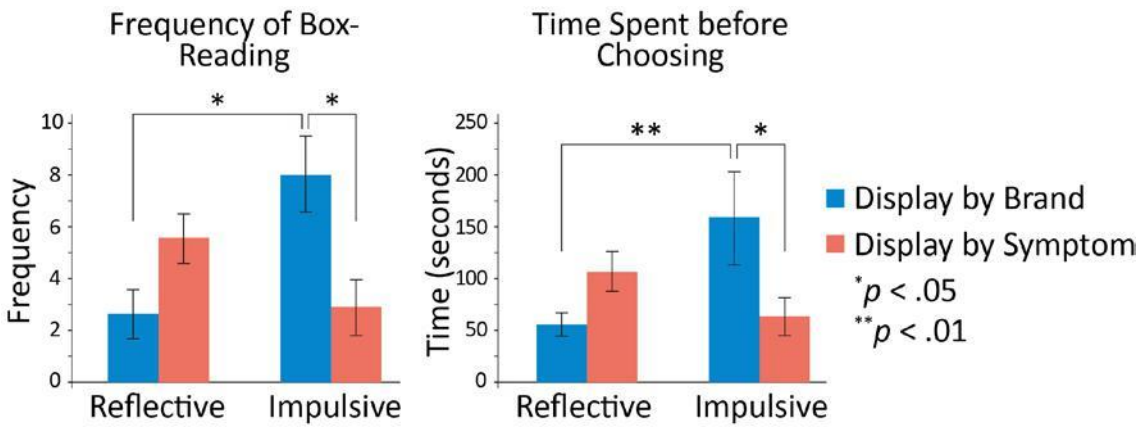

Figure 2: Results from the experiment

4. DISCUSSION

The results suggested influence of store display and personality on information-seeking behavior. Consistent with studies on package design (Choi et al., 2012b) and interface design (Mukai et al., 2015), store display design has an influence on the consumers' behavior before choosing drugs. The influence of the brand is especially strong to those who has cognitive-impulsive personality. In order to examine more details about how the participants read information on the drug boxes, experiments using an eye-tracker will be useful.

5. ACKNOWLEDGMENTS

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REFERENCES

Choi, J., Koyama, S., Izumisawa, M., Shiragami, M., Akazawa, C. & Hibino, H. (2012a). Evaluation of users' attention to the labeling information of over-the-counter medicines using eye-tracker. *Transactions of Japan Society of Kansei Engineering*, 11(1), 69-78. [in Japanese]

Choi, J., Koyama, S., Izumisawa, M., Shiragami, M. & Hibino, H. (2012b). Guiding consumers' attention to safety-related information by highlighting "risk classification" on OTC drug packaging. *Bulletin of Japanese Society for Science of Design*, 59(4), 11-18. [in Japanese]

Kawase, A., Sembiring, E. T., Choi, J., Koyama, S., Izumisawa, M., & Hibino, H. (2011). Comparison between the Japanese and US consumer's eye movement while choosing over-the-counter drugs: "name and benefits" vs. "ingredients and risks". *International Association of Societies of Design Research 2011 Proceedings*, p146.

Kawase, A., Choi, J., Izumisawa, M., Hibino, H., & Koyama, S. (2016). Consumaers' viewpoints to the labeling information of OTC medicines can change by brand. *Bulletin of Japanese Society for Science of Design*, 62(4), 35-42. [in Japanese]

Mukai, S., Tanaka, S., Mizuno, Y., Hibino, H., & Koyama, S. (2015). Design of web screens that promote viewing of detailed information about over-the-counter drugs by warning about potential side effects. *International Association of Societies of Design Research 2015 Proceedings*, 2829-2837.

Takigiku, K., & Sakamoto, A. (1991). Development of cognitive impulsive-reflective scale – an examination of reliability and validity. *The 39th meeting of the Japanese Group Dynamics Association Proceedings*, 39-40. [in Japanese]