

스포츠의류 마찰음 정보 제공에 따른 인터넷 구매자의 감성평가

**Sensibility Evaluation of Internet Shoppers
with the Sportswear Rustling Sounds**

백경량, 조길수

연세대학교 의류환경학과

ABSTRACT

This study investigates the perception of different fabrics by consumers when provided with a video clip with rustling sounds of the fabric. We utilized sportswear products that are currently on the market and evaluated the emotional response of internet shoppers by measuring the physiological and psychological responses. Three kinds of vapor-permeable water-repellent fabric were selected to generate video clips each containing the fabric rustling sound and images of exercise activities wearing the sportswear made of the respective fabric. The new experimental website contained the video clips and was compared with the original website which served as a control. 30 subjects, who had experience to buy clothing online, took part in the physiological and psychological response to the video clip. Electroencephalography (EEG) was used to measure the physiological response while the psychological response consisted of evaluating accurate perception of the fabric, satisfaction, and consumer interest. When we offered video clips with fabric's rustling sound on the website, subjects answered they could get more accurate and rapid information to decide to purchase the products than otherwise they do the shopping without such information. However, such rustling sounds somewhat annoy customers, as proved psychological and physiological response. Our study is a critical step in evaluating the consumer's emotional response to sportswear fabric which will promote selling frequency, reduce the return rate and aid development of new sportswear fabric further evolution of the industry.

Keyword: HCI (human computer interaction), internet shopping, video clip, sportswear fabric, rustling sound

1. Introduction

With the increasing development of information technology, the internet usage has become very common. Due to lifestyle changes, people prefer to purchase a variety of products via the internet to save time and boost efficiency. When consumers make a choice for a cloth-

ing item, they not only evaluate usability from ergonomics' views, but, at the same time, they regard sensibility perception [1]. However, studies about a sensory perception towards clothing are not enough yet. Sportswear fabrics made of nylon, or polyester have water-repellent and wind proofing functions and they are coated as well. That is why sportswear fabrics make lots of noise, com-

pared to any other textile. If these rustling sounds make people uncomfortable or annoyed, such clothing items are more likely to be returned.

Offline consumers can try on or touch clothes and even judge whether sportswear’s rustling sounds are nerve-racking or not. But online consumers can’t get access to such information so that they tend to feel unsatisfactory when they get their ordered items later. Thus, it is vital to solve such problems by offering enough information on rustling sounds on the web.

The purpose of our study is to find whether the website offering a video clip with rustling sounds is more effective and advantageous to online buyers when they purchase the sportswear products through psychological and physiological responses.

2. Experimental

2.1. Specimens and generating video clips

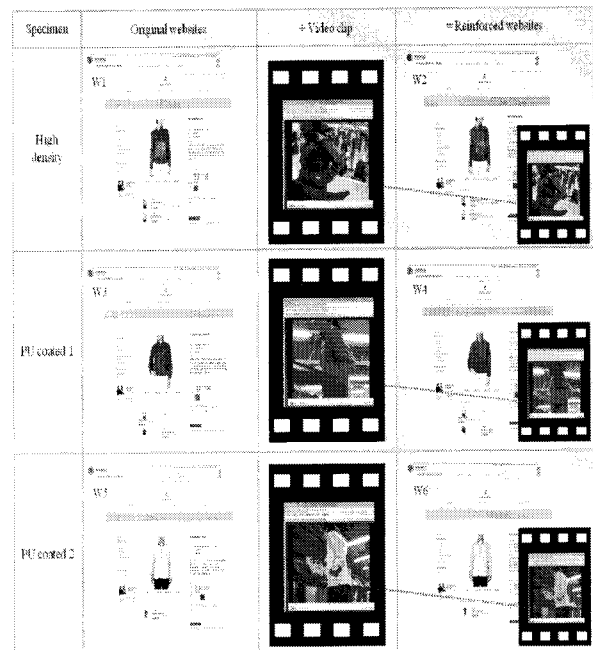
Three traditional fall/winter outdoor sportswear fabrics were randomly selected. One is high density fabric, and the others are PU coated fabrics. To generate video clips, we combined each fabric rustling sound and image of exercise activities. Fabric sounds were generated with Simulator for Rustling Sound (Patent 10-0539368-00006) in a soundproof room. Images were captured by a subject who exercises on the treadmill at a jogging speed (2.6 m/s) with wearing sportswear. The video clip lasted for 30 seconds while the view alternated every 5 seconds to entertain the viewer.

2.2. Experimental condition and measurement of psychological and physiological response

Based on 3 samples, six web pages were made. Half of them have video clips with the fabric rustling sound while the rest do not. The list of website stimuli according to the rustling sound of sportswear fabric is shown Figure 1. To investigate how rustling sounds af-

fect potential consumers’ purchases, a randomized ‘within subject design’ method was utilized.

The fifteen male and female subjects, who had experienced internet shopping, filled out a questionnaire regarding their subjective sensations of the sounds and effect of decision support of compositeness visualization and auditory sense of clothing in a soundproof room. Psychological response was analyzed by using SPSS, while physiological response (EEG) was analyzed by FFT spectrum and gathered the data according to frequency area by using MATLAB.



[Figure 1] The experimental websites (with video clips of rustling sound attached)

3. Results and Discussion

3.1. Psychological response through the video clip with the rustling sound

3.1.1. Internal consistency and ANOVA analysis

7 questionnaires were used for regarding subjects’ effect of decision support of compositeness visualization and auditory sense of clothing (Table 1) [2]. The overall Cronbach’s coefficient alpha of the questionnaire

was .94. Three websites showed a precisely significant difference between 'Offering a video clip with rustling sounds' and 'Not offering a video clip with them' and between female and male on all questionnaire items, including overall satisfaction about decision support of sensations of clothing and purchase decision. However, there was no significant difference among the experimental products. The interaction between the products and the video clip with rustling sounds, between the video clip and sex, and between products and sex did not have significant difference, neither (Table 2).

[Table 1] Psychological evaluation questionnaires

Sensibility for	Attributes	Question #
the website w/ or w/o the video clip with the rustling sportswear fabric sound	general information on clothing	1
	quick information about fabric of clothing	2
	accurate information about fabric of clothing	3
	enough information as wearing the clothing offline	4
	reduce time for purchase decision support	5
	enough information for making a purchase decision	6
	perception of purchasability	7

[Table 2] ANOVA test for psychological evaluation questionnaires

Source	Sum of squares	df	Mean square	F
Sound	140.871	1	140.871	205.183***
Product	0.218	2	0.109	0.153
Sex	8.233	1	8.233	11.992*
Sound*Product	0.042	2	0.021	0.028
Sound*Sex	1.996	1	1.996	2.907
Product*Sex	1.745	2	0.873	1.271

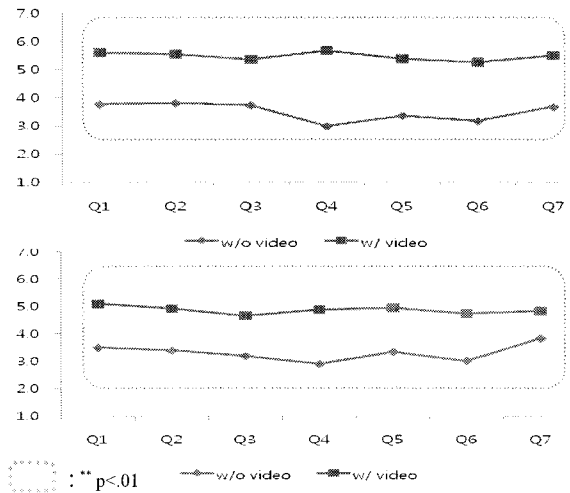
p<.05, ***p<.001

3.1.2. Comparative analysis

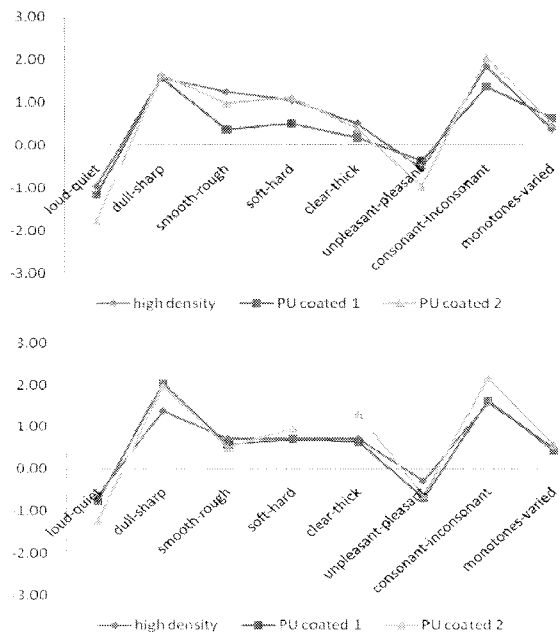
To investigate the impact of a sportswear's expected tactile sensation on the experimental website in terms of decision-making, the original website and the experimental website were compared. Most subjects responded that the video clip with fabric rustling sounds allow them to get enough accurate information to decide if they want to purchase those items or actually they are willing to purchase them. However, females put more value on websites with rustling sounds than males did (Figure 2).

3.1.3. Sound evaluation

8 questionnaires were utilized for subjects' subjective sensations of the sounds [3]. They felt that the sounds from PU coated fabrics were much louder than high density fabric sound. They made subjects feel sharp, smooth, unpleasant, inconsonant, and varied.



[Figure 2] Comparison of a video clip with rustling sound or not (up: female, down: male)



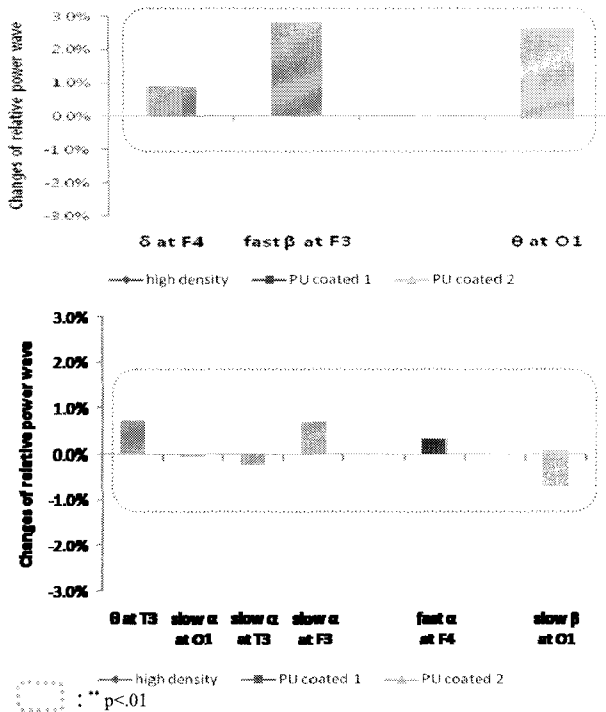
[Figure 3] Comparison of the fabric rustling sound or not (up: female, down: male)

3.2. Physiological response through the video clip with the rustling sound

3.2.1. Evaluation of EEG data

To get physiological experimental response for the video clip with the rustling fabric sound stimuli, we measured delta, theta, slow alpha, fast alpha, slow beta and fast beta relative power wave at six lobes such as O1, O2, T3, T4, F3 and F4. These were rated in terms of relative power on the X axis, and the difference of relative power wave between the original website and reinforced one with a video clip with fabric rustling sound were rated on the Y axis.

Physiological response about the fabric rustling sounds was in keeping with psychological response with them. Such rustling sounds made subjects annoy, as shown in analyses of brain waves. Furthermore, females responded that the fabric rustling sounds made them be much louder, rougher, harder and more unpleasant than males did (Figure 4).



[Figure 4] Changes of relative power wave offering the video clip with the fabric rustling sound (up: female, down: male)

4. Conclusion

This study investigates the perception of different fabrics by consumers when provided with a video clip with rustling sounds of the fabric. Most subjects responded that the video clip with fabric rustling sounds allow them to get enough information to decide if they want to purchase those items and to get more accurate and rapid information than otherwise they do the shopping without such information. Since online shopping precludes the consumer from feeling and listening to the fabric of the sportswear, video clips containing fabric rustling sounds are valuable information for the internet shoppers. However, they are psychologically under stress because they consider rustling sounds annoying. Our study is a critical step in evaluating the consumer's emotional response to sportswear fabric which will aid development of new sportswear fabric, promote selling frequency, and reduce the return rate further evolution of the industry.

Reference

[1] Fukuda, R. (2008). Change in Emotion during Use of Products, Proceeding of the 2nd International conference on Applied Human Factors and Ergonomics, Las Vegas, USA. 07. 14-17.

[2] Yang, Y., Kim, C., & Cho, G. (2008). Subjective Evaluation of Frictional Sounds from Sportswear according to Speeds of Movements, Proceeding of the Science of Emotion & Sensibility.

[3] Jeong, K., Jang, S., Chae, J., Cho, G., & Salvendy, G. (2008). Use of Decision Support for Clothing Products on the Web Results in No Difference of Perception of Tactile Sensation than Actually Touching the Material, International Journal of Human Computer Interaction, 24(8). 794-808.