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To Study Effects of Using Human Presenter in Product Image: Applying an Eye-tracker VS Facial Expression Translation

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ABSTRACT

Eye tracking is the process of measuring either the point of gaze or the motion of an eye relative to the head. An eye tracker is a device for measuring eye positions and eye movement. Eye trackers are used in research on the visual system, in psychology, in psycholinguistics, marketing, as an input device for human-computer interaction, and in product design. Previous study applies an eye-tracker to investigate effects of using human presenter in product images and conclude that eye-tracker data can be used for eye-gaze data collection and analyzed for further statistical conclusion [8]. The result indicates that product image with positive emotion female presenter gets the highest fixation duration, however, not significantly higher than fixation duration of other types of product images.

However, Eye tracking by professional eye-tracker is not an affordable research method for most researches. Facial expression translation is a new function comes from “Youdao translate officer” which can be downloaded from apple APP store for free; It can indicate human facial expression in eight dimensions (i.e., happiness, angry, fear, contempt, disgust, calm, surprise, sad) with values. We are proposed to use this free technical to investigate effects of using human present in product images and compare the results with studies applies eye-tracker previously. A fresh accepted research method could be discovered by this study, and give an optional research method in relative field.

Keywords: Human Presenter, Product Image, E-commerce, Eye-tracking, Facial Expression Translation, Fixation duration.

INTRODUCTION

Nowadays, technology has played an important role in medical, education, communication, and especially in marketing. If organizations use technology effectively; they will be able to create advantages over their competitors. Researchers use many tools for collecting data such as questionnaires and interviews. However, questionnaires and interviews may not be the most suitable tools for collecting eye-gaze data. On the other hand, Facial expression translation APP which installed in smart phone is an acceptable and affordable way for the researches to get eye-gaze data for further study purpose. Many studies have been done in laboratory for collecting eye-gaze data by expensive eye tracker. In this study, we are try to redo a group of experiments which have been done by eye trackers, collecting facial expression data and calculate attitude value to compare with eye tracking results.

RESEARCH OBJECTIVES

This paper has three objectives which are:

1. To study how facial expression translation technology can collect data from visitors of ecommerce webpages.
2. To use the collected facial expression data to calculate “attitude value”
3. To compare collected facial expression data of five different product images on e-commerce webpages which are:
Using no human presenter in product image.
Using male presenter with positive emotion (smiling face) in product image.
Using male presenter with neutral emotion in product image.
Using female presenter with positive emotion (smiling face) in product image.
Using female presenter with neutral emotion in product image.
4. To compare the results with the previous study applies eye-tracker

RESEARCH METHODOLOGY

Research Tools

There are three research tools in this study.

1. A smart phone with “Youdao translate officer” APP installed, software interface as shown in Figure 1.



Figure 1: Software interface

2. Five e-commerce webpages, with five different product images as mentioned earlier, but same design and content in each page, as shown in Figure 2, 3, 4, 5, and 6.



Figure 2: Webpage using no human presenter in product



c.

Figure 3: Webpage using male presenter with positive emotion (smiling face) in product image.

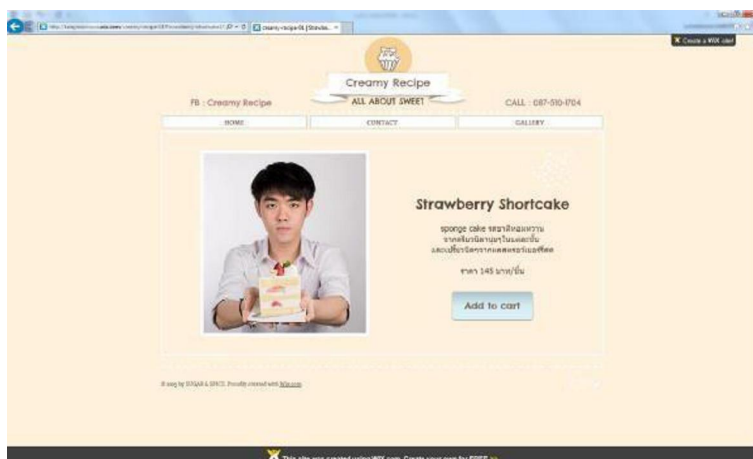


Figure 4: Webpage using male presenter with neutral emotion in product image.



Figure 5: Webpage using female presenter with positive emotion (smiling face) in product image.



Figure 6: Webpage using female presenter with neutral emotion in product image.

3. Questionnaire for collecting participants' data. This questionnaire is divided into four parts. The first part is used to collect demographic data such as gender, age, and experiences with Internet shopping. The second part collects participants' vision condition, usual or unusual (such as Myopia, Hyperopia, or Astigmatism). The third part is to double check if each participant really looks at the webpage or not (by asking something specific about the product on webpages). And the final part is to ask participants about product (cake) purchase behavior such as how often he/she buys the product, reasons why he/she buys the product, his/her opinions about using human presenter in product image, and so on.

Procedure

Nielson (2006) suggested using about 20 subjects when collecting usability data. Since we have five different product images to compare in this study, we collect data from 100 participants (20 subjects x 5 different product images). We conducted this study in these following steps:

1. The information about this research was announced to students. Each volunteer participant made appointment with his/her convenient date and time. For the data collection process, data can be collected from one person at a time.
2. Each participant came to his/her appointment.
3. Participant listened to an explanation about the study and steps of data collection before starting the data collection process. Then, if the participant agreed, he/she signed the consent form allowing us to use his/her data in the study.
4. Participant adjusted his/her seat in front of the computer. Then, we set smart phone position in accordance with participant's seat for reducing error in data collection.
5. Then, we asked each participant to view an e-commerce webpage. Facial expression image will be captured during the participant to view the website.
6. Lastly, participant was asked to fill in the questionnaire to collect participant's demographic data, as well as other data and opinions for the study.

Measurements

In this study, participants were asked to view e-commerce webpages. Website conditions (see table 1) as below. We were interested in participants' facial expression translation data when they looked at product images on our experiment webpages. After data collection from smart phone was finished, we filtered participants' facial expression translation data in tables to calculate viewer attitude value of each participant for product image.

Table 1: website conditions

Website Conditions	Using Human Images in Product Presentation				
	Image with Positive Facial Expression		Image with Neutral Facial Expression		Product Presentation without Human Image
	Female	Male	Female	Male	
A	●				
B			●		
C		●			
D				●	
E					●

Participants

One hundred volunteer participants who were undergraduate students from Xiamen University participated in this study. A summary of demographic information of 100 participants will show in the Table. The participants content female and male, Average age will be counted and they are expected had internet shopping experience.

EXPECTING RESULTS

As mentioned earlier, there are five e-commerce webpages, with five different product images in this study, one product image on one webpage. The 100 volunteer participants were divided into 5 groups, one group for one product image (or one webpage). So, 20 participants (5 males, 15 females) were assigned to one product image. In group 1, participants viewed the e-commerce webpage using no human presenter in product image. In group 2, participants viewed the e-commerce webpage using male presenter with positive emotion (smiling face) in product image. In group 3, participants viewed the e-commerce webpage using male presenter with neutral emotion in product image. In group 4, participants viewed the e-commerce webpage using female presenter with positive emotion (smiling face) in product image. And group 5, participants viewed the e-commerce webpage using female presenter with neutral emotion in product image.

In experimental study with eye tracker device, the results from eye tracking data shows that product image with female presenter expressing positive emotion (smiling face) gets the highest fixation duration, but not significantly higher than fixation duration of other types of product images. When grouping by gender of the presenter, the result suggests that product image with female presenter gets the highest fixation duration. When grouping by emotion expression of presenter, the result indicates that product image with human presenter expressing neutral emotion gets higher average fixation duration than other groups. Product image with female presenter expressing positive emotion gets the highest fixation duration, product image with male presenter expressing positive emotion gets the lowest fixation duration. The average fixation duration of product images

with human presenters expressing positive emotion is less than the average fixation duration of product images with human presenters expressing neutral emotion. And finally, when grouping by human presenter usage, the result suggests that product image with human presenter gets higher fixation duration than product image without human presenter. Results from ANOVA and t-test all indicate that there is no significant differences between different groups of product images. This can be because the product image position on the experiment webpage is in the center of the page and the size of product images are quite large. Hence, participants in the study would look at the product images no matter what types of product images they are. However, most participants suggest in the questionnaire that they prefer product image with female presenter expressing positive emotion (smiling face).

Data is still in processing, more details and data will be come out in presentation. We are expect that the results from facial expression translation collecting shows similar result with eye tracking, i.e. Attitude value could shows that product image with female presenter expressing positive emotion (smiling face) gets the highest attitude value, but not significantly higher than attitude value of other types of product images. When grouping by gender of the presenter, the result could suggest that product image with female presenter gets the highest attitude values.

CONCLUSION AND LIMITATIONS

From this study, we could conclude that facial expression image data can be used for eye-gaze data collection and data collected from the study can be analyzed for further statistical conclusion. A fresh accepted research method could be discovered by this study, and give an optional research mothed in relative field.

However, there are some limitations using Facial expression image data for collecting data as follow:

1. We found problems when participants wore eyeglasses. Facial expression image data detected some reflective points of eyeglasses, instead of participants' eyes.
2. We found that sometimes facial expression image data crashed during collecting data due to unstable smart phone or conditions in the test room.

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