

COMPARISON OF RESPONDENT IMAGES BETWEEN PICTURE AND TEXT USED SURVEYS IMPLICATIONS FOR NEW RESEARCH METHODS USING PICTURES

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ABSTRACT

Smartphones and iPhones, Instagram, and Twitter have drastically changed the environment of pictures and photographs. Since the beginning of 21st century, the use of pictures and photographs in research and surveys has been increasing in marketing and social sciences. However, we lack discussion about 'when', 'where', and 'how' to use pictures in surveys. Some studies reveal 'when' and 'where' to use pictures and its usefulness in surveys, however much more discussion of 'how' to use pictures is an urgent issue for this new research method. In this study, we focus on experience and the memory biases that may influence in surveys to give implication to 'how' pictures should be used. Comparison of images formed by pictures with images by texts was investigated using an internet survey research (total of 1600 respondents). F-tests of standard deviation of 20 image words to the pictures (e.g. Energetic, lively, intellectual) between the two groups (visitors and non-visitors) were conducted to confirm the influence of experience. From the results of the F-tests, we found out that in some cases the variance difference of images formed by picture and by texts are significant in a few cases. This leaves us with a possibility that there might be an influence of experience on images by picture, where further discussion and research should be made as soon as possible.

Keywords: *Picture-used surveys, Experience effect, Standard Deviation*

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1. INTRODUCTION

The attention of using pictures (including photographs) in research and surveys has been increasing in social studies since the beginning of the 21st century. The reasons analyzed in the recent literature refer to the environmental changes in pictures (Edo et.al. 2013). Technological changes, such as low price digital cameras and iPhones, high information transmission speed, low costs for information transferring and high performance and resolution of the cameras of mobile phones have changed the photographing behavior of people. Consequently, social changes, for example, less resistance in taking and processing photographs have affected the using of pictures in research in most of the developing countries. People take pictures anywhere and anytime, upload them to the social media when they want to, like Instagram or Twitter. Behavior of taking and showing pictures has completely changed.

Due to these environmental changes, especially in the field of research using surveys, using pictures in questionnaires have become common in the recent years. However, there has not been enough discussion for how to use pictures in surveys in the past literature. Edo et.al. (2013) has pointed that it is an urgent issue to understand the characteristics of pictures in surveys, or otherwise it might be used improperly, because of the meaning encoded and decoded are different from respondents to respondents.

In this study, the objective is to identify the factors that influence pictures in surveys and give implication to the future of new research methods using pictures.

2. REVIEWS OF PICTURE-USED SURVEYS

There are two types of picture-used surveys. The first type of picture-used surveys is the ones that present pictures within the surveys. They are often used to assist the image of what to ask in the questionnaire. This type of picture-used surveys has been often used from the 1960s when advertisement effects had to be measured. They are also used in product design evaluation when verbal questions could not be sufficient for presenting and expressing the idea and concepts.

The second type of picture-used surveys is the ones that we do not present but receive as responses and answers from the respondents. In this type of picture-used surveys, we ask the respondents to draw, find, take, or select pictures for the answers to the given questions in the survey (Zaltman 2003). This second type of picture-used surveys started to be used in the late 1980s when diversification of lifestyles aroused (Kiriyaama 1992, Kuwahara 1999). This method was developed from visual psychology and anthropology (Kuwahara 1999). Kiriyaama (1992) used this method in a new product development for a Japanese New Years' dish, and pointed out the advantages and disadvantages of picture-used surveys. Kuwahara (1999) used pictures in his studies to understand post-modern consumer behavior. He proposed a method called

‘Stereo Photo Essay Method’. In this method, respondents take pictures and let them interpret the pictures to understand the respondents’ unconscious mind and the depth psychology.

During the past decade, after iPhones and smart phones diffused in daily life, using this second type of surveys became popular. The main reason was that the convenience of the picture-used surveys increased, but at the same time, many researchers and marketers realized that only quantitative marketing research was not enough to understand the consumer’s insights. In the mid-2000s, picture-used surveys started to be popular in marketing surveys in practical marketing in the qualitative research (Snyder 2012, JMRA 2006).

Academic studies to conceptualize the picture-used surveys could be seen from the beginning of the 2010s (Pauwels 2011, O’Toole 2013). In these studies, this method of collecting pictures from respondents is often called as ‘participant-generated photography’ or ‘respondent-generated visual imagery’, which focuses on the collection of pictured data and its analysis. Ochiara and Edo (2013) demonstrated methods to analyze the collected pictures, which they called ‘Picture Mining’ because it resembles the Data Mining and Text Mining methods. Ochiara and Edo (2013) defined Picture Mining as ‘an explorative research analysis method that takes useful information from pictures, photographs, and static or moving images’. The Picture Mining concept includes observational research in the broad sense, because it also aims to analyze moving images (Ochiara and Edo 2013). However, there are few conceptual studies that support its significance of these picture-used methods.

3. PAST EXPERIENCE EFFECTS ON IMAGE FORMED BY PICTURES

The contemporary issues underlying in the field of picture-used research are common to both types. They are ‘when’, ‘where’, and ‘how’ to use pictures in surveys. No theories nor conceptualized knowledge give us clear answers to these questions.

Edo et.al. (2014) has identified ‘when’ and ‘where’ the most efficient fields are for picture-used surveys. They say that picture-used surveys are useful in 1) Research in Consumer and Customer Lifestyles, 2) New Product Development and 3) Research in Fashion and Design.

The main objective of this study is to give implication to ‘how’ to use pictures in surveys. We will focus on the influence past experience, a factor that could affect the images of the objects and ideas asked in surveys.

Experiences in the past form memories, and these will be biases when answering surveys. One reason for this bias is memory biases. Memory biases are mainly studied in psychology and consumer behavior field. Tulving (1972) has discussed episodic and semantic memory and its processes. We think that because pictures are easier to understand than texts, they are likely to recall various memories. The various memories will influence the images of the respondents to

be various. In this study, we will examine if the past experience will influence the image formed by the shown pictures are different with image by texts.

4. METHODOLOGY

In this research, the field of tourism and sightseeing was selected. Tourism and sightseeing is one of the areas that people express their experiences using pictures. Experience of sightseeing is episodic, which makes it even more difficult to express. This is one of the reasons why so many people upload their pictures of sightseeing on the social media.



Picture 1: Pictures used in the survey (left Hiroshima, right Kyoto)

Itsukushima Shrine	Kiyomizu Temple
1)A shrine in Miyajima, Hiroshima Prefecture. The head shrine of 500	1)A historical Hosō sect Buddhism temple built before the Heian period.
2)It is one of the UNESCO world heritage site 'Itsukushima Shrine'.	2)It is one of the UNESCO world heritage site 'Historic Monuments of
3)Famous for the red torii gate which looks like floating on the water which many tourists visit.	3)Famous for the 'stage of Kiyomizu Temple', which many excursion student visit.

Table 1. Text explanations used in the survey (left Hiroshima, right Kyoto).

A quantitative survey research was conducted on the internet in March 2017. Total of 1600 respondents (male 800, female 800) living in the Tokyo and suburbs were collected. Their age range is from 20 to 49 years old (800 were 20 to 34 yrs. old, and 800 were 35-49 yrs. old). In this study, pictures of Kyoto (Kiyomizudera temple) and Hiroshima (Itsukushima shrine) were selected for image evaluation (Picture 1). Kyoto and Hiroshima were selected because of the respondents visiting behaviors. Although both sightseeing spots are world heritages, Kyoto is

visited by most of the Japanese people. On the other hand, Hiroshima is not so much a popular place compared to Kyoto. To verify our hypothesis of experience effects, it was necessary to select a place like Hiroshima, where we could collect enough respondents who have not visited that place. Pictures were chosen from a pre-test prior to the research.

The respondents were divided into two groups. The first group was shown a picture of Kiyomizudera temple and then they were asked 20 image questions (see Table 3) in a 5-point scale. After that, they read an explanation of Itsukushima Shrine (Table 2) using texts (Group A). After that, the same 20 image questions were asked again. The second group was shown a picture of Itsukushima Shrine. After this, they read the explanation of Kiyomizudera temple (Table 2), just the opposite contents of the first group (Group B). All groups answered their experience, lifestyles, involvement towards sightseeing.

5. RESULTS

Past experience of the sightseeing spots (Hiroshima and Kyoto) in each group are shown in Table 2. The experience of visiting Hiroshima was 41.94% in total (single and multiple experiences). Kyoto was 73.80%. There is a large difference in experience between the two sightseeing spots.

Table 2: Past visiting of sightseeing spots of respondents (MA)

		Group A (n=800)	Group B (n=800)	Total (n=1600)	Total (%)
Hiroshima	Living Experience	44	35	79	4.94%
	Single Visiting Experience	274	292	566	35.38%
	Multiple Visiting Experience	53	52	105	6.56%
	Visiting Intention	399	380	779	38.95%
	NA	235	227	462	23.10%
Kyoto	Living Experience	41	38	79	3.95%
	Single Visiting Experience	570	573	1143	57.15%
	Multiple Visiting Experience	165	168	333	16.65%
	Visiting Intention	266	289	555	27.75%
	NA	137	127	264	13.20%

To verify the experience effect on image using pictures, standard deviation was used to see if there is variance between the two groups. We have determined that standard deviation as one of the measurements of diversity and variance for an image that a picture or texts make. Low standard deviation indicates low diversity and variance, which means that experience did not influence the image of the object to the respondents.

To examine the experience effect on pictures, we compared the standard deviation of image by picture with the image by text. F-test was used to verify the difference of standard deviation of image by picture and by text among visitors and non-visitors. Most of the image questions were not significant for both Kyoto and Hiroshima non-visitors. We can say that if there is no experience, the image formed by pictures and text does not differ much.

However, there were some significant measures for Hiroshima visitors (Table 3). There were 9 image questions that were significant. Although the images by picture and by text were mostly similar among the Kyoto visitors, the significant measures of Hiroshima will lead us to further discussion and research that experience might influence the image formed by pictures.

Table 3: F-test of Image by picture and by text (Hiroshima visitors)

		Group A (n= 327)		Group B (n= 344)		Difference		F-Test
		Image by Picture		Image by Text				
		Average	SD	Average	SD	Average	SD	p-value
1	Active	2.96	1.02	2.67	1.18	0.29	-0.17	0.13
2	Vigorous	2.76	0.98	2.63	1.14	0.13	-0.16	0.14
3	Energetic	3.26	1.00	3.04	1.24	0.22	-0.24	0.03 *
4	Lively	3.22	0.97	3.04	1.20	0.18	-0.24	0.03 *
5	Merry	3.14	0.95	3.00	1.37	0.14	-0.42	0.00 **
6	Adorable	3.09	1.03	3.10	1.26	0.00	-0.22	0.05 *
7	Beloved	3.17	1.11	3.21	1.29	-0.04	-0.18	0.13
8	Favorite	2.21	0.95	2.12	1.02	0.09	-0.07	0.44
9	Pretty	3.20	1.03	3.13	1.33	0.06	-0.30	0.01 **
10	Awesome	1.92	0.85	2.25	1.17	-0.33	-0.32	0.00 **
11	Amazed	3.37	1.05	3.17	1.26	0.20	-0.21	0.07 *
12	Surprised	3.32	1.07	3.00	1.31	0.32	-0.24	0.04 *
13	Astonished	3.61	1.04	3.35	1.22	0.26	-0.18	0.12
14	Agitated	3.68	1.08	3.35	1.25	0.33	-0.17	0.15
15	Startled	3.06	1.09	3.00	1.25	0.06	-0.17	0.16
16	Extraordinary	2.14	0.92	2.31	1.13	-0.17	-0.21	0.04 *
17	Intellectual	2.57	1.02	2.33	1.10	0.24	-0.08	0.47
18	International	2.57	1.02	2.35	1.14	0.22	-0.12	0.28
19	Enjoyable	2.83	1.05	2.60	1.11	0.23	-0.06	0.58
20	Precious	1.96	0.89	1.88	0.94	0.08	-0.05	0.58

*p<0. 05 **p<0. 01

6. CONCLUSION AND FOR DISCUSSION

In this research, we have discussed how we should use pictures in surveys. Images formed by pictures are not so different compared to images formed by text in most cases. Thus, we can

say that it is possible for us to use both picture and text in a similar way to measure images of an object. Advantages using pictures in surveys, such as easier decision-making, memory recalling, will decrease the burden of respondent responses, and these will generate the using of pictures in surveys.

Even if the advantages of using pictures were confirmed in this way, still we have to consider the experience of the respondents. As the results of Hiroshima visitors suggest, images by pictures tend to be different with the images by the text. We need further discussion of the antecedents of this circumstance, but we have to take in the characteristics that pictures are polysemantic rather than unambiguous. As a result, existence of experience might lead to the reinforcement of recalling different episodes inside the memory, which might conclude to a different image.

Pictures in surveys will definitely increase in the future. Although we need further research and studies of how to use pictures in surveys, and the implication to this crucial issue was shown in our research.

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REFERENCES

Edo K., H. Kitakata and T.Yamazaki (2013), 'Consideration of the concepts of Coolness: The women's evaluation of Cool Biz styles as men's fashion', *Fashion Business*, 18, pp.21-31

Edo K. H. Kitakata and A. Yamai (2014), 'The Social and Economic Impacts of 'Cool Biz' and 'Super Cool Biz' fashion in Japan', 2014 IFFTI Conference papers, *International Federation of Fashion Technological Institutes*, under publishing

Kiriyama, N. (1992), 'Fashion Research for Japanese New Years' dish', in H.Asano eds, *The Frontier of Marketing Research*, pp. 79-95, Doubunkan

Kuwahara, T. (1999) *Understanding of The Consumer Mind by post-modern method*, Nihon Keizai Shimbunsha

JMRA (2006), 'The Frontier of Surveys without words: Why non-verbal surveys?', *Marketing Researcher*, 101, pp.32-42, Japan Marketing Research Association

Ochihara H. and K. Edo (2013), Basic studies for conceptualizing Picture Mining: Classification of Picture researches and issues for new research methods', *JMRA Annual Conference Proceedings*, pp.23-32

O'Toole P., 'Capturing Undergraduate Experience through Participant-Generated Video', *The Qualitative Report* 2013, 18, Article 66, pp.1-14

Nelson, D.L.; Reed, U.S.; Walling, J.R. (1976). "Pictorial superiority effect". *Journal of Experimental Psychology: Human Learning & Memory*, 2: 523–528.

Pauwels, L. (2011), 'An integrated conceptual framework for visual social research' in E. Margolis & L. Pauwels eds., *The Sage handbook of visual research methods*, pp. 3-23, Los Angeles, CA: Sage.

Snyder, C. (2012), 'A Case Study of a Case Study: Analysis of a Robust Qualitative Research Methodology', *The Qualitative Report*, 17, pp1-21

Shaughnessy, J. J., Zechmeister, E. B., & Zechmeister, J. S. (2006). *Research methods in psychology*. New York: McGraw-Hill.

Tulving, E. (1972). 'Episodic and semantic memory' in E. Tulving and W. Donaldson eds., *Organization of Memory*, pp. 381–402, New York: Academic Press.

Zaltman, G. (2003), *How Customers Think*, Harvard Business School Press