

Emotional Responses to e-Magazine Published with Cinemagraph Images

Ji Seob Park · Jin Hwa Bae · Kwang Su Cho

Abstract This study aims to compare and analyze the differences of emotional responses between two types of e-magazines published—one with cinemagraph images and another with general still images. To conduct this study, a total of nine pages were prepared with different contents according to each theme and samples of e-magazine with a total of nineteen sections of images were exposed to a total of thirty persons of subjects. Fifteen persons were assigned to the experimental group viewing the cinemagraph images, and other fifteen persons were assigned to the control group viewing the general still images. As a result of the experiment, the emotional responses of the experimental group and the control group were significantly different. Twenty-eight items of positive emotional responses out of forty-two items of the emotional responses were more found in the experimental group, and fourteen items of negative emotional responses affected the control group more. In the experimental group where the differences in the mean value and significant differences were found, negative emotional responses were not examined but fourteen positive emotional response items such

as Loveliness, Merriness, Freshness, Activeness, Attractiveness, Powerfulness, Heartwarming, Joyfulness, Interesting, Confidence, Excitement, Cheerfulness, Humorousness, and Amazement were found; in the control group, positive emotional responses were not found but three items of negative emotional responses such as Ambiguousness, Stuffiness, and Boredom were found.

Keywords Cinemagraph, e-Magazine, Emotional Responses

1 Introduction

At the end of 2013, PwC, a US consulting company, analyzed that the global e-book market size would be 11 billion and 599 million dollars with a growth rate of 33.6% compared to the previous year, and the size of the e-book market would be recorded as 488 million dollars with a growth rate of 17.9% in comparison to the previous year, occupying 19.7% of the e-book market in Asia and Pacific regions [5]. According to the Ministry of Culture, Sports, and Tourism, the wholesome market size of domestic publication, printing and distribution of newspapers, magazines, mobile and internet e-books was 2 trillion 197.3 billion won in 2012. In particular, a publication of internet/mobile e-book occupied just 1.5% of the whole market, but the average annual increase and decrease rate was 23.9%, which showed a higher growth rate than the other fields. Hence, the expansion of the electronic publication market might be anticipated in the future [14]. Thus, as the domestic e-book market size and the growth rate increased, public interest in the e-book also naturally increased. Recently, as smartphone, tablet PC, and e-book terminal popularized, the e-book contents were also expected to increase in consumption. Following such global and domestic trends, this study aimed to provide an insight on the publication of e-book, e-magazines, in particular,

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to activate the consumption of e-book contents by differentiating the usage of images on e-magazines. This study adopted still pictures that were generally used in current publications and cinemagraph images, which were pictures with a portion endlessly repeating as a video clip, to examine the differences in the emotional responses respectively.

2 Theoretical Background and Hypothesis

2.1 Emotional Responses

The concept of emotion is defined collectively by feeling, mood, sense, and intention [1]. Along with cognition, emotion also works as an important factor in decision-making, but few studies on the emotion in relation to consumer's behavior have been conducted in comparison to the cognitive processing theories or behavior theories [13].

Because the theories on effects of existing advertisements emphasize the cognitive aspect and overlook the emotional aspect, it motivated us to conduct the studies on the emotional responses. Zajonc & Markus (1982) suggested, "The emotional responses are separate from the cognitive responses, and it occurs through a quick process in contrast to the cognitive system," which called more attention to the emotional responses. In the following studies, it is found that emotional response is not a simply emotional status toward something but it is a rich repository of subjective emotions which occur by an object [13]. In fact, they claims that the emotions aroused by an advertisement lead to the attitude not only toward the advertisement but also toward the product itself. [1]. The classification of emotional responses was conducted by data reduction technique, such as factor analysis. As a result of the technique, the sub-dimensions of the emotional responses were substantially revealed [13].

This study investigates the emotional responses of people by using greatly evocative cinemagraph images in comparison to the general still images, based on the precedent studies on the emotional responses of people toward advertisements.

2.2 Cinemagraph

The so-called cinemagraph technique became known by Jamie Beck and Kevin Burg, fashion photographers, through the Huffington Post in 2011, and then it was considered to be a field of photography art. The term cinemagraph was a compound of cinema and photograph, giving

a new type of feelings with a still picture and a video stimulating imagination of people [6]. From 2012, studies on the publication technique of the cinemagraph were conducted, and those on marketing have started since 2014 [3][4][12]. Ji-seob Park (2014) claimed that the cinemagraph stimulated the imagination of people with an endlessly repeating video as part of the picture, and also that it had a unique characteristic of inserting a motion cue in the picture. Most of the studies were conducted on the PC and mobile e-commerce. In the study of Ji-seob Park (2014) on food e-commerce, purchasing intentions, brand attitudes, perceived monetary values, freshness, and tastes improved in the group who viewed the cinemagraph images than the group with the general still images. The reason was that the cinemagraph images were more evocative than the general still images to stimulate imagination [12].

2.3 Hypothesis

Ji-seob Park (2014) implied that the visual stimuli of the cinemagraph images stimulated more imagination and had more evocativeness than the general still images and that people evaluated the cinemagraph images more positive than the general still images. Eye tracking and interview studies proved that the motion cue in the cinemagraph images, in contrary to the general still images, draw more attention of people and made them read for a longer time to incur positive responses. Ji-seob Park (2014) analyzed that the cinemagraph images of food samples used in the study enhanced people to recall their experience in the past as well as people, places, or events in the past (Johnson 2001), thus the effect was greater than the people who viewed general still images. This study investigated how the evocativeness influenced emotion of people based on the preceding studies, and also verified what kind of positive or negative responses were caused by the cinemagraph images in contrast to the general still images. Ji-seob Park (2014) conducted the study with samples of food products to measure the evocativeness because, as the study explained, food, in general, was accepted as to be evocative. This study also made samples with food images to publish a food-focused e-magazine with cinemagraph images. Accordingly, hypotheses of differences in emotional responses to the published e-magazine in comparison to general still images were suggested as follows:

H1 : The emotional responses to the e-magazine with cinemagraph images would be higher than those to the e-magazine with the general still images.

H2 : The positive responses to the e-magazine with cinemagraph images would be higher than those to the e-magazine with the general still images.

3 Experiment and Analysis

3.1 Experimental Design and Procedure

Participants

Thirty undergraduate and graduate students of Yonsei University participated in this study. There were thirteen male participants and seventeen female participants. The age distribution was 32.0% of 21-25 years old, 43.6% of 26-30 years old, and 24.4% of 31-35 years old. The rate of reading e-book was the highest in the age group of 26-30 years old, and the most of the participants read the e-book on their smartphones or on a tablet PC. 44% of the participants had experience of reading the e-book on their smartphones, 38% on computer (PC)/laptop, 11% with the tablet PC, 3.2% with other personal mobile terminals, 2% with the e-book reader terminal, and 1.8% of the other. Regarding the question of monthly frequency, 1-3 times per month was most answered by 24 persons (67.3%).

Table 1 Experimental Sample

Category	Cinemagraph Images in E-magazine (Square Box - Motion Section)	General Still Images in E-magazine
Cover (1 Page) Image Section: 1		
Content (2 Page) Image Section: 3		

3 Page Editor's Greeting Image Section: 6		
Advertisement (4 Page) Image Section: 1		
Special Feature (5 Page) Image Section: 1		
Interview with Famous Restaurants/Food (6 Page) Image Section: 1		
Introduction of Famous Restaurants (7 Page) Image Section: 2		



control group. A total of nineteen image sections were composed: one image section for the cover on page 1, three image sections for the content on page 2, six image sections for the editor’s greeting on page 3, one image section for the advertisement on page 4, one image section for the special feature on page 5, one image section for the interview of famous restaurant/food on page 6, two image sections for the introduction of famous restaurant on page 7, one image section for the introduction of cooking on page 8, and one image section for a hot issue on page 9.

The resolution of the sample e-magazine was 2048 x 1536 according to 7.9" display standard of Apple iPad 4, published by Adobe InDesign CC version as seen in <Table 1>.

Composition of Questionnaires

We referred to Burke & Edell (1989) for the 56-feelings scale of positive and negative emotional responses and Cheol-soo Kim (1990) whom again referenced to Wan-seok Kim (1989) to choose the 48 Korean adjective scales. For positive emotional responses, 32-adjectives scale was used and it included factors such as Content, Excitement, Cheerfulness, Pleasant, Merriness, and Loveliness. As for the negative emotional responses, 16-adjectives scale was used and it included Scorn, Disgusting, Disappointment, Ambiguousness, and Monotonousness [2][7][8][10][11]. The subjects reading the experimental samples were requested to measure their feelings with the adjectives based on a 5-point scale, from ‘never felt (1) to strongly felt (5).’ The <Table 2> showed the composition of the emotional responses.

Sample Design

The samples of e-magazines with the insertion of cinemagraph images and general still images were published for this study. As the cinemagraph images were known for their great influence on the food advertisement [12], the sample e-magazine was made as a ‘food magazine’ specialized in the relevant food information. The contents in the e-magazine were composed of nine themes as other general food magazines provide. The image sections were organized according to the nine types of contents, and then the cinemagraph images were inserted for the experimental group and the general still images were inserted for the

Table 2 Organization of Emotional Responses

Category		Questionnaires of Emotional Responses	Scale	Advanced Research
Emotional Responses (48)	Positive Emotional Responses (32)	Content, Excitement, Cheerfulness, Pleasantness, Merriness, Loveliness, Calmness, Freshness, Peacefulness, Activeness, Attractiveness, Proudness, Humorousness, Diligence, Powerfulness, Feeling of Happiness, Heartwarming, Warmness, Amazement, Piquant, Coziness, Softness, Joyfulness, Goodness, Satisfaction, Self-esteem, Touching, Friendliness, Interesting, Confidence, Gratitude, Excitation	5-points Likert scale	Holbrook&Bet al. (1987)
	Negative Emotional Responses (16)	Scorn, Disgusting, Disappointment, Ambiguousness, Monotonousness, Frustration, Foolishness, Discomfort, Dislikes, Annoyingness, Sense of Betrayal, Anger, Stiffness, Upset, Boredom, Confusedness		Weston et al. (1988) Dolen et al. (2001) Cheol-soo Kim (1990) Yeong-hwa Kim (2005)

Experimental Procedure

The procedure of the experiment was sufficiently explained to the participants before the experiment. The subjects reading the cinemagraph e-magazine were classified as the experimental group, and the subjects reading the general e-magazine were classified as the control group. The subjects were randomly assigned into two groups and they were requested to sit in front of the computer desks where the tablet PC holders were placed. The participants read the exposed e-magazine through the tablet PC on the desk, and then they filled out the questionnaires. It took an average of ten minutes for each experiment. Each participant got compensation of 3,000 won for their participation.

3.2 Experimental Result and Analysis

A total of fifteen subjects were in the experimental group and another 15 in the control group. A total number of thirty persons were considered to be a small sample, and the results were analyzed by t-test. In a small sample, as the normal distribution could not be supposed according to a central limit theorem, t-test was used. In the field of social science, even a lesser number than thirty samples was acceptable, hence, a total of thirty subjects were analyzed in this study (Byeong-seo Kang & Cheol-ho Cho, 2005).

The result data of the experiment were analyzed by SPSS 21.0 and hypothesis test, and the experimental group and the control group were compared. As the Cronbach's alpha coefficient was used to validate reliability, the total reliability was 0.96, with the reliability of positive emotional responses of 0.97 and of the negative emotional responses 0.93, obtaining a high level of reliability as all the results were above 0.6. Next, to check the validity, factor analysis was performed. As a factor extraction method, a principle component analysis was used, and a varimax method was performed for rotation. The result of the factor analysis for the emotional responses to the advertisement was shown in the <Table 3>. The factors were classified by Factor 1 of 'positive emotional responses,' and Factor 2 of 'negative emotional responses.' The total explanation power for both factors was 49.73%, and the factors were proven valid with an eigenvalue above 1. Factor 1 was loaded in the order of 'Satisfaction, Attractiveness, Heartwarming, Piquant, Activeness, Pleasantness, Amazement, Joyfulness, Proudness, Freshness, Excitation, Cheerfulness, Excitement, Loveliness, Touching, Goodness, Powerfulness, Interesting, Content, Merriness, Friendliness, Feeling of Happiness, Confidence, Softness,

Warmness, Humorousness, Coziness, Gratitude, Self-esteem, Peacefulness, and Monotonousness.' Factor 2 was loaded in the order of 'Disappointment, Frustration, Anger, Scorn, Discomfort, Foolishness, Dislikes, Annoyingness, Disgusting, Upset, Ambiguousness, Diligence, Stuffiness, Boredom, Confusedness, Sense of Betrayal, and Calmness.' The factors of Self-esteem and Peacefulness from the positive emotional responses in the factor 1 and the factors of Diligence, Sense of Betrayal, and Calmness from the negative emotional responses in the factor 2 were removed since the value of loadings did not exceed the standard of 0.4. Also, the factor of Monotonousness was loaded but did not match with the theoretical purpose of this study thus it was removed. Therefore, the total 42 items were composed of twenty-eight items of positive emotional responses and fourteen items of negative emotional responses.

Also, as the variance explanation power of the positive emotional responses was 33.68%, which was higher than that of the negative emotional responses of 16.06%, it implied that the emotional responses of the subjects who read the e-magazine with cinemagraph images had more positive emotional responses than the subjects who read the e-magazine with general still images. In particular, the positive emotional response of the 'Satisfaction' was analyzed to have a high explanation power.

Table 3 Factory Analysis Result of the Emotional Responses

Emotional Responses		Factor 1 (a=.9019)	Factor 2 (a=.9456)	Cronbach alpha
Items				
1	Satisfaction	0.87		0.97
2	Attractiveness	0.85		
3	Heartwarming	0.85		
4	Piquant	0.83		
5	Activeness	0.81		
6	Pleasantness	0.80		
7	Amazement	0.80		
8	Joyfulness	0.79		
9	Proudness	0.78		
10	Freshness	0.77		
11	Excitation	0.76		
12	Cheerfulness	0.76		
13	Excitement	0.74		
14	Loveliness	0.74		
15	Touching	0.73		
16	Goodness	0.72		

17	Powerfulness	0.72	
18	Interesting	0.70	
19	Content	0.67	
20	Merriness	0.67	
21	Friendliness	0.64	
22	Feeling of Happiness	0.63	
23	Confidence	0.61	
24	Softness	0.61	
25	Warmness	0.61	
26	Humorousness	0.61	
27	Coziness	0.60	
28	Monotonousness*		0.29
29	Gratitude	0.51	
30	Self-esteem*	0.34	
31	Peacefulness*	0.33	
32	Disappointment		0.84
33	Frustration		0.82

34	Anger		0.77	0.93
35	Scorn		0.77	
36	Discomfort		0.77	
37	Foolishness		0.74	
38	Dislikes		0.72	
39	Annoyingness		0.70	
40	Disgusting		0.69	
41	Upset		0.66	
42	Ambiguousness		0.58	
43	Diligence*		0.54	
44	Stuffiness		0.53	
45	Boredom		0.47	
46	Confusedness		0.43	
47	Sense of Betrayal *		0.30	
48	Calmness*		0.29	
Eigen Value		16.16	7.71	
Total Variance		33.68	16.06	49.73

*p < .1, **p < .05, ***p < .01

The item of the * mark was removed in the factor analysis since it did not exceed the standard of 55/40 or unmatched with the theoretical purpose.

To verify the hypothesis of this study, t-test was performed between the groups. <Table 2> was the result of the verification of differences in the emotional responses between the groups. The average of the experimental group was 113.33 and the control group was 98.92. Significant differences between the groups occurred (t=1.792, p<.1). Therefore, the first hypothesis that the emotional responses to the e-magazine with cinemagraph images would be higher than those to the e-magazine with general still images was proved. Also, the results of differences in the emotional responses between the groups are shown in the <Table 4>. According to <Table 5>, the average of each factor of the positive emotional responses, the average of the experimental group was 77.8 and the control group was 59.6. A significant difference between the groups oc-

curred (t=2.381, p<.05). Therefore, as the subjects viewing the cinemagraph images could be translated to show higher 'positive emotional responses', the second hypothesis that the positive emotional responses to the e-magazine with the cinemagraph images would be higher than those to the e-magazine with the general still images was also proved. Regarding the 'negative emotional responses', the average of the experimental group was 22.6 with the control group of 23.4, showing a little higher negative emotional responses in the control group. A significant difference between the groups, however, did not occur according to the result of the t-test. It was observed that the e-magazine with the cinemagraph images did not arouse negative emotional responses of the subjects and that was the same for the viewers of e-magazine with general still images.

Table 4 Verification of Differences in the Emotional Responses between the Groups

Classification Group	N	Average	Standard Deviation	df	t	sig
Experimental Group	15	113.33	22.10	28	1.792	0.084*
Control Group	15	98.27	23.92			

*p < .1, **p < .05, ***p < .01

Table 5 Verification of Differences in the Types of Emotional Responses between the Groups

	Classification Group	Average	Standard Deviation	df	t	sig
Positive Emotional Responses	Experimental Group	77.8	22.79	28	2.381	0.025**
	Control Group	59.6	18.89			
Negative Emotional Responses	Experimental Group	22.6	8.62	28	-0.262	0.796
	Control Group	23.4	8.12			

*p < .1, **p < .05, ***p < .01

Following the verification of the differences in the types of emotional responses between the groups, the differences between the questionnaires for the emotional responses were compared. The t-test result of the emotional responses between the groups was shown in the <Table 6>. As the result of the analysis, the significant differences in the positive emotional responses between the groups were observed as: Loveliness (t=1.70, p<.1), Merriness (t=2.21, p<.05), Freshness (t=1.74, p<.1), Activeness (t=4.23, p<.01), Stiffness (t=-2.23, p<.05), Cheerfulness (t=5.08,

p<.01), Attractiveness (t=2.33, p<.05), Humorousness (t=2.15, p<.05), Powerfulness (t=2.80, p<.01), Heartwarming (t=1.78, p<.1), Joyfulness (t=3.12, p<.01), Interesting (t=3.12, p<.01), Confidence (t=1.69, p<.1), Excitement (t=2.34, p<.05), and Amazement (t=2.81, p<.01). Negative emotional responses between the groups were observed as: Ambiguousness (t=-2.18, p<.05), Stiffness (t=-2.23, p<.05), and Boredom (t=-1.72, p<.1). Thus, the second hypothesis was also proved.

Table 6 T-test Result of the Emotional Responses between the Groups

No	Question	Group	Average	Standard Deviation	t	df	sig
1	Scorn	Experimental Group	1.13	0.35	0.59	28	.56
		Control Group	1.07	0.26			
2	Disgusting	Experimental Group	1.20	0.77	0.63	28	.53
		Control Group	1.07	0.26			
3	Disappointment	Experimental Group	1.27	0.59	-1.60	23	.12
		Control Group	1.73	0.96			
4	Ambiguousness	Experimental Group	1.93	1.10	-2.18	28	.04**
		Control Group	2.87	1.25			
5	Frustration	Experimental Group	1.93	1.28	0.30	28	.77
		Control Group	1.80	1.15			
6	Foolishness	Experimental Group	1.60	1.30	0.16	28	.88
		Control Group	1.53	0.99			
7	Discomfort	Experimental Group	2.20	1.21	0.15	28	.88
		Control Group	2.13	1.25			
8	Loveliness	Experimental Group	2.27	1.16	1.70	23	.10*
		Control Group	1.67	0.72			
9	Dislikes	Experimental Group	1.53	0.74	-0.67	28	.51
		Control Group	1.73	0.88			
10	Merriness	Experimental Group	3.40	1.12	2.21	28	.04**
		Control Group	2.47	1.19			

11	Freshness	Experimental Group	3.00	1.46	1.74	28	.09*
		Control Group	2.20	1.01			
12	Annoyingness	Experimental Group	2.40	1.18	-0.16	28	.88
		Control Group	2.47	1.13			
13	Pleasantness	Experimental Group	3.13	1.25	1.18	28	.25
		Control Group	2.67	0.90			
14	Anger	Experimental Group	1.33	0.82	0.87	28	.39
		Control Group	1.13	0.35			
15	Activeness	Experimental Group	4.13	0.92	4.23	28	.00***
		Control Group	2.40	1.30			
16	Stuffiness	Experimental Group	1.67	0.72	-2.23	23	.04**
		Control Group	2.47	1.19			
17	Cheerfulness	Experimental Group	3.80	0.94	5.08	28	.00***
		Control Group	2.20	0.77			
18	Upset	Experimental Group	1.13	0.35	0.00	28	1.00
		Control Group	1.13	0.35			
19	Attractiveness	Experimental Group	3.53	0.99	2.33	28	.03**
		Control Group	2.67	1.05			
20	Boredom	Experimental Group	1.87	0.64	-1.72	22	.10*
		Control Group	2.47	1.19			
21	Proudness	Experimental Group	1.73	1.10	0.54	28	.59
		Control Group	1.53	0.92			
22	Humorousness	Experimental Group	2.47	1.60	2.15	17	.05**
		Control Group	1.53	0.52			
23	Confusedness	Experimental Group	3.07	1.49	1.55	28	.13
		Control Group	2.27	1.33			
24	Powerfulness	Experimental Group	3.07	1.28	2.80	28	.01***
		Control Group	1.87	1.06			
25	Feeling of Happiness	Experimental Group	2.67	1.11	1.34	28	.19
		Control Group	2.13	1.06			
26	Heartwarming	Experimental Group	2.67	1.11	1.78	28	.09*
		Control Group	2.00	0.93			
27	Warmness	Experimental Group	2.47	1.19	-0.16	28	.87
		Control Group	2.53	1.06			
28	Content	Experimental Group	1.93	1.16	-0.17	28	.87
		Control Group	2.00	1.00			
29	Coziness	Experimental Group	2.40	0.99	0.17	28	.86
		Control Group	2.33	1.11			
30	Softness	Experimental Group	2.47	1.25	0.15	28	.88
		Control Group	2.40	1.12			

31	Joyfulness	Experimental Group	3.33	1.11	3.12	28	.00***
		Control Group	2.13	0.99			
32	Goodness	Experimental Group	3.33	1.11	1.64	28	.11
		Control Group	2.73	0.88			
33	Satisfaction	Experimental Group	3.07	1.03	1.50	28	.15
		Control Group	2.53	0.92			
34	Touching	Experimental Group	2.00	1.41	0.77	24	.45
		Control Group	1.67	0.90			
35	Friendliness	Experimental Group	3.07	1.03	0.52	28	.60
		Control Group	2.87	1.06			
36	Interesting	Experimental Group	4.00	1.00	3.12	28	.00***
		Control Group	2.87	0.99			
37	Confidence	Experimental Group	3.40	0.91	1.69	28	.10*
		Control Group	2.73	1.22			
38	Gratitude	Experimental Group	1.60	0.91	0.25	28	.81
		Control Group	1.53	0.52			
39	Excitation	Experimental Group	2.33	1.18	1.60	28	.12
		Control Group	1.67	1.11			
40	Excitement	Experimental Group	2.53	1.06	2.34	28	.03**
		Control Group	1.60	1.12			
41	Piquant	Experimental Group	2.07	1.39	1.33	28	.19
		Control Group	1.47	1.06			
42	Amazement	Experimental Group	3.00	1.36	2.81	28	.01***
		Control Group	1.80	0.94			

* $p < .1$, ** $p < .05$, *** $p < .01$

Also, the mean values of the experimental and control groups in some of the emotional responses were different. In the experimental group, the mean values of fourteen items were: Loveliness ($t=1.70$, $p<.1$), Merriness ($t=2.21$, $p<.05$), Freshness ($t=1.74$, $p<.1$), Activeness ($t=4.23$, $p<.01$), Attractiveness ($t=2.33$, $p<.05$), Powerfulness ($t=2.80$, $p<.01$), Heartwarming ($t=1.78$, $p<.1$), Joyfulness ($t=3.12$, $p<.01$), Interesting ($t=3.12$, $p<.01$), Confidence ($t=1.69$, $p<.1$), Excitement ($t=2.34$, $p<.05$), Cheerfulness ($t=5.08$, $p<.01$), Humorousness ($t=2.15$, $p<.05$), and Amazement ($t=2.81$, $p<.001$), which were higher than the control group. And there also was a significant difference in the result of the t-test. On the other hand, three negative emotional responses: Ambiguousness ($t=-2.18$, $p<.05$), Stuffiness ($t=-2.23$, $p<.05$), and Boredom ($t=-1.72$, $p<.1$) were observed in the control group. Regarding the difference between the experimental group and the control

group, a great deal of positive emotional responses and none of the negative emotional responses were observed in the experimental group, while none of the positive emotional responses and three of the negative emotional responses such as Ambiguousness, Stuffiness, and Boredom were observed in the control group. The results in the <Table 6> were summarized as in the <Table 7>. That is, it might imply that the people who read the e-magazine with cinemagraph images felt positive emotions such as Loveliness, Merriness, Freshness, Activeness, Attractiveness, Powerfulness, Heartwarming, Joyfulness, Interesting, Confidence, Excitement, Cheerfulness, Humorousness, and Amazement but people who read the e-magazine with general still images might feel emotions such as Ambiguousness, Stuffiness, and Boredom.

Table 7 Comparison of the Emotional Responses in Significant Differences of the Mean Values or According to the Result of T-test between the Groups

Classification	Experimental Group	Control Group
Positive Emotional Responses	Loveliness	
	Merriness	
	Freshness	
	Activeness	
	Attractiveness	
	Powerfulness	
	Heartwarming	
	Joyfulness	
	Interesting	
	Confidence	
	Excitement	
	Cheerfulness	
	Humorousness	
	Amazement	
Negative Emotional Responses		Ambiguousness Stiffness Boredom

4 Discussion and Conclusion

This study investigated the emotional responses of people for the e-magazine published with cinemagraph images.

The results of this study could be summarized as follows:

Firstly, it was analyzed that the emotional responses of the experimental group were greater than the control group with a significant differences. Secondly, the positive emotional responses in the experimental group were larger than the control group with a significant difference as well. Negative emotional responses, on the other hand, were larger in the control group than the experimental group but with insignificant differences. Thirdly, the positive responses in the experimental group were fourteen items of Loveliness, Merriness, Freshness, Activeness, Attractiveness, Powerfulness, Heartwarming, Joyfulness, Interesting, Confidence, Excitement, Cheerfulness, Humorousness, and Amazement, but none of the negative emotional responses were observed. Meanwhile, none of the positive emotional responses were found in the control group, but the three of the negative emotional responses such as Ambiguousness, Stiffness, and Boredom were observed.

Therefore, the result of the study implied that the e-magazine published with the cinemagraph images brought about more various positive emotional responses from people than the e-magazine with only general still

images.

A theoretical contribution of this study is that we have established groundwork of studies on emotional responses to cinemagraph images. A practical contribution is that we have provided a clue for application of the cinemagraph image to the field of e-book beyond the existing sections of photography art and marketing.

Further discussions based on the result of this study are as follows:

Even though this study has targeted e-magazine in the field of e-book, and the e-magazine for food, in particular, the target of future study should be expanded to the other e-books such as textbook, novel, or a comic book. Also, it is expected that studies on the cinemagraph images will explore alternative sections of the general still images beyond the fields of photography arts and marketing in the future.

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