Impression Space Analysis of Local Mascot Characters for Regional Promotion

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Impression Space Analysis of Local Mascot Characters for Regional Promotion

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Abstract. Recently, local mascot characters called "Yurukyara" have been active in various places. They play an important role in raising a region's image and exciting the region to promote regional development. It is important to understand the impression given by the characters, since each character's image leads to the promotion and recognition of the region. In this study, we analyze the impression of local mascot characters to provide useful information for regional promotions, etc. First, we extract the Kansei factors from the characters' appearances and classify the characters within the factor space. Next, we analyze the differences in impressions when adding character-profile and video information.

Keywords: Local mascot character, impression analysis, Kansei factor, analysis of variance

1. Introduction

Recently, local mascot characters called "Yurukyara" have been active in various places. They play an important role in raising a region's image and exciting the region to promote regional development. It is important to understand the impression given by the characters, since each character's image leads to the promotion and recognition of the region.

Studies have been conducted on the impressions that such characters give to people, including the effect of the character images[1], [2]. Jiyavorananda et al. have studied factors such as "yuru-sa" impressions[3]. "yuru-sa" includes several meanings such as "loose" and "relaxed". Ito et al. have researched the psychological effects of a character's design using rough sets[4]. In addition, Hotogi et al. have developed a character-creation system using affective words[5]. These studies deal directly with the impression of the character's design. As another approach, Tateishi et al. evaluated mascot characters using biological signals and response times[6].

Local mascot characters are actively used for regional promotion and in conjunction with other things. For example, as a character introduced its birth story, it can promote the regions and events. Moreover, a character's movie can be created and uploaded on the Internet.

Therefore, in this study, we analyze the impressions of local mascot characters, including their design factors and other information to find useful results for regional promotion. First, we extract the Kansei factors from character's appearance and then classify the character within the factor space. Moreover, we analyze the differences in impression when adding character-profile and video information, and examine the characteristics of each of the classified characters.

2. Extraction of the Impression Space of a Local Mascot Character

To determine the image obtained from a local mascot character's appearance, the impressions that a person feels about it are extracted from the factor analysis. We then do a Kansei evaluation experiment on the images of selected local mascot characters, and analyze the obtained Kansei data.

2.1. Selection of Local Mascot Characters

Local mascot characters used for the experiment were selected from the "Yurukyara Grand Prix 2014". The selected characters are shown in Table 1. We selected five characters each from the top, middle and lower ranks of the Grand Prix rankings, and five local characters from Fukui Prefecture. The characters from Fukui Prefecture were included because it is our region and we would like to utilize the research results. A costume image of each character was acquired from the Grand Prix Web site[7]. These were used as stimuli for the subjects.

2.2. Selection of Adjective Pairs

For the evaluation, 17 pairs of adjectives representing character impressions were extracted with reference to the previous studies[1], [2]. The adjective pairs are shown in Table 2.

Table 1. A List of Selected Local Mascot Characters

No.	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10
										
Name	Gunma-chan	Fukkachan	Mican	Shinjokun	Ojichama	Tsudanun	Try-kun	Suekkokun	Kiko	Mikanmaru
Ranking	1	2	3	4	5	748	749	750	751	752
No.	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
										
Name	Gee nyi & Gee star	Smabear	Nyuzou	Ikikko-chan	Minorichan	Asakura Yumemaru	Kikurin	Echizen Kanitaro	Sabanyan	Shiromaru-kun
Ranking	1695	1695	1695	1698	1698	170	630	1311	1344	1395

Table 2. Adjective Pairs

Powerful	-	Delicate
Unique	-	Ordinary
Active	-	Modest
Friendly	-	Unfriendly
Cute	-	Not cute
Natural	-	Artificial
Traditional	-	Modern
Loud	-	Quiet
Childish	-	Mature
Cheerful	-	Gloomy
Clean	-	Messy
Sharp	-	Roundish
Dependable	-	Undependable
Cool	-	Uncool
Calm	-	Frustrated
Flashy	-	Plain
Self-assertive	-	Self-effacing

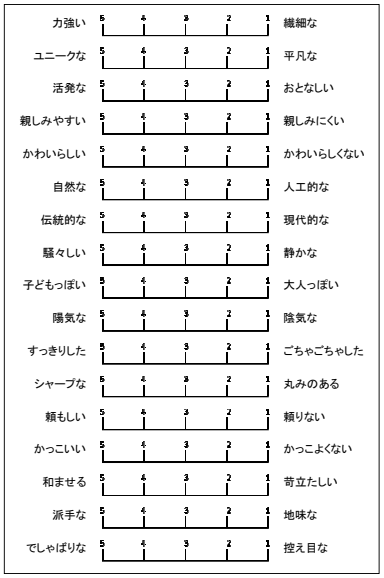


Fig. 1. Questionnaire Form Used in the Kansei Evaluation Experiment

2.3. Kansei Evaluation Experiment

The Kansei evaluation experiment was conducted by showing the subject an image of a local character. Slides were created with an image of each character placed in the center, and then the slides were displayed on a PC display. The display order of the slides was randome so that there is no bias in the characters categories (upper rank, middle rank, lower rank, and Fukui prefecture).

The experiment participants were 19 university students aged 19 to 24 (average age 20.26 years old, standard deviation 1.19; male: 7, female: 12). Questionnaire evaluations were conducted on five semantic differential (SD) scales for each pair of adjectives. The questionnaire form used in the Kansei evaluation experiments is shown in Figure 1. The data of 17 subjects (average age 20.17 years old, standard deviation 1.18; male: 5, female: 12) excluding invalid respondents were analyzed.

2.4. Factor Analysis Results

The rating-scale values obtained from the questionnaire were analyzed using factor analysis (major factor method, varimax rotation), and four factors were obtained. The cumulative contribution rate was about 54.2%. The factor loading after rotation is shown in Table 3.

The first factor seems to represent the character's activity because factor loadings such as "Active," "Loud," and "Self-assertive" are high. Therefore, the first factor is called "Activity." The second factor is considered to represent the love or comforting of the character, because factor loadings such as "Cute," "Friendly," and "Calm"

Table 3. Factor Loading After Rotation

	Factor 1 Activity	Factor 2 Comforting	Factor 3 Dependability	Factor 4 Appearance
Active - Modest	0.809	-0.109	0.092	0.098
Loud - Quiet	0.797	-0.249	-0.040	-0.037
Self-assertive - Self-effacing	0.695	-0.299	-0.002	-0.198
Flashy - Plain	0.650	-0.025	0.168	-0.289
Cheerful - Gloomy	0.601	0.349	-0.129	0.159
Powerful - Delicate	0.540	-0.222	0.416	0.034
Unique -Ordinary	0.306	0.033	0.181	-0.087
Cute - Not cute	-0.202	0.867	-0.056	0.011
Friendly - Unriendly	0.017	0.857	0.096	0.186
Calm - Frustrated	-0.079	0.845	0.128	0.103
Natural - Artificial	-0.193	0.491	0.035	0.189
Sharp - Roundish	0.057	-0.489	0.287	0.282
Childish - Mature	0.270	0.451	-0.426	-0.025
Dependable - Undependable	0.334	0.075	0.746	0.165
Cool - Uncool	0.238	0.121	0.674	0.242
Traditional - Modern	-0.060	-0.017	0.355	-0.117
Clean - Messy	-0.170	0.219	0.061	0.707
Cumulative Contribution Rate (%)	19.44	38.77	48.73	54.19

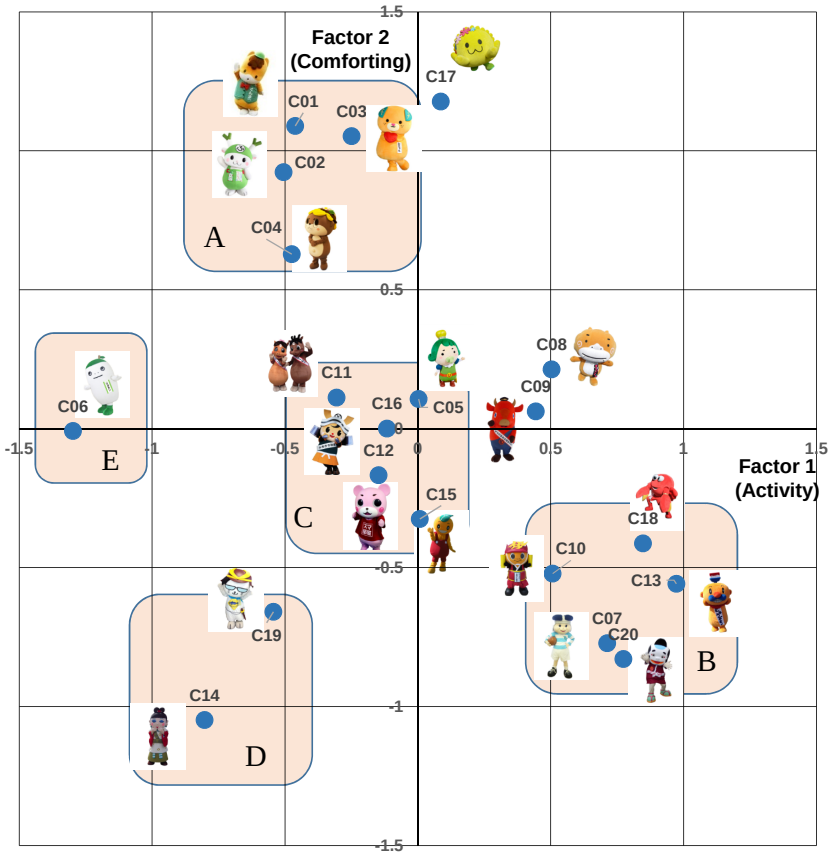


Fig. 2. Scatter Diagram of Characters' Factor Score Distributions (Activity and Comforting Axes)

are high. Thus it is the "Comforting" factor. The third factor includes "Dependable" and "Cool." It is thought that this factor expresses strong and reliable impressions; therefore, Factor 3 is "Dependability." Factor 4 includes "Clean" and is considered to represent the physical appearance of the character. Therefore, Factor 4 is "Appearance."

Next, the factor scores were averaged for each charac-

ter. A scatter diagram of the factor-score distribution of "Activity" and "Comforting" is shown in Figure 2.

Characters C01, C02, C03, and C05 are placed in area A of the second quadrant. In this group, Comforting has a high value, and Activity is -0.5 to 0. Therefore, these characters give an impression that is comforting and somewhat inactive. In addition, since the characters in this group are high ranking, it is suggested that they give a good impression. These characters' common points are short hands and feet, and black ellipse eyes. Therefore, these features are design elements for giving a good impression.

Characters C07, C10, C13, C18, and C20 are placed in area B of the fourth quadrant. These characters are active and do not give a comforting impression. Especially, C07, C18, and C20 have elongated legs and give a cheerful impression. Further, their images move actively, on the whole.

C05, C11, C12, C15, and C16 are placed in area C near the origin. It seems that the comforting and activity of these characters are neither high nor low.

C14 and C19 are placed in area D in the third quadrant and have no comforting or activity. Both characters hide their eyes and have a unique atmosphere. Further, C08 in area E is not active, and the comforting factor score is 0. C08's impression is not only different from the other characters of the D group, it also seems to be eccentric, compared to the other characters.

From these results, it seems that the characters' impression can be divided into groups to a certain extent by "Activity" and "Comforting".

3. Impression Changes When Adding a Character's Profile and Movies

In Section 2, four factors were extracted from the impressions of local mascot characters, and the characters were grouped according to the factor-score distributions. In addition, similar design elements and physical characteristics in the group were pointed out. However, since these characters are used for regional promotion, etc., it is necessary to consider their impression evaluation with images and other information. Therefore, in this section, we investigated the different impressions when adding the character's profile and video information.

3.1. Adding Information about Local Mascot Characters

In Section 2, we used only the character's photo images in the evaluation experiment. However, it was thought that other information could be added to improve public relations (PR); e.g., the character's profile, including its hometown, motif, birth history, and other background information. In addition, movies of the character can be uploaded to related Web sites and video sites, and used as PR image strategies. Such a movie can also greatly affects the character's impression. Therefore, we used the profiles and movies as additional character information in this study.

(a) Photo slide of mascot

(b) Photo and profile slide of mascot

(c) Movie slide of mascot

Fig. 3. Additional Character Information Slides

3.2. Experiment

The subjects were divided into four groups. After seeing the information of the local mascot character displayed on the PC screen, each subject evaluated the impression that it intuitively felt using five stages. At that time, we changed the characters information shown for each group. The information displayed for each group is as follows.

Group 1: Image only
Group 2: Image and Profile
Group 3: Image and Movie

Group 4: Image, Profile and Movie

3.2.1. Character Selection

One character was selected from each of the groups obtained from Figure 2, except the D group. Characters in the D group have little published information or movies; hence, additional information is difficult to obtain. Moreover, their design elements differ from other characters, e.g., they wear sunglasses or hide their faces. It was considered that a comparison of impressions would be difficult, so the group was excluded from the experiment.

The selected characters are as follows.
A Group: C01 (Gunmachan)
B Group: C10 (Mikanmaru)
C Group: C05 (Ojichama)
E Group: C08 (Tsudanun)

A costume image of each character was acquired from the Grand Prix Web site[7]. Profiles were created by obtaining the character's birthplace, birth history, motifs, etc. from the character's official web-site[8]–[12]. For movie contents, we used movies published on YouTube where the character is dancing [13]–[16]. As shown in Figure 3, slides containing this contents were created. The slides were presented to the subjects in each group as follows. Group 1 saw only (a), Group 2 saw only (b), Group 3 saw (a) and (c), and Group 4 saw (b) and (c). A silenced movie was shown for the movie slide (c) to eliminate the influence of the sound.

3.2.2. Selection of Evaluation Word Pairs

Two or three pairs of adjectives were selected from each factor in Section 2. In addition, "Be healed – Not be healed" representing Factor 2 was added. In addition, three evaluation words "Favorite – Least favorite," "I want to meet – I do not want to meet," and "I want to approach – I do not want to approach" were added, to investigate their influence on other factors such as favorability. The evaluation word pairs used in this experiment are shown in Table 4.

3.2.3. Results of Two-way Factorial Analysis of Variance

In the evaluation experiment, the subjects evaluated the words from Table 4 with a five-grades rating scale after seeing the slide for each character, as shown in Figure 3. The experiment participants were 60 university students and graduate students, aged 18 to 26 (average age 21.5 years old, standard deviation 1.61; male: 28, female: 32). They were divided into four groups of 15 people with the same gender ratio and assigned to the above four groups.

We analyzed each evaluation word for each character to obtain Kansei data using a two-way factorial analysis of variance with "Movie" and "Profile" as the main factors. The analysis results are shown in Table 5. This table shows the P-value of the two factors and their intersection; if there is a significant difference, they are painted gray. In addition, Figure 4 shows the average graphs of each group.

The main effect of the "Favorite" profile factor was recognized in three out of four characters. From Figure 4 (a), C01 decreased in favorability because of the profile. The subjects might feel a gap between the realistic profile information and the image they envisioned. However, since the score dropped about four points, the character had a high favorability in the first place.

In addition, from Figure 4 (b), C08 tends to rise in favorability with a profile, possibly because the character was better understood. C05 is similar to C08. Therefore, the profile's effect on the favorability differs depending on the character. However, it is suggested that characters with a favorable appearance do not need a profile, while the favorability of a character low likeability improves by providing a profile.

Figures 4 (c) and (d) show the average graphs of cases where the movie factor was recognized. In "Cool" for C01 in (c) and "Dependable" for C10 in (d), the evaluation decreased due to the added movie information. The dependability evaluation is believed to be lowered because the loose and comical actions of the characters become conspicuous in the movement.

Character C08 of the E group showed several major effects in terms of the profile. Figure 4 (e) shows the average graph of "Cute." The evaluation was raised by adding a profile; similar tendencies are "Friendly" and "Favorite" (Figure 4 (b)). In the distribution of Figure 2, this character is located away from the other character groups, and is considered eccentric compared to the others. However, since it is possible to understand the character's background when a profile is added, it seems that its comforting and favorability have increased.

The above suggests that a person's impression of a character changes by adding profiles and actions to the character. When considering regional promotions using local mascot characters, it was thought that the effect of the impression would change by appropriately combining additional information with the character's appearance. However, since many impressions have effects that are not recognized in Table 5, it is necessary to consider additional information and factors.

4. Conclusion

In this paper, we conducted impression-evaluation experiments of local mascot characters for the purpose of regional promotion. First, we conducted an appearance-impression evaluation of the local mascot characters, and four factors were obtained by factor analysis. Moreover, it was shown that the characters could be classified using the factor-score axis of the obtained "Activity" and "Comforting" factors. Next, an impression-evaluation experiment adding the "profile" and "movie" information was carried out, and the change of impressions was investigated. A significant difference was confirmed for several impressions.

As future work, it is necessary to consider other information and factors such as SNS content and impressions

Table 4. Evaluation Word Pairs

F1: Activity	Active	-	Modest
	Self-assertive	-	Self-effacing
	Flashy	-	Plain
F2: Comforting	Be healed	-	Not be healed
	Cute	-	Not cute
	Friendly	-	Unfriendly
F3: Dependability	Dependable	-	Undependable
	Cool	-	Uncool
-	Favorite	-	Least favorite
	I want to meet	-	I do not want to meet
	I want to approach	-	I do not want to approach

Table 5. Analysis Results of Two-way Factorial Analysis of Variance (P-value)

Factor	Adjective pair	A: Gunmachan (C01)			B: Mikanmaru (C10)			C: Ojichama (C05)			E: Tsudanun (C08)		
		Movie	Profile	Interaction	Movie	Profile	Interaction	Movie	Profile	Interaction	Movie	Profile	Interaction
F1: Activity	Active - Modest	0.526	0.166	0.899	0.176	0.560	0.176	0.389	0.252	0.252	0.015	0.269	0.579
	Self-assertive - Self-effacing	0.847	0.847	0.037	0.580	0.199	0.199	0.781	1.000	0.169	1.000	0.615	0.801
	Flashy - Plain	0.749	0.338	0.203	0.215	0.755	0.351	0.306	1.000	0.608	0.478	0.723	0.723
F2: Comforting	Be healed - Not be healed	0.789	0.593	1.000	0.478	0.887	0.122	0.122	0.904	0.904	0.821	0.117	0.651
	Cute - Not cute	0.732	0.306	0.494	0.504	0.351	0.893	0.052	0.895	0.510	0.551	0.008	0.720
	Friendly - Unfriendly	0.252	0.701	1.000	1.000	0.454	0.802	0.064	0.788	0.592	0.624	0.009	1.000
F3: Dependability	Dependable - Undependable	0.364	0.133	0.364	0.035	0.284	1.000	0.372	0.551	0.765	0.751	0.343	0.343
	Cool - Uncool	0.031	0.189	0.305	0.521	1.000	0.521	0.567	0.254	0.774	0.288	0.079	0.477
–	Favorite - Least favorite	0.670	0.013	0.670	0.516	0.897	0.697	0.392	0.023	0.392	0.697	0.008	0.156
	I want to meet - I do not want to meet	0.646	1.000	1.000	0.606	0.440	0.125	0.487	0.816	0.816	0.807	0.147	1.000
	I want to approach - I do not want to approach	0.463	0.463	0.883	0.792	0.792	0.190	0.206	0.446	0.131	0.243	0.054	0.363

Significance level 5%
1%

over time. Suzuki et al. have been studying from a viewpoint in which local mascot characters use Twitter[17]. In particular, SNS content is considered to be important for promotion. It should also be used for actual regional promotion.

References:

[1] K. Osawa and M. Yamada, "Relationship between Impressions and Popularity of Yuru-charas," Proc. of the 17th Annual Conference of Japan Society of Kansei Engineering, B21(3pages), 2015. (in Japanese)

[2] S Ito, "Comparing Characteristics and Impressions of Local Mascots," Tokyo Metropolitan University Psychological Research, Vol.22, pp.21-30, 2012. (in Japanese)

[3] S. Jiyavorananda, H. Ishikawa, S. Sakai, K. Yamanaka, T. Yamanaka and T. Masuda, "Elucidation of Factors Predicting the Impression of "*Yuru-sa*" in Japanese Yuru-kyara Mascot Characters," International Journal of Affective Engineering, Vol.15, No.3, pp.231-238, 2016.

[4] S. Ito and T. Yamashita, "Applying Rough Set to Analyze Psychological Effect of Mascot Character Design," International Journal of Affective Engineering, Vol.13, No.3, pp.159-165, 2014.

[5] M. Hotogi and M. Hagiwara, "Analyses of Local Mascot Characters and Proposal of Automatic Character Creation System Using Affective Words," International Journal of Affective Engineering, Vol.14, No.4, pp.299-307, 2015.

[6] C. Tateishi, G. Inou, H. Sawai, E. Koyama, Y. Kitani and M. Fujito, "The Effects on the Popularities and Interests Mascot Characters' Acceptability Give to the General Public," Proceedings of 2013 Second IIAI International Conference on Advanced Applied Informatics, pp.373-378, 2013.

[7] Yurukyara Grand Prix Official Website, `http://www.yurugp.jp/index.php` (in Japanese)

[8] Gunma Prefectuer - Profile of Gunmachan, `http://www.pref.gunma.jp/01/b0100129.html` (in Japanese)

[9] Iyo City / What is "Mikanmaru" (Leader of Ajinosato Five Mighty Men) ?, `https://www.city.iyo.lg.jp/syoukoukankou/machizukuri/aji/mikanmaru_test.html` (in Japanese)

[10] Kyoto Uji miyage.com, `https://www.ujimiyage.com/user_data/yuruchara02.php` (in Japanese)

[11] Morisia Tsudanuma, `http://www.morisia.com/about/` (in Japanese)

[12] Chibanippo Online, `http://www.chibanippo.co.jp/news/local/125634` (in Japanese)

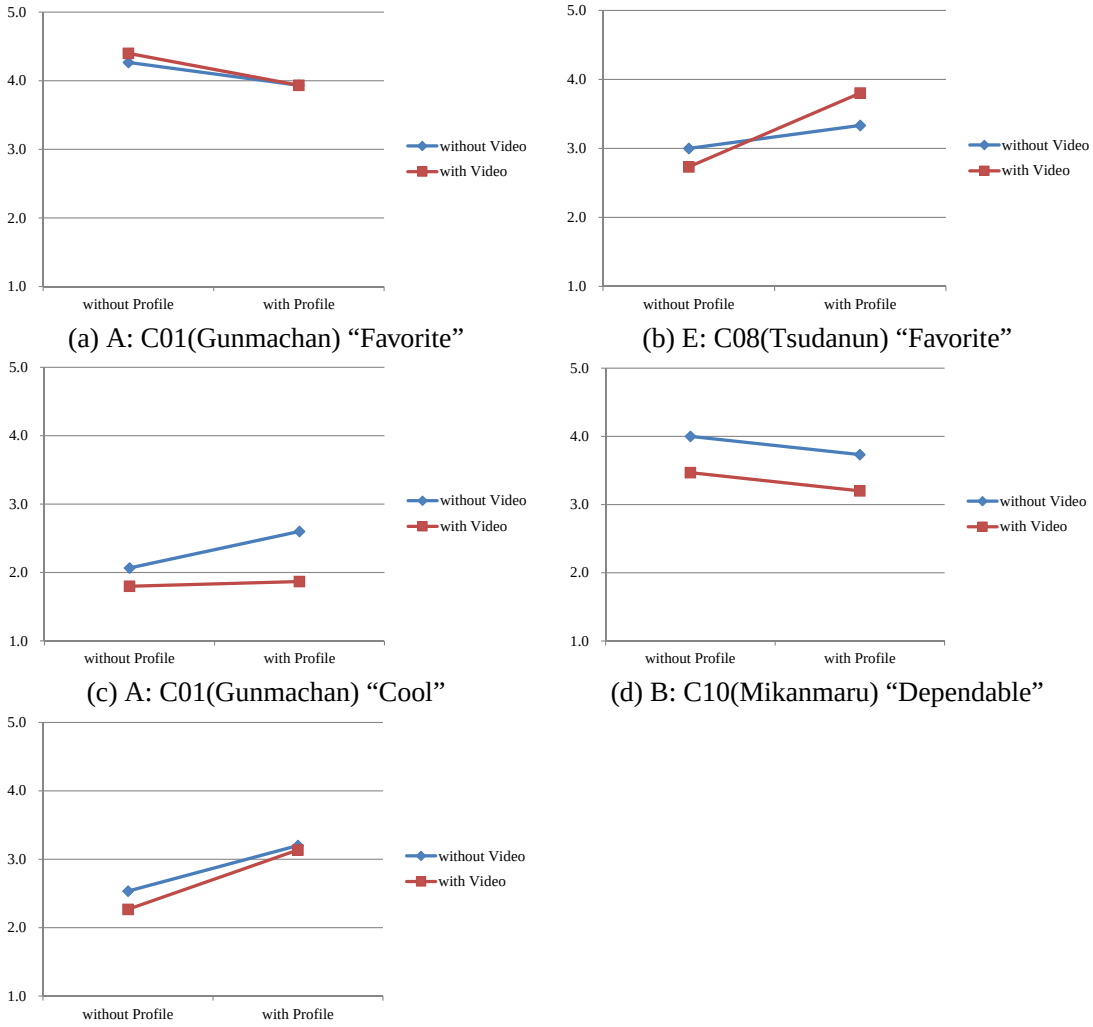
[13] Gunmachan Dance "Minna no Gunma"-YouTube, `https://www.youtube.com/watch?v=YRGcOhdjQQo`

[14] Iyo city Ehime prefecture "Mikanmaru" × "Call Me Maybe"-YouTube, `https://www.youtube.com/watch?v=2l3eliC8CxI`

[15] Ojichama of Chacha Kingdom -Music Video–YouTube, `https://www.youtube.com/watch?v=er3mG6GCXfI`

[16] Tsudanum Exercises-YouTube, `https://www.youtube.com/watch?v=9KVBzHsDj7U`

[17] S. Suzuki and Y. Kurata, "An Analysis of Tweets by Local Mascot Characters for Regional Promotions, Called Yuru-Charas, and Their Followers in Japan," Information and Communication Technologies in Tourism 2017, pp.711-724, 2017.



(a) A: C01(Gunmachan) “Favorite”

(b) E: C08(Tsudanun) “Favorite”

(c) A: C01(Gunmachan) “Cool”

(d) B: C10(Mikanmaru) “Dependable”

(e) E: C08(Tsudanun) “Cute”

Fig. 4. Average Graph of Each Group

Name:
Your Name

Affiliation:
Your Institute

Address:
Address of Your Institute

Brief Biographical History:
Your History

Main Works:
• Your Works

Membership in Academic Societies:
• Your Learned Societies