Proposal for a Font Changer Application Based on Results of an Impression Evaluation Experiment

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Summary
By popularization of computers and the Internet, communicate via only text has become essential in our daily lives. Especially, SNSs (Social Networking Services) are indispensable tools to our everyday life. However, expressive richness on SNS communication is clearly not sufficient. Because of that, problems of human relations often occur. Therefore, we focused on "Fonts". It can be understood from our daily lives that the impressions of text change with different fonts even if that has little scientific basis. Utilizing this phenomenon, we propose an application (app) that improves the expressiveness of SNS communication by changing fonts. In this study, we conducted a font-impression evaluation experiment. Utilizing the results, we defined the impressions of each font, and designed the app that enables the user to select fonts from the desired impressions. With this app, the users can choose fonts intuitively and it leads to improve the expressiveness of texts communication on SNSs.

Key words:
Smartphone Application, Messenger Application, Font, Human Interface, Mobile Communication, SNS

1. Background

In recent years, there are many troubles with text-based communication on SNSs or e-mails. There are many cases in which someone's impressions completely differ between in face-to-face communication and in text-only communication on SNSs or e-mails.
In face-to-face communication, we can see face of the communication partners. We judge the partners' emotion from their faces. In addition, we convey information by selecting words, inserting the appropriate intervals, changing voice tones, or doing eye contact if necessary. At the same time, the partner also surmises meanings of received information by seeing our face and judging from the words, eye contact or voice tones.
In only-voice-based communication on telephone calls, the expressiveness is a little low compared to the face-to-face communication because we cannot see the partners' faces. However, we can change the tones of voice freely. From the tones, we can surmise the partners' emotions.
On the other hand, SNSs are text-only communication. Depending on expression or intonation, the meaning of the same sentence changes differently. A sentence that was written originally with positive meaning can be received with malicious or hostile meaning. Sometimes, that occurs miscommunication.
However, since the 2000s, SNSs have been major tools of communication with the popularization of smartphones. Some young people group all kind of communication together as SNSs, and they do not use computers or e-mails as communication tools. The number of those people is increasing.
SNSs are the tools, which are suitable for the lifestyles of today's youngsters. It is said that 35% of the world population is using SNS. SNSs are convenient services, however they just consist of plain texts. The expressiveness is clearly not sufficient comparing with other communication software or word-processing software. In text-only communication, we cannot convery non-verbal meanings such as facial expressions or voice tones. In other words, we have to convey our intentions only with literary meanings of the words. Due to lack of expressiveness, it is often the case that someone think that his or her feeling will be well transmitted, however the actual text conveys his or her original intention differently to the communication receivers. Because of this kind of miscommunication, a number of problems of human relation have been occurring.
Expressive richness on SNSs is a key-point to be improved as soon as possible without keeping SNSs' quick communication speed.

2. Purposes and Aim

Troubles with communication on tools such as SNSs that are convenient however lack expressiveness often occur. Using many movies or images may solve lack of expressiveness. However, because of this, it is inevitable that their visibility or usability as tools can be lowered. Thereupon, in this study, we focused on "font" as a method to express emotions in text-base communication.
In recent years, fonts are used not only for sentences but also for every kind of text. They are taken into account for various objects such as bookbinding, comic balloons, posters, websites, and television telops. Using different fonts for each aim quite affects design quality or simplicity of the understandable messages.

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In this paper, we devise an app to improve expressiveness of SNS communication by different fonts, and design a prototype.

3. Expressiveness of Text

With the popularization of the Internet, there are many functions to complement information in text. The function of "Emoji (emoticons)" that began with e-mails originally, and "Stamp (sticker)" which is spreading in recent years. However, those are just complementary functions and they do not always promote accurate communication. For example, when we feel too lazy to message or reply in a text, and use those functions of images or illustrations improperly, our communication partners would have the question: "Why did he (she) send me this image?" That may even cause misunderstandings and confusions.
In addition, there are many cases in which the pictures or illustrations are bought as just a collectors' items and meaninglessly overused.

3.1 Emoji (Emoticons)

Emoji is a function, which can be used in almost all SNSs. The users can express their emotions by putting some small icons in texts. However, there is a problem that impression about Emoji is different depending on culture or age. Some people feel uncomfortable with too many use of Emojis, and others may have cold impression when there are no Emojis in a text. It cannot be said that the senders and recipients have the same impressions of the same Emojis. The types of Emojis are limited. There are many cases where there is no exact Emoji that is suitable to our needs at the timely timing.

Fig.1 Emoticon

3.2 Stamp (Sticker)

Stamps themselves have messages or meanings. If the users use this function effectively, they can communicate without inputting texts. The users can download the sets of images on their own devices for free or with charge, and they can use each image as Stamp. In 2011, Stamp function was added to "LINE", one of SNSs. Today, Facebook messenger also has this function.
In 2014, LINE started a service called "creators' Stamp （creators' stickers）", in which the users create original Stamps and sell them. Today, because of this function, there are many Stamps and the number of Stamps is increasing. There are some Stams that have clear meanings or use purposes. The users can establish conversation by only exchanging Stamps. If the users utilize Stamps properly, they can communicate very quickly.
The problem of this function is that the users cannot perform detailed adjustment on Stamps according to circumstances of the moment. It is because Stamp are ready-made images. There are some cases in which the communication is difficult because the Stamp recipient cannot understand the sender's original intention mistaking a delicate difference of nuance. Stamps is said to be a useful and entertaining function, however it cannot be said that they improve the users' expressiveness. Rather, for a wider variety of Stamps or possible interpretations of Stamps, it can be said that the function might complicate communications.

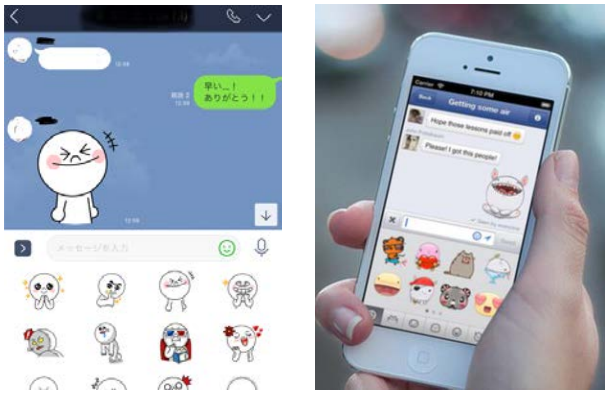

Fig.2 LINE and FB messenger

Both of Emoji and Stamp functions are simple and useful, and they are now popular functions for SNS communication. However, the difference in interpretation among many people is prone to cause misunderstanding. Taking the importance of SNSs into consideration, it cannot be said that the current expressiveness with only those functions is sufficient.

4. Relevant Studies

4.1 Studies to Improve Expressiveness of Text

Importance of text is increasing with development of the computer technology. There is an attempt to expand information of text by using comic balloons or animations [3]. There are a proposed system to change fonts or colors

that are suitable to texts [4], and also a proposal for the color poster system to reflect emotions [6]. It is clear that the attempt to add emotional meaning to text information is a theme that gathers people's interests socially.

4.2 Studies about Fonts

As described in the previous section, the idea that fonts can provide some kind of impression has become common. There are some studies, which are trying to find relationship between fonts and voices [5] and also another study extracted the elements of the quality evaluation by font figures. Those studies have demands in the field of Kansei Engineering (Affective Engineering) or Human Interface. It can be said that the difficulty to find out the paring impression to fonts is the reason why people are interested in the field of studies on fonts.
However, the precedent studies do not provide sufficient outcome. Fonts have a wide variety types, and they are increasing day by day. It is difficult to research them all in detail.
Depending on era, reader-friendly fonts are changing. Therefore, we carried out a questionnaire research, and then attempted to measure the impression: (5. Evaluation experiment of fonts' impression).

4.3 Precedent Example

Today, there are some applications (apps) to change fonts on SNSs. We explain about those basic systems.
The users select fonts they want to use on SNSs, and enter the text on the specified images. The converted images are output, and then they will be uploaded and shared to SNSs as images. Some apps can provide extra Emojis or change texts' colors.
However, they have some problems. Those apps can often output the text that is different from what the user wants. For example, preview images are often different form the actual images, and unexpected line feeds are inserted despite of the users' will. Most of those apps arenhard to use, low usefulness, and lack of utility.

5. Evaluation Experiment of Fonts' Impression

Depending on different font, the impression that is perceived by information recipient is much different. In addition, it is necessary to change the fonts when ceeating any documents with computers. The type of fonts is considered in not only documents creation but also in all of the text-base objects like posters, TV telops, books, balloons of comics, and so on. Fonts not only improve the expressiveness of the creators, but also have the important role in text-base communication.

However, what kind of properties each font has and hot it is used, have not been clarified. Therefore, we held a questionnaire research to clarify the difference of fonts' impressions.

5.1 Purpose

To develop the application (app), which changes fonts on SNSs, we cast a questionnaire research on impressions of fonts, for clarification.

5.2 Methods

We carried out a questionnaire research with XX males and females in their 10's and 20's. Table 1 shows the fonts focused on as investigation targets.
Those fonts are selected from common fonts that are pre-installed on both of Windows and Macintosh or installed on Microsoft Office standard edition by default. Because our app targets are Japanese, we researched mainly Japanese fonts. When examinees were asked to evaluate fonts, they were not informed the names of fonts, and they just saw font samples.

Table 1: Fonts investigated

Type of font	*Name of font*	*Font sample*
Gothic type	HGP Sou-Ei-Kaku Gothic UB	あいうえお カキクケコ ABCDefgh
	HGP Gothic E	あいうえお カキクケコ ABCDefgh
	MSP Gothic	あいうえお カキクケコ ABCDefgh
	Yu Gothic	あいうえお カキクケコ ABCDefgh
	Meiryo	あいうえお カキクケコ ABCDefgh

	HG Round Gothic M-PRO	あいうえお カキクケコ ABCDefgh
Mincho type	HGP Mincho E	あいうえお カキクケコ ABCDefgh
	MSP Mincho	あいうえお カキクケコ ABCDefgh
Pop type	HGP Sou-Ei-Kaku Pop type	あいうえお カキクケコ ABCDefgh
Serif	Microsoft Himalaya	ABCDE fghij
Sans serif	Ariai	ABCDE fghij
Comic sans	Comic Sans MS	ABCDE fghij

We prepared 7 assessment points for each font. Examinees assessed fonts upon each point based on three-stage evaluation.

Table 2: Assessment Point

Assessment Points	***Three Stages***		
	Positive	***Normal***	***Negative***
Strength	Strong	Medium	Weak
Speed	Fast	Normal	Slow
Brightness	Bright	Medium	Dark
Weight	Heavy	Normal	Light
Intelligence	High	Normal	Low
Amusement	Fun	Common	Boring
Emotion	Happy	Normal	Sad

5.3 Results and Discussion

This investigation has clarified the fact that impressions of fonts are different each other. We will explain about each font one by one.
Table 3-14 shows the results. Regarding the rates of Answers, 70% or more is indicated in bold and white type with a black background, 60% or more is bold with a gray background, and 50% or more is bold with a light gray background.

5.3.1 UB HGP Sou-Ei-Kaku Gothic UB

Table 3: Results1 “HGP Sou-Ei-Kaku Gothic UB” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	76.1	Medium	20.7	Weak	3.2
Speed	Fast	6.0	Normal	**50.2**	Slow	43.9
Brightness	Bright	37.0	Medium	15.5	Dark	25.0
Weight	Heavy	82.5	Normal	15.4	Light	2.1
Intelligence	High	9.1	Normal	**58.2**	Low	32.6
Amusement	Fun	29.1	Common	**50.2**	Boring	20.7
Emotion	Happy	27.0	Normal	70.9	Sad	2.1

Regarding the assessment point, “Strength”, “Strong” was the majority, and as for “Weight”, “Heavy” was the highest. It means tha
This font has “heavy” and “strong” impression. Under the assessment point, “Speed”, “Slow” was slightly higher.

5.3.2 HGP Gothic E

Table 4: Results2 “HGP Gothic E” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	14.4	Medium	**67.0**	Weak	18.6
Speed	Fast	15.8	Normal	70.8	Slow	13.4
Brightness	Bright	30.5	Medium	**62.8**	Dark	6.7
Weight	Heavy	14.4	Normal	**62.8**	Light	22.8
Intelligence	High	16.8	Normal	70.5	Low	12.6
Amusement	Fun	14.0	Common	73.7	Boring	12.3
Emotion	Happy	10.5	Normal	83.9	Sad	5.6

Regarding all of the assessment points, HGP Gothic E was evaluated as “Medium” or “Normal” with the high percentage. It proves that this font is a very common and versatile font.

5.3.3 MSP Gothic

Table 5: Results3 “MSP Gothic” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	9.1	Medium	**52.6**	Weak	38.2
Speed	Fast	31.6	Normal	**60.7**	Slow	7.7
Brightness	Bright	38.7	Medium	**56.3**	Dark	4.9
Weight	Heavy	4.2	Normal	**54.2**	Light	41.5
Intelligence	High	22.9	Normal	**64.4**	Low	12.7
Amusement	Fun	11.9	Common	70.2	Boring	17.9
Emotion	Happy	14.4	Normal	77.2	Sad	8.4

Regarding almost all of the assessment points, MSP Gothic had the high percentage of “Medium” or “Normal”. As to the assessment point of “Brightness”, it had a slightly high percentage of “Bright”, and as for the point of “Weight”, it marked a slightly high percentage of “Light”.

5.3.4 Yu Gothic

Table 6: Results4 “Yu Gothic” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	3.5	Medium	11.9	Weak	84.6
Speed	Fast	45.8	Normal	33.1	Slow	21.1
Brightness	Bright	41.5	Medium	37.3	Dark	21.1
Weight	Heavy	1.1	Normal	11.6	Light	87.4
Intelligence	High	32.7	Normal	33.1	Low	34.2
Amusement	Fun	11.3	Common	40.8	Boring	47.9
Emotion	Happy	45.8	Normal	33.1	Sad	21.1

Regarding the Assessment point of “Strength”, Yu Gothic had a high percentage of “Weak”, and as to the point of “Weight”, it recorded a high percentage of “Light”. This fact proves that this font has “light” and “weak” impressions. In this survey, it can be said that this font has the opposite impression to HGP Sou-Ei-Kaku Gothic UB.

5.3.5 Meiryo

Table 7: Results5 “Meiryo” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	8.1	Medium	**62.8**	Weak	29.1
Speed	Fast	21.1	Normal	**62.5**	Slow	16.5
Brightness	Bright	42.1	Medium	**51.2**	Dark	6.7
Weight	Heavy	6.3	Normal	**51.1**	Light	42.6
Intelligence	High	8.5	Normal	46.8	Low	44.7
Amusement	Fun	34.9	Common	**52.1**	Boring	13.0
Emotion	Happy	28.1	Normal	**64.2**	Sad	7.7

Regarding almost all of the assessment points, the examinees evaluated Miryo with a high percentage of “Medium” or “Normal”. As to the assessment point of “Brightness”, it had slightly high percentage of “Bright”, and as for the “Weight”, it had a slightly high percentage of “Light”, and under the point of “Intelligence”, it had a slightly high percentage of “Low”.

5.3.6 M-PRO HG Round Gothic M-PRO

Table 8: Results6 “M-PRO HG Round Gothic M-PRO” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	5.3	Medium	48.9	Weak	45.8
Speed	Fast	27.0	Normal	**56.5**	Slow	16.5
Brightness	Bright	44.6	Medium	48.8	Dark	6.7
Weight	Heavy	3.5	Normal	43.5	Light	53.0
Intelligence	High	12.6	Normal	**50.2**	Low	37.2
Amusement	Fun	35.4	Common	46.7	Boring	17.9
Emotion	Happy	33.3	Normal	**52.6**	Sad	14.0

M-PRO HG Round Gothic M-PRO showed statistical dispersion, and it can be said that this font has no outstanding characteristics. Relatively speaking, regarding the assessment point of “Strength”, it had a slightly high percentage of “Weak”, as to the point of “Brightness”, it had a slightly high percentage of “Bright”, and upon the point of “Weight”, it had a slightly high percentage of “Light”.

5.3.7 HGP Mincho E

Table 9: Results7 “HGP Mincho E” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	77.5	Medium	20.8	Weak	1.8
Speed	Fast	32.0	Normal	48.2	Slow	19.7
Brightness	Bright	29.6	Medium	**52.8**	Dark	17.6
Weight	Heavy	**51.2**	Normal	43.1	Light	5.7
Intelligence	High	**61.1**	Normal	32.9	Low	6.0
Amusement	Fun	21.8	Common	**52.5**	Boring	25.7
Emotion	Happy	16.3	Normal	72.8	Sad	11.0

Regarding the asessment point of “Strength”, HGP Mincho E had a high percentage of “Strong”, and as for the point of “Intelligence”, it had a great percentage of “High”. This font has “smart” and “strong” impression. In addition, under the point of “Weight”, it had a low percentage of “Heavy”.

5.3.8 MSP Mincho

Table 10: Results8 “MSP Mincho” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	9.2	Medium	21.5	Weak	**69.4**
Speed	Fast	48.9	Normal	31.3	Slow	19.7
Brightness	Bright	40.8	Medium	41.9	Dark	17.3
Weight	Heavy	7.7	Normal	20.1	Light	72.2
Intelligence	High	45.4	Normal	39.8	Low	14.8
Amusement	Fun	14.1	Common	**54.2**	Boring	31.7
Emotion	Happy	11.3	Normal	**58.5**	Sad	30.3

Regarding the assessment point of “Strength”, MSP Mincho had a low percentage of “Weak”, and as to the point of “Weight”, it had a great percentage of “Light”. This indicates that although the extent is not as much as Yu Gothic, this font has “weak” and “light” impression. When comparing it with the fonts that have the same kind of impressions, regarding the assessment point of “Intelligence”, it had a slightly higher rate. Also, under the assessment point of “Brightness”, it had a slightly higher rate of “Bright”.

5.3.9 HGP Sou-Ei-Kaku Pop type

Table 11: Results9 “HGP Sou-Ei-Kaku Pop type” (Unit: %)

	あいうえおカキクケコ ABCDefgh					
Assessment Points	***Three Stages***					
	Positive		***Normal***		***Negative***	
Strength	Strong	75.7	Medium	13.4	Weak	10.9
Speed	Fast	14.8	Normal	28.5	Slow	**56.7**
Brightness	Bright	48.9	Medium	27.1	Dark	23.9
Weight	Heavy	77.1	Normal	12.0	Light	10.9
Intelligence	High	8.8	Normal	27.5	Low	**63.7**
Amusement	Fun	**59.2**	Common	29.9	Boring	10.9
Emotion	Happy	**56.7**	Normal	35.6	Sad	7.7

Regarding the assessment point of “Strength”, HGP Sou-Ei-Kaku Pop type had a great percentage of “Strong”, as for the point of “Weight”, it had a high percentage of “Heavy”, and as to the point of “Intelligence”, it had a great percentage of “Low”. The result means that this font has “heavy” and “strong” impression with low intelligence. In addition, regarding the assessment point of “Amusement” and “Emotion”, it had the great percentage of “Fun” and “happy”. This proves that this font has the positive impression like “fun” or “happy”. Under the assessment point of “Speed”, it had a slightly higher of “Slow”, and upon the point of “Brightness”, it had a slightly higher rate of “Bright”.

5.3.10 Arial

Table 12: Results10 “Arial“(Unit: %)

	ABCDefgh					
Assessment Points	Three Stages					
	Positive		Normal		Negative	
Strength	Strong	13.4	Medium	81.0	Weak	5.6
Speed	Fast	15.1	Normal	79.9	Slow	4.9
Brightness	Bright	24.6	Medium	70.1	Dark	5.3
Weight	Heavy	10.2	Normal	74.3	Light	15.5
Intelligence	High	20.4	Normal	71.1	Low	8.5
Amusement	Fun	7.7	Common	81.0	Boring	11.3
Emotion	Happy	7.0	Normal	88.7	Sad	4.2

Regarding all of the assessment points, Arial had the high percentage of “Medium” or “Normal”. This fact proves that this font is a very common and versatile font.

5.3.11 Microsoft Himalaya

Table 13: Results11 “Microsoft Himalaya“(Unit: %)

	ABCDefgh					
Assessment Points	Three Stages					
	Positive		Normal		Negative	
Strength	Strong	24.3	Medium	**63.4**	Weak	12.3
Speed	Fast	41.9	Normal	**50.4**	Slow	7.7
Brightness	Bright	35.2	Medium	**54.6**	Dark	10.2
Weight	Heavy	12.3	Normal	**61.3**	Light	26.4
Intelligence	High	**69.4**	Normal	28.5	Low	2.1
Amusement	Fun	12.4	Common	**69.5**	Boring	18.1
Emotion	Happy	12.3	Normal	80.3	Sad	7.4

Regarding almost all of the assessment points, Microsoft Himalaya had the high percentage of “Medium” or “Normal”. This proves that this font has the impression with high intelligence, as compared to Arial. In addition, as for assessment point of “Speed”, it had a slightly higher rate of “Fast”.

5.3.12 Comic Sans MS

Table 14: Results12 “Comic Sans MS “(Unit: %)

	ABCDefgh					
Assessment Points	Three Stages					
	Positive		Normal		Negative	
Strength	Strong	16.2	Medium	47.9	Weak	35.9
Speed	Fast	15.8	Normal	**50.7**	Slow	33.5
Brightness	Bright	**55.3**	Medium	39.1	Dark	5.6
Weight	Heavy	10.6	Normal	42.6	Light	46.8
Intelligence	High	9.5	Normal	21.1	Low	**69.4**
Amusement	Fun	72.5	Common	20.8	Boring	6.7
Emotion	Happy	**67.6**	Normal	27.1	Sad	5.3

Regarding the assessment point of “Intelligence”, Comic Sans MS had a great percentage of “High”, and as to the point of “Amusement” it had a high percentage of “Fun”, and as for the point of “Emotion”, it had a high percentage of “Happy”. This fact proves that this font has “fun” and “happy” impression with low intelligence. When the font was compared to HGP Sou-Ei-Kaku Pop type, which has same kind of impressions, regarding the assessment point of “Strength” and “Weight”, it relatively had the slightly higher rate of “Weak” and “Light”.

5.3.13 Assessment points

There were seven assessment points for this evaluation in total. Among these points, the relationship between “Strength” and “Weight” was strong. The fonts, for which “Strong” was most-selected regarding the assessment point of “Strength”, had a tendency that “Heavy” was most-selected upon the point of “Weight”. Likewise, the fonts, for which “Weak” was most-selected regarding the assessment point of “Strength”, had a tendency that “Light” was most-selected upon the point of “Weight”.

The same things can be said to the assessment point of “Amusement” and “Emotion”. The fonts, for which “Fun” was most-selected regarding the assessment point of “Amusement”, had a tendency that “Happy” was most-selected upon the point of “Emotion”.

The relationship between “Intelligence” and “Amusement” / “Emotion” was also remarkable. The fonts for which “Low” was most-selected regarding the assessment point

of “Intelligence”, had a tendency that “Fun” and “Happy” were most-selected in the point of “Amusement” and “Emotion”.
It seems to be difficult to specify fonts’ impressions regarding the assessment point of “Speed” or “Brightness”. As to the point of “Speed”, HGP Sou-Ei-Kaku Pop type showed a slightly higher rate of “Slow”,, and upon the point of “Brightness”, Comic Sans MS had a slightly higher rate of “Bright”. However, the results were dispersed as a whole.

5.4 Research Conclusion

From the results, in this research, the impressions of fonts are defined as shown in the table.15-18.

Table 15: Defined impressions of fonts 1

	HGP Sou-Ei-Kaku Gothic UB	***HGP Gothic E***	***MSP Gothic***
Strength	Strong	-	-
Speed	Slow	-	-
Brightness	-	-	-
Weight	Heavy	-	(Light)
Intelligence	-	-	-
Amusement	-	-	-
Emotion	-	-	-

Table 16: Defined impressions of fonts 2

	Yu Gothic	***Meiryo***	***HG Round Gothic M-PRO***
Strength	Weak	-	(Weak)
Speed	Fast	-	-
Brightness	(Bright)	(Bright)	(Bright)
Weight	Light	(Light)	(Light)
Intelligence	-	(Low)	-
Amusement	Boring	-	-
Emotion	(Happy)	-	-

Table 17: Defined impressions of fonts 3

	HGP Mincho E	***MSP Mincho***	***HGP Sou-Ei-Kaku Pop type***
Strength	Strong	Weak	Strong
Speed	-	Fast	Slow
Brightness	-	(Bright)	(Bright)
Weight	(Heavy)	Light	Heavy
Intelligence	High	High	Low
Amusement	-	-	Fun
Emotion	-	-	(Happy)

Table 18: Defined impressions of fonts 4

	Arial	***Microsoft Himaraya***	***Comic Sans MS***
Strength	-	-	-
Speed	-	Fast	-
Brightness	-	-	(Bright)
Weight	-	-	(Light)
Intelligence	-	High	Low
Amusement	-	-	Fun
Emotion	-	-	Happy

From this survey, we found that people have different impressions for each font. Based on these results, We improve the expressiveness of SNS communication.

6. The App Outline

6.1 The Font Changer Application

The app proposed in this paper is an app to change fonts upon the users’ desired impressions. The users can select fonts upon 6 impression factors: Strength, Weight, Intelligence, Amusement, Speed (regarding these factors, the comparable results were recorded with both positive and negative stages in “5. Evaluation Experiment of Font’s Impression”), and Normal. Table 4 shows the fonts set for each impressions. Fig.3 shows the execution screen of the app.

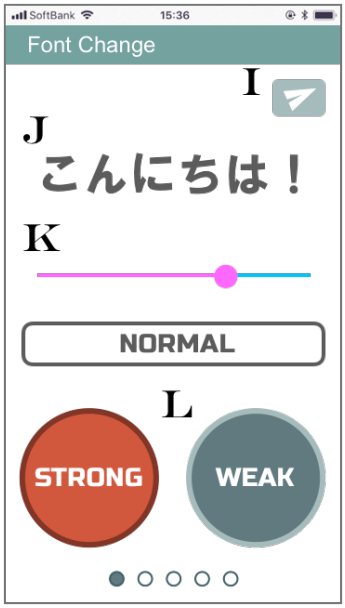

Fig. 3 Execution screen of the app

(J) means “the preview”. The user can check the entered text with the applied font in real time. K is the font size settings. The user can change the font size by dragging the thumb of the SeekBar to left and right. By tapping the sending button (I), the text on the preview (J) is temporarily stored as an image, and the image will be sent to SNSs.
We explain about detail of the impression settings (L). The user can change fonts of texts paring with the impressions by operating this part. The font is changed by tapping each small circle button. The available fonts are defined in table.6. For example, in Fig.3, when the user taps the “STRONG” button, the font displayed in J is changed to “HGP Sou-Ei-Kaku Gothic UB”. When he or she taps twice, the, font is changed to “HGP Sozu-Ei-Kaku Pop

type", and with tapping third times, the font is changed to "HGP Mincho E". Besides, with the user's one more tap on the button, the font is changed to "HGP Sou-Ei-Kaku Gothic UB".

The type of impression factors can be switched by swiping the screen to right and left. Fig.4 shows the button designs for each impression factors.

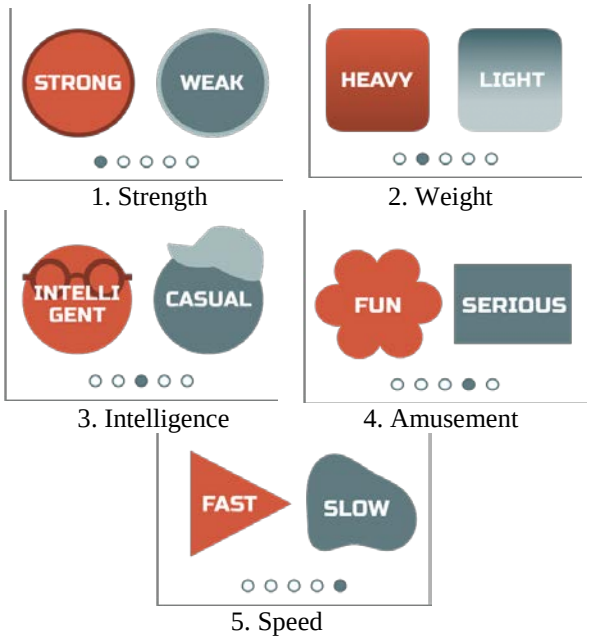

Fig. 4 Impression selection

Table.19 shows fonts set for each button. When define this font setting, we considered from table.15-18.

Table 19: Setting Fonts

Impression		*Name of Fonts*
1. Strength	Strong 1	HGP Sou-Ei-Kaku Gothic UB
	Strong 2	HGP Sou-Ei-Kaku Pop type
	Strong 3	HGP Mincho E
	Weak 1	Yu Gothic
	Weak 2	MSP Mincho
2. Weight	Heavy 1	HGP Sou-Ei-Kaku Gothic UB
	Heavy 2	HGP Sou-Ei-Kaku Pop type
	Light 1	MSP Mincho
	Light 2	Yu Gothic
3. Intelligence	Intelligent 1	HGP Mincho E
	Intelligent 2	MSP Mincho
	Intelligent 3	Microsoft Himalaya
	Casual 1	HGP Sou-Ei-Kaku Pop type
	Casual 2	Comic Sans MS
4. Amusement	Fun 1	HGP Sou-Ei-Kaku Pop type
	Fun 2	Comic Sans MS
	Serious	Yu Gothic
5. Speed	Fast 1	Yu Gothic
	Fast 2	MSP Mincho
	Fast 3	Microsoft Himalaya
	Slow 1	HGP Sou-Ei-Kaku Gothic UB
	Slow 2	HGP Sou-Ei-Kaku Pop type
6. Normal	Normal 1	HGP Gothic E
	Normal 2	MSP Gothic
	Normal 3	Meiryo
	Normal 4	HG Round Gothic M-PRO
	Normal 5	Ariai

6.2 How to use the app

Fig. 5 The image of font selection

1) Entering texts: The user enters some sentences that he or she wants to upload (send) to SNS checking the preview (J, Fig.3).
2) Controlling size of texts: The user changes the size of text by touching the thumb of the Seek Bar and dragging it left or right (K, Fig.3).

3) Selecting impressions: The user selects the impression that he or she wants to add to the texts under the impression settings (L, Fig.3).
4) Sending to SNS: By tapping the send button (I, Fig.3), the text in the preview will be shared on SNS as an image.

7. Conclusions and Future Work

In this paper, we propose the app to change fonts by selecting impressions. We conducted the questionnaire research about the impressions of fonts in order to set the paired fonts to enhance the accuracy. With this app, the users can change fonts freely by only selecting impressions that they want to add to the texts. It means that they can improve the expressiveness of SNS communication.

This time, our app proposal and development targeted SNS communication, and the function to change fonts that fit well to the users' desired impressions is applicable to other fields. For example, one of the possible application ideas is a support to the hearing-impaired people, as the font-change application to that field was mentioned about in the chapter of relevant studies. In situations where people can use only text information, this function is expected to be highly useful. It can be said that, the utilization of the different fonts can improve the users' expressiveness of communication.

In the future, we will conduct the subject experiments for the proposed app to improve its usability and user-friendliness.

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