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Communication through Typefaces: Affective Selection of English, Myanmar and Japanese Typefaces

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Abstract: Typefaces play an important role in business communication as they are found to shape consumers' perceptions and impressions towards products. One way typefaces shape perception is by carrying connotative meanings which are often difficult to identify. Since connotative meanings are implicit, incorrect choice of typefaces can ruin the effectiveness of communication. This study tried to build typeface recommendation guidelines for 3 languages - English, Myanmar, and Japanese - through subjective evaluation. Results could pinpoint suitable typefaces for each of the 36 Kansei adjectives, and also find 5 clusters of adjectives and types. Findings that are consistent with prior studies on English and Japanese typefaces are derived for Myanmar language where no such study exists. In addition, points of caution regarding relying on originally specified font-weight, and how using fonts with 'exciting' Kansei can impact readability are also noted.
Keywords: *Comparison of Typeface Impression, Font selection, SD Scale, Correspondence Analysis, Clustering*

1. INTRODUCTION

Typography and typefaces are considered to play an important role in business communication as proved by several studies, which showed that typefaces shape consumers' perception and the memorability of advertisement claims, and how consumer attitudes are affected by type. Due to the significance played by typography and typefaces, a large number of researches has been done into their impact, with one branch of studies focusing on affective meanings they have. Studies have found that the appearance of typefaces can carry specific connotations or meanings to consumers. Dyole et.al [1] have demonstrated that specific typefaces carry the meaning of 'dynamism' and 'potency', whereas Rompay et.al [2] have demonstrated how the connotations of 'luxuriousness', 'casualness', 'masculinity' or 'femininity' are communicated by a typeface. However, despite the large body of studies already conducted, little guidance can be found on typefaces of some lesser-known natural languages such as Myanmar. By recognizing this need, this study conducted a similar study on typefaces from 3 languages: 1) Myanmar language, where no studies have been conducted yet on the emotional impact of typefaces, 2) English language, and 3) Japanese language. The aim is to build a recommendation system and compare results to see if findings are consistent with previous similar studies and across languages.

2. RELATED WORKS

2.1 On Personality of Typefaces

A large number of researches has been done into the personality of typefaces for major languages used in the world. One such literature is Shaikh [3] which studied onscreen typefaces based on respondents' feelings towards the personality of 40 typefaces using 15 Semantic Differential Scales. Results pointed out to 3 factors – namely, Potency, Evaluative and Activity – that explain the personality of the fonts selected. Henderson et. al [4] also studied the personalities of typefaces and evaluated them against 12 impression variables. The number of typefaces studied by Henderson et. al was 210, comprising of various designs. This study found 6 underlying design dimensions, and potential tradeoffs among impressions were also discussed. Based on the impressions found by these works of literature, and also based on practical typeface selection guidelines, suitable Kansei adjectives were selected in this study.

2.2 On Multilingual Typeface Selection

Among papers related to typeface selection in multilingual settings, Qiu et. al [5] is a study done on the combined usage of Japanese and Latin typefaces. The authors of this study used the Affective Engineering approach to quantify the affective meanings of Japanese and Latin typefaces, and based on their findings, they recommended a typeface selection method when the two different languages are to be used together. As a result of this study, the authors found out that it is more effective to use Latin and Japanese typefaces that are found to have similar impressions through the statistical analyses, compared to using the original Latin letters found in the Japanese typeface packages. However, the application of Qiu et.al is a recommendation for juxtaposition (combined usage) of fonts, whereas the current study is aimed at the recommendation for individual (non-combined) usage.

3. CHOICE OF TYPEFACES AND EVALUATION ITEMS

3.1 Selection of Typefaces

For each language, 10 typefaces were selected by producing Orthogonal Arrays using 3 same variables: Category, Weight, and Height. Variable 'Category' includes *Serif*, *San-serif*, *Monospaced*, and *Others* for English; *Mincho*, *Gothic* and *Others* for Japanese; *San-serif* and *Others* for Myanmar. Variable 'Weight' includes *Regular*, *Bold*, *Light*, and *Others*; whereas variable 'Height' includes *Longer* and *Shorter*. The use of similar variables and an Orthogonal Array allows comparison of results in the analysis section, and also ensures that fonts with varying styles are selected. The 30 typefaces selected are as shown in Table 1.

3.2 Selection of Adjectives and Evaluation Items

For the purpose of evaluating the typefaces, 18 pairs of Kansei adjectives were selected based on past literature [4][5][6][7], and practical font selection guidelines such as Tsutawaru Design [8]. They are as shown in Table 2. Respondents were then asked to rate each typeface on these adjectives and evaluation items using 7-point Semantic Differential Scales. Responses obtained from 168 respondents (56 for each language) were then analyzed to derive findings.

4. QUANTIFYING AFFECTIVE RELATIONSHIPS

4.1 Relationship Between Typefaces and Adjectives

Table 1: Selected Typefaces in this Study

Code	Category	Weight	Height	Typeface Name
en1	Serif	Regular	Shorter	Times New Roman
en2	Monospaced	Regular	Longer	Monofonto
en3	Others	Regular	Shorter	Courgett
en4	San-Serif	Regular	Longer	Open Sans
en5	Serif	Bold	Longer	EB Garamond
en6	San-Serif	Others	Shorter	Roboto
en7	Others	Others	Longer	Broadway
en8	Serif	Others	Longer	Superclarendon
en9	Others	Bold	Shorter	Big Shoulder Display
en10	Monospaced	Regular	Longer	Courier New
mm1	San-serif	Bold	Longer	Myanmar Black
mm2	Others	Regular	Shorter	Yoeyar-one
mm3	Others	Bold	Longer	Ayar Nayon
mm4	San-serif	Regular	Shorter	Myanmar Sans Pro
mm5	Others	Bold	Shorter	Myanmar Nayone
mm6	Others	Regular	Longer	Ayar Typewriter
mm7	San-serif	Bold	Shorter	Ayar Kasone
mm8	San-serif	Regular	Shorter	Myanmar Sabae
mm9	Others	Bold	Shorter	Myanmar Phetsot
mm10	San-serif	Regular	Longer	Zawgyi-one
jp1	Gothic	Bold	Longer	Noto Sans CJK JP Bold
jp2	Mincho	Regular	Longer	IPAexMincho
jp3	Gothic	Regular	Shorter	HGMaruGothicMPRO
jp4	Other	Light	Longer	M+ 2c Light
jp5	Other	Regular	Shorter	azuki-font
jp6	Mincho	Bold	Shorter	HGPMinchoE
jp7	Gothic	Light	Shorter	Yu Gothic UI Light
jp8	Other	Bold	Shorter	HGPSoeiKakupoptai
jp9	Mincho	Light	Shorter	UD Digi Kyokasho NP-R
jp10	Other	Regular	Shorter	Tanuki Permanent Marker

Table 2: Adjectives Used for Evaluation

	Left	Right
q1	strong	weak
q2	light	heavy
q3	soft	hard
q4	formal	casual
q5	plain	graceful
q6	calm	exciting
q7	serious	cheerful
q8	individualistic	familiar
q9	reliable	sportive
q10	strict	gentle
q11	cute	elegant
q12	classic	modern
q13	delicate	robust
q14	sophisticated	unsophisticated
q15	intellectual	emotional
q16	distinctive	in-distinct
q17	clear	unclear
q18	neat	clumsy

To find the relationship between typefaces and 18 pairs of Kansei adjectives, coordinates of the typefaces and adjectives are determined by Correspondence Analysis. Each Kansei adjective is split into two: the left adjective and the right adjective, hence, making a total of 36 adjectives. Using the resulting Correspondence Plot and distances obtained from it, the fonts to be recommended for each adjective is identified based on the shortest distance. The results are summarized in Table 3.

4.2. Groups of Adjectives and Fonts using Non-hierarchical Clustering by K-mean s

To help with grouping, non-hierarchical clustering using K-means method was done in this section. Since K-means clustering allows determining the number of clusters, 3 clustering trials were attempted with 4, 5 and 6 clusters. While clustering with the number of clusters = 4 resulted in very big clusters that do not seem natural, clustering with the number of clusters = 6 resulted in one cluster with only adjectives and no font. Therefore, the final analysis was done with the number of clusters = 5. The results are as shown in Table 4.

5. FINDINGS AND DISCUSSIONS

5.1 Building Typeface Recommendation Guidelines

In the case that fonts have to be recommended when a specific Kansei adjective is provided, results from Correspondence Analysis using the shortest distance (Table 3) are useful. And by cross-checking with the actual font images, relations between font design aspects and Kansei adjectives can be pointed out. For example, fonts recommended for ‘formal’ are regular weighted serif font en1 Times New Roman; bolded Mincho font jp6 HGPMinchoE, and regular weighted san-serif font mm10 Zawgyi-One. This finding aligns with the results of prior studies where serif/Mincho are considered formal; for Zawgyi-one, it is the only Myanmar font with a totally rounded appearance without any additional typographic styles and it was the dominant font used in Myanmar before Unicode transformation, hence these factors might have contributed to it being recommended for ‘formal’. Recommended fonts for ‘cute’ include regular weighted calligraphic font en3 Courgett; regular weighted Gothic font jp3 HGMaruGothicMPro; and regular weighted calligraphic font mm2 Yoeyar-One which resembles ornate scripts than other cleaner Myanmar fonts. And fonts recommended for ‘clumsy’ are non-regular weighted display font en7 Broadway; bolded display font jp8 HGPSoeiKakupoptai which is intended for POP

Table 3: Recommended Fonts for Each Adjective

Adjective	EN	Distance	MM	Distance	JP	Distance
strong	en02	0.100	mm07	0.072	jp06	0.505
weak	en03	0.303	mm02	0.182	jp07	0.151
light	en06	0.300	mm02	0.437	jp04	0.133
heavy	en02	0.117	mm07	0.236	jp08	0.567
soft	en06	0.284	mm02	0.387	jp04	0.098
hard	en02	0.092	mm07	0.191	jp06	0.601
formal	en01	0.048	mm10	0.224	jp06	0.215
casual	en03	0.401	mm03	0.209	jp10	0.291
plain	en03	0.213	mm04	0.232	jp02	0.285
graceful	en04	0.095	mm04	0.098	jp09	0.197
calm	en10	0.272	mm10	0.128	jp09	0.066
exciting	en07	0.310	mm03	0.122	jp08	0.077
serious	en01	0.174	mm01	0.160	jp06	0.157
cheerful	en03	0.481	mm06	0.123	jp05	0.254
individual	en03	0.347	mm03	0.224	jp10	0.330
familiar	en10	0.115	mm04	0.086	jp02	0.020
reliable	en01	0.105	mm10	0.087	jp02	0.132
sportive	en03	0.563	mm03	0.197	jp10	0.213
strict	en05	0.146	mm05	0.125	jp06	0.345
gentle	en03	0.246	mm02	0.145	jp07	0.096
cute	en03	0.239	mm02	0.078	jp03	0.129
elegant	en10	0.099	mm01	0.216	jp02	0.194
classic	en10	0.098	mm10	0.224	jp02	0.175
modern	en03	0.327	mm06	0.185	jp03	0.294
delicate	en06	0.132	mm04	0.370	jp04	0.084
robust	en09	0.085	mm07	0.258	jp08	0.503
sophisticated	en10	0.126	mm04	0.051	jp02	0.054
unsophisticated	en09	0.321	mm03	0.229	jp08	0.240
intellectual	en01	0.079	mm10	0.110	jp02	0.180
emotional	en03	0.495	mm03	0.130	jp10	0.195
distinct	en08	0.055	mm09	0.045	jp02	0.447
in-distinct	en03	0.179	mm02	0.129	jp07	0.040
clear	en10	0.039	mm10	0.153	jp02	0.079
unclear	en07	0.412	mm03	0.065	jp10	0.162
neat	en10	0.105	mm10	0.085	jp02	0.039
clumsy	en07	0.302	mm03	0.147	jp08	0.077

Table 4: Results of Clustering (K=5)

No.	Size	Contents	
C1	16	Adj	weak, light, soft, gentle, cute, delicate, in-distinct
		Font	mm08, jp01, jp03, jp04, jp07, en03, en04, en06
C2	10	Adj	strong, heavy, hard, robust, distinct
		Font	mm07, mm09, en02, en08, en09
C3	8	Adj	formal, serious, strict
		Font	mm01, mm05, jp06, en01, en05
C4	16	Adj	casual, exciting, cheerful, individual, sportive, modern, unsophisticated, emotional, unclear, clumsy
		Font	mm03, mm06, jp05, jp08, jp10, en07
C5	16	Adj	plain, graceful, calm, familiar, reliable, elegant, classic, sophisticated, intellectual, clear, neat
		Font	mm04, mm10, jp02, jp09, en10

displays; and bolded display font mm3 AyarNayon which has a distinctive look but less easy to read and eye-straining for readers. It can be observed that similar to findings of previous papers for English and Japanese fonts [9], typographic elements that add to the ornateness of word appearance could be counterproductive and impact Myanmar fonts' functionality and readability

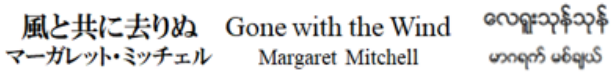

Figure 1: Recommended Fonts for 'Formal'

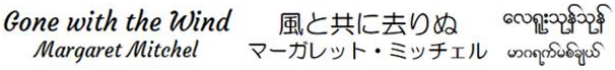

Figure 2: Recommended Fonts for 'Cute

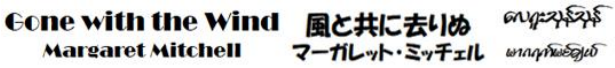

Figure 3: Recommended Fonts for 'Clumsy'

5.2 Points of Caution

The results also point out a few things to beware of when considering fonts' Kansei. One point is that the original font size as specified by font creators may or may not match the evaluated Kansei of respondents. For example, it can be observed that font jp1 NotoSans CJK_JP Bold which is originally specified as a 'bold' font is considered light, weak by respondents as indicated by it being in Cluster 1; en8 Superclarendon Light which is originally specified as a light font is considered strong, heavy, hard for being in Cluster 2. This points out that it is not enough to decide the perceived heaviness of fonts judging merely by the original weight. It may be required to check the appearance of the font itself and judge wisely.

The second point is the group of adjectives in Cluster 4, where seemingly active adjectives such as 'exciting', 'cheerful', 'sportive', and 'modern' are found together with adjectives that indicate inferior document processibility such as 'unclear'. This indicates that while the use of such fonts is recommended for purposes that suit their Kansei, designers should also beware that the text itself might be illegible or easily mistakable due to their unclearness.

6. CONCLUSION

The advantage of Kansei Engineering used in this study is that it approaches the problem from the demand side. With a large number of fonts available on the market these days, it is close to impossible to immediately know the exact font to use for a certain project. Kansei Engineering helps in this decision making by allowing the designers or users to only identify the Kansei, such as 'cute', and the results will identify the best fonts suited for this purpose. This study manages to provide recommendations for three languages, including Myanmar language for the first time, and provide a comparison by keeping the features of fonts and adjectives the same. Findings can also be useful for managers who are tasked with communication in an international context using text as a medium.

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