

# Typeface Personality Traits and Their Design Characteristics

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## ABSTRACT

Most research on fonts is related to legibility, readability and recognition. There are only a few studies on typefaces and their potential personality traits. In this paper, we focus on the visual expression of typefaces and their design characteristics. The relationship between typefaces and their personality traits is investigated. By using statistical analyses on data collected from participants who filled out a survey, the correlation between fonts and personality traits is explored. Fonts used within this study are grouped according to their personality traits. The typical typographical and aesthetic characteristics of typefaces in these groups are examined in detail.

## Keywords

Typeface, Personality Traits, Survey, Analysis, Typeface Design Characteristics.

## 1. INTRODUCTION

Typography is a critical tool in visual communication, because typeface can evoke human emotions. Some fonts can reinforce a chosen message, whereas others can detract from an intended meaning and have adverse effects. Therefore, selecting the appropriate typeface to express and communicate a message is very important. In the document analysis community, a paper on conspicuous character patterns has been presented by Uchida et al [1].

In this paper, we examine whether specific typefaces are perceived to have particular personality traits. First, we established ten different personality traits for twenty four typefaces. A survey was then created and administrated to individuals who voluntarily participated in the study. This survey was created to help determine whether or not participants think that the twenty four chosen fonts are associated with ten tangible personality traits, and to what degree fonts can convey these traits.

After obtaining sufficient data, our next step was to analyze how particular typefaces are associated with certain personality traits. In order to measure the relationship between typefaces and

personas quantitatively, we used standard statistical methods to evaluate the relationship between studied typefaces and personality traits.

The relationship between typefaces and personality traits are thus examined. In this thesis, typeface design characteristics, such as x-height proportion, ascender and descender proportion as well as font weight and so on are studied further. We also analyze the aesthetic design characteristics and appropriate uses of studied typefaces.

## 2. TYPEFACE PERSONALITY SURVEY

In the area of marketing and consumer psychology, typeface personality has been studied for a long time. The earliest study is by Proffenberger and Franken [2], who identified five atmosphere qualities for twenty nine typefaces. These qualities include cheapness, dignity, economy, luxury, and strength. Some researchers assigned specific personas to specific typefaces. Kostelnick, Roberts and Dragga [3] depicted Times New Roman as “bookish and traditional”; Bodoni as “dramatic and sophisticated” and Goudy as “corpulent and jolly”. Shunshan and Wright [4] described Garamond as “graceful, refined and confident” and Century Schoolbook as “serious yet friendly”.

There are however, discrepancies within these past studies on the topic of typefaces and their associated personalities. The personalities identified by the above stated researchers are not consistent. This may be due to the difference in participants based on gender, age or other demographic factors.

### 2.1 Proposed Study Method

In our study, a survey with twenty four different fonts in two sizes and ten personality traits was developed.

#### 2.2.1 Studied Typeface

**Cooper Black** Berlin Sans FB **Bernard MT Condensed**  
Garamond **Belwe Lt BT** **Playbill** **Holly Potter** Centaur  
Poor Richard **Jokerman** Times New Roman  
Arial **Broadway** Kino MT **Impact** Chiller  
Helvetica **Bauhaus 93** **Kabel** **Onyx** Rockwell  
**Snap ITC** Harrington Footlight MT Light

Figure 1. Twenty four typefaces used in the survey

Twenty four different typefaces were chosen as test typefaces (Figure 1). We selected these twenty four typefaces to represent a

wide range of physical characteristics. Each typeface exhibits variations in typeface design from x-height, ascender, descender and stroke weight, etc. Also, these twenty four typefaces are widely used in different applications. Some of them are standard and most frequently used in books and newspapers, such as Times New Roman and Arial. Others, such as Cooper Black and Impact, are popular for advertising.

### 2.2.2 Typeface Personality in Research

We selected ten typeface personality traits: Cheerful, Fearful, Legible, Attractive, Creative, Formal, Sloppy, Relaxed, Confident and Friendly, based on previous studies. These studies have frequently referred to such adjectives to describe typefaces within the literature.

### 2.2.3 Rating Scale

We used a modified five point Likert Scale with the categories as Not at All, Slightly, Moderately, Highly and Extremely. The scale was used to reflect a range of different responses from participants to the twenty four typefaces.

### 2.2.4 Participants

A total of 75 participants completed the survey, 37 females and 38 males. Approximately 58.7% of participants were between 20-29 years of age, and 22.7% between 30-39 years. Only one participant was younger than 20 years and the other 17.3% participants were older than 40 years. Approximately 40% of respondents reported having a bachelor degree, 42.7% a master's degree and 10.7% a doctorate. The education backgrounds of the remaining 6.6% participants include High School, Technical School and Junior College.

### 2.2.5 Materials and Procedures

For each typeface, the complete alphabet in 22 points was displayed in an image that included capitals, lower cases and numerals. Two pangrams were also displayed in 16 points in another corresponding image. Figure 2 illustrates a sample of the twenty four typefaces. The text samples were converted to binary images at 200\*200 dpi resolution.

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz  
0123456789

The quick brown fox jumps over  
the lazy dog. Please complete  
the survey to your comfort level.

**Figure 2. Sample of the alphabets and text displayed in the font survey. This sample shows the typeface Poor Richard.**

The twenty four typefaces were randomly distributed throughout the survey to avoid any effects due to order. The two images were presented at the top of each page, followed by the rating scale.

The survey was provided as printed and online forms, with 27 questions. 24 questions addressed the twenty four fonts and ten personality traits, and 3 questions inquired about demographic information, including age, gender and education background.

The survey took approximately 30-35 minutes to complete. Participants were provided written instructions at the beginning of the survey. They were asked to visually examine the computer or paper displays of the twenty four typefaces and rate them on ten personality traits, indicating how well the typeface suited each personality trait.

### 2.2.6 Data Collection Method

We used the online survey tool --- freeonlinesurvey [5] to create the survey form. Two approaches were used to conduct the survey, the online version and the paper version.

## 3. ANALYSIS OF SURVEY RESULTS

The program we used to analyze survey data is SPSS (v.17.0).

### 3.1 Univariate Analysis

In order to explore the characteristics of individual variables from our survey data and to prepare for further statistical procedures, we first applied univariate analysis on the rating scores for each typeface of the survey data.

We examined the histogram of rating scores of each typeface to explore the distributions of rating scores for each typeface related to each personality trait. The histograms of rating scores exhibited two common shaped distributions: normal and slightly skewed.

We examined the mean values, minimum values, maximum values and standard deviations of rating scores of each typeface based on each personality trait. We summarized the five typefaces that were the most associated with each of the ten personality traits and their mean values in Table 1. The abbreviations used for typefaces are shown in Table 2 for easy reference.

**Table 1. Five typefaces that were the most associated with each of the ten personality traits and their means in descending order**

Personality	Typeface				
Cheerful	Jm	SITC	Hr	BLB	Ga
	3.453	3.293	3.013	2.653	2.600
Fearful	Hp	Pb	Cl	BMC	KM
	2.907	2.480	2.387	2.107	2.093
Legible	Ht	TNR	Ga	Al	Cr
	4.147	4.107	4.027	4.000	3.973
Attractive	Ga	Hr	Cr	Jm	SITC
	3.173	3.133	3.120	2.907	2.907
Creative	Jm	SITC	Hr	HP	Cl
	3.640	3.427	3.333	3.120	3.040
Formal	TNR	Cr	Ht	Ga	Al
	4.173	3.973	3.853	3.813	3.760
Sloppy	Cl	HP	Jm	SITC	Pb
	3.120	2.800	2.787	2.733	2.347
Relaxed	Jm	SITC	Hr	Cl	CB
	3.293	3.107	3.000	2.907	2.893
Friendly	Jm	SITC	CB	Ga	Cr
	3.493	3.320	3.240	3.227	3.227
Confident	Ht	TNR	Al	Cr	Ga
	3.827	3.720	3.667	3.600	3.587

**Table 2. Name abbreviations of twenty four typefaces**

Typeface Name	Abbreviation
Cooper Black	CB
Berlin Sans FB	BSF
Bernard MT Condensed	BMC
Garamond	Ga
Belwe Lt BT	BLB
Playbill	Pb
Harry Potter	HP
Centaur	Cr
Poor Richard	PR
Jokerman	Jm
Times New Roman	TNR
Arial	Al
Broadway	Bw
Kino MT	KM
Impact	Ip
Chiller	Cl
Helvetica	Ht
Bauhaus 93	Bh93
Kabel	Kb
Onyx	Ox
Rockwell	Rw
Snap ITC	SITC
Harrington	Hr
Footlight MT Light	FL

### 3.2 Correlation Analysis

We used the Pearson's Correlation coefficient to measure the strength of the linear relationship between each two typefaces. In our study, a high positive correlation coefficient between two typefaces indicated that participants perceived these two typefaces have very similar personality traits.

A number of relatively strong correlations are found in our calculations. In the social sciences, a correlation of 0.30 using individual level data is considered a "good" correlation; a correlation above 0.40 is considered "strong" [6]. In our study, in order to reduce the number of typefaces for further analysis, we set 0.60 or more as a "strong" correlation threshold.

As a result, fifteen typefaces were used in further analyses. They are Garamond, Belwe Lt BT, Harry Potter, Centaur, Jokerman, Times New Roman, Arial, Chiller, Helvetica, Bauhaus 93, Kabel, Rockwell, Snap ITC, Harrington and Footlight MT Light. The other nine typefaces, Cooper Black, Berlin Sans FB, Bernard MT Condensed, Playbill, Poor Richard, Broadway, Kino MT, Impact and Onyx were not included in the next factor analysis because they were not found to be the most associated with the ten personality traits or they did not produce statistically significant results in the correlation analysis.

### 3.3 Factor Analysis

We performed factor analysis to identify the common underlying factors between typefaces and personality traits. Factor analysis is similar in reasoning to cluster analysis. Generally, a factor

analysis goes through two stages: deriving the factors, then rotating them to enhance their interpretability.

Principal Components Analysis (PCA) was used to combine multiple correlated variables into components. This method was used in the typeface persona studies conducted by Bartram [7].

After obtaining the components, we used Varimax rotation to enhance the interpretability of each component and sort data until specific groups are identified.

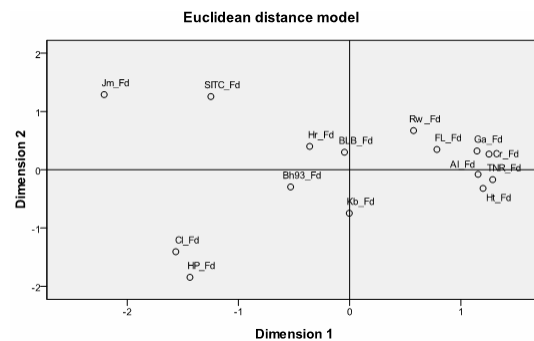
On closer examination of the factor analysis results, the ratings of the fifteen typefaces and the values of their correlation, we finally decided four groups. Typefaces within a group correlated highly with the other typefaces in that group, and did not correlate highly with typefaces in other groups. Items that had higher factor loadings were being more representative of the factor than items with lower factor loadings. In summary, we labeled the four groups based on these rankings as in Table 3.

**Table 3. Four groups and their corresponding typefaces**

Factor	Typeface
Directness	Garamond, Centaur, Times New Roman, Arial, Helvetica, Rockwell, Footlight MT Light
Gentleness	Belwe Lt BT, Bauhaus 93, Kabel
Cheerfulness	Jokerman, Snap ITC, Harrington
Fearfulness	Harry Potter, Chiller

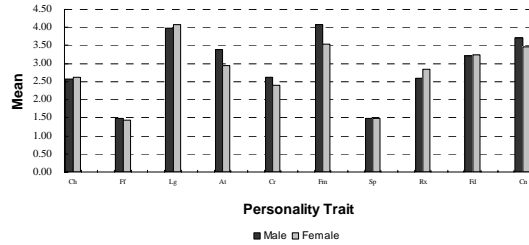
### 3.4 Multi-Dimensional Scaling (MDS) Analysis

We performed MDS on rating scores of fifteen typefaces related to ten personality traits to validate the results from the factor analysis. MDS analyzes the dissimilarity of data in a way that displays the structure of the distance between data like data as a geometrical picture. Figure 3 is an example showing the MDS analysis of the fifteen typefaces related to the personality trait "Friendly". We found that typefaces that are similar are represented by points that are close together, and typefaces that are dissimilar are represented by points that are far apart. The fifteen typefaces can be combined into four groups in the Figure 3. Typefaces within a group were close together. There was no overlap between groups. Therefore, the MDS analysis revealed the fifteen typeface groupings results comparable to those from factor analysis and MDS analysis validated the results from factor analysis.

**Figure 3. MDS analysis of fifteen typefaces related to the personality trait "Friendly"**

### 3.5 Demographic Differences

We performed a one way Analysis of Variance (ANOVA) on the survey data to detect if there is a difference between demographic groups based on gender. Gender serves as the independent variable in our analysis. Figure 4 is an example of the histogram of typeface Garamond concerning ten personality traits in terms of gender.



**Figure 4. Histogram of typeface “Garamond” concerning ten personality traits in male and female groups**

We found no statistically significant difference between the responses of male and female participants for all fifteen typefaces and ten personality traits by calculating and comparing the rating scores’ means of each typeface based on male and female participants. Moreover, we used the difference among means of each typeface related to ten personality traits and assessed them with a one-way ANOVA. The results were all insignificant ( $p > 0.05$ ). Gender, thus does not have a significant and sizeable effect on perceptions of the fifteen typefaces’ personality traits.

For the remaining demographic data (age and education background), the numbers of participants within these groups were not sufficient for a valid analysis. The majority of participants stated to be over 20 years of age and only several participants claimed having Technical School/Higher Vocational School and Junior College/Technical College education.

## 4. TYPEFACE CHARACTERISTICS ANALYSES

### 4.1 Typographical Design Characteristics

First, we analyzed typographical design characteristics of the four groups that include all fifteen typefaces. Typographical design characteristics include legibility, Serif and Sans Serif, x-height, ascender, descender, character stroke contrast design, character height and width design, stem and cap height design, counter design and character space etc. In this paper, we focus on the first five characteristics.

#### 4.1.1 Legibility

Legibility is one of the primarily concerns of typeface designers and is an important part of typeface design. We examined the legibility of fifteen typefaces by analyzing the survey data of personality trait “Legible”. We calculated the means of rating scores of personality trait “Legible” for all fifteen typefaces in four groups.

From the mean values of personality trait “Legible” of fifteen typefaces and four groups shown in Tables 4 and 5, we have found that:

1. The most legible group is Directness, followed by the group Gentleness and Cheerfulness; the most illegible group is Fearfulness.
2. Typefaces in the Directness group all have high values ( $>3.5$ ) for the personality trait “Legible”.
3. The total value for the group Directness is much higher than the value of group Fearfulness.

**Table 4. Means of rating scores of personality trait “Legible” for fifteen typefaces within their corresponding groups**

Group	Typeface	Legibility
Directness	Garamond	4.0137
	Centaur	3.9726
	Times New Roman	4.0822
	Arial	3.9726
	Helvetica	4.1233
	Rockwell	3.7123
	Footlight MT Light	3.5342
Gentleness	Belwe Lt BT	3.3562
	Bauhaus 93	2.4521
	Kabel	3.2603
Cheerfulness	Jokerman	2.4658
	Snap ITC	2.3836
	Harrington	2.7397
Fearfulness	Harry Potter	2.0822
	Chiller	2.2466

**Table 5. Legibility comparison of four groups**

No.	Group	Legibility
1	Directness	3.916
2	Gentleness	3.023
3	Cheerfulness	2.530
4	Fearfulness	2.164

#### 4.1.2 x-height Proportion

The typographical structure of text lines is determined from the vertical projection profile, VP [8], as shown in Figure 5. Each component  $VP[i]$  represents the sum of black pixels of the scanline  $i$ . The  $ul$  and  $bl$  scanlines, which estimate the upperline and the baseline, correspond to the main peaks of VP, such that:



$$ul = i \text{ if } i \in [to, to + \frac{1}{2}|bo - to|] \& \max(VP[i+1] - VP[i]);$$

$$bl = i \text{ if } i \in [to + \frac{1}{2}|bo - to|, bo] \& \max(VP[i-1] - VP[i]).$$

$$x\text{-height} = bl - ul$$

$$wordheight = bo - to$$

$$x\text{-height Proportion} = x\text{-height} / wordheight$$

**Figure 5. Four typographical lines from vertical projection profiles**

We examined the x-height proportion of fifteen typefaces included in the four groups (Table 6).

**Table 6. x-height proportions of fifteen typefaces in 36 point**

Group	Typeface	x-height/ word height
<b>Directness</b>	Garamond	0.4444
	Centaur	0.3916
	Times New Roman	0.5038
	Arial	0.5571
	Helvetica	0.5603
	Rockwell	0.5145
	Footlight MT Light	0.5036
<b>Gentleness</b>	Belwe Lt BT	0.5639
	Bauhaus 93	0.5180
	Kabel	0.5644
<b>Cheerfulness</b>	Jokerman	0.3736
	Snap ITC	0.5347
	Harrington	0.5180
<b>Fearfulness</b>	Harry Potter	0.4138
	Chiller	0.2917

For the x-height proportions of fifteen typefaces shown in Table 6, we found that:

1. x-height ratios of the typefaces in group Directness are within the range of 0.40-0.56.
2. x-height ratios of the typefaces in group Gentleness are comparably larger (>0.50) than all other groups. Typeface Kabel has the largest x-height ratio of 0.5644 as compared to all other typefaces.
3. x-height ratios of typefaces in group Cheerfulness are within the range of 0.37-0.52.
4. x-height ratios of group Fearfulness are the smallest of the four groups. The typeface Chiller has the smallest x-height ratio of 0.2917 in fifteen typefaces.

#### 4.1.3 Ascender Proportion

Based on Figure 5, we find that:

$$\text{Ascender} = ul - to$$

$$\text{Ascender Proportion} = \text{Ascender} / \text{wordheight}$$

We examined the ascender proportion of all fifteen typefaces within their four groups (Table 7) and found that:

1. The ascender ratios of typefaces in group Directness are within the range of 0.20-0.32. Typeface Helvetica has the smallest ascender ratio (0.2143) of all fifteen typefaces.
2. The ascender ratios of typefaces within the group Confident are very close to each other and are within the range of 0.21-0.23.
3. The ascender ratio range of typefaces in group Cheerfulness and Fearfulness are wide. Chiller, in group Fearfulness, has the largest ascender ratio of all fifteen typefaces at 0.3542.

**Table 7. Ascender proportions of fifteen typefaces in 36 point**

Group	Typeface	Ascender/height
<b>Directness</b>	Garamond	0.2741
	Centaur	0.3147
	Times New Roman	0.2556
	Arial	0.2143
	Helvetica	0.2057
	Rockwell	0.2391
	Footlight MT Light	0.2555
<b>Gentleness</b>	Belwe Lt BT	0.2180
	Bauhaus 93	0.2374
	Kabel	0.2331
<b>Cheerfulness</b>	Jokerman	0.3516
	Snap ITC	0.2292
	Harrington	0.2518
<b>Fearfulness</b>	Harry Potter	0.3241
	Chiller	0.3542

#### 4.1.4 Descender Proportion

Based on Figure 5, we find that:

$$\text{Descender} = bo - bl$$

$$\text{Descender Proportion} = \text{Descender} / \text{wordheight}$$

We examined the descender proportion of all fifteen typefaces within their four groups (Table 8).

**Table 8. Descender proportions of fifteen typefaces in 36 point**

Group	Typeface	Descender/height
<b>Directness</b>	Garamond	0.2815
	Centaur	0.2937
	Times New Roman	0.2406
	Arial	0.2286
	Helvetica	0.2340
	Rockwell	0.2464
	Footlight MT Light	0.2409
<b>Gentleness</b>	Belwe Lt BT	0.2180
	Bauhaus 93	0.2446
	Kabel	0.2025
<b>Cheerfulness</b>	Jokerman	0.2747
	Snap ITC	0.2361
	Harrington	0.2302
<b>Fearfulness</b>	Harry Potter	0.2621
	Chiller	0.3542

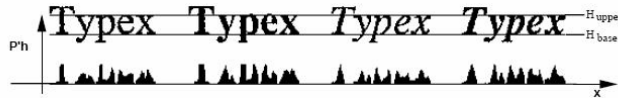
From Table 8, we found that:

1. The descender ratios of typefaces in group Directness are close together and are within the range of 0.22-0.30.

2. The descender ratios of typefaces in group Confident are in the range of 0.20–0.25. Typeface Kabel has the smallest descender ratio of 0.2025
3. The descender ratios of all typefaces in group Cheerful are around 0.24.
4. The descender ratios of group Fearfulness are the largest one of all four groups. Typeface Chiller in this group has the largest descender ratio (0.3542) of all fifteen typefaces.

#### 4.1.5 Weight Detection

The weight of font is reflected by the density of black surfaces on the white background. This density ( $dn$ ) is extracted from the horizontal profile  $P'_h$ .



**Figure 6. Horizontal Projection Profiles**

The weight is computed on the central part of the line located between  $H_{upper}$  and  $H_{base}$ , in order to be independent of the text line structure [8].  $dn$  is thus defined by:

$$dn = \frac{1}{n} \sum_{x=1}^n P'_h[x]$$

We examined the font weights of fifteen typefaces within the four groups (Table 9), in which the fifteen typefaces were set in 36 points in measurement.

**Table 9. Font weight of fifteen typefaces in 36 point**

Group	Typeface	Font weight
Directness	Garamond	26.2734
	Centaur	19.9271
	Times New Roman	34.0139
	Arial	42.8067
	Helvetica	32.8545
	Rockwell	34.9534
Gentleness	Footlight MT Light	24.6890
	Belwe Lt BT	34.1732
	Bauhaus 93	49.4027
Cheerfulness	Kabel	56.3408
	Jokerman	33.7589
	Snap ITC	53.4029
Fearfulness	Harrington	20.8273
	Harry Potter	30.1218
	Chiller	17.6524

From Table 9, we found that:

1. The weights of typefaces in group Directness are within the range of 20 to 43.

2. The weights of typefaces in group Gentleness vary from 34 to 56, in which typeface Kabel has the largest weight (56.34) of all fifteen typefaces.
3. The weights of typefaces in group Cheerfulness vary greatly from 20 to 53.
4. The weights of typefaces in group Fearfulness are comparably small. Typeface Chiller has the smallest weight (17.65) of the fifteen typefaces.

#### 4.1.6 Serif and Sans Serif

We classified all fifteen typefaces based on typographical features. We find that the typefaces in group Directness consist of Serif, Sans Serif, Slab Serif and Display Serif. The typefaces in group Gentleness are Display Serif, Display Sans Serif and Display. The typefaces in group Cheerfulness and Fearfulness are all the Display typefaces.

In the typographic literature [9], Serifs are generally believed to have a significant impact on readability. On the contrary, there are also some researchers ([9] and [10]) who question if Serifs enhance legibility. From our font survey results, the three most legible typefaces include Helvetica, Times New Roman and Garamond with scores that are very close (Table 4), which shows there is not a big difference between Serif and Sans Serif on legibility issues within our present study. By contrast, the three most illegible typefaces include Harry Potter, Chiller and Snap ITC (Table 4). The most legible group is group Directness and the most illegible group is group Fearfulness. This may suggest that legibility is diminished by the use of exaggerated ornamental elements and prominent typographical features. Moderate typographical design characteristics increase typeface legibility. The simpler a typeface design is, the more legible it is.

## 4.2 Aesthetic Design Characteristics

According to some marketing research studies on logo design [11] and [12]), three universal aesthetic dimensions of graphic logo design were proposed, elaborateness, naturalness and harmony.

### 4.2.1 Elaborateness

#### 4.2.1.1 Ornament vs. Briefness

The design of typefaces in group Directness is brief, simple, and without any ornaments. Compared with the briefness of typeface design within the group Directness, some special ornaments were incorporated in Display typefaces within the groups Gentleness, Cheerfulness and Fearfulness. For example, the design of typeface Jokerman in group Cheerfulness, includes some little stickers, small circles or even star figures added deliberately to the main strokes of letters (Figure 7).



**Figure 7. Ornaments of typeface “Jokerman”**

#### 4.2.1.2 Depth vs. Flatness

Depth gives the appearance of perspective or a three dimensional design [11]. Typefaces in group Directness are flat and seldom have structure variation; the strokes of these typefaces are always vertical and horizontal. Typefaces in group Gentleness have a slight structural variation. Typefaces in group Cheerfulness and

Fearfulness represent a wide range of structure variation. These variations include stroke form, character size and proportion, etc., which add depth to the typeface and make it more distinctive.

#### 4.2.1.3 *Special Use and Common Use*

Typefaces in group Directness are commonly and widely used in small sizes as text typefaces for newspaper, textbooks, magazines, etc. They can also be used in large sizes for Display typefaces, such as headings in advertisements. However, typefaces in group Gentleness, Cheerfulness and Fearfulness are only suitable for headings in large sizes.

#### 4.2.2 *Naturalness*

##### 4.2.2.1 *Organic vs. Geometric*

Organic designs are those that are made up of natural shapes, such as irregular curves. Alternatively, geometric designs tend to represent less natural and more synthetic-looking objects [11]. Typefaces in groups Directness and Gentleness are more geometric while typefaces in groups Cheerfulness and Fearfulness are more organic in appearance. For example, typeface Bauhaus 93 in group Gentleness, displays a rigid letterform style, which is geometric and even (Figure 8).



**Figure 8. Geometric strokes of typeface “Bauhaus 93”**

##### 4.2.2.2 *Printed vs. Handwritten Appearance*

For typefaces of groups Directness and Gentleness, their strokes are straight lines, and their structure is rigid. The characters rest on the same baseline. However, typefaces in groups Cheerfulness and Fearfulness, include letterforms that look more handwritten and random.

#### 4.2.3 *Harmony*

##### 4.2.3.1 *Symmetry vs. Asymmetry*

The letterform design of typefaces in groups Directness and Gentleness exhibit symmetry everywhere, and the symmetrical design generally lends the letterform to a more formal appearance. On the contrary, asymmetry is a more common letterform design of typefaces in groups Cheerfulness and Fearfulness.

##### 4.2.3.2 *Balanced vs. Unbalanced*

Balance is related to symmetry because symmetric designs are normally considered balanced. Letterforms of typefaces in groups Directness and Gentleness are well proportioned and balanced, as opposed to letterform designs of typefaces in groups Cheerfulness and Fearfulness. They have different baselines, proportions and flexible ornaments.

### 4.3 **Summary of Typeface Characteristics**

#### 4.3.1 *Typographical Characteristics*

We examined the typographical characteristics of our studied typefaces from two aspects, groups and their representative typefaces.

##### 4.3.1.1 *Typographical Characteristics of Four Groups*

1. The values of typographical characteristics of typefaces in group Directness are moderate compared with the other three groups and it is the most legible groups in four groups. It proved the balance between a moderately large x-height, ascender and descender ratios is very important for typeface legibility.
2. The typefaces in group Gentleness have largest ratios on x-height and font weight, while smallest ratios on ascender and descender ratios in four groups. Legibility of the Gentleness group ranks second out of the four groups. The typefaces in groups Directness and Gentleness are easy to read.
3. The values of typographical characteristics of typefaces in group Cheerfulness and Fearfulness vary in a wide range. Typefaces that have minimum or maximum values in our fifteen typefaces fall mainly within these two groups. Some typefaces in these two groups have very flexible and exaggerated values. This exaggeration creates visual interest, making typefaces prominent and provides readers with strong visual feelings. The typefaces of these two groups consist only of Display typefaces, and are easy to catch readers' eyes compared with Serif and Sans Serif typefaces from the Directness and Gentleness groups. Legibility of these two groups is worse than the Directness and Gentleness groups.
4. There are trade-offs between typeface legibility and strong visual feelings conveyed by typefaces. Specifically, moderate design increases the typeface legibility, but decreases prominent responses. For example, typeface Helvetica in group Directness scored very highly on legibility, low on creative and cheerful and average on relaxed in our font survey. Typeface Jokerman in the Cheerfulness group scored first on cheerful and creative and low on legible. The typefaces in group Gentleness are less prominent compared to the other three groups. They produced average scores on several typeface traits, such as cheerful, friendly, confident and relaxed.

#### 4.3.1.2 *Typographical Characteristics of Groups' Representative Typefaces*

On the basis of the survey results and analysis of groups' typographical characteristics, we select four typefaces that represented the characteristics for each of the four groups.

1. Directness Group and Typeface Helvetica
2. Gentleness Group and Typeface Belwe Lt BT
3. Cheerfulness Group and Typeface Jokerman
4. Fearfulness Group and Typeface Harry Potter

#### 4.3.2 *Aesthetic Characteristics*

We evaluated aesthetic characteristics of the four groups based on three aspects: elaborateness, naturalness and harmony. In our analysis we found that:

1. The typefaces of groups Directness and Gentleness are less complex and plainer compared with those in the Cheerfulness and Fearfulness groups. Different ornaments are used in all the typefaces of group Cheerfulness and Fearfulness, while there are no ornaments in the typefaces of the Directness group, and some subtle ornaments in typefaces of the Gentleness group.
2. The letterform of typefaces in the Directness and Gentleness groups are more geometric and carefully set. Those of the

Cheerfulness and Fearfulness groups are more flexible and natural.

3. The typefaces in the Cheerfulness and Fearfulness groups are asymmetrical and unbalanced, while those in the Directness and Gentleness groups are symmetrical and balanced.
4. The most attractive groups are Directness and Cheerfulness, their typefaces ranked highest on personality trait "Attractive".
5. There are some trade offs in the aesthetic aspects of typeface design. Symmetrical and balanced designs increase friendly responses and typeface legibility but decrease attraction and prominent responses. The use of ornaments always influences and decreases typeface legibility.

#### 4.3.3 Appropriate Uses

Since specific typefaces are associated with particular personality traits, we need to consider the responses that typefaces might create. Thus typefaces should be carefully selected to ensure appropriateness for the meanings and occasions.

##### 4.3.3.1 Directness Group

Typefaces in this group are legible, formal and confident, but unimaginative, unemotional and unrelaxed. Therefore such typefaces are common used, all purpose and especially appropriate for the content of official documents, reports and forms.

##### 4.3.3.2 Gentleness Group

Typefaces in this group are less prominent and scored average on all the personality traits. In addition, the typefaces of the Gentleness group are more legible than typefaces in the Cheerfulness and Fearfulness groups. However, with regard to the noticeable ornaments used in these typefaces, they are more appropriate used in the commercial advertising and headings than for textual contents. However, the feelings they evoked might not as intense as typefaces in the Cheerfulness and Fearfulness groups.

##### 4.3.3.3 Cheerfulness Group

Typefaces in this group are rated as cheerful, attractive, creative and relaxed. Such typefaces are generally best for evoking a pleasant tone in the commercial advertisement and children reading books.

##### 4.3.3.4 Fearfulness Group

Similar as typefaces in the Cheerfulness group, the typefaces in the Fearfulness group are also best for evoking intense emotional feelings. The difference is typefaces in this group are displeasing and cold. Such typefaces are generally used in the commercial advertising for special effects. In addition, typefaces in the Cheerfulness and Fearfulness groups are not very legible, therefore they are often printed in large size and more appropriate for the headings than texts.

## 5. CONCLUSION AND FUTURE WORK

Compared with previous research on font and personality traits ([13] and [14]), in this paper, we did not only perform analyses of font survey results, identified the personalities of twenty four studied typefaces, and obtained the four typeface groups, we also conducted further research on the typographical and aesthetic

characteristics based on our study groups and suggested the potential association with typeface design and their personality traits.

Current work is an initial step; however, more research is required. The selection of personality traits that are used in research should be pilot tested and examined in more detail to help make studied personality traits more accurate and specific. Due to the limitations based on our study's methodology, we must also address some issues which may have influenced the participants' responses, including factors such as participants' reading comprehension, reading time, familiarity with studied typefaces. All these factors need further investigation.

## REFERENCES

- [1] Uchida S., Hattori R., Iwamura M., Omachi S. and Kise K. 2009. Conspicuous character patterns. In Proceedings of 10th International Conference on Document Analysis and Recognition (Barcelona, Spain, July 26-29, 2009), IEEE Computer Society, Washington, DC, 16-20. DOI=<http://portal.acm.org/citation.cfm?id=1635277>
- [2] Poffenberger, A.T. and Franken, R.B. 1923. A study of the appropriateness of type faces. *Journal of Applied Psychology*. Vol.7, 312-329.
- [3] Kostelnick, C., Roberts, D.D. and Dragga, S. 1997. *Designing visual language: Strategies for professional communicators*. Longman, New York.
- [4] Shunshan, R. and Wright, D. 1994. *Desktop publishing by design*. Microsoft Press, Bellevue, Washington.
- [5] <http://www.freeonlinesurvey.com>
- [6] Sweet, S.A. and Martin, K.G. 2008. *Data Analysis with SPSS*. third edition, Pearson Education, Upper Saddle River, New Jersey, 106-107.
- [7] Bartram D. 1982. Perception of semantic quality in type: Difference between designers and non designers. *Information Design Journal*, Vol.3, Issue 1, 38-50.
- [8] Zramdini A. and Ingold, R. 1998. Optical Font Recognition Using Typographical Features. *IEEE Transaction on Pattern Analysis and Machine Intelligence*, Vol. 20, No. 8. 877-882.
- [9] Arditi, A. and Cho, J. 2005. Serifs and font legibility. *Vision Research*, Vol. 45, No. 23, 2926-2927.
- [10] Moriarty, S. E. and Scheiner, E. 1984. A study of close-set text type. *Journal of Applied Psychology*, Vol.69, No.4, 700-702.
- [11] Henderson, P.W. and Cote, J.A. 1998. Guidelines for selecting or modifying logos. *Journal of Marketing*, Vol. 62, No. 2, 14-30.
- [12] Henderson, P.W., Giese, J.L. and Cote, J.A. 2004. Impression management using typeface design. *Journal of Marketing*, Vol. 68, No. 4, 60-72.
- [13] Shaikh, A.D., Chaparro, B.S. and Fox, D. 2006. Perception of fonts: Perceived personality traits and uses. *Usability News*, Vol. 8, Issue 1, 1-6.
- [14] Brumberger, E.R. 2003. *The Rhetoric of Typography: The Persona of Typeface and Text*. Technical Communication, Vol. 50, No.2, 206-223.