

로고 유무에 따른 감성 분석

Sensitivity Analysis According to the Presence of the Logo

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Abstract

This paper analyses the sensory responses of Chinese female consumers towards different designs of perfume bottles with particular attention to the existence of logos on them. We used total 40 samples of the perfume bottles, 20 with logos on them and 20 without, and the results show that young Chinese female consumers prefer simple designs over complex designs that contain different types of free curves with vivid colors. In addition, the existence of logos on bottles was found not to change the responses significantly, meaning that the logos on bottles do not affect sensibility of Chinese female towards perfume bottles. A logo's impacts on the bottle depended in part on the bottle's color and shape. Overall, a perfume bottle with simple shapes and light colors became regarded as more resplendent when the logo was added, but a bottle with more complex shapes and vivid colors tended to become regarded as plainer after adding the logo. This shows that a logo serves as a conciliatory element in the impression of the whole bottle in the 'resplendent-plain' category.

Key words : Perfume bottle, shape, Logo, Sensibility Analysis, Chinese

1. Introduction

As market competition intensifies, the life cycles of product become shorter, and consumers' needs and expectations changed much. With the increasing amounts of consumer goods popuring into high streets, many consumers buy goods based on the first impression, and this increased the importance of packaging. A study conducted by the Paperboard Packaging Alliance in 2005 showed that in the minds of consumers, product and

package are one and the same: "Whatever a package says to a shopper – through words, shapes, materials, sizes – is exactly what its contents become, be they a bottle of perfume or a bottle of milk" (Heider and Oliver, 2010). Perfume has provocative symbolic value to the consumer's taste and status especially for female consumers in China(Zhang, 2010), and it is one such product that the container, or the bottle, offers the first impression to attract consumer's attention rather than merely serving its function as container of the perfume.

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The shapes and colors of the bottles, which may or may not include the logos, produce various different impressions on the consumers, such as being ‘refined’, ‘elegant’, ‘tranquil’ and so on. Such impressions play a key role in stimulating consumers’ desire to purchase in the first time(Nie and Zhang, 2004). Therefore, such impressions, or the ‘customers’ affective needs’(Kuang and Jiang, 2009) should be taken into account in designing and modifying packaging to achieve desired responses in order to increase sales effectively.

2. Research objectives

This paper analyses Chinese consumers’ responses to perfume bottles using sensibility engineering method. In addition to analyzing impressions the bottles leave on consumers, the paper also analyses the extent to which the logos, the printed designs of the companies’ brands, affect the sensory impressions on the consumers. Such studies have not been conducted in China to our knowledge and this is one area that needs more research in relation to the cultural background of Chinese consumers.

As our study focused on the shapes and colors of bottles and the existence of logos on the bottles, we used visual images produced using computer as samples. Surveys were conducted using these images(see research methods below) and quantified data was analyzed in relation to the female consumer’s emotional evaluation. Main objectives for the analyses are as below:

1. Explore the shape features of Chinese young women’s favorite perfume bottles
2. Research into the perceptual influence and influence factors of logo on perfume bottle shapes, and summarize the features of the logo which can enhance the degree of emotional evaluation of perfume bottles.

3. Research process and methods

3.1. Research Process and Methods

We designed the research targeting Chinese female

aged between 18 and 25. In China, women starts to get interested in fashion, making-up and wearing perfumes at around this age and most of them would not have used perfumes as yet. However, they will soon reach the age when they start wearing perfumes and as first-time buyers, their sensory responses to the visual images of packaging are expected to have strong effect on their decision to purchase.

A total of forty eight female, mostly university students aged 19 to 24(average being 22.4 years), participated in the research. The participants were shown 40 images mentioned above on computer screen. In order to control the impacts of brand recognition, they were first shown 20 images without logos before they were shown images with logos on. Average time spent by each participant for the study was not more than 30 minutes and hence participant’s fatigue was not counted as a factor that could affect their responses.

In choosing the words of evaluation, we first chose 400 adjectives relating to feeling and used Kawakita-Jiro Method(K-J Method) to reduce the number to 200 then to 30 through two rounds of screening. After this, we used Multidimensional Scaling Methods(MDS) to objectively identify 12 pairs of antonyms and negative words that are most associated with the 30 adjectives. Table 1 shows the 12 pairs of antonyms and negative words that were used in the evaluation and below are the actual Chinese words used during the survey. Of these, ‘like’ was adopted as the key variable for analysis.

Gorgeous -Simple(華麗-朴素) Provocative - Homely(濃烈-淡雅) Exquisite-Coarse(精緻-粗糙) Good-looking - Not good-looking(好看-不好看) Modern-Vintage(現代-古典) Heavy-Light(重的-輕的) Expensive-Cheap(昂貴-便宜) Fashionable-Classical(潮流-經典) Like- Dislike(喜歡-不喜歡) Mature-Youthful(成熟-青春) Graceful-Profane(優雅-庸俗) Feminine-Masculine(女性-男性).

As shown in the table 1, in choosing the scale of evaluation, each category is divided into seven levels in terms of the strength for the convenience of data analysis. Chinese characters used for each scale are shown below: Very much so(非常), Relatively so(比較), A little bit so(一点点).

In the analysis of the data, Semantic Differential(SD)

method was used to find out the most popular sample, then we used the correlation matrix on the responses of Chinese consumers towards the samples.

Table 1. The scale and words of evaluation

Score	7	6	5	4	3	2	1	
sampleX	Highly	Relatively	A little	Neutral	A little	Relatively	Highly	
1 Gorgeous								Simple
2 Provocative								Homely
3 Exquisite								Coarse
4 good-looking								Unsightly
5 Modern								Vintage
6 Heavy								Light
7 Expensive								Cheap
8 Fashionable								Classical
9 Like								Dislike
10 Mature								Youthful
11 Graceful								Profane
12 Feminine								Masculine

3.2 Selection of Sample

In creating samples of perfume bottles, 20 most popular and best-selling samples in China in the year 2010 were chosen. We did background survey in the department stores to learn best selling items and chose the 20 samples considering the brand, fragrance, shapes and styles of bottles, and removed the products with similar shape and the same brand. Then we produced 20 images with logos and additional 20 without logos by digitally removing the logo from the sample images(see Appendix I). Samples number 1 to 20 are those without logos and samples no.21 to 40 are the same with logos on the bottles. Thus, sample no. 1 and sample no.21 are the same bottles but the former contains no logo. In presenting the analysis, sample no.21 is marked as no.21-1 in tables and figures to identify it further with the same bottle without the logo.

In conducting the research, instead of using actual

samples of bottles, we have adopted digital images. Despite possible limitations in understating the importance of the sensibility relating touch(such as weight and feel of the surface), computerized images were adopted because the study’s main focus is on the sensory responses of the consumers towards visual images and the existence or otherwise of logos. Practically, digital images are easy to manipulate to produce images of bottles without logos and are visually close to real bottles. Such methods were also adopted by Park and Jung(2001), in their study of sensibility towards interior designs of automobiles and Jo(2011) used 3D virtual simulation to analyse responses towards interior of restaurants.

4. Analysis of survey results

4.1. Analysis of the Most Popular Sample by the Interviewee

4.1.1. Correlation Matrix Analysis

In the table 2 below, those pairs scoring 0.7 or higher can be regarded as having high correlations. These include, ‘like - good-looking’(0.944), ‘like - graceful’(0.888) and ‘gorgeous - provocative’(0.865). In other words, these pairs of words mean almost the same to Chinese customers. Table 2 further rearranges to show this more clearly. From this table it could be implied that for Chinese customers there is a strong correlation among the feelings of ‘like’ ‘graceful’ and ‘good-looking’ in terms of their responses towards perfume bottles.

Table 2. Variables that have two or more related variables

variable	Related variable	score
like	good-looking	0.944
	graceful	0.888
	modern	0.716
nice	good-looking	0.944
	graceful	0.848
provocative	gorgeous	0.865
	heavy	0.726
graceful	like	0.888
	gook-looking	0.848

4.1.2. Method of Semesty Difference

The samples were then sorted in descending order, those with average score of keywords “like” is above 5.00 and below 3.50 ,which means samples above “a little like” and below“prefer to a little dislike”. From table 3, we can conclude that the most popular samples are s26-6, s40-20, s6, s22-2, s21-1, s34-14, s20 back, s33-13, s14, and s28-8; the least popular samples are s3, s10, s18.

The variables of each sample shown in the table 3 were then analysed in therms of the strength of their influence. For this research, the variables with average scores above 5.00 and below 3.00 are regarded as having greater influence. Important variables of the most popular samples with scores below 3.00 can be regarded to mean their antonyms. Those variables with strong influences are then rearranged in the table 4 for each sample. As in the table the variable “good-looking, graceful, exquisite” appear 10 times, “expensive” appears 9 times, “feminine, modern “appear 8 times,” mature” appear 6 times.

On the other hand, of those samples identified as least

favorite(s3, s10, and s18), the most influential variables were “provocative/mature” followed by “heavy” and “gorgeous” as shown in the table 5.

These results show that the variable of “like” is most closely associated with “good-looking” “graeful” and “exquisite” in other words, these are the adjectives that are most associated with the perfume bottle designs that Chinese customers prefer. On the other hands the variables such as “provocative”, “gorgeous “ and “heavy” were most closely associated with “dislike” meaning that these are the adjectives Chinese customers tend to avoid in choosing perfume bottles.

Table 3. The most popular samples”& “The least popular samples

Sort samples In descending order selecting”like-dislike”as key words	
sample	Score of “like”
s26-6	5.79
s40-20	5.69
s6	5.63
s22-2	5.35
s21-1	5.33
s34-14	5.25
s20	5.23
s33-13	5.17
s14	5.15
s28-8	5.15
sample	Score of “like”
s18	3.44
s10	3.27
s3	2.85

Table 4. Important variables of the most popular samples

sample	The frequency of Important variables								
	N/G/E	expensive	feminine	modern	mature				
s26-6	N/G/E	expensive	feminine	modern	mature				
s40-20	N/G/E	expensive	feminine	modern			fashionable		
s6	N/G/E	expensive		modern	mature			simple	elegant and quiet
s22-2	N/G/E	expensive	feminine	modern	mature	gorgeous			
s21-1	N/G/E	expensive	feminine			gorgeous			
s34-14	N/G/E	expensive	feminine	modern	mature				
s20	N/G/E		feminine	modern					
s33-13	N/G/E	expensive		modern	mature	gorgeous			
s14	N/G/E	expensive	feminine	modern	mature	gorgeous	fashionable		
s28-8	N/G/E	expensive	feminine				fashionable		
	10	9	8	8	6	4	3	1	1
N/G/E: nice/ graceful/ exquisite									

Table 5. Important variables of the least popular samples

Important variables of the least popular sample					
sample	Important variables	The frequency of Important variables			
		provocative /mature	heavy	gorgeous	feminine /expensive
s3	provocative mature heavy	provocative /mature	heavy		
s10	provocative heavy gorgeous mature	provocative /mature	heavy	gorgeous	
s18	provocative mature feminine expensive gorgeous	provocative /mature		gorgeous	feminine /expensive
		3	2	2	1

The results above provide some insights towards the popular designs of perfume bottles. The bottles that were preferred have simple designs as s6, s20, s22-2. The exception is S21-1, which, even though the upper part has complex design, the body still has simple form. S34-14 is another exception, the perfume bottle had metallic feel and were regarded as highly “gorgeous”,

but, in this case as well, its overall shape is dominated by a simple free curve but still not a complex design including many ornamental features. On the other hand, we can see from the least popular samples that these perfume bottles have complex free curves, heavy ornamental features and an amalgamation of different shapes as well as strong and vivid colors.



Figure 1. the most popular samples and the least popular samples



Figure 2. samples that scores are above 5.00 no matter with or without Logo.

In sum, the following features can be identified as the best design for the perfume bottles for young Chinese women

- Simple is better.
- Details should be delicate in order to give the consumers higher class feelings.
- Those with straight lines are more likely to be liked by customers than curves.
- Complexity is not welcome

4.2. Correlation Analysis of Logo

4.2.1. Logo impact on the perception of perfume bottles

In the first factor analysis, the first factor including “gorgeous”, “provocative”, “vintage”, “heavy” and therefore can be summarized as “resplendent”; the second factor including “exquisite”, “expensive” and therefore can be summarized as “delicate”. The results of the second factor analysis are similar to the first, the two factors are “resplendent” and “delicate”. The third factor analysis has not changed much, but two additional adjective “feminine”, “graceful” are added to factor 2, which therefore can be summarized as “Dainty”.

Overall, the first factor changed little after adding the logo to the perfume bottles since the impact variables of factor 1 are about the overall impression of the perfume

bottle, while lacking the attention of other details such as logo. The factor 2 are added with two variables “feminine” and “graceful”, and the increase of “exquisite” is relatively large. In addition, the samples S6, S20, and S14 had “like” scores above 5.00 among the most popular samples regardless of the logos on the bottle. Samples without logos were also liked by the respondents which imply that the design of perfume bottle body is more significant. They also have surprisingly simple designs.

These imply, interestingly, the existence of logos on bottles did not change the responses significantly. In other words, the existence or otherwise of logos on bottles does not affect sensibility of Chinese female towards perfume bottle.

This point is also seen in the table 6 and 7. We used the data acquired through Semantic Differential and applied factor analysis to the data and the result is shown in the table 6 and 7. The four variables that were most influential (higher than 0.7 in absolute value) in factor 1 are the same whether with logo or without logo. In terms of factor 2, four variables – ‘exquisite’, ‘expensive’, ‘feminine’ and ‘graceful’ – were influential among the samples with logo and of these, two – ‘exquisite’, ‘expensive’ – were also significant among those without logo. In short, the logo did not cause any significant change in both factor 1 and factor 2. These

four significant variables for factor 1, namely ‘gorgeous’, ‘provocative’, ‘heavy’ and ‘vintage’ (antonym of ‘modern’) were combined to a new variable ‘resplendent’ in order to map sample positions. Similarly, ‘expensive’, and ‘exquisite’ which were significant variables for factor 2 among the samples without logo, were combined to ‘delicate’, while four important variables for those with logo, ‘exquisite’, ‘expensive’, ‘feminine’ and ‘graceful’, were combined to ‘dainty’.

Table 6. Factor analysis of all perfume bottles without logo

Without Logo		
10 variables	Factor	
	1	2
1 gorgeous	.925	.328
2 provocative	.917	.100
6 heavy	.759	.039
5 modern	-.736	.447
11 graceful	-.674	.628
12 feminine	.458	.432
7 expensive	.213	.835
3 exquisite	.244	.824
8 fashionable	-.004	.672
10 mature	-.037	.113
	Resplendent	Delicate

Table 7. Factor analysis of all perfume bottles with logo

With Logo		
10 variables	Factor	
	1	2
1 gorgeous	.924	.271
2 provocative	.892	-.105
5 modern	-.827	.322
6 heavy	.741	.106
10 mature	-.290	-.216
3 exquisite	.225	.918
7 expensive	-.097	.768
12 feminine	.334	.756
11 graceful	-.567	.703
8 fashionable	-.473	.565
	Resplendent	Dainty

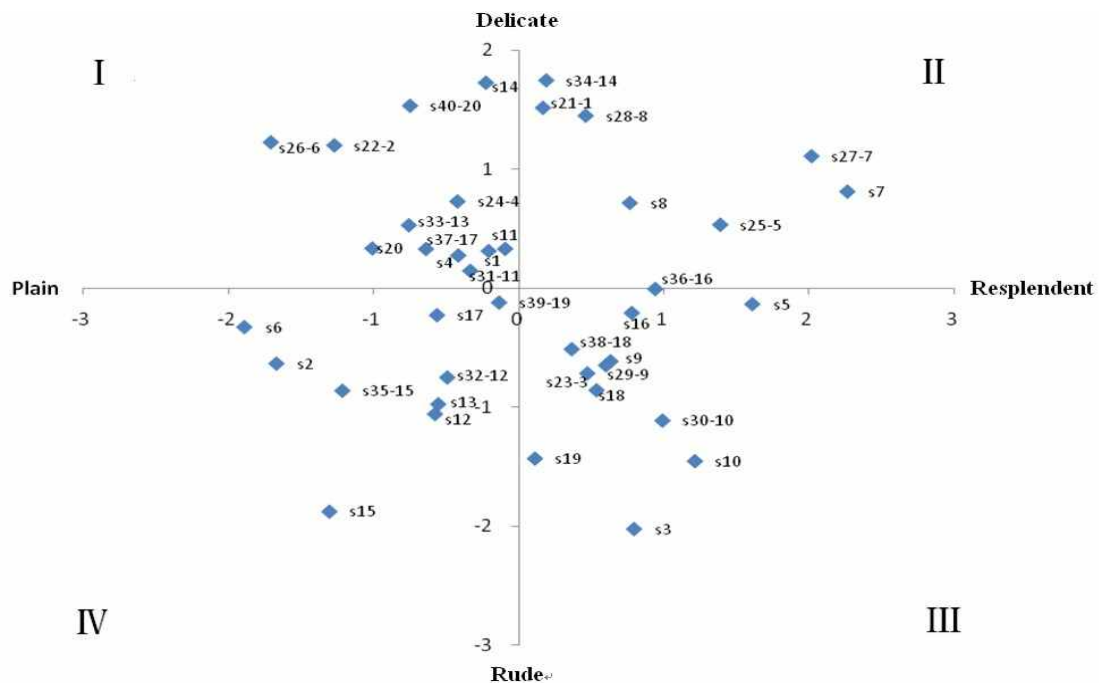


Figure 3. The sample distribution plot based on Table 8
 X : Resplendent—Plain Y : Delicate—Rude

Figure 3 shows that the positions of the samples move up on the y-axis after adding the logo to the perfume bottles, while there is no particular direction on the x-axis. One interesting result is that the vertical movement is larger than the horizontal movements in all the samples. This means that the logo has a greater

impact on the ‘delicate’-‘rude’ scale than on the ‘resplendent’-‘plain’ scale. Sample 11 is an exception to move to the lower left, but only slightly. The straight-line distance between samples in the Figure 3 which is greater than 1 and less than 0.4 are summarized as follows:

Table 8. The straight-line distance between samples in the Figure 3 which is greater than 1

Sample	<p>2</p> 	<p>6</p> 	<p>13</p> 	<p>3</p> 
Straight-line distance	1.87	1.56	1.52	1.34
Sample	<p>19</p> 	<p>1</p> 	<p>20</p> 	<p>15</p> 
Straight-line distance	1.33	1.26	1.23	1.02

Table 9. The straight-line distance between samples in the Figure 3 which is less than 0.4

Sample	<p>9</p> 	<p>16</p> 	<p>11</p> 
Straight-line distance	0.05	0.26	0.30
Sample	<p>12</p> 	<p>18</p> 	<p>7</p> 
Straight-line distance	0.32	0.38	0.39

The common ground of samples whose change is greater than 1 and less than 0.4 can be summarized as follows:

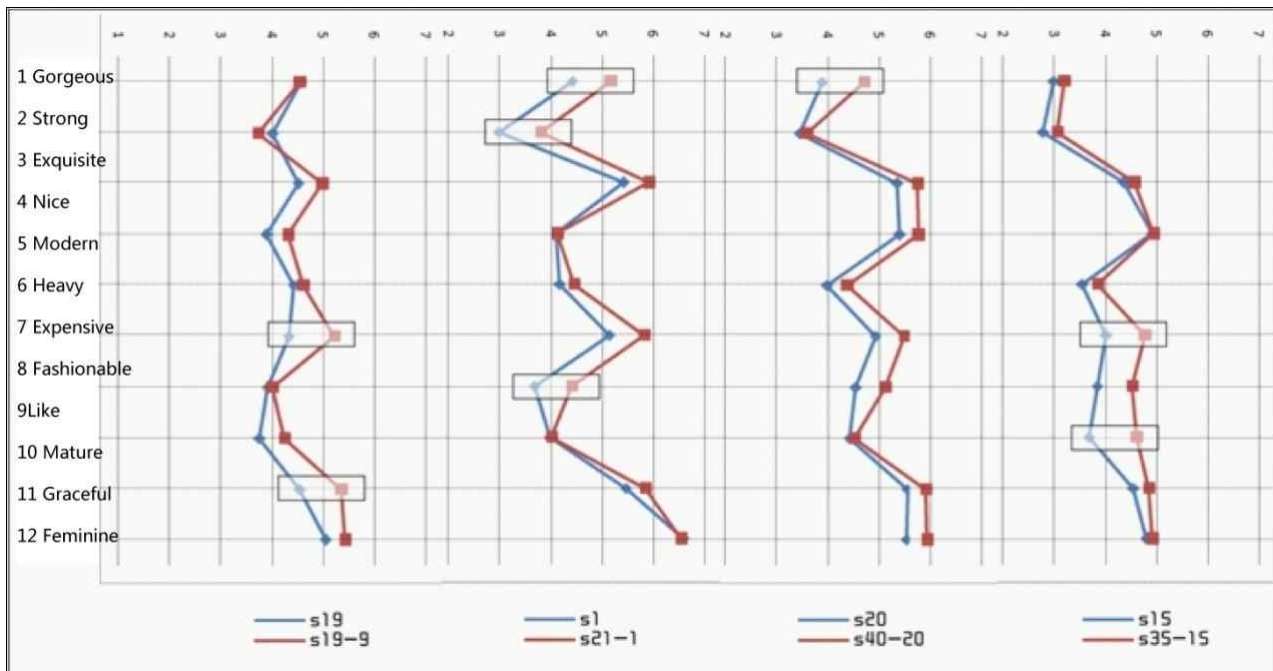
Table 10. The common ground of perfume bottles whose changes are great and little

	The samples change greatly	The samples change slightly
Shape	Simple bottle: basic shape such as round and rectangular or a simple deformation on the basis of that	Complex bottle: the triangle, the deformation of the basic shape is greater, inward depression of the bottle
Color	light colors: light orange, light green, pink, transparent	vivid colors: dark red, dark purple, dark green, multicolor
Logo	Striking: light background, dark-colored LOGO; sans serif font; font is thick; accounted for a large area of the bottle surface	Not striking: dark background, light-colored LOGO; squiggles and serif font; font is thin; accounted for a small area of the bottle surface
Material	Bottle is transparent glass, high transparency, cap is glass or metal	The material is opacity and even cannot tell which material is used
Decoration	Simple: no decoration	Complex: decorated with a ribbon or nets, etc.

Since the location changes of the samples in the scatter plot are very small in the horizontal direction, and the changes in the vertical direction are by a large upward, becoming more delicate, so the logo's features of the large-change samples here are the points a designer should refer to when designing logo for

perfume bottles.

The line charts based on the variables of samples whose straight-line distance are greater than 1 are as follows: The 0.8 above variables of every sample are summarized as follows:



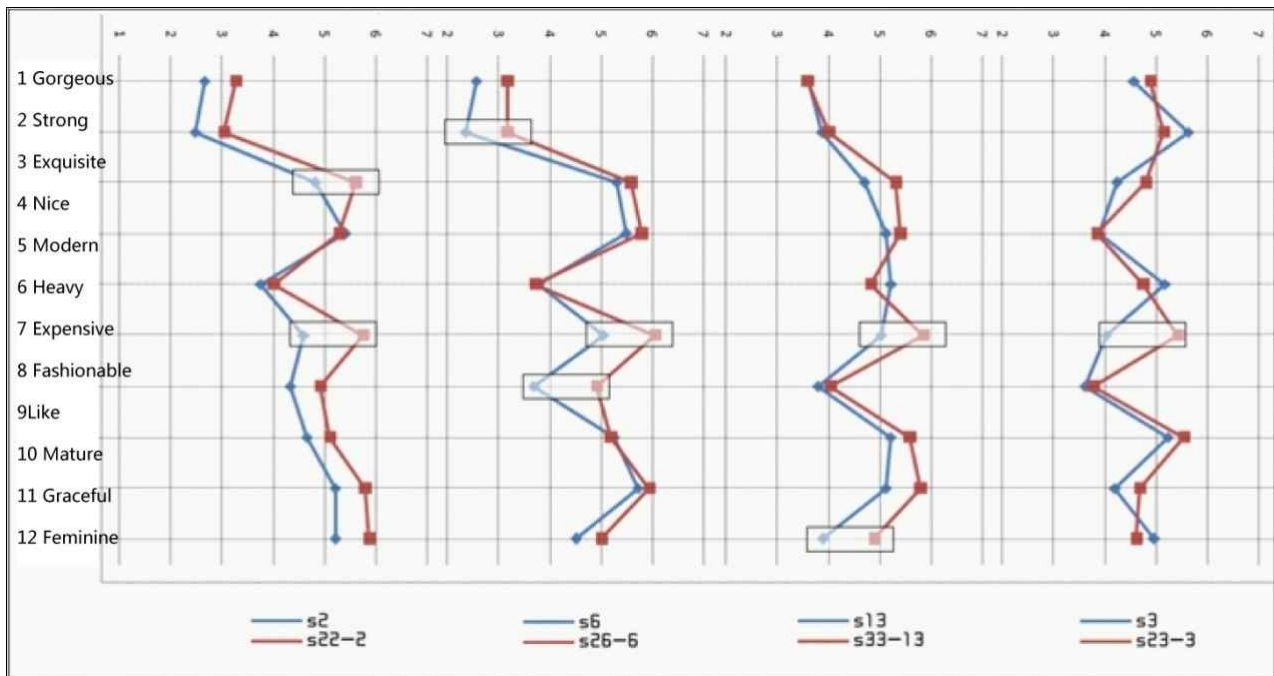




Figure 4. Line charts of the samples' variables in the Table 12

Table 11. Summary of the 0.8 above variables of samples whose straight-line distance are greater than 1

Sample	The variables whose variation are above 0.8	Variation
s2 	expensive	1.17
s6 	fashionable	1.23
	expensive	1.00
	provocative	0.81
s13 	feminine	1.00
	expensive	0.81
s3 	expensive	1.40
s19 	expensive	0.90
	graceful1	0.81
s1 	provocative	0.81

s20 	gorgeous	0.81
s15 	mature	0.91

It can be seen from figure 4 and table 11 that the variables appear more than twice are: “expensive” and “provocative”. In the box are variables whose variations are greater than 1, they are “expensive”, “fashionable”, “feminine”. Overall, the largest change is “expensive”, as seen in s2, s3, s6 s13, and s19. This indicates that the impression of perfume bottles generally appear more expensive after adding the logo to the bottle. Therefore, when designing logos for perfume bottles, the designer should grasp the features of the greatly-improving logos and considering the overall sense of perfume bottles style.

5. Conclusion

Several conclusions can be drawn from the analysis above. In general, young Chinese female prefer simple design. The existence of logos on bottles did not change

the responses significantly. In other words, the existence or otherwise of logos on bottles does not affect sensibility of Chinese female towards perfume bottles. A logo's impacts on the bottle depend in part on the bottle's color and shape. Overall, perfume bottles with simple shapes and light colors became more resplendent after the logos were added but bottles with more complex shapes and dark colors tended to become plainer after adding the logos. This shows that a logo serves as a conciliatory element in the impression of the whole bottle in the 'resplendent-plain' category. However, why a logo had greater impact on the 'delicate'-'rude' scale than on the 'resplendent'-'plain' scale needs further investigation.

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APPENDIX 1: Samples



1



2



3



4



5



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10



11



12



13



14



15



16



17



18



19



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21-1



22-2



23-3



24-4



25-5



26-6



27-7



28-8



29-9



30-10



31-11



32-12



33-13



34-14



35-15



36-16



37-17



38-18



39-19



40-20