

# A STUDY OF PRODUCT PREFERENCE AND MENTAL-DISTANCE BASED ON GENDER SCHEMA

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## ABSTRACT

In recent years, because of the influence of sweeping social, economic, and technical changes, sex roles and sex stereotypes have changed dramatically. Relationship between gender orientation of product and consumer's gender is becoming indefinite. Product with gendered form might not only attract gender-congruent groups. There might be potential consumers with incongruent gender, but congruent gender schema to the product. On the other hand, except the effect of product preference, the influence called mental-distance that between consumer and product might affect consumer's choice. The relationship of mental-distance and product preference is also one of the researching directions. This research uses Sex Role Scale to divide 170 subjects into  $2(\text{gender}) \times 4(\text{gender schema}) = 8$  groups, and uses Stratified Random Sampling Method to select 68 subjects for joining the Preference and Mental-Distance Test for gendered-product. Bivariate Correlation Analysis, T-Test, ANOVA Analysis, and LSD Multiple Comparisons would be used to analyze the research data. Research result shows: (1) Reverse correlation existed between product preference and mental-distance. In other words, product with familiar image to self-image would make people intimate and raise preference for the product easily. (2) Correlations between product preference and mental-distance are different because of different sex roles. (3) Research builds the relationship between gender and gendered-product, concluding the result into relationship charts. (4) Based on gender schema theory, research revises the dilemmas of gender stereotype design, provides designers a guideline for the gender orientation of product form.

**Keywords:** *Product Preference, Gender Schema, Mental-Distance, Product Form*

## **1. INSTRUCTION**

When we talked about the gender orientation of products, we would associate with a variety of gender-based forms of products in thinking immediately. Some vocabularies that used by Kansei engineering such as dexterous, lovable, etc are usually used to describe the products with female orientation. Actually, it's a kind of sex stereotype in our society. However, because of the influence of society changes recently, sex roles and sex stereotypes have changed dramatically. Products are designed for female users may attract not only female buyers. The dexterous and graceful urban vehicle may attract male consumers as well. Classifying the consumers by gender orientation might limit the target market.

The product with gendered form only attracts gender-congruent groups is doubtful. Could product image match the consumer's self-image plays a major part in consumer decision process. Masculinity or femininity in mentality is an important aspect of self-concept. (Chang, 2006) Wiggins and Holzmuller (1978, 1981) also advocates that characteristics of masculinity and femininity are important to build human dignity and social orientation. Comparing masculinity/femininity in mentality with gender in physiology, which may affect consumers' preference, is worth to be probed into.

In addition, some researchers discovered that no matter what the physiological gender is, consumers with masculine self-schema prefer masculine products and activities. In opposition, consumers with feminine self-schema prefer feminine products and activities as well (Gentry, James, Doering, & O' Brien, 1978). Worth et al. (1992) also advocated that self-identification of masculinity or femininity is more important than physiological gender. So, how to use a new viewpoint of gender to think about the relation between consumer preference and product image is one of the research directions.

On the other hand, the influential factors of choosing a product for consumer are not only the product preference but also the mental-distance between consumer and products. The closer the product image and consumer self-image is, the easier for consumer to accepts. Would the product preference be influenced by physiological gender or gender schema is also what we should discuss in the research.

The research goals are as follow: (1) To confirm the relationship between product preference and mental-distance. (2) To build the connections of product preference and mental-distance in different groups based on the gender-schema theory. (3) To find out the image of product form that different gender-schema group preferred, and establish the connections between the gender and gender products. (4) To compare the proper gender orientations for products based on physiological gender and gender-schema.

## **2. RESEARCH PROCEDURE AND ANALYSIS**

### **2.1. Product screening and sample manufacture**

#### **2.1.1. Select categories of products**

Firstly, select the products which subjects usually contact in their daily life. Approximately 40 categories of product were selected. Using Expert Method, three designers who have the

design experiences of relative products were invited, and fitness of the products was in discussion. Finally, 33 categories were picked up.

Table 1: Product categories

01 Digital camera	10 Calculator	19 Bottle opener	28 Speaker
02 Video recorder	11 Stapler	20 Juicer	29 Tableware
03 Cell phone	12 Pen	21 Toaster	30 Sport shoes
04 Mp4 player	13 Hair dryer	22 Watch	31 Diamond ring
05 Notebook	14 Trash can	23 Bicycle	32 Keyboard
06 Headphone	15 Steam iron	24 Car	33 Desktop clock
07 Mouse	16 Washing machine	25 Scooter	
08 Webcam	17 Vacuum cleaner	26 Perfume bottle	
09 USB flash drive	18 Coffee maker	27 Portmanteau	

### 2.1.2. Product sample collection

In order to obtain the representative sample, an interview with three designers was carrying on and the characteristic model was drawn up. Next, sample collection was applied. Each product type was collected based on three kinds of characteristic shape—the masculine, the feminine and the neutralistic. At the end, Five sample products was collected in 33 categories (33 × 5 samples), hence totally 165 samples.

Following, the product-to-sex degree questionnaire for 165 samples was made with 5-scale Semantic Differential method (S.D. method)—1 score for feminine; 2 score for a little feminine; 3 score for the neutralistic; 4 score for a little masculine, and 5 score for masculine.



Figure 1: The representative sample screens the \_ sample 1-1

Consecutively, six experienced product designers were asked to fill the questionnaire. The result was then tested by internal consistency, with Cronbach's alpha to be 0.754, which satisfied the requirement of internal consistency or stability.

Next step, based on the average score from questionnaire, the characteristic product of samples were chosen (choose three kinds of characteristic samples for each categories, the masculine, the feminine and the neutralistic). In the end, 33 categories times 3 samples, which means totally 99 types of characteristic samples was selected to carry on the experiment in next stage.

### 2.1.3. Experiment sample cards manufacturing

In order to avoid the brand interfering, backgrounds in pictures, brands and logos were eliminated. Sample cards size was regulated in 90 × 90 mm, that is very easy to recognize and grasp. Totally, 99 cards were made.

## 2.2. Experiment

There are two stages in this experiment. The first stage is gender schema grouping. Using the Sex Role Scale (李美枝, 1981), 170 subjects would be sorted into 8 gender schema groups. Then, 40% samplings were chosen by Stratified Random Sampling method. The second stage is gendered product preference and mental-distance experiment.

### 2.2.1. Classified by gender schema

To determine the sex type of the subjects and to establish their respective gender schema, a scale modified by 李美枝 (1981), from Bem Sex Role Inventory (BSRI) was adopted to study sex, specialty, and characteristic role. There are 40 items in the scale, including 20 items in masculine and 20 items in feminine. Using Five-scale Likert Method, the scale can determine 4 kinds of sex role types and hence establish their gender schemas respectively: (1) androgynous, (2) masculine, (3) feminine and (4) undifferentiated.

Subjects are 170 students (80 males, 90 females) of department of Industrial Design, National Cheng Kung University, with self-sex manner in gender schema development. They were asked to examine themselves by the congruity of adjectives in the questionnaire.

According to subjects' scores in the M items and the F items (higher or lower than the mean), they were classified into four groups. Then, count the score in male and female respectively, subjects were sorted by physiological sex (2) × gender schema (4), totally in eight groups.

Stratified Random Sampling Method was then applied. According to hived off result, 40% of people at random were drawn in each group.

Because the male subjects are too less for next stage, two subjects were joined.

### 2.2.2. Product preference and Mental-distance.

To establish the correlation between product preference and mental-distance, the second stage was here taken. Sixty-eight subjects (33 males and 35 females) who have taken the first stage experiment were selected from different group of gender schema. Ninety-nine samples with 33 product categories contained one masculine, feminine and neutralistic product sample in each, were used in the experiment. (1) Product Preference Experiment: Using Clustering, Subjects were asked to classify the 99 samples into 9 groups based on the preference of its overall shape, from low to high. (2) Mental-Distance Experiment: Using the same method, Clustering, the more similar product image and self-image were, the more intimate mental-distance it showed. Relatively, it will become estranged. Finally, we can obtain the degree about intimate or estranged in the product. There have the score 1-9, from far to near.

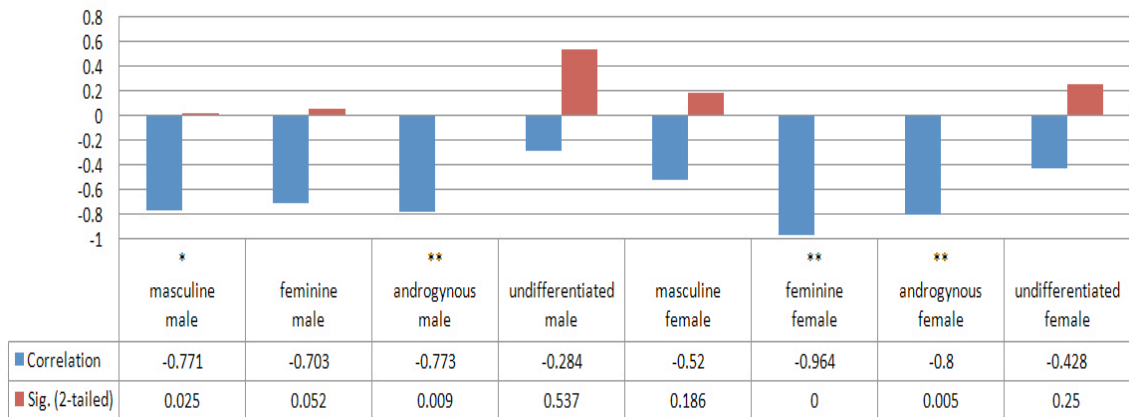
### 3. FINDINGS AND DISCUSSION

Through experiment, the data of preference and mental distance for 68 subjects were established. In this chapter, descriptive statistical analysis, Bivariate Correlation Analysis, T-Test, ANOVA Analysis, and LSD Multiple Comparisons would be used to analyze the research data to find the influence of gender schema on gendered-product preference and mental distance. According to both physiological gender and gender schema, different groups were examined if there are any different feelings about gendered-products.

#### 3.1. Bivariate Correlation Analysis of preference and mental distance

To test the influence of gender schema on preference and mental distance to gendered-product, Bivariate Correlation Analysis was applied in each group.

The result of Bivariate Correlation Analysis is shown in figure2. The blue bars display the Pearson correlations. It is obvious that correlations in this research are all negative in eight groups. The longer the bar is close to -1, the stronger relationship exists. The red bars display the significance of correlations. The shorter the bar is, the more significant the relationship will be. (mark \* over 0.05; mark \*\* over 0.01).



**Figure 2:** Bivariate Correlation Analysis of the preference and mental distance to gendered-product

Result shows that the relationships between gendered-product preference and mental distance are all negative. It implies when product has shorter mental distance, it would be liked easily, and vice versa. On the other hand, the strength between gendered-product preference and mental distance are different between each group.

According to theory of Erdwins, Small, and Gross (1980), androgynous group has higher and more positive self-concept. Research also shows that androgynous group prefers the products with closer mental distance. Relatively, Erdwins et al. (1980) thought that undifferentiated group has lower self-concept. It means that products close to their self-image may not attract them.

When it comes to consistent group of gender schema, the correlation between product preference and mental distance is up to middle, high or significant. It infers that the products they are familiar with can bring higher preference. On the other hand, the inconsistent group of gender schema has weaker self-concept. It may be because that their sex role is not






















conformable to social expectation. In feminine male to neutralistic product and masculine female to masculine product, the relationship between product preference and mental distance is significant, but relatively weak on other products. It shows that product has closer mental distance may not bring higher preference to inconsistent group.

### 3.2. Integration of relationship between preference and mental distance

First, independent T-test was used to discuss if there are any difference in gendered-product preference and mental distance between male and female physically. Second, ANOVA Analysis and LSD Multiple Comparisons were applied to analyze if any difference in gendered-product preference and mental distance between each group. Then, descriptive statistical analysis was tested to compare each group in the average of preference and mental distance.





































Analysis on two aspects: physiological gender and gender schema, generalize the conclusions into tables as follow.

Table 2: Preference and mental distance of feminine product

Feminine product				
Preference		Mental distance		
Gender schema	average of preference	Gender schema	average of mental distance	LSD Cultiple Comparisons
undifferentiated female 	178.8	undifferentiated female 	143.7	closer than 
androgynous female 	170.7	androgynous female 	153.4	closer than 
feminine male 	158.3	feminine female 	167.5	not significant
feminine female 	156	feminine male 	177.1	not significant
androgynous male 	155.3	masculine female 	178.8	not significant
undifferentiated male 	154.4	androgynous male 	182.4	further than 
masculine male 	152.5	undifferentiated male 	194	further than 
masculine female 	150.9	masculine male 	196.8	further than 







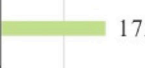






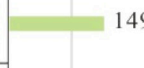


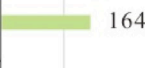

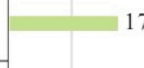




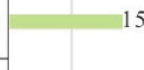
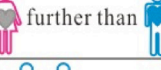


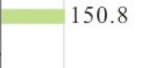

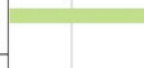


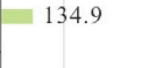

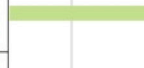






Feminine product form does not bring difference between males and females. However, as talking about familiarity, they are easy to make male users to keep a distance from and unwilling to use. To know more, it makes masculine male and undifferentiated male comparatively tend to feel farther; nevertheless lets androgynous female and undifferentiated female feel closer.

Table 3: Preference and mental distance of neutralistic product

Neutralistic product				
Preference		Mental distance		
Gender schema	average of preference	Gender schema	average of mental distance	LSD Cuiltple Comparisons
androgynous female 	 176.2	androgynous female 	 141.2	closer than 
masculine female 	 167.1	feminine male 	 144.8	closer than 
undifferentiated female 	 166.3	undifferentiated male 	 149.6	not significant
undifferentiated male 	 160.4	masculine male 	 177.1	not significant
masculine male 	 157.9	undifferentiated female 	 157	not significant
feminine male 	 155	androgynous male 	 157.3	not significant
androgynous male 	 154.7	masculine female 	 160.5	not significant
feminine female 	 142.5	feminine female 	 174.4	further than  

No matter males or females, neutralistic product does not bring strong preference or abomination to them. Androgynous females and feminine males have higher acceptability to it than other groups; on contrary, feminine females feel aloof and have low acceptability and preference.

Table 4: Preference and mental distance of masculine product

Preference		Mental distance		
Gender schema	average of preference	Gender schema	average of mental distance	LSD Cultiple Comparisons
undifferentiated male 	 181.7	masculine male 	 141.2	closer than 
masculine male 	 172.1	undifferentiated male 	 144.8	closer than 
androgynous male 	 165.3	androgynous male 	 149.6	closer than 
feminine female 	 164.1	feminine male 	 177.1	closer than 
feminine male 	 159.3	masculine female 	 157	closer than  further than 
androgynous female 	 150.8	androgynous female 	 157.3	further than 
undifferentiated female 	 134.9	feminine female 	 160.5	further than 
masculine female 	 127.8	undifferentiated female 	 174.4	further than 

On both physiological gender and gender schema, each group has different degree of preference for masculine product. Masculine form brings strong preference or abomination easily. Relatively, males prefer and feel close to masculine product form.

About females, masculine females have higher preference for masculine product than feminine females, and feel closer to masculine product than undifferentiated females. It means that masculine females are willing to use masculine product.

#### 4. CONCLUSION

Research established the relationship between gender and gendered-product, based on gender schema theory and physiological gender. It reduced the dilemmas of gender stereotype design, provided designers a guideline for the gender orientation of product form.

##### 4.1. Relationship between preference and mental distance

According to Correlation Analysis, preference and mental distance are negative correlations. When mental distance is closer, preference will be higher. Preference represents the intuitive likes and dislikes on products, but mental distance is related to the similar degree between products and self-image.

##### 4.2. Establish the relation between preference and mental distance of each gender schema group

Each group has different degree of relationship in preference and mental distance. The groups of androgynous and consistent gender schema have stronger connection and better





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