Effects of horizontal vs. vertical combinations of names and icons in the brand logo on consumers' psychological perceptions and brand attitudes

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Abstract: *Based on the stereotype content model, this study explored the effects of the logos in the form of horizontal combinations (icons on the left while names on the right) and vertical combinations (names on the top while icons at the bottom) on consumers' psychological perceptions and brand attitudes from the perspective of consumers' psychological demands. In this study, four experiments were conducted by Sojump to demonstrate the effects of horizontal vs. vertical combinations (names and icons in the brand logo) on consumers' attitudes toward a brand and its intermediate mechanism. From the research,it is found that logo design can meet consumers' emotional and cognitive demands for brands from psychological aspect.Horizontal combinations of names and icons in the brand logo bring consumers a higher geniality, while vertical combinations of names and icons in the brand logo bring consumers a higher authority. The combinations of names and icons in the brand logo positively affect consumers' attitudes toward a brand. Psychological distance is regarded as the mediating mechanism between the main effects, and the product type plays a moderating role. This paper further advances the study of different combinations of names and icons in the brand logo on the psychological demands and relationship characteristics of consumers, which provides some guidance for the research of consumers' cognition and psychology, and also broadens the scope of application of the stereotype content model.*

Keywords: *Horizontal combination, Vertical combination, Psychological distance, Psychological perception, Brand attitude*

1. Introduction

As a visual symbol, the brand logos can convey some specific information by virtue of people's ability of thinking in terms of symbol recognition and association.Compared with text information, the graphic logos are much easier to be perceived and remembered by consumers, resulting in brand associations and thus influencing consumers' psychological perception and brand evaluation.In daily life, the name and icon logos in the form of horizontal or vertical combinations can be seen everywhere. For example, Nestle, Philips and other brand logos use the horizontal combination of names and icons (icons on the left while names on the right) to convey the brand image characteristics; Hermes, Rolex and other brand logos use the vertical combination of names and icons (names on the top while icons at the bottom) to convey the brand personality traits (Fig. 1).It is not difficult to find that the luxury brands often use the brand logos in the vertical combination, such as Patek Philippe, Chanel, and LV, and have the hierarchical statuses of dignity and luxury. While the mass-market brands often pursue practicality and functionality, they often adopt the brand logos in the horizontal combination, such as GREE, TBU, and ZTE, and have stable and durable brand styles.It can be seen that different companies will choose different brand logos for different types of products.The psychological needs arising from the choices of the combination forms of the brand logos have attracted the attention of academic researchers, who began to explore the impacts of this element of the brand logos on consumers' psychological perception and brand attitudes.

Figure 1: Case contrast of the brand logos.

Previous studies on the impacts of the design elements of the brand logos on consumers' perceptions found that some single visual element, such as graphic (concrete vs. abstract, implicit vs. explicit), text (complete vs. incomplete, uppercase vs. lowercase, straight vs. italics), or border (bordered vs. Borderless, round vs. angular, rectangular vs. square) of the brand logos affects consumers' psychological perception, and thus further affects their evaluation of the brand further [1][2][3][4][5].However, few scholars have studied the influences of the combination logos of names and icons (horizontal vs. vertical) on consumers' psychological perception and brand attitudes. In addition, the existing studies have focused on the pure text brand logos[6][7,] while few scholars have explored the brand logos in the combinations of names and icons.For this reason, based on the visual attribute of the horizontal and vertical combinations of the brand logos, this study explored the impacts of the combination forms of the brand logos of names and icons (horizontal vs. vertical) on consumers' psychological perception and brand attitudes, and expanded the research scope of the brand logos through involving the product type as an affecting factor.

2. Literature review and hypotheses

2.1. Horizontal or vertical combinations of names and icons of the brand logo and consumers' psychological perceptions

Visual changes in logos affected consumers' emotional responses, brand perception and psychological perception[8].This study introduced the stereotype content model to depict how people formed psychological perceptions for others and social community through the two dimensions of social perception --- warmth and competence, which triggered the corresponding psychological emotion and behavioral responses[9].Among them, competence represented the levels of intelligence, skills, responsibility and efficiency, while geniality stood for being friendly, helpful, sincere and reliable[9].When exploring the relationship between consumers and brands, the brand designers and managers often drew on a stereotype content model to search for consumers' perception of the brand and society.Japutra et al.[10]found that consumers' visual perception of the brand logo directly influences their warmth/competence stereotype of the brand, and then affects their attitudes and preferences towards the brand[10].At present, some researches have divided logos into icon logos, name logos and a combination of names and icons[11][12][13]. Bresciani et al.[11] thought that logos with a combination of names and icons were more attractive than the pure name logos (or icon logos alone).In our daily life, the horizontal combinations of logos give people a feeling of geniality, narrowing the distance between the brand and consumers.For example, "7-ELEVEN", "Family Mart" or "Circle-K" make consumers have a feeling of geniality and warmth.Moreover, some logos with horizontal combinations had a stronger crowding effect than those of vertical combinations[8], which could bring more geniality to consumers. On the contrary, when faced with the brands, such as "HERMES" and "LANCOME", they often conveyed a strong sense of "authority" and "rank".Therefore, we proposed the following hypotheses:

H1: The logos with a combination of names and icons (horizontal vs. vertical) affects consumers' psychological perception, which is shown as follows:

H1a: The logos with a horizontal combination of names and icons (vs. a vertical combination) leads consumers to perceive more geniality of the brand.

H1b: The logos with a vertical combination of names and icons (vs. a horizontal combination) leads consumers to perceive more authority of the brand.

2.2. The effects of psychological distance

Psychological distance regarded psychological feelings as a criterion for judging the approach or

distance from something, triggering people's social cognition of the outside, and influencing their judgments and decisions about the objective things[14][15]. Psychological distance included time, space and social distances[15][16].A change in objective distance might produce a corresponding change in psychological distance.The previous studies have shown that psychological distance is an important dimension that affects the relationship between consumers and brands, and the most intuitive manifestation is the impacts of the distant or close relationship which an individual perceives on consumers' perceptions.In the design of the brand logo, psychological distance was applied to the typographic research of text cases. When the same text was arranged in different forms, due to the small visual span of the vertical text and the slow speed of capturing information[17], consumers will have a farther psychological distance, thus enhancing consumers' authority perception. While the horizontal arrangement of the text form is easy to narrow the psychological distance with consumers, so as to enhance the perception of geniality.Therefore, we propose the following hypotheses:

H2: Psychological distance plays a mediating role in the relationship between the combination logo of names and icons, and consumers' perceptions.

H2a: The logos with a horizontal combination of names and icons are easy for consumers to perceive a closer psychological distance and generate a higher perception of geniality. Psychological distance plays a mediating role in the relationship between the logos with a horizontal combination of names and icons, and consumers' perception of geniality.

H2b: The logos with a vertical combination of names and icons can easily make consumers perceive a farther psychological distance and generate a higher perception of authority. Psychological distance plays a mediating role in the relationship between the logos with a vertical combination of names and icons, and consumers' perception of authority.

2.3. Moderating effect of product types

Strahilevitz and Myers[18]suggested that products were usually classified into hedonic and utilitarian. Hedonic product (e.g. luxury jewelry, luxury watches) were designed to satisfy the demands of consumers' emotional experience, pleasure and self-expression, so that people could enjoy sensory pleasure. While utilitarian goods (e.g. laundry detergent, microwave oven) emphasized the function or quality of the products, which could meet people's essential needs and accomplish a specific goal or actual task.WANG et al.[19]divided consumption motivations into functional needs, psychosocial needs, hedonic needs, and so on, which could be summarized as the two basic psychological needs: utilitarian needs and hedonic needs. A study showed that the hedonic and the utilitarian of a product were defined by the stereotypes of competence and enthusiasm, which might cause different psychological perceptions and evaluations of consumers.For consumers, whether or not to adopt a certain product and what type of the product depends on whether the attributes of the product can meet their own psychological needs.As the core visual attribute of the product and the brand image, the shape and placement of the brand logo affects the audience's overall perceptions of the product.In the use of logos, it was found that the logos with a vertical combination of names and icons often appeared in hedonic products. As the selection of hedonic products (luxury goods) was highly authoritative and hierarchical[20], consumers could satisfy their psychological needs for social status and power relations by purchasing the hedonic products[21]. Therefore, when the logos of hedonic products were designed as the vertical combination of names and icons, consumers took advantage of the characteristics of the authority[22], success[23][24], and glamour[25][26]of the luxury brands to meet their psychological demands of consumers to realize their own ideals[27], thus generating more positive brand attitudes.On the contrary, logos with a horizontal combination of names and icons were mostly applied to utilitarian products. Consumers bought these utilitarian products to satisfy their psychological needs for functional benefits in their daily life[28], to obtain the practical value of the products and establish a close relationship with the brands.In conclusion, based on the moderating effects of product types, consumers' psychological perceptions of geniality and authority towards brands influenced their evaluation and purchase behavior[29](see Fig.2).Therefore, we propose the following hypotheses:

H3: The logos with a combination of names and icons (horizontal vs. vertical) affects consumers' psychological perceptions, but the impacts of logos with a combination of names and icons on consumers' psychological perceptions will vary with different product types, that is, it has a moderating mediating role in the first stage.

H3a: For hedonic products, the logos with a vertical combination of names and icons will make consumers have a higher perception of authority, and thus a more positive brand attitude.

H3b: For utilitarian products, the logos with a horizontal combination of names and icons will lead consumers to have a higher perception of geniality, and then a more positive brand attitude.
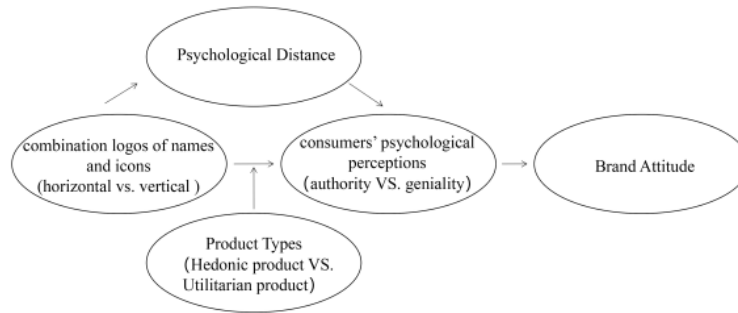

Figure 2: Conceptual framework.

3. Study 1: The horizontal or vertical combinations and consumers' psychological perceptions of brand logos

Study 1 tested Hypothesis 1 by examining the effects of horizontal or vertical combinations on consumers' psychological perceptions using a virtual brand name as the stimulus. The horizontal or vertical combination was applied as the independent variable, and consumers' perceptions of geniality and authority were identified as the dependent variables. Previous research suggests that the complexity and familiarity of logo design may affect consumers' psychological perceptions[30]. We measured brand logo familiarity and complexity during the experiments in Study 1, which were used as covariates to exclude their effects on the main effect.

3.1. Pretest

In Study 1, we chose a virtual brand logo "FOCAN" as the stimulus to control the effects of confounding variables, such as consumers' original brand experience and knowledge. A pretest (N=95) revealed that the differences in brand familiarity ("familiar", 1 = very unfamiliar, 7 = very familiar) and brand preference ("like", 1 = strongly dislike, 7 = strongly like) between horizontal or vertical combinations were not significant (M familiarity-horizontal combination=2.2, M familiarity-vertical combination=2.41, t (94) =0.47, p>0.1; M preference-horizontal combination=3.86, M preference-vertical combination=3.89; t (94) =0.79, p>0.1).

3.2. Participants and procedure

A total of eighty-eight participants were recruited for this study by Sojump. The participants' ages ranged from 18 to 28 years old, with a mean age of 21, and 67.3% were female.

The participants, randomly distributed into two groups, viewed "FOCAN" in the horizontal combination group or "FOCAN" in the vertical combination group (see Fig. 3). They were then instructed to complete the questionnaire, including a manipulation check, main dependent variable measures and additional measures, including brand logo complexity, brand familiarity, brand preference, and demographic information.

Figure 3: Brand logos used in Study 1: (a) the brand logo with ; (b)the brand logo with.

3.3. Measures

The manipulation check asked the participants whether they could distinguish which brand logo belonged to a horizontal combination or a vertical combination. Because no participants answered incorrectly, the manipulation was successful. The dependent variables were consumers' geniality and authority perceptions. The participants were asked to provide a 7-point Likert scale response (1 = strongly disagree, 7 = strongly agree) to measure their perceptions. Geniality perceptions were measured by three items, "intimate", "geniality" and "friendly", and authority perceptions were measured by "classic", "authority" and "hierarchical". Both scales had good reliabilities (geniality perception: Cronbach's alpha=0.819; authority perception: Cronbach's alpha=0.752).

Additional measures included brand logo familiarity, brand preference, complexity, and demographic information. First, we used 2-item scales to measure brand logo complexity and brand familiarity. In detail, the items for brand logo complexity were "difficult to remember" and "complex" (1=strongly disagree, 7=strongly agree, Cronbach's alpha=0.529); the items for brand familiarity were "familiar" (1 = strongly disagree, 7 = strongly agree, Cronbach's alpha=0.6). Then, the measurement for brand preference used the same scale as the pretest in Study1.Finally, we collected information on gender and age from the demographic information.

3.4. Results and discussion

The horizontal combination or vertical combination was used as a between-subjects factor.An ANOVA with covariates (brand complexity and familiarity) reveals a significant difference in that the vertical combination (vs. horizontal combination) led consumers to perceive more authority of the brand (Mauthority-horizontal combination)=3.97, Mauthority-vertical combination=4.65; $F(1,88)=2.0$, $p<0.01$), while the horizontal combination (vs. vertical combination) led consumers to perceive more geniality of the brand (M geniality-horizontal combination=5.04, M geniality-vertical combination=4.35; $F(1,88)=1.0$, $p<0.01$) (see Fig. 4). Removing the covariates from the analysis does not change the results. Therefore, H1 was supported.
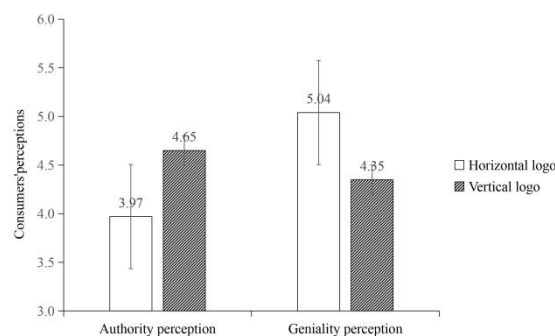

Figure 4: Results of Experiment 1.

The findings of Study 1 indicate that horizontal or vertical combinations can influence consumers' perceptions and attitudes toward the brand. Compared with a horizontal combination, a vertical combination leads consumers to perceive the brand to have more authority and less geniality. The reason is that vertical alignment brings visual hierarchy, but horizontal alignment brings visual equality[31]. Therefore, individuals sense more authority and less geniality from the vertical combination than from the horizontal combination.

Study 1 demonstrated the effects of horizontal or vertical combinations on consumers' perceptions, but the reason has not been known. Psychological distance has proven to have a broad impact on individuals' perceptions, evaluations, and intentions[32], while individuals also hold different levels of psychological distance from the same object, which reflects their social perceptions[14]. The next study examines the mediating role of psychological distance between horizontal or vertical combinations and consumers' perceptions of brand logos.

4. Study 2: The effect of psychological distance

Based on Study 1, Study 2 examined the mediation effect of psychological distance to further explore the theoretical mechanism in the relationship between horizontal or vertical combinations and consumers'

perceptions of brand logos. A virtual brand logo "COVIN" (horizontal combination/vertical combination) was used as the stimuli and was randomly revealed to participants. The dependent variables were the consumers' perceptions, specifically authority perception and geniality perception.

4.1. Pretest

An online study was conducted to examine the consumers' familiarity and preference for the virtual brand name "COVIN" (see Fig. 5). Ninety-one participants were randomly divided into horizontal and vertical combination groups to complete a questionnaire. All participants were asked to evaluate brand familiarity and preference on a seven-point Likert scale, with a higher score indicating higher familiarity and preference. An independent sample t test analysis showed that there was no significant difference in the consumers' familiarity and preference between the horizontal combination and vertical combinations (M familiarity- horizontal combination = 3.84, M familiarity- vertical combination = 3.75, $t(91) = 0.10$, $p > 0.05$; M preference- horizontal combination= 4.24, M preference- vertical combination = 4.09, $t(91)$ = -0.59, $p > 0.05$; M complex-horizontal combination=3.61, M complex-vertical combination=3.64, $t(91)$=-0.04, $p>0.05$). Thus, we can ensure that the virtual brand logo "COVIN" (horizontal combination or vertical combination) is perceived as similar in familiarity and preference. The participants were unfamiliar with this virtual brand, and therefore, the design of the virtual brand "COVIN" was successful.

Figure 5: Brand logos used in Study 2: (a) the brand logo with ; (b)the brand logo with.

4.2. Participants and procedure

One hundred forty-two online participants were recruited for Study 2. The participants' ages ranged from 18 to 25 years old, with a mean age of 19.67 years, and 56.3% were female.

The service provider Sojump was used to implement this experiment. The participants were randomly divided into two groups. Two groups of virtual brand logos were developed as stimuli: a) the horizontal combination of "COVIN", and b) the vertical combination of "COVIN". According to the horizontal or vertical combinations in the questionnaire, the participants were required to complete the questionnaire with the manipulation check and measurements of the mediator, dependent variables, and the required demographic information.

4.3. Measures

The participants were asked to answer a manipulation check question about the horizontal combination or vertical combination they had viewed. The Inclusion of Other in the Self (IOS) scale was then adopted to test the psychological distance between the participants and the brand logo. This scale has been widely used to measure the closeness between a person and an object[33]. The participants observe seven different sets of circles, from just touching to fully overlapping. One circle in each pair was labeled "self", the other circle was labeled "COVIN", and the respondents could choose one of the seven pairs to answer the question, "Which picture best describes your feelings toward this brand?" (1 = far psychological distance, 7 = close psychological distance). The participants also were required to complete the measures of consumers' perceptions, similar to the scales used in Study 1. The reliabilities of the scales had good performance (authority perception: Cronbach's alpha = 0.883; geniality perception: Cronbach's alpha = 0.834).

4.4. Results and discussion

The results of the manipulation check showed that all 142 participants correctly recognized the horizontal combination or vertical combination. Therefore, the manipulation of the horizontal or vertical combination was successful. An independent sample t test showed that compared with the vertical combination, the horizontal combination led consumers to perceive more geniality of the brand (M

horizontal combination = 5.45, M vertical combination= 4.62, t (142) = 4.454, p < 0.001). Moreover, compared with the horizontal combination, the vertical combination led consumers to perceive more authority of the brand (M horizontal combination = 4.22, M vertical combination = 5.33, t (142) = -4.415, p < 0.001), supporting Hypothesis 1.

We adopted SPSS bootstrapping (Model 4; Hayes, 2017) with 5,000 bootstrap samples to test independently the mediating effect of psychological distance on consumers' perceptions (authority vs. geniality perception) of the brand logos. The results showed that psychological distance mediates the effect of horizontal or vertical combinations on consumers' perceptions.

A significance was found in the total effect of the horizontal combination on geniality perceptions (total effect = -0.352; 95% CI = [-0.509, -0.196]). Meanwhile, another significance was found in the indirect effect of psychological distance (indirect effect =-0.118; 95% CI = [-0.236, -0.012]), which supported the mediation effect. Moreover, the direct path had a significant difference (direct effect = -0.234; 95% CI = [-0.425, -0.044]), indicating that psychological distance was a partial mediator, supporting Hypothesis 2a.

Furthermore, the bootstrap test also revealed that psychological distance mediated the effect of horizontal or vertical combinations on authority perception. A significance was found in the total effect of the vertical combination on authority perception (total effect = 0.350; 95% CI = [0.193, 0.506]). Meanwhile, there was a significant indirect effect on psychological distance (indirect effect = 0.161; 95% CI = [0.037,0.314]), which provided evidence of mediation. In addition, the direct path had a significant difference (direct effect =0.189; 95% CI = [0.000, 0.377]), indicating that psychological distance was a partial mediator, supporting Hypothesis 2b.

Study 2 revealed that horizontal or vertical combinations evoked different psychological distances, thus affecting brand perceptions. In particular, when facing the vertical combination logo, consumers feel a farther psychological distance, resulting in more authority perception of the brand being obtained. When facing the horizontal combination, consumers feel a closer psychological distance, resulting in more geniality perception of the brand being obtained. Compared with the vertical combination, the horizontal combination is closer to the consumers in social and visual space, which creates a closer connection. In addition, because psychological distance has been verified as a partial mediator, there may exist some latent variables and explanations about the mechanism to be studied in future research.

The results confirmed the mechanism underlying the effect of horizontal or vertical combinations on consumers' perceptions of brand logos. It also is important to consider the type of product, such as hedonic and utilitarian, which may influence the outcome result in the consumer's attitude toward the brand. We focused on the hedonic and utilitarian attributes of the products, which represented a different division of the product's function. More importantly, consumers have different perceptions about different types of products[21], which is discussed in Study 3.

5. Study 3: The moderating effect of product types

In Study 3, we tested the impact of horizontal or vertical combinations on consumers' perceptions and brand attitudes under the different product types. In Studies 3a and 3b, product types were defined as hedonic and utilitarian, exploring the moderating role of product types in horizontal or vertical combinations and consumer perceptions. The designs in Study 3a and Study 3b were 2 (logo design: horizontal combination vs. vertical combination) × 2 (product types: hedonic vs. utilitarian) between-subjects factorial experiments.

Prior to the formal study, we conducted an online pretest to ensure that the manipulation of product types matched our expectations. We chose jewelry products and luxury watches as hedonic products and laundry detergent and microwave ovens as practical products. A total of 39 adults completed the online test. The participants rated the target products as hedonic or utilitarian on a 7-point, 10-item semantic HED/UT scale. A paired t test was used to determine the appropriate products, and we selected jewelry products as the hedonic target product and laundry detergent as the utilitarian target product after careful consideration. A t test analysis showed that the participants rated the jewelry products as hedonic (M=5.91, SD=0.87) rather than utilitarian (M=5, SD=1.28; T (35) =3.42, p<0.001). In contrast, the participants perceived laundry detergent as utilitarian (M=6.54, SD=0.80) rather than hedonic (M=5.97, SD=1.02; T (35) =2.55, p<0.01).

5.1. Study 3a

5.1.1. Pretest

In this study, we used "RAVON" as the virtual logo name (see Fig. 6). A pretest (N=63) showed the effect of consumer familiarity and preference for the brand logo (M familiarity-horizontal combination=3.25, M familiarity-vertical combination=3.52, t (63)=-0.61, p>0.1; M preference-horizontal combination=3.94, M preference-vertical combination=3.84, t (63)=0.29, p>0.1). Therefore, the stimulus "RAVON" is suitable for this experiment.

Figure 6: Brand logos used in Study 3A.

5.1.2. Participants and procedure

An online study was conducted with 140 participants. The average age of these participants was 24.1 years (range=18-53), and 100 (71.4%) were female.

First, we brought a brief introduction to the participants about the brand. It was an advertisement for a jewelry brand with a virtual logo named "RAVON". Then, the participants were randomly divided into two groups according to the horizontal combination or vertical combination of "RAVON", and they were asked to complete a questionnaire. Its content included manipulation checks for horizontal or vertical combinations, psychological distance measures, consumers' authority perception and geniality perception, brand attitudes and demographic information.

5.1.3. Measures

The measures of the horizontal or vertical combinations, manipulation check, psychological distance, authority perception, geniality perception and demographic information were the same as those in Study 1 and Study 2. The scales of authority perception and geniality perception had good reliability (authority perception: Cronbach's alpha=0.642; geniality perception: Cronbach's alpha=0.917). The participants reported brand attitudes on a four-item scale[34], including "appealing", "good", "pleasant", and "favorable" (1 = strongly disagree, 7 = strongly agree). The reliability of the scale also was good (Cronbach's alpha = 0.856).

5.1.4. Results and discussion

A between-subjects MANOVA between horizontal or vertical combinations and the hedonic product revealed a significant interaction effect of horizontal or vertical combinations on consumers' authority perception (F 1,140) =0.534, p<0.01), while there was no significant effect on consumers' geniality perception. Specifically, under the moderating effect of hedonic products, consumers can perceive more authority for the vertical combination group than for the horizontal combination group (M authority perception-horizontal combination =3.17, M authority perception-vertical combination =5; F= (1,140) =1.543, p<0.05). However, the horizontal or vertical combinations did not affect the geniality perception for consumers (M geniality perception-horizontal combination =4.16, M geniality perception-vertical combination =4.41; F= (1,140) =1.11, p>0.1) (see Fig. 7).

A between-subjects ANOVA on brand attitudes was conducted for horizontal or vertical combinations and hedonic products. The two-way interaction between horizontal or vertical combinations and hedonic products was significant (F (1,140) =1.331, p<0.05). The analysis showed that under the moderation of hedonic products, brand attitude was more positive with the vertical combination than with the horizontal combination (M attitude-horizontal combination =4.41, M attitude-vertical combination=5.23; F (1,140) =2.40, p<0.01).
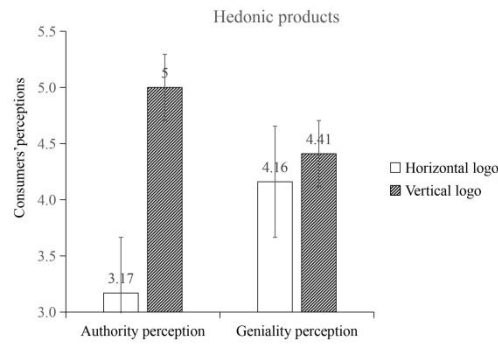
Figure 7: Results of Experiment 3.

Next, we examined whether psychological distance and consumers' perceptions mediated the interaction between horizontal or vertical combinations and product types on brand attitudes.

We conducted a moderated mediation analysis using bootstrapping with 5,000 bootstrap samples. We specified the horizontal or vertical combinations as the independent variable, psychological distance and authority (or geniality) perception as mediators, product types as the moderator, and brand attitudes as the dependent variable. Table 1 shows that when psychological distance and consumers' authority perception were the mediators, the vertical combination $\rightarrow$ psychological distance $\rightarrow$consumers' authority perception $\rightarrow$ brand attitudes pathway and vertical combination $\rightarrow$ psychological distance $\rightarrow$ brand attitudes pathway were significant. The findings showed that product types further influenced consumers' perceptions of authority by moderating their psychological distance. Bootstrapped confidence intervals suggested that the index of moderated mediation for consumers' authority perception was significantly different from zero (indirect effects=0.378, SE=0.160, 95% CI= [-0.711, -0.068]). Thus, these findings suggest that when consumers purchase hedonic products, the vertical combination and the hedonic product interact with consumers' perceptions, leading to positive attitudes toward the brand.

Table 1: Moderated sequential mediation analysis results.

	Psychological distance(M)		Authority perception(M1)		Brand attitudes(Y)	
	$R^2=0.530^{***}$		$R^2=0.692^{***}$		$R^2=0.190^{***}$	
β		(SE)	β	(SE)	β	(SE)
Horizontal or vertical combinations(X)	0.626^*	(0.937)	0.525^*	(0.710)	-0.044	(0.366)
Product types(W)	0.132	(0.302)	-0.349^*	(0.224)	-	
Horizontal or vertical combinations×Product types	0.119	(0.181)	0.505^*	(0.134)	-	
Psychological distance(M)	-		0.152^*	(0.064)	-0.232^*	(0.066)
Authority perception(M1)	-		-		0.309^{**}	(0.087)

Note: The numbers in parentheses are standard errors. Unstandardized coefficients are reported. Significance based on two-tailed tests. $^{***}p<.001$, $^{**}p<.01$, $^*p<.05$.

5.2. Study 3b

5.2.1. Pretest

"COVIN" was used as the virtual logo name for a laundry detergent product in this study (see Fig. 8). The results of a pretest (N = 168) revealed the effects about consumers' familiarity and preference for the brand (M familiarity-horizontal combination=3.80, M familiarity-vertical combination=4.06, t (168) =-1.10, p>0.1; M preference-horizontal combination=4.44, M preference-vertical combination=4.16, t (168)=1.40, p>0.1). Therefore, the stimulus "COVIN" used for the experiment is suitable.

Figure 8: Brand logos used in Study 3B.

5.2.2 Participants and procedure

An online study was conducted with 168 participants. These participants' ages ranged from 15 to 50 years old, with a mean age of 22.3 years, and 65.4% were female.

First, we brought a brief introduction to the participants about the brand. This was an advertisement for a laundry detergent brand with a virtual logo named "COVIN". Then, the participants were randomly divided into two groups according to the horizontal or vertical combinations of "COVIN" and asked to complete a questionnaire. Its content included manipulation checks for horizontal or vertical combinations, psychological distance measures, consumers' authority perception and geniality perception, brand attitudes, and demographic information.

5.2.3. Measures

The measures of the horizontal or vertical combinations, manipulation check, psychological distance, authority perception, geniality perception and demographic information were the same as those in Study 1 and Study 2. The scales of consumers' authority perception and geniality perception had good reliability (authority perception: Cronbach's alpha=0.567; geniality perception: Cronbach's alpha=0.750). The participants reported brand attitudes on a four-item scale((Mackay 2009), including "appealing", "good", "pleasant", and "favorable" (1 = strongly disagree, 7 = strongly agree). The reliability of the scale also was good (Cronbach's alpha = 0.876).

5.2.4. Results and discussion

The between-subjects MANOVA revealed a significant interaction effect of horizontal or vertical combinations on consumers' geniality perception (F $(1, 168) = 1.30$, $p<0.05$), while there was no significant effect on consumers' authority perception. Specifically, under the moderating effect of utilitarian products, consumers can perceive more geniality for the horizontal combination group than for the vertical combination group (M geniality perception-horizontal combination =4.81, M geniality perception-vertical combination=3.73; F= $(1,168) =0.63$, $p<0.05$). However, the horizontal or vertical combinations did not affect consumers' authority perception (M authority perception-horizontal combination =4.04, M authority perception-vertical combination =4.57; F= $(1,168) =1.28$, $p>0.1$) (see Fig. 9).

An analysis with between-subjects ANOVA on brand attitudes was conducted for horizontal or vertical combinations and utilitarian products. The horizontal or vertical combinations and the utilitarian products have a significant two-way interaction (F $(1,168) =1.345$, $p<0.05$). This analysis showed that under the moderation of the utilitarian product, the horizontal combination had a more positive brand attitude than that of the vertical combination (M brand attitude-horizontal combination =4.62, M brand attitude-vertical combination =4.39; F $(1,68) =0.602$, $p<0.050$).
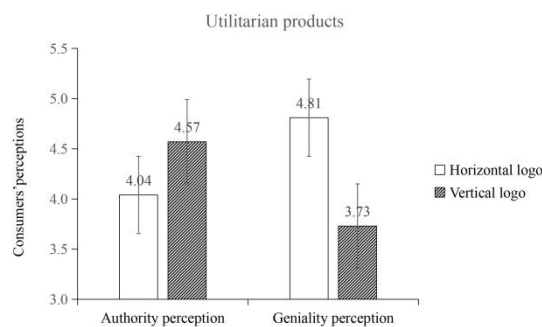

Figure 9: Results of Experiment 3b.

Next, we examined whether psychological distance and consumers' perceptions can mediate the interaction between horizontal or vertical combinations and the product types on brand attitudes. We conducted an analysis with moderated mediation by using bootstrapping with 5,000 bootstrap samples. We specified the horizontal or vertical combinations as the independent variable, psychological distance and consumers' authority (or geniality) perception as the mediators, product types as the moderator, and brand attitudes as the dependent variable. Table 2 shows that when psychological distance and consumers' geniality perception were the mediators, the horizontal combination → psychological distance → consumers' geniality perception → brand attitudes pathway and horizontal combination → psychological distance → brand attitudes pathway were significant. The findings showed that product types further influenced consumers' perceptions of geniality by moderating their psychological distance. Bootstrapped confidence intervals suggested that the index of moderated mediation for consumers' geniality perception was significantly different from zero (indirect effects=0.074, SE=0.045, 95% CI= [-0.177, -0.004]). Thus, these findings suggested that when utilitarian products were purchased, consumers had positive attitudes toward the brand because of the horizontal combination and the utilitarian product interacting with consumers' perceptions.

Table 2: Moderated sequential mediation analysis results.

	Psychological distance(M)		Geniality perception(M2)		Brand attitude(Y)	
	$R^2=0.112^{***}$		$R^2=0.310^{***}$		$R^2=0.097^{***}$	
β		(SE)	β	(SE)	β	(SE)
Horizontal or vertical combinations(X)	0.558^*	(0.831)	0.508^*	(0.597)	0.037	(0.197)
Product types(W)	0.797^{***}	(0.259)	0.846^{***}	(0.190)	-	
Horizontal or vertical combinations×Product types	1.143^{***}	(0.163)	-1.341^{***}	(0.119)	-	
Psychological distance(M)	-		0.139^*	(0.055)	0.228^{***}	(0.062)
Geniality perception(M2)	-		-		0.172^*	(0.084)

Note: The numbers in parentheses are standard errors. Unstandardized coefficients are reported. Significance based on two-tailed tests. $^{***}p<.001$, $^{**}p<.01$, $^*p<.05$.

Combined with the analysis of Experiments 3a and 3b, it can be concluded that the vertical combination can make consumers perceive more authority than the horizontal combination can. The horizontal combination can make consumers perceive more authority for the hedonic product, creating a positive brand attitude, while the horizontal combination can make consumers perceive more geniality for the utilitarian product, which increases good feelings for the brand (see Fig. 10). Overall, these results support Hypothesis 3.
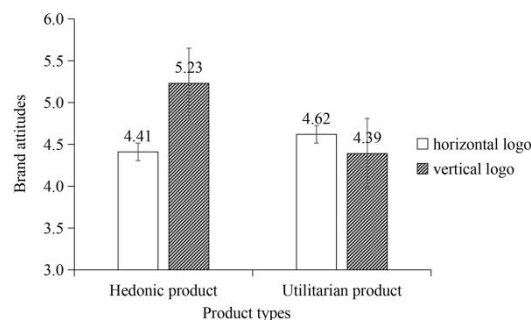

Figure 10: Results of Experiment 3A&3B.

6. General discussion

The brand logo is a vital brand asset for an enterprise[35][36]. The design elements in the brand logo makes consumers have different psychological perceptions and also influence their brand attitudes and behavioral motivations[37][38]. The research results show that compared with the logo with a vertical combination of names and icons, the logo with a horizontal combination of names and icons makes

consumers perceive much more geniality. Compared with the logo with a horizontal combination of names and icons, the logo with a vertical combination of names and icons allows consumers to perceive the higher authority, and psychological distance generates a mediating effect. In order to further broaden the scope of application of the stereotype content model, the moderating effects of product types have been investigated. For utilitarian (vs. hedonic) products, the horizontal combination of names and icons of the brand logo (vs. vertical combination) will make consumers perceive more brand warmth (vs. authority) and thus have a more positive brand attitude.

6.1. Theoretical implications

There are two main theoretical contributions of this study. First, a large number of studies focus on the effects of design elements of the brand logo, such as shapes[39], text[2], graphics[40], and colors[41] on consumers' perceptions and product evaluations. However, few studies concern the impacts of the combination logos of names and icons (horizontal vs. vertical) on brand attitudes. With the help of perceptions of authority and geniality in stereotype content models, this study analyzes the emotional responses generated by different combinations of names and icons of the brand logos, and then explores the influences of consumers' psychological perceptions on brand attitudes and behavioral motivation[42]. This conclusion broadens the findings in the field, and also expands the application scope of stereotype content models.

Second, this study introduces the concept of psychological distance to explore the impacts of the horizontal and vertical combination of the brand logos on consumers' psychological perceptions. Because the different combinations of the brand logos pull in or push away the psychological distance between consumers and brands, they will affect the psychological perception process of consumers. This conclusion expands the research scope of consumer psychology, and provides some guidance for the researches on the future consumers' behavior and the psychological fields.

6.2. Managerial implications

This study has found that consumers' preference for the combination logos of names and icons (horizontal vs. vertical) depends on the type of products. For hedonic products, consumers prefer a vertical combination of the brand logos, while for utilitarian products, consumers prefer a horizontal combination of the brand logos, which will contribute to the design and improvement of the brand logos. If an enterprise tends to emphasize the noble and luxurious features of the brand logos, and highlight its fashionable, classic and popular advantages, it should give priority to the vertical combination logos of names and icons. However, if an enterprise tends to emphasize practical and efficient features of the brand logos, and highlight its advantages of stability, reliability and speed, it should give preference to the horizontal combination logos of names and icons. For example, it will be more beneficial for the enterprises producing daily necessities to choose the horizontal combination logos of names and icons, which provides a certain reference for the enterprise managers to design the brand logos.

7. Limitations and future research

First of all, this research is only limited to the impacts of horizontal and vertical combinations of icons and names in the design of the brand logos on consumers' brand attitudes. The research shows that the complexity of the brand logos affects consumers' perceptions[43]. Future researches can further explore the interaction between the combination forms of the brand logos and the other visual factors, including font types[44] and graphic color[45].

Secondly, in Study 3, the product type is regarded as a moderating effect. The current research shows that individual feelings are related to perceptions of authority[46], and the future research may take into account the sense of power (high vs. low power), so as to further explore the influences of the combination logos of names and icons (horizontal vs. vertical) on consumers' brand perceptions.

Finally, this study discusses the application and mechanism of the cases of the horizontal vs. vertical combinations of names and icons in the field of the brand logo design. But it does not cover the other fields, such as packaging, posters, and advertising. Therefore, in daily life, the combination logos of names and icons (horizontal vs. vertical) may generate other psychological perceptions, such as the awakening of efficiency and aesthetic perception[47][48], which can also be a direction for future research.

Acknowledgments

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