

Original Paper

The Effects of Logos' Frames on Consumers' Psychological Perceptions and Brand Attitudes

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Abstract

This study examined the effects of the brand logo's frames (complete vs. incomplete) on consumers' perceptions and attitudes. There were 452 participants in two studies online. The results show that the brand logos with complete (vs. incomplete) frames have higher safety (in Study 1). Moreover, the logos' frames of complete (vs. incomplete) brands will generate the positive brand attitudes through increasing the consumers' psychological perception of safety. For products with high safety attributes, consumers will have a higher evaluation of the brand logos with the complete frames, but there is no effect for products with less important safety attributes (in Study 2). This paper provides some guidance for the research of consumers' psychological perceptions, and also broadens the scope of application of the conceptual metaphor.

Keywords

brand logo, logo's frame, psychological perceptions, brand attitudes, security attributes

1. Introduction

The logo's frame (i.e., the logo with or without an outline) is one of the most important design features in logo design (Bresciani & Paolo, 2017), which plays a vital role in its aesthetic creation. Such a design feature of the frame is widely used in art-related practices, including logo design (Chen & Bei, 2019). For example, Cadillac had a complete frame logo in 1920, but changed it into an incomplete frame logo in 2009. After 2014, the incomplete frame of the brand logo was removed. Changes to the logo's frame like this can also be found in other brand logos, such as Dodge, Lexus and Volvo. It has attracted the attention of academic researchers.

Previous studies on the impacts of the brand logo's shape on consumers have found that the brand

logos can effectively evoke consumers' emotional, attitudinal, and behavioral responses (Müller et al. 2013; Jun et al. 2008). A variety of visual features of brand logos, such as shape (round vs. square, square vs. rectangular, angular vs. rounded), position (high vs. low), integrity, prominence, and state (dynamic vs. static) will affect consumers' perceptions and preferences, which in turn affects their evaluation of products or brands (Zhang et al., 2006; Hagtvedt, 2011; Cutright, 2012; Cian et al., 2014; Jiang et al., 2015). Some studies have pointed out that the logo's frames are related to the meanings of structure, credibility and protection, which forms the visual closure and openness, and affects consumers' perceptions of mental safety (Fajardo et al., 2016; Cutright, 2012). However, the complete vs. incomplete brand logo's frames are so prevalent in life, but few scholars have examined their impacts on consumers' perceptions and product evaluation.

2. Literature Review and Research Hypothesis

2.1 *The Meaning of the Conceptual Metaphor of the Brand Logo's Frames*

The Conceptual Metaphor Theory (CMT) held that the process of metaphorization from concrete concept to abstract concept was achieved through the "scaffolding" of conceptual structures (Williams et al., 2009), where people could use concrete direct experience to understand and interpret these abstract concepts. Consumers transformed the abstract and indescribable feelings into the brand feelings and perceptions with the help of concrete and intuitive metaphorical objects through the metaphorical cognitive model (Barrett & Kurzban, 2006).

Framing was an important tool for defining objects in a limited space and was also a way of expressing structures and orders (Cwerner & Metcalfe, 2003; Cutright, 2012). If the frame of a brand logo was regarded as a physical boundary, and was affected by the metaphorical mapping mechanism, the individual would be unconsciously affected by the idea of "the environment with the physical boundary with the outside world is safer", thus making a judgment that things were much safer (Cutright, 2012). Especially when the sense of control was lacking, the individual tended to seek boundaries in the surrounding physical environment to obtain a sense of order and structure (Cutright, 2012). The boundary of the brand logo itself acted as a spatial element of the physical boundary, and conveyed brand information to consumers by stimulating their conceptual metaphorical cognition (Barrett & Kurzban, 2006).

2.2 *The Effects of the Brand Logo's Frames on Consumers' Perceptions*

Studies have shown that physical boundaries mitigated feelings of emotional discomfort triggered by threatening environments (Belk, Seo et al., 2007) or personal control threats (Cutright, 2012), suggesting that physical boundaries might be perceived as protecting. This depended on the consumers' mental needs for personal safety and mental health. In contrast, when consumers had a low need for safety, a sense of confinement was generated (Fajardo et al., 2016). Boundaries, as an important tool for identifying objects in a given space, were representations of structure and order (Cwerner & Metcalfe, 2003). A relatively independent and enclosed space would be formed within the boundary, and the

physical boundary in the given space could stimulate a sense of inclusion and protection for consumers (Levav & Zhu, 2009; Meyers-Levy & Zhu, 2007), leading to psychological safety. Thus, we further argued that when a brand logo had a complete and connected frame, consumers would unconsciously associate the complete frame with a sense of safety and protection, and this conceptual metaphor would in turn affect consumers to generate higher sense of psychological perception of safety. Therefore, this study proposed the following hypothesis:

H1: The frame of the brand logo (complete vs. incomplete) affected consumers' psychological perception of safety. Compared with the logos with the incomplete frame, the complete frame could make consumers have a stronger sense of psychological perception of safety.

2.3 The Effects of the Brand Logo's Frames on Consumers' Brand Attitudes

Previous studies have shown that a complete frame of a brand logo could affect consumers' willingness to purchase at different levels of perceived risks (Fajardo et al., 2016). The brand logos with incomplete frames might trigger the perception of an unsafe environment, and subsequently increased the perceived utility of safety-oriented products (Rahinel & Nelson, 2016). Specifically, when consumers paid more attention to the safety attributes of the target products, they would increase their positive attitudes towards the brands. when faced with brands with high product safety risks (such as pharmaceutical and electronic products), consumers would take safety attributes as the key factors to evaluate brand preferences, and the safety and the sense of responsibility of the product were the important basis for consumers to generate purchasing behavior (Rahinel & Nelson, 2016). However, for some specific categories (such as clothing and game products), the safety risks of the product were lower, while other attributes might be more concerned. In this case, the brand logo's frames (complete vs. incomplete) would no longer affect consumers' evaluation of the brands. Therefore, this study proposed the following hypothesis:

H2: For products with more important safety attributes, a complete brand logo's frame would generate a more positive brand attitude than an incomplete brand logo's frame. Consumers' psychological perception of safety would mediate the relationship between brand logo's frames and brand attitudes. For those products with less important safety attributes, the brand logo's frame (complete vs. incomplete) did not affect the consumers' attitudes towards the brands.

3. Study 1: Brand Logo's Frames and Consumers' Psychological Perception of Safety

Study 1 tested Hypothesis 1 by examining the effects of logo's frame completeness and incompleteness on consumers' mental safety perceptions using a virtual brand logo as a stimulus.

3.1 Experiment 1A

Method

Study 1 tested Hypothesis 1 by examining the effects of logo's frame completeness and incompleteness on consumers' psychological perception of safety by using a virtual brand logo as a stimulus.

Participants

From some university in the northwest of China, 100 college students were recruited to participate in the study for 2 CNY. (52 men, 48 women; Mage=21.4, SD=1.21, range=18-25).

Procedure

First, the subjects were randomly assigned to two groups after entering the laboratory. In order not to reveal the true purpose of the experiment, the questionnaire was presented as “A Questionnaire for Market Research of a Pharmaceutical Brand Company” in the experimental material. Subsequently, all the subjects were offered with the “FXQ” brand logo. Among them, one group of subjects saw the brand logo with the complete frame, while the other group saw the brand logo with the incomplete frame (seen in Appendix A). Finally, they were guided through manipulation checks to measure the dependent variables and other variables, including brand logo complexity, familiarity, brand preferences and demographic information.

The dependent variables were the consumers’ psychological perception of safety. Participants were asked to provide a range of feelings on a 7-point Likert Scale (1 = strongly disagree, 7 = strongly agree) so as to measure their views. Safety perceptions were measured by the three items: “the brand is trustworthy”, “the brand is reliable”, and “the brand is safe” (1 = strongly disagree, 7 = strongly agree, Cronbach alpha = 0.70).

Results

The results showed that there was a significant difference in the level of the perceived safety of pharmaceutical brands between the two groups of subjects. The level of the perceived safety of complete frame brand logos was significantly higher than that of incomplete frame brand logos ($N=100$, $M_{\text{complete frame logo}}=4.63$, $SD=1.21$, $M_{\text{incomplete frame logo}}=4.12$, $SD=1.36$, $t=2.30$, $df=98$, $p<0.05$). The results of Experiment 1A showed that complete frame brand logos were more likely to generate higher consumer perceptions of safety than incomplete frame brand logos. These results supported H1.

Discussion

The experimental material of Experiment 1A consisted of medical drugs that belonged to a product category with high safety; perhaps consumers’ general concerns about the safety attributes of products in this category affected their perceptions of safety. To verify the stability and universality of this hypothesis, the next step would be to repeat the test of this hypothesis again by using clothing as the experimental material.

3.2 Experiment 1B

The experimental process of Experiment 1B was similar to that of the above-mentioned Experiment 1A. The pharmaceutical brands in Experiment 1A belonged to the category where consumers were particularly concerned about product safety attributes, and thus this concern might interfere with consumers’ evaluation of product safety perception.

Method

Experiment 1B repeated Experiment 1A using clothing, where consumers were not particularly concerned about the safety attributes, as the experimental material.

Participants

From some university in the northwest of China, we recruited 100 participants to complete the study in exchange for a small monetary reward (52 men, 48 women; Mage=21.7, SD=1.85, range=20-30).

Procedure

After each participant looked at the frame of a logo for a clothing brand (complete vs. incomplete) (seen in Appendix A), they were asked to evaluate the logo's design, their perceived safety of the brand, brand category knowledge, and their concerns about the product's safety attributes.

Results

There was no difference in concern about safety attributes between the two groups, but there was a significant difference in the evaluation of safety of FXQ clothing. The perceived safety of logos with complete frames was significantly higher than that of logos with incomplete frames. ($N=100$, $M_{\text{Logo-complete frame}}=4.88$, $SD=1.37$, $M_{\text{Logo-incomplete frame}}=4.26$, $SD=1.95$, $t=2.40$, $df=98$, $p<0.05$). H1 was once again used for support.

Discussion

In Experiment 1B, H1 was verified through repeated manipulations of logos for different product categories: Logos with a complete frame can improve consumers' psychological perception of safety in contrast to logos with an incomplete frame. So far, we have found that this effect exists not only for pharmaceutical brands with high concern about safety attributes, but also for clothing brands with low concern about safety attributes. Therefore, the universality and robustness of the effect are supported.

4. Study 2: The Effects of Brand Logo's Frames on Consumers' Brand Attitudes

In this study, two experiments were conducted to study the effects of the brand logo's frames (complete vs. incomplete) on consumers' brand attitudes for products with different concerns about safety attributes. A total of 83 participants were involved in the pre-experiment. The participants were asked to rate the product safety attributes through a seven-point semantic scale (1 = "low" and 7 = "high"). The selected products included food, medicine, clothing and electronic products. The results showed that there were significant differences between the electronic brand and the game brand ($M_{\text{electronics brand}} = 5.75 > M_{\text{game brand}} = 4.63$, $n=83$, $t=4.84$, $p<0.05$). Electronic brands belonged to the type of brands with high safety attributes, while game brands belonged to the type of brands with low attention to safety attributes. Therefore, electronic brands and game brands were selected as the experimental materials for Study 2.

4.1 Experiment 2A

Method

In Experiment 2A, we chose electronic brands with high concern about safety attributes as the

experimental materials. The purpose was to compare the effects of logos with complete and incomplete frames on brand attitudes under product categories with different concerns over safety attributes.

Participants

From some university in the northwest of China, 117 college students were recruited as subjects in exchange for a small monetary reward (71 men, 45 women; Mage=24.5, SD=1.92, range=18-30).

Procedure

First, the subjects were randomly assigned to two groups after entering the laboratory. In order not to reveal the real purpose of the experiment, the questionnaire was presented in the experimental materials as “A Questionnaire for the Market Research of an Electronic Brand Company”. Subsequently, all the subjects were offered with the brand logo of “NCS”. Among them, one group of subjects saw the brand logo with a complete frame, while the other group of subjects saw the brand logo with an incomplete frame (as shown in Appendix B). Finally, they were guided through manipulation checks to measure the dependent variables and other variables, including complexity and familiarity of the brand logos, brand preferences, and demographic information.

Manipulation checks were used to ask participants to see if the brand logo’s frame was complete or incomplete. Because the participants didn’t respond incorrectly, the case design (manipulation) of the brand logo’s frame was successful.

First, to assess the subjects’ level of concern about the safety attributes of electronic products, participants were asked to provide a range of their feelings on a 7-point Likert scale (1 = “not at all concerned”, 7 = “very concerned”) to measure their perceptions, with the question “How concerned are you about the safety of gaming products?”. Second, subjects were asked to report their evaluation of the psychological perception of safety of the brand logo. The perception was measured by the items of “the brand is trustworthy”, “the brand is reliable”, and “the brand is safe” (Gupta & Hagtvedt, 2021). Finally, participants reported their attitudes toward the brand on a five-item scale (Mackay et al., 2009), including “appealing”, “good”, “pleasant”, “favorable”, and “likeable” (1 = strongly disagree, and 7 = strongly agree).

Results

Safety attributes. The two groups of participants were highly concerned about the safety of electronic products, and there was no significant difference (MLogo-complete frame=5.42, SD=2.4, MLogo-incomplete frame=5.31, SD=1.54, df=254, $p>0.1$, $T=0.62$).

psychological perception of safety. The independent samples t-tests and one-way analyses of variance (ANOVA) on the two groups’ psychological perception of safety and brand attitudes were performed. The score for psychological perception of safety of the brand of the group with complete frames was significantly higher than that of the group with incomplete frames (MLogo-complete frame=5.18, SD=1.19, MLogo-incomplete frame=4.23, SD=1.66, df=232, $p<0.01$, $T=-6.09$).

Brand attitudes. Likewise, the brand attitudes of the group with the complete frames were significantly higher than those of the group with the incomplete frames ($N=117$, MLogo-Complete frame =4.82,

SD=0.85, MLogo-Incomplete frame=4.18, SD=1.28, df=115, $P<0.01$, $T=-3.35$).

Mediation analyses. We further tested for the mediating role of psychological perception of safety through a bootstrapping analysis using PROCESS Model 4 (with 5,000 bootstrapping resamples; seen in Hayes, 2013). As predicted, the results revealed that the direct effects of the logos' frames on brand attitudes were not significant at 95% confidence interval (seen in Table 1). The indirect effects of logos' frames on brand attitudes through psychological perception of safety were significant, which showed that the relationship between logos' frames and brand attitudes was mediated by psychological perception of safety. We thus preliminarily supported H2.

Table 1. Mediating Effect test and Regression Analysis Results

Variables	Coefficient	95%CI		SE
		LL	UL	
Logo frame—psychological perception of safety	0.81	0.86	2.08	0.31
psychological perception of safety—Brand attitudes	0.83	1.08	1.44	0.09
Logo frame—psychological perception of safety—Brand attitudes	0.67	0.41	0.92	0.13
Logo frame—Brand attitudes	0.44	-0.60	1.47	0.52

Moderated mediation analyses. The data were submitted to the moderated mediation analyses (PROCESS, Model 14, with 5,000 bootstrapping resamples). The results revealed an interactive effect of psychological perception of safety and safety attributes on brand attitudes (seen in Table 2). The influences of psychological perception of safety on brand attitudes were significant. Furthermore, the indirect effects associated with logos' frames and brand attitudes through psychological perception of safety was also significant, $b = 0.63$; CI [0.30, 1.12]. These results indicated that the mediation effects of psychological perception of safety were moderated by safety attributes, and H2 was once again supported.

Table 2. Moderating Roles of Safety Attributes

Variables	Coefficients	95%CI		SE
		LL	UL	
Logos' frames	0.03	-0.36	0.43	0.20
Safety attributes	0.24	0.10	0.38	0.07
psychological perception of safety	0.48	0.31	0.65	0.08
psychological perception of safety × safety attributes	0.72	0.41	1.09	0.17

Discussion

Experiment 2A provided the effective support for H2. For brands with high concerns over safety

attributes, consumers had a higher evaluation of logos with complete frames, and psychological perception of safety played a full mediation role. The experimental material in Experiment 2A was an electronic product with high concern about safety attributes. To compare the influences of concerns about safety attributes on brand attitudes, we used “games brand” as the experimental materials to verify whether the above mechanism had general applicability.

4.2 Experiment 2B

Method

Experiment 2B was similar to Experiment 2A. In Experiment 2B, we chose game products with low concerns about safety attributes as the experimental materials. The purpose was to compare the effects of logos with complete and incomplete frames on brand attitudes under product categories with different concerns over safety attributes.

Participants

From some university in the northwest of China, 135 college students were recruited to participate in the study for 2 CNY. (85 men, 50 women; $M_{age}=25.3$, $SD=1.85$, range=18-29).

Procedure

The experimental process was identical to that of Experiment 2A, and the same virtual brand logos were used. When safety perceptions were measured, the brand was changed into the game brand. The participants were presented with a brief introduction of NCS, which included a sentence like this: “Founded in 2010, NCS is a game brand from Europe with products all over the world”. They were then instructed to measure the primary dependent variables and other variables through manipulation checks, including the complexity and familiarity of the brand logos, brand preferences, and demographic information.

The manipulation check was used to ask the participants to see if the brand logo’s frame was complete or incomplete. Since the participants didn’t give wrong answers, the case design (manipulation) of the brand logo’s frame was successful.

First of all, in order to evaluate the participants’ concern about the safety attributes of game products, the participants were asked to provide their ranges of feelings on a 7-point Likert Scale (1 = “not at all concerned” and 7 = “very concerned”) to measure their views, with the question item of “How concerned are you about the safety of game products?” Secondly, the subjects were asked to report their evaluations of psychological perception of safety of the brand logos. The psychological perception of safety was measured by the three items, that is “the brand is trustworthy”, “the brand is reliable”, and “the brand is safe” (Hagtvedt, 2021). Finally, the participants reported their attitudes toward the brand on a five-item scale (Mackay et al., 2009), including “appealing”, “good”, “pleasant”, “favorable”, and “likeable” (1 = strongly disagree, 7 = strongly agree).

Results

We analyzed the perceived safety and brand attitudes of the two groups of logos (complete vs. incomplete) using ANOVA and PROCESS Model 14. The psychological perception of safety were

significant in both groups (MLogo-complete frame = 5.11, SD=1.89, MLogo-incomplete frame = 4.78, SD =1.45, $T=1.66$, $df=133$, $p<0.05$). The indirect effects associated with logos' frames and brand attitudes through psychological perception of safety were not significant, $b = -0.13$; CI [-0.65, 0.38]. These results suggest that for the products with low concerns over safety attributes, the complete and incomplete frames of logos do not affect consumers' attitudes toward brands. This finding supported H2.

Discussion

Experiments 2A and 2B verify the mediating effect of perceived safety and the moderating effect of concerns of a product's safety attributes in H2. Logos with complete and incomplete frames affect consumers' brand attitudes by influencing their perceived safety. When consumers are highly concerned about a product's safety, a logo with a complete frame will produce a higher evaluation of the product. When consumers are less concerned about a product's safety, brand attitudes are not affected by the logo's frame.

In sum, the findings in Study 2 suggest that consumers' concerns about a product's safety attributes determine whether the frame effect influences consumers' brand attitudes. This effectively verifies H2 and further clarifies the boundary conditions to which the frame effect applies.

5. General Discussion

This paper discusses the impacts of the brand logos' frames (complete vs. incomplete) on consumers' psychological perception of safety and brand attitudes through two studies with four experiments. The results show that compared with the incomplete brand logos' frames, the complete brand logos' frames are more likely to meet the self-safety needs of consumers, generate perceptions of safety and reliability, and trigger a high degree of the brand trust. Safety perception mediates the impacts of the logos' frames (complete vs. incomplete) on consumers' brand attitudes. When consumers are highly concerned about the safety attributes of the target products, the complete brand logos' frames can also increase consumers' perceptions of safety and form the positive brand attitudes.

Theoretical contributions

Such research results have certain theoretical significance. First of all, a large number of studies focus on the impacts of the brand logos on consumers' brand attitudes, but few studies focus on the impacts of the brand logos' frames (complete vs. incomplete) on brand attitudes. This study is based on embodied cognition theory, which holds that concrete physical experiences or information can influence abstract perceptions, and that the minimal external features or information can influence consumers' psychological perception of safety and attitudes toward brands or products (Chae & Hoegg, 2013). Starting from the visual attribute of the brand logos' frames, this study has found that the frame features will stimulate the consumers' psychological perception of safety, which in turn affects their brand attitudes. This conclusion broadens the findings in the field and also expands the scope of the application of the conceptual metaphor.

Secondly, based on the theoretical perspective of conceptual metaphor, this study explores the effects of brand logos' frames (complete vs. incomplete) on consumers' psychological perception of safety. In recent years, some researchers have started to examine the formation of consumers' psychological perception of safety from the perspective of metaphor (Sundar & Noseworthy, 2014), but most of them only cover spatial metaphor, especially the effects of changes in the spatial location on consumers' psychological perception of safety. This study shifts vision from spatial metaphor to conceptual metaphor, which provides some guidance for the future research in the field of consumers' behavior and psychological perception of safety, and at the same time, broadens the scope of metaphor research.

Managerial implications

The findings of the study have important practical significance for enterprise management. The results of this study show that the complete frames of the brand logos generate higher psychological perception of safety among consumers, while the enterprises with the advantages of robustness, reliability, and inclusiveness will give priority to the complete frames of the brand logos so as to improve consumers' recognition and trust in the brand.

Limitations and future research directions

There are some limitations in the current research. This study is limited to the effects of the frames (complete vs. incomplete) in the logos' structural features on consumers' brand attitudes, and the study has found that the complexity of the brand logos also affects consumers' perceptions (Van Grinsven & Das, 2014). Future research can further explore the interaction between the brand logo's frames and other visual factors, including colors (Labrecque & Milne, 2012) and frame shapes (Liu et al., 2021). In addition, only the impacts of the logos' frames (complete vs. incomplete) on consumers' psychological perception of safety have been tested so far in our research, but other perceptual factors, such as imagination, honesty and efficiency are still not involved (Aaker, 1997). In the future studies, researchers will reveal more boundary conditions for the main effects.

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Appendix A. Stimulus in Study 1



complete frame logo



incomplete frame logo

Appendix B. Stimulus in Study 2



complete frame logo



incomplete frame logo