The Impact of Product Expression on Purchase Intention - The Moderating Role of Relative Deprivation

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Abstract. This study investigates how anthropomorphic expressions on products influence consumer purchase intentions, the moderating role of relative deprivation, and the mediating effect of consumer need for uniqueness. The research reveals that while anthropomorphic product expressions can enhance emotional connections with consumers, their preferences for different expressions are context-dependent. Experiment 1, using a 2×2 between-subjects design, confirmed the main effect of product expression and the moderating effect of relative deprivation. Experiment 2 further explored the mediating role of the need for uniqueness between product expression and purchase intentions. The findings indicate that positive expressions generally foster purchase intentions, but negative expressions may be preferred by consumers who feel relatively deprived. The need for uniqueness plays a pivotal mediating role, suggesting that consumers may favor products with negative expressions to fulfill their need for uniqueness. This study provides new insights into understanding consumer responses to anthropomorphic product expressions and offers practical guidance for marketing strategies.

Keywords: Product Anthropomorphism, Purchase Intentions, Relative Deprivation, Need for Uniqueness, Contextual Influence.

1 Introduction

The appearance of a product is an important factor for companies to influence consumer decision-making, and distinctive product designs can enhance consumer attention and purchase intention (Bloch, 1995). Nowadays, many companies are using anthropomorphic elements in product design to increase their attractiveness to consumers. For example, M&M's chocolate candies have brought great success to Mars & Murrie by presenting six bright-colored mascots to the public.

In the design of anthropomorphic product appearance, the expression of the product's appearance is one of the important factors that companies need to consider in marketing. Traditional research believes that a positive product expression will convey a friendly brand attitude to consumers and hope to establish a lasting social relationship, while a negative product expression will convey an unfriendly brand attitude,

leading to a negative brand impression among consumers (Leppanen and Hietanen, 2004). However, in marketing practice, sometimes the anthropomorphic expression of products will have an "inverse effect" on consumers' product attitudes. For instance, Bellezza et al. [1-14] found that a smiling expression can make the audience feel weak, unthinking, and submissive, while an aggressive product expression can make consumers perceive "more capable" or "more decisive." Consumers' preferences for product expressions are "situational." Understanding when they prefer positive expressions and when they prefer negative expressions, and the mechanisms behind these preferences [15-17], will help companies design products that are suitable for the market.

2   Literature Review and Research Hypotheses

Anthropomorphism is the most intuitive metaphorical way to compare the characteristics of objects with human characteristics, thereby enhancing the fluency of people's perception of object characteristics. In the field of marketing research, many studies have found that anthropomorphism can promote consumers' purchasing behavior of products or brands by affecting consumers' cognition and emotions. Delbaere et al. (2011) found that in advertising, anthropomorphic action designs such as "drinking water" facial cleanser and "holding hands" jewelry can leave a deeper impression on consumers. Rodriguez et al. (2014) [9-12] found that anthropomorphism can enhance consumers' self-consistency, making consumers more willing to buy anthropomorphic products. Anthropomorphism can also improve the quality of communication between enterprises and consumers. Consumers can communicate with the communication objects created by anthropomorphism to meet their social needs (Xun et al., 2014) [13].
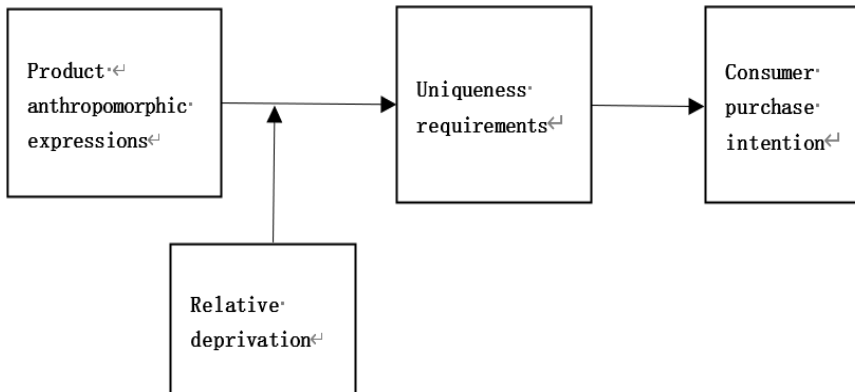

Fig. 1. Research theoretical framework.

3   Research Design, Experimental Process, and Data Analysis

This paper ,as shown in Fig.1, tests the moderating effect of relative deprivation on the relationship between product anthropomorphic expression and consumer purchase intention, as well as the mediating mechanism of the moderating effect, through two experiments. Experiment 1 uses a 2×2 between-subject design to test the main effects and moderating effects, and Experiment 2 uses the same between-subject design after changing the experimental materials to test the mediating effect.

3.1   Experiment 1: Testing Main Effects and Moderating Effects

3.1.1 Experimental Subjects.

This experiment randomly distributed 65 questionnaires through the "Questionnaire Star" platform, and received 60 questionnaires, including 36 males and 24 females, with an average age of 27 years old. Considering the impact of the subjects' environmental conditions on emotional factors, the researchers measured the emotional status of the subjects before the experiment. After excluding 8 incomplete and emotionally fluctuating questionnaires (such as very excited), the final effective sample size was N=52.

3.1.2 Stimulus Design and Experimental Procedure.

After the subjects clicked on the questionnaire link to enter the answer interface, the page briefly introduced the purpose of the questionnaire, simulating a department store market research scenario, and invited subjects to fill in relevant preference information. All questions used a 7-point Likert scale. First, subjects were asked to fill in their current emotional state, referring to the Hagtvedt (2011) scale. Subsequently, subjects entered the relative deprivation initiation phase. This paper draws on Alder's (2009) situational simulation initiation method. After filling in the emotional questions, subjects were randomly entered into one of the two pages. One page required subjects to "recall and briefly write down the experience when they were most financially embarrassed," and the other page required subjects to "recall and briefly write down the experience when they were financially abundant." After writing the experience, subjects filled in three questions about whether relative deprivation was initiated, referring to the Sharma (2012) scale. The results showed that the relative deprivation was successfully initiated (M high relative deprivation = 3.16, SD = 0.75; M low relative deprivation = 5.11, SD = 1.01).

Next, subjects entered the product expression stimulus phase. According to Yuki (2007), most consumers perceive expressions through the shape of the eyes and mouth. The researchers selected a handbag without a clear design style and brand characteristics as the experimental material, and the picture was processed in monochrome. For the positive expression, the researchers chose an equilateral triangle to simulate a smiling expression, and for the negative expression, an inverted triangle was chosen to simulate a sad expression. After browsing the product expression pictures, subjects

were asked to describe the product expression they observed to test whether consumers successfully understood the type of product expression. The results showed that after seeing the equilateral triangle product expression picture, the content filled in by the subjects contained the most words related to the positive expression (83%) (such as gentle, smile); and after seeing the inverted triangle product expression picture, the content filled in by the subjects contained the most words related to the negative expression (89%) (such as angry, sad), and there were no other frequently mentioned words (<5%).

3.1.3 Data Analysis.

This paper, as shown in Fig.2, uses SPSS 26 to analyze the data. Experiment 1 first uses a one-way ANOVA method, and the results show that the main effect of product expression on consumer purchase intention is significant ($F (1, 46) = 10.48$, $p < 0.05$, $\eta2 = 0.19$). The estimated value of the difference in consumer purchase intention between negative and positive expressions is -1.37, with a 95% confidence interval of -2.215 to -0.517. Therefore, compared to negative expressions, positive expressions are more likely to stimulate consumers' purchase intention, and Hypothesis 1 is supported.
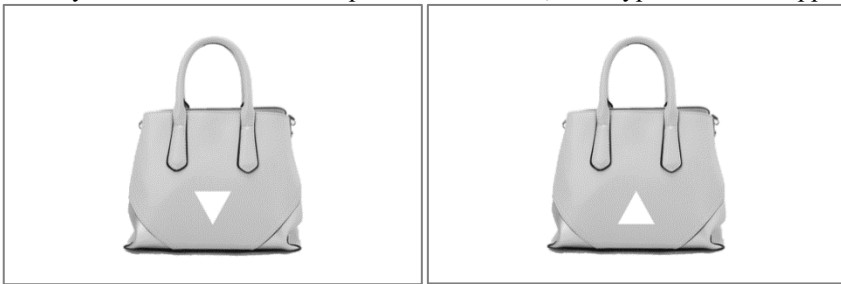

Fig. 2. Moderating Effect Diagram.

3.2   Experiment 2: Testing Mediating Effects

3.2.1 Experimental Subjects.

This experiment still randomly distributed 80 questionnaires through the "Questionnaire Star" platform, and received 75 questionnaires, including 43 males and 32 females, with an average age of 24 years old. After excluding 2 incomplete and emotionally fluctuating questionnaires, the effective sample size was N=73.

3.2.2 Stimulus Design and Experimental Procedure.

The questionnaire still simulates the department store market research scenario and invites subjects to fill in relevant preference information. Subjects were first asked to fill in their current emotional state, and then entered the relative deprivation initiation phase, using the same situational simulation method as Experiment 1. Subjects were asked to fill in the economic difficulties they have encountered or the economic wealth experiences, and then fill in three questions about whether relative deprivation was initiated. The results showed that the relative deprivation was successfully initiated (M

high relative deprivation = 2.97, SD = 1.01; M low relative deprivation = 4.7, SD = 0.69).

Next, subjects entered the product expression stimulus phase. In this experiment, the researchers selected an animal figure product as the experimental material, and the picture was processed in monochrome. For the positive expression, the researchers designed a gentle look and an upward mouth corner, and for the negative expression, the researchers designed an aggressive look and a downward mouth corner. After browsing the product expression pictures, subjects were asked to describe the product expression they observed to test whether consumers successfully understood the type of product expression. The results showed that after seeing the pictures with a gentle look and an upward mouth corner, the content filled in by the subjects contained the most words related to the positive expression (83%) (such as smile, happy); and after seeing the pictures with an aggressive look and a downward mouth corner, the content filled in by the subjects contained the most words related to the negative expression (89%) (such as angry, fierce), and there were no other frequently mentioned words (<5%).

3.2.3 Data Analysis.

As shown in Table 1. Experiment 2 used the SPSS macro program PROCESS's Model 7 to test the moderating effect. The results showed that the interaction item of relative deprivation and product expression significantly predicted consumer purchase intention, $p < 0.05$. At a low level of relative deprivation (relative deprivation = 0), the mediating effect of uniqueness needs was -0.43, with a 95% CI [-1.61, -0.04]; at a high level of relative deprivation (relative deprivation = 1), the mediating effect of uniqueness needs was -0.03, with a 95% CI [-0.29, 0.27]. The comparison of the moderating mediating effects showed that the difference in the mediating effect of uniqueness needs between high and low relative deprivation was 0.4, with a 95% CI [0.01, 1.2], thus supporting Hypothesis 3.

Table 1. Analysis Results of Moderated Mediation Effects.

Regression equation		Fit index		Regression coefficient significance		
Outcome Variable	Predictor variables	R2	F	β	95%CI	t
Uniqueness Demand	Product Expressions	0.28	3.54	-1.53	[-2.35,-0.71]	-3.75
	Relative deprivation			-0.59	[-1.49,0.31]	-1.3
	Expression × Deprivation			1.42	[0.14,2.7]	2.21
Purchase Intention	Product Expressions	0.42	8.08	-1.27	[-1.89,-0.65]	-4.09
	Uniqueness requirements			0.28	[0.03,0.54]	2.2

4   Conclusion

Product anthropomorphism can increase the vitality of a product by shaping the unique attributes of humans, thereby promoting interaction between the product and consumers, deepening consumers' understanding of product attribute characteristics, and bringing market competitive advantages to corporate marketing strategies (Epley, 2007). Therefore, previous research on product anthropomorphism mainly focused on how to deepen consumers' understanding of anthropomorphism, such as product role images, interaction methods between products and consumers, etc. (Fox et al., 2001), and there was less research on the design of anthropomorphic product appearance. The first theoretical contribution of this paper lies in exploring and testing the impact of product expression, an important anthropomorphic appearance factor, on consumer purchase intention, enriching previous research on anthropomorphic factors and providing new ideas for understanding consumer product perception methods.

For the study of product anthropomorphic expressions, many past literatures have found that positive expressions (such as friendly, warm, etc.) will often enhance consumers' purchase intention and positive evaluation, while negative expressions (such as aggressive, contemptuous, etc.) will reduce consumers' purchase intention and bring negative evaluation (Galinsky, 2003).

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