

Cuteness anthropomorphic purchase intention for unattractive products: The Mediating Role of Empathy

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Abstract. Consumers usually prefer products with perfect appearance and attractiveness, as well as reject unattractive and low-attractive products, which puts forward higher requirements and thresholds for brand marketing and product design. Anthropomorphism is an effective communication element. Anthropomorphism of cuteness refers to anthropomorphizing the image of children or babies and endowing them with personality traits. Previous studies have shown that cute anthropomorphism has a significant impact on the purchase intention of unattractive products by affecting consumers' empathy. Empathy refers to the emotional response of individuals to the emotional state or painful experience of others.

This study is based on the realistic dilemma of unsalable unattractive products, combined with anthropomorphic marketing theory, and introduced the concept of empathy in the field of psychology. Aiming to study the impact of anthropomorphism on the purchase intention of unattractive products, and further test the mediating role of empathy and modulatory effects of cuteness elements, this study identifies the underlying psychological mechanisms that affect consumer empathy.

Keywords: Anthropomorphism of cuteness; consumer preference; empathy; potential psychological mechanism.

1. Introduction

There is a fact that food waste due to boycotts of products that are less than perfect in appearance has reached 30% (Berkenkamp and Meehan, 2016). In this study, based on predecessors, we enrich the research questions about anthropomorphism and discuss the empathy of unattractive products. This study proposes a more cost-effective solution to the food waste problem than discounting and remodeling. The conclusion of this study is dedicated to providing the company's product design. Strengthening product competitiveness is the only way for merchants and enterprises to become more profitable. That is the target that our study tries to make and find a solution that works.

2. Literature review

2.1 Attractiveness and Consumer Preference

Anthropomorphism is the process of attributing human qualities, such as appearance, motives, intentions, and emotions, to non-human entities so that they are seen as "persons" with life, emotions, and minds.

Attractiveness refers to the considerable interest and preference for the things that may be obtained. For consumers, only when they have an interest and preference for a certain commodity will they increase their desire to buy, which will lead to the behavior of consumers buying. There is widespread evidence that consumers are reluctant to purchase unattractive products (de Hooge et al., 2017; Grewal et al., 2019; Loebnitz and Grunert, 2018; Loebnitz et al., 2015). In addition, consumer attitudes are influenced by the degree of unattractiveness. Moderately deformed fruits and vegetables were considered better than slightly or extremely unattractive (Lombart et al., 2019).

2.2 Anthropomorphism and empathy

Building upon Coke's empathy-enhanced two-stage framework (Coke et al., 1978), we propose that attributing human characteristics to unattractive products. As per the aforementioned model

(Coke et al., 1978), the identification of individuals in distressing circumstances stimulates empathic sentiments, subsequently leading to an augmentation in supportive actions. Our assertions align with prior studies which have demonstrated that unappealing appearances tend to evoke greater empathy, as they create a perception of increased vulnerability and a higher likelihood of receiving assistance.

2.3 Cuteness

"Cute" can often trigger consumers' positive perceptions and evaluations, it benefits from this Positive stereotype, and the perception of "cuteness" can induce consumers to make positive inferences such as immaturity, innocence, kindness, and honesty. Studies have shown that adults with baby faces are often evaluated as more naive and honest by people, especially relative to adults who are mature in appearance.

When a company is facing a serious public relations crisis, compared with CEOs with more mature appearances, baby-faced CEOs are more likely to gain consumers' understanding and trust. Cuteness can arouse people's empathy, which expresses concern and love for the happiness of others (Williams, Dalgleish, Karl, & Kuyken, 2014), which is essentially related to vulnerability (vulnerability), fragility and helplessness are the key factors for empathy (Oveis, Horberg, & Keltner, 2010), and because cuteness can induce people to make inferences about vulnerability, it will naturally lead to empathy.

3. Hypotheses

3.1 Empathy for anthropomorphic design of unattractive products

Anthropomorphism enhances consumers' ability to recognize demand for unappealing products, as it activates their cognitive and emotional responses towards objects (Waytz et al., 2010).

When encountering objects that exhibit human-like qualities, such as anthropomorphic attributes, individuals may experience empathetic emotions due to the implication of their capacity to feel (Ketron and Naletelich, 2019).

Moreover, our belief is that increased empathy towards anthropomorphic unattractive products leads to higher purchase intention. Empathy has consistently been recognized as a significant predictor of helping behavior and fostering social inclusion (Coke et al., 1978; Beeney et al., 2011; Verhaert and Poel, 2011).

Furthermore, research has demonstrated that empathy plays a mediating role in the connection between anthropomorphism and sustainable behavior (Ketron and Naletelich, 2019).

Accordingly, this study's Hypothesis is proposed as follows:

H1. Anthropomorphism results in increased purchase intentions for unattractive products.

H2. Anthropomorphism stimulates empathy, which leads to an increase in consumers' willingness to purchase unattractive products, that is, empathy plays a mediating role.

3.2 Moderating effect of cuteness

In the field of marketing, the definition of "cuteness" can be roughly divided into the following three types. The first definition is mainly based on anthropomorphic image design. The second definition mainly starts from the level of consumer perception, and regards "cute" as a positive perception and evaluation. For example, some scholars believe that "cute" is a positive perception that will make consumers feel affectionate. The last one is to combine the above two and think that "cute" is a unique marketing method, that is to say, through product design, brand image, market positioning, etc., the company makes consumers a good impression of the company's products or brands. The perception of "cute" is to activate consumers' positive evaluation of these products or brands, thereby promoting the occurrence of consumer purchase behavior. If we add cuteness

factors to the sales of unattractive products, we can well stimulate consumers' empathy. Thus influencing consumers' preference for unattractive products.

H3. The cuteness element plays a moderating role in the process of anthropomorphic stimulation of consumers' empathy for unattractive products.

4. Methods and results

4.1 Experimental paradigm

Three studies were performed. Study 1 mainly verified the matching effect of unattractive products and anthropomorphic images on consumer responses (ie test H1). Study 2 verified the mediating effect of empathy on anthropomorphism's influence on purchase intention by changing the external validity of stimulus reinforcement experiments. (i.e. test H2). Based on the first two studies, the third study further explored the moderating effect of the juvenile elements on anthropomorphic arousal of empathy (ie test H3). Experimental stimulus material is unattractive product graphic advertising material. The selection of images and descriptions of advertising content is mainly based on literature and expert guidance.

Participants were recruited from the Questionnaire Star website, a professional survey site suitable for nationwide use. The relevant items mainly include: "I will consider buying this product", "I would like This product" and "I will not be inclined to buy this product" ; the measurement scale of anthropomorphic perceptual manipulation is mainly based on the scale of Tong Chen et al. (2021), and the relevant items mainly include:"The carrot in the picture looks like Individual" , "The carrot in the picture is alive" . All scales are 7-point scales.

4.2 Study 1

4.2.1 Experimental purpose

In Experiment 1, we aimed to investigate whether anthropomorphism affects consumers' purchase intentions for unattractive products. According to predictions, anthropomorphic relative to non-anthropomorphic will lead to higher purchase intention of consumers for unattractive products.

4.2.2 Experimental material

This article uses images and text to perform double anthropomorphic operations. Previous studies have shown that the dual design is more likely to stimulate the anthropomorphic perception of the subjects (Guido & Peluso, 2015; Puzakova et al., 2018; Huang Xin, 2018). In the selection of materials for this experiment, the screening criteria for product anthropomorphic images are mainly based on the research of Chen Tong et al. (2021), and finally selected natural unsightly carrots, a relatively common vegetable, as the product anthropomorphic The carrier of the image, anthropomorphic design of unattractive products. The two images of non-anthropomorphic and anthropomorphic are shown in Figure 1.



Fig. 1. a non-anthropomorphic image. b anthropomorphic image.

4.2.3 Method

This study mainly recruited subjects on the questionnaire star platform, and the subjects answered the questionnaire online. The content of the questionnaire was divided into non-anthropomorphic groups and anthropomorphic groups.

First of all, the subjects filled in the basic information of gender, age, and education, and then according to the questionnaire requirements, the subjects had to imagine that they were shopping in a supermarket and seeing some unattractive carrots on the shelf. The image of the carrot is displayed in the form of a picture. Under the non-anthropomorphic condition, the appearance of the carrot does not add any human characteristics and is described in a third-person tone.

The specific text description is: "Please try these carrots"; in the anthropomorphic condition under condition, the appearance of the carrot incorporates human features, and the description is described in a very brief first-person tone, the specific text is: "Please buy us". Except for the differences in the above designs, the other information presented by the two groups was identical. After viewing the graphic information, the subjects will fill in the questionnaires of the non-anthropomorphic group and the anthropomorphic group respectively. Each group includes three parts, namely: product purchase choice, product purchase intention, and manipulation test of anthropomorphic perception question.

Among them, for the measurement of the main variables, the measurement scale of purchase intention manipulation mainly refers to the scale proposed by Cooremans and Geuens et al. (2019).

4.2.4 Results

In Experiment 1, 140 questionnaires were distributed online. After excluding invalid questionnaires, there were 131 remaining valid questionnaires. After analysis, among the remaining effective samples, the average age of the subjects was 25.84 years old, including 51 males, accounting for 38.93%, and 80 females, accounting for 61.07%. The education level of most of the subjects was undergraduate, accounting for 80.15%

(1) Reliability test. Through the validity test of Experiment 1, its α coefficient is 0.797, which is greater than 0.7, indicating a high level of reliability. And the corrected item-total correlation (CITC) values are all greater than 0.5, which also shows a high level of reliability.

(2) Manipulation check. For anthropomorphism, we ran a paired-sample t-test to test the validity of the anthropomorphic manipulation. The results showed that there was a significant difference between anthropomorphic and non-anthropomorphic conditions, the mean values of non-anthropomorphic and anthropomorphic were 4.62 and 5.21, so their difference was 0.59, and their $P < 0.05$, we considered anthropomorphic. There is a significant effect of non-anthropomorphic and non-anthropomorphic on product selection, indicating that anthropomorphic manipulation is effective.

For consumers' purchase intentions, we conducted a variance analysis, and the results showed that anthropomorphism would increase consumers' purchase intentions (M non-anthropomorphic = 4.53, SD = 1.565, M anthropomorphic = 5.08, SD = 1.254, $F = 17.079$, $P = 0.000$), indicating that anthropomorphism increases consumers' willingness to purchase unattractive products.

Mediation analysis. To investigate the mediating effect of empathy in the relationship between cute anthropomorphism and purchase intentions, this study takes empathy as the mediating variable, anthropomorphism as the independent variable, and subjects' willingness to buy unattractive products as the dependent variable. Under the condition of sample size of 156, hierarchical regression is selected for testing. Two models were involved in this hierarchical regression analysis (model 1 involved one independent variable, model 2 involved one independent variable and empathy of the intermediary variable). The R^2 of model 1 was 0.235, and that of model 2 was 0.505. After adding the intermediate variable (empathy) to model 2 on the basis of model 1, the change value of R^2 of model 2 is 0.27 and shows a significant change (Sig.F change is 0.000). Moreover, according to the analysis, we can know that empathy is partially mediated, and this result

proves the mediating role of empathy. To sum up, hypothesis 2 has been preliminarily verified in experiment 2.

4.2.5 Discussion

The results of Study 1 support H1. Through the test, we can conclude that anthropomorphism will increase consumers' willingness to buy. Furthermore, in Study 1, linguistic cues and feature cues were used in tandem to manipulate anthropomorphism. However, anthropomorphic features may scramble consumers' perception of a product as unattractive. To clarify the role of anthropomorphism, we used two anthropomorphic approaches separately in Study 2.

4.3 Study 2

4.3.1 Experimental purpose

In Experiment 2, we aimed to investigate the influence of cute elements on anthropomorphic effects, and whether the addition of cute elements to anthropomorphic unattractive products would have an impact on empathy. We predicted that the effect of anthropomorphism on eliciting empathy would be stronger when the anthropomorphic unattractive product was more juvenile in anthropomorphic appearance. This study further supports our interpretation of the empathy effect by demonstrating a moderating effect of the juvenile element. We believe that the cute element will enhance the positive role of anthropomorphism in arousing consumers' empathy, and then affect consumers' purchase intentions for unattractive products.

4.3.2 Experimental material development

In the second experiment, we will continue to develop new anthropomorphic images of products, and apply the cute design elements to the anthropomorphic image design of products. Among them, the screening criteria for the anthropomorphic image of the product in the form of cuteness are mainly based on the research of Grewal et al. The design of images and related text materials generally follows the framework adopted in Experiment 1 and Experiment 2. The two product images of Anthropomorphic and Youmeng Anthropomorphic are shown in Figure 2.

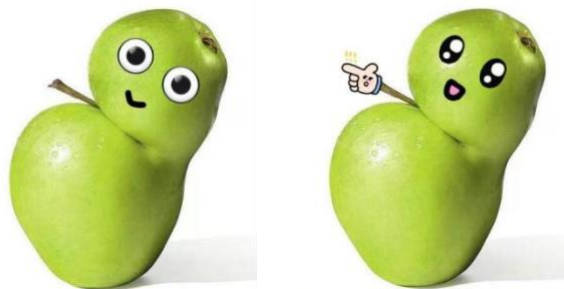


Fig. 2. a non-anthropomorphic image. b anthropomorphic image.

4.3.3 method

This experiment adopts a single-factor between-subjects experimental design (type of product anthropomorphism: cute anthropomorphism, anthropomorphism), the adjustment variable is the cute element, and the dependent variable is consumers' willingness to purchase unattractive products. In Experiment 2, the subjects were still recruited on the questionnaire star platform, and the subjects answered the questionnaires online.

In this experiment, the subjects were asked to imagine that they were buying green apples in the supermarket, and then they encountered some unattractive green apples on the shelf. After viewing the graphic information, the subjects had to choose between two products that used different degrees of anthropomorphic images. At the same time, they also needed to answer the manipulation test questions on the perception and empathy of cuteness's anthropomorphic images.

Among them, the measurement scale for empathic manipulation still uses the scale of Experiment 2, and the measurement scale for the perceptual manipulation of cuteness's anthropomorphic image mainly refers to the scale of Nenkov and Scott (2014), using "cute (cute), likable" The three items of "Cute, Adorable, and Endearing" were used to measure the overall "cute" perception of the subjects on the stimuli. Related items include: "the image of the green apple is cute", "the image of the green apple is likable", "the image of the green apple is cute". A 7-point scale was used for the measurement items and manipulation test items of each variable.

4.3.4 results

In Experiment 3, 113 questionnaires were distributed online. After excluding invalid questionnaires, there were 105 remaining valid questionnaires. After analysis, among the remaining effective samples, the average age of the subjects was 20.90 years old, among which there were 33 males, accounting for 31.43%, and 72 females, accounting for 68.57%. The education level of most of the subjects was undergraduate, accounting for 88.57%.

(1) Reliability test

Through the validity test of Experiment 3, its α coefficient is 0.917, which is greater than 0.7, indicating a high level of reliability. And the corrected item total correlation (CITC) values are all greater than 0.5, which also shows the reliability level.

(2) Manipulation test

The first was to examine the manipulation of anthropomorphism in Experiment 3. Running a paired-sample t-test, subjects scored significantly higher in the anthropomorphic condition ($M = 5.12$, $SD = 1.071$) than in the control condition ($M = 4.99$, $SD = 1.181$). The difference was 0.13, and their $P < 0.05$, these results indicated that our anthropomorphic manipulation was effective.

empathy. As we predicted, ANOVA revealed a significant positive main effect of anthropomorphism on empathy ($F = 34.827$, $p = 0.000$); suggesting that anthropomorphism evokes higher empathy for the unattractive apple.

purchase intention. As we predicted, ANOVA revealed a significant positive main effect of anthropomorphism on purchase intention ($F = 37.788$, $p = 0.000$), suggesting that anthropomorphism increases consumers' purchase intention for unattractive apples.

Moderator variable analysis. In order to further strengthen the potential mechanism of empathy between anthropomorphism and purchase intention, we conduct the analysis by hierarchical regression analysis, which involves 2 models (model 1 with 1 independent variable and moderating variable small Meng, model 2 adds an interactive variable on the basis of model 1), the R^2 of model 1 is 0.598, the R^2 of model 2 is 0.695, when changing from model 1 to model 2, the R^2 change value of the model is 0.097, And F also changed significantly. It shows that the juvenile factor plays a regulating role in the process of empathy caused by anthropomorphic independent variables, that is, when the anthropomorphic unattractive product is added with juvenile elements, it will have an impact on the empathy effect.

4.3.5 Discussion

The results of Study 2 support our Hypothesis 3. First, we replicate findings from previous research that anthropomorphism enhances consumers' purchase intentions by eliciting empathy. Secondly, we found that cuteness can regulate the empathy effect of anthropomorphism, and finally verified the regulating effect of cuteness elements on empathy induced by anthropomorphism.

5. Summary

5.1 Theoretical Implications

Although previous related research has explored how strategies to deal with unattractive products can enhance consumers' purchase intentions, our findings examine the marketing strategies and potential psychological effects of anthropomorphism from the perspective of

anthropomorphism-induced empathy. Anthropomorphic marketing establishes deep emotional perception with consumers in product design. Second, previous research has shown an anthropomorphic relationship between anthropomorphism and empathy in non-human entities, such as robots (Riek et al., 2009), light bulbs (Chandler and Schwarz, 2010). Our findings by showing that anthropomorphic products can also elicit similar emotional responses. Finally, we delved into the different ways and degrees of anthropomorphism, and chose to introduce cute elements for manipulation, which enriched the multiple strategic effects of anthropomorphic product design and marketing.

5.2 Managerial Implications

Our findings suggest that retailers can anthropomorphize unattractive products to gain empathy from consumers, which can reduce consumer resistance to unattractive products. Retailers can also try various ways to anthropomorphize products to achieve a similar effect. In addition, in common anthropomorphic marketing strategies, anthropomorphism with cute elements can more effectively stimulate consumers' empathy for unattractive products. Such anthropomorphism can increase consumers' willingness to buy and attract more consumers.

5.3 Limitations and future research

There are still many areas for improvement in this study, which can be further improved in follow-up studies. First of all, there are many complex situational factors in the consumption of unattractive products, which have not been considered in this study. Then, when measuring the regulating effect of the cute elements, it is difficult to distinguish between the anthropomorphic image design of unattractive products and the anthropomorphic image design of young products. The reason is that individuals attach different importance to product aesthetics, and each person has a different perception of the degree of cuteness. Finally there is the experimental materials and manipulation methods. All research experiments in this study collected data by simulating real-world shopping scenarios, and we measured reported purchase intentions rather than capturing actual consumer behavior. However, consumer behavior is largely influenced by the real shopping environment, such as where attractive products are displayed on the shelves, and consumers focus more on the trade-off between product attractiveness and goodwill.

References

- [1] Grewal, L., Hmurovic, J., Lamberton, C., Reczek, R.W., 2019. The self-perception connection: why consumers devalue unattractive produce. *J. Market.* 83 (1), 89–107.
- [2] Cooremans, K., Geuens, M., 2019. Same but different: using anthropomorphism in the battle against food waste. *J. Publ. Pol. Market.* 38 (2), 232–245.
- [3] Chen Tong, Razzaq Amar, Qing Ping, Cao Binbin. Do you bear to reject them? The effect of anthropomorphism on empathy and consumer preference for unattractive produce[J]. *Journal of Retailing and Consumer Services*, 2021, 61:
- [4] Guido, G., & Peluso, A. M. (2015). Brand anthropomorphism: Conceptualization, measurement, and impact on brand personality and loyalty. *Journal of Brand Management*, 22(1), 1-19.
- [5] Puzakova, M., & Aggarwal, P. (2018). Brands as rivals: Consumer pursuit of distinctiveness and the role of brand anthropomorphism. *Journal of consumer research*, 45(4), 869-888.
- [6] Nenkov G Y, Scott M L. "So cute I could eat it up": priming effects of cute products on indulgent consumption[J]. *Journal of Consumer Research*, 2014, 41(2): 326-341.
- [7] Argo J J, Popa M, Smith M C. The sound of brands[J]. *Journal of Marketing*, 2010, 74(4): 97-109.
- [8] de Hooge, I.E., Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S.M., Almlil, V. L., 2017. This apple is too ugly for me!: consumer preferences for suboptimal food products in the supermarket and at home. *Food Qual. Prefer.* 56, 80–92.

- [9] Loebnitz, N., Grunert, K.G., 2018. The impact of abnormally shaped vegetables on consumers' risk perception. *Food Qual. Prefer.* 63, 80–87.
- [10] Loebnitz, N., Schuitema, G., Grunert, K.G., 2015. Who buys oddly shaped food and why? Impacts of food shape abnormality and organic labeling on purchase intentions. *Psychol. Market.* 32 (4), 408–421.
- [11] Coke, J.S., Batson, C.D., McDavis, K., 1978. Empathic mediation of helping: a two-stage model. *J. Pers. Soc. Psychol.* 36 (7), 752.
- [12] Preacher K J, Rucker D D, Hayes A F. Addressing moderated mediation hypotheses: Theory, methods, and prescriptions[J]. *Multivariate behavioral research*, 2007, 42(1): 185-227.