



Article

Culture and Self-Congruity in Online Product Ratings: Exploring a Dual Perspective on Emotional Differences in the Pleasure and Pain of Consumption

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Abstract: The nature of the online shopping environment can cause uncertainty; thus, consumers use the product experiences and evaluations of others to make purchase decisions. In this study, we investigated whether online product ratings affect consumers' consumption-related emotions. We also examined whether the effects of these ratings vary depending on culture and self-congruity. We conducted a PROCESS macro model 12 analysis on 394 subjects (200 American and 194 Chinese) recruited through Amazon Mechanical Turk (MTurk) and Wenjuanxing to examine interaction effects and mediation effects. The results showed that American consumers focus on the pleasure of consumption when making purchase decisions, whereas Chinese consumers emphasize the pain associated with cost. Specifically, American consumers experience more consumption-based pleasure and have positive purchase intentions when online product ratings are high, regardless of self-congruity. In contrast, Chinese consumers have less adverse reactions to cost and more positive purchase intentions regardless of online product ratings when self-congruity is high; however, when self-congruity is low, this only occurs if online product ratings are high. Our study provided a mechanism for understanding the culturally dependent effects of online product ratings and offered insights into whether consumers' perceptions of spending pain can be alleviated to drive purchases. Based on these results, we elucidated this study's academic implications. We also provided practical implications for companies implementing effective online marketing strategies.

Keywords: online product ratings; culture; self-congruity; pleasure of consumption; spending pain



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1. Introduction

With the rise in online shopping and consumption, consumers rely on purchase information and reviews from others to make more informed purchases [1]. Consumers seek confidence in their purchases by relying on evaluations from other consumers [2]. Previous studies have confirmed that positive evaluations from others enhance consumers' trust in products and increase their purchase intentions [3]. Additionally, online product evaluations significantly influence consumers' purchasing decisions, particularly for experience-based purchases such as cultural and artistic products [4]. Online product evaluations have become consumers' most widely used method of word-of-mouth communication [5,6]. According to a survey by Zhong-Gang et al. [7], 82% of consumers refer to product evaluations when purchasing products online, and 93% responded that these evaluations influence their purchase decisions. A survey conducted on 2005 U.S. consumers showed similar results. According to the report, 93% of consumers indicated that online reviews influenced their purchasing decisions, and 82% reported deciding to make a purchase after reading reviews [8].

Consumers rely on product reviews in online shopping environments to reduce their perceived uncertainty when making purchase decisions, as they cannot actually see or touch products [9]. In this case, other consumers' positive evaluations of products can reduce this uncertainty and increase purchasing confidence. In other words, consumers judge that the more positive a review, the more useful and better quality a product is [10]. As a result, higher average product ratings can reduce uncertainty and increase purchase intentions [11]. Thus, online product evaluations have become vital marketing tools for companies to drive positive consumer attitudes toward products and increase the likelihood of purchasing.

This study examined whether online product ratings influence not only consumers' positive intentions but also their consumption-related emotions. When purchasing a product, consumers may experience the conflicting emotions of the pleasure of consumption and the spending pain [12]. If consumers feel more consumption pleasure than spending pain, they are likelier to purchase a product, but if they feel more pain, they may hesitate [13]. Although these emotions are closely related to consumers' likelihood of purchasing products, few existing studies examine this in the online shopping environment. Thus, we proposed a mechanism to examine the impact of online product ratings on consumer purchasing by analyzing the relationship between these two consumption emotions.

In addition, we examined the role of cultural differences as a factor influencing how online product ratings affect two consumption-related emotions. Previous studies indicated that cultural differences affect consumers' perceptions, attitudes, and behaviors [14]. For example, consumers in Eastern cultures, which tend to have greater power distance and uncertainty avoidance, are more sensitive to country-of-origin cues than those in Western cultures [15]. Additionally, consumers in Eastern cultures with collectivist tendencies are more influenced by social norms when purchasing products compared to consumers in Western cultures with individualist tendencies [16]. In relation to this study, consumers in Western cultures, including the United States, tended to focus on the benefits they can obtain, while those in Eastern cultures, including China, tended to focus on the losses they will accrue and ways to mitigate them [17]. Thus, our study attempted to confirm whether cultural differences affect consumers' consumption-related emotions and moderate the effects of online product ratings.

Furthermore, this study focused on ways to alleviate spending pain, which causes consumers to hesitate in making purchases. To this end, we examined the role of self-congruity, which refers to the strength of the relationship between a consumer and a brand. According to previous studies, this relationship can affect the influence of reviews. In particular, consumers with collective tendencies are more influenced by their in-group than their out-group [2]. Moreover, the perception of a strong relationship reduces the pain consumers experience when making a payment [13]. This study investigated whether brands with high self-congruity (i.e., those with strong consumer relationships) play the same role as a consumer's in-group. We examined whether self-congruity alleviates the spending pain experienced by consumers.

This study aimed to examine the role of consumption-related emotions in shaping the effect of product ratings on consumers' purchase intentions in online shopping environments. Specifically, we proposed a mechanism for the impact of online product ratings by exploring the influence of conflicting emotions, such as the pleasure of consumption and the spending pain. Although consumption-related emotions significantly impacted purchasing decisions, they were not widely considered in previous studies, particularly in the context of online shopping environments. We also aimed to verify whether this effect of online product ratings varied across cultural contexts and consumer-brand relationships. To this end, we conducted an experiment involving American and Chinese consumers and analyzed the influence of self-congruity. Our goal was to uncover the mechanism behind the online product rating effect and to suggest ways to enhance this effect by reducing consumers' negative emotional experiences. The findings of this study are expected to pro-

vide meaningful insights not only for academic research but also for companies developing online marketing strategies that leverage social cues.

2. Theoretical Background and Hypotheses Development

2.1. Online Product Ratings and the Two Emotions of Consumption

In an online shopping environment, product reviews can significantly impact consumers' purchasing decisions [18]. Thus, companies actively present these reviews, exposing consumers to various evaluations while shopping online, allowing them to evaluate the usefulness of products based on this information and thus make purchase decisions [19]. These evaluations have such a strong impact on purchasing decisions because the online shopping environment is characterized by relatively high uncertainty compared to other shopping contexts. In other words, as consumers cannot see or touch products, it is difficult to determine quality, causing high uncertainty and perceived risk; thus, consumers rely on product evaluations from others [20,21].

Previous studies have shown that positive online product ratings increase consumers' likelihood of purchasing as they reduce uncertainty and increase their perception of a product's value [18,22]. In other words, positive product ratings increase consumers purchasing confidence. In fact, a study by Lim and Van Der Heide [23] showed that positive online product ratings enhance consumers' trust in a product, while negative ratings can seriously damage this trust [24]. Anggraeni and Albari [25] demonstrated that online product evaluations reduce consumers' perceived risk and increase trust. Furthermore, Ahn and Lee [2] proved that positive online product ratings cause consumers to perceive a product's usefulness as high. Ketelaar, Willemsen, Sleven, and Kerkhof [22] showed that the influence of positive online product ratings on purchase intentions was stronger for consumers who perceived high uncertainty. In a similar vein, Tuo [4] demonstrated that online product evaluations exert significant influence even in experiential consumption, which is associated with relatively high uncertainty. Using sentiment corpus analysis to examine the impact of online film reviews, the results revealed that positive reviews increased consumers' movie consumption. Zhang, Liang, Li, and Zhang [6], who investigated the influence of online reviews in the context of the sharing economy, found that online reviews lead consumers to perceive intellectual, hedonic, epistemic, and social relationship values, which, in turn, increases their intention to make repeat purchases. Thus, positive online product ratings reduced consumers' uncertainty and increased their perception of product value, increasing purchase intentions.

This study examined the influence of online product ratings, focusing on consumption-related emotions. Consumers tend to experience two conflicting emotions when purchasing a product. Specifically, they experience pleasure related to consumption and pain related to payment. Prelec and Loewenstein [12] explained this based on the double-entry mental accounting theory, suggesting that consumers experience the pleasure of consumption and the pain of spending when making a purchase. Ultimately, their purchases are determined by the trade-off between these emotions. Therefore, companies must determine ways to reduce spending pain and increase the pleasure of consumption [13]. In particular, in an online shopping environment with relatively high uncertainty, it is more difficult to inspire confidence and legitimacy in product purchases. Therefore, consumers are likelier to experience spending pain than the pleasure of consumption. In fact, previous studies have shown that spending pain is greater in situations where purchase legitimacy is low [13]. For example, Rick et al. [26] suggested that consumers have more adverse reactions to payment for hedonic goods, which are more difficult to justify and can cause more guilt than utilitarian goods. Therefore, these two consumption emotions must be considered in consumer purchase decisions in an online shopping environment characterized by high uncertainty.

In this study, we suggested that online product ratings can alleviate the weaknesses of online shopping environments and lead consumers to purchase. In other words, the more positive the online product ratings, the more consumers will experience pleasure from consumption rather than spending pain. Similarly, Ahn and Lee [2] showed that positive product ratings increase consumers' perceptions of a product's usefulness and their sense of belonging to an in-group. In addition, positive reviews can lower consumers' perceived uncertainty and increase their confidence in a product. Thus, as the legitimacy related to purchasing a product increases, the pain of payment decreases. Therefore, we expected that positive online product ratings will increase the pleasure of consumption and reduce spending pain.

2.2. Cultural Differences and Online Product Ratings

Culture refers to a shared meaning system among those who speak a particular language in a specific time and geographical region [27]. It acts as a collective programming of the mind that distinguishes members of a group from other groups [28]. Cultural differences have been recognized as factors that affect consumers' attitudes and behaviors [29]. For example, consumers in collectivistic cultures pay more attention to information about a product's origin, while those in individualistic cultures tend to focus more on product-specific characteristics [15]. Additionally, Phan et al. [30] found cultural differences in the effect of message framing. Specifically, Vietnamese consumers, who have a collectivistic orientation, are more persuaded by loss-framed messages than by gain-framed messages, whereas American consumers, with an individualistic orientation, are more persuaded by gain-framed messages. An analysis of 56,000 respondents across 25 countries by Dikčius et al. [31] also suggests that cultural context influences the level of uncertainty people perceive in online shopping. In other words, culture is an essential variable that must be considered to understand consumers' purchasing decisions. It has such a strong influence because it causes consumer tendencies to differ. This study examined the different cultures of the United States and China and how they influence consumers' purchasing decisions.

The most widely recognized theory explaining cultural differences is Hofstede's cultural dimensions theory. Hofstede et al. [32] explained cultural differences using six domains: (1) individualism/collectivism, (2) power distance, (3) uncertainty avoidance, (4) masculinity/femininity, (5) long-term/short-term orientation, and (6) indulgence/restraint. American and Chinese cultures differ in individualism/collectivism, power distance, and long-term/short-term orientation. The United States is characterized by a highly individual society. American consumers make choices for themselves and consider their achievements as important [29]. They tend to focus on the benefits they will obtain and easily accept new ideas or innovations [17,33]. Furthermore, American culture has relatively less power distance and short-term orientation, making consumers easily accept new things [34]. In contrast, China presents a typical collective society. Chinese consumers value the group's choices and goals more than their own [29]. They tend to focus on the losses that negatively affect the group rather than the benefits and do not accept new ideas easily [17,33]. In addition, Chinese society is characterized by greater power distance and a long-term orientation. As a result, they place great importance on tradition and do not easily accept new ideas or innovations [29].

In short, American consumers prioritize gains and readily accept innovations, while Chinese consumers focus on losses and have difficulty accepting new things. Similarly, Aaker and Lee [17] found that consumers with independent tendencies, such as individualism in American culture, are more sensitive to gains, while those with interdependent tendencies, such as collectivism in Chinese culture, are more sensitive to losses. Uskul et al. [35] demonstrated that gain-framed messages are more effective for consumers in individualistic cultures, while loss-framed messages are more effective for those in collectivistic cultures. Elliott, Meng, and Hall [29], who investigated consumers' technology acceptance by culture, showed that American consumers focus on the positive aspects of innovative

technology, such as its benefits, while Chinese consumers emphasize the negative aspects, such as losses caused by technology.

Because of these cultural differences, we expected American consumers to perceive the benefits of products through online ratings. That is, American consumers were expected to perceive more pleasure through consumption when online product ratings are positive, increasing their purchase intentions. In contrast, Chinese consumers were expected to infer the size of losses based on online product ratings. This means that they perceive less loss from products when they are reviewed positively. Therefore, we expected that Chinese consumers will experience less spending pain as online product ratings become more positive, increasing purchase intentions.

2.3. *The Role of Self-Congruity*

Consumers do not simply identify a brand as the name of a corporate product. Rather, they perceive brands as having personalities similar to people [36] and form relationships with them [37]. If the relationships between consumers and brands are strong, consumers identify with the brand and perceive it as a partner, indicating that the brand is strongly connected to the consumer's self [37]. The congruence between a consumer's self and a brand's image is a representative concept explaining the relationship between consumers and brands. Congruence between an individual and a brand is defined as the degree to which a consumer's self-concept is similar to the image of a product or brand [38]. High congruence between an individual and a brand's image means that consumers perceive their self-image and the brand's image as similar. Previous studies have shown that this congruence positively affects consumers' attitudes and purchases, such as advertising effectiveness, brand loyalty, and purchase intentions [38,39]. For example, Aw et al. [40] confirmed that high congruence between consumers and brands positively impacts brand loyalty and purchase intention. Similarly, Bagaskara and Marsasi [41] found a positive correlation between congruence and consumers' trust in brands. The consistent findings from previous studies suggest that self-congruence is a crucial factor in strengthening the consumer-brand relationship and is an essential element to consider in consumer purchase decisions.

The congruence between consumers and brands is divided into self-congruity and ideal congruity, depending on the type of self the brand is connected to. A consumer's self includes their actual and ideal self [42]. The actual self refers to consumers' current appearance, and self-congruity is the congruity between a consumer's actual self and a brand's image. When self-congruity is high, consumers attempt to satisfy self-consistency through the brand. In contrast, the ideal self refers to what consumers want to become, and ideal congruity refers to the congruence between consumers' ideal self and the brand image. When ideal congruity is high, consumers attempt to enhance their self-esteem through a brand [43,44]. Although both self-congruity and ideal congruity significantly influence consumers' purchasing decisions, the two congruities are also impacted by other factors. For example, ideal congruity is more important in situations where products have high visibility [45]. In contrast, self-congruity has a relatively stronger influence on the relationship between the self and the brand [46]. In this study, we proposed self-congruity, which refers to the consistency between the actual self and a brand's image, as a key variable and examined the effect of online product ratings based on the influence of self-congruity on the consumer-brand relationship.

In this study, we expected that the influence of online product ratings and culture on consumers' consumption-related emotions and purchase intentions will depend on self-congruity. As mentioned above, a high level of self-congruity causes consumers to perceive that the brand is similar to them and is included in their in-group. We expected that the relationship between consumers and brands will affect the impact of online product ratings. However, we anticipated that the influence of self-congruity will not always be strong and that it will be greater for Chinese consumers, who are more sensitive to relationships than American consumers. In this regard, Ahn and Lee [2] showed that independent consumers,

such as those in American culture, have greater purchase intentions when online ratings are positive, regardless of the type of relationship. However, interdependent consumers, such as those in Chinese culture, were only influenced by online ratings from their in-group. This means that the consumer–brand relationship has a stronger influence on Chinese consumers than American ones.

2.4. Research Hypotheses

This study examined the influence of online product ratings, culture, and self-congruity on consumers' consumption-related emotions and purchase intentions. First, this study anticipated that the impact of online product ratings on consumers' consumption-related emotions will vary by culture. Specifically, for American consumers, who are more sensitive to gains, product ratings are expected to be associated with consumption pleasure. In contrast, for Chinese consumers, who are more sensitive to losses, product ratings are likely to be linked to spending pain [17,33]. Therefore, the influence of online product ratings on consumption pleasure was expected to occur only for American consumers, while the influence on spending pain was expected to occur only for Chinese consumers.

2.4.1. Pleasure of Consumption

As mentioned above, the influence of online product ratings on the pleasure associated with consumption was expected to be stronger for American consumers than Chinese ones. American consumers have individual tendencies, focusing on new ideas and the benefits they will gain [17,33]. Therefore, the higher the online product rating, the more pleasure these consumers will feel from consumption, regardless of self-congruity. American consumers' individualistic behavior means they are relatively less influenced by self-congruity; thus, a high online product rating indicates the amount of benefits they will receive is greater [2]. In contrast, Chinese consumers have collectivist tendencies, focusing on the losses or costs they will incur. In other words, they are more sensitive to losses than to gains [17,30]. This means that these consumers place more weight on the pain associated with spending money than on the pleasure of consumption when making purchase decisions. Thus, online product ratings and self-congruity will not impact their pleasure from consumption. Based on this, the following hypotheses are presented.

Hypothesis 1 (H1). *American consumers experience more pleasure from consumption when online product ratings are high than when they are low, irrespective of self-congruity.*

Hypothesis 2 (H2). *Chinese consumers' pleasure from consumption is not influenced by online product ratings and self-congruity.*

2.4.2. Spending Pain

Regarding the pain associated with spending money, the influence of online product ratings is expected to be stronger for Chinese consumers than American ones. Furthermore, we expect that self-congruity will moderate the influence of online product ratings. When self-congruity is high, Chinese consumers will experience less spending pain regardless of online product ratings. High self-congruity indicates that consumers have a strong relationship with a brand. According to previous studies, consumers with collective tendencies follow the opinions of their in-group regardless of their evaluation of a product, as they perceive a sense of belonging when complying with the opinions of their in-group [2]. The sense of belonging in a relationship alleviates the spending pain perceived by consumers [13]. Thus, Chinese consumers who prioritize relationships act in a way that strengthens their sense of belonging with brands due to strong self-congruity. Furthermore, they perceive less spending pain regardless of online product ratings. In other words, online product ratings do not influence spending pain. However, when self-congruity is low, the relationship with a brand no longer provides a purchasing reason. Therefore, online product ratings are expected to affect the negative feelings associated with spending

money. That is, when product ratings are low, making it difficult to justify a purchase, the spending pain will increase. Based on this, the following hypotheses are presented.

Hypothesis 3 (H3). *Online product ratings and self-congruity do not influence American consumers' spending pain.*

Hypothesis 4 (H4). *Chinese consumers' spending pain varies depending on online product ratings and self-congruity (interaction effect).*

Hypothesis 4a (H4a). *When self-congruity is high, online product ratings do not impact Chinese consumers' spending pain.*

Hypothesis 4b (H4b). *When self-congruity is low, Chinese consumers experience more spending pain when online product ratings are low than when they are high.*

2.4.3. Purchase Intentions

As mentioned above, we expected American consumers to experience more pleasure from consumption when online product ratings are high, regardless of their self-congruity. Therefore, American consumers will have more positive purchase intentions when online product ratings are high, regardless of their self-congruity. In contrast, we expected that Chinese consumers to experience spending pain differently depending on online product ratings and self-congruity. Therefore, their purchase intentions also vary depending on the two variables. That is, when self-congruity is high, online product ratings do not influence purchase intentions, but when self-congruity is low, purchase intentions increase when ratings are high. Based on this, the following hypotheses are presented.

Hypothesis 5 (H5). *American consumers have more positive purchase intentions when online product ratings are high than when they are low, irrespective of self-congruity.*

Hypothesis 6 (H6). *Chinese consumers' purchase intentions vary depending on online product ratings and self-congruity (interaction effect).*

Hypothesis 6a (H6a). *When self-congruence is high, online product ratings do not impact Chinese consumers' purchase intentions.*

Hypothesis 6b (H6b). *When self-congruence is low, Chinese consumers have increased purchase intentions when online product ratings are high than when they are low.*

Finally, consumption emotions are key in promoting or inhibiting purchases [12,13]. That is, consumers who experience more pleasure from consumption are likelier to purchase products, while those who experience more pain due to costs are likelier to hesitate to purchase. This suggests that the influence of online product ratings, culture, and self-congruity on purchase intentions is driven by consumption-related emotions. Therefore, the following hypothesis is presented along with this study's conceptual model (see Figure 1).

Hypothesis 7 (H7). *The interactive effect of online product ratings, culture, and self-congruity on purchase intentions is mediated by the pleasure of consumption and the spending pain.*

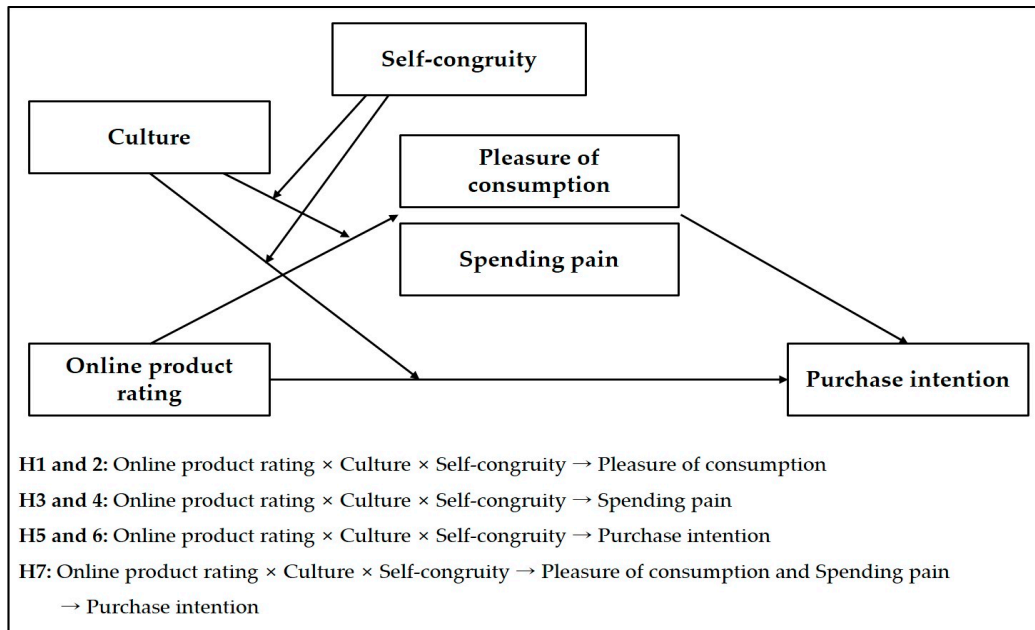


Figure 1. Conceptual model.

3. Methods

3.1. Data Collection

This study investigated how the effect of online ratings varies according to cultural differences and self-congruity. To understand the mechanism underlying this influence, we examined the mediating roles of consumption pleasure and spending pain. We used PROCESS macro model 12 to conduct this analysis. Specifically, online product ratings were set as the independent variable, with culture and self-congruity as moderator variables, consumption pleasure and spending pain as mediators, and purchase intention as the dependent variable. A bootstrapping analysis was performed using 10,000 resamples [47], and the data were analyzed with SPSS version 21.0.

To prevent the dilution of cultural influences that could arise when subjects’ nationality differs from the country they currently reside in, we conducted the survey targeting local residents in the United States and China. A total of 394 subjects participated in the experiment, of which 200 were Americans recruited through Amazon Mechanical Turk (mean age = 34.00 years, SD = 7.28, range = 20–56), and 194 were Chinese recruited through Wenjuanxing (mean age = 33.43 years, SD = 8.32, range = 20–67). The survey was conducted from 28 August to 31 August 2024. The subjects’ specific characteristics are presented in Table 1.

Table 1. Sample characteristics.

American Subjects				Chinese Subjects			
Characteristics		N	%	Characteristics		N	%
Gender	Male	88	44.0	Gender	Male	89	44.3
	Female	112	56.0		Female	108	55.7
Age	20–29	44	22.0	Age	20–29	69	35.6
	30–39	121	60.5		30–39	98	50.5
	40–49	29	14.5		40–49	14	7.2
	50–59	6	3.0		50–59	9	4.6
	≥60	0	0.0		≥60	4	2.1

3.2. Research Procedures and Measurement Items

The experiment participants were informed that they were currently shopping on an online website. They were then presented with a scenario containing information about a product. The product presented to the subjects was earbuds based on the study of Ahn and Lee [2], and the brand and model selected was Samsung’s Galaxy Buds. We selected earbuds as a suitable product category for this study, as they are a relatively mid-priced item that allows for a balanced assessment of both pleasure of consumption and spending payment, this study’s key variables. Samsung is a Korean manufacturing company that does not originate in the subjects’ countries of origin, the United States and China, and Galaxy Buds is a brand familiar to both countries’ subjects, which helps avoid cultural familiarity bias; therefore, it was judged to be suitable as an experimental stimulus. Additionally, the product information presented to the subjects was accompanied by one of two product ratings. The low-rating group was presented with a rating of 2.3 points, while the high-rating group was presented with a rating of 4.8 points (see Appendix A). The pretest results (n = 39) indicated that participants perceived a score of 4.8 (M = 4.84) as significantly higher than a score of 2.3 (M = 3.00; t = -4.354, p < 0.001). Afterward, the subjects responded to a manipulation check item about the product rating, along with items about the pleasure of consumption, spending pain, and purchase intentions (see Table 2). All items were measured using a 7-point Likert-type scale. We selected a 7-point Likert scale as it is well-suited to capturing subtle emotional changes in participants. Previous research has shown that this scale offers high accuracy in measuring complex psychological variables, such as consumption pleasure and spending pain [12]. Finally, the subjects responded to demographic information questions.

Table 2. Measurement items.

Items	Standardized Estimate	C.R.	AVE	Cronbach’s Alpha
[Manipulation Check]				
Perceived Rating Level				
Online reviews from consumers who purchased this product (Galaxy Buds) are positive.	-	-	-	-
[Variables]				
Self-Congruity [44,48]				
The personality of Galaxy Buds is consistent with how I see myself (my actual self).	0.863	0.762	0.616	0.809
The personality of Galaxy Buds is a mirror image of me (my actual self).	0.909			
Pleasure of Consumption [49,50]				
I will feel happy when I purchase the product.	0.916	0.877	0.538	0.967
I will be content when I purchase the product.	0.930			
I will be pleased when I purchase the product.	0.921			
I will feel joyful when I purchase the product.	0.932			
I will be fulfilled when I purchase the product.	0.924			
Spending pain [13]				
I would feel a lot of pain about spending money on purchases right now.	0.896	0.850	0.531	0.954
It would be painful to spend money on this product.	0.920			
I will suffer when I pay for this product.	0.913			
Spending money on this product will actually hurt.	0.893			
I will feel discomfort when I pay for this product.	0.865			

Table 2. Cont.

Items	Standardized Estimate	C.R.	AVE	Cronbach's Alpha
Purchase Intention [51]				
The likelihood of me buying the product (Galaxy Buds) is very high.	0.917			
I would consider buying the product (Galaxy Buds) of this brand.	0.905	0.852	0.590	0.953
The probability that I would like to buy the product (Galaxy Buds) of this brand is very high.	0.912			
My willingness to buy this product (Galaxy Buds) is very high.	0.920			

4. Results

4.1. Validity of Measurement Items

In this study, we tested for common method bias to minimize potential errors that could undermine the validity of the research results due to using the same measurement method [52]. The results of Harman’s single-factor test indicated that the first factor accounted for 28.50% of the variance, which is less than half of the total explained variance. Therefore, we concluded that common method bias is not a concern in this study.

We conducted a confirmatory factor analysis (CFA) using AMOS 27.0 (see Table 2). Overall, the measurement model demonstrated a good fit (CMIN/DF = 2.204, CFI = 0.983, GFI = 0.936, IFI = 0.983, NFI = 0.969, RMSEA = 0.055). The standardized estimates for all measurement items were above 0.8. The composite reliability of the research constructs ranged from 0.765 to 0.877, exceeding the recommended threshold of 0.6 [53,54]. Additionally, the Average Variance Extracted (AVE) ranged from 0.531 to 0.616, surpassing the recommended minimum of 0.5 [53,54]. These results confirm the convergent validity of the model.

4.2. Manipulation Check

A manipulation check of online product ratings was conducted using a 2 (online product rating) × 2 (culture) ANOVA. The ANOVA results for the perceived rating level revealed that the main effect of online product ratings was significant ($F = 294.375, p < 0.001$). The subjects perceived the rating level as higher when the online product rating was high ($M = 5.65$) than when it was low ($M = 3.13$). The influence of other variables was not significant (all, $p > 0.1$). This indicates that the online product rating was appropriately manipulated.

4.3. Pleasure of Consumption (H1 and H2)

The PROCESS macro model 12 was utilized to verify the influence of online product ratings, culture, and self-congruity on the pleasure of consumption, spending pain, and purchase intention (Hypothesis 1–6) and the moderated mediating effect (Hypothesis 7). A bootstrapping analysis with 10,000 resamples was used with online product ratings as independent variables, culture and self-congruity as moderator variables, pleasure of consumption and spending pain as mediators, and purchase intention as a dependent variable [47]. The results confirmed using PROCESS macro model 12 are presented in Table 3.

The regression analysis results on the pleasure of consumption (see Table 3) showed significant main effects of online product ratings ($\beta = 8.05, t = 4.12, p < 0.001$) and culture ($\beta = 5.45, t = 2.48, p < 0.05$). The main effect of self-congruity was not significant ($\beta = 0.74, t = 1.24, p > 0.1$). More importantly, the three-way interaction effect of the three variables was significant ($\beta = 0.53, t = 2.05, p < 0.05$). To examine the effects of online product ratings and self-congruity on pleasure of consumption among American consumers (Hypothesis 1) and Chinese consumers (Hypothesis 2), we analyzed the interaction effects across cultural groups. The analysis of the interaction effect revealed that pleasure of consumption varied according to online product ratings for American subjects regardless of self-congruity (see Figure 2). That is, in both the low self-congruity cases ($-1\text{ SD} = 3.71$; low online product

rating: 3.38 vs. high online product rating: 6.08; $\beta = 2.69, t = 8.41, p < 0.001$) and the high self-congruity cases (+1 SD = 6.46; low online product rating: 3.57 vs. high online product rating: 5.90; $\beta = 2.33, t = 7.50, p < 0.001$), the subjects experienced more pleasure of consumption when the online product rating was high than when it was low. This supports Hypothesis 1. However, among the Chinese subjects, the pleasure of consumption varied by online product rating and self-congruity. Specifically, in the cases of low self-congruity, Chinese subjects did not perceive pleasure of consumption differently depending on the online product rating (low online product rating: 3.95 vs. high online product rating: 3.76; $\beta = -0.20, t = -0.53, p > 0.1$), but in the cases of high self-congruity, they perceived more pleasure of consumption when the online product rating was high ($M = 5.04$) than when it was low ($M = 4.13$; $\beta = 0.91, t = 2.36, p < 0.05$). This means that Hypothesis 2, which predicted that Chinese consumers' pleasure of consumption does not vary depending on online product ratings and self-congruity, was rejected.

Table 3. Results of regression analysis using PROCESS macro model 12.

Dependent Variables	Pleasure of Consumption		Spending Pain		Purchase Intention	
	β	t	β	t	β	t
Pleasure of Consumption (Mediator)	-	-	-	-	0.52	15.42 ***
Spending Pain (Mediator)	-	-	-	-	-0.12	-3.80 ***
Online Product Ratings (A)	8.05	4.12 ***	3.66	1.78	-0.32	-0.24
Culture (B)	5.45	2.48 *	7.05	3.05 **	-4.13	-2.78 **
Self-Congruity (C)	0.74	1.24	1.54	2.47 *	-1.02	-2.57 *
A × B	-4.87	-3.59 *	-3.13	-2.20 *	1.85	2.01 *
A × C	-0.66	-1.80	-0.66	-1.71	0.42	1.69
B × C	-0.54	-1.28	-1.24	-2.82 **	1.11	3.96 ***
A × B × C	0.53	2.05 *	0.54	1.98 *	-0.49	-2.82 **

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

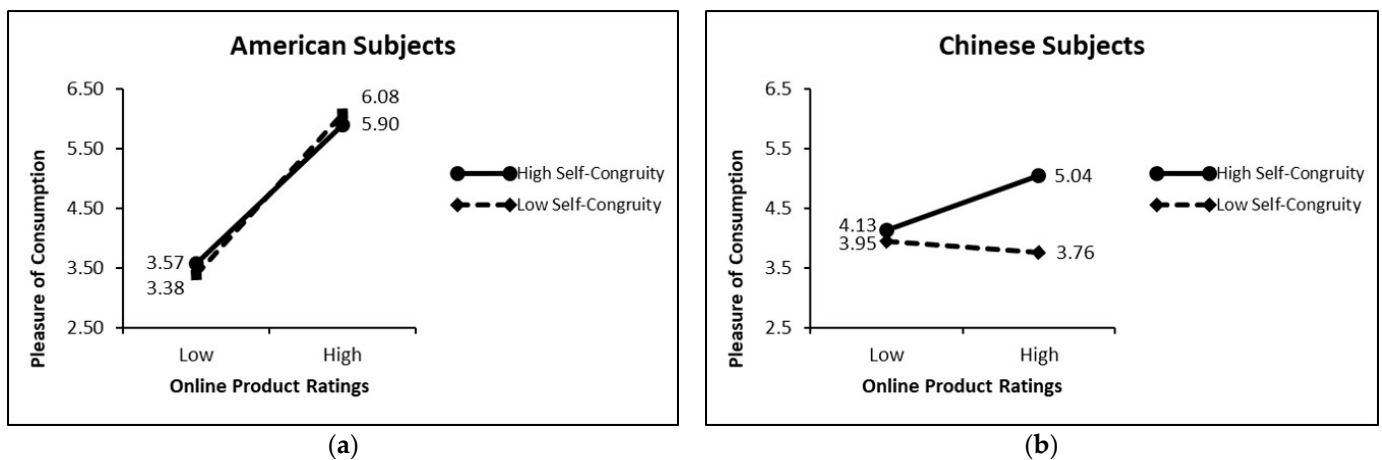


Figure 2. Interaction effects on pleasure of consumption: (a) American subjects; (b) Chinese subjects.

4.4. Spending Pain (H3 and H4)

The regression analysis results on spending pain (see Table 3) revealed that the main effect of online product ratings was not significant ($\beta = 3.66, t = 1.78, p > 0.1$), but the main

effects of culture ($\beta = 7.05$, $t = 3.05$, $p < 0.01$) and self-congruity ($\beta = 1.54$, $t = 2.47$, $p < 0.05$) were significant. Additionally, the interaction effect of the three variables was significant ($\beta = 0.54$, $t = 1.98$, $p < 0.05$). To examine the effects of online product ratings and self-congruity on spending pain among American consumers (Hypothesis 3) and Chinese consumers (Hypothesis 4), we analyzed the interaction effects across cultural groups. The analysis of the interaction effect revealed that the spending pain among American subjects was not affected by online product ratings and self-congruity (see Figure 3). Specifically, spending pain did not differ by online product rating in both the low self-congruity cases (low online product rating: 2.95 vs. high online product rating: 3.03; $\beta = 0.08$, $t = 0.24$, $p > 0.1$) and high self-congruity cases (low online product rating: 3.44 vs. high online product rating: 3.19; $\beta = -0.25$, $t = -0.76$, $p > 0.1$). Therefore, Hypothesis 3, which predicted that American consumers' spending pain does not vary depending on online product ratings and self-congruity, was supported. However, the spending pain of Chinese subjects varied by both online product rating and self-congruity. Specifically, in cases with low self-congruity, Chinese subjects experienced more spending pain when their online product ratings were low ($M = 4.28$) than when they were high ($M = 3.23$; $\beta = -1.05$, $t = -2.71$, $p < 0.01$), but in cases with high self-congruity, they did not feel different spending pain depending on the online product rating (low online product rating: 2.85 vs. high online product rating: 2.96; $\beta = 0.11$, $t = 0.26$, $p > 0.1$). These findings supported Hypotheses 4a and b.

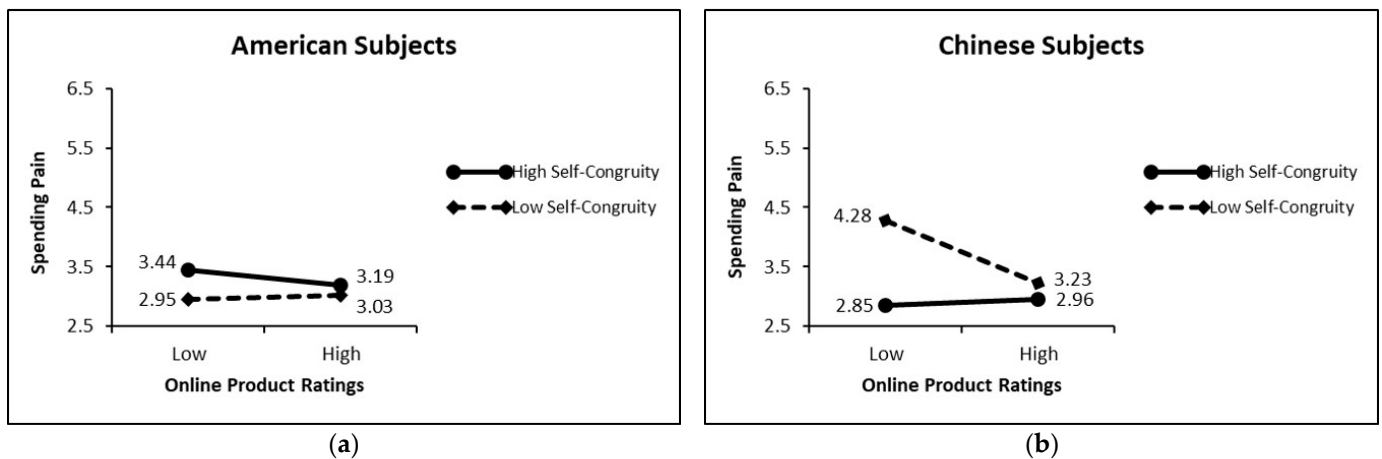


Figure 3. Interaction effects on spending pain: (a) American subjects; (b) Chinese subjects.

4.5. Purchase Intentions (H5 and H6)

The regression analysis results associated with purchase intention (see Table 3) indicated that the effects of pleasure of consumption ($\beta = 0.52$, $t = 15.42$, $p < 0.001$) and spending pain ($\beta = -0.12$, $t = -3.80$, $p < 0.001$), which were entered as mediating variables, were significant. Additionally, the main effect of online product rating was not significant ($\beta = -0.32$, $t = -0.24$, $p > 0.1$), but the main effects of culture ($\beta = -4.13$, $t = -2.78$, $p < 0.01$) and self-congruity ($\beta = -1.02$, $t = -2.57$, $p < 0.05$) were significant. More importantly, the three-way interaction effect of the three variables was significant ($\beta = -0.49$, $t = -2.82$, $p < 0.01$). To examine the effects of online product ratings and self-congruity on purchase intentions among American consumers (Hypothesis 5) and Chinese consumers (Hypothesis 6), we analyzed the interaction effects across cultural groups. Analysis of the interaction effect revealed that the purchase intention of American subjects varied according to online product ratings regardless of self-congruity (see Figure 4). That is, in both the low self-congruity cases (low online product rating: 3.90 vs. high online product rating: 5.16; $\beta = 1.26$, $t = 5.45$, $p < 0.001$) and the high cases (low online product rating: 3.95 vs. high online product rating: 5.01; $\beta = 1.06$, $t = 4.80$, $p < 0.001$), the higher the online product rating, the more positive the purchase intention. Therefore, Hypothesis 5 was supported. However, the purchase intention of Chinese subjects varied according to both online product ratings

and self-congruity. Specifically, in the case of low self-congruity, Chinese subjects had more positive purchase intentions when the online product rating was high ($M = 5.22$) than when it was low ($M = 3.92$; $\beta = 1.30$, $t = 5.27$, $p < 0.001$), but in the case of high self-congruity, their purchase intentions did not vary across online product ratings (low online product rating: 5.68 vs. high online product rating: 5.44; $\beta = -0.25$, $t = -0.97$, $p > 0.1$). Therefore, Hypotheses 6a and b were supported.

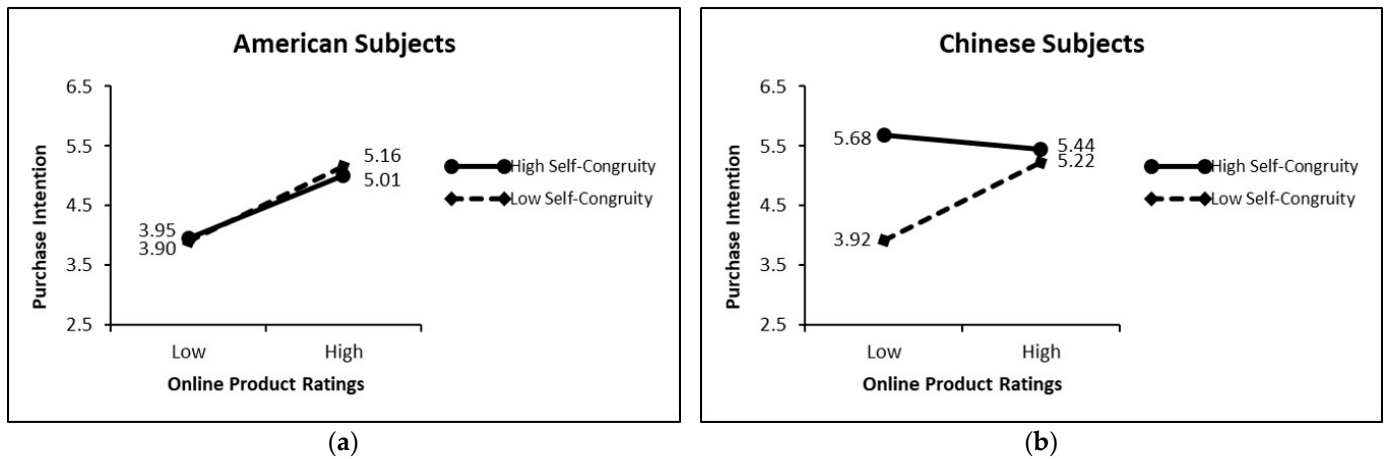


Figure 4. Interaction effects on purchase intention: (a) American subjects; (b) Chinese subjects.

4.6. Moderated Mediation Analysis (H7)

To verify Hypothesis 7, which predicted the mediating effect of pleasure of consumption and spending pain, a moderated mediation analysis was conducted. The results indicated that both the mediating effects of pleasure of consumption and spending pain were significant. That is, the indirect effects of the pleasure of consumption (indirect effect = 0.28, 95% CI: 0.01–0.58) and spending pain (indirect effect = -0.07, 95% CI: -0.16–0.01) were significant. This indicates that the interaction effects of online product ratings, culture, and self-congruity on purchase intention were caused by the pleasure of consumption and spending pain. Therefore, Hypothesis 7 was supported.

To specifically examine the mechanism of the effect of online product ratings according to consumers’ culture, the individual paths were assessed according to culture (see Table 4). As a result, the effect of online product ratings of American subjects was confirmed to have been caused by the pleasure of consumption, whereas the effect of online product ratings of Chinese subjects was caused by spending pain, not the pleasure of consumption.

Table 4. Conditional indirect effects.

American Subjects					
Self-Congruity	IV	MV	DV	Indirect Effect	95% CI
Low	Online product rating	Pleasure of consumption	Purchase intention	1.40	1.08~1.77
High				1.21	0.87~1.57
Low	Online product rating	Spending pain	Purchase intention	-0.01	-0.09~0.06
High				0.03	-0.05~0.15
Chinese Subjects					
Low	Online product rating	Pleasure of consumption	Purchase intention	-0.10	-0.51~26
High				0.47	-0.01~0.98
Low	Online product rating	Spending pain	Purchase intention	0.13	0.05~0.27
High				-0.01	-0.11~0.10

Note: IV = independent variable, MV = mediating variable, DV = dependent variables, CI = confidence interval.

5. Discussion

5.1. Summary

This study investigated the influence of online product ratings, culture, and self-congruity on consumers' purchase intention. The results revealed the interaction effects of online product ratings, culture, and self-congruity. Specifically, American consumers felt more pleasure of consumption when online product ratings were high than when they were low, regardless of their self-congruity, and as a result, had more positive purchase intentions. In contrast, Chinese consumers were influenced by self-congruity. When their self-congruity with the brand was high, Chinese consumers felt less spending pain and thus had relatively positive purchase intentions regardless of online product ratings. An interesting observation is that contrary to our prediction, when self-congruity was high, Chinese consumers felt the pleasure of consumption more when online product ratings were also high. This indicates that when self-congruity was high, Chinese consumers inferred the size of utility they could obtain from the product through online product ratings. However, the moderated mediation analysis results demonstrated that the pleasure of consumption did not lead to purchase intentions among Chinese consumers. Finally, when self-congruity with the brand was low, Chinese consumers felt less spending pain when the online product rating was high than when it was low, leading to more positive purchase intentions.

5.2. Academic Implications

This study had the following academic implications. First, it examined the role of consumption-related emotions, pleasure of consumption, and spending pain related to the influence of online product ratings on consumers' purchase decisions. Although consumers' consumption-related emotions are variables that directly affect their purchase likelihood, prior research on consumption-related emotions in the context of online shopping has been very limited. In response, this study expanded research on consumption-related emotions and social influence in online shopping by revealing that online product ratings can affect consumers' consumption-related emotions.

Second, this study revealed that the differences in consumption emotions and purchase intentions according to online product ratings vary depending on culture. In the case of American consumers, online product ratings led to purchase intentions through the pleasure of consumption, while in the case of Chinese consumers, they led to purchase intentions through spending pain. These findings are similar to the cultural influences on gains and losses described in previous studies. Furthermore, this study presented a differentiated result by revealing that the cultural influence on gains and losses leads to consumption emotions. Thus, this study contributed to the research on consumption emotions and culture while also enhancing the diversity of research on social cues in online shopping by applying insights from two distinct fields.

Finally, this study confirmed the role of self-congruity. In particular, it found that the relationship between consumers and brands based on self-congruity leads to the same results as found with group type (in-group vs. out-group). Through this, this study contributed to the research on self-congruity and social influence. By revealing that the influence of self-congruity varies depending on culture, this study provided meaningful academic implications.

5.3. Practical Implications

This study had several practical implications. First, its results revealed that consumers can feel consumption-related emotions even in an online shopping environment. Therefore, companies should consider ways to increase the pleasure of consumption and alleviate spending pain when consumers try to purchase products on online shopping platforms. In this regard, this study's results demonstrated that online product ratings, which function as social cues, can be a solution.

Second, this study revealed that the emotions experienced in online shopping differ depending on cultural differences among consumers. While purchases by American consumers are associated with the pleasure of consumption, which is an emotion related to the obtainable utility of a product, purchases by Chinese consumers are associated with the alleviation of spending pain, which is an emotion related to the cost that must be sacrificed to acquire a product. This suggests that companies should consider their customers' culture when providing products or services to consumers. Thus, while American consumers should be provided with information or cues that can enhance the perception of product quality, Chinese consumers should be provided with cues that can reduce the uncertainty or the pain of paying that they feel.

Finally, the results of this study again demonstrated the importance of brands. In particular, brands are more important to consumers in collectivist societies such as China. According to this study's results, Chinese consumers rely more on spending pain than pleasure of consumption when purchasing products in an online shopping environment. Therefore, companies should consider methods to reduce spending pain for Chinese consumers. For example, brands with strong relationships with consumers play a role in reducing their spending pain; thus, companies can alleviate consumers' spending pain and foster purchases by building their own brands' strength.

5.4. Limitations and Future Research Directions

Although this study provided academic and practical implications, it has several limitations. Therefore, we suggest the following directions for future research. First, the product presented to the subjects in this study was earbuds. Future research should utilize more diverse product categories as experimental stimuli. Notably, price levels presented to consumers vary depending on the product category and relatively expensive products may increase the spending pain perceived by consumers. Therefore, future research should conduct experiments considering the relationship between product price levels and spending pain.

Second, in this study, Samsung Galaxy was selected as a brand and presented to the subjects. Consumers may perceive different personalities associated with various brands and may perceive characteristics such as warmth or competence differently. Therefore, future research should examine brands with varying characteristics to strengthen the generalizability of this study's findings.

Third, in this study, we used Amazon MTurk and Wenjuanxing to recruit participants. While both platforms are commonly used in behavioral research, they may introduce a bias due to participants' familiarity with e-commerce, particularly among those with prior online shopping experience. Therefore, future studies could explore more diverse and valid methods for both experimental designs and participant recruitment.

Fourth, in this study, only online product ratings were used as social cues presented to consumers. However, various social cues can be presented to consumers, such as the number of buyers, the number of reviews, and the direction of reviews, in addition to ratings. Future research should examine whether other social cue types can play the same role in online product ratings.

Finally, in an online shopping environment, consumers' purchases may be influenced by who wrote the reviews presented. However, this study did not provide reviewer characteristics to the subjects. Future research could provide more meaningful implications for companies by examining whether reviewer characteristics, such as being an expert or an in-group member, affect the research results.

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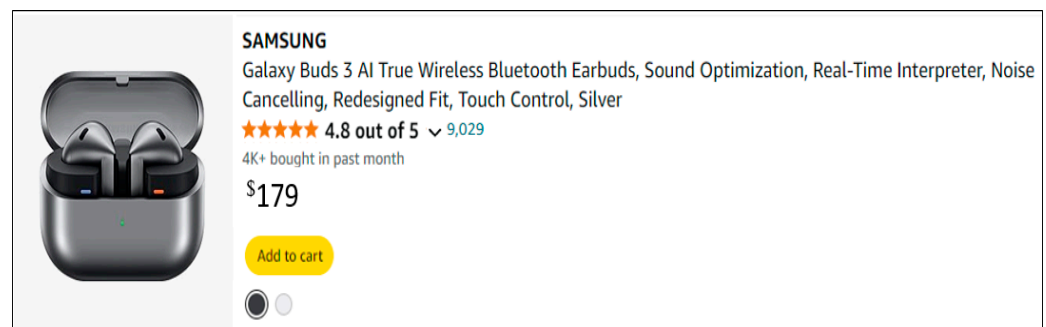
Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.

Data Availability Statement: The data are available from the corresponding author upon request.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. Examples of Experimental Stimuli

Appendix A.1. American Version (High Rating Condition)



Appendix A.2. Chinese Version (Low Rating Condition)



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