



Print ISSN: 2233-4165 / online ISSN 2233-5382
 JIDB website: <http://www.jidb.or.kr>
 doi: <http://dx.doi.org/10.13106/jidb.2021.vol12.no10.7>

Angular or Rounded? The Influence of Social Exclusion on Consumers' Shape Preference

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Received: August 04, 2021. Revised: September 12, 2021. Accepted: October 05, 2021.

Abstract

Purpose: Studies on social exclusion from a sensory perspective are rather limited in state-of-the-art literature, especially in exploring the relationship between social exclusion and shape preference from a sensory marketing perspective. The present study aims to explore the effect of social exclusion on consumers' shape preference (angular vs. rounded) and the underlying mechanism. **Research design, data and methodology:** The relationship between social exclusion and consumers' shape preference was investigated in Study 1 using a one-way between-subject design (being excluded vs. being included), and the mediation effect of sense of control has been examined in Study 2 via a between-subjects design (being excluded vs. being included) \times 2 (angular vs. rounded). Both studies were conducted on the Credamo data platform in China, and evaluated by one-way ANOVA. **Results:** The results showed socially excluded consumers prefer the product with angular design rather than socially included consumers, and this effect can be mediated by sense of control. **Conclusions:** This paper contributes academically for investigating the research area of the sense of control and explores the influence of the control needs of humans on consumer behaviors. Furthermore, it also clarifies new potential psychological role of shape preference - the recovery of the sense of control - to enrich the psychological mechanisms of shape preference.

Keywords: Social Exclusion, Sensory Marketing, Sense of Control, Shape Preference

JEL Classification Code: C83, C90, M31

1. Introduction

Facebook, the internet design giant, has repeatedly adjusted its brand logo design, switching from a square border at the beginning to a rounded border recently. Another international company, well-known for its cell phone and smart hardware platform at its core, Xiaomi Inc. also recently launched a new logo, replacing angular edges with rounded one. A similar event also happened at Lays Inc., an enterprise famous for its potato chips and snack foods. It changed the brand logo design several times, and the most recent adjustment uses a background image of a rounded design to substitute for the angular background image.

Although there are thousands of shapes, they generally can be classified as rounded, angular, or some combination. Specifically, rounded shapes refer to shapes being curved without sharp angles (e.g., oval or circular), while angular shapes consist of straight lines and pointed shapes (e.g., triangles or squares) (Jiang, Gorn, Galli, & Chattopadhyay, 2016). It has been found that consumers have a natural preference for shapes and tend to choose rounded shapes over angular rows (Bar & Neta, 2007; Westerman, Gardner, Sutherland, & White, 2012). However, actual consumption is influenced by factors such as self-construal (Zhang, Feick, & Price, 2006), individual gender (Ding, Pang, & Wang, 2019), shape and taste, auditory and olfactory sensory organs (Becker, van Rompay, Schifferstein, & Galetzka, 2011). Most preceding studies have focused on how individual trait differences affect individual preference for

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angles or rounded arcs, whereas less attention has been paid to the influence of social-environmental cues on shape. Social exclusion is also a key variable in situational factors influencing consumer preferences, although less intensively studied. Thus, this paper focuses on the influence of social exclusion on shape preferences in social contexts, with the motivation to clarify the underlying mechanism.

In real life, social exclusion can be found everywhere. A bank rejects your credit card application, or a membership club refuses your membership application; a store clerk is busy with other customers while simply ignoring you. Existing research has found that social rejection not only activates brain regions responsible for pain perception, but also threatens individual's need for a sense of control (Mandel, Rucker, Levav, & Galinsky, 2017; Cutright & Samper, 2014). Therefore, the present study starts from how to repair the negative effects of social exclusion on individuals, before exploring the preference of excluded individuals for different shapes (rounded vs. angular).

Social exclusion widely exists in daily life and can cause significant negative effects on people's physiology, psychology, and behavior (Maner, DeWall, Baumeister, & Schaller, 2007; Williams, 2007). From a marketing perspective, the excluded respond to social exclusion by purchasing showy products, seeking unique products, or involving in conformity consumption behavior (Lee & Shrum, 2012; Mead, Baumeister, Stillman, Rawn, & Vohs, 2010; Wan, Xu, & Ding, 2014). Another tendency is to be likely to touch warm or soft products. For example, tactile warmth can reduce people's feelings of rejection (Murphy & Dweck, 2016), touching a soft teddy bear can effectively reduce negative emotions after social rejection (Tai, Zheng, & Narayanan, 2011). Individuals who experience social rejection are more likely to buy products with anthropomorphic features (Chen, Wan, & Levy, 2017). However, there are rather limited studies on social exclusion from a sensory perspective in the psychological literature. Thus, in the field of marketing, much effort is required to explore the relationship between social exclusion and shape preference from a sensory marketing perspective. On this basis, this study explores consumers' shape preferences after experiencing social exclusion from the perspective of sensory marketing.

Based on the above analysis, the state-of-the-art literature is firstly reviewed regarding social exclusion on consumer's shape preference, before introducing the conceptual framework and the hypotheses. Afterwards, two studies have been designed and carried out to test the proposed hypotheses. The derived findings are comprehensively analyzed by one-way ANOVA to verify our hypotheses. This is followed by the descriptions of the theoretical contributions and managerial implications of our

work. Finally, the limitations of the present study as well as directions for future research was discussed.

2. Theoretical Background and Hypotheses Development

2.1. Consumers' Shape Preference

In the current comparative study on shapes, scholars mainly classify shapes into categories of rounded and angular: rounded shapes are those with mainly rounded curves but no sharp angles (e.g., circle, oval, etc.); angular shapes are those with a combination of straight lines and sharp angles (e.g., triangles, squares, etc.). The discussion of consumer shape preference, brand representation, and brand graphic design has generally focused on consumer preference for angular and rounded shapes (Zhang, Feick, & Price, 2006).

On the perceptual level of aesthetics, rounded designs present a friendly, approachable feeling (Bertamini, Palumbo, Gheorghes, & Galatsidas, 2016). In contrast, angular shapes can deliver a sense of seriousness, aggression, and threat, representing power and individuality (Aronoff, Woike, & Hyman, 1992; Bar & Neta, 2007; Bloch, Brunel, & Arnold, 2003). Psychological studies have shown that people generally prefer rounded shapes rather than angular ones (Bar & Neta, 2007; Silvia & Barona, 2009). Aronoff, Woike, and Hyman (1992) found that rounded body postures and facial expressions conveyed warmth, while angular body postures conveyed threat. In addition, Bar and Neta (2009) found that angular objects, as opposed to rounded objects, can cause higher levels of activation in the amygdala. This is a nucleus in the human brain processing the feeling of fear, which makes individuals feel threatened.

Research has found that content factors also affect consumers' shape preferences: rounded can bring a friendly, kind feeling, representing a harmonious relationship with the surroundings, stimulating people's need for a sense of belonging; On the contrary, angular brings an aggressive feeling, representing a confrontational relationship with the surroundings, and people's need for uniqueness. Therefore, the shape of angular is often associated with uniqueness (Zhu & Argo, 2013). In addition, research on brand identity shows that rounded product design creates soft associations and attracts consumers who seek comfort, while angular product design creates hard associations and attracts consumers who seek durability (Jiang, Gorn, Galli, & Chattopadhyay, 2016).

2.2. Social Exclusion

As one of the most prevalent social phenomena, social exclusion is widespread in all aspects of modern life (Nezlek, Wesselmann, Wheeler, & Williams, 2015). Research studies show that 78% of adults have experienced various social exclusion at work (O'Reilly, Robinson, Berdahl, & Banki, 2015), and one may exclude others 25,000 times in their lifetime. Social exclusion is a social phenomenon in which individuals are excluded by other people or groups in society. This includes direct exclusion or rejection from other individuals or groups, indirect disregard or isolation (Leary, 1990; Twenge, Baumeister, Tice, & Stucke, 2001; Williams, 2007), and even angry facial expressions. Consequently, their need for belonging is threatened.

Physiologically, social exclusion can cause negative physiological effects on the excluded person, such as increased blood pressure (Stroud, Tanofsky-Kraff, Wilfley, & Salovey, 2000), decreased sleep quality, and decreased immune system function (Cacioppo, Hawkey, Bernston, Ernst, Gibbs, Stickgold, & Hobson, 2002), which endanger the physiological health of the excluded person. Social exclusion can also directly trigger negative psychological reactions, such as anxiety, loneliness, jealousy, depression, and other negative emotions (Leary, 1990). In order to alleviate such negative effects, individuals will try different manners. For instance, the excluded may adopt pro-social behaviors to reestablish social connections or to be socially accepted (Lee & Shrum, 2012; Williams, Cheung, & Choi, 2000). Specifically, the excluded may imitate the behaviors of others (Lakin, Chartrand, & Arkin, 2008) or alter their characteristics to gain new social connections, such as by broadening or changing their self-concept to incorporate

new traits in potential friends, thereby increasing their similarity to others and working harder to fit in (Richman, Slotter, Gardner, & DeWalle, 2015). Table 1 presents an overview of state-of-the-art literature on social exclusion to show the research advance of the present study.

2.3. Sense of Control and Consumers' Shape Preference

As an individual's needs to demonstrate competence, superiority, self-worth, and control over the environment, a sense of control is one of the fundamental human needs and the primary motivation driving individual behavior (Alloy, Clements, & Koenig, 1993). There is a consistency between the lack of control and people's perception of self-difference (Cutright & Samper, 2014). Under social exclusion, an individual's important self-concept is impacted, and his or her self-integrity is destroyed, leading to uncertainty and uncontrollability about the self and the surrounding environment.

The lack of an individual's self-concept will lead to the lack of individual presence and control (Campbell, Baumeister, Dhavale, & Tice, 2003). Therefore, when consumers are socially excluded, their sense of self-control is reduced. For example, when individuals have a low sense of power, they commonly have a low sense of control over the events they are confronted with (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009). At the same time, Cutright and Samper (2012) have shown that consumers' lack of control motivates them to seek a range of alternative sources of control to compensate for their feeling. Specifically, Compensatory Control Theory (CCT) suggests that when individuals are unable to obtain a sense of control directly from themselves, they tend to seek external sources of

Table 1: Summary of existing research on social exclusion consumer behavior

Source	Research objectives	Main findings
Pieters (2013)	Investigated whether consumers face a "material trap" because social exclusion reinforces materialism.	Consumers tend to acquire more material goods to cope with the isolation caused by exclusion.
Mead et al. (2011)	Investigated whether social exclusion causes people to spend and consume strategically in the service of affiliation.	Social exclusion causes people to spend and consume strategically in the service of affiliation.
Ward & Dahl (2014)	Examined the circumstances in which consumers increase their regard and willingness to pay after brand rejection.	Consumers have more positive attitudes and higher willingness to pay when (1) the rejection comes from an aspirational (vs. non-aspirational) brand.
Chen, Wan, and Levy (2017)	Investigated whether socially excluded consumers are more motivated to build relationships with brands when they exhibit human-like characteristics.	Compared with non-excluded consumers, socially excluded consumers exhibit greater preference for anthropomorphized brands.
Wan et al. (2014)	Investigated whether socially excluded consumers may strategically choose products to differentiate themselves from the majority of others.	Participants perceived the exclusion as having a stable [unstable] cause, socially excluded participants were more [less] likely than choose distinctive products.
This research	Aimed at exploring the effect of social exclusion on consumers' shape preference (angular vs. rounded) and the underlying mechanism.	Compared with socially included consumers, socially excluded consumers are more likely to prefer angular shapes. Sense of control mediates the effect of social exclusion and consumer shape preference.

control (VanBergen & Laran, 2016). Aydin, Fischer, and Frey (2010) have demonstrated that socially excluded individuals showed a strong willingness to adopt religious beliefs as a way to reshape their sense of control. In addition, access to or possession of specific products can help consumers regain a sense of control (Chen, Lee, & Yap, 2017), such as products with boundaries, orderly retail environments (Cutright, 2012), and practical goods (Chen, Lee, & Yap, 2017).

Based on the above analysis, this paper proposes that when individuals are socially excluded, their sense of control decreases. Therefore, they must find effective ways to restore their sense of control. The need for a sense of control is the need for a sense of mastery. For individuals, power and status reflect their ability and control. Lea and Webley (2006) also showed that the advantage of having a higher socioeconomic status means that the individual has more control over himself and his surroundings. Previous research has shown that rounded are symbolic of compromise, friendliness, warmth, and harmony, while angular is symbolic of resistance, strength, threat, aggression, and status (Hoegg, Alba, & Dahl, 2010; Patrick & Hagtvedt, 2011). On this basis, we speculate that, in contrast to products with a rounded design, angular design products symbolize aggression and threat to others, overcoming the potential comfort-related attraction of roundedness.

The pursuit of status is conducive to the individual grasping more resources and control. And the angular type has the function of self-compensation. Therefore, when individuals encounter social exclusion, their sense of control is lacking. Consequently, their tendency to consume status increases, and choosing products with angular design can compensate for the sense of control to strengthen self-affirmation.

Based on the above inferences, the following hypotheses are proposed:

H1: Compared with socially included consumers, socially excluded consumers prefer angular shapes rather than rounded shapes.

H2: Sense of control mediates the effect of social exclusion and consumer shape preference. Specifically, compared with socially included consumers, socially excluded consumers develop stronger needs for a sense of control, resulting in enhanced preference for angular shapes.

3. Overview of Studies

Two studies were conducted to test the above hypotheses (see Fig. 1. for the conceptual framework). Study 1 establishes the main effect: Compared with socially included consumers, socially excluded consumers are more likely to prefer angular shape (H1). Study 2 examines the mediation effect of sense of control (H2).

3.1. Study 1

3.1.1. Design and Procedure

In study 1, we investigated the effect of social exclusion on customers' shape preference. A total of 199 (80 males and 119 females, $M_{age}=29.66$, $SD=6.36$) recruited via Credamo participated in this study for monetary compensation. Participants were randomly assigned to one condition (state of social exclusion: being excluded vs. being included) one-way between-subject design. The experiment consisted of two seemingly independent tasks. The first task was a situational imagery investigation aiming at manipulating individuals of social exclusion and social acceptance, adapting to the experiments by (Wan, Xu, & Ding, 2014). Specifically, participants were asked to read a story and imagine themselves in the situation: "IWE is an international gaming company, and members who successfully apply for membership in the IWE House are entitled to a range of exclusive value-added services. You are interested in joining the IWE Member House and have sent out your application." We then manipulate the two types of social exclusion with different responses, for the rejection group: after one week, you receive a rejection letter

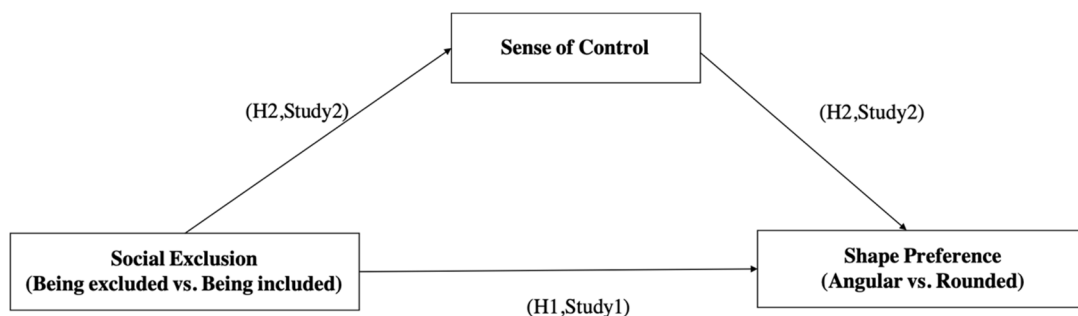


Figure 1. Conceptual framework

from the IWE Member House, and for the inclusion group: after one week, you find that you are warmly welcomed by the IWE Member House. Next, the subjects were asked to record in detail the scene they had just recalled, including what happened and how they felt at the time. The manipulation test scale of Molden, Lucas, Gardner, Dean, and Knowles (2009) was used to measure the extent to which subjects felt rejected and ignored, and the two items of the scale were "To what extent did you feel rejected in the scene you just recalled?" and "To what extent did you feel ignored in the scene you just recalled?" (1=not at all, 7=very strongly, $r=0.92$).

The second experimental task was a product attitude survey. In this task, subjects were shown two types of shoes and then made a purchase choice. The only difference between the two shoes was that one had an angular logo (model A), while the other had a rounded logo (model B) (see Appendix A). Subjects were presented with two types of shoes and then made a purchase choice. The only difference between the two shoes was that one had an angular logo (model A) and the other had a rounded logo (model B), and the two shoes were presented in random order. Next, subjects rated the shape of the two shoes (How would you rate the design style of the shoe logo? 1=very rounded, 7=very angular) and the perceived uniqueness of the logo (how unique do you think the design of these shoes are? 1=very common, 7=unique). Afterward, subjects' emotional feelings during the previous recall task were also measured (Overall, how was your emotional state at that time? 1=very bad, 7=very good) to rule out any possible influence of emotion on the experimental outcome (Williams, Cheung, & Choi, 2000).

Finally, the subjects completed the demographic information and ended the experiment.

3.1.2. Results and Discussion

1) Manipulation Check. Since two types of social exclusion measurements, ignored and rejected, were used for social exclusion, we examined the differences in subjects' perception of social exclusion under the two different measurement and obtain the mean value of the two measures separately. The results showed that subjects in the social exclusion group felt a stronger sense of being neglected compared to those in the social acceptance group ($M_{\text{being excluded-neglect}}=5.82$, $SD=1.04$ vs. $M_{\text{being included-neglect}}=2.13$, $SD=1.40$; $F(1, 197)=447.40$, $p<0.001$); Similarly, subjects in the social exclusion group felt a higher sense of rejection compared to those in the social inclusion group ($M_{\text{being excluded-sense of rejection}}=5.77$, $SD=1.15$ vs. $M_{\text{being included-sense of rejection}}=1.91$, $SD=1.25$; $F(1, 197)=514.61$, $p<0.001$). Afterward, the subjects' neglect scores were averaged with the rejection scores to examine the differences in the perceptions of subjects at different levels of social

exclusion. The results showed that subjects in the social exclusion group felt higher social exclusion compared to those in the social inclusion group ($M_{\text{being excluded}}=5.80$, $SD=0.96$ vs. $M_{\text{being included}}=2.02$, $SD=1.27$; $F(1, 197)=559.70$, $p<0.001$).

2) Shape Perception. Using a one-way ANOVA, it was found that subjects perceived the pattern shape of shoes A ($M_{\text{angular pattern}}=6.17$, $SD=1.03$) to be more angular than the pattern shape of shoes B ($M_{\text{rounded pattern}}=2.07$, $SD=1.51$; $F(1, 198)=656.17$, $p<0.001$, $\eta^2=0.77$), indicating that our manipulation of shape was successful.

3) Confounding (Uniqueness Perception) Check. First, an ANOVA was conducted with social exclusion as the independent variable and subjects' emotions as the dependent variable. The results showed that subjects in the social inclusion group had the significantly higher emotional pleasure ($M_{\text{being included}}=6.10$, $SD=0.79$) than subjects in the social exclusion group ($M_{\text{being excluded}}=4.94$, $SD=1.83$; $F(1, 197)=33.65$, $p<0.001$). There were significant differences in the moods of the different social exclusion groups. Therefore, subjects' moods were used as covariates in the subsequent analyses to control their effects on the study results. Second, subjects' perceptions of the uniqueness of the two patterns A and B were tested as factors for repeated measures, and the results showed that there was no significant difference in subjects' perceptions of uniqueness between product patterns A and B ($M_{\text{A uniqueness perception}}=4.67$, $SD=1.55$ vs. $M_{\text{B uniqueness perception}}=4.53$, $SD=1.56$; $F(1, 198)=0.64$, $p=0.43$), so we ruled out the influence of uniqueness perception on product choice.

4) Product Preference. Logistic regression analysis was conducted with social exclusion as the independent variable (0=included, 1=excluded), product choice as the dependent variable (0=shoes with rounded logo in model B, 1=shoes with angular logo in model A), and subjects' emotions during questionnaire completion as covariates. The results showed that the rejected subjects were more likely to choose shoes with the angular logos than the accepted ones ($\beta=-0.89$, $Wald=8.00$, $p=0.005$). Specifically, in the excluded group, 59.00% of subjects chose shoes with angular logo, compared to 33.33% in the accepted group.

Discussion: The findings of Study 1 support for our proposed hypothesis. Based on the Compensatory Control Theory, the results of study 1 showed that socially excluded subjects prefer angular shapes rather than rounded shapes, thus providing initial empirical support for H1. Extending the findings of study 1, study 2 aims to explore the psychological mechanism underlying the social exclusion effect by testing the mediating effect of a sense of control. Also ruling out potential confounds (such as perceptions of the uniqueness). In study 2, we will use a different stimulus to test the hypothesis again.

3.2. Study 2

3.2.1. Design and Procedure

In Study 2, we recruited 300 adult subjects from Credamo (129 males and 171 females, $M_{age}=29.76$, $SD=5.23$). Participants were randomly assigned to 2×2 conditions (state of social exclusion: being excluded vs. being included) \times (product shape: angular vs. rounded) between-subjects design. The experiment consisted of two seemingly independent tasks. The first task was a situational imagery investigation aiming at manipulating social exclusion, a method adapted from Lu and Sinha (2017) manipulation of social exclusion and inclusion. Specifically, participants were asked to read a story and imagine themselves in the story situation:

This is the beginning of the new semester, and you do not know many people in your class. You are taking a marketing class in which you must work on multiple assignments in groups. You must find 3 students to form a group. After a couple of classes, you decide to ask 3 students, because you have some conversations with these 3 students during/after the class and they are seemingly friendly. You then send an email request to each of these 3 students and ask whether they would like to work together with you for the group assignments. A day later, you receive emails from them, and all students reject (accept) your requests to work in a group together.

After reading this scenario, participants were asked to indicate how rejected and ignored they felt during the experience. The manipulation test scale of Molden, Lucas, Gardner, Dean, and Knowles (2009) was used to measure the extent to which subjects felt rejected and ignored, and the two items of the scale were "To what extent did you feel rejected in the scene you just recalled?" and "To what extent did you feel ignored in the scene you just recalled?" (1=not at all, 7=very strongly, $r=0.92$).

Next, we measured subjects' sense of control in a situational imagery task by adapting the questions (Michinov, 2005). Sample items include "As long as I am determined to do something, I can manage to do it well", and "What I want to do, I can always find a way to complete successfully". (1=strongly disagree, 7=strongly agree, $\alpha=0.89$)

In the final part of the experiment, participants were told that they would like to purchase a watch for themselves. This product selection scenario was adapted from (Vallen, Sridhar, Rubin, Ilyuk, Block, & Argo, 2019) (see Appendix B). Subjects were asked to rate their willingness to buy the watch after looking at the pictures of the watch. The purchase intention scale is based on the "purchase intention scale" used by Dodds, Monroe, and Grewal (1991), (e.g., "I have a very high intention to buy this product" and "The likelihood of purchasing this product is very high.") (1=not

at all, 7=very strongly, $r=0.77$), then report on the mood and demographic variables, before ending the experiment.

3.2.2. Results and Discussion

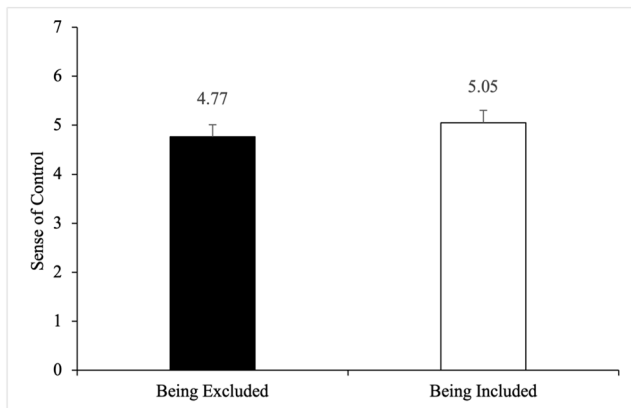
1) Manipulation Check. Social exclusion was measured using two approaches, ignored as well as rejected. Therefore, we examined the differences in subjects' perceptions of social exclusion under the two approaches and the mean of the two measures separately. The results showed that subjects in the social exclusion group felt a stronger sense of being neglected compared to those in the social acceptance group ($M_{\text{being excluded-neglect}}=5.67$, $SD=1.26$ vs. $M_{\text{being included-neglect}}=2.18$, $SD=1.58$; $F(1, 298)=448.75$, $p<0.001$); similarly, subjects in the social exclusion group felt a higher sense of rejection compared to those in the social acceptance group ($M_{\text{being excluded-the sense of rejection}}=6.27$, $SD=1.15$ vs. $M_{\text{being included-the sense of rejection}}=2.05$, $SD=1.74$; $F(1, 298)=614.22$, $p<0.001$). Next, the subjects' neglect scores were averaged with their rejection scores to examine the difference in the perceptions of subjects at different levels of social exclusion. The results showed that subjects in the social exclusion group felt higher social exclusion compared to those in the social acceptance group ($M_{\text{being excluded}}=5.97$, $SD=1.03$ vs. $M_{\text{being included}}=2.11$, $SD=1.61$; $F(1, 298)=609.58$, $p<0.001$).

2) Shape Perception. Using a one-way ANOVA, it was found that subjects perceived the product shape of the square model ($M_{\text{angular pattern}}=6.25$, $SD=0.78$) to be more angular than the rounded model ($M_{\text{rounded pattern}}=2.70$, $SD=1.59$; $F(1, 298) = 603.14$, $p<0.001$), indicating that our manipulation of shape was successful.

3) Confounding Check. Firstly, an ANOVA was conducted with social exclusion as the independent variable and subjects' emotions as the dependent variable. The results showed that subjects in the social acceptance group had significantly higher emotion in terms of pleasure ($M_{\text{being included}}=6.11$, $SD=0.95$) than subjects in the social exclusion group ($M_{\text{being excluded}}=4.83$, $SD=1.82$; $F(1, 298) = 58.14$, $p<0.001$). This shows that there was a significant difference in mood across social exclusion groups; therefore, subjects' mood was used as a covariate in the subsequent analysis to control its effect on the results. Afterward, social exclusion and shape manipulation were selected as independent variables, and the subjects' perceptions of the uniqueness of the two watches were used as dependent variables for the ANOVA. The results showed that the main effect of social exclusion ($F(1, 296) = 0.23$, $p=0.634$) and the interaction effect of social exclusion and shape manipulation ($F(1, 296)=0.06$, $p=0.797$) was not significant, while the main effect of shape manipulation ($F(1, 296)=14.29$, $p<0.001$) was significant. The findings suggest that although the manipulation of social exclusion does not affect the subject's product uniqueness, the difference in the shape of the watch

itself triggers differences in perceived uniqueness. To rule out the interference caused by uniqueness on product purchase intention, we controlled it as a covariate in the subsequent analysis.

4) Sense of Control. A multivariate analysis of covariance was conducted with social exclusion and product shape as independent variables and sense of control as dependent variables. The results showed that the main effect of social exclusion was significant ($F(1, 296) = 6.10, p = 0.013, \eta^2 = 0.02$), while the main effect of shape manipulation ($F(1, 296) = 0.90, p = 0.343$) and the interaction effect of social exclusion and shape manipulation ($F(1, 296) = 0.75, p = 0.388$) were not significant. This finding suggests that only differences in social exclusion affect changes in individual the perceptions of control, while shape manipulation does not have a significant effect on perception of control. This is consistent with our expectation, social exclusion reduced subjects' sense of control compared to the social acceptance group (M being excluded-the sense of control = 4.77, $SD = 1.05$ vs. M being included-the sense of control = 5.05, $SD = 0.92$; $F(1, 298) = 6.19, p = 0.013$; see Fig. 2).



Notes: Error bars represent standard errors.

Figure 2: Effects of Social Exclusion, Being Excluded vs. Being Included on Sense of Control.

5) Product Purchase Intention. A multivariate analysis of covariance was conducted with social exclusion and product shape as independent variables, emotion and product uniqueness as covariates, and product purchase intention as the dependent variable. The results showed that the main effect of social exclusion ($F(1, 294) = 0.29, p = 0.591$) as well as product shape ($F(1, 294) = 0.22, p = 0.643$) was not significant after controlling subjects' emotions and perceived product uniqueness. However, the interaction effect of social exclusion and product's shape was significant ($F(1, 294) = 21.358, p < 0.001, \eta^2 = 0.07$).

Further comparative analysis (planned contrast) showed that subjects in the social exclusion group were more likely to purchase angular watches than rounded watches (M being excluded -angular purchase = 5.54, $SD = 0.83$ vs. M being excluded-rounded purchase = 4.77, $SD = 1.56$; $F(1, 296) = 13.44, p < 0.001, \eta^2 = 0.04$); In contrast, subjects in the social acceptance group had significantly higher purchase intentions for rounded watches than angular watches (M being included-rounded purchase = 5.52, $SD = 1.09$ vs. M being included-angular purchase = 5.11, $SD = 1.50$; $F(1, 296) = 3.78, p = 0.053$; see Fig.3), thus, the results confirms Hypothesis 1 again.

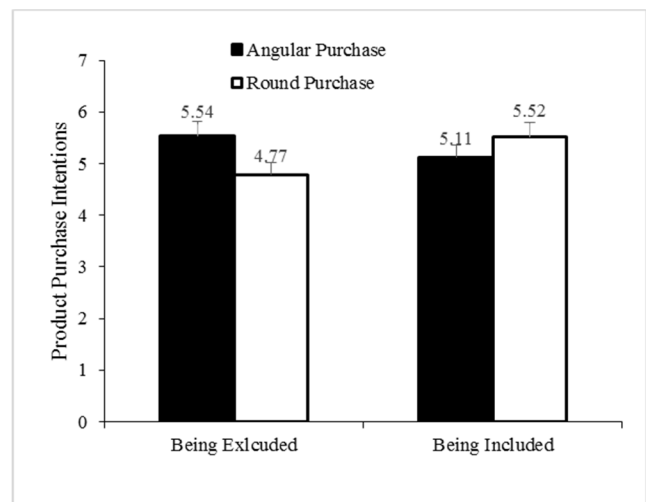


Figure 3: The interaction of social exclusion and shape type (Study 2)

6) Mediation Analysis. Referring to the Bootstrap method of Hayes (2013), a mediation test was conducted using Model4 in Process with a sample size of 5000. Social exclusion (exclusion=1, acceptance=0) was used as the independent variable, sense of control was selected as a mediating variable, and product purchase intention was selected as the dependent variable. The results showed that the indirect mediating effect of sense of control on social exclusion on product purchase intention was significant at a 95% confidence interval (LLCI=-0.1599, ULCI=-0.0173), with an estimated mediating effect value of -0.07. In addition, the direct effect of social exclusion on product purchase intention was not significant after controlling for the sense of control (LLCI=-0.3867, ULCI=0.2068; see Fig. 4). This result indicated that the sense of control plays a fully mediating role in the relationship between social exclusion on angular product purchase intentions and hypothesis H2 is supported.

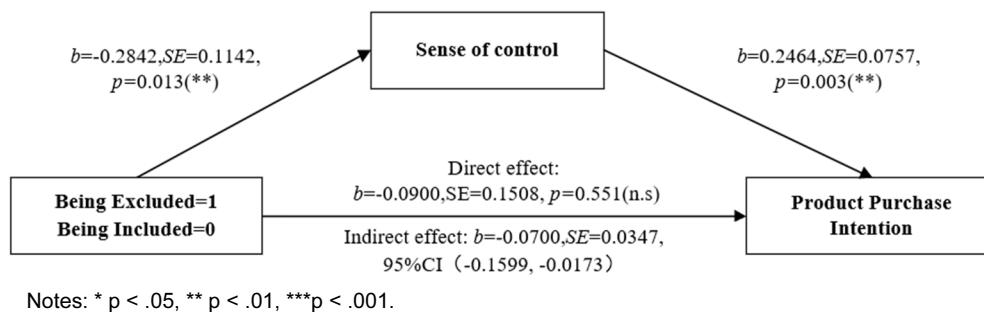


Figure 4: Study 2: mediation through sense of control.

Discussion: Study 2 replicated the findings of Study 1 by manipulating social exclusion in another method. Furthermore, Study 2 provided further evidence that socially excluded consumers' socially excluded consumers develop a stronger need for a sense of control, resulting in an enhanced preference for angular shapes. More important, sense of control was found to mediate the effect of social exclusion on preference for angular shapes. Socially excluded consumers develop a stronger need for a sense of control, resulting in an enhanced preference for angular shapes. Moreover, the alternative explanation of decision bias was examined and ruled out, further strengthening the mediation effect of sense of control.

4. Theoretical Contributions

This study not only enriches the discussion on the difference of consumer shape preference but also makes a supplement on the visual influence on sensory marketing. In contrast to existing studies that are mainly focused on self-constructed differences (Zhang, Feick, & Price, 2006), gender (Ding, Pang, & Wang, 2019), shape and taste, auditory and olfactory sensory organs (Becker, van Rompay, Schifferstein, & Galetzka, 2011). This work primarily focuses on social exclusion in social contextual factors, thus enriching the study of social exclusion as a contextual factor influencing consumer shape preferences.

Secondly, angular design elements are symbolic of individuality, strength, aggression, power, see previous research (Hoegg, Alba, & Dahl, 2010). Our study confirms that products with angular design elements can help consumers satisfy their need for control, provides new insights into the underlying motivations for consumers to prefer products with differently shaped design elements. While previous studies have used shape as an independent variable to explore its effect on consumer information persuasion (Zhu & Argo, 2013) and brand attitudes (Jiang, Gorn, Galli, & Chattopadhyay, 2016), service evaluation

(Liu, Bogicevic, & Mattila, 2018), this study explored the effect of situational elements as a dependent variable.

Finally, in the field of sense of control, theories on a sense of control have received a lot of attention in recent years from scholars in the fields of psychology and consumer behavior. (Chen, Lee, & Yap, 2017; Chaxel, 2016). For example, Cutright and Samper (2014) have shown that consumers with a low sense of control are more likely to choose products and services that require more effort. Chen, Lee, and Yap (2017) have found that control deprivation leads to higher physical consumption (vs. hedonic consumption). Based on the compensatory control theory, this paper proposes an explanatory role for the sense of control, in which social exclusion leads to individuals' lack of control and then restores their self-control through shape preference. The proposed control theory provides a new theoretical explanation for the relationship between social exclusion and shape preference, which makes up for the shortcomings of the original theoretical explanation. In the case of shape preference, at the psychological level, the psychological mechanisms of shape preference mainly focus on perceived warmth (Liu, Bogicevic, & Mattila, 2018).

This paper takes a theoretical perspective on the sense of control and explores the influence of the control needs of humans on consumer behaviors. Meanwhile, it also clarifies a new potential psychological role of shape preference - the recovery of the sense of control - to enrich the psychological mechanisms of shape preference.

5. Managerial Implications

The findings of this work are of great value for mitigating the negative effects of social exclusion. For example, companies can use the product of rounded shape to address the service failures associated with social exclusion in their marketing practices. Specifically, in shopping malls, hotels, and other consumer places, customers often encounter situations where they are ignored

or left out by waiters, which can lead to a sense of rejection. To reduce or avoid negative attitudes or evaluations towards the company or brand, companies can provide small gifts with rounded shapes during the service to compensate for the negative consequences of service failure.

In the production or sale of new products such as those with rounded elements, the target market can be aimed at people who are ignored, rejected or have a high sense of isolation, such as the unemployed, people with broken families, etc. Also, through advertising campaigns to stimulate the sense of control of the target consumer groups, thereby increasing their preference for rounded products and purchases.

Companies can rely on big data information to analyze customer characteristics in-depth, and recommend them specific products based on their characters. As a result, it can increase their purchase intentions and satisfaction. Specifically, based on this study, if a company identifies that its target customers are being ignored, such as when a consumer initiates a chat while no one responds, or if they are experiencing a difficult situation such as unemployment, it can offer them products with angular design elements.

6. Limitations and Directions for Future Research

This study has several limitations that need to be addressed in near future. First, this study merely focuses on the fact that social exclusion affects shape preferences. Future research could further explore the applicable boundary variables. This study focuses on products consumed in public, while future research could explore whether products consumed in private place have similar results to those consumed in public.

Second, other moderating variables that may potentially influence consumers' preference for shape in the context of social exclusion should be explored. Moreover, this study focuses on the effect of shape (angular vs. rounded) on consumers' product evaluations, but there is more than one dimension to classify logos. Future research should consider the impact of different logo designs and product packaging on consumer attitudes, emotions, and product evaluation.

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Appendix A: Shoes stimuli used in Study 1



Model A



Model B

Appendix B: Watches stimuli used in Study 2



Model A



Model B