

The Effect of Social Crowdedness on Preference for Utilitarian Products

Xi Chen¹ & Tingyu Yang¹

¹ Business School, China University of Political Science and Law, China

Correspondence: Xi Chen, Business School, China University of Political Science and Law, Beijing, 102249, China. Tel: 86-135-8166-0073. E-mail: 45706582@qq.com

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Abstract

In a modern society with high population density, consumers usually face crowded consumption environment. Meanwhile, the choices they can make are more and more abundant. Is there any correlation between social crowdedness and the preference for different types of products?

This research examines if social density or social crowdedness has influence on people's tendency to choose functional products rather than hedonic products. We propose that social crowdedness increases the likelihood of preference for functional products rather than hedonic products. This effect occurs because crowded environment would make consumers feel a sense of loss of control, and hence makes them engage in interpretive cognition, exhibit a desire for structured and meaningful products, and practical function of the product as a compensatory method to help them regain control.

Two studies provide support for this hypothesis. Study 1 confirms the relationship between social crowdedness and the product type preference. Study 2 examined the mediating effect of perceived control as the driving mechanism, which is, social crowdedness gives rise to a feeling of loss of perceived control, to fill up this, consumers seek products with more practical and useful function feature rather than hedonic and pleasure-oriented products as compensation to fill the gap.

This study expands the research in the fields of social crowdedness from consumer behavioral perspectives. Also, the research may contribute to the marketing planning of different types of commodities in various environments.

Keywords: social crowdedness, interpretive control, compensatory control, functional products, hedonic products

1. Introduction

Charlotte goes shopping, she visits two stores, the stores are similar except that, one is much more crowded, and the other store is less crowded. And Charlotte likes the product offerings from both places. We raise a question that if the different social crowdedness level of the store environment impact her choice of the product?

In this question, social crowdedness is defined as the population density per unit area (Maeng and Tanner 2013; O'Guinn et al., 2015). When people feel crowded, mostly it is caused by physical proximity to others (Stokols 1972, Consiglio et al., 2018). Since crowdedness often times are a negative experience, it always gives rise to negative results (Sommer 2009; Stokols 1972).

Base on research on social density (Rodin 1976; Sherrod and Cohen 1978), and feel of control (Cutright 2012; Cutright, Bettman, and Fitzsimons 2013;), we raise the statement that high- (vs. low-) crowded environments would result in people's feeling of decrease in of personal control. And as a result, people show a increased tendency to buy structured goods preference and prefer more practical and utilitarian featured products, and practical function of the product as a compensatory method to help them regain control. Therefore, compared with functional products, consumers put under social crowded environment are more prone to choose practical utilitarian products than hedonic featured products.

2. Theoretical Background

2.1 Social Crowdedness

Previous studies examined a range of psychological consequences driven by social crowdedness, for instance, the sensory overload (Milgram 1970), hostility (Griffitt and Veitch 1971), consuming foods with higher calories (Hock and Bagchi 2018), prefer less saturated colored products (Chen, Li, 2022). When one senses his or her space is

potentially threatened, it probably would give rise to the avoidance motivation (Cain and LeDoux 2008), in this way people tend to protect themselves (Lang and Bradley 2008; Tooby and Cosmides 1990).

In terms of consumer choice consequences, being socially crowded in a shopping environment can result in a series of outcomes. For example, high social density environment will decrease consumer satisfaction (Eroglu, Machleit, and Barr 2005), decrease product evaluations (O'Guinn, Tanner & Maeng 2015), or tend to display greater variety seeking in their choices (Levav & Zhu, 2009). Hwang Su and Mattila(2020) found that low-power individuals exhibited more favorable attitudes toward the menu with a popularity cue at a crowded restaurant.

2.2 *Perceived Control*

In motivation research, researchers identified desire of control as a central human motive(e.g., Alloy and Abramson, 1979, Deci and Ryan, 1987). The perception of personal control refers to the motive to render the world predictable and controllable(Pittman 1998). It is found that a good perception of control and autonomy will give rise to a increased sense of well-being(Skinner, 1996; Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993), raise up a positive emotion(Garbarino, 1975). By contrast, a threatened loss of perceived control therefore will lead to anxiety and feeling of upset and depression (Fiske and Morling 1996, Abramson, Seligman and Teasdale 1978). Previous studies have demonstrated that people are eager to maintain the sense of personal control of present and future events, hence, when their feeling of perceived control is threatened or compromised, they have motivation to recapture the control(Fritsche and Jonas 2008). Weisz and Snyder(1982) found that people have two kinds of personal perceived control, called the primary control and the secondary control, where primary control refers to the capability to control a desired result directly, on the contrary, the secondary control means that people try to achieve control more indirectly, for instance, people trust in powerful others who are capable to have impact on the result in a desired direction, which is proposed to increase vicarious control(Fritsche and Jonas 2008).

2.3 *Social Crowdedness and Perceived Control*

The study on social and environmental psychology revealed that social density may give rise to control-debilitating effects (Baum and Valins 1977), make people feel decreased personal control, expose people to a decreased desired actions (Baum and Valins 1977; Rodin 1976). Meanwhile, crowdedness would narrow one's construal level (Maeng and Tanner 2013) and lead to loss of control (Hui and Bateson 1991),

A variety of previous studies reveal that as an environment gets more crowded, people under the particular context may sense a loss of personal control.

2.4 *Perceived Control and Choice of Utilitarian Products*

2.4.1 *Compensation Mechanism*

Marketing research supports the idea that when they are in socially crowded environment, people have increased tendency to execute control-restoring behaviors. And this is a compensation mechanism, people tend to turn to some behaviors or choices to compensate for their decreased perceived personal control. When consumers perceive a decreased freedom, they try to regain it by choosing more varied or unique choices (Levav and Zhu 2009). Besides, one's sense of lost control drive them to increase compensatory actions, for instance, purchasing "structured" products (products with sharp edges or tangible boundaries(Cutright 2012). For the current study, it is stated that product function and practical feature is also an way through which people fill the gap of the lost control.

2.4.2 *Structured and Meaningful Products as Compensations*

There are two ways to achieve sense of personal control, one is primary control, the other is secondary control(Rothbaum, Weisz, and Snyder ,1982)). The secondary control theory states that, individuals seek to find deep underlying meaning of things under a specific context, this is a type of explanatory control, it has very close relationship with people's consuming behavior. Consumers usually apply this way of control in their consuming behavior context. When consumers are under crowded environment, they feel a threat of their freedom and their feel of personal control, in order to eagerly regain the control, consumers as a compensation will start their cognition elaborating system, and build structure out of a product, and give it meaning, so that to regain the sense of structure and order, this plays as a compensation mechanism and help people regain their feel of personal control.

2.4.3 *The Self-Regulatory Theory*

The self-regulatory theory states that, consumers make decisions driven by two forces, one is promotion goal, the other one is prevention goal. Research shows that social density will incur defense intention and avoidance

behavior, individual tends to choose safety-oriented goods, and more attracted to prevention focused when facing different product options.

3. Theoretical Model and Hypothesis

Building on the review of previous studies and theories, this research demonstrates that The theory of control in social crowdedness research domain states that, under social dense condition, the feeling of uncertainty increases, individual has difficulty controlling his behaviors, under a context of lost control, individual tends to make compensating behaviors to compensate for his lost feeling of perceived control, so that to regain control of outside environment, so that they can achieve desired outcomes of the current and future events.

When control is compromised in one domain, say the social crowdedness deprive of people of control, the secondary control mechanism works, people regain control indirectly, under a shopping context, consumers might prefer structured or meaningful product options. In another word, when people are more physically confined, people exhibit a specific product type preference. Specifically, under consumption context, they are more likely to select more function oriented product options, and show a decreased purchase intention of hedonic products, this is true because hedonic products will remind consumers of relax lifestyle, out of order, and casual condition, whereas functional product is usually related to self-discipline, order, and rules, realize their defense goal in terms of self-regulatory goal, and make people feel safe and rebalanced, which make people feel structured and under control.

According to this perspective, we argue that when people are in social crowded environment, people's perceived control is threatened, a reduced sense of general control drive people to restore control by elaborating more the meaningfulness of products, seek explanation and purpose of a particular product option.

In other words, social crowdedness has influence on product preference, and this is driven by a mediator the feel of personal control, functional product options will compensate for consumers' feel of lost personal control. And here is the theoretical framework of the current research shown in figure 1.

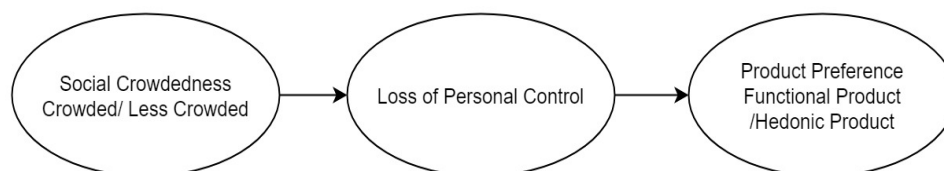


Figure 1. Theoretical Model

We propose the following hypothesis:

H1: Social crowdedness has influence on consumers' preference on different product type. That is, under crowded environment, people prefer functional products.

H2: social crowdedness will induce a feeling of loss of control, therefore individuals prefer more functional products.

3.1 STUDY 1: Social Crowdedness and Preference for Functional Products

The primary goal of study 1 is to explore the main effect of this research, which is the relationship between crowdedness and functional product option preference, specifically, whether being socially crowded would lead people to choose a more functional rather than hedonic product option.

3.1.1 Method

We designed two sessions, for the first session, participants were randomly assigned to either social crowded group or uncrowded group, fill out a task for an unrelated study, and for exploratory purposes, participants completed the demographic measures such as gender, age, income, education level etc. As for the crowded group, participants were exposed to social crowded image whereas in uncrowded group, participants were exposed to uncrowded images (see Figure 2 and 3). We asked participants to image being under the circumstance and feel the situation, and we ask them to write down their feeling at that moment.

Then participants of both groups were asked to indicate their preference for functional and hedonic product options with a binary choice question where functional product is neck pillow(hedonic product) versus electronic

timer(functional product). Finally, participants were asked to rate how crowded they evaluate the picture to be on a seven point scale where 1 means not crowded and 7 means very crowded.



Figure 2. More Social Crowded Group



Figure 3. Less socially crowded group

Eighty-two undergraduates completed this study in return for partial course credit, we delete those surveys that used too much or too short time, leaving seventy-four valid data. The demographic description of the data is that, male take 33.8% with twenty-five people, female take 66.2%, with forty-nine people.

3.1.2 Results and Discussion

We did a T test on the independent variable, socially crowded or not, just like what we proposed before, subjects in the high crowdedness context revealed the place to be substantially more crowded ($M=6.39$) than did those in the less crowded context ($M=3.03$, $p<.000$). Therefore, the manipulation of being socially crowded is successful.

Next, we examine the main effect, that if participants primed with the crowded picture generated more preference towards functional product option than hedonic product option. In terms of the main effect, participants imagine themselves being under the shopping scenario, and choose between two products, A. neck pillow used at rest, B. electronic timer used during study or work. We coded the independent variable in study 1 as being socially crowded or not, where 1 indicates a more socially crowded situation and 2 means being less socially crowded. And we code the dependent variable the participants' product choices, giving the hedonic choice a value of 1 and the functional product choice a value of 0.

A ki-square test performed yielded the result that, out of the participants who were primed as socially crowded group, 18 chose hedonic choice, which takes up fifty percent, leaving 18 participants choosing functional product, which also takes up fifty percent. With regard to less socially crowded group, 28 participants chose hedonic products which takes up 73.68% and 10 participants chose functional product, which takes up 26.32%. $\chi^2(1, N=74)=4.409 > 3.8415$, $p=0.031$, which indicates a significant main effect. Consistent with our hypothesis, socially crowded or not, will have impact on one's preference towards hedonic versus functional products. Phrased

another way, being socially crowded, will make people prefer functional product compared with hedonic choice. Therefore, we conclude that hypothesis 1 is proved.

3.2 Study 2 Mediating Role of Sense Personal Control

The above study 1 provides evidence of hypothesis 1, that the mere social crowdedness appeared to influence individual's product preference, specifically, thus suggesting that the social density systematically influences individuals' preference of functional products instead of indulgence products. Study 2 has one main goal, we wanted to explore the underlying mechanism why social density has impact on people's product choice preference, which means, if there exists any mediating variable that drives the relationship.

3.2.1 Method

Study 2 is also implemented through online questionnaire. We ask students taking consumer behavior course participate a survey. One hundred and fifteen students agreed to fill out two apparently independent questionnaires. One is the social crowded condition, whereas the other is assigned to the socially spacious condition. They are both asked to fill out unrelated test which is actually the filler questionnaire, and then watch the context pictures, and watch the image of the shopping environment and to then imagine they are now, being under the condition, to buy products. And then they are asked to write down how they feel for that moment, and afterwards, evaluate the degree of social crowdedness. Finally they are asked to rate their preference of two product options on a 7-point scale anchored from 1 (least favorable) to 7 (most favorable), one is hedonic product and the other one is the functional product. After that they fill out three questions of perception of personal control on a 5-point scale.

The store images used in study 2 is same as the one used in study 1. Out of the one hundred and fifteen questionnaires, we delete those invalid ones such as time spend too long or too short, we get one hundred and ten questionnaires. Among the subjects, there are 28 male subjects, taking up 25.5%, and 82 female subjects, taking up 74.5%.

Manipulation Checks. Study 2 manipulate the social density by assigning subjects to either the high-density or low-density condition. Participants are told to check the image and to try to imagine being in the environment, and write down their feeling toward the environment for that moment. We use SPSS to do a T test toward the crowdedness context and find that, participants in the more (vs. less) crowded environment perceived the place to be more crowded ($M_{\text{more_crowded}}=6.59$, $SD=1.176$ vs. $M_{\text{less_crowded}}=3.31$, $SD=1.691$, $p=0.000$) and thus, our manipulation of crowding in study 2 was successful.

Product Preference. Study 2 also tests the main effect, it applies the 7 point scale likert scale questionnaire to test participants' product preference (1=don't like at all, 7= like it very much) and it used ANOVA to examine the main effect. Designed as below, participants were assigned to different shopping context, and assess the crowdedness of the environment, imagine themselves being under the shopping environment, and choose from the two products, "the neck pillow for rest" and "electronic timer for work or study". Product option A the neck pillow is actually a leasurable hedonic product, whereas the option B the electronic timer is a functional product option.

We first conduct an ANOVA with product preferences of two different options as the dependent variable and crowding (more, less) as the independent variable. The result reveals that, as our prediction, subjects in the more crowded condition choose functional products than hedonic products ($M_{\text{more_crowded}}=3.92$, $SD=1.664$ vs. $M_{\text{less_crowded}}=3.10$, $SD=1.723$, $p=0.013$), thus crowding increased functional product consumption, and hypothesis 1 is proved.

3.2.2 Mediation Effect

The goal of study 2 is to examine the underlying mechanism why people prefer functional product, that it is due to the feeling of loss of perceived control, and as compensation to fill the negative feeling of loss, people turn to functional products. After filling out the questions of social crowdedness manipulation, and the main effect test as of which product option to pick, we ask participants to fill out three item questions of perceived control. The measure of perceived sense of control comes from McConatha, J.T and Huba, H.M., (1999) raised at 1999, its reliability is 0.6. And this measure is a three item questions on a 5-point scale (from 1= the least suitable, 5= most suitable), the first and third item question is asked in positive direction whereas the second item question is asked in a reverse order (5= the least suitable, 1=most suitable).

We apply a hierarchical regression to test the mediating effect. We ran three linear regressions and built three regression equation models, the variables we used are independent variable, the perceived social crowdedness (more crowded or less crowded), the dependent variable Y, the preference toward the hedonic and functional product, and the mediating variable, which is the perceived sense of lost control.

Here are the three regression equations:

$$\textcircled{1} Y=a_1X+e_1$$

$$\textcircled{2} M=a_2X+e_2$$

$$\textcircled{3} Y=a_3X+a_4M+e_3$$

Where equation 1 tests the main effect, whether being socially crowded influences the different product preference. Equation 2 investigates whether more socially crowded condition would result in people's feeling of lost control. Equation 3 aims to prove that the feeling of lost control is a mediator, which mediates the relationship between the crowdedness and product choice. Table 1 exhibits the research result:

Table 1. Regression Result

	Equation 1	Equation 2	Equation 3
F value	6.383	105.317	6.589
Significance	0.013	0.000	0.002
Adjusted R ²	0.047	0.489	0.093

Table 2. Regression Coefficients

Model		Non-standardized weights		Standardized weights	T	P
		B	Standard errors	Beta		
1	Constant	4.732	0.500		9.462	0.000
	More Crowded/less crowded	-0.817	0.323	-0.236	-2.527	0.013
2	Constant	4.745	0.213		22.308	0.000
	More Crowded/less crowded	-1.412	0.138	-0.703	-10.262	0.000
3	Constant	2.068	1.155		1.790	0.076
	More Crowded/less crowded	-0.025	0.443	-0.007	-0.055	0.956
	Average level of feeling of lost control	0.561	0.221	0.326	2.544	0.012

Results of table 1 and table 2 show that all the three equations pass the regression test, yield significance P value 0.013, 0.000 and 0.002.

Equation model 1 shows, less social crowdedness is negatively related to participants' preference of functional product(the electronic timer) ($\beta=-0.817$, $p=0.013$), which is the same with the conclusion that more social crowded condition is positively correlated with the product preference toward functional product(electronic timer). this means that, compared with less crowded social environment, under crowded density context, people are more likely to prefer functional product options, therefore, the main effect is proved.

Equation model 2 shows, less socially crowded environment is negatively related to personal sense of lost control ($\beta=-1.412$, $p=0.000$), which means the more crowded the context, people are more prone to lost a sense of personal control of the condition.

Equation model 3 reveals that when independent variable is composed of perceived crowdedness and feel of personal control, the R² raise from 0.047 in model 1 to 0.093 in model 3. Which means the explanative power of the model increases. Meanwhile, the β of perceived social crowdedness is no more significant ($\beta=-0.025$, $p=0.956$), this proves that there is a mediating role played by sense of lost personal control in the model setting. Therefore, H2 is tested, social crowdedness gives rise to the feeling of lost control, and consecutively leads to peoples' preference for more function-oriented product options.

4. General Discussion

In this article, we test the hypothesis that spatially confined consumers react against an incursion to their personal space by choosing functional product offerings instead of hedonic offerings. We present the results with two experiments. The first experiment documents our basic effect: people placed in a crowded environment are more likely to seek functional products than people placed in a spacy environment. In the second experiment, we show that the link between density environment and product choice is due to one's feeling of loss of control.

This research provided evidence for the underlying mechanism by linking our findings with chronic need for control. We found that social crowdedness increased the likelihood of functional produce choice among participants who scored high on a chronic need for control scale.

To our knowledge, this article is the first investigation into relationship between physical density and hedonic versus functional product preference, which contributes the area of research of social crowdedness domain. Secondly, the investigation of role of feel of loss of control also fills the gap of research, which enriches the studies of the underlying mechanism that how social density impact individual psychology, and consumers' consuming behaviors.

5. Research Contributions

As a conclusion, this research revealed that crowdedness of an environment positively influences consumers' probability to choose functional products compared with hedonic products, under circumstances that social density turns threatening, people's protection tendency is activated, induce people more constrained and conservative in social actions.

Previous studies on compensatory control proposed that structure seeking, spreading word of mouth (Consiglio et al., 2018), play a way of compensation. The current study investigates that purchasing functional products might also be a way by which people react to threats to lost control.

Our research also features significant managerial implications. It points that managers can take advantage of crowded store settings to add up to increase marketing campaigns positive result in terms of launching and promoting functional products in the market. Companies can display functional products in more densely populated places like more crowded stores, shopping malls, or product shelves or aisles. Besides, our work also suggests that marketing practitioners could leverage this finding by timing marketing activities when companies' target consumers are in more crowded environment, say crowded places, or consumers come at time when the population flow is crowded.

6. Limitations

We acknowledge that in this research, the sample we use are mostly undergraduate students, and gender distribution is not even. Moreover, in the two studies of this research, we all ask subjects to look at pictures under different level of social crowdedness, rather than put them in an field study experimental setting such as make participants in real market or stores with different levels of social density, this aspect is worthy of further investigation. People may behave differently when doing shopping online than making decision in real market offline.

7. Further Research Directions

This study also raise further questions for future research. For instance, while we focused on the likelihood to choose between functional and hedonic products, future studies may examine different outcomes. Say how social crowdedness influences the preference of product with different colors, with different color saturation level, products of soft versus hard, products of smooth or coarse texture etc. We invite scholars to further investigate from the senses perspective as stated above.

It might be interesting to test if there are any moderators that moderate the effect of social crowdedness on product preference; for instance, if consumers with different level of chronic tolerance of social density could react differently to the crowdedness of the purchase environment. Or the intimacy of people with others, or to say, whether a person is alone or with friends in the crowded environment may influence control perception, and hence play a role affecting the relationship. Further research can seek other moderators.

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