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경영학 석사 학위논문

**Physical versus Social: The Effect of  
Social Distance on the Relationship  
between Physical and Social Density**

물리적 밀도와 사회적 밀도에 대한 고찰: 사회적  
거리를 중심으로

2020 년 2 월

서울대학교 대학원

경영학과

송 건 우

# Physical versus Social: The Effect of Social Distance on the Relationship between Physical and Social Density

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이 논문을 경영학 석사 학위논문으로 제출함  
2020 년 1 월

서울대학교 대학원  
경영학과  
송 건 우

송건우의 석사 학위논문을 인준함

2020 년 1 월

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## **ABSTRACT**

# **Physical versus Social: The Effect of Social Distance on the Relationship between Physical and Social Density**

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When undergoing physical constraint by being in a crowded place, people often feel a potential threat of their personal space being violated, experiencing high social density. Previous research has shown negative influences of social density on consumer experience in many different cases. For example, Underhill (1999) showed that consumers may maneuver away from a product they have been looking at or ending their shopping earlier when experiencing high social density. Other research shows that this effect of social density can be attenuated through in-group identification and other measures in decreasing the social distance between the individual and the crowd (Patterson 1976; Maeng, Tanner, and Wu 2017). Therefore, the current research suggests that the influence of physical density on social density is moderated by the amount of social distance that an individual feels towards the crowd at hand.

The current research focuses on revealing the interaction effect of physical density and social distance on social density through an online survey in which two hundred and sixty-eight people participated. Participants were randomly distributed into four conditions, differing in physical density and social distance between the individual and the crowd. They were asked to answer a survey asking for how much social density they felt and the willingness-to-pay for an item.

Based on the survey data, moderated mediation analysis was conducted to show evidence for the attenuation of the influence of physical density on social density through the moderating role of social distance. The current research has important implications in that while the physical environment is often difficult to alter to one's favor, other ways of attenuating for the effect can be found.

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**Keywords:** Social Density, Physical Density, Social Crowding, Social Distance  
**Student Number :** 2018–21580

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# 1. THEORETICAL BACKGROUND

## 1.1. INTRODUCTION

Imagine yourself commuting to work at 7:00 AM every day, struggling through a fully packed subway. Not only do you have a hard time trying to wake up, but you also try not to push or touch anyone by accident in the moving subway. In such a case, finding peace within your own space is a challenge. At the end of the ride, you feel exhausted from all the uproar caused and being pushed around by random strangers.

Now, imagine a different situation where you are at a rock concert, watching your favorite band play in the very first row. Everyone is probably standing up and jumping around in excitement, possibly bumping into each other in the densely packed concert hall. You might bump into other people. But they do not seem to care as they think it is a part of enjoying the show. Although the two situations do not differ in that people are situated in tightly packed areas, maybe pushing each other, they do not give the same emotion to the people at the end. I propose that although the physical density of a situation is a crucial factor in creating a sense of emotion, it is also important to examine what exact situation an individual is currently facing or how psychologically close he or she feels to the crowd in order to fully determine how much crowded or disturbance the individual may feel.

Many academic literature show that physical crowdedness, or physical density, has negatively influenced consumer choices (Underhill 1999; Hall, 1966; Xu, Shen and Wyer 2012; O'Guinn, Tanner and Maeng 2015). However, not many

have tried to examine the relationship between physical crowdedness or physical density and social density.

The concept of space and physical crowding has played many roles in influencing consumer choice and behavior in everyday lives as well as literary work. When visiting an unfamiliar restaurant, the number of visitors can serve as a reference point to measure the popularity of the diner or the quality of the food. It is highly likely that people will avoid entering restaurants that are almost empty during prime time. This example shows how people use the level of physical density as a reference point to evaluate a person or a place.

When going to a sports game, people feel more engaged in the game and feel more belongingness to the team when there are more people in the stadium. Although an empty stadium will provide the fans with more physical comfort, it is unable to give the hype of watching live games.

Similarly, Novelli, Drury, Reicher, and Stott (2013) show how social density mediates the effect of social identification on positive emotion in a crowd during social outdoors events. Such are examples that lead to the idea that mere physical crowding or physical density is not necessarily a negative influence on consumer experience.

Based on this idea, the current research aims to unveil the linkage between physical and social density by examining how social distance plays a role. I further wish to show that manipulating the social distance between the individual and the crowd can moderate how physical density affects social density and ultimately influence consumer decision-making on product valuation as well.

## 1.2. Personal Space

The matter of both physical and social density is essentially based on the concept of personal space. Personal space can be defined as a moveable boundary around a human being, functioning as a buffer to protect people from potential threats (Hall 1966; Delevoye-Turrell, Viene, and Coello 2011). Goffman (1971) defines personal space as “the space surrounding an individual, anywhere within which entering other causes the individual to feel encroached upon, leading him to show displeasure and sometimes to withdraw.”

The two definitions focus on that personal space is the wall that keeps other ‘contaminants’ or sources of displeasure from bothering an individual. Following such definitions, there has been a plethora of research suggesting that crowdedness has various negative influences on consumer experience.

Hall (1966) shows that there is an optimal distance at which people feel comfortable with the distance varying on their relationship with others. While comfortable distance among friends or family members can go as close as 1.5 to 2.5 feet, people may need as much as 4 to 7 feet to with mere acquaintances to keep stay comfortable without causing discomfort. According to Hall, when other people are closer than such a given optimal level, people are likely to feel that their personal space is being invaded and experience discomfort.

Many researchers explain specific situations in how such discomfort leads to changes in consumer behavior. Edney, Walker, and Jordan (1976) concluded that when an individual’s personal space is violated, he or she may feel that one’s uniqueness is threatened and be motivated to restore this individuality.

Similarly, Levav and Zhu (2009) also show that individuals facing

physical confinement display more variety-seeking tendencies when buying products. The research was manipulated by inducing physical constraint to individuals by altering the aisle width in a retail store environment, showing that simple physical confinement, an indirect way of decreasing personal space, can also show such effect.

Eroglu, Machleit, and Barr (2005) show that crowded retail environments can reduce shopper satisfaction and possibly lead to an earlier departure from the store, the effect mediated by emotions experienced by the shopper. Huang, Huang, and Wyer (2017) argued that when consumers feel crowded during a shopping experience, they tend to decrease the evaluation of a product or service and show lower levels of customer satisfaction.

Another feature of personal space is that it is malleable and moveable. Goffman (1971) argues that the setting and bases for personal space will change continuously according to factors including, but not limited to local population density, the purpose of the individual intruding personal space, and characteristics of the social occasion. Stokols (1972) also reason that an individual's response to a crowd is determined not only by the physical spatial restrictions but also by the relationship with the members of the crowd.

These ideas suggest that the negativity experienced by consumers when their personal space is invaded or limited. Also, due to the malleability of the boundary of personal space, it is possible to postulate that underlying factors are existing between physical density, situations physical crowdedness where one's personal space may be invaded and social density, how the individual feel crowded from the occasion.

### **1.3. Social Density and Physical Density**

Social density, or social crowding, refers to a large group gathering of people, increasing the likelihood of an individual's personal space being violated (Maeng, Tanner, and Soman, 2013). This is a concept that is different from simple physical density, or physical crowdedness, as it specifically mentions that the people will feel as their personal space may be violated. Social density is an important factor to examine as it affects consumer choice and product valuation as well. This is also taking a step further from examining the effect of others' presence on consumer behavior (Argo, Dahl, & Manchanda, 2005; Ariely & Levav, 2000; Ratner & Kahn, 2002).

Xu et al. (2011) argue that individuals may increase their preference for distinctive products when they find themselves in a crowded situation for reasons outside their control. When individuals feel their personal space is violated in such a constrained environment, consumers showed a preference toward more unique and distinctive products as a means of re-establishing their identity as independent and unique individuals (Levav & Zhu, 2009).

Maeng et al. (2013) show that consumers may become more defensive under a high social density environment. Studies found that high social density invokes an avoidance motivation that results in consumers' increased preference for safety-oriented products and more receptive to prevention-framed messages than promotion-framed messages. However, such effects of social density were attenuated when the crowd consisted of in-group members.

O'Guinn, Tanner, and Maeng (2015) is a piece of literature showing a direct link between social density and product valuation. The studies show that

social density can be used by individuals to infer subjective social class and income of a crowd at a retail environment, mediating product valuation as well.

When shown an image of a store with either crowded or uncrowded, people evaluated those shoppers in an uncrowded situation as having a higher social status and a higher income.

This is in accordance with previous researches displaying as people have evolved throughout the ages, animals, including humans have long attempted to control area and resources nearby. Edney (1974) argues that territory size is related to perceived social status, as to obtain greater space required greater power. Being in a socially sparse environment signaled other consumers that the consumers had the social status to be able to obtain the space they required or sought.

A similar case was found in the retail environment of luxury stores where the number of shoppers or physical density is limited or controlled to give the best shopping experience to consumers (Dion & Borraz, 2017). It is also possible to see cases where large department stores are closed to the public to open just for Very Important Persons, as to give them physical comfort and a sense of special treatment.

Such social class inferences mediated a relationship between social density and product valuation, as individuals reported higher willingness-to-pay for products that were shown in a less crowded store.

An important aspect of social density is that it does not necessarily equal physical density. As mentioned above, while physical density or physical crowdedness is the population density per unit area (Maeng et al. 2013, O'Guinn et al. 2015), whereas social density requires the individual to actually feel crowded and feel as if their personal space is at risk. Stokols (1972) also mentioned that a

person's response to a crowd is influenced by the relationship with the crowd. Wang and Ackerman (2019) further theorize that social density also depends on the person-specific factors (e.g. motivation) as well as group-specific factors (e.g. the composition of the group), arguing that there are discrepancies between physical and social density.

However, it must be noted that a number of existing research has manipulated and measured social density by observing only the physical aspect without considering the social dimension, although physical density undoubtedly induces social density. This research aims to clarify the relationship between the two densities by manipulating physical density and suggesting a moderator.

While the studies may not fully differentiate between the two densities, they report incidents of where the effect of social density (but manipulated as only physical density) is attenuated. Patterson (1976) reported that people feel less constrained by physical proximity when they have eye contact with the individual.

Maeng et al. (2013) showed that the influence of social density on avoidance motivation and preference for safety-oriented products was attenuated when the crowd consisted of in-group members. High sensation, positive valence, and in-group crowd composition were found to weaken the negative influence of social density on creativity as well (Maeng, Tanner, and Wu 2017).

All of these incidents include cases where the crowd is perceived as socially close 'in-group' or suggest a relatively safer situation. This is in accordance with previous researches as the effects of social density occur from the threat of having their personal space invaded. When individuals perceive less discomfort from such physical intrusion of personal space or allow for more generous optimal distance for which people feel comfortable at with another

individual as Hall (1966) mention, it is rational to argue that the same degree of physical constraint would not carry over to social density, therefore attenuating the effect.

#### **1.4. Social Distance and Social Density**

Social distance is defined as the distance that exists between social groups or individuals (Trope and Liberman 2011). Social distance may be determined by whether another individual is close or distant, suggesting either in-group or outgroup membership (Kim, Zhang, and Li 2008; Linville, Fischer, and Yoon 1996). Matthews and Matlock (2011) suggest that social distance can affect how comfortable a group feels interacting with another group while an increase in social distance decreases positivity (Trope et al. 2011).

By examining previous academic literature, it is possible to argue that being socially close is a factor in determining the comfort and positive valence among individuals. These are the very factors that were suggested to deter physical density from creating social density as well. Also, as social density is created from feeling a potential threat of others, feeling comfort or safe is a direct cause to which such threat is diminished.

Trope and Liberman also argue that social distance may be a core psychological distance that exerts a particularly strong influence on the perception of other distances. This can explain how social distance can overcome the effect of spatial distance of physical density, which is another form of psychological distance, or constraint in certain situations.

Therefore I hypothesize that while physical density leads to social density,

this influence is moderated by the social distance between the individual and the crowd at hand. Also, I argue this will, in turn, affect the impact of social density on product valuation as well.

## **2. HYPOTHESES AND CONCEPTUAL MODEL**

The following are the hypotheses and conceptual model of this thesis:

**Hypothesis 1:** Physical density will negatively influence the valuation of a product.

**Hypothesis 2:** Social density will mediate the negative influence of physical density on product valuation.

**Hypothesis 3A:** When an individual feels socially close to the existing crowd, the effect of physical density on social density will be attenuated.

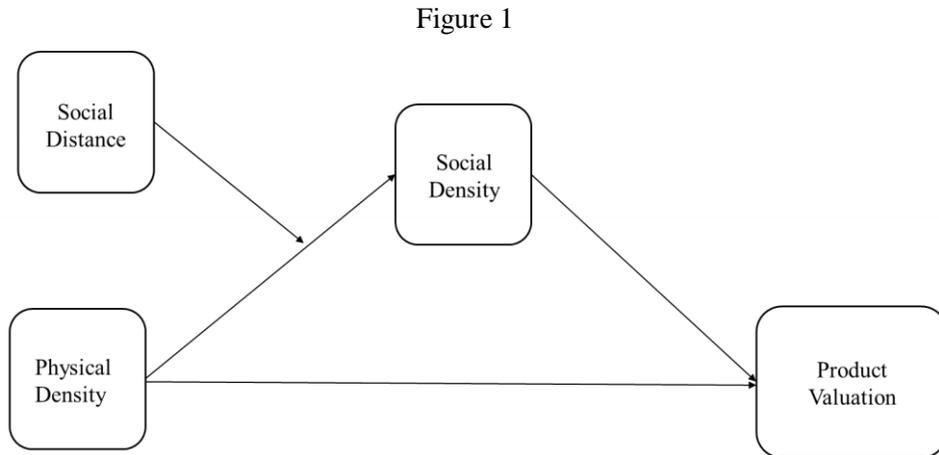
**Hypothesis 3B:** When an individual feels socially distant to the existing crowd, the effect of physical density on social density will be amplified.

The conceptual model is similar to that of O'Guinn et al. (2015), including the relationship between social density and product valuation. However, the current model sets to argue that physical density does not work alone to influence the amount of social density or crowdedness an individual may feel.

Hypotheses 1 and 2 aim to display the influence of physical and social density on product valuation as other research has done, but by showing mediation of social density to account for such effect.

Hypotheses 3A and B explain how the effect of a physically dense environment may not necessarily promote consumers to feel socially dense as well, which in turn can reduce the negative influence in consumer experience as well.

Figure 1 below shows the conceptual model of the current research.



### 3. STUDY DESIGN AND ANALYSIS

The purpose of the study was to examine whether will the social distance between an individual and the crowd influences the effect of physical density on social density as well. Another goal was to see whether physical density will negatively influence the valuation of an actual product with social density working as a mediator.

The actual physical density was manipulated into either dense or sparse conditions using a picture describing a retail store setting. Social distance was manipulated by giving different instructions to the participants before viewing the picture of the retail setting. Other constructs as social density and product valuation were measured by using a set of questionnaires. An online survey was used for this study.

### **3.1. Method**

Two hundred and sixty-eight participants from Amazon Mechanical Turk, an online survey panel, completed this survey for a small payment. The study was explained to them as part of research in examining the influence of retail store impression on consumer choice beforehand. After giving consent to participate in the study, participants were randomly assigned to conditions of a 2 (physical density: dense vs. sparse) by 2 (social distance: close vs. distant) between-subjects design.

All participants were shown a picture of a store with human silhouettes depicted as the crowd of customers. Human silhouettes were used instead of real pictures of customers to prevent any peripheral judgments that may occur by investigating the customers rather than the manipulations as adapted from O’Guinn et al. (2015). Participants were told that the store picture was from an actual store and were instructed to examine the store environment for a few moments. The physical density was manipulated by varying the number and places of human silhouettes as figures 2A and 2B. The sparse condition contained five human silhouettes, widely dispersed throughout the store. The dense condition, on the other hand, contained fourteen silhouettes, many of which were gathered in the center of the store to evoke crowdedness.

Social distance was manipulated by varying the specific instructions given to the participants in their respective conditions. In the socially close condition, the instruction specified the retail store as "local" and read “The silhouettes are your friends and other shoppers around you”. In comparison, the socially distant condition did not disclose any information about the exact place of the retail store

and had instructions that read “The silhouettes represent other random shoppers”.

After viewing the stimuli, participants were instructed to imagine shopping in the store to buy a pair of shoes and asked to report how much money in US dollars they were willing to pay if they were to buy them. Only a picture of a shoebox was used to prevent estimating the price of the shoe by its features without considering the environment as adapted in O’Guinn et al. (2015). To prevent overpricing or underpricing, participants were asked to range the payment from \$20 to \$400. Although O’Guinn et al. (2015) used the same range using a slide bar, participants were asked to type in the number directly to prevent inconsiderate drag around the center of the bar. Finally, participants were given out the questionnaires measuring for social distance and social density.

Social density was measured using seven-point Likert scale (1 point = strongly disagree, 7 point = strongly agree) on three items as “I feel other shoppers are similar to myself”, “I feel psychologically close to other shoppers”, and “I feel that other shoppers are typical in-group members” as adapted from Kim, Zhang, and Li (2008). The results were reverse-coded so that small numbers would equal the short distances between the individual and other customers and a scale was created by averaging out the three items. Social density was measured by two items, “I feel like the store is crowded” and “I feel like the store is packed” using a seven-point Likert scale (1 point= strongly disagree, 7 point=strongly agree). Different levels of physical density and social distances were dummy-coded for analyses.

Figure 2A: Sparse condition containing five people



Figure 2B: Dense condition containing fourteen people



## 3.2. Results

### *Social Distance*

A one-way Analysis of Variance showed participants in the socially close conditions ( $M = 3.16$ ,  $SD = 1.25$ ) showed a significant difference between the socially distant conditions ( $M = 3.55$ ,  $SD = 1.45$ ;  $F(1, 266) = 5.71$ ,  $p = .018$ ). The participants who were in the social close conditions interpreted the relationship between themselves and the crowd of other shoppers as socially closer.

### *Social Density*

A one-way ANOVA was conducted to measure the difference between the conditions. The physically dense conditions ( $M = 6$ ,  $SD = 0.98$ ) displayed significantly high levels of social density than the physically sparse condition ( $M = 3.94$ ,  $SD = 1.84$ ;  $F(1, 266) = 131.56$ ,  $p < .000$ ) as well. To be specific, when comparing the socially close conditions, the physically dense condition reported a higher level of social density ( $M = 5.87$ ,  $SD = 0.99$ ) than the physically sparse condition ( $M = 4.15$ ,  $SD = 1.76$ ;  $t(132) = 7.08$ ,  $p = .005$ ). Similarly, in socially distant condition, the dense condition reported a higher level of social density ( $M = 6.13$ ,  $SD = 0.95$ ) compared to the sparse condition ( $M = 3.75$ ,  $SD = 1.90$ ;  $t(132) = 9.11$ ,  $p < .000$ )

### *Product Valuation*

The product valuation did not show significant differences in different conditions except when comparing physically sparse and socially distant condition ( $M = \$111.78$ ,  $SD = \$81.61$ ) against the two socially close conditions. The

physically dense, socially close condition ( $M = 134.61$ ,  $SD = 102.78$ ,  $t(135) = 1.44$ ,  $p < .01$ ) was significantly larger and physically sparse and socially close condition ( $M = 131.23$ ,  $SD = 95.67$ ,  $t(131) = 1.26$ ,  $p < .1$ ) was marginally larger than the sparse and distant condition. The fact that the each of the conditions did not vary may be due to high variances within the values. As the total mean of the willingness-to-pay was \$122.88, the standard deviation was at \$92.96 as well. It seems as if people may have had a difficult time estimating the price of the pair of shoes. When comparing the product valuation for different social distances, the socially close conditions showed a marginally significantly higher willingness-to-pay ( $M = \$132.97$ ,  $SD = \$99.04$ ) than the socially distant conditions ( $M = \$112.80$ ,  $SD = \$92.96$ ;  $F(1, 266) = 3.181$ ,  $p = .076$ ).

Table 1

Social Density, Product Valuation		
	Socially close	Socially distant
<b>Social Density</b>		
Dense	5.88(.99)	6.13(.95)
Sparse	4.15(1.76)	3.75(1.90)
<b>Product Valuation</b>		
Dense	134.61(102.78)	113.85(90.21)
Sparse	131.23(95.67)	111.78(81.61)

\*Standard deviations are noted in parentheses

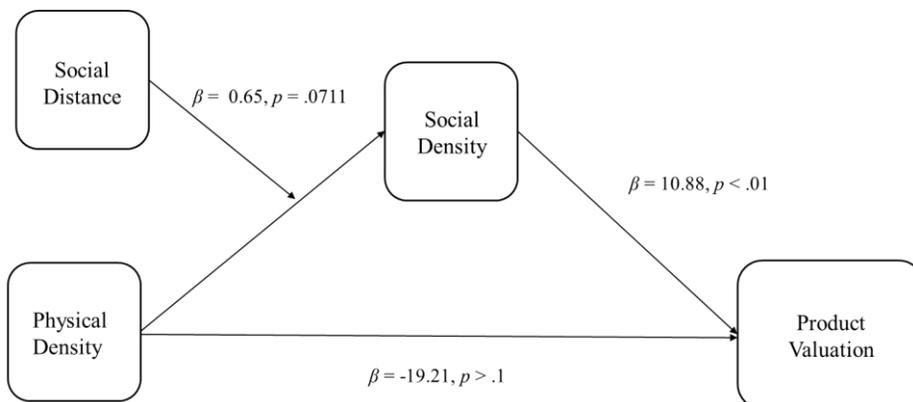
#### *Moderated Mediation Analysis*

A moderated mediation analysis was conducted to test the hypotheses using the Hayes Process Macro for SPSS (Hayes 2013) using dummy variables as the independent variable, physical density, and the moderator, social distance. Using 5,000 bootstrap samples with a 90% confidence interval, it is notable that the

analysis showed a marginally significant interaction effect of physical density and social distance ( $\beta = 0.65, SE = 0.36, p < .0711$ ) on social density. Physical density also had a significantly positive effect on social density as predicted ( $\beta = 1.73, SE = 0.25, p < .001$ ). Social distance did not have any direct significant effect on social density ( $\beta = -0.40, SE = 0.25, p > .1$ ).

On the product valuation, the analysis revealed that there was no direct effect of physical density ( $\beta = -19.21, SE = 13.73, p > .1$ ) on willingness-to-pay. Unlike the predictions, social density was found to positively mediate the relationship between physical density and product valuation ( $\beta = 10.88, SE = 3.84, p < .01$ ). Moderated mediation was found as the indirect effect of physical density on product valuation differed on the different levels of social distance excluding zero (0.32 and 17.07). Socially close situation had a smaller effect ( $\beta = 18.84$ ) than distant situation ( $\beta = 25.89$ ) on the influence of physical density on social density, indicating that individuals do perceive less social density or crowdedness when feeling socially closer to the crowd. Figure 2 shows the model with direct effect of physical density on product valuation, interaction of physical density and social distance on social density, and the effect of social density on product valuation.

Figure 2



### **3.3. Discussion**

It is noteworthy that social distance did play a role in decreasing the amount of social density an individual may feel when facing a physically dense situation. However, against my predictions, social density had a positive relationship with the product valuation. A possible explanation is that people may have judged the product based on the population of the store rather than the social status of the crowd as O'Guinn et al. (2015) suggest. Harpen, Pieters, and Zeelenberg (2005) mention that when consumers are unsure about the value of a product, information from other consumers' valuation may help set decide their own value. Also, when consumers realize that others have bought the product, they may be induced to buy the product as well. As study participants were exposed to the stimuli, it may have been that they evaluated the product based on how physical density created a sense of popularity among other shoppers, inducing them to think as if the stores offered valuable products. Measures of providing the customer with more information about the retail setting or the product values may help consumers to refrain from using other evidence than the physical density of the store to rule out alternative explanations.

Nonetheless, the moderated mediation test was still able to capture the interaction effect of physical density and social distance on social density as predicted. This implies that physical density does not always induce social density and more precautions should be taken when using social density as a construct in academic research as it is different from physical density as many researchers have used regardless. As more details on the relationship between the two densities are discovered, there will be more ideas on how to manage crowdedness. At the current

moment, this study leaves room for marketers to manipulate the social distance between the shoppers to alleviate a crowded environment if needed.

## **4. GENERAL DISCUSSION**

The current research aimed to bring light to the relationship between social density and physical density and possibly extend this matter into investigating a direct effect on consumer decision-making through examining product valuation. An online survey was conducted, with over two hundred participants measuring the conceptual model of physical density affecting product valuation by social density as a mediator and social distance moderating the relationship between physical and social density.

Although the product valuation did not show difference across conditions, the social distance between an individual consumer and the crowd was revealed to be marginally significant in moderating the relationship between the two densities through a moderated mediation analysis.

Managerially, I believe that this can be a starting point for those retail stores with crowded environments by nature or how to react to such a situation. As previous researches indicate that people become defensive to a potential threat, it will be crucial to help consumers feel comfortable and feel as if they are a part of the whole and not any outsider standing by. Creating a sense of team or harmony with fellow shoppers to give the consumers a reason to empathize or feel similar to one another may be a possible way of decreasing the social distance between the customers.

This study can contribute to the academic branches of studying social

density as it attempts to disclose the relationship between how physical density can induce social density. As the previous line of research did not distinguish between the two, the current work can be a footnote to future research in the area of social density. Also, suggesting social distance as a moderating construct can leave room for researchers to generate ideas in which other factors that may affect the relationship.

#### *Limitations and Suggestions for Future Research*

There are a few limitations in that this study does not directly measure physical density and see how it leads to social density but manipulate it into different conditions by using human silhouettes in a picture. It will be worthwhile to give a direct comparison between the two. More importantly, the current study showed a reversal in the effect of social density on product valuation, unlike the previous academic literature. This hints at the possibility of not ruling out other peripheral factors that may have affected the study. A better way of excluding out alternative factors and explanations are needed to fortify the results of this study.

Another limitation is that the product valuation did not differ per conditions. Although some conditions did show significant differences, there was not much difference overall and the variance was very large for a stable result. A better method of measuring product valuation will be of use in the future research.

#### *Implications and Future Research*

Future research can be exploring the relationship between the individual and the place where the physical crowding is occurring. In this research, the social distance measured was between the individual customer and the crowd of other shoppers at a retail setting. However, the composition of the crowd is not the only

factor that can give a feeling of safety and positive valence that can alleviate the fear of a potential threat causing social density. Factors that constitutes the ambiance of a store should be examined to see whether it can control for social density.

Another important aspect is understanding when does increase in physical density work better. A crowded marketplace or a sports stadium full of fans is going to positively influence consumer experience, not the physical comfort of using almost the whole stadium to watch a game. The purpose of the visit to a place will likely affect how an individual looks at a crowd. As Wang and Ackerman (2018) mention, the effect of physical density on social density depends on individual factors as well as group factors, leaving much room for further investigation and research to come.

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## 6. APPENDIX

### *Instructions*

#### I. Socially close condition

This study is concerned with retail store impressions. Please spend a few moments imagining yourself shopping in a local store for a pair of shoes and a t-shirt. The image below shows the store environment for you to consider. The silhouettes are your friends and other shoppers around you.

#### II. Socially distant condition

This study is concerned with retail store impressions. Please spend a few moments imagining yourself shopping in a store for a pair of shoes and a t-shirt. The image below shows the store environment for you to consider. The silhouettes represent other random shoppers.

### *Store Environment*

#### I. Dense condition



## II. Sparse condition



### *Questionnaire*

The box below contains a pair of shoes from the store



If you were to purchase a pair of shoes in the box above, how much would you pay in the range of \$20 ~ \$400? (The currency is in U.S. dollar and any answer out of the range will not be accounted for)

Please indicate how much you agree with the following statements about this study.

1. I feel other shoppers are similar to myself
2. I feel like the store is crowded
3. I feel psychological close to other shoppers
4. I feel that other shoppers are typical in-group members
5. I feel like the store is packed

## 요약 (국문 초록)

소비자들은 사람들이 많은 곳을 지나거나 좁은 장소에 있는 등 물리적 밀도(physical density)가 증가하면, 특정 공간이 사람들로 인해 얼마나 붐빈다고 생각하는지를 의미하는 사회적 밀도(social density)가 높다고 느끼고 개인공간(personal space)에 대한 위협을 감지한다. 이는 물리적 밀도가 사회적 밀도에 영향을 미치는 사례로, 두 변수간의 상관관계를 평가하는 것은 매우 중요하다. 하지만, 기존 연구들은 군중이 많은 경우(crowdedness)에 대해 물리적 밀도와 사회적 밀도를 명확하게 구분하여 두 밀도간의 상관관계를 정량화한 적이 없다. 본 연구에서는 1) 물리적 밀도와 사회적 밀도에 대한 관계를 평가하고, 2) 물리적 밀도가 사회적 밀도를 형성할 때 영향을 주는 사회적 거리(social distance)의 영향을 분석하고자 한다.

본 연구에서는 268명의 피험자를 대상으로 온라인 설문조사를 실시하였다. 각 피험자들에게 물리적 밀도 조건 2가지와 사회적 거리 조건 2가지를 변수로 설정하고, 각 변수의 조건에 따라 총 4가지의 경우를 질의하여 제품가격평가를 수행하였다. 설문조사 결과를 바탕으로 조절된 매개효과 검증을 수행하여, 2가지 변수인 물리적 밀도 및 사회적 거리와 사회적 밀도 사이의 상관관계를 정량적으로 평가하였다.

본 연구에서는 소비자가 군중에 대해서 느끼는 사회적 거리 가 물리적 밀도와 사회적 밀도의 관계에서 유의한 상관관계가 있음을

확인하였다. 또한, 군중과의 친밀함을 제공하는 방법으로 사회적 거리 변수를 조절하여 물리적 밀도가 사회적 밀도에 주는 부정적인 영향들을 완화할 수 있음을 확인하였다.

본 연구를 통해 물리적인 환경을 조절하는 방법으로 물리적 밀도를 감소시켜 사회적 밀도를 개선하는 어렵게 때문에, 사회적 거리를 조절함으로써 사회적 밀도를 개선하여 소비자들의 부정적인 경험을 감소시키는 방법이 효과적임을 제시하였다.

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**주요어** : 사회적 밀도, 물리적 밀도, 사회적 거리  
**학 번** : 2018-21580