



## THE PERCEPTION OF PERSONAL SPACE AND CROWDING DURING COVID-19: AN EXAMPLE OF GROCERY SHOPPING

### COVID-19 SÜRECİNDE KALABALIK VE KİŞİSEL ALAN ALGISI: MARKET ALIŞVERİŞİ ÖRNEĞİ

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#### Abstract

Covid-19 has reshaped the daily lives of people all around the world. Many regulations and changes have been made by the authorities in order to reduce the risk of transmission of the virus. Significantly, the regulations made by the government aim to reduce the number of people per square meter in closed areas and to increase the social distance between people. These regulations bring along new personal space and crowding perceptions. In this context, people's behaviors in many public spaces, from public transportation to grocery shopping, have gained a new texture. This change not only affected the perspective of the place but also caused a shift in the perspective of people for one another. In this paper, environmental regulations aiming to adapt people's behaviors to social distance due to Covid-19 are examined in terms of personal space and crowding concepts. The purpose is to conduct an online interview with a retrospective approach and present the data as a narrative to determine the participants' perceptions of the random sampling method about personal space and crowding concepts before and after the pandemic. The research data were analyzed using the content analysis method in the QRS Nvivo qualitative data analysis program. In the results of the study, it was revealed through the example of grocery shopping that people's need for personal space in closed areas increased, and the crowding perception differed from the pre-pandemic period due to psychological reasons.

#### Özet

Covid-19 salgını, dünyanın her yerinde insanların günlük yaşamlarını yeniden şekillendirmiştir. Yetkililer tarafından virüsün bulaşma riskini azaltmak için birçok düzenleme ve değişiklik yapılmıştır. Dünya Sağlık örgütü tarafından yapılan uyarılar ve merkezi otoritelerce yapılan düzenlemeler kapalı alanlarda metrekareye düşen kişi sayısını azaltmayı ve insanlar arasındaki sosyal mesafeyi artırmayı hedeflemektedir. Bu düzenlemeler yeni kişisel alan ve kalabalık algılarını beraberinde getirmektedir. Bu bağlamda toplu taşımadan market alışverişine kadar birçok kamusal alanda insanların davranışları yeni bir doku kazanmıştır. Bu değişim bireylerin sadece mekana bakış açılarını değiştirmekle kalmamış, aynı mekanda bulunduğu diğer insanlara bakış açılarının da değişmesine neden olmuştur. Bu çalışmada, Covid-19 nedeniyle insanların davranışlarını sosyal mesafeye uyarlamayı amaçlayan çevre düzenlemeler, kişisel alan ve kalabalık kavramları açısından incelenmektedir. Amaç, içinden geçilen değişim sürecinin bireyin kişisel alan ve kalabalık algıları üzerindeki etkisini market alışverişi örneği üzerinden ortaya koymaktır. Çalışmada katılımcıların pandemi öncesi ve sonrasında kişisel alan ve kalabalık kavramlarına ilişkin algılarını belirlemek için retrospektif bir yaklaşımla çevrimiçi görüşmeler yapılarak veri toplanmıştır. Araştırma verileri QRS Nvivo nitel veri analiz programında içerik analizi yöntemi kullanılarak analiz edilmiştir. Çalışmanın sonuçlarında market alışverişi örneği üzerinden Covid-19 salgını süresince insanların kapalı alanlarda kişisel alan ihtiyacının arttığı, kalabalık algısının psikolojik nedenlerle pandemi öncesine göre farklılaştığı ortaya konulmuştur.

**Keywords:** Covid-19, Crowding, Grocery Shopping, Personal Space

**Anahtar Kelimeler:** Covid-19, Kalabalık, Market Alışverişi, Kişisel Alan

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## 1. PURPOSE OF THE STUDY

The built environment is shaped to meet people's needs and is used as a tool to convey cultural values (Aiello & Thompson, 1980). Regulations in the built environment under pandemic conditions ensure the implementation and adoption of health measures apart from the transfer of cultural values. The amount of space available in the room is a factor in determining people's personal distance (Fredman, 1975). With the regulations made to contribute to social distance protection and to reduce the rate of spread of the coronavirus, the maximum number of people to be in one place is determined, and personal spaces between people are also defined. This is also effective in shaping the crowding perception in public spaces. Besides, comprehensive studies on personal space are handled together with the concept of crowding due to the effect of population density on personal space (Little, 1965). Therefore, it is thought that using the concepts of personal space and crowding together in the study will provide meaningful data.

This study aimed to examine the changing personal space and crowding perceptions in society due to Covid-19. In this way, the study will allow inferences to be made for new spatial arrangements that may be needed in closed public spaces in the pandemic or post-pandemic period. Supermarkets, in which rules and constraints determined by the authorities are applied to make a clear assessment of spatial perception, have been determined as research sample. Supermarkets now take part in almost everyone's lives even more than before during the pandemic process as they meet primary needs, and they constitute an important part of the daily life. Consequently, it is thought that supermarkets will provide rich data to examine the perception change of personal space and crowding.

## 2. CONCEPTUAL BACKGROUND

While culture is a significant determinant of crowding and personal space perception, the Covid-19 pandemic has caused a change beyond cultural influences worldwide. Individuals who are not yet infected have also been affected by the pandemic all over the world (Shields et al., 2020), and this has caused a behavioral change for anyone who is afraid of getting infected. Since the relationship and interaction of the concepts of personal space and crowding have gained dominance, especially in the public sphere with the effect of the pandemic, the research examines these two concepts.

### 2.1. Personal Space

The concept of personal space does not have an exact numerical counterpart; it can vary with the person, the context, and the culture (Sommer, 2002). Hall (1959; 1966), defines some distance measure: 1.5 ft– 4 ft for personal distance, 4 ft–12 ft for social distance, and 12 ft–25 ft for public distance.

Aiello and Thompson (1980) define two functions of personal space as follows:

It protects against possible psychologically and physically uncomfortable social encounters by regulating and controlling the amount and quality of sensory stimulation, and it communicates information about the relationship between the interactants and the formality of the interaction by making available to others (as well as to the self) cues as to the preferred distance which has been chosen.

Accordingly, the personal space has a regulatory function in communication and creates a psychological and physical boundary in the social environment. Personal space is a means of protection against external threats, and more personal space is needed in case of stress (Dosey & Meisels, 1969). With this reference, considering that coronavirus is an external threat, the personal space needed in the public sphere has also increased with the effect of the stress caused by the risk of transmission.

The personal space, defined by Sommer (1974) as the invisible borders surrounding the human being, is secured with stimuli reminding the maintenance of social distance in public spaces during the pandemic.

## **2.2. Crowding**

When other people are around, the individual decides on his/her needs, movements, and position in the space considering others' presence (Epstein, 1981). Zlutnick & Altman (1972) mention that crowding is examined in two ways: the number of people per unit in space and physiological reactions and subjective emotions. Under pandemic conditions, the number of people per square meter is effective in the authorities' control of the crowd in a space, and it is noteworthy that subjective feelings, especially anxiety and worry, are influential in shaping individuals' behavior and crowding perception. When an environment gets crowded, one person's activities can interfere with another person's activities (Epstein, 1981). It is possible to see the effect of other people's behavior in the environment on the movement flow of the individual in the Covid-19 period, where people are making great efforts to stay away from one another. Accordingly, it can be stated that crowding practices also have significantly varied on an individual scale. Shield et al. (2020) state that mandatory or optional quarantines and the use of products such as face masks during the pandemic process generate crowding practices and new public behaviors.

## **2.3. Covid-19 Effects on Grocery Shopping**

Grocery shopping is an action that enables people to meet their basic needs such as nutrition. Especially in urban life, individuals have many options for grocery shopping, such as chain markets, small local businesses, and online shopping. With the effect of the Covid-19 pandemic, the distances between people, especially in indoor spaces, and the intersections in movement flows and regulations have become serious issues that need attention (World Health Organization, 2020; Sabri Ulker Foundation, 2020). Throughout the Covid-19 pandemic, during which leaving home restrictions were applied in many countries, individuals were able to leave their homes to meet their basic needs. In this way, it was possible to shop for groceries even during the obligation of staying home. According to O'Conner's (2020) article, based on the research of Gehl People conducted in almost 70 countries, 59% of people felt crowded in places of essential errands which mainly include groceries. For this reason, it is valuable to examine the concepts of personal space and crowding through market shopping.

According to Morgan (2020), who stated that the most significant change in grocery shopping is in online shopping, 81% of consumers had never shopped groceries online before the pandemic in the U.S., while 79% of customers have bought groceries online during the pandemic. Li et al. (2020) pointed out that online grocery shopping helps to reduce the risk of infection, and according to their research in China, online grocery shopping, which had an 11% market share before the pandemic, increased to 38% after the pandemic. Similarly, Chang and Meyerhoefer argue that online food shopping services will slow the transmission of Covid-19

and help protect at-risk consumers from the virus by reducing physical contact, which will also benefit public health (Chang & Meyerhoefer, 2021).

Consumer behavior is shaped by people's fears and concerns about the virus (Grashuis et al., 2020). This change may be reflected in the behaviors in the physical shopping process as well as in the preference in online shopping. Another issue pointed out by Morgan (2020) is that shoppers try to spend as less time as possible in the supermarket and try to shop without going beyond their needs.

According to their research in China in the early period of the pandemic, Li et al. concluded that there were changes in grocery shopping habits, but local small businesses did not lose customers (Li et al., 2020).

During the pandemic, many regulations are also made by the authorities to ensure the safest shopping. According to the Covid-19 guidelines of the Republic of Turkey Ministry of Health (2020), everyone, shoppers and employees, must have at least 4 square meters of space in the market. Similarly, some initiatives have published guidelines to make grocery shopping safer, such as maintaining social distance during shopping and disinfecting the hands and the surfaces touched (Sabri Ulker Foundation, 2020).

### **3. FIELDWORK**

#### **3.1. Data Collection Method**

The research data were obtained through qualitative research methods, as it enables participants to see their perspectives and reveal data on processes (Yıldırım & Şimşek, 2018). Since qualitative methods are used to determine variables instead of controlling them (Corbin & Strauss, 2008), it was deemed appropriate to be used in a study investigating perception change. During the research process, ten people (6 women, 4 men) were interviewed. Participants were selected by excluding those under 18 and over the age of 65 who have strict restrictions during the pandemic process. In the study, the most populated cities of Turkey were chosen as the sample (TUIK, 2022), and the number of participants that would provide data richness was determined according to the population density in the cities (3 Istanbul, 2 Ankara, 2 Izmir, 2 Bursa, 1 Antalya). In this way, all participants in city centers can go to similar market chains, allowing them to reach similar spatial contexts. By asking open-ended questions to the participants, interviews were conducted online, which also allowed them to tell their memories. In these interviews, voice recording was taken with the participants' permission, and then the interviews were transcribed.

#### **3.2. Data Analysis Method**

Content analysis was chosen as the analysis method, as it allows focusing on the concepts within the data and the relationships between concepts (Yıldırım & Şimşek, 2018). In the analysis process, the qualitative data analysis program named QSR Nvivo was used as it made vital contributions to digital analysis data management, idea management, querying on data, data visualization, and reporting data (Bazeley & Jackson, 2019), and the graphics resulting from these analyses were presented to the reader.

According to Creswell (2017), good qualitative research should include the researcher's comments considering their socioeconomic and cultural backgrounds. Qualitative research containing narrative data should not be presented as a scientific report but should be

presented in a way that includes narratives to facilitate the reader's understanding of the subject (Creswell, 2017). In the analysis and findings section, in addition to the graphics presenting the outputs of the content analysis, researcher comments and participant narratives were included.

### 3.3. Analysis and Result

In order for the reader to get a general impression of the sampling, the table containing the participants' demographic characteristics, their distance to the market, and the way they go to the market are given below (Table 1).

**Table 1:** Characteristics of the participants.

	City	Age	Gender	Distance of the nearest grocery shop	Preference to go shopping
P1	Istanbul	27	W	10-15 mt	On foot
P2	Izmir	52	M	150	On foot
P3	Antalya	52	W	50	On foot
P4	İstanbul	29	M	600	By car
P5	Bursa	28	W	125	On foot
P6	Ankara	28	W	800	By car
P7	Izmir	59	W	100	On foot
P8	Ankara	28	M	150	On foot
P9	Istanbul	33	W	1500	By car (generally)
P10	Bursa	28	M	500	On Foot

As seen in the table, all the participants live in one of Turkey's five most populous cities, and all the participants are in different age groups. On the other hand, in the evaluation of the research data, it was determined that the distance of the participants to the market was influential on their choice of the way of going to the market. However, it was not the only factor in this matter.

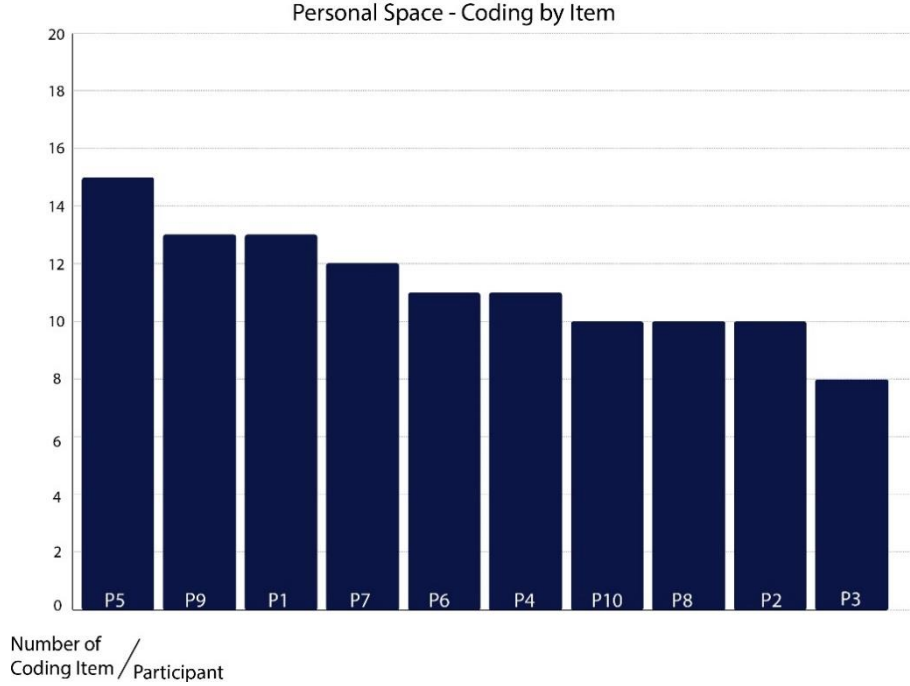
In the process of content analysis of interview data, while evaluating the concepts of the crowding and personal space in grocery shopping, personal space, crowding, and grocery shopping are determined as themes (Table 2). At this stage, QRS Nvivo qualitative data analysis program was used to carry out the content analysis systematically and to visualize the results. After the coding of the participants' data, the thematic content analysis was completed by listing the codes under their related themes. Under the theme of grocery shopping, codes do not directly indicate the concepts of the crowding or personal space or both. In addition, other codes (hygiene, excuse to go to the market, lockdown, and confidence) that contain restrictions and requirements depending on the epidemic situation are under the theme of others.

It was noted that the participants who stated that they did not care about personal space before the pandemic paid attention to personal space and interpersonal distance during the pandemic process. Physical contact makes most participants think that their personal space has been violated before the pandemic. Statements such as "If there is no annoying smell, it is okay for me" and "It bothered me when he came to the distance where I could feel the smell of sweat" demonstrate that for some participants, the scent is also a criterion for determining personal distance. However, it has been observed that all the participants' personal space needs in public spaces are now increasing. Taking a step back to protect the personal space when someone approaches, warning the other person in case this cannot be done, and using

the shopping cart as a means of determining the distance with people are the preferred actions during grocery shopping. The number of statements regarding the participants' personal space theme can be seen in the figure below (Figure 1).

**Table 2:** Reference numbers of themes and codes.

Name	Files	References
PERSONAL SPACE	10	113
using shopping carts to determine distance	4	6
step back - walk away	9	17
standing position in line	5	5
reactions and responses	9	17
interpersonal distance	10	64
contact	2	2
smell	3	4
physical contact	10	18
CROWDING	10	135
waiting to stay away from the crowd	7	14
time and speed	6	20
stress	8	24
public transportation	5	6
prefer the spacious one	7	14
physiological reactions and subjective emotions	4	4
observation before entering the market	6	10
obligations to control crowd	4	7
number of people per unit	7	10
change in shopping time	7	10
change in the perception of crowding	8	11
GROCERY SHOPPING	10	69
the order of taking products according to human density	9	11
small local businesses	6	10
shopping list	5	8
shopping frequency	7	12
product price and quality	6	8
outdoor market	2	2
online shopping	7	7
increase in online shopping	3	4
avoiding window shopping	6	7
Others	10	19
lockdown	3	3
hygiene	4	5
excuse to go for a walk	2	4
confidence	4	7



**Figure 1:** The number of participants referencing the personal space theme.

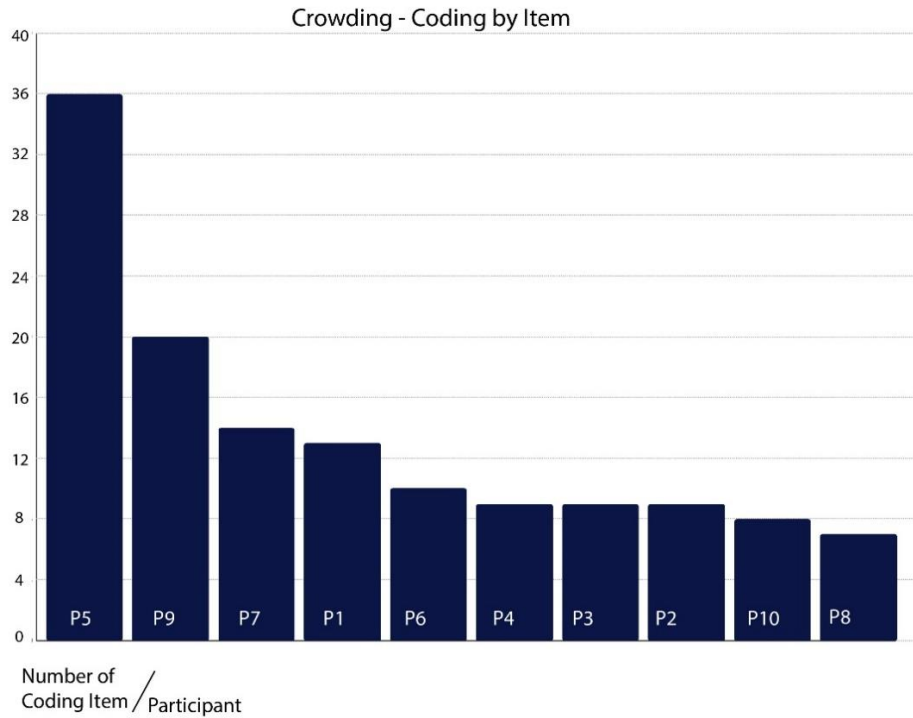
According to Figure 1, even the participant who had the least related expression with the crowding theme referred to this theme 8 times. This shows that the crowding theme is a remarkable factor in the spatial approach of grocery shopping. Furthermore almost all of the participants talked about the significant changes in crowding perceptions during the pandemic process. The following statements show the extent of this change:

“While a place with 20 people was not crowded before, now even ten people seem like a crowd.”

“Normally, I do not like crowds, but 3-5 people would not bother me, now even if there are 2 people, I feel like playing around the corner.”

“The pre-pandemic crowd and the perception of crowd in the pandemic process are very different; even one more person is crowded for me now.”

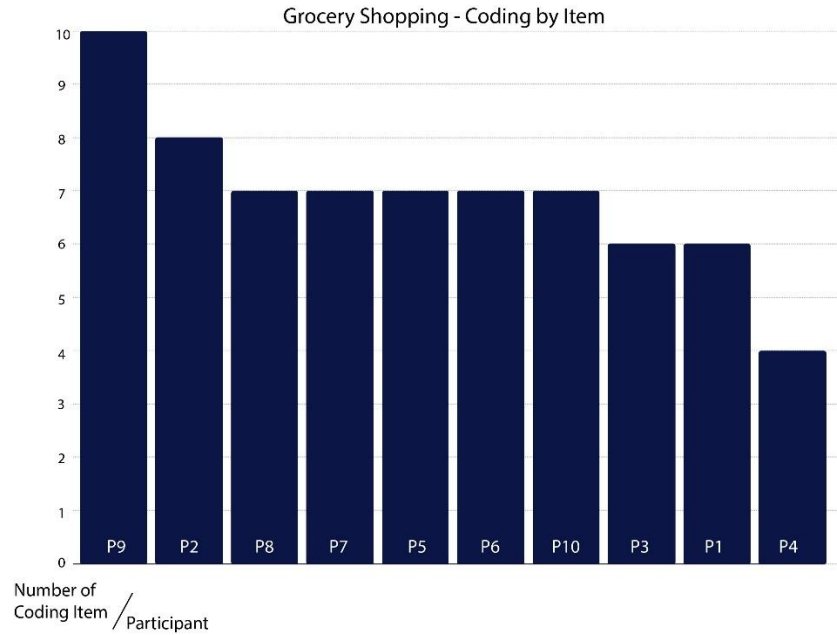
Some strategies developed by people to avoid exposure to crowds during grocery shopping can be listed as follows: observation before entering the market, waiting to stay away from the crowd, trying to spend less time and being quick in the market, using shopping lists, preferring the spacious one, changing shopping time, etc. The number of statements regarding the participants' crowding theme can be seen in the figure below (Figure 2).



**Figure 2:** The number of participants referencing the crowding theme.

The personal space theme is similar to the crowding theme. However, it is noteworthy that the two most referencing participants within this theme have high reference numbers. This remarkable difference may indicate extra sensitivities and vulnerabilities about personal space. Additionally, it has been observed that product quality and prices are still effective for many people in choosing the market for shopping. Most participants do not think that small local businesses are an excellent alternative to supermarkets during the epidemic process. It has been determined that most of the participants have a change in the frequency of going to the market. This change may be due to the increase in the frequency of online shopping, as well as preferring to go to the market frequently to spend a short time in the market, to buy a small number of products at a time, or to choose to accumulate their needs and buy them at once in order to decrease the number of visits to the market. Also, many people avoid window shopping to shorten their time at the grocery store. People produce different strategies to minimize the risk of virus transmission during the grocery shopping process. The number of statements regarding the participants' grocery shopping theme can be seen in the figure below (Figure 3).





**Figure 3:** The number of participants referencing the grocery shopping theme.

#### 4. DISCUSSION AND CONCLUSION

Shields et al. (2020) state that distance has so far been dependent on interpretation and individual performance and that avoidance required stepping off pathways. Similar to this statement, it was seen that all of the research participants had different perceptions of personal space and needs before the pandemic. Also, this need varies depending on the place and the possibilities of the space. For example, a participant who needs more space in a shopping center stated that he would accept less because he knew that public transport could not have such a space. Although social distance rules have been determined for many public spaces due to the pandemic, it is seen that people who are sensitive about this issue still prefer to step back or change their paths when they encounter people who do not pay attention to distance (Shields et al., 2020). Evans and Howard (1973) demonstrate that the need for personal space can vary according to gender and person.

Nevertheless, in this study, it was observed that the need for personal space during the pandemic process was shaped regardless of gender. It is noteworthy that the participants put the shopping cart between themselves and other people to protect their personal space and stay away from the crowd. Goffman (2020) describes the area as any place surrounded to some extent by barriers to perception. In this example, too, what people do is to use the shopping cart as an obstacle to identify a region where they protect their personal space.

The main conclusions of the study are that the perception of personal space is relatively stripped of demographic features due to the risk of contamination, the perception of the crowd in public spaces differs greatly, and that people produce different methods to stay away from the crowd and protect their personal space during their grocery shopping process.

In the light of these discussions, it can be clearly stated that individuals' perceptions of personal space and crowding differ with the effect of the Covid-19 pandemic for supermarkets, shopping places, which are an example of a public closed space. Even if it is predicted that the transmission rate of the Covid 19 pandemic or the decrease in virus activity

will initiate a new change in the spatial perception of individuals, it is thought that this change will not result in a return to their pre-pandemic perceptions when the statements of the research participants are considered. In addition to online shopping, small businesses and outdoor markets create an alternative to reduce contact in grocery shopping. Furthermore, it is noteworthy that in cases where reducing contact with people is among the primary concerns, window shopping decreases, and the density of people in the space is effective in the product purchase decision and shopping order. Accordingly, it would be beneficial to reconsider the plan and movement flows in closed public areas.

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