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# The Perception Of Residents Of Comfort Conditions In Gated Communities For High-Income Groups: The Case Of Bursa, Turkey

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***ABSTRACT****: The objective of this research paper is to investigate residents' perception of environmental and indoorcomfort conditions inthe residences in gated communities for higher-income groups,focusing on thermal, visual and acoustical comfort. For this purpose, a residential satisfaction survey was conducted to residents of 6 housing estates in Bursa, Turkey. The study consists of three main parts: i) literature review ii) evaluation of user satisfaction survey, and iii) discussion of the research findings focusing on improving indoor environment. Comfort parameters for indoor environmental conditions are predetermined by the authors based on ASHRAE 55-2010 standards. The questionnaires were applied to residents and they were asked to express the importance of comfort conditions in housing preference and their satisfaction level with comfort parameters in gated communities which they prefer to live in. The results suggest that design decisions in such residential areas are predominantly taken based on privilege, security and site opportunities, and that satisfaction from indoor spaces is considered as of secondary importance. While users prefer these types of residences due to the perception of privilege, site opportunities and security, they feel dissatisfied with basic parameters such as daylight and indoor temperature, which are important during the usage.In conclusion, recommendations are developed towards the improvement of architectural design of gated communities which is a type of housing preferred by upper income groupsaddressing thermal comfort, lighting and acoustics.*

***KEY WORDS:*** *User Comfort, Indoor Environmental Conditions, Residential Satisfaction, Gated Communities, Bursa*

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## I INTRODUCTION

Gated communities for upper income groups appear to have emerged as a form of spatial limitation in order to create a privileged life and social homogeneity among social groups, and for providing personalization, comfort and security (Low 2001, Roitman 2005, Pijpers and vanHoutum, 2005, Mohdet al.2016). In this regard, different from other settlements, it is a necessity in gated communities to ensure that residents feel satisfied with comfort conditions. The construction of these types of settlements are generally based on features such as security, social facilities, parking, various services that facilitate everyday life, social safety, privileged life, and earthquake security (Carvalho et al., 1997, ÖzkanTöre andKozamanSom, 2009, Yüksel and Akbulut 2009). Despite the importance of comfort conditions and various attributes in these housing estates that target high income groups, provision of comfort is not given priority in architectural decisions.

User comfort and indoor air quality are certain issues associated with human health and well-being of society as a total sense of physical, mental and social well-being. World Health Organization reported that maintaining optimum indoor climate in buildings is important for occupants in terms of human health, comfort and productivity (Ashrae, 2010). Within this scope it can be said that the users' performance and tranquility are influenced by the comfort conditions of indoor environment. In this context, six selected case building that are gated communities were evaluated based on the perceptions of comfort in the physical environment, by considering the determinants of indoor comfort conditions including climatic, visual, acoustical aspects.Prior to the field study, a research was conducted on the architectural features of case buildings, together with the literature review on previous studies subjecting resident perception and preferences of visual, acoustic,thermal, air and luminous comfort conditions in housing environments.

In gated communities, residents seem to associate comfort with security measures and feeling of safety at the site (Low 2001, Roitman 2005). When studies on the perception of comfort is evaluated, it is seen that a study on comfort conditions of residents in a Danish housing estate examined visual, acoustic, thermal and air quality aspects and the effects of residential features on comfort together with the expectations of users. In this context, the topics that were investigated were: parameters that provided a good indoor climate, the satisfaction level of users from the indoor comfort parameters, features that provided comfort to the respondents, climatic comfort level of residents, and the behavior and preferences of residents related to indoor climate comfort control. In the study, it was found that the conditions of the housing environment (such as the position of the house, daylight) were important for providing comfort in the interior and that the indoor thermal, visual, acoustic or air quality parameters increased indoor comfort (Frontczak et al., 2012).

In a study on thermal comfort in Australia during summer, users were assessed for their level of satisfaction with thermal comfort and their behavior in controlling indoor climate. The data in the study showed that residents' responses to questions such as outdoor temperature and the amount of airflow related to ambient temperature inside and outside of their buildings were varied. In addition, it was found that some of the qualities that are included in the design of building blocks and interior spaces such as operable windows, ceiling fans, etc. were essential to thermal comfort (Soebarto and Bennets, 2014). This shows that the location of the building blocks, their relationship to each other, and their location, has an impact on airflow, which in turn affects thermal comfort. In this context, it is possible to reach the conclusion that in addition to the interior design and plans of housing estates, equipment installed gated community residences also has an impact on thermal comfort.

A study on the effects of daylight on visual and luminous comfort in residential units in Hong Kong has shown that daylight satisfaction level is increased in residences located on higher floors and in buildings with large window openings. On the other hand, in houses facing south, the satisfaction of daylight level is higher than other directions. The study also reached a conclusion indicating that level of satisfaction with daylight was very important on luminous comfort and general housing satisfaction; that satisfaction with daylight changed in summer and winter months due to the change in the daylight levels, and external obstruction in high and dense building sites negatively affects daylight satisfaction (Xue et al., 2014). In this framework, the level of satisfaction from daylight can be expected to decrease in gated communities with high and dense building blocks.

Considering that comfort conditions are very significant for satisfaction from residences, it seems that gated communities are preferred by residents because of the comfort provided, as well as their sense of privilege and safety. Position of building blocks from each other, layout of sites, residential equipment for residents' air and daylight control, size of the facade gaps, and height of apartments affecting airflow and daylight level, and changing level of comfort in summer and winter months are important parameters affecting the comfort of users, and should be considered in building design. In order to ensure satisfaction from residences, which is related to the comfort level of residents, it will be beneficial to consider such qualities for the settlement of the housing area and for the design of the interior spaces of residences. In this framework, this study, aims to determine, based on resident opinions, the parameters that should be taken into consideration in architectural design for increasing satisfaction and comfort in residences in gated communities, which is a type of housing preferred by upper income groups.

## II METHODOLOGY

The user perception and satisfaction with the indoor environment conditions can be examined from the responses of the resident surveys. From this point of view, a field study was conducted to determine user expectations about comfortable indoor conditions in houses in gated communities and to what extent these expectations are met. The research aims to cover heating, air-conditioning, ventilation, natural and artificial lighting, indoor air quality, acoustical and visual issues depending on the user opinions.

The residential satisfaction survey is developed based on 5 point Likertscale ranging from very satisfied to very unsatisfied. The questionnaire involves 4 questions regarding the key themes such as: thermal, acoustical and visual comfort sensation. Interviews were held with residents of gated communities for high-income groups in category via this voluntary questionnaire.To ensure consistency, 33% of the residents living in each area were interviewed and a total of 220 residents were surveyed. The answers have statically analyzed in terms of percentages. The attained results are illustrated in graphs in the research findings section.

## III CASE STUDY

Bursa with a population of 2,5 million is the 4th most populated metropolitan city in Turkey. It is located between the south-east cost of the Marmara Sea and the north western slopes of Uludag Mountain. Temperate climate of the region is characterized with warm summers and mild winters. In a survey conducted on the preferences of individuals about residential area selection in 2017, it was observed that the most preferred region in Bursa metropolitan area is in the Nilüfer district with a rate of 32.8%, where Balat neighborhood is

located (Mutlu andVarol 2017). Today, despite the slum areas that are in the immediate vicinity of Balat, the neighborhood became the most popular residential district where demand and supply are high, becoming the most preferred neighborhood for the upper income groups.In Figure 1, locations of case buildings within Balat districts are marked on the aerial photo on Google Earth.


**Figure 1.Location of the Case Buildings (Google Earth)**

The selected buildings are naturally ventilated and illuminated through window openings. Daylight is supported by pendant light windows. For climate control, some of the homes are equipped with AC system and fans.

**SampleA (EgemenEvler):**There are 48 apartments with a size ranging from 298 to 304 $m^2$ and all apartments are 4+1 (Figures 2 and 3). There is indoor parking for 2 cars per apartment, indoor and outdoor children's playground, outdoor swimming pool, outdoor children's pool, and decorative pools, a basketball court, fitness center, cafeteria, sauna for men and women, 24 hours' security, 4500 $m^2$ green area.

**Figure 2. Photographs taken from the Sample A**
**Figure 3. Aerial photo of the Sample A**

**Sample B (Green Park DikencikEvleri):**There are 122 apartments in 12 blocks on a 25.000 $m^2$area, apartments are 3+1 and 4+1. 3+1 apartments are 211-215 $m^2$, 4+1 apartments are 264-320 $m^2$ in size. There are green spaces, hiking trails, children playground, outdoor swimming pool, tennis courts, a cafeteria and a market in the gated community, which has 24 hours' security (Figures 4 and 5)

**Figure 4. Photographs taken from the Sample B**
**Figure 5.Aerial photo of the Sample B**

**Sample C (Dikencik Country):**Situated on land of 20.870 m2, there are 88 4+1 and 5+1 apartments in 11 blocs. 4+1 apartments are 232 $m^2$ and 5+1 duplex apartments are 322 $m^2$ in size. There is a green and recreational area with a total area of 10.000 $m^2$ with 24-hour security, closed car park for 2 cars for each apartment, children's playground, outdoor swimming pool, tennis, basketball and mini football fields (Figures 6 and 7)

**Figure 6. Photographs taken from the Sample C**
**Figure 7.Aerial photo of the Sample C**

**SampleD (HeybeliKonakları):**Consists of 13 blocks located on an area of 34.000 $m^2$ and have a total of 240 apartments. The apartments in the residential area, which has 24 hours' security, consist of 2+1, 3+1, 4+1 and 5+1 apartments. All of the 5+1 apartments are duplex and are located either at the loft or the garden floor; each building block has 1 loft duplex and 3+1 apartments. 2+1 apartments are 155 m2, 3+1 apartments are 185/230 $m^2$, and 5+1 apartments are 350 $m^2$ in size. There are open and closed car parks, walk and bicycle paths, playgrounds for children, 2 outdoor swimming pools, tennis, basketball and mini football fields, cafeteria and fitness room, and a 25.000 $m^2$ green area (Figures 8 and 9).

**Figure 8. Photographs taken from the Sample D**
**Figure 9.Aerial photo of the Sample D**

**SampleE (Turkuaz Plus):**This apartment consists of 9 blocks located on 30.000 $m^2$lands and has 195 apartments with 3+1, 4+1 and 5+1 options. There are 4+1 single story houses, garden, mezzanine or loft duplex options, and 5+1 loft duplex apartments. 3+1 flats are in sizes ranging from 147-166 $m^2$, 4+1 flats are 215 to 316 $m^2$, and 5+1 flats are 430 $m^2$. In addition to a green area of approximately 17.000 $m^2$ and facilities such as a walking track, swimming pool, fitness center, basketball court, children's playground, sauna, social facilities, there is a bazaar that has commercial functions and 34 shops, which serves the Balat neighborhood (Figures 10 and 11).

**Figure 10. Photographs taken from the Sample E**
**Figure 11.Aerial photo of the Sample E**

**Sample F (Bakgör City):**There are 10 building blocks with a total of 271 apartments, which are all are 4+1. It has a recreational area of 10.000 $m^2$, a closed car park for 500 cars, 24-hour security, children's playground, indoor swimming pool for men and women and an indoor sports hall. In addition, there are 61 stores with different commercial functions serving the Balat neighborhood on the ground level of the site (Figures 12 and 13).



**Figure 12. Photographs taken from the Sample E**
**Figure 13.Aerial photo of the Sample E**

## IV RESEARCH FINDINGS

In the first section four questions were asked, mainly consisting of the respondent's socio-demographic information. General information regarding demographic informationfor the residents of all gated communities is given below (Table 1).

**Table 1. Demographic characteristics**

| | Housing estates (Percentage) | | | | | |
|---|---|---|---|---|---|---|
| Gender: | Sample A | Sample B | Sample C | Sample D | Sample E | Sample F |
| Female | 69 | 51 | 43 | 84 | 44 | 42 |
| Male | 31 | 49 | 57 | 16 | 56 | 58 |
| Age: | | | | | | |
| Under 18 years old | 2 | 0 | 3 | 0 | 4 | 0 |
| 18-25 years old | 4 | 4 | 17 | 0 | 6 | 0 |
| 26-35 years old | 24 | 24 | 20 | 37 | 23 | 19 |
| 36-45 years old | 25 | 21 | 43 | 48 | 22 | 48 |
| 46-55 years old | 26 | 33 | 8 | 10 | 31 | 19 |
| 56-65 years old | 13 | 12 | 9 | 5 | 14 | 14 |
| 66 years or older | 6 | 6 | 0 | 0 | 0 | 0 |
| Educational status: | | | | | | |
| Secondary school graduate | 13 | 2 | 12 | 1 | 2 | 0 |
| High school graduate | 32 | 15 | 35 | 55 | 30 | 39 |
| Bachelor's degree | 49 | 74 | 46 | 39 | 50 | 57 |
| Postgraduate | 6 | 9 | 7 | 5 | 18 | 4 |
| Occupation: | | | | | | |
| Employed | 56 | 47 | 48 | 38 | 42 | 48 |
| Retired | 15 | 30 | 9 | 10 | 25 | 23 |
| Student | 5 | 2 | 14 | 0 | 4 | 0 |
| Housewife | 24 | 21 | 29 | 52 | 29 | 29 |

The general information of gender, age, educational status and jobs of respondents acquired by the survey in all cases are given respectively. Out of total participants, 55% of respondents are female and 45% are male which shows that the majority of the respondents are female. Survey results show that, 1% of the respondents are below the age of 18, 5% are between 19-25 years old, 25% are between 26-35 years old, 35% are between 36-45 years old, 21% are between 46-55 years old, 11% are between 56-65 years old, and 2% of the respondents are above the age of 66. 61% of respondents report to have bachelor's degrees; 34% have high school education and 5% have only secondary school education or less.

The results reveal that there is diversity in terms of education among the residents who participated in the questionnaire. Regarding occupational distribution of the residents, 46% are employed, 31% are housewives, 19% are retired and 4% are students. In Balat, 2% of the apartments have one resident, whereas 21% has two, 39% has four and 9% has five or more residents. Regarding ownership status of the properties, 73% of the residents were homeowners, 26% were tenants, and 1% were living with relatives.

In the study, a total of 6 questions were asked under these main topics: thermal environment, acoustic issues and lighting. Firstly, these topics were used to find out the ones residents attach importance, and then to determine the level of satisfaction in their houses for each evaluation criterion. The results revealed that all topics were considered very important in housing preference. Table 2 shows the general results of the responses obtained from 6 residential sites.

**Table 2.Degree of importance of different comfort conditions in housing preference of the residents**

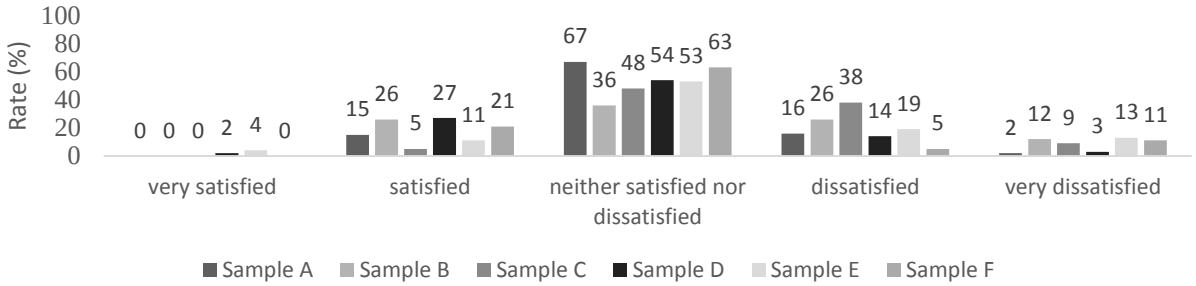
| | | Absolutely important | Important | Neither important nor not important | Not important | Absolutely not important |
|---|---|---|---|---|---|---|
| Thermal | Indoorairtemperature in summer | 294 | 239 | 54 | 9 | 4 |
| | Indoorairtemperature in winter | 318 | 222 | 53 | 5 | 2 |
| Acoustic | Indoornoise problem | 221 | 278 | 88 | 8 | 5 |
| | Outdoornoise problem | 280 | 262 | 43 | 11 | 4 |
| Visual | Daylight | 323 | 235 | 35 | 7 | 0 |
| | ArtificialLight | 210 | 223 | 138 | 20 | 9 |

Although the values are very close to each other, the order of importance of different comfort conditions in housing preferences are obtained as: 1-Daylight, 2-indoor air temperature in winter, 3-indoor air temperature in summer, 4-outdoor noise problem, 5- indoor noise problem and 6-artificial Light.

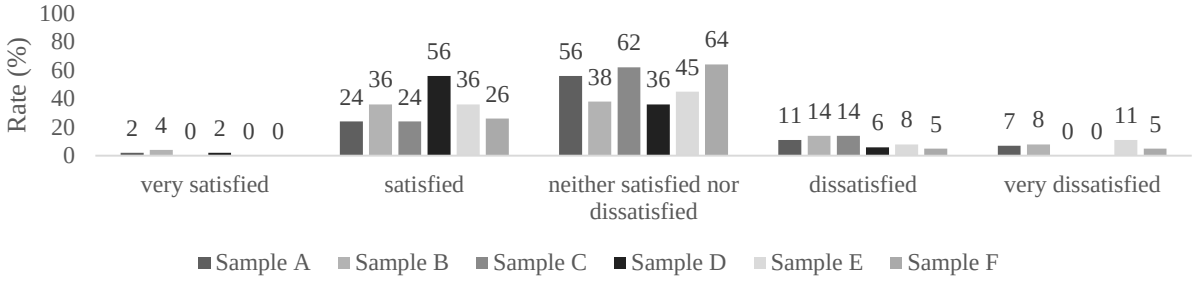
In this section, perception of physical comfort in houses is evaluated. The users were asked to evaluate the negative and positive aspects of houses and give a rating about existing comfort conditions. The answers illustrated in graphs reflect the impact of the current comfort level particularly for indoors, which affects the user's performance and well-being. Six comfort issues were presented in graphs using a 5-point Likert scale with responses from 1- strongly disagree to 5 - strongly agree.

According to American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 55(Ashrae, 2010), thermal comfort is defined as "The state of mind which expresses satisfaction with the thermal environment". Thermal environmental conditions are defined as acceptable when at least 80% of the occupants are comfortable within a space. The comfort temperature is a result of the interaction between theresidents and the built environment they are occupying. The clothing level, type of activity and environmental variables such as air temperature, humidity, air velocity and radiation affect thermal sensation and satisfaction of occupants (Ashrae, 2010)

In environmental control context, first two questions of the interview were about thermal comfort.The residents were asked to express how they feel about the indoor temperature of the residence during winter and summer seasons. Graph 1 reflects the answer for summer, while Graph 2 reflects the answer for winter.



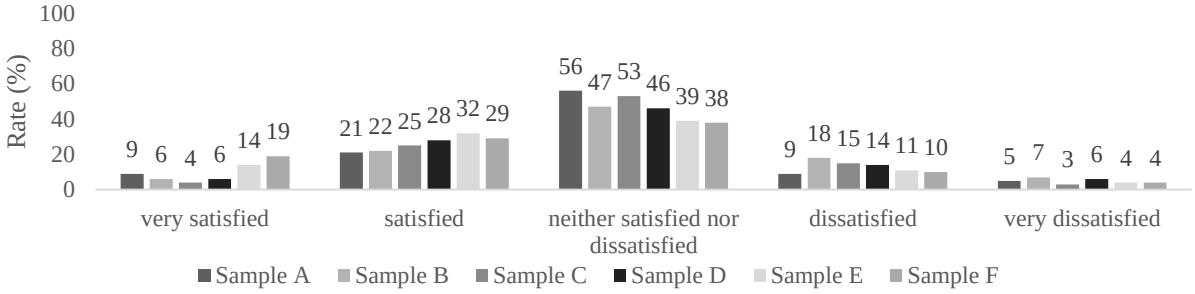

**Graph 1.The user perception of thermal comfort in summer**



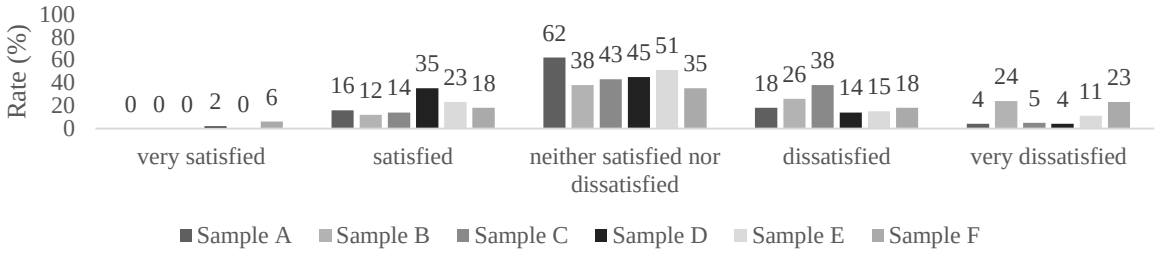

**Graph 2.The user perception of thermal comfort in winter**

The users' perception of the mechanical heating and air conditioning system use providing acclimatization for indoors.

Next questions object to cover acoustical comfort perception of residents in terms of acoustical characteristics of houses volume, indoor and outdoor noise problem (Graph 3- Graph 4).

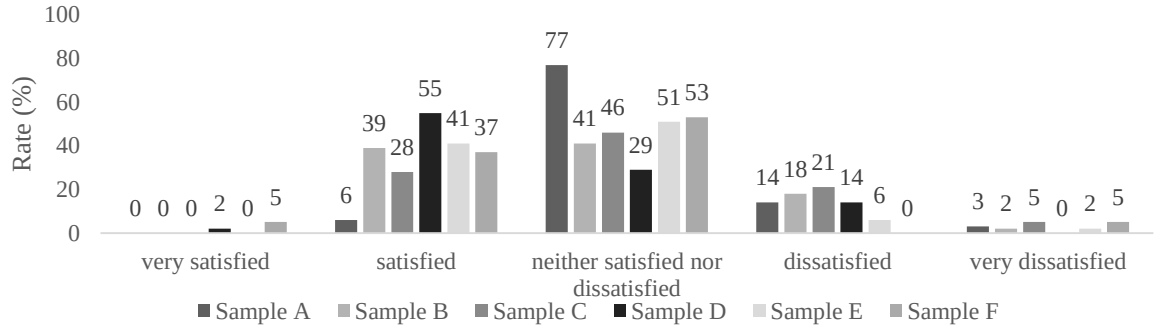



**Graph 3.The user perception of indoor acoustical comfort and noise control**

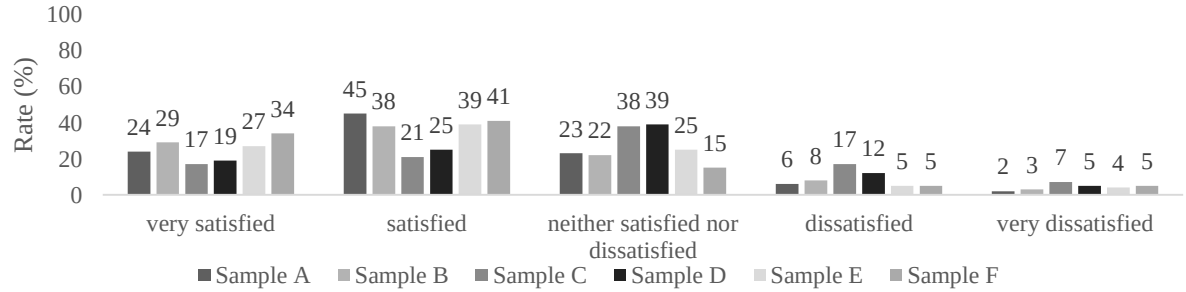



**Graph 4.The user perception of outdoor acoustical comfort and noise control**

Indoor daylight and artificial illumination level along are discussed as the preconditions of visual comfort. Graph 5 reflects the satisfactory state of daylight use while Graph 6 reflects the user views on artificial illumination.




**Graph 5.The user perception of indoor daylight level in houses**




**Graph 6.The user perception of indoor artificial illumination level in houses**

The satisfaction level of respondents in the six case studies was obtained for thermal environment, acoustic issues and lighting. Findings from the questionnaires that are analyzed in percentages are presented in Graphs 1-6.The evaluations of different comfort conditions are tabulated in Table 2. Negative aspects are marked with bold characters.

The method that is used to compare the data obtained about the satisfaction with comfort through the questionnaire is to score the gated communities based on the answers given by the residents. As a result of the

assessment, the satisfaction score of comfort parameters can be seen in Table 3. The data obtained is discussed below.

**Table 3. Satisfaction scores related to comfort conditions in the case housing estates**

| User Satisfaction | | Sample A | | Sample B | | Sample C | | Sample D | | Sample E | | Sample F | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S | **D** | S | **D** | S | **D** | S | **D** | S | **D** | S | **D** |
| T: | Indoorairtemperature in summer | | **-5** | | **-24** | | **-51** | 11 | | | **-26** | | **-6** |
| | Indoorairtemperature in winter | 3 | | 14 | | 10 | | 54 | | 6 | | 11 | |
| A: | IndoorNoise Problem | 20 | | 2 | | 12 | | 14 | | 41 | | 49 | |
| | OutdoorNoise Problem | | **-10** | | **-62** | | **-34** | 17 | | | **-14** | | **-34** |
| V: | Daylight | | **-5** | 17 | | | **-3** | 45 | | 31 | | 37 | |
| | ArtificialLight | 83 | | 82 | | 24 | | 41 | | 80 | | 94 | |

*S: Satisfied D: Dissatisfied*

## V DISCUSSION

The objective of this study is to discover users' views in with respect to achieving optimal comfort conditions in houses. Table 4 shows the percentage of the factors which are important for the comfort conditions in the housing preferences of residents. To determine the general satisfaction rate of users, it was taken into account whether 80% of the responders expressed satisfaction. In this case, the level of satisfaction / dissatisfaction in sample A was +16; whereas B was +32, C was +16, D was +48, E was +40, and F was +24. While daylight is in first place in residential preference, it also creates a positive outcome when users state no dissatisfaction with daylight conditions. It was observed that "indoor air temperature in winter", which was the second most important condition for satisfaction also met expectations. However, it was observed that residents were dissatisfied with "indoor air temperature in summers", which is the third most important condition for satisfaction. It is unlikely to achieve indoor thermal comfort conditions during summers without using any artificial air conditioning equipment. It was observed that "outdoor noise problems", which is the fourth most important condition for satisfaction, created the highest dissatisfaction. Outside traffic and other noises were important indicators of user dissatisfaction from acoustic comfort. There were no negative issues related with "indoor noise problems", which was at the fifth place, and "artificial light" at the sixth place (Table 4).

**Table 4.The importance of comfort conditions in housing preference in the case housing estates**

| | Absolutely important (%) | Important (%) | Neither important nor not important (%) | Not important (%) | Absolutely not important (%) | **% of importance** | **Gradation** |
|---|---|---|---|---|---|---|---|
| Indoor air temperature in summer | 49 | 40 | 9 | 1 | 1 | 89 | 3 |
| Indoor air temperature in winter | 53 | 37 | 9 | 1 | 0 | 90 | 2 |
| Indoor noise problem | 46 | 37 | 15 | 1 | 1 | 83 | 5 |
| Outdoor noise problem | 43 | 45 | 9 | 2 | 1 | 88 | 4 |
| Daylight | 54 | 39 | 6 | 1 | 0 | 93 | 1 |
| Artificial Light | 37 | 35 | 23 | 3 | 2 | 72 | 6 |

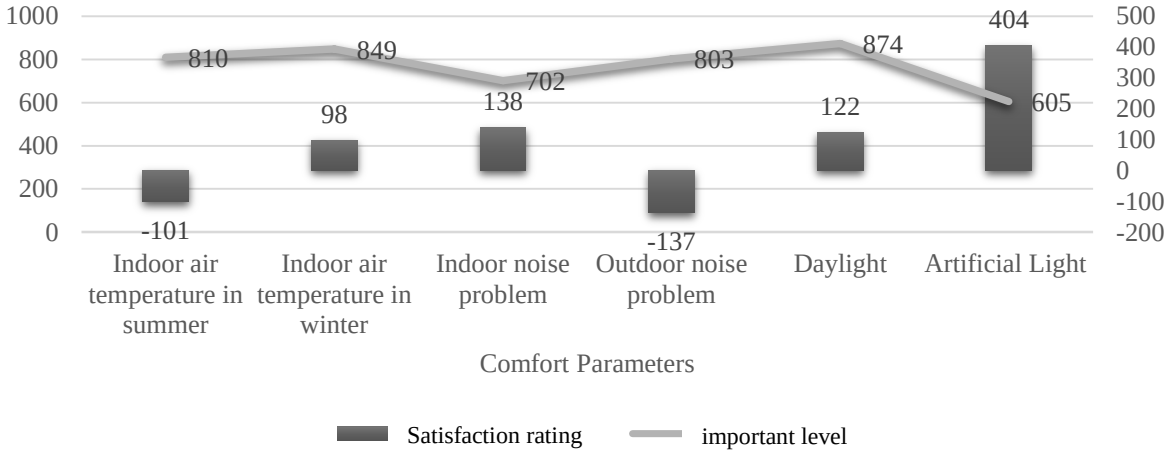
Based on the satisfaction scores in gated communities, when the results related to the level of satisfaction given in Table 3, and the expressions given in Graph 1-6 are taken into consideration, it is observed that in all examples a common factor for satisfaction is artificial light (Table 5). Residents of the examples A and E are satisfied with the indoor noise control and artificial light levels, while examples B and C are only satisfied with the artificial light levels. In examples D and F, parameters that users are satisfied with are higher and it was observed that satisfaction with daylight and artificial light levels were high in both examples; however the difference between the two samples were: in D, where residents were satisfied with the indoor air temperature in winters, whereas in example of F, users were satisfied with the indoor noise control. In cases B, C, and F outdoor noise problems were observed, and the only example from which users were unsatisfied with was example C because of air temperature in summers.

**Table 5.The status of satisfaction with comfort conditions in the case housing estates**

| | **Satisfactionstatus** | |
|---|---|---|
| **Samples:** | **Satisfied> %80** | **Dissatisfied> %80** |
| Sample A | IndoorNoise Control<br>ArtificialLight | - |
| Sample B | ArtificialLight | OutdoorNoise Problem |
| Sample C | ArtificialLight | Indoorairtemperature in summer<br>OutdoorNoise Problem |
| Sample D | **Indoor air temperature in winter**<br>**Daylight**<br>ArtificialLight | - |
| Sample E | IndoorNoise Control<br>ArtificialLight | - |
| Sample F | IndoorNoise Control<br>Daylight<br>ArtificialLight | OutdoorNoise Problem |

The residents can be physically and psychologically healthy and productive in the built environments only if optimal comfort conditions are provided. The results show that, achieving optimal visual, acoustical, and climatic comfort conditions is essential to create a positive impact on users' performance in houses. Furtherly, this knowledge can contribute towards the improvement of future house designs addressing residential comfort parameters for indoors.

In terms of the data, the following results were obtained when the survey was compared with the total satisfaction scores and the degree of importance scores in the residential estates (Graph 7):




**Graph 7. Comparison of total satisfaction scores and the degree of importance scores**

The most important aspect for users' in residential preference is daylight, however residents were satisfied with this aspect in only two housing estates, and the artificial lighting aspect, which was the least important factor for satisfaction, has received the highest satisfaction score in satisfaction ratings. It is observed that only one example was satisfied with the indoor air temperature in winters, which is the second important factor for satisfaction.

Based on the results obtained and in parallel to the data given by Soebarto and Bennets (2014) indicating that the outdoor temperature and the amount of airflow are important for thermal comfort, it can be stated that there is dissatisfaction with the temperature in summers due to the obstruction of air flow in residences that are located towards the center. In the study, the reason of users finding indoor spaces uncomfortably warm is due to the inadequate airflow because of the nearby building blocks, and not giving priority to comfort in design decisions regarding placement of residential sites. In this context, control rather than the placement of building blocks the comfort of residents in gated communities can be provided by indoor equipment providing users. The dissatisfaction with regard to thermal comfort in summers, which is associated with the location of dwellings, can also be associated with the general dissatisfaction with daylight levels. In parallel to the data of a study by Xue et al. (2014) regarding the dissatisfaction with daylight due to external obstruction that creates shadows and reflections in areas surrounded by high and dense buildings, the satisfaction from daylight is low in case buildings which are close to high and dense building blocks. Daylight satisfaction, which is the most important comfort parameter for resident preferences in examples D and F, was high because building blocks are distant from each other and were spread to a larger area and thus do not block daylight. On the other hand, high level of satisfaction from artificial illumination in all sites is in parallel to the security demand from gated communities. This is also related to the aesthetic perception of gated communities, which is seen as a prestige object.

Similar to results of different studies(Low 2001, Roitman 2005, Pijpers and vanHoutum, 2005, Mohd et al.2016, Carvalho et al., 1997, ÖzkanTöre and KozamanSom, 2009, Yüksel and Akbulut 2009), it is obtained in the research that gated communities are linked to factors such as social privilege, personalization, comfort, security and site facilities. Although satisfaction of housing estates is related to comfort conditions of residences and surrounding areas as suggested by Frontczak et al. (2012), these conditions become of secondary importance in architectural decisions in gated communities.

## VI CONCLUSIONS AND RECOMMENDATIONS

In this study, it was aimed to reveal the expectations of the residents about the climatic, acoustic and visual comfort conditions of residents and their satisfaction from these expectations. The results show that there are factors such as the noise coming from the external environment or the indoor environment temperature in

summers, which are of secondary importance when choosing residences, however such factors ultimately cause dissatisfaction.

The study of gated communities for upper income groups show that design decisions in such residential areas are predominantly taken based on privilege, security and site opportunities, and that satisfaction from indoor spaces is considered as of secondary importance when designing residences and their surroundings. While users prefer these type of residences due to the perception of privilege, site opportunities and security, they feel dissatisfied even with basic parameters such as daylight and indoor temperature, which are important during the usage of such residences. In order to avoid such problems, it is necessary to increase the awareness of residents about comfort conditions of the interior space when choosing residences.

It is possible to reach a conclusion that despite to the low level of importance attached to artificial illumination, artificial illumination creates satisfaction because of the positive impact it provides in terms of security and in terms of the feeling of prestige and privilege of social facilities.

Parameters such as daylight, air flow, noise that affect satisfaction of residents in terms of comfort levels are closely related to the location of the building blocks from one another. In the study, the reason of users finding indoor spaces uncomfortably warm is due to the inadequate airflow because of the nearby building blocks, and comfort not given priority in design decisions regarding placement of residential sites. In this context, comfort of users in gated communities can be provided by indoor equipment providing residents control rather than the placement of building blocks. In gated communities it is important to provide facilities such as air conditioners, smart home systems for controlling air and daylight in indoor spaces, but satisfaction from residences will increase if comfort conditions are taken into consideration when taking decisions related to spatial organization of buildings in housing area. In order to increase satisfaction from residences such qualifications should be considered in the design of housing space, the organization of buildings in the area and in interior design.

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