A Study on The User Satisfaction with The Configuration of Housing Interior Spaces

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Article Info	Abstract
	This study aims to analyze and present satisfaction levels of users of housing interior spaces as per the variables of the housing ownership structure, the housing size, the number of rooms in the housing unit, and the housing type. Also, the study aims to address the housing features and quality as factors affecting satisfaction with the housing unit. Within the scope of this research, which was carried out with a quantitative research design; A face-to-face survey was conducted by reaching 134 households from Pendik district, which was selected as the study area. For the administration of the survey form, all research participants were selected with the convenience sampling method, and the ethical endorsement for the research was received from the Ethics Committee. The research data collected with the survey form were analyzed with computer software, the Statistical Package for Social Science. In the study, it was found that participants had high levels of satisfaction with all spaces of the housing unit as per the housing size and the number of rooms in the housing unit. Upon the analysis of the levels of satisfaction with the landscape configuration of the living spaces, it was discerned that housing renters had higher levels of satisfaction with the landscape configuration of the living spaces than housing owners. The data on levels of satisfaction with the landscape configuration of the living spaces indicate that participants residing in detached houses in low-rise housing estates and participants residing in apartments in housing estates had higher levels of satisfaction with the landscape configuration of the living spaces than those residing in apartments in single buildings. At the end of the analysis, it was discerned that the variable of the housing ownership structure had no effect on the satisfaction of the housing interior space user.

1. INTRODUCTION

Rapoport (2000) defines housing as a system of built environments in which a specific system of activities is included, and in this sense, housing has more importance than neighborhood and environmental quality layers [1]. So and Leung (2004) found that the quality of life had statistically significant associations with the comfort and visual acceptability of the housing unit, and according to Doxiadis Associates (1978), the satisfaction of housing needs created the desire for a balanced development, improved the living standards, and provided secure and satisfactory conditions [2, 3].

The most basic factor in the formation process of the spatial setup in the house is the user, and in relation to this, user needs, user lifestyles and user housing expectations play an important role in the shaping of the house [4]. When evaluated from the user's perspective, the housing unit comes forward as a phenomenon representing security, comfort, and the individual's self-space whilst the housing environment comes up as a basic living space created to meet the needs of individuals in the housing unit and/or in the housing community and to ensure socio-psychological satisfaction. In this context, it is possible to assert that the housing unit as well as its environment needs to be conceptually addressed as a whole together with its user and is a concept that simultaneously forms a relationship with the societal environment [5].

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The problems that arise in the physical, economic, psychological and socio-cultural society in which the house and its immediate surroundings are located, adversely affect the satisfaction and behavior of the individuals who live there, and put their happiness and well-being in trouble [6].

The concept of satisfaction is encountered as a concept used in housing evaluations. Housing satisfaction, on the other hand, reveals the level of human-environment interaction shaped on the basis of the physical standards of the house. However, for the performance evaluations to be made about the residence and its immediate surroundings, a measurement must be carried out in line with appropriate measures and criteria. From another perspective, satisfaction in housing is a symbol of environmental, social and life quality [7]. Therefore, the user's evaluation of the subjective living space created in the house and the immediate environment of the house is the most basic issue that will contribute to the determination of the needs and expectations about the house and its immediate environment [5].

Residential research has gone beyond examining the physical, structural and functional characteristics of the individual's regional core, which is called "housing" over time. The desire to know the effects of housing on human life has been increasing over the years. For this reason, measuring the quality of housing has become an important tool. Housing satisfaction is defined as the satisfaction felt by an individual upon the acquisition of what is needed or desired in the housing unit and in its environment [8]. Besides, according to Salleh (2008), to what extent individuals' housing needs are met is reflected by housing satisfaction [9]. There are numerous scientific research studies on the housing unit and its environment. According to Gülaydın (2004), "to be happy along with being satisfied is not the sign of a luxury, rather, it is a psychological need" [10]. In this context, to what degree the spaces meet user expectations is associated with housing satisfaction, and the satisfaction level differs as per the user's age, gender, life perspective, experiences, or expectations [10].

Housing satisfaction is conceptualized as a measure of housing and neighborhood satisfaction [11, 12, 13]. It is defined as the feeling of satisfaction that an individual achieves when his real and desired (or desired) needs regarding her/his home and neighborhood environment are met [14, 15]. While evaluating the housing satisfaction of individuals, a subjective evaluation is made according to both housing and neighborhood characteristics [15]. While the harmony between existing and desired conditions reflects housing satisfaction, mismatch leads to housing dissatisfaction [16, 17]. Residential satisfaction is a multidimensional construct that works at the residential, neighborhood and individual level and is affected by many factors (such as physical, social and individual) [18].

User satisfaction changes over time and is shaped by evolving in line with the requirements. User satisfaction is of paramount importance in human life. Housing design should be made in such a way that the user will be happy and satisfied and at the same time respond to their wishes and requirements. Insufficient housing conditions affect individuals and satisfaction directly and negatively. The concept of user satisfaction has a wide range and differs according to the building class. There is a wide variety and different of specializations in the housing field. When the literature is examined, it is quite common to encounter parameters that affect occupant satisfaction in housing.

Most people want a kind of sanctuary for their living environment, a place where they can bring up children, have privacy, sleep, eat, relax, and restore themselves. This means a wellmanaged environment relatively devoid of nuisance, overcrowding, noise, danger, air pollution, dirt, trash, and other unwelcome intrusions [19]. Residential occupant satisfaction is based on many parameters such as personal priorities of people, spatial comfort and physical characteristics of the interior, perception of space and user opinions The correct determination of the elements that affect satisfaction in the design development process in the house reflects positively on the solution of design problems and ensuring satisfaction.

Even if it is hard to evaluate the satisfaction of residents with the physical aspects of housing units, it is obvious that the housing unit and its potential versatility affect the levels of satisfaction with interior space arrangements [20]. As various user masses are likely to have diverse housing demands and perceptions, this

diversity should be addressed by thinking about the design in a versatile manner. The same housing class and model may not necessarily appeal to every user [21].

The qualities of the housing unit and its interior space directly affect user satisfaction, and factors such as the district where the housing unit is located, the user's demographic characteristics (gender, age, the number of members of the household, the duration of residing in the housing unit, the profession, the education level, the income level, and so on), the spatial hierarchy of the living spaces in the housing interior space, the landscape configuration, and so on are the parameters that shape the user satisfaction in the context of the housing framework.

Upon the review of the relevant literature, it is discerned that the qualities of the housing unit and its environment directly affected user satisfaction. Factors affecting satisfaction with the housing unit are comfort parameters, different comfort levels, the plan layout of the housing unit, its size, its hardware, and its quality. In this framework, in this study, the housing units that are occupied by households supposed to represent low-, middle-, and high-income groups and that are located in densely populated six neighborhoods in the permanent residential region of the district of Pendik in Istanbul province of Turkey will be analyzed in terms of the configuration and organization of their interior spaces and will also be evaluated in the context of user satisfaction.

1.1. Research Problem

The primary problem of this research is to seek an answer to the question, "Does the housing interior space configuration have any effect on user satisfaction?". In this direction, by addressing interior space configurations of housing units located in different neighborhoods of the district of Pendik, the satisfaction of housing users with their housing units was examined. As well as the above primary problem, four hypotheses were formulated to examine the relationship between the housing interior space configuration and user satisfaction.

H_1: There is a positive association between housing ownership status and user satisfaction.

H_2: There is a positive association between housing size and user satisfaction.

H_3: There is a positive association between the number of rooms in the housing unit and user satisfaction.

H_4: There is a positive association between housing type and user satisfaction.

1.2. Research Limitations

Due to the time constraint, this research was conducted solely with housing users from diverse income groups residing in different neighborhoods of the district of Pendik in Istanbul province. The use of statistical data covering only the district of Pendik, which is situated in the Anatolian side of Istanbul, is considered the most significant limitation of this research. Additionally, the selection of a research sample from a limited area undermines the generalizability of the findings obtained in the research.

2. METHOD

Within the context of this study that was performed to find out the satisfaction levels of users of housing interior spaces, the parameters affecting housing interior spaces were identified in light of the review of the relevant literature and in the context of the fieldwork, and in this respect, to find out about the user satisfaction with housing interior space configurations, the study was conducted in the district of Pendik that had the characteristics of suburbs and consequently had a housing development potential in Istanbul.

Figure 1. *The location map of the study area (the district of Pendik in Istanbul, Turkey) [22]*

The examination of the housing development in the district of Pendik shows that the production of particularly the qualified housing projects occurred and gained momentum depending on transportation alternatives and urban transformation. Upon a closer look at the district of Pendik in the context of housing development, four different regions come to the fore, that is, first, the coastal region, which includes the oldest settlements, second, the suburban region, which grows in interaction with the airport, is more home to qualified housing projects, and is developed in a more inward-oriented and secure manner, third, the local urban transformation region, which develops alongside squatter settlements and is currently in a change and transformation process, and fourth, the development region close to the northern forests, in which prestigious housing projects are produced and which is mostly preferred by the high-income group.

In this study designed as quantitative research, 134 households residing in different neighborhoods of the district of Pendik which was home to all housing users from diverse income groups were contacted in the context of the sample selection. In order to collect the data from the main mass in an easy, fast and economical way; a questionnaire form developed by the authors was used as a data collection tool in order to question the housing satisfaction levels of the users selected by convenience sampling method. The survey form was administered to participants on a face-to-face basis. The survey questions that were created to find out user satisfaction with housing interior spaces were evaluated under three factors.

The first factor that aimed to identify participants' demographic characteristics had questions designed to find out the number of persons residing in the housing unit, the duration of residing in the housing unit, age, gender, profession, education level, and income level. These data were collected with a structured data form.

The second factor that aimed to identify the positioning of the housing unit and its interior space contained questions created to find out the housing ownership structure, the size of the housing unit, the number of its rooms, its type, its status of having a sufficient number of WCs and bathrooms, its status of having one or more rooms adjacent to the stairwell, and its status of having WCs and bathrooms adjacent to the stairwell. These data were collected with a five-point Likert scale (1: Highly dissatisfied, 5: Highly satisfied).

The third factor that aimed to identify the levels of satisfaction with the housing spatial configuration included questions developed to find out about the levels of satisfaction with the hierarchy of living spaces (lounge, sitting room, kitchen, and so on), the kitchen organization, the balcony space and its usage, WC & bathroom spaces and their usage, doorway & hall and their usage, room spaces and their usage, the landscape configuration of living spaces, and the overall housing satisfaction. These data were collected with a structured data form that comprised four questions.

A factor analysis was conducted to test the validity of the survey form that was used in the research. Before the factor analysis, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were utilized to identify whether the data structure of the survey form was well-suited to the factor analysis. As the KMO value (0.881) was close to 1 in the KMO test and the p-value was below 0.05 ($p < 0.05$) in Bartlett's test, it was concluded that the dataset was suitable for the factor analysis. Obtaining a high KMO value means that each variable will be estimated "perfectly" by other variables on a scale. If a KMO value that is zero or close to zero is obtained, it is concluded that the dataset is not suitable for the factor analysis. Obtaining a KMO value below 0.50 means that the factor analysis cannot be continued [23].

Table 1. *Factor Analysis - The Explained Total Variance*

Component	Initial Eigenvalues			Sum of Squared Factor Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.829	60.364	60.364	4.829	60.364	60.364
2	1.021	12.768	73.132	1.021	12.768	73.132

Upon the examination of the above total explained variance values, it is discerned that eight items in the dataset were weighted under two factors as there were two factors with eigenvalues above 1. These factors explain 73.132% of the total variance (Table 2).

Table 2. *Factor Weight Matrix and Reliability Coefficients*

Variables	Factor	
Parameters of the spatial configuration satisfaction	1	2
Overall satisfaction	0.948	
Room spaces and their usage	0.899	
Spatial hierarchy of the living spaces	0.888	
Doorway & hall and their usage	0.841	
WC & bathroom and their usage	0.821	
Kitchen organization	0.761	
Balcony space and its usage	0.581	
Landscape configuration of the living spaces		0.977

The factor analysis and Cronbach's alpha coefficient were utilized to test the reliability of the survey form that was used for the measurement of the level of satisfaction. In the factor analysis conducted by researchers, it was discerned that factor loadings ranged from 0.581 to 0.977 according to the factor weight matrix. Bagozzi and Yi (1988), Kim and Jin (2001), and Karasar (1995) stated that, if Cronbach's alpha coefficients for a scale were above 0.60, the scale was considered to be "reliable" [24, 25, 26] (Bagozzi & Yi, 1988; Kim & Jin, 2001; Karasar, 1995). In the reliability test performed for the survey form, which was used as the scale in this research, Cronbach's alpha coefficient was calculated as 0.802 for the overall scale, and accordingly, it was concluded that the survey form had high-level reliability. The collected data were examined with frequency analysis, descriptive statistics, the One-Way Analysis of Variance (ANOVA), and the t-test.

3. FINDINGS

3.1. Data on Housing Users' Demographic Characteristics

The distribution of the data on participants' demographic characteristics was examined with the frequency analysis, and in this regard, the data on age, the number of persons per household, the duration of residing in the housing unit, profession, education level, and the income level were consecutively exhibited in Table 3.

Table 3. Data on Housing Users' Demographic Characteristics

Variables		n	%
Gender	Female	52	38.8
	Male	82	61.2
	Total	**134**	**100.0**
Age	18-20 years	11	8.2
	21-30 years	41	30.6
	31-40 years	68	50.7
	41-50 years	13	9.7
	51-60 years	1	0.7
	Total	**134**	**100.0**
Number of persons per household	1-2	18	13.4
	3-4	81	60.4
	5-6	32	23.9
	7 or above	3	2.2
	Total	**134**	**100.0**
Duration of residing in the housing unit	0-2 years	39	29.1
	3-5 years	34	25.4
	5-10 years	27	20.1
	10 years or above	34	25.4
	Total	**134**	**100.0**
Education level	Primary school	9	6.7
	High school	16	11.9
	Undergraduate program	86	64.2
	Master's program	19	14.2
	Doctorate program	4	3.0
	Total	**134**	**100.0**
Income level	2500-5000 TL	56	41.8
	5000-7500 TL	39	29.1
	7500-10000 TL	25	18.7
	10000-12500 TL	6	4.5
	12500-15000 TL	5	3.7
	15000 TL or above	3	2.2
	Total	**134**	**100.0**

First, upon the review of the breakdown of participants by gender, it is discerned that 82 participants constituting 61.2% of all participants were male whilst 52 participants constituting 38.8% of all participants were female. Second, in the examination of the breakdown of participants by age group, it is found that 68 participants constituting 50.7% of all participants were aged 31-40 years while 1 participant constituting 0.7% of all participants was aged 51-60 years. Third, based on the analysis of the breakdown of participants by the number of persons per household, it is identified that 81 participants constituting 60.4% of all participants lived with 3-4 persons whilst 3 participants constituting 2.2% of all participants lived with 7 or more persons. Fourth, in the context of the review of the breakdown of participants by the duration of residing in the housing unit, it is discerned that 39 participants constituting 29.1% of all participants resided for 0-2 years in the housing unit while 27 participants constituting 20.1% of all participants resided for 5-10 years in the housing unit. Fifth, as regards the examination of the breakdown of participants by education level, it is found that 86 participants constituting 64.2% of all participants held a bachelor's degree whilst 4

participants constituting 3% of all participants held a doctorate degree. Sixth, upon the review of the breakdown of participants by income level, it is identified that 56 participants constituting 41.8% of all participants earned an income of 2500-5000 Turkish Liras (TL) while 3 participants constituting 2.2% of all participants earned an income of 15000 Turkish Liras or more.

3.2. Housing Users' Data on The Positioning of The Housing Unit and Its Interior Space

The distribution of the data on participants' data about the qualities of the housing unit was examined with the frequency analysis, and the data on the housing ownership structure, the housing size, the number of rooms in the housing unit, and the housing type were successively displayed in Table 4.

Table 4. The Data on the Qualities of The Housing Unit Inhabited by Participants

Variables	n	%
Housing ownership structure		
Renter	55	41
Owner	79	59
Total	**134**	**100**
Housing size		
Below 100 m²	51	38.1
100-150 m²	65	48.5
150-200 m²	11	8.2
200-250 m²	5	3.7
Above 250 m²	2	1.5
Total	**134**	**100**
Number of rooms in the housing unit		
1 lounge + 1 room	51	38.0
1 lounge + 2 rooms	18	13.5
1 lounge + 3 rooms	46	34.3
1 lounge + 4 rooms	15	11.2
1 lounge + 5 rooms	2	1.5
1 lounge + 6 or more rooms	2	1.5
Total	**134**	**100**
Housing type		
Apartment in a single building	93	69.4
Apartment in a housing estate	37	27.6
Detached house in a low-rise housing estate	4	3.0
Total	**134**	**100**

First, upon the review of the breakdown of participants by the housing ownership structure, it is discerned that 55 participants constituting 41% of all participants were renters whereas 79 participants constituting 59% of all participants were owners. Second, based on the examination of the breakdown of participants by the housing size, it is found that 65 participants constituting 48.5% of all participants lived in housing units with areas of 100-150m² while 2 participants constituting 1.5% of all participants lived in housing units with areas above 250m². Third, according to the analysis of the breakdown of participants by the number of rooms in the housing unit, it is identified that 51 participants constituting 38% of all participants resided in housing units with 1 lounge + 1 room, 2 participants constituting 1.5% of all participants resided in housing units with 1 lounge + 5 rooms, and 2 other participants constituting again 1.5% of all participants resided in housing units with 1 lounge + 6 or more rooms. Fourth, in the context of the review of the breakdown of participants by housing type, it is discerned that 93 participants constituting 69.4% of all participants resided in apartments in single buildings whilst 4 participants constituting 3% of all participants resided in detached houses in low-rise housing estates.

3.3. The Data on Levels of Participants' Satisfaction with the Housing Spatial Configuration

Participants were asked to evaluate the levels of their satisfaction with housing interior spaces with a five-point Likert scale. Each dimension referring to an aspect of satisfaction with the housing unit and its spatial configuration indicates the user satisfaction level. The distribution of the levels of participants' satisfaction with different spaces of the housing unit was examined with the frequency analysis in Table 5.

Table 5. The Distribution of Levels of Participants' Satisfaction with Different Spaces of the Housing Unit

Variables	Highly dissatisfied		Dissatisfied		Neutral		Satisfied		Highly satisfied	
	n	%	n	%	n	%	n	%	n	%
Satisfaction with the spatial hierarchy (plan configuration) of the living spaces such as lounge, sitting room, kitchen, doorway, bedroom, and so on	8	6.0	15	11.2	42	31.3	48	35.8	21	15.7
Satisfaction with the kitchen organization	16	11.9	18	13.4	37	27.6	51	38.1	12	9.0
Satisfaction with the balcony space and its usage	30	22.4	22	16.4	35	26.1	31	23.1	16	11.9
Satisfaction with WC & bathroom spaces and their usage	9	6.7	23	17.2	41	30.6	47	35.1	14	10.4
Satisfaction with the doorway & hall (circulation spaces) and their usage (in terms of the adequacy of size or width)	10	7.5	25	18.7	33	24.6	45	33.6	21	15.7
Satisfaction with room spaces and their usage	11	8.2	26	19.4	33	24.6	45	33.6	19	14.2
Satisfaction with the landscape configuration of the living spaces	3	2.2	30	22.4	30	22.4	59	44.0	12	9.0
Overall satisfaction with the housing unit	8	6.0	25	18.7	29	21.6	57	42.5	15	11.2

First, it is discerned that 8 participants constituting 6% of all participants were highly dissatisfied with the spatial hierarchy (plan configuration) of the living spaces such as lounge, sitting room, kitchen, doorway, bedroom, and so on whereas 21 participants constituting 15.7% of all participants were highly satisfied with it. Second, it is found that 16 participants constituting 11.9% of all participants were highly dissatisfied with the kitchen organization while 12 participants constituting 9% of all participants were highly satisfied with it. Third, it is identified that 30 participants constituting 22.4% of all participants were highly dissatisfied with the balcony space and its usage whilst 16 participants constituting 11.9% of all participants were highly satisfied with them. Fourth, it is discerned that 9 participants constituting 6.7% of all participants were highly dissatisfied with WC & bathroom spaces and their usage whereas 14 participants constituting 10.4% of all participants were highly satisfied with them. Fifth, it is found that 10 participants constituting 7.5% of all participants were highly dissatisfied with the doorway & hall and their usage whilst 21 participants constituting 15.7% of all participants were highly satisfied with them. Fifth, it is identified that 11 participants constituting 8.2% of all participants were highly dissatisfied with room spaces and their usage while 19 participants constituting 14.2% of all participants were highly satisfied with them. Sixth, it is discerned that 3 participants constituting 2.2% of all participants were highly dissatisfied with the landscape configuration of the living spaces whereas 12 participants constituting 9% of all participants were highly satisfied with it. Seventh, upon the review of the overall satisfaction with the housing unit, it is found that 8 participants constituting 6% of all participants were highly dissatisfied with the housing unit whilst 15 participants constituting 11.2% of all participants were highly satisfied with it.

3.4. The Difference in Participants' Satisfaction Levels as Per the Parameters

By calculating the means of participants' total satisfaction scores for eight items, each of which was rated from 1 point to 5 points, firstly, participants' overall satisfaction levels were identified. Next, participants' overall satisfaction scores and satisfaction scores for eight items were analyzed as per a variety of parameters.

3.5. The Difference in Participants' Satisfaction Levels as Per the Housing Ownership Structure

The independent samples t-test was utilized to analyze the means of participants' overall satisfaction scores and scores of different satisfaction dimensions on the basis of the housing ownership structure and to find whether there was a statistically significant difference in these means as per the housing ownership structure.

Table 6. *The Difference in Means of Participants' Satisfaction Scores as Per the Housing Ownership Structure*

Variables		n	mean	sd	t	p
Satisfaction with the spatial hierarchy of the living spaces	Renter	55	3.51	1.03	0.382	0.538
	Owner	79	3.39	1.10		
	Total	**134**	**3.44**	**1.07**		
Satisfaction with the kitchen organization	Renter	55	3.02	1.13	2.010	0.159
	Owner	79	3.30	1.16		
	Total	**134**	**3.19**	**1.15**		
Satisfaction with the balcony space and its usage	Renter	55	2.82	1.32	0.084	0.772
	Owner	79	2.89	1.34		
	Total	**134**	**2.86**	**1.33**		
Satisfaction with WC & bathroom spaces and their usage	Renter	55	3.24	1.10	0.024	0.877
	Owner	79	3.27	1.06		
	Total	**134**	**3.25**	**1.07**		
Satisfaction with the doorway & hall (circulation spaces) and their usage	Renter	55	3.22	1.18	0.621	0.432
	Owner	79	3.38	1.16		
	Total	**134**	**3.31**	**1.17**		
Satisfaction with room spaces and their usage	Renter	55	3.22	1.24	0.125	0.724
	Owner	79	3.29	1.12		
	Total	**134**	**3.26**	**1.17**		
Satisfaction with the landscape configuration of the living spaces	Renter	55	3.56	0.86	4.351	0.039*
	Owner	79	3.20	1.07		
	Total	**134**	**3.35**	**1.00**		
Overall satisfaction with the housing unit	Renter	55	3.36	1.13	0.032	0.858
	Owner	79	3.33	1.07		
	Total	**134**	**3.34**	**1.09**		

* A p-value below 0.05 (p<0.05) shows that the difference in means is statistically significant.

The results of the independent samples t-test show that, as per the housing ownership structure, there was a statistically significant difference in means of participants' scores of satisfaction with the landscape configuration of the living spaces (p<0.05) whereas there was no statistically significant difference in means of their overall satisfaction scores and scores of other satisfaction dimensions (p>0.05). Renters had a higher mean score of satisfaction with the landscape configuration of the living spaces than owners, and this difference between the two groups was statistically significant.

3.6. The Difference in Participants' Satisfaction Levels as Per the Housing Size

The independent samples t-test was employed to examine the means of participants' overall satisfaction scores and scores of different satisfaction dimensions on the basis of the housing size and to find whether there was a statistically significant difference in these means as per the housing size.

Table 7. *The Difference in Means of Participants' Satisfaction Scores as Per the Housing Size*

Variables		n	mean	sd	F	p
Satisfaction with the spatial hierarchy of the living spaces	Below 100 m²	51	3.04	1.04	3.248	0.014 *
	100-150 m²	65	3.66	1.08		
	150-200 m²	11	3.64	0.92		
	200-250 m²	5	4.00	0.00		
	Above 250 m²	2	4.00	1.41		
	Total	**134**	**3.44**	**1.07**		
Satisfaction with the kitchen organization	Below 100 m²	51	3.06	1.16	0.822	0.513
	100-150 m²	65	3.18	1.18		
	150-200 m²	11	3.36	1.12		
	200-250 m²	5	3.80	0.84		
	Above 250 m²	2	4.00	0.00		
	Total	**134**	**3.19**	**1.15**		
Satisfaction with the balcony space and its usage	Below 100 m²	51	2.49	1.27	5.828	0.000 *
	100-150 m²	65	2.80	1.30		
	150-200 m²	11	4.00	0.89		
	200-250 m²	5	4.20	0.45		
	Above 250 m²	2	4.50	0.71		
	Total	**134**	**2.86**	**1.33**		
Satisfaction with WC & bathroom spaces and their usage	Below 100 m²	51	2.90	1.06	3.723	0.007 *
	100-150 m²	65	3.34	1.03		
	150-200 m²	11	3.82	0.98		
	200-250 m²	5	4.20	0.84		
	Above 250 m²	2	4.00	0.00		
	Total	**134**	**3.25**	**1.07**		
Satisfaction with the doorway & hall (circulation spaces) and their usage	Below 100 m²	51	3.02	1.14	1.417	0.232
	100-150 m²	65	3.48	1.15		
	150-200 m²	11	3.45	1.51		
	200-250 m²	5	3.80	0.45		
	Above 250 m²	2	3.50	0.71		
	Total	**134**	**3.31**	**1.17**		
Satisfaction with room spaces and their usage	Below 100 m²	51	2.82	1.09	3.811	0.006 *
	100-150 m²	65	3.51	1.17		
	150-200 m²	11	3.27	1.19		
	200-250 m²	5	4.20	0.45		
	Above 250 m²	2	4.00	0.00		
	Total	**134**	**3.26**	**1.17**		
Satisfaction with the landscape configuration of the living spaces	Below 100 m²	51	3.16	1.03	2.535	0.043 *
	100-150 m²	65	3.38	0.95		
	150-200 m²	11	3.45	1.13		
	200-250 m²	5	4.00	0.00		
	Above 250 m²	2	5.00	0.00		
	Total	**134**	**3.35**	**1.00**		
Overall satisfaction with the housing unit	Below 100 m²	51	2.94	1.08	3.375	0.012 *
	100-150 m²	65	3.52	1.09		
	150-200 m²	11	3.73	0.90		
	200-250 m²	5	4.00	0.00		
	Above 250 m²	2	4.00	0.00		
	Total	**134**	**3.34**	**1.09**		

* A p-value below 0.05 (p<0.05) shows that the difference in means is statistically significant.

The results of the One-Way ANOVA indicate that, as per the housing size, there were statistically significant differences in means of overall satisfaction scores and scores of satisfaction with the spatial hierarchy of the living spaces, satisfaction with the balcony space and its usage, satisfaction with WC &

bathroom spaces and their usage, satisfaction with room spaces and their usage, and satisfaction with the landscape configuration of the living spaces (p<0.05).

According to the results of the Tukey multiple comparison test conducted to identify which group had a statistically significant difference from other groups, first, participants living in housing units with areas of 100-150 m², 150-200 m², and 200-250 m² had significantly higher mean overall satisfaction scores than those living in housing units with an area below 100 m². Second, participants living in housing units with an area of 100-150 m² had a significantly higher mean score of satisfaction with the spatial hierarchy of the living spaces than those living in housing units with an area below 100 m². Third, participants living in housing units with areas of 150-200 m² and 200-250 m² had significantly higher mean scores of satisfaction with the balcony space and its usage than those living in housing units with an area of 100-150 m² and an area below 100 m². Fourth, participants living in housing units with areas of 100-150 m², 150-200 m², and 200-250 m² had significantly higher mean scores of satisfaction with WC & bathroom spaces and their usage than those living in housing units with an area below 100 m². Fifth, participants living in housing units with areas of 100-150 m² and 200-250 m² had significantly higher mean scores of satisfaction with room spaces and their usage than those living in housing units with an area below 100 m². Sixth, in terms of satisfaction with the landscape configuration of the living spaces, participants living in housing units with an area above 250 m² had a significantly higher mean score than those living in housing units with an area of 200-250 m² while participants living in housing units with an area of 200-250 m² and an area below 100 m² had significantly higher mean scores than those living in housing units with areas of 100-150 m² and 150-200 m².

3.7. The Difference in Participants' Satisfaction Levels as Per the Number of Rooms in the Housing Unit

The One-Way ANOVA was utilized to analyze the means of participants' overall satisfaction scores and scores of different satisfaction dimensions on the basis of the number of rooms in the housing unit and to find whether there was a statistically significant difference in these means as per the number of rooms in the housing unit.

Table 8. The Difference in Means of Participants' Satisfaction Scores as Per the Number of Rooms in the Housing Unit

Variables		n	mean	sd	F	p
Satisfaction with the spatial hierarchy of the living spaces	1 lounge + 1 room	51	3.0	1.0	3.565	0.009*
	1 lounge + 2 rooms	18	3.4	0.5		
	1 lounge + 3 rooms	46	3.8	1.2		
	1 lounge + 4 rooms	15	3.6	0.9		
	1 lounge + 5 rooms and 1 lounge + 6 or more rooms	4	4.0	0.8		
	Total	134	3.4	1.1		
Satisfaction with the kitchen organization	1 lounge + 1 room	51	3.1	1.2	0.378	0.824
	1 lounge + 2 rooms	18	3.2	1.0		
	1 lounge + 3 rooms	46	3.2	1.2		
	1 lounge + 4 rooms	15	3.4	1.2		
	1 lounge + 5 rooms and 1 lounge + 6 or more rooms	4	3.5	0.6		
	Total	134	3.2	1.2		
Satisfaction with the balcony space and its usage	1 lounge + 1 room	51	2.5	1.3	4.848	0.001*
	1 lounge + 2 rooms	18	2.7	1.4		
	1 lounge + 3 rooms	46	2.9	1.3		
	1 lounge + 4 rooms	15	3.9	1.1		
	1 lounge + 5 rooms/or more rooms	4	4.3	0.5		
	Total	134	2.9	1.3		
Satisfaction with WC & bathroom spaces and their usage	1 lounge + 1 room	51	2.9	1.1	3.947	0.005*
	1 lounge + 2 rooms	18	3.2	0.9		
	1 lounge + 3 rooms	46	3.4	1.1		
	1 lounge + 4 rooms	15	3.7	1.0		

	1 lounge + 5 rooms/or more rooms	4	4.5	0.6		
	Total	**134**	**3.3**	**1.1**		
Satisfaction with the doorway & hall (circulation spaces) and their usage	1 lounge + 1 room	51	3.0	1.1	2.385	0.055
	1 lounge + 2 rooms	18	3.1	1.1		
	1 lounge + 3 rooms	46	3.7	1.1		
	1 lounge + 4 rooms	15	3.4	1.4		
	1 lounge + 5 rooms/or more rooms	4	3.8	0.5		
	Total	**134**	**3.3**	**1.2**		
Satisfaction with room spaces and their usage	1 lounge + 1 room	51	2.8	1.1	4.898	0.001*
	1 lounge + 2 rooms	18	3.0	1.0		
	1 lounge + 3 rooms	46	3.7	1.2		
	1 lounge + 4 rooms	15	3.4	1.2		
	1 lounge + 5 rooms/or more rooms	4	4.0	0.0		
	Total	**134**	**3.3**	**1.2**		
Satisfaction with the landscape configuration of the living spaces	1 lounge + 1 room	51	3.2	1.0	2.184	0.074
	1 lounge + 2 rooms	18	3.3	0.8		
	1 lounge + 3 rooms	46	3.4	1.0		
	1 lounge + 4 rooms	15	3.6	1.0		
	1 lounge + 5 rooms/or more rooms	4	4.5	0.6		
	Total	**134**	**3.4**	**1.0**		
Overall satisfaction with the housing unit	1 lounge + 1 room	51	2.9	1.1	3.630	0.008*
	1 lounge + 2 rooms	18	3.3	0.8		
	1 lounge + 3 rooms	46	3.7	1.2		
	1 lounge + 4 rooms	15	3.7	0.9		
	1 lounge + 5 rooms/or more rooms	4	4.0	0.0		
	Total	**134**	**3.3**	**1.1**		

* A p-value below 0.05 (p<0.05) shows that the difference in means is statistically significant.

The results of the One-Way ANOVA show that, as per the number of rooms in the housing unit, there were statistically significant differences in means of overall satisfaction scores and scores of satisfaction with the spatial hierarchy of the living spaces, satisfaction with the balcony space and its usage, satisfaction with WC & bathroom spaces and their usage, and satisfaction with room spaces and their usage ($p<0.05$).

According to the results of the Tukey multiple comparison test conducted to identify which group had a statistically significant difference from other groups, first, participants residing in housing units with 1 lounge + 3 rooms had a significantly higher mean score of satisfaction with the spatial hierarchy of the living spaces than those residing in housing units with 1 lounge + 1 room. Second, participants residing in housing units with 1 lounge + 4 rooms, housing units with 1 lounge + 5 rooms, and housing units with 1 lounge + 6 or more rooms had significantly higher mean scores of satisfaction with the balcony space and its usage than those residing in housing units with 1 lounge + 1 room, housing units with 1 lounge + 2 rooms, and housing units with 1 lounge + 3 rooms. Third, in terms of satisfaction with WC & bathroom spaces and their usage, participants residing in housing units with 1 lounge + 4 rooms had a significantly higher mean score than those living in housing units with 1 lounge + 1 room, and participants residing in housing units with 1 lounge + 5 rooms and housing units with 1 lounge + 6 or more rooms had significantly higher mean scores than those living in housing units with 1 lounge + 1 room, housing units with 1 lounge + 2 rooms, and housing units with 1 lounge + 3 rooms. Fourth, in terms of satisfaction with room spaces and their usage, participants residing in housing units with 1 lounge + 3 rooms had a significantly higher mean score than those residing in housing units with 1 lounge + 1 room and housing units with 1 lounge + 2 rooms, and participants residing in housing units with 1 lounge + 5 rooms and housing units with 1 lounge + 6 or more rooms had significantly higher mean scores than those residing in housing units with 1 lounge + 1 room. Fifth, participants residing in housing units with 1 lounge + 3 rooms and housing units with 1

lounge + 4 rooms had significantly higher mean overall satisfaction scores than those residing in housing units with 1 lounge + 1 room.

3.8. The Difference in Participants' Satisfaction Levels as Per the Housing Type

The One-Way ANOVA was employed to examine the means of participants' overall satisfaction scores and scores of different satisfaction dimensions on the basis of the housing type and find whether there was a statistically significant difference in these means as per the housing type.

Table 9. *The Difference in Means of Participants' Satisfaction Scores as Per the Housing Type*

Variables		n	mean	sd	F	p
Satisfaction with the spatial hierarchy of the living spaces	Apartment in a single building	93	3.4	1.1	0.587	0.557
	Detached house in a low-rise housing estate	4	4.0	0.8		
	Apartment in a housing estate	37	3.5	0.9		
	Total	**134**	**3.4**	**1.1**		
Satisfaction with the kitchen organization	Apartment in a single building	93	3.2	1.2	0.154	0.858
	Detached house in a low-rise housing estate	4	3.5	0.6		
	Apartment in a housing estate	37	3.2	1.0		
	Total	**134**	**3.2**	**1.2**		
Satisfaction with the balcony space and its usage	Apartment in a single building	93	2.8	1.3	2.402	0.094
	Detached house in a low-rise housing estate	4	4.3	0.5		
	Apartment in a housing estate	37	2.9	1.3		
	Total	**134**	**2.9**	**1.3**		
Satisfaction with WC & bathroom spaces and their usage	Apartment in a single building	93	3.2	1.1	3.016	0.052
	Detached house in a low-rise housing estate	4	4.5	0.6		
	Apartment in a housing estate	37	3.3	1.1		
	Total	**134**	**3.3**	**1.1**		
Satisfaction with the doorway & hall (circulation spaces) and their usage	Apartment in a single building	93	3.3	1.2	0.347	0.708
	Detached house in a low-rise housing estate	4	3.8	0.5		
	Apartment in a housing estate	37	3.2	1.2		
	Total	**134**	**3.3**	**1.2**		
Satisfaction with room spaces and their usage	Apartment in a single building	93	3.3	1.2	0.867	0.423
	Detached house in a low-rise housing estate	4	4.0	0.0		
	Apartment in a housing estate	37	3.2	1.1		
	Total	**134**	**3.3**	**1.2**		
Satisfaction with the landscape configuration of the living spaces	Apartment in a single building	93	3.1	0.9	10.389	0.000*
	Detached house in a low-rise housing estate	4	4.5	0.6		
	Apartment in a housing estate	37	3.8	1.0		
	Total	**134**	**3.4**	**1.0**		
Overall satisfaction with the housing unit	Apartment in a single building	93	3.3	1.2	0.812	0.446
	Detached house in a low-rise housing estate	4	4.0	0.0		
	Apartment in a housing estate	37	3.4	1.0		
	Total	**134**	**3.3**	**1.1**		

* A p-value below 0.05 (p<0.05) shows that the difference in means is statistically significant.

The results of the One-Way ANOVA indicate that, as per the housing type, there was a statistically significant difference in means of scores of satisfaction with the landscape configuration of the living spaces (p<0.05). According to the results of the Tukey multiple comparison test conducted to identify which group had a statistically significant difference from other groups, participants residing in detached houses in low-rise housing estates and participants residing in apartments in housing estates had significantly higher

means of scores of satisfaction with the landscape configuration of the living spaces than those residing in apartments in single buildings.

4. DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

By focusing on the satisfaction levels of users of housing interior spaces, this study analyzed housing satisfaction in a broad perspective within the context of the housing ownership structure, the housing size, the number of rooms in the housing unit, the housing type, the level of satisfaction with the housing spatial configuration, the positioning of interior spaces, and so on.
It was found that a large majority of the housing users participating in this research owned housing units in which they resided. Thus, it can be stated that this signified that the satisfaction of a household member in relation to the housing ownership structure was high for the housing unit in which the household member continued to reside [6]. In the same vein, according to Tan and Khong (2012), being a homeowner increases the degree of housing satisfaction [27]. However, in the study by Mohit and Azim (2012), it is discerned that homeowners had lower satisfaction than renters [28]. Hence, the first hypothesis of this study (H_1) was not supported by the above result of this research, however, the result overlapped with the relevant literature. Besides, the results found in this study show that the duration of residing in the housing unit did not affect housing satisfaction.

In relation to the housing size and the number of rooms in the housing unit, it was identified that a large majority of the participants resided in housing units that had an area of 100-150 m² and, in this parallel, had 1 lounge + 3 rooms. However, if satisfaction is evaluated on the basis of each space of the housing unit, it can be stated that, as the housing size and the number of rooms increase, satisfaction also directly increases. There are numerous factors affecting the satisfaction of housing residents. Housing users' space perceptions, the interspace distance, the bathroom, the kitchen, bedrooms, and all forms of space, the arrangement of spaces, how these spaces are connected to each other and how they work with each other, what sort of a layout they generally have in the plan schema, and so on can be set forth as factors affecting satisfaction levels [29]. According to Omole (2001), the ventilation, the number of rooms, the dimensions of the room, the toilet, and the adequacy of the physical design of the housing unit are among the housing features that need attention [30]. In this direction, as the housing size and the number of rooms increase, the obligation to create spaces, which are larger in terms of area and higher in number, to meet the needs of housing users will be in place. Hence, the second and third hypotheses of this study (H_2 and H_3) were supported by the above results of this research, and the results overlapped with the relevant literature. These results indicate that the housing size and the number of rooms in the housing unit affected housing satisfaction.

In interviews held with housing users, a significant majority of the housing users stated that the type of housing unit where they resided was an apartment in a single building. On the other hand, participants' overall satisfaction levels show that participants residing in detached houses in low-rise housing estates and participants residing in apartments in housing estates had higher overall satisfaction levels than those residing in apartments in single buildings. The district of Pendik, in which the fieldwork was carried out, is a region where housing estates with security services were densely located. The most apparent characteristic of this region is that it is a spacious and calm district that is close to downtown Istanbul but far away from its crowdedness, chaos, and pollution. Housing estates in this region are made up of high-rise or low-rise apartment blocks and villas. According to Barutçular and Dostoğlu (2019), residing in a low-rise residential building, integrating the residential building into green fields, giving importance to family privacy zones, and having private storage areas and car parks are factors affecting satisfaction [31]. Thus, the fourth hypothesis of this study (H_4) was supported by the above result of this research, and the result overlapped with the relevant literature. This result demonstrates that the housing type affected housing satisfaction.

In the study, the results that come to the forefront in light of the data collected from survey participants are as below:

• There is no positive association between housing ownership structure (owner, renter) and user satisfaction with the physical features of the housing unit.

• There is a positive association between housing size and user satisfaction with the physical features of the housing unit.

• There is a positive association between the number of rooms in the housing unit and user satisfaction with the physical features of the housing unit.

• There is a positive association between housing type and user satisfaction with the physical features of the housing unit.
In light of the above results, the recommendations below were developed:

• To increase the well-being and user satisfaction in the interior space, this study and other similar studies should have qualities to guide the way for housing planning efforts.

• In terms of prioritizing user sensitivity in determining the configuration of the housing unit and its interior space, the use of surveys should be put in place.

• The necessity to create the parameters, which came to the fore with this study, such as the housing ownership structure, the housing size, the number of rooms in the housing unit, the housing type, the housing spatial configuration, and the positioning of interior spaces through a designing/planning process based on scientific data to increase the quality of individuals' lives should be prioritized.

In this study, in terms of user satisfaction, the results overlapping with each other were obtained. Also, these results are in a similar vein to the studies addressed in the review of the relevant literature. In prospective studies, evaluations can be made from a broader perspective by adding different parameters about housing, and the explanatory power of satisfaction can be increased. In this sense, so that this study can represent the research population better, it is recommended that new research to cover housing stocks in different districts of Istanbul be planned.

This study performed with the participation of housing users is perceived to be important as it lays the groundwork for a more detailed research study to be carried out in this area. It is considered that this study created the base for similar and necessary studies to be conducted about Istanbul in other areas and also made contributions to statistical data. Besides, by making interregional comparisons, province-based comprehensive data on the topic can be obtained.

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