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ARTICLE

The effect of housing and neighborhood satisfaction on perception of happiness in Bursa, Turkey

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Abstract

This study aimed to correlate happiness with housing, housing area and neighborhood satisfaction based on the results of different studies that have shown that satisfaction with housing and the neighborhood affects residents' perceptions of happiness. Unlike the related researches in the literature, this study controls for the negative consequences arising from financial concerns in its examination of the effect of housing, housing area and neighborhood satisfaction on happiness. The Balat neighborhood in Bursa, Turkey, which is popular with high-income residents, was selected for this study considering these issues. The participants were asked to indicate the importance they attribute to and their satisfaction levels with their housing estates, residences and neighborhood. Data were collected from 217 residents of 6 sites in the neighborhood who were selected using stratified sampling. Reliability analysis, frequency distributions, descriptive statistics and Chaid analysis were used to evaluate the data. The analysis found that the variable that most affected perceptions of happiness was housing estate satisfaction. According to the results obtained from the second stage of the analysis, satisfaction with the residence increased satisfaction with the housing estate, and therefore positively affected happiness. The third stage of the analysis indicated that the importance of the properties of the residential area on the housing site affected satisfaction with housing. This study discusses its results, the factors that determine housing and housing estate satisfaction and the relationship of the properties of the residential area with the happiness of residents.

Keywords Happiness · Residence satisfaction · Housing estate satisfaction · Property values · Chaid analysis

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1 Introduction

Happiness is a multidimensional concept that has a wide range of associations with other concepts. Personal and time-dependent variables have a great importance in perceptions of happiness, and the concept of subjective well-being (SWB) is associated with happiness (Larsen et al. 1985). SWB emerged as an overall assessment of well-being together with all the important aspects of life, and a life evaluation that embodies the outcomes of life satisfaction and happiness (Diener et al. 2009). In relation to SWB, the factors that affect happiness and components that constitute life as a whole are in interaction (Larsen et al. 1985; Diener 2000; Kahneman 1999; Veenhoven 2000; Larsen and Eid 2008; Diener et al. 2009). Happiness, which is related to life satisfaction and SWB, is also associated with quality of life (QoL) (Larsen and Eid 2008; Diener et al. 2009).

While personality affects happiness in the long term, life circumstances are also important for well-being (WB) (Headey and Wearing 1992; Diener 2000; Veenhoven 2000). Satisfaction levels with different areas of life affect perceptions of happiness, which are mainly associated with goal-achievement, satisfaction of basic human needs and satisfaction in a variety of life domains (Michalos 1980, 1983; Feist et al. 1995; Bailey and Snyder 2010; Lyubomirsky et al. 2006). Kahneman (1999) associates happiness in connection with individual circumstances and expectations, indicating that individuals determine their expectations in line with their circumstances and goals. Thus, expectations and happiness are mutually shaped.

The factors that affect happiness include perceptions and satisfaction levels in different areas of life: personal relationships such as friendship and marriage (Ryff 1989; Michalos 1983; Myers and Diener 1996; Easterlin 2003; Lyubomirsky et al. 2006), personal qualities such as demographic factors, personality, mood and temperamental traits (Michalos 1980; Easterlin 2003; Lyubomirsky et al. 2006), level of education (Michalos 1980; Bailey and Snyder 2010), employment status and work (Michalos 1983; Easterlin 2003; Pavot and Diener 2008; Fallahi and Mehrad 2015), economic situation (Michalos 1980, 1983; Easterlin 2003; Veenhoven 2000; Bailey and Snyder 2010), material things and consumption areas (DeLeire and Kalil 2010), government services (Michalos 1983), safety (Adams 1992; Veenhoven 2000), housing and housing area (Adams 1992; Pavot and Diener 2008; Michalos 1983; Lu 1999; Bailey and Snyder 2010; Fujiwara 2013; Fallahi and Mehrad 2015). Housing and housing environment constitute an important part of life circumstances (Martin 2012; Van Kamp et al. 2003; Marans 2003). Housing satisfaction affects the general happiness of the individual along with the physical and social environment (Vera-Toscano and Ateca-Amestoy 2008). Research on effects of housing and housing areas on SWB, attitudes, perceptions and expectations contributes to determining their interactions.

This study aimed to correlate the perception of happiness with housing, housing area and neighborhood satisfaction based on the results of different studies that have shown that satisfaction with housing and housing area affects individual's perceptions of happiness. It aimed to determine whether housing, housing area and neighborhood satisfaction affect the happiness levels of residents and to what extent these factors do so. In perceptions of happiness, satisfaction levels expressed in questions that focus on specific areas of life seem most prominent (Kahneman 1999). This study was carried out in the rapidly developing province of Bursa, Turkey.

An economic approach to the concept of happiness shows that economic expectations can reduce happiness, and that, as the gap between satisfaction with economic circumstances and economic expectations increases, it adversely affects happiness (Easterlin

2003; Michalos 1983; Kahneman 1999). Therefore, in this context, the economic conditions affect happiness level in a manner correlative with housing satisfaction. In the literature, particularly in terms of housing and socio-economic conditions, studies linking housing and neighborhood satisfaction with SWB generally focus on the problems in residential areas hosting people with low or moderate income levels. The user groups with high economic statuses were examined on the basis of the research gap determined for evaluating the effects of housing and neighborhood satisfaction, two concepts which are the main focus points in this study, on SWB. For this reason, the high-income neighborhood of Balat in Bursa was selected as case study area. This study also examined how the different features of housing and housing areas built specifically for a financially and socially homogeneous user group affected the happiness of user groups. Furthermore, to methodologically contribute to the literature, this study identified the effects of these factors on happiness by applying the CHAID Decision Tree Method, a method not commonly used in built environment analyses.

As mentioned above, many studies in the relevant literature report that satisfaction with different areas of life shapes the perception of happiness (Michalos 1980, 1983; Feist et al. 1995; Bailey and Snyder 2010; Lyubomirsky et al. 2006; Kahneman 1999). As this study intended to focus on the effects of housing and housing area satisfaction on happiness perception, concepts of perception and satisfaction—the combination of perception and expectation—were collectively used in the context of perception of happiness and satisfaction with the housing and its environment.

As is the case in many parts of the world, people in Turkey have a greater desire to live in higher quality and more expensive buildings as their income levels increase. Over the last decade, the demand for and supply of luxury buildings have been on the rise in Bursa, the fourth largest city in Turkey. Initially designed as applied research for a post-graduate course, this study originally aimed to evaluate the effects of different qualities and satisfaction levels on the perception of happiness with housing and its environs before expanding to involve the disciplines of architecture and statistical sciences at a later time. One additional objective of this study was to develop recommendations for scientific studies examining the social and physical conditions and other variables in these housing establishments. The data obtained from this study are expected to pave the way for future studies on housing areas where supplies and demands are more intense than ever.

2 Literature review

There are many studies of the effects of housing and housing areas on happiness. This review of the literature examines studies of the physical, social and economic dimensions of residence on perceptions of happiness.

The literature indicates that the physical qualities and the size of housing positively affect happiness as an attractive and effective factor in increased SWB (Foye 2017; Clapham et al. 2018; Zhang et al. 2014; Rohe and Basolo 1997; Pavot and Diener 2008; Michalos 1983; Lu 1999; Dunn et al. 2003). The positive effect of the spatial characteristics of housing on satisfaction may be related to differences in income levels (Zhang et al. 2014; Vera-Toscano and Ateca-Amestoy 2008). All the qualities of the housing such as the number of rooms, or the type of housing affect individual satisfaction with housing, and householder income is also an important determinant of housing satisfaction. Housing and life satisfaction increases with moving to a new home, but living in the new housing and environment and becoming

habituated to them makes it fall again in the following years (Frijters et al. 2011; Galiani et al. 2015; Wolbring 2017).

There are also studies that examine the relationship of housing with its environment and its importance. Housing and housing properties were found to have strong effects on housing satisfaction and life satisfaction (Elsinga and Hoekstra 2005; Tran and Van Vu 2018; Frijters et al. 2011; Wolbring 2017). Besides the physical environment, the social environment is also important in terms of housing satisfaction and happiness. Dunn et al. (2003) found that the social aspects of residential life are more important than the physical aspects of housing, and that satisfaction with social aspects positively affects happiness. DeLeire and Kalil (2010) found that leisure spending and consumption were associated with the social environment as components that enhance happiness and life satisfaction. It is known that social homogeneity, status, privilege and social facilities are important reasons for choosing gated communities (Roitman 2005; Blakely and Synder 1997; Carvalho et al. 1997). Homes in gated communities thus involve the purchase of a social environment and social facilities. The feeling of belonging to a particular group creates perceptions of "fitting in," even if there are no continuous collective activities, and this makes people happy. Good social relations are necessary for happiness (Diener and Seligman 2002). On the other hand, regardless of the sense of happiness, despite the numerous studies of the positive effects of social relations on housing satisfaction and quality of life (Sirgy and Cornwell 2002; Marans 2003; Bonaiuto et al. 2003; Ren and Folmer 2017; Kowaltowski et al. 2006), Vera-Toscano and Ateca-Amestoy (2008) found that good social relations have no direct effects on housing satisfaction, but that, together, the physical and social environment do affect happiness.

Security, safety and location (Carvalho et al. 1997; Chapman and Lombard 2006) are important factors in choosing to reside in a gated community. Happiness is enhanced in communities that have security, wealth and common values. Social status, similar education and income levels also positively affect happiness (Veenhoven 2000). Adams (1992) found that feeling safe and social relationships with neighbors affect happiness and associated quality of life with neighborhood satisfaction (Adams 1992). The inclusion of families in social networks can create feelings of safety and increase the availability of social support (Rözer et al. 2016). According to the literature, social networks and a sense of safety support each other and positively affect perceptions of happiness.

Studies have shown that owning a home has positive effects on happiness and life satisfaction. When people invest large amounts of resources in housing, they make a rational decision and gain notable well-being (Tran and Van Vu 2018). The effects of housing conditions on SWB are associated with homeownership and social status. The social status associated with economic well-being is another way that housing affects SWB (Clapham et al. 2018). Home ownership is described in the literature as a social norm (Gurney 1999). The positive effects of homeownership on SWB and happiness has been documented in different studies (Clapham et al. 2018; Foye et al. 2018; Hu 2013; Huang et al. 2015). Thus, economic well-being and social status affect perceptions of happiness due to housing conditions and homeownership.

3 Case study

3.1 Data and methodology

3.1.1 The aim and scope of the study

The aim of this research article is to relate residents' perceptions of happiness to housing, housing area and neighborhood satisfaction. It is aimed to determine whether these factors affect happiness levels, and to determine which factors do so and to what extent. The Balat neighborhood in the Nilüfer district of Turkey's fourth largest city, Bursa, was chosen as the study area. Balat is a preferred by high-income groups in Bursa, which has been rapidly developing in recent years, where gated communities have increased rapidly, especially in the last decade, and are still growing (Gür and Sezer 2018). While Balat's total population was 5149 in 2012, it increased to 8444 in 2015 and to 12,141 in 2017 (retrieved November 17, 2018 from http://www.nufusune.com/11124-bursa-nilufer-balat-mahallesi-nufusu). The data shows that there has been a strong demand for housing in the neighborhood in recent years. Since the literature survey indicated that social environment and economic wealth affect the happiness of individuals, together with housing, housing area and neighborhood qualities, the effects of such housing areas on happiness were studied in Balat, which consists of gated communities for high-income groups.

3.1.2 The sample and data collection

The universe of the survey was the inhabitants of gated communities in the Balat neighborhood of Nilüfer District in Bursa. The data were collected from six gated communities in January and February 2018 using stratified sampling. The sample of the study consists of 217 residents of six gated communities in Balat District. Interviews with the residents were conducted between 14:00 and 18:00 daily, except Sunday. The fact that female residents are generally more active at home during these hours had a positive impact on the study, as they use residences and housing areas more intensively and for longer periods of time.

The questionnaire was prepared by the authors and has two parts, one concerning the demographic characteristics of the participants and 30 questions about the characteristics of the housing estate, residence and neighborhood. In this section, participants were asked to specify their level of satisfaction with and the importance of the items on a five-point Likert scale. The second part has 42 items about neighborhood relations, the properties of the residential area, opinions about the neighborhood and belonging, unmet expectations related to the apartment and overall life satisfaction. Necessary permissions to conduct the study were obtained from the Uludag University Ethics Committee of Social and Humanities Research and Publication in December of 2017 on the basis of the questionnaire form and application form, which contained the details of the interviewed user groups. The data collected from the Balat residents were analyzed using frequency distributions, descriptive statistics and Chaid analysis which is a multivariate statistical method.

3.1.3 Chi squared Automatic Interaction Detection (CHAID) Analysis

Data mining is a term used to describe the process of sifting through large databases in search of interesting and previously unknown patterns. It is useful to distinguish between

two main types of data mining, namely, verification-oriented (the system verifies the user's hypothesis) and discovery-oriented (the system finds new rules and patterns autonomously). Discovery methods, which automatically identify patterns in the data, involve both prediction and description methods. Prediction methods can be examined under the titles of classification and regression methods. A decision tree is one of the classification methods (Rokach and Maimon 2015).

The three most common analytic methods used in decision trees to perform classification and division are CHAID (Chi squared Automatic Interaction Detection), C&RT (Classification and Regression Trees) and QUEST (Quick, Unbiased, Efficient, Statistical Tree). CHAID analysis, a decision tree method, is an analytic approach used to examine the relationships between dependent and independent variables. CHAID proceeds in steps. First, the best partition for each predictor is found. Next, the predictors are compared and the best one is chosen. The data are then subdivided according to this chosen predictor. Each of these subgroups is then reanalyzed independently to produce further subdivisions for analysis (Kass 1980). The "Chi squared" part of the CHAID term derives from the fact that the technique essentially involves automatically constructing many cross-tabs and calculating the statistical significance of the proportions. The most significant relationships are used to control the structure of a tree diagram (Hoare 2004). The statistical test used depends on the type of target attribute. An F test is used if the target attribute is continuous; a Pearson Chi squared test if it is nominal; and a likelihood ratio test if it is ordinal (Rokach and Maimon 2015).

Classic assumptions, such as the concepts of normality, linearity and homogeneity, are required to conduct this analysis. Its advantages are that its output is highly visual and contains no equations (Ratner 2015). Moreover, certain features, like the option to present the hierarchical relationships within large data sets and the practicability in understanding and interpreting these relationships, make the method more appealing for researchers. The analysis, however, is not able to yield remarkable results for small sample groups, which can be regarded as a disadvantage. Due to the advantages mentioned, this method is commonly preferred for examining the relationships, particularly those between categorical variables.

3.2 Case study area

Bursa, with a population of 2.5 million, is the 4th most populous city in Turkey. It is located between the south-east coast of the Marmara Sea and the northwestern of Uludag Mountain. Its temperate climate region is characterized by warm summers and mild winters. A 2017 survey of the preferences of individuals about residential area selection found that most popular neighborhood in Bursa was the Nilüfer district where Balat is located at a rate of 32.8% (Mutlu and Varol 2017). Today, despite the slum areas in the immediate vicinity of Balat, the neighborhood is the most popular residential district for upper-income groups. Figure 1 shows the studied housing estate locations in Balat on Google Maps. The reason for choosing the housing of high-income groups was to minimize the negative effects of financial concerns on levels of happiness and to focus on the housing area.

Sample A (Egemen Evler): Sample A includes 48 apartments with sizes ranging from 298 to 304 m^2 and all apartments are 4 + 1. There is indoor parking for 2 cars per apartment, indoor and outdoor children's playgrounds, an outdoor swimming pool, an outdoor children's pool, decorative pools, a basketball court, fitness center, cafeteria, saunas for men and women, 24-h security and a 4500 m^2 green area (Fig. 2).



Fig. 1 The case study sites: (a) Egemen Evler, (b) Green Park, (c) Dikencik Country, (d) Bakgör City, (e) Heybeli Konakları, (f) Turkuaz Plus



Fig. 2 Views of the case study sites

Sample B (Green Park): Sample B has 122 apartments in 12 blocks on a 25,000 m^2 area. The apartments are 3 + 1 and 4 + 1. The 3 + 1 apartments are 211–215 m^2, and the 4 + 1 apartments are 264–320 m^2. There are green spaces, hiking trails, a playground, an outdoor swimming pool, tennis courts, a cafeteria and a market in the gated community, which has 24-h security (Fig. 2).

Sample C (Dikencik Country): Situated on 20,870 m^2, Sample C has 88 4 + 1 and 5 + 1 apartments in 11 blocks. The 4 + 1 apartments are 232 m^2, and the 5 + 1 duplex apartments are 322 m^2. There is a green recreational area with a total area of 10,000 m^2 with 24-h

security, inside parking for 2 cars for each apartment, a children's playground, an outdoor swimming pool, tennis and basketball courts, and a mini football field (Fig. 2).

Sample D (Bakgör City): Sample D has 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, indoor parking for 500 cars, 24-h security, a playground, indoor swimming pools for men and women and an indoor sports hall. The ground level of the site has 61 stores that serve Balat (Fig. 2).

Sample E (Heybeli Konakları): Sample E has 240 2 + 1, 3 + 1, 4 + 1 and 5 + 1 apartments in 13 blocks on 34,000 m^2. It has 24-h security. All of the 5 + 1 apartments are duplex and are located either on the top or the ground floors. Each building block has 1 loft duplex and 3 + 1 apartments. The 2 + 1 apartments are 155 m^2, the 3 + 1 apartments are 185/230 m^2, and the 5 + 1 apartments are 350 m^2. It has indoor and outdoor parking, walking and bicycle paths, playgrounds, 2 outdoor swimming pools, tennis and basketball courts, a mini football field, a cafeteria, a fitness room and 25,000 m^2 of green space (Fig. 2).

Sample F (Turkuaz Plus): Sample F consists of 9 blocks located on 30,000 m^2. It has 195 apartments with 3 + 1, 4 + 1 and 5 + 1 options. There are 4 + 1 single story homes, garden, mezzanine or loft duplex options, and 5 + 1 loft duplex apartments. The 3 + 1 flats range from 147 to 166 m^2, the 4 + 1 flats range from 215 to 316 m^2, and the 5 + 1 flats are 430 m^2. In addition to approximately 17,000 m^2 of green space and facilities such as a walking track, a swimming pool, a fitness center, a basketball court, a playground, a sauna and social facilities, it has a mall with 34 shops that serve Balat neighborhood (Fig. 2).

4 Results

According to the results of the data evaluation, the significance and satisfaction levels regarding different characteristics of housing areas were determined based on the responses given by the residents to a 5-point Likert-type scale, which analyzed the data on the demographic characteristics through frequency distributions and descriptive statistics in the first stage. Applying CHAID analysis, the data related to the evaluation of the different characteristics of the housing and housing area were associated with the data related to the happiness that users experience on account of living in the neighborhood. The frequency distribution of the demographic characteristics of the participants is shown in Table 1.

Table 1 shows that 140 (64.8%) of the participants were female, and 76 (35.2%) were male. Of the participants, 7 (3.2%) were under 18 years old, 7 (3.2%) were 18–25 years old, 48 (22.1%) were 26–35 years old, 73 (33.6%) were 36–45 years old, 41 (18.9%) were 46–55 years old, 26 (12%) were 56–65 years old, and 15 (6.9%) were over 66. Of them, 7 (3.4%) were literate, 7 (3.4%) completed primary School, 45 (21.7%) were high school graduates, 123 (59.4%) were university graduates, and 25 (12.1%) had postgraduate education. Of them, 100 (46.9%) were employed, 40 (18.8%) were retired, 1 (0.5%) was unemployed, 9 (4.2%) were students, and 63 (29.6%) were housewives.

The incomes of 10 of the participants (5.2%) were between 300 and 700 euros, 27 (14%) were between 701 and 1000 euros, 28 (14.5%) were between 1001 and 1400 euros, 41 (21.2%) were between 1401 and 1800 euros, 32 (16.6%) were between 1801 and 2200 euros, 33 (17.1%) were between 2201 and 2600 euros, and 21 (10.9%) had incomes over 2601 euros.

Of the participants, 20 (9.2%) were from Sample A, 40 (18.4%) were from Sample B, 21 (9.7%) were from Sample C, 35 (16.1%) were from Sample D, 55 (25.3%) were from Sample E, and 46 (21.2%) were from Sample F. The sample population of each housing

Table 1 Demographic information

	n	%
Gender		
Female	140	64.8
Male	76	35.2
Age		
18 <	7	3.2
18–25	7	3.2
26–35	48	22.1
36–45	73	33.6
46–55	41	18.9
56–65	26	12.0
66 >	15	6.9
Educational status		
Illiterate	0	0.0
Literate	7	3.4
Completed primary school	7	3.4
High school graduate	45	21.7
Bachelor's degree	123	59.4
Post graduate	25	12.1
Work status		
Employed	100	46.9
Retired	40	18.8
Unemployed	1	0.5
Student	9	4.2
Housewife	63	29.6
Total monthly income (Euros)		
300 <	1	0.5
300–700	10	5.2
701–1000	27	14.0
1001–1400	28	14.5
1401–1800	41	21.2
1801–2200	32	16.6
2201–2600	33	17.1
2601 >	21	10.9

estate was determined in proportion to the number of units on the housing estate (Table 2). At least 35% of the residents were interviewed.

Of the units, 19 (9.1%) had a single occupant, 60 (28.7%) 2 had occupants, 54 (25.8%) had 3 occupants, 60 (28.7%) had 4 occupants, and 16 (7.7%) had 5 or more occupants. Of the participants, 10 (4.8%) had no vehicle, 78 (37.7%) had 1 vehicle, 114 (55.1%) had 2 vehicles, 4 (1.9%) had 3 vehicles and 1 (0.5%) owned 4 or more vehicles. Of the participants, 163 (76.5%) were owners, 46 (21.6%) were tenants, and 4 (1.8%) were staying in a relative's property or had another status. From the frequency values obtained for the type of residence where the participants were residing, it is seen that 21 (9.8%) of the residences are 2 + 1, 70 (32.6%) of them are 3 + 1, 106 (49.3%) of them are 4 + 1, 16 (7.4%) of them are 5 + 1 and 2 (0.9%) of them are other types of units (Table 2).

Table 2 Residence and housing estate information

	n	%
Housing estate		
Sample A: Egemen Evler	20	9.2
Sample B: Green Park	40	18.4
Sample C: Dikencik Country	21	9.7
Sample D: Bakgör City	35	16.1
Sample E: Heybeli Konakları	55	25.3
Sample F: Turkuaz Plus	46	21.2
Number of occupants		
1	19	9.1
2	60	28.7
3	54	25.8
4	60	28.7
5 or more	16	7.7
Number of cars owned		
0	10	4.8
1	78	37.7
2	114	55.1
3	4	1.9
4 or more	1	0.5
Ownership status		
Owner	163	76.5
Tenant	46	21.6
Relative's property	2	0.9
Other	2	0.9
Type of residence		
2 + 1	21	9.8
3 + 1	70	32.6
4 + 1	106	49.3
5 + 1	16	7.4
Other	2	0.9

This study aimed to determine the effect of housing, housing estate and neighborhood satisfaction on the happiness levels of residents. It also investigated whether these factors affected happiness:

(a) Factors Related to the Residence: earthquake safety, architectural qualities of the apartment (size, location, orientation), the size of the rooms, the kitchen and the bathroom, the quality of the construction, the hardware of the apartment (built-in appliances, material quality, etc.), daylight and natural lighting, visual appeal, indoor temperature in summer and winter, thermal comfort, noise level, auditory comfort.
(b) Factors Related to the Housing Estate: recreational (green space) and physical environment, the architecture of the housing estate, aesthetics, social facilities, sports facilities such as walking, cycling tracks, playgrounds, perception of the neighborhood, parking, proximity to work, association with family and friends of similar social status, security and security perception.

(c) Factors Related to the Neighborhood: access to shopping facilities, access to the transportation network, proximity to schools, commuting duration, location in the city, social facilities such as health services, neighborhood prestige, activity opportunities, social environment and traffic congestion.

4.1 Reliability analysis

The Cronbach's alpha coefficient for satisfaction levels on the entire scale was 0.916, and the Cronbach's alpha coefficient for importance was 0.867. The Cronbach's alpha coefficients for the satisfaction level of the sub-dimensions were 0.896 for housing attribute size, 0.793 for the housing estate attribute size and 0.841 for the neighborhood attribute size. The Cronbach's alpha coefficients for the importance of the sub-dimensions were 0.828 for housing attribute size, 0.806 for housing estate attribute size and 0.788 for neighborhood attribute size. The Cronbach's alpha coefficient was 0.887 for the entire second part of the scale and 0.856 for the life satisfaction dimension. These findings show that the scale is quite reliable.

4.2 Importance and satisfaction levels residents experience toward housing, housing estate and neighborhood

The participants were asked to indicate the importance of and their satisfaction levels with these factors. The descriptive statistics for housing estate importance (HEI), housing estate satisfaction (HES), residence importance (RI), residence satisfaction (RS), neighborhood importance (NI) and neighborhood satisfaction (NS) are shown in Table 3.

Table 3 shows that the mean HEI score of the participants was 4.38, their HES score was 4.06, and their RI score was 4.53. Their RS score was 3.96, their NI score was 4.35, and their NS score was 3.74. These findings indicate that the participants thought that the housing estate, residence and neighborhood factors were quite important. Their satisfaction with the housing estate, residence and neighborhood factors was also high. However, their satisfaction levels were lower than the importance they attributed to the factors.

4.3 CHAID analysis results regarding the determination of the factors affecting the happiness-related perceptions of residents

The aim of the study is to classify the inhabitants in terms of whether they are happy to live in the neighborhood and to determine the factors that affect this classification. The

Table 3 Descriptive statistics for the variables

	Mean	SD	Minimum	Maximum	Range
HEI	4.38	0.45	2.82	5.36	2.55
HES	4.06	0.60	2.36	6.00	3.64
RI	4.53	0.44	3.10	5.20	2.10
RS	3.96	0.55	2.10	5.00	2.90
NI	4.35	0.54	2.44	5.11	2.67
NS	3.74	0.65	2.00	5.22	3.22

item, "I am happy with my life," on the questionnaire was included in the analysis under the name "being happy in Balat" as a dependent variable in affirmative "yes" and negative "no" categories. The following variables forms the independent variables of the analysis: housing estate satisfaction (HES), residence satisfaction (RS), neighborhood satisfaction (NS), life satisfaction (LS), neighborhood relationship (NR), properties of the residential area (PRA), opinions about the neighborhood and belonging (ONB), housing estate (HE), average monthly income (MI) and ownership status (OS) These variables are thought to be effective on the classification to be made. The tree diagram and the findings obtained from the application of Chaid analysis were presented in Fig. 3.

Figure 3 includes 5 of the 10 continuous and categorical independent variables. It shows that 77.6% of the participants answered yes, and that 22.4% answered no to the item, "I am happy with my life." The neighborhood satisfaction (NS), life satisfaction (LS), neighborhood relationship (NR), opinions about the neighborhood and belonging (ONB) and average monthly income (MI) variables had no significant effect on the dependent variable.

Housing estate satisfaction was the variable that had the greatest effect on the residents' happiness in Balat. This variable is the first branch of the tree that best indicates happiness. Of the participants who were happy to live in Balat, 50% had low housing estate satisfaction scores (HES), 77.3% had moderate scores, and 94.2% had high scores. Therefore, happiness with living in the neighborhood increased as satisfaction with the housing estate increased.

The diagram's second-tier branches show that the variable that best described the participants with the lowest HES scores was the housing estate (HE) variable. The variable that best described the participants with moderate scores was ownership status (OS), and the variable that best described the participants with high scores was residence satisfaction (RS). Of the participants with low HES scores, 84.6% of those residing in Sample

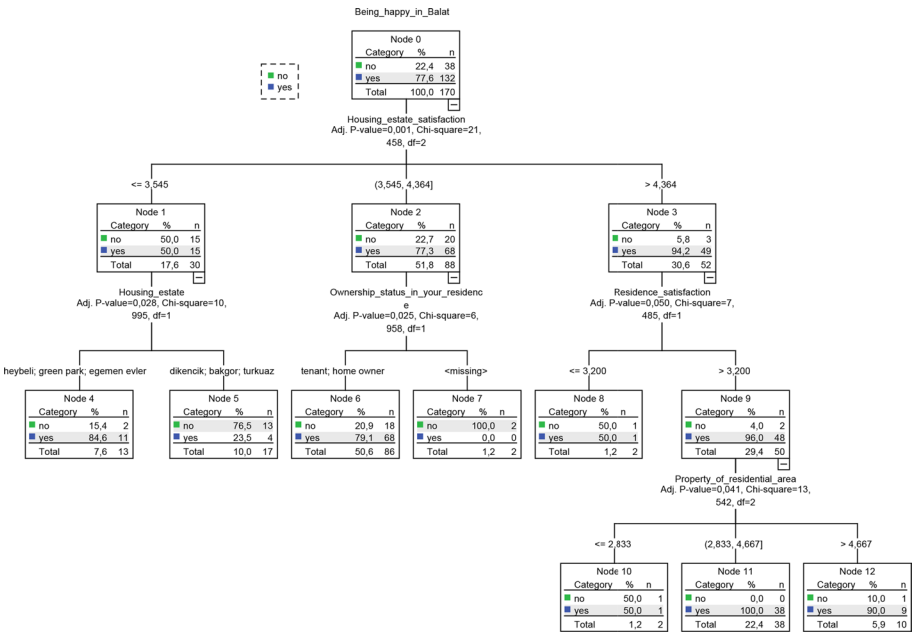


Fig. 3 Chaid tree for the being happy in Balat variable

E, Sample B and Sample A said that they were happy to live in the neighborhood, and 23.5% of those residing in Sample C, Sample D and Sample F stated that they were happy. 79.1% of the participants who were owners or tenants and had moderate HES scores said that they were happy to live here. Of the participants with high HES scores, 50% of those with low residence satisfaction (RS) scores and 96% of those who had high RS said they were happy to live in the neighborhood. High satisfaction with the housing estate can be explained by residence satisfaction. From this point of view, following high housing estate satisfaction, residents with high residence satisfaction were found to be happy to live in the neighborhood.

The diagram's third-tier branches show that, of the participants with high HES scores, the variable that best described the participants with high residence satisfaction (RS) was the properties of the residential area (PRA) variable. Of the participants who were happy to live in Balat, 50% had low PRA scores, 100% had moderate scores, and 90% had high scores. The residents who were satisfied with the housing estate, residence and properties of the residential area were happy.

5 Discussion

This research found that the participants attributed great importance to the qualities of their housing estates, residences and neighborhoods. They were also satisfied with these factors; however, it is noteworthy that their levels of satisfaction were lower than the levels of importance. The results show that the most effective factor in individuals' perceptions of happiness is housing estate satisfaction. The neighborhood satisfaction (NS), life satisfaction (LS), neighborhood relationship (NR), opinions about the neighborhood and belonging (ONB) and average monthly income (MI) variables were expected to affect perceptions of happiness, but they did not. The individuals who were happy to live in Balat had high levels of satisfaction with housing estates that are gated communities. This study's results are similar to those of the studies that have indicated that housing areas affect residents' perceptions of happiness (Adams 1992; Pavot and Diener 2008; Michalos 1983; Lu 1999; Bailey and Snyder 2010; Fujiwara 2013; Fallahi and Mehrad 2015). This study's results show the importance of housing estate satisfaction levels on perceptions of happiness. Perceptions of happiness are affected by issues such as recreational areas, the physical environment and the architecture of housing estates, aesthetic perceptions of housing estates, social facilities, security, playgrounds, sports facilities, parking, neighborhood and proximity to work. Along with these factors, association with family and friends of similar social status, and perceptions of security raise happiness levels. Satisfaction levels with these factors show the effects of recreational opportunities, social homogeneity and interaction, and perceptions of physical and social security on happiness. This is similar to the claim by DeLeire and Kalil (2010) that leisure spending and happiness in relation to the effects of social homogeneity, status and social facilities affect the choice to live in gated communities. DeLeire and Kalil (2010) showed the relationship between leisure spending, social environment and happiness. The housing estate expenses for social facilities as a form of interaction with the social environment is also a form of leisure spending. This study found that social facilities and social homogeneity in Balat's housing estates make the residents happy. These results support the arguments of Vera-Toscano and Ateca-Amestoy (2008), which emphasize the importance of housing's physical and social environment to the overall happiness of residents.

The second-tier branches of the Chaid tree indicate that satisfaction with residences increases satisfaction with housing estates, and therefore positively affects happiness. The survey results show that, although they are satisfied with the housing estate, half of the participants who have low satisfaction with their residence, and almost all (96%) of the participants who are satisfied with their residence are happy to live in the neighborhood. Accordingly, regardless of the results obtained from different housing sites, earthquake safety, the architectural characteristics of the apartment (housing size, location, direction), the size of different spaces, construction quality, equipment and comfort conditions of the apartment are important to housing estate satisfaction and perceptions of happiness in all areas. The results of the survey are consistent with the studies that show the positive effects of satisfaction with spatial characteristics such as size, number of rooms and type of housing on happiness (Foye 2017; Clapham et al. 2018; Zhang et al. 2014; Rohe and Basolo 1997; Pavot and Diener 2008; Michalos 1983; Lu 1999; Dunn et al. 2003). Despite being satisfied with their housing estates, low satisfaction with residences negatively affected the happiness of 50% of the residents. Almost all the people who were satisfied with both their housing and their housing estate were happy with their lives and happy to live in Balat.

The second-tier branches of the Chaid tree also indicate that housing ownership moderately accounts for satisfaction with housing estates. This result, like studies of the positive effect of housing ownership on happiness (Clapham et al. 2018; Foye et al. 2018; Hu 2013; Huang et al. 2015), shows that housing ownership increases satisfaction with housing estates and thus positively affects the happiness.

The effect of housing conditions on SWB is associated with homeownership and social status. Social status associated with economic well-being is another factor that determines the effect of housing on SWB (Clapham et al. 2018). Home ownership is described in the literature as a social norm (Gurney 1999). Other studies have shown the positive effect of owning a home on SWB and happiness. The literature indicates that economic well-being and social status affect perceptions of happiness along with housing conditions and homeownership.

Depending on the demographic characteristics of the residents, the scale of the housing estate, location, and time, the results varied. Participants from samples A, B and E said that they were happy to live in the neighborhood, although their housing estate satisfaction was low. This shows, since the most important factor in residence satisfaction is housing estate satisfaction and even their satisfaction with their residences was low, that these sites' social facilities, social homogeneity and interaction supported happiness. The common characteristic of samples A, B and E is that social relations are very strong in all three, and the residents and their families are similar in terms of social status. The results of this research show that the security and social relations of residents of similar social status are associated with being happy to live in Balat. This result supports the argument by Dunn et al. (2003) that, in environments where social relations are important and community life is dominant, the physical qualities of the housing have less effect on the happiness of residents, indicating that satisfaction with the social aspects of housing are more important than its physical aspects, and that they have a positive effect on happiness. In samples C, D and F, social interaction is more cosmopolitan, and in samples D and F, the residents mix with the city residents at large in the sites' commercial facilities.

This survey's results (Fig. 3) indicate that residence satisfaction is important for housing estate satisfaction, but has less effect on perceptions of happiness. Perceptions of security in samples C, D and F, which interact with the city at large, negatively affect the residents' perceptions of happiness. Since several studies (Roitman 2005; Blakely and Synder 1997; Carvalho et al. 1997; Chapman and Lombard 2006) indicate that social homogeneity,

status, security and privilege are important reasons for choosing to live in gated communities, it is expected that happiness will be lower in housing estates where these are lacking. The results of this study were similar. Diener and Seligman (2002) claim that good social relations are necessary for happiness is also similar. On the other hand, Veenhoven (2000) and Adams (1992) argue that security, social relations, common values, similar social status, education and higher income levels in communities increase their levels of happiness, and the high levels of happiness in samples A, B and E, which have residents with common characteristics, confirm this. The results of this research show that, even if housing estate satisfaction is low, residents who live in areas with strong social networks, security, similar social status and homogeneity are more satisfied with living in Balat. Social homogeneity and security are important to gated communities, as indicated by Rözer et al. (2016) because social networks support feelings of safety and social support.

The third tier of the Chaid tree indicates the important effect of the properties of the residential area on satisfaction with both housing estates and residences. The residents who were satisfied with their housing estate, residence and properties of the residential area were happy. The residents who were satisfied with the real estate value of their residences had higher residence satisfaction, housing estate satisfaction and were happier to live in Balat. This is because, when people invest a large amount of resources in housing, they increase well-being, as indicated by Tran and Van Vu (2018). Higher property values increase the investment and nominal value of housing assets, which is satisfying for homeowners (Vera-Toscano and Ateca-Amestoy 2008).

In relation to economic well-being, homeownership and social status positively affect SWB and happiness (Clapham et al. 2018; Foye et al. 2018; Hu 2013; Huang et al. 2015). Studies have also found that the spatial qualities and size of housing are associated with income level, and that householder income affects housing satisfaction (Zhang et al. 2014; Vera-Toscano and Ateca-Amestoy 2008). Together with the positive effects of homeownership, social status, property value, economic well-being and investing a large amount of resources in housing on happiness in the literature, in the case of Balat, in addition to social status, being satisfied with the properties of the residential area increased satisfaction with housing estates and residences, accounting for the happiness of their residents.

6 Conclusion and recommendations

Perceptions of and satisfaction with domains of life such as personal relationships, material issues, consumption, security and housing all affect happiness. Housing is an important part of life and determines happiness due to the simultaneous effects of the physical and social environment. However, housing satisfaction is affected by economic circumstances, thus influencing users' happiness levels. This study that was conducted in the area where people with high economic statuses live focused on the satisfaction derived from built environment and aimed to examine the happiness-related perceptions by minimizing the negative consequences arising from financial concerns. It further aimed to analyze the relationships between different characteristics in this regard by detailing the analysis in the later stages of the study, where the effects of satisfaction from the factors related to house and housing area on the level of happiness were evaluated through CHAID analysis, an analysis tool not commonly used in studies on built environments.

This study of satisfaction with housing, housing estate and neighborhood and happiness found that the factor that affected perceptions of happiness most was housing estate

satisfaction. The fact that aspects of the housing estates in Balat such as social facilities, recreational areas, quality of the physical environment, security and transportation had significant effects on happiness supported the idea that the physical and social dimensions of housing environments simultaneously affect residents. Thus, the residents of the housing estates where social homogeneity and interaction were present were happier. This study concluded that people who live in gated physical environments with boundary walls and who belong to social networks with good relationships were happier. These results indicate that physical environments with common areas for strengthening social relations, recreational and social opportunities with residents of similar social status support the happiness of the residents. The development of the physical environment and opportunities that support the social dimension of life in the production of housing estates can positively affect the happiness of the residents in both ways.

In addition to the social dimension, the qualities of housing such as earthquake safety, architectural characteristics of the apartment (housing size, location, orientation), the size of different spaces, construction quality, furnishings and comfort also played an important role in the residents' happiness. Together with the physical and social experience offered by the housing estate, the happiness of almost all people who were satisfied with their housing units shows the importance of the multi-dimensional effect of the qualities of the physical environment. Even though housing satisfaction was low, the social facilities of the housing estate, social homogeneity, interaction and security supported happiness. However, housing units that suited the residents' personal qualities, needs and expectations, were comfortable, offered social interaction in physically and socially safe housing estates suitable for families with children significantly increased their happiness.

Another interesting result is that the residents who were satisfied with the properties of the residential area were happier. This indicates that property value satisfaction was seen as an indicator of social status in social environments associated with economic well-being and the ability to invest a large amount of resources in housing, and this made the residents happy. In connection with this, ownership of housing on these sites, being satisfied with property value and being included in that specific physical and social environment increased the residents' happiness.

This study found that satisfaction with the qualities of housing units and gated communities, having similar social status, security and high property values area related to the happiness of the Balat residents. The significant effect of housing estate satisfaction on happiness indicated the importance of residents' judgments about the physical and social qualities of the residential area. This study found that social homogeneity, security and social opportunities in housing estates positively affect on housing estate satisfaction and happiness, while satisfaction with the housing unit made almost all the residents happy. The effect of satisfaction with the properties of the residential area and being homeowners on happiness showed the importance of homeownership as an indicator of economic and social status. With regard to the social environment, it was not important for the housing estate to be located in Balat, although it was of moderate importance for it to be in an elite neighborhood during the initial choice. However, being in a privileged neighborhood did increase happiness levels about living in Balat.

Today, like other cities, differences in levels of wealth in Bursa are an important factor affecting spatial arrangements, and Balat, where upper-income groups are concentrated, is the neighborhood where the effects of purchasing power on happiness can be most clearly observed. The results of this research show that living a privileged life in a gated housing estate that also satisfies the residents with its property value increased the happiness of the residents. This indicates that people's need and desire to acquire

housing that meets commercial standards in a developing country such as Turkey is increasing. Nowadays, gated communities constitute an important part of supply in housing planning policies. Housing policies affect the happiness of residents, and economic disparities are reflected in spatial arrangements. Housing policies have a large effect on happiness with physical, social and economic environments. Policies should provide housing satisfaction rather than homeownership, and efforts should be made to increase the happiness of residents by improving housing conditions. This study of the effect of social and economic factors on happiness with housing environments shows that a comparison can be made between commercial properties and affordable housing in the future, and determining the factors related to housing estates that affect the happiness of social groups with different levels of economic well-being can contribute to housing policies.

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