

How the layout of residential blocks influences the sense of satisfaction

Niusha Esmaeilpoorarabi*

Assistant Professor, School of Architecture, College of Fine Arts, University of Tehran

Abstract

Sense of satisfaction is one of the concepts that researchers have used to assess people's understanding of place. This study aimed to determine if housing blocks' layout affect what people experience in their immediate surroundings. For this purpose, we chose the Narmak district because its unique design allowed us to compare the satisfaction of residents in two special forms: squares and alleys, reducing disturbances as much as possible. At the same time, the scale of these squares and alleys were diverse. This article maps the neighbourhood's layout and how it affects satisfaction with the residence, i.e., the sense of belonging, level of noise, etc. This research explains residents' perceptions of their community are based on physical, social and personal factors that intertwine and influence residential satisfaction. Findings strongly support the main question asking about the connection between sense of satisfaction and neighbourhoods' layout. Residents of Squares have more sense of satisfaction than residents of streets and alleys. Outcomes can be carefully factored in planning and designing neighbourhoods.

Keywords: "sense of satisfaction", "neighbourhoods", "layout", "housing", "Narmak".

Introduction

The level of satisfaction or dissatisfaction with a place is thought to be governed by a wide range of factors including both individual and contextual factors (Neal, 2021). Individual factors such as age, gender, home ownership status and social and cultural status can affect residential satisfaction. Contextual influences include characteristics of the place such as Location in the city, designing attributes of the place, availability of essential services like educational facilities and open spaces (McGirr et al., 2014)

While satisfaction has been studied frequently in neighbourhood research (Lalli, 1992; Kemmis, 1992), several other indicators have also been used to measure perceived neighbourhood quality. Among those are different indicators tapping at people's sense of attachment to their housing environment. For instance, several researchers have asked residents whether they think of their neighbourhood as their home or just a place to live in, and whether they feel attached to the local area (Morrison, 2003). Moreover, almost all of these studies have been carried out in western countries not here and it is not clear whether their result will apply to Iran, a country in Middle East with its own different characteristics.

To address these gaps, the purpose of this article was to explore the relationship between sense of satisfaction and physical attributes of the place within a residential subdivision. In particular, the aim of this study was to answer the question that which designing approach that will leads to a more sense of satisfaction: housing along main streets, along semi-private alleys or around rectangular squares.

To this end, we chose Narmak neighbourhood as the site for this study because its' unique design allows us to compare the different design approaches that have mention before parallelly and reduce the negative intervene factors as much as possible. All of those housing forms exist in one geographical area that according to our definition of neighbourhood, acknowledge as a neighbourhood. This will contribute the study because it can be hypothesized that when it comes to social factors like economical, educational,

and cultural characteristics of the residents, there not much difference amongst the residents in different parts of the neighbourhood so the social factors will not affect the study remarkably and the focus is totally on physical environment.

Residential Satisfaction

Housing satisfaction is a complex phenomenon that depends on several factors. Residents' perceptions of their community are based on physical, social and personal factors that intertwine and influence residential satisfaction (Table 1). For example, the physical characteristics of a community, such as safe public open spaces, can lead to the formation of social bonds that lead to the development of housing satisfaction (Jones-Rounds et al., 2013; Mouratidis & Yiannakou, 2022).

Therefore, these factors must be measured simultaneously to adequately assess satisfaction with living space. One area that has not been explored is the relationship between community, sense of place and belonging and their impact on housing.

Residential satisfaction is a view of whether a community fulfills personal goals and needs, and how satisfied it is with the environment and whether it is known for its sense of community. It is a multidimensional construct that focuses on the social environment, such as belonging and acceptance, and the physical environment, such as access to community services and housing quality. (Hur and Morrow-Jones, 2008).

Sense of Satisfaction Factors

Objective and subjective dimensions affecting housing satisfaction include predictors classified as personal, social and physical factors. Personal factors relate to length of residence, ownership, sense of belonging, compatibility, etc. Social factors include aspects like social support, social control (safety) and community involvement. Physical factors include satisfaction with environmental features, safety, noise level and crowd level/density (Young et al., 2004).

Personal Factors

The personal factor, attachment, determines residential satisfaction. The factors that measure this quality are:

a) long-term integration: which lead to long-term social integration into place, and such integration creates an emotional bond between residents and their homes and community.

b) Sense of ownership: a concept that identifies residents with a sense of control over the place: the greater the residents feel they have power to manage their place they feel more they belong there (Hummon, 1992).

c) social cohesion: social cohesion is dependent upon the need for a shared sense of morality and common purpose (Forrest and Kearns, 1999).

d) Sense of belonging: feeling of being a part of community is not only due to social ties but physical environment can reinforce those social developments and increase attachment (Young et al., 2004). According to Hummon (1992) community attachment is an emotional investment in a locality that is strongly rooted in involvement in local social relationships.

e) meaningfulness: Tuan (1977) defines place as a “centre of meaning or field of care”. What people feel toward the place is not intrinsic to the physical attributes of place but stems from human interpretations of the setting which forms by what people experience in the place. (Stedman, 2003)

f) continuity: physical attributes of the place maintain a connection between residents' past and present environments, which contributes in preserving their community identities (Giuliani, 1991);

g) compatibility: a “good” fit, the thought “This is my kind of community” exists when the environment facilitates people's everyday lifestyle and when they can perform well in that environment (Twigger-Ross and Uzzell, 1996)

h) community confidence: an aspect that defines future expectancy for people who are living together.

Social Factors

Some researchers argue that social relationships are more important to residential satisfaction than the physical environment. Kemmis (1992) was one of the first researchers to consider social factors as important in determining residential satisfaction. Previous studies have shown that residents who feel a sense of belonging to a community identify with that community and are consequently more satisfied with their social relationships and physical environment, which in turn leads to greater satisfaction with their place of residence. Feeling that he belongs, he becomes more committed to the community. The level of involvement with their community also affects their level of satisfaction with where they live. Social factors consist of:

a) social support: friendship networks and the development of small groups develops feelings for each other (Pretty et al., 1996)

b) trust: research have found that feelings of trust are significant predictors of feeling satisfaction with the neighbourhood.

c) connection: informal social contact between two neighbours and develop an informal relationship (Buckner, 1988)

d) social participation: interactions about community issues or engagement in community problems and related activities.

e) social control: Informal social controls include the willingness of neighbours to intervene when perceived wrongdoings are occurring in the community (Cook, 1983)

Physical Factors

Physical factors consist of:

a) distinctiveness: the feeling of being different from others by joining a group or place (Twigger-Ross and Uzzell, 1996)

b) Flexibility: the possibility of using space for different purposes encourages more residents to use the space, which leads to greater a sense of satisfaction with the place (Azizi, 2006)).

c) Satisfaction with environmental features: some studies find that physical appearance is the most important factor in increasing neighbourhood satisfaction and quality of life (Sirgy and Cornwell, 2002)

d) safety: those who feel safe in their neighbourhood report higher satisfaction than those who do not feel safe (Baba and Austin, 1989).

e) Noise level (Lu, 1999)

f) Obstruction/density level: a sense of neighbourhood was found to be a significant negative factor in housing satisfaction. It should be mentioned that actual density and perceived congestion differ. The feeling of crowding is not only a result of lack of space, but also of excessive social stimulation, and it is the perceived crowding, not the actual level of crowding, that creates satisfaction.

Table 1. Sense of Satisfaction: Theoretical Domains

Domains of Sense of Satisfaction		
Personal factors	Social Factors	Physical Factors
Long term integration	Social support	Distinctiveness
Sense of ownership	Trust	Flexibility
Cohesion	Connection	Satisfaction with environmental attributes
Sense of belonging	Participation	safety
Meaning	Social control	Level of noise

Continuity (stability)		Level of crowding/density
Compatibility		
Community confidence		

Site Study

Narmak neighbourhood, in the northeast of Tehran in district 8 provides a good set to explore the questions of this study. This neighbourhood with an area of 84.9-acres and with the population of 25223 residents and 5843 family is one rare neighbourhood in Tehran that is built according to a master plan. This area is restricted by Resalat Expressway from north, Sani boulevard from south, 45 Metri of Tehranpars from east and Ayatollah Madani from the west side (it has to mentioned that a small part of the original neighbourhood separated from the rest by Resalat Expressway which changed the whole characteristic of that area so in the process of this study, this area wasn't included). The planning, designing and constructing of this neighbourhood started about 1950. The original design was composed of 98 squares with lanes and streets around them and it hasn't changed conspicuously since then. Figure 1 shows Narmnak site plan and study sites. A typical square is consisted of residential blocks around the square and a green space in the middle of it though the scale and size of each of these quadrangles are not the same (Figure 2-5).



Figure 1. Narmak Neighbourhoods (Source: google earth)

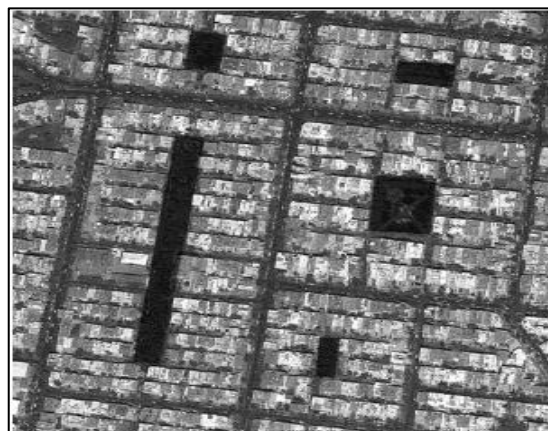


Figure 2. Squares. Picture from above
(Source: google earth)



Figure 3. A typical square with green space and sidewalk. (Source: Author)

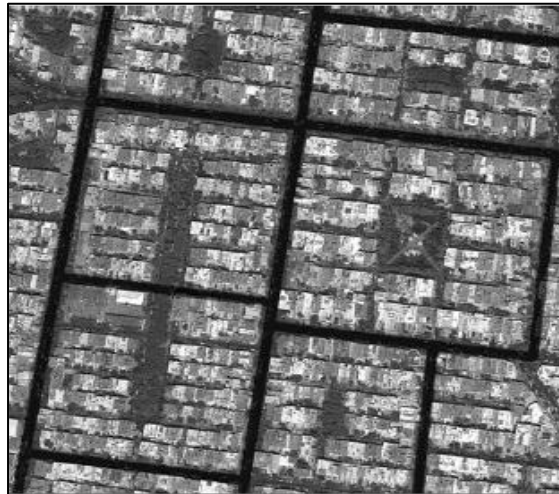


Figure 4. Streets. Picture from above (Source: google earth)



Figure 5. A typical street with green space and sidewalk. (Source: Author)

METHOD

The structured questionnaire was designed to evaluate residents' sense of satisfaction and its three defined dimensions. The designed survey originally stems from SCI (Sense of Community index) with some changes according to current context. Then, 8 experts were asked to read the questions and write their point of view about them to provide as much validity as possible for the study since there was no reliable inner reference to use.

Participants

The data were collected on different locations at neighbourhood. Our subsample included individuals aged 18 and older. In general, 465 questionnaires were collected. However, individuals missing information on any of the dependent or explanatory variables were excluded from the analysis. It reduces the validated questionnaires to 372. Consequently, analysed questionnaires consist of 372 participants aged between 18 and 80 ($M = 39.63$; $SD = 6.96$). Participants live in varied spots of the neighbourhood.

Measures

A five-page questionnaire included a series of 5-point Likert -scale items and a series of 4-point one assessing the level of three explained domains of sense of satisfaction and one set of question asks the residents how they feel about the place with aim of using them to analyse the data (open-ended questions). Some questions also included to measure a number of background variables, including length of residence, number of people in household, number of children in household, age, gender and level of education. The question about income eliminated due to the inconvenience it caused for participants. As it is explained before, sense of satisfaction is composed of three domains. The survey included at least three questions to assess each item of the hypothesized main domains.

To access the level of respondent's place attachment, they were asked to answer some questions from it is completely true or completely untrue. Some of these statements were: "To some extent do you proud of your neighbourhood?", "To some extent the residents of this square/ alley look themselves as a community?" or they were asked to rate some statements from totally agree to totally disagree. Statements like: "It feels good to be a part of this community", "This is a good place for the growth and development of my children" and "As long as it concerns me, at this city, there are better neighbourhoods to live in".

The questions and statement that have been asked to measure the identity of residents were like: "Are the form and physical attributes of this square/ alley in influential of the meaning of this place for you?", "Are the form and physical attribute of this square/ alley is different from other part of this neighbourhood?", "Are the form and physical attributes of this square/ alley is compatible with your lifestyle?" and "are you optimistic about the future of this square/ alley?".

The questions addressing the feeling of social interaction were like: "How much do you trust your neighbours?", "Are the people of this square/ alley come together for social activities to improve the neighbourhood?", "How much the people of this square/ alley know their neighbours?" and "To some extent the control of residents over the incidence occurring in the this square/ alley, has improve the quality of life here?".

And finally, some of the questions that were been asked to evaluate the level of satisfaction were: "How much are you satisfied with the physical appearance of your square/ alley?", "Is it a safe place to live?", "How much are you satisfied with the noise pollution of your square/alley?" and "How much are you satisfied with density of buildings and population crowding of your square/alley?".

Results

To evaluate the influence of layout, including scale, on the sense of satisfaction, we divided housing layouts around squares into three groups: large square, medium square and small ones. We also divided housing blocks that have been built along straight lines into two categories: streets and alleys. Our findings strongly support our main question asking about the connection between "sense of satisfaction" and "neighbourhood design". As shown in table 2, the overall "sense of satisfaction" is higher among people

who live around one of the rectangular squares than those who dwell along the streets and alleys of the neighbourhood. But, not all defined dimensions of “sense of satisfaction” have correlation with our independent variable which is “neighbourhood layout”. Of its three dimensions, personal factors have a meaningful relationship with the layout of blocks.

As it can be seen in table 3, due to sense of ownership and increasing of continuity (stability), residents of squares have more physical identity than residents of streets and alleys. On the other hand, residents of streets and alleys are less dissatisfied with changes around their neighbourhood, but the other group is dissatisfied with changes and feels that they are losing their identity. In table 4, the level of social participation is higher in squares. So those who live around the squares, have more social participation than those who lives in the streets. In addition, the level of social control (security) is higher in large squares. Therefore, it can be said that those who live around the large squares have more satisfaction about security. Finally in table 5, the results show, people who live in one of the squares are more satisfied with physical appearance of the place, hence, they are more satisfied with their neighbourhood. The results also show that those who live in the alleys and streets feel the environment is more crowded and the level of density is more.

The influence of scale was also evaluated. According to our finding, the level of sense of satisfaction is comparatively higher among the residents of small squares and is significantly lower among people who live in alleys. To be specific, the result shows that sense of belonging is higher in the residents of small squares and conspicuously lower among those who live in alleys. On the other hand, those who live in the small squares are more satisfied with social participation of their neighbourhoods.

One of the most interesting points is that distinctiveness is higher in the residents of small squares and it shows that they have a higher level of identity because they feel that they live in a distinctive environment. The residents of large square and alleys are correspondingly most and least satisfied group with the appearance of their neighbourhoods. Also, our findings shows that level of noise is higher in large squares and lower in streets. The residents of small squares are more confident of their neighbourhood's future. In addition, the results also show they are more inclined to participate in social activities to improve the quality of life in neighbourhoods, but regarding the level of trust, no correlation has been found between this item and scale and form of the place (Table 6-7).

Table 2. Relationship between sense of satisfaction, its three domains and layout of blocks

	Layout	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Overall sense of satisfaction	Large Sq.	79	172.9241	24.13837	2.71578	167.5174	178.3308	124.00	226.00
	Medium Sq.	96	170.5729	27.15637	2.77164	165.0705	176.0753	122.00	254.00
	Small sq.	34	176.3824	25.71171	4.40952	167.4111	185.3536	127.00	269.00
	Streets	81	170.3333	23.29056	2.58784	165.1834	175.4833	111.00	229.00
	Alleys	80	161.6375	30.88617	3.45318	154.7641	168.5109	105.00	304.00
Personal factors	Large Sq.	40	80.7750	16.14595	2.55290	75.6113	85.9387	44.00	118.00
	Medium Sq.	135	80.2296	12.09536	1.04100	78.1707	82.2886	50.00	108.00
	Small sq.	35	85.4571	19.19611	3.24474	78.8630	92.0512	56.00	170.00
	Streets	81	81.2346	11.87463	1.31940	78.6089	83.8603	47.00	110.00
	Alleys	80	76.6500	15.37308	1.71876	73.2289	80.0711	47.00	127.00
Social factors	Large Sq.	40	53.3250	9.34355	1.47734	50.3368	56.3132	37.00	73.00
	Medium Sq.	135	52.5704	11.55360	.99438	50.6037	54.5371	21.00	122.00
	Small sq.	35	52.1143	9.89882	1.67321	48.7139	55.5146	35.00	73.00

	Streets	81	51.6296	10.95382	1.21709	49.2075	54.0517	23.00	85.00
	Alleys	80	48.3250	11.11024	1.24216	45.8525	50.7975	30.00	81.00
Physical factors	Large Sq.	39	52.3846	8.74978	1.40109	49.5483	55.2210	37.00	75.00
	Medium Sq.	135	52.3333	8.75368	.75340	50.8432	53.8234	30.00	75.00
	Small sq.	35	54.4286	18.24069	3.08324	48.1627	60.6945	33.00	148.00
	Streets	81	52.1358	8.28214	.92024	50.3045	53.9671	36.00	69.00
	Alleys	80	49.3750	10.22949	1.14369	47.0985	51.6515	26.00	85.00

Table 3. Relationship between sense of satisfaction and personal factor items

Factor	Item	Layout	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Personal Factors	Long term integration	Large Sq.	40	4.7750	8.85637	1.40031	1.9426	7.6074	1.00	59.00
		Medium Sq.	135	3.7111	1.26294	.10870	3.4961	3.9261	1.00	10.00
		Small Sq.	35	3.8000	1.43075	.24184	3.3085	4.2915	2.00	8.00
		Streets	35	3.8000	1.43075	.24184	3.3085	4.2915	2.00	8.00
		Alleys	80	3.9375	1.26635	.14158	3.6557	4.2193	1.00	8.00
	Sense of ownership	Large Sq.	40	10.4500	2.65011	.41902	9.6025	11.2975	3.00	14.00
		Medium Sq.	135	10.4148	2.27703	.19598	10.0272	10.8024	4.00	15.00
		Small Sq.	35	10.8000	2.45908	.41566	9.9553	11.6447	5.00	14.00
		Streets	81	9.8642	2.07216	.23024	9.4060	10.3224	4.00	14.00
		Alleys	80	9.8375	2.13140	.23830	9.3632	10.3118	5.00	14.00
	Cohesion	Large Sq.	40	11.2750	2.63105	.41601	10.4335	12.1165	2.00	16.00
		Medium Sq.	135	11.3407	2.61786	.22531	10.8951	11.7864	.00	16.00
		Small Sq.	35	11.6000	3.21943	.54418	10.4941	12.7059	.00	16.00
		Streets	81	11.8272	2.08441	.23160	11.3663	12.2881	7.00	17.00
		Alleys	80	11.0500	2.52030	.28178	10.4891	11.6109	4.00	16.00
	Sense of belonging	Large Sq.	40	18.0750	3.81890	.60382	16.8537	19.2963	11.00	26.00
		Medium Sq.	135	17.9333	3.71805	.32000	17.3004	18.5662	10.00	26.00
		Small Sq.	35	18.6571	3.72545	.62972	17.3774	19.9369	8.00	24.00
		Streets	81	18.5679	3.37616	.37513	17.8214	19.3144	11.00	26.00
		Alleys	80	17.0250	3.74495	.41870	16.1916	17.8584	9.00	26.00
	Meaning	Large Sq.	40	11.0500	2.93476	.46403	10.1114	11.9886	4.00	16.00
		Medium Sq.	135	11.1111	2.49377	.21463	10.6866	11.5356	4.00	18.00
		Small Sq.	35	14.6000	16.27738	2.75138	9.0085	20.1915	5.00	107.00
		Streets	81	11.1852	2.47038	.27449	10.6389	11.7314	2.00	17.00
		Alleys	80	11.4250	5.60238	.62637	10.1783	12.6717	3.00	41.00
	Continuity (stability)	Large Sq.	40	8.7500	2.47811	.39182	7.9575	9.5425	3.00	14.00
		Medium Sq.	135	8.5407	2.34922	.20219	8.1408	8.9406	2.00	15.00
		Small Sq.	35	8.4571	1.91500	.32369	7.7993	9.1150	5.00	14.00
		Streets	81	8.4198	1.97398	.21933	7.9833	8.8562	4.00	13.00
		Alleys	80	7.9500	2.35410	.26320	7.4261	8.4739	1.00	13.00
	Compatibility	Large Sq.	40	8.6500	2.65591	.41994	7.8006	9.4994	3.00	14.00
		Medium Sq.	135	9.0889	3.33562	.28708	8.5211	9.6567	2.00	39.00

		Small	35	8.9143	2.35611	.39826	8.1049	9.7236	2.00	14.00
		Streets	81	9.1852	2.16859	.24095	8.7057	9.6647	3.00	14.00
		Alleys	80	8.2125	2.69408	.30121	7.6130	8.8120	3.00	14.00
	Community confidence	Large	40	7.7500	3.10293	.49062	6.7576	8.7424	.00	12.00
		Medium	135	8.0889	2.64425	.22758	7.6388	8.5390	2.00	13.00
		Small	35	8.6286	2.85003	.48174	7.6496	9.6076	4.00	12.00
		Streets	81	8.3210	2.60685	.28965	7.7446	8.8974	2.00	13.00
		Alleys	80	7.2125	2.80006	.31306	6.5894	7.8356	2.00	12.00

Table 4. Relationship between sense of satisfaction and social factor items

Factor	Item	Layout	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
Social Factors	Social support	Large	40	5.2750	1.86723	.29523	4.6778	5.8722	2.00	10.00
		Medium	135	5.1037	1.88582	.16231	4.7827	5.4247	1.00	10.00
		Small sq.	35	5.0857	1.65158	.27917	4.5184	5.6531	1.00	8.00
		Streets	81	5.5185	1.66667	.18519	5.1500	5.8870	2.00	9.00
		Alleys	80	4.5750	1.87438	.20956	4.1579	4.9921	2.00	9.00
	Trust	Large	40	7.8750	2.51343	.39741	7.0712	8.6788	4.00	12.00
		Medium	135	8.7185	2.06120	.17740	8.3677	9.0694	3.00	14.00
		Small sq.	35	8.6857	2.74153	.46340	7.7440	9.6275	3.00	14.00
		Streets	81	8.2593	2.24041	.24893	7.7639	8.7547	3.00	13.00
		Alleys	80	7.7625	2.15972	.24146	7.2819	8.2431	2.00	12.00
	Connection	Large	40	17.7000	4.38061	.69264	16.2990	19.1010	7.00	27.00
		Medium	135	17.5704	5.15656	.44381	16.6926	18.4481	9.00	51.00
		Small sq.	35	17.2571	3.62461	.61267	16.0120	18.5022	11.00	26.00
		Streets	81	17.3333	5.05470	.56163	16.2156	18.4510	4.00	33.00
		Alleys	80	16.2750	4.42082	.49426	15.2912	17.2588	9.00	34.00
	Participation	Large	40	10.9500	2.90843	.45986	10.0198	11.8802	4.00	17.00
		Medium	135	10.8296	4.35126	.37450	10.0889	11.5703	4.00	48.00
		Small sq.	35	11.0571	2.94002	.49695	10.0472	12.0671	5.00	18.00
		Streets	81	9.9877	2.65751	.29528	9.4000	10.5753	5.00	18.00
		Alleys	80	9.2500	3.01263	.33682	8.5796	9.9204	1.00	16.00
	Social control (security)	Large	40	11.5250	2.40712	.38060	10.7552	12.2948	3.00	15.00
		Medium	135	10.3481	3.33976	.28744	9.7796	10.9167	.00	15.00
		Small sq.	35	10.0286	2.94544	.49787	9.0168	11.0404	4.00	15.00
		Streets	81	10.5309	2.65088	.29454	9.9447	11.1170	4.00	15.00
		Alleys	80	10.4625	3.09734	.34629	9.7732	11.1518	3.00	15.00

Table 5. Relationship between sense of satisfaction and Physical factor items

Factor	Item	Layout	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
							Lower Bound	Upper Bound		
		Large	40	7.7500	2.10920	.33349	7.0754	8.4246	2.00	12.00

Physical Factors	Distinctiveness	Medium	135	7.7852	2.03105	.17480	7.4395	8.1309	2.00	12.00
		Small	35	11.0286	16.33201	2.76061	5.4183	16.6388	4.00	104.00
		Streets	81	7.9012	1.99753	.22195	7.4595	8.3429	2.00	12.00
		Alleys	80	8.0625	5.31619	.59437	6.8794	9.2456	.00	39.00
	Flexibility	Large	40	9.0500	2.78227	.43992	8.1602	9.9398	3.00	15.00
		Medium	135	9.1852	2.78906	.24004	8.7104	9.6600	3.00	15.00
		Small	35	8.8286	2.33245	.39426	8.0273	9.6298	4.00	13.00
		Streets	81	9.3086	2.49821	.27758	8.7562	9.8610	3.00	15.00
		Alleys	80	8.4000	2.64623	.29586	7.8111	8.9889	2.00	14.00
	Satisfaction with environmental attributes	Large	40	9.5500	2.65011	.41902	8.7025	10.3975	3.00	15.00
		Medium	135	9.4519	3.09723	.26657	8.9246	9.9791	3.00	15.00
		Small	35	9.2857	2.52716	.42717	8.4176	10.1538	4.00	15.00
		Streets	81	8.7901	3.17693	.35299	8.0876	9.4926	3.00	15.00
		Alleys	80	7.7125	3.08608	.34503	7.0257	8.3993	2.00	15.00
	safety	Large	40	8.9500	2.59141	.40974	8.1212	9.7788	3.00	15.00
		Medium	135	9.1704	2.90532	.25005	8.6758	9.6649	3.00	15.00
		Small	35	8.6857	2.98793	.50505	7.6593	9.7121	3.00	15.00
		Streets	81	9.2963	2.88290	.32032	8.6588	9.9338	2.00	15.00
		Alleys	80	8.7125	2.75678	.30822	8.0990	9.3260	3.00	15.00
	Level of noise	Large	40	9.9250	1.70049	.26887	9.3812	10.4688	7.00	15.00
		Medium	135	9.4370	2.05378	.17676	9.0874	9.7866	3.00	15.00
		Small	35	9.2286	2.66884	.45112	8.3118	10.1453	3.00	15.00
		Streets	81	8.9877	1.52884	.16987	8.6496	9.3257	6.00	15.00
		Alleys	80	9.1000	1.91992	.21465	8.6727	9.5273	5.00	15.00
	Level of crowding/density	Large	39	7.3077	2.26127	.36209	6.5747	8.0407	3.00	14.00
		Medium	135	7.3037	2.01588	.17350	6.9606	7.6469	3.00	13.00
		Small	35	7.3714	2.46249	.41624	6.5255	8.2173	3.00	12.00
		Streets	81	7.8519	1.98816	.22091	7.4122	8.2915	1.00	14.00
		Alleys	80	7.3875	2.15532	.24097	6.9079	7.8671	3.00	12.00

Table 6. Relationship between sense of satisfaction and scale of space

Scale	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Large Squares	79	172.9241	24.13837	2.71578	167.5174	178.3308
Medium Squares	96	170.5729	27.15637	2.77164	165.0705	176.0753
Small Squares	34	176.3824	25.71171	4.40952	167.4111	185.3536
Streets	81	170.3333	23.29056	2.58784	165.1834	175.4833
Alleys	80	161.6375	30.88617	3.45318	154.7641	168.5109

Table 7. ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7643.230	4	1910.808	2.724	.029
Within Groups	256081.551	365	701.593		

Discussion and Conclusion

Our findings support our main hypothesis regarding the relationship between neighbourhoods' layout and sense of satisfaction. Residents of Squares of Narmak neighbourhood have more sense of satisfaction than residents of streets and alleys, also, they are more satisfied with physical attributes of their built environment and feel they are living in a unique space that belong to them and define who they are. We chose this particular neighbourhood because it provides us with the opportunity to compare these to distinctive forms with decreasing the influence of other intervene factors for example financial factors as much as possible.

Among discussed items, meaning and distinctiveness have positive correlation with sense of satisfaction. Also, residents of square are more motivated to spend time in the shared spaces due to the possibilities the environment provide for them, so they have more chance to meet others and develop a relationship. According to our interviews, green space is the most attractive quality of squares. In addition, many of squares have playground for children and since many of parents accompany their child, they meet others and that has led to higher level of interaction. Moreover, unlike the residents of alleys and streets, they are also more attached to the place because they feel they own the place and in their mental image, there are some specific lines that distinct their square from other sections.

To expand the research, scholars should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

Additionally, it is necessary to consider two general research limitations. Firstly, the study only involves One case, and therefore limits the layout characteristics to be generalised. However, a study of best practices and other layouts of neighbourhoods would help generalise the findings. Secondly, the influence of demographic differences needs to be explored.

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References

- AZIZI, M. M. 2006. Sustainable Residential Neighbourhoods: The Case Study of Narmak Neighbourhoods, Tehran. HONAR-HA-YE-ZIBA, 27, 4.
- BABA, Y. & AUSTIN, D. M. 1989. Neighbourhoods' environmental satisfaction, victimization, and social participation as determinants of perceived neighbourhood safety. Environment and Behaviour, 21, 763-780.
- BUCKNER, J. C. 1988. The development of an instrument to measure neighbourhood cohesion. American Journal of Community Psychology, 16, 771-791.
- COOK, J. R. 1983. Citizen response in a neighbourhood under threat. American journal of community psychology, 11, 459-471.
- FLEMING, R., BAUM, A. & SINGER, J. E. 1985. Social support and the physical environment.
- FORREST, R. & KEARNS, A. 1999. Joined-up places?: Social cohesion and neighbourhood regeneration, YPS for the Joseph Rowntree Foundation York.

- GIULIANI, M. V. 1991. Towards an analysis of mental representations of attachment to the home. *Journal of Architectural and Planning Research*, 8, 133-146.
- HUMMON, D. M. 1992. *Community attachment*, Springer.
- HUR, M. & MORROW-JONES, H. 2008. Factors that influence residents' satisfaction with neighbourhoods. *Environment and Behaviour*.
- JONES-ROUNDS, M. L., EVANS, G. W. & BRAUBACH, M. 2013. The interactive effects of housing and neighbourhood quality on psychological well-being. *Journal of epidemiology and community health*, jech-2013-202431.
- KEMMIS, D. 1992. *Community and the Politics of Place*, University of Oklahoma Press.
- LALLI, M. 1992. Urban-related identity: Theory, measurement, and empirical findings. *Journal of environmental psychology*, 12, 285-303.
- LU, M. 1999. Determinants of residential satisfaction: Ordered logit vs. regression models. *Growth and Change*, 30, 264-287.
- MCGIRR, E., SKABURSKIS, A. & DONEGANI, T. S. 2014. Expectations, preferences and satisfaction levels among new and long-term residents in a gentrifying Toronto neighbourhood. *Urban Studies*, 0042098014522721.
- MORRISON, N. 2003. Neighbourhoods and social cohesion: Experiences from Europe. *International Planning Studies*, 8, 115-138.
- Mouratidis, K., & Yiannakou, A. (2022). What makes cities liveable? Determinants of neighbourhood satisfaction and neighbourhood happiness in different contexts. *Land Use Policy*, 112, 105855.
- Neal, Z. (2021). Does the neighbourhood matter for neighbourhood satisfaction? A meta-analysis. *Urban Studies*, 58(9), 1775-1791.
- PRETTY, G. M., CONROY, C., DUGAY, J., FOWLER, K. & WILLIAMS, D. 1996. Sense of community and its relevance to adolescents of all ages. *Journal of Community Psychology*, 24, 365-379.
- SAMPSON, R. J., RAUDENBUSH, S. W. & EARLS, F. 1997. Neighbourhoods and violent crime: A multilevel study of collective efficacy. *Science*, 277, 918-924.
- SIRGY, M. J. & CORNWELL, T. 2002. How neighbourhood features affect quality of life. *Social Indicators Research*, 59, 79-114.
- STEDMAN, R. C. 2003. Is it really just a social construction? The contribution of the physical environment to sense of place. *Society & Natural Resources*, 16, 671-685.
- TUAN, Y.-F. 1977. *Space and place: The perspective of experience*, U of Minnesota Press.
- TWIGGER-ROSS, C. L. & UZZELL, D. L. 1996. Place and identity processes. *Journal of environmental psychology*, 16, 205-220.
- YOUNG, A. F., RUSSELL, A. & POWERS, J. R. 2004. The sense of belonging to a neighbourhood: can it be measured and is it related to health and wellbeing in older women? *Social Science & Medicine*, 59, 2627-2637.