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Examining interaction of city legibility and sense of security

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Abstract

The city is an ongoing changing structure because of reflection of ongoing changes of cultures. Sense of belonging and sense of security to environment increase the level of liveability of a city in this ongoing changing structure. People get used to a legible environment easily and legibility of space increases the sense of security and the familiarity. In this study, the interaction of legibility of city and sense of security is examined via streets. Haskoy area, which belongs to Istanbul Beyoglu District that is an old settlement, is chosen as the investigation field. Osgood semantic differential scale is used for this research as method. This method is performed with first and third grade psychology students and the results are compared. The differences or similarities in the spatial evaluation of participants are measured over photographs of the 6 streets which are classified in terms of landmarks, building-age-state, greenery, enclosure, mystery, perspective, and coherence. In addition, the relationship between legibility of streets and sense of security is evaluated.

Keywords: city legibility; sense of security; street; Haskoy;

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1. Introduction

Referring to Maslow's hierarchy of needs (1943); security is the main need for humankind as food, shelter, and health. Physical environment has a great role to make people feel secure. Therefore, security of physical environment has real effect on quality of life that is naturally related with quality of urban space and their building components. Like many theoreticians Kevin Lynch (1960) investigated urban spaces and quality of life and according to Lynch, a good environment gives its possessor an important sense of emotional security. On the other hand, space is an organic and live structure. Living spaces have many ongoing changes in the process of their evolutions thereby city has also an ongoing changing structure. Good environment means it is legible. Under the ongoing structure, legibility of an area gets real importance to increase sense of security. Many urban planners and designers develop solutions to attain more livable urban areas. Therefore, their efforts are devoted to the question of security as well as the influence of environmental designs in creating spaces with this quality (Jacobs, 1961; Newman, 1996). This investigation mainly aims to show the relationship between city legibility and sense of security.

1.1 Definition of legibility

Legibility, in the context of navigation and wayfinding, is a term that has been used for many years in the discipline of city planning (Ingram & Benford, 1995). According to Lynch (1960), if a city is legible, its parts can be recognized and can be organized into coherent patterns. In another terms the parts and whole of city have definable relations. Legibility is the key of understanding the city (Eraydin, 2007). A city is more legible when its layers have good configuration. More legible city means also good quality of life and more understandable environment. Hence, when people understand or read their environment they will feel more secure.

1.2 Definition of security

Security means becoming secure and having no sense of fear. Razniak & Razniak (2014) describes security as one of the primary needs of human society that specifies its function and development. Security is the main human need. Level of security defines the quality of life. According to Nasar & Fisher (1993), the physical environment is more important than the social environment. According to Harting (1991), light, open space and access to the real refuge are three most important physical characteristic of the environment to feel safe.

2. Method

2.1. Research area

The aim of this research is investigating relationship between city legibility and sense of security in streets of Haskoy District, Istanbul. The study field selected includes ongoing changes, historical structures, industrial and residential usages, and good view of Golden Horn of Istanbul. Therefore, streets of the area have several views for investigation. Streets are one of the most significant elements of legibility criteria. People define the city mostly based on streets and herewith built environment.

6 different images of streets of Haskoy have been chosen for the research. The differences or similarities in the spatial evaluation of participants are measured over the chosen photographs of these 6 streets that are classified in terms of landmarks, building-age-state, greenery, enclosure, mystery, perspective, and coherence. Name of streets are Aziz Street, Basmaci Rusen Street, 2 different views from Kalayci Bahce Street, and 2 different views from Tursucu Cesme Street.



Figure 1: 1 -Aziz Street, 2-Basmaci Rusen Street, 3/4- Kalaycı Bahce, 5/6-Tursucu Cesmesi Street

2.2. The participants

Psychology students are determined as the main group of participants. First and third class students are designated as sub-groups. 27 female and 13 male students of each first class and third class, totally 80 students, participated to the investigation.

2.3. Semantic differential scale

Osgood's semantic differential is used to get data for the study. Semantic differential technique is preferred because by that way comparative results are given easily. In this method, a questionnaire includes a rating scale between two bipolar adjectives. Participants have scored legibility and sense of security of 6 different aspects of streets according to given adjective list. These adjectives are chosen based on legibility and security terms and they are;

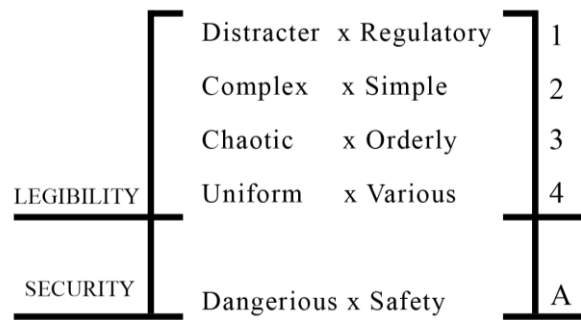


Figure 2 : The adjective pairs.

3. Results and Discussion

4 adjectives based on legibility are marked as '1-2-3-4' and 1 adjective based on safety is marked as 'A' had determined. The data from survey is coded into SPSS software for descriptive statistical analysis and correlation statistical analysis. By this way, evaluations of the street conditions are accepted as 'dependent variables'.

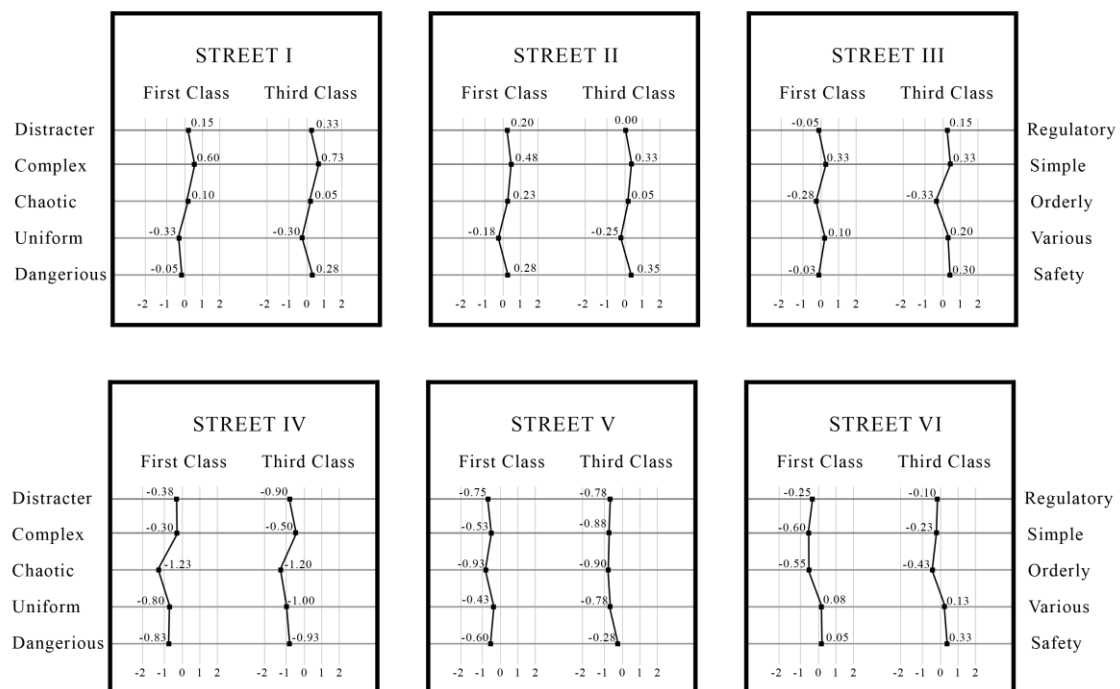


Figure 3: Mean values of adjectives

In SPSS, -2 is defined for very negative, -1 for negative, 0 for neutral, 1 for positive, and 2 for very positive. The weighted average is determined for each question and just street 2 (Basmacı Rusen

Street) and street 6 (Tursucu Cesmesi Street 2) are determined as safe by both sub-groups. Street 4 (second view of Kalaycı Bahce Street) and street 5 (first view of Tursucu Rusen Street) are determined as dangerous. The interesting point is that one side of Tursucu Cesmesi Street was determined as safe and the second side of it was determined as dangerous. Probably the slope and the length of street had influence on this result.

First Class Psychology Students (27 Female -13 Male)			
	Adjectives	Sig.(2-tailed)	P. Correlation
Street I	A x 1	0.003	0.45**
	A x 2	0.004	0.44**
	A x 3	0.076	0.28
	A x 4	0.948	- 0.11
Street II	A x 1	0.176	0.21
	A x 2	0.361	0.14
	A x 3	0.001	0.50**
	A x 4	0.046	0.31*
Street III	A x 1	0.267	0.18
	A x 2	0.009	0.40**
	A x 3	0.082	0.27
	A x 4	0.590	0.08
Street IV	A x 1	0.020	0.36*
	A x 2	0.540	0.30
	A x 3	0.014	0.38*
	A x 4	0.837	0.03
Street V	A x 1	0.221	0.19
	A x 2	0.003	0.46**
	A x 3	0.512	-0.10
	A x 4	0.023	0.35*
Street VI	A x 1	0.005	0.43**
	A x 2	0.727	0.05
	A x 3	0.127	0.24
	A x 4	0.159	0.22

Third Class Psychology Students (27 Female -13 Male)			
	Adjectives	Sig.(2-tailed)	P. Correlation
Street I	A x 1	0.046	0.31*
	A x 2	0.001	0.49**
	A x 3	0.000	0.61**
	A x 4	0.060	0.42**
Street II	A x 1	0.350	0.15
	A x 2	0.082	0.27
	A x 3	0.001	0.48**
	A x 4	0.134	0.24
Street III	A x 1	0.036	0.33*
	A x 2	0.000	0.60**
	A x 3	0.000	0.55**
	A x 4	0.003	0.45**
Street IV	A x 1	0.000	0.53**
	A x 2	0.000	0.53**
	A x 3	0.002	0.46**
	A x 4	0.001	0.40**
Street V	A x 1	0.005	0.43**
	A x 2	0.032	0.34*
	A x 3	0.003	0.45**
	A x 4	0.000	0.64**
Street VI	A x 1	0.000	0.60**
	A x 2	0.415	0.13
	A x 3	0.022	0.36*
	A x 4	0.002	0.47**

* Correlation is significant at the 0.05 level. (2-tailed)
 ** Correlation is significant at the 0.01 level. (2-tailed)

* Correlation is significant at the 0.05 level. (2-tailed)
 ** Correlation is significant at the 0.01 level. (2-tailed)

Figure 4: Correlation results of first class students

Figure 5: Correlation results of third class students

The next step of the evaluation is to analyse the correlation between legibility and security variables. The value of a correlation coefficient ranges (r) between -1 and 1(-1 < r > 1). Correlations show a significant and a moderate relation relationship between legibility and security, especially at the results of third class students.

Although the correlations are generally upper than 0 at the Figure 4 (First Class Students), less than half of values are not significant. On the other hand, the correlations of Figure 5 (Third Class Students) are significant except four points. This shows us that the psychology education has the role on the reading environment. They detect the environment in a different aspect and may be more aware. Because according to several researches, secure area means open and wide view, light, regular, clean, liveable, accessible, green, etc. and the chosen streets have at least one criteria of security (Yazdanfar & Nazari, 2015).

Another interesting result of the investigation is Street II (Basmaci Rusen Street). Although it includes regular, light, and wide view, it does not have significant correlation in both sub-groups of participants. According to survey, its historical face causes this result. Students sense old as insecure.

4. Conclusion

This research examined the relationship between city legibility and security. It proved that this relationship is linear, that means if spaces become more legible, sense of security and naturally quality of life increase. Nowadays, in addition, the concept of security is related to components of the urban design. These two terms influence each other, either in a negative or a positive manner. It means that improvement of urban design, to get more legible physical environment will increase the sense of security. Therefore, this investigation can be a guide for designers to see why legibility has great importance for urban design. In addition, it can also be a guide in terms of security and its importance for people.

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