CHAPTER FOUR: PLANNING THE RESEARCH STUDY

4.1 Introduction

This research attempts to explore the teenage students' perception of safety in relation to non-political graffiti vandalism with reference to outdoor lighting levels in urban areas of Tehran, Iran. It is also to assess the related SCP variables known to impact on vandalism and graffiti occurrence, as well as to evaluate the environmental variables that correlate with the high degree of non-political graffiti vandalism damages.

This research also investigates the perception of juveniles' regarding the various aspects of vandalism as well as its main causes and risk factors in urban areas of Tehran. It is to give a view on vandalism issues in Tehran and helps to determine if modifications suggested by theoretical models are recognised by respondents as having ability to impact fear of crime in urban areas of Tehran.

To that end, 518 students from three different urban areas in Tehran, ages 10 to 18 were surveyed in April and May 2009 and SCP assessment conducted in the same three areas of the city by 50 students in architecture. Exploring any correlation between different types of vandalism damages and perception of safety in urban areas of Tehran, investigating the perception of juveniles' regarding the various aspects of vandalism and graffiti as well as its main causes and risk factors in urban areas of Tehran, assessment of any correlation between outdoor lighting level and non political graffiti occurrences in urban areas of Tehran, SCP assessment and demographic variables provided both quantitative and qualitative part of the research.

The purpose of this chapter is to explain how the research is accomplished; what the data consisted of and how the data was collected and organised. It also describes the instruments and procedures used for this research.

4.2 Overview of Research Methodology: Survey

4.2.1 Sampling technique: The survey was administered to 518 teenager students from 12 schools of interest recruited from 3 different areas of Tehran in April and May 2009. The areas selected based on socioeconomic status of residents (Kalantari et al., 2007). As discussed in chapter 3 of this research, the urban design and urban facilities in 3 areas have been conditioned by socioeconomic status of residents.

In total 503 students agreed to do the survey. A further 15 students refused to do the survey. Of the 15 students refused to do the survey none of them did give any specific reasons for refusing. The sample size represents general view or opinions of teenagers in Tehran within a 3% margin of error at the 95% confidence level. Social and political expression is one of the common causes of committing vandalism and graffiti in Tehran (Tehran Municipality report, 2008). Due to different nature of the motivations to these types of vandalism and graffiti, other variables can contribute to choice of target. Considering the aim of this study and the need to exclude vandals with political and social expressions, teenager students selected as target population since they are less likely to involve in political and social protests[1]. It should be noted that political and social graffiti vandalism can be differentiated from other types of graffiti damages by the special signs, meaning of the words and colour of the writings in urban areas of Tehran. It will result in nullifying the effects of political and social motivations to vandalism and graffiti that can bias the results.

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1 The age of majority is18 in Iranian Law

Selected areas are shown in Figure 4.1 as follows:

- Area Number 1: North part of Tehran (Upper Social status- Elahie)

- Area Number 2: East part of Tehran (Middle Social status- Piroozi)

- Area Number 3: South of Tehran (Lower Social status- Nazi Abad)
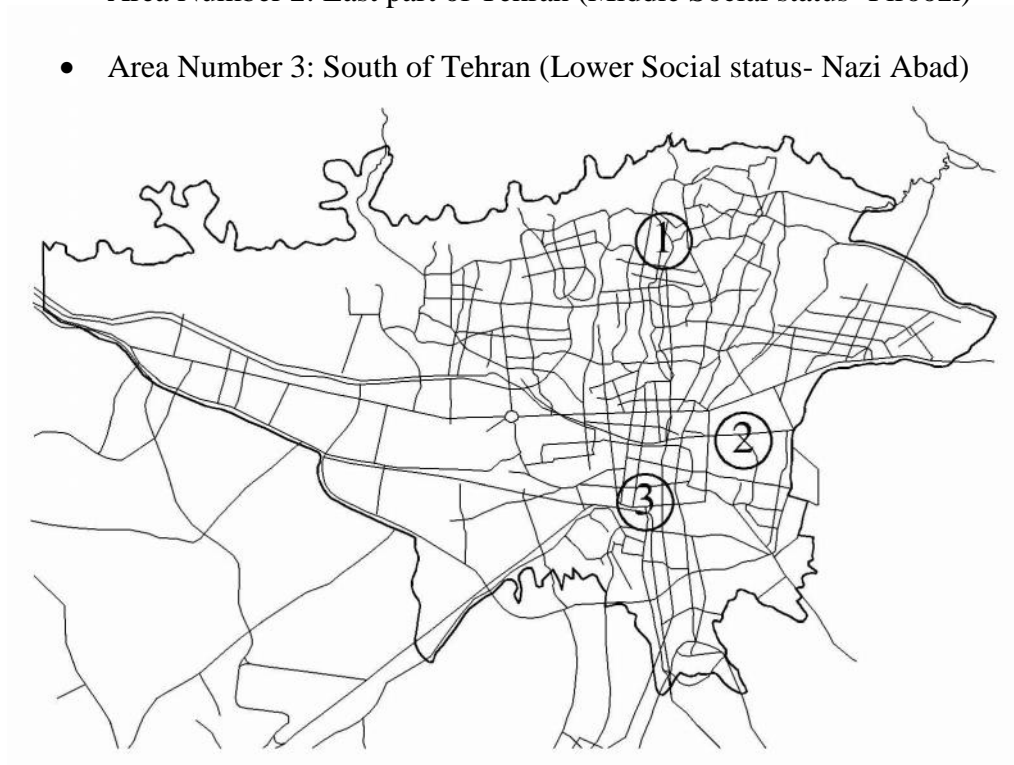

Figure 4.1: Three selected areas where the survey conducted in
Area Number 1: North part of Tehran (Upper Social status)
Area Number 2: East part of Tehran (Middle Social status)
Area Number 3: South of Tehran (Lower Social status)

The survey occurred in 6 secondary schools and 6 high schools in 3 different areas of the city. In each area 2 girls' school and 2 boys' school has been selected. In this way, it was possible to gain access to different age groups. In each school, the students of 3 classes (3 different age groups) have been surveyed. Knowing that boys tend to vandalise more than girls[2], the respondents were predominantly males in each area. The sample comprises a higher proportion of male (69.8%) than females (29.80%). The number of the boys interviewed in each area is approximately 2.36 times more than the number of girls.

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[2] See chapter 2.3

Survey occurred during the weekdays and during the school time (morning and afternoon sessions). Table 4.1 shows the breakdown of respondents in each school by sex. Table 4.1 indicates that 187 students from area 3 completed the survey that provided the largest percentages of the respondents (N= 187, 37.1%) followed by area 1 with 159 participants (31.6%).

Table 4.1 Number of students surveyed in each area (sex)

	Sex	Area 1	Area 2	Area 3	Total
	Girl	47	49	53	149
Valid	Boy	112	105	134	351
	Total	159	154	187	500
Missing	System	0	1	2	3
Total		159	154	187	503

4.2.2 The instrument: A questionnaire completed by respondents in order to gather primary data for statistical analysis. The copy of the questionnaire is presented in Appendix E (Persian and English version). The first part of the survey, defined the 'Vandalism Act' in Persian language as there is no equal term for 'vandalism' in Persian language.

The survey consists of two groups of the questions focus on the aim of the study. First group of the questions are related to perception of safety and SCP initiatives to combat vandalism and graffiti damages. This part first asked subjects to indicate how respondents are worried about certain types of vandalism in their neighbourhood (Question 3). According to Tehran municipally report (Tehran Municipality report, 2008), there are four common types of vandalism damages in Tehran urban areas on the basis of the targets. The specific types of vandalism probed were: graffiti and any damaged to their houses, any damages to their vehicles, any damages to public properties and any damages to landscape and green areas in their neighbourhood.

It will help to put more efforts to prevent such types of vandalism damages that might be a growing concern to respondents. Moreover, the relationship between these common types of vandalism and graffiti damages and perception of safety has been assessed. In research by Atkins et al. (1991) on the effects of lighting on crime and British Crime Survey (BCS) By Home office (1982-2001) (Grant, Harvey, Bolling & Clemens, 2006) the same method used to study how respondents are worried about crime in their local area on a five point likert scale.

Although the effects of vandalism on perception of safety has been proven by CPTED theory in different studies (Goldstein, 1996) but the assessment of the correlation between different types of vandalism and graffiti in particular and perception of safety is not yet noticed by researchers in urban areas of Tehran. This is a new research topic in Iran. To have a general view on respondents' perception of safety in the area of residence and in the area, where they study, they were asked to rate how they are concern their safety in both areas (Question 1). This method had been used before by Coumarelos (2001) and Grant, et al. (2006) to study perception of safety.

To study the correlation between graffiti occurrences in the neighbourhoods in particular and respondents' perception of safety, two photos were presented to respondents and teenager students were asked to rate their perception of safety in a vandalised neighbourhood by graffiti writers (Question 19).

Question 2 is designed to make a comparison between the effectiveness of selected SCP variables to improve perception of safety among teenager students in urban areas of Tehran. The variables selected on comprehension of each SCP component comprises of responsibility of residents toward the area of residence (informal surveillance), police patrol (formal surveillance), neighbourhoods' management (Image/Space management),

occurrences of vandalism and graffiti (Image/Space management), presence of more people in the neighbourhood (formal surveillance) and Lighting level (natural surveillance). The variables measured using a likert scale of 1 to 5. The method obtained from research by Austin , Furr and Spine (2002) and Md Sakip and Abdullah (2011).

This question is designed to find out if preventing vandalism and graffiti is as important as other SCP variables to improve perception of safety among respondents in urban areas of Tehran.

The second group of the questions are related to vandalism, graffiti and lighting. The respondents first asked questions about vandalism (including graffiti). These questions are trying to investigate the perception of juveniles' regarding the various aspects of vandalism as well as its main causes and risk factors in urban areas of Tehran. These questions are helpful to give us a general view on vandalism issues and contribute to increase our understanding of the problem in urban areas of Tehran. Moreover, the data are collected to be used for further studies.

Teenager students asked about the factors that can encourage and motivate a person to commit vandalism (Question 9). They had to use a likert- type response (1to 5) (Wet, 2004).The factors were decided based on literature review and social and environmental characteristics of urban areas of Tehran. For example although alcohol misuse is known as a motivation to vandalism but this factor was not presented to respondent as a motivation to vandalism. According to Iran regulations and Muslim believes, selling and drinking alcohol is forbidden.

The students were also asked about the factors that can help to prevent vandalism in urban areas of Tehran (Question 16). Based on situational crime prevention theory, respondents were asked to assess the effectiveness of eight vandalism prevention initiatives including lighting programs (lighting vs. No lighting) to tackle vandalism (including graffiti). The findings from this question will help to find the most effective anti vandalism programs and highlights the effectiveness of lighting initiatives to tackle vandalism in comparison to other anti vandalism programs (Brehaut, 2009).

Some other questions such as how respondents are willing to participate in anti vandalism programs and how they rate vandalism as a crime have been asked from respondents (Question 7&15).

In line with the aim of the study and to find any correlation between lighting level and vandalism and graffiti occurrences in general, respondents were asked four direct questions about the relationship between lighting, vandalism and graffiti. The questions designed based on the method implemented by department of transport to study the value of improved lighting in rural areas (Willis, Powe & Garrod, 2003). First they were asked about possible time of vandalism occurrence. To find out the effectiveness of implementing lighting initiatives (lighting vs. No lighting), it was important to know when vandalism is likely to happen considering the physical and social characteristics of urban areas of Tehran (Question 10) that might be different with other communities. For example if in Tehran, vandalism is more likely to happen during the daytime, then there is no point to implement either lighting or no lighting initiatives to tackle vandalism. This question highlights the current gap in research in understanding vandalism and graffiti on the influence of time in Tehran urban areas.

Question 12 asked respondents about the possibility of vandalism occurrence in three different lighting conditions and question 13 asked respondents if improved lighting can prevent vandalism and graffiti.

To support the findings from question 12 and to study the effects of lighting level to increase the possibility of graffiti occurrences as one of the types of vandalism, respondents were asked to answer some questions related to three photos about vulnerability of the same property to graffiti regardless of the effects of other environmental variables. These questions applied a technique[3] that had been used previously by Webb (1984), Decker et al. (1993) and Smith (2003) (as cited in Smith, 2003). According to Smith (2003), the approach overcame some problems. First is the problem noted by Brantingham and Brantingham (1993 as cited in Smith, 2003); Smith (2003) explained that "offenders may not be conscious of why they offend in one particular situation rather than another, and therefore may not be able to articulate why they might choose to vandalise one object rather than another" (P.10) and second is the problem identified by Nee and Taylor (1988 as cited in Smith, 2003) known as symmetry of cue salient[4]. Smith (2003) added that:

"The approach allowed a number of factors to be presented to subjects at the same time as in real world situation" (Smith, 2003, P.11).

Question 11 and 14 are designed to re examine the available literature on vandalism prevention initiatives in Tehran urban areas. This re-examination of the

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[3] 'The research was carried out in 1994 in the Greater London area with 11 to 16-year-olds who were asked to imagine themselves in a vandalism crime script involving damage of and graffiti writing on fences, walls, or barriers ("fences"). The research test whether there were differences in subjects' ratings of their likelihood of vandalizing "fences" with certain features that were thought to increase their suitability for graffiti writing (presence of graffiti and the width of the fence) or for damage (presence of damage and the hardness of the fence material). Specifically, this recent vandalism behavior was limited to a single type of target — that is, fences, walls, or barriers similar to those shown to them in a series of photographs." (Smith, 2003, P.207)

[4] "Symmetry of cue salience may be present in studies that ask offenders to rate the attractions of particular target features. For example, the absence of a burglar alarm may be a strong cue for burglary, while the presence of an alarm may not necessarily be equally unattractive to burglars" (Smith, 2003, P.11).

literature is important in a sense to delineate how these environmental variables suggested by CPTED and SCP are supported by teenager students (respondents) as having ability to effect on vandalism occurrence. Lack of any research on the effectiveness of CPTED/SCP initiatives and vandalism occurrences in Tehran urban areas can justify the importance of asking such questions.

Question 4 & 5 & 6 are related to lighting level and perception of safety. Although there is no doubt on the effects of lighting to improve perception of safety, however there are different explanations on how lighting cause to improve perception of safety (Farrington & Welsh, 2003). These questions are to re examine the available literature which has never been done in Tehran and to discuss why lighting level lead to increase perception of safety in urban areas of Tehran. The findings from these questions and the effects of lighting on graffiti and vandalism will help to come up with the conclusion and will be discuss in chapter 6 of the present research.

To test the validity of the survey and to identify any practical problems in this research, the survey was distributed to 150 students in January 2009. The feedback showed that the questionnaire was uncomplicated and easy to complete. Therefore no amendments or alterations were required to the design and the full survey was conducted in April and May 2009.

Basic socio-demographic data (age, gender, education status and family income) was also collected and measured in this study in order to understand the characteristics of respondents.

The questions are constructed on closed format[5]. A Likert scale was employed in respect of attitude questions. Respondents were asked to rate each questions on a five point scale ranging from 1(Very Low) 2 (Low), 3 (Average), 4 (High), 5 (Very High). An important aspect of this type of question is the inclusion of both positively and negatively phrased questions about the same subject. "This allows the investigator to discover if the participant has answered questions truthfully or if they simply have gone through the list of statements just circling any answer" (Zeisel, 1984).

Friedman rank Test, Spearman's Rank Correlation Test and Mann Whitney U test are the non parametric statistical tests to analyse the ordinal data obtained from questionnaires.

Friedman Test is a non-parametric test (distribution-free) used to compare observations repeated on the same subjects. This is also called a non-parametric randomised black analysis of variance. This non parametric makes no assumption about the distribution of the data. The hypotheses for the comparison across repeated measures are:

Ho: The distributions are the same across repeated measures
Ha: The distributions across repeated measures are different

These hypotheses could also be expressed as comparing mean ranks across measures. The test statistic for the Friedman's test is a Chi-square with a-1 degrees of freedom, where 'a' is the number of repeated measures. When the p-value for this test is small (usually <0.05) we have evidence to reject the null hypothesis (WINKS SDA Statistical Software, n.d.)

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5 " There are a number of advantages to well developed forced-choice questions. Where the questionnaire is long or peoples' motivation to answer is not high, forced choice question are useful since they are quick to answer. This is particularly so if the questionnaire is self administered rather than administered by skilled interviewer who can establish rapport and increase motivation." (Vaus, 2002, P.100 &101).

"The Spearman's Rank Correlation Coefficient is used to discover the strength and direction of association that exists between two variables measured on at least an ordinal scale". Spearman's rank correlation coefficient allows identifying easily the strength of correlation within a data set of two variables, and whether the correlation is positive or negative (whether the slope of the corresponding line is positive or negative). Spearman's rank correlation coefficient requires data that are at least ordinal and the calculation, which is the same as for Pearson correlation, is carried out on the ranks of the data. Each variable is ranked separately by putting the values of the variable in order and numbering them. Spearman's rank correlation coefficient is used as a measure of linear relationship between two sets of ranked data that is it measures how tightly the ranked data clusters around a straight line.

Spearman's rank correlation coefficient, like all other correlation coefficients, will take a value between) 1 and +1. A positive correlation is one in which the ranks of both variables increase together. A negative correlation is one in which the ranks of one variable increase as the ranks of the other variable decrease. A correlation of (+1 or 1) will arise if the relationship between the two variables is exactly linear. A correlation close to zero means there is no linear relationship between the ranks. (Altman 1990, pp. 285±288.)

The Mann-Whitney U Test is used to compare differences between two independent groups when the dependent variable is either (a) ordinal or (b) interval but not normally distributed." (laerd Statistics. N.d.)

It is used to test the null hypothesis that two samples come from the same population (i.e. have the same median) or, alternatively, whether observations in one sample tend to be larger than observations in the other.

The hypotheses for the comparison of two independent groups are:

Ho: The two samples come from identical populations
Ha: The two samples come from different populations

The test statistic for the Mann-Whitney test is U. This value is compared to a table of critical values for U based on the sample size of each group. If U exceeds the critical value for U at some significance level (usually 0.05) it means that there is evidence to reject the null hypothesis in favour of the alternative hypothesis. (WINKS SDA Statistical Software, n.d.)

For sample sizes greater than 20, a z-value can be used to approximate the significance level for the test. In this case, the calculated z is compared to the standard normal significance levels." (Gravetter & Wallnau , 2006, P.646).

SPSS[6] (V.16) and Minitab (V.15) are the statistical software package used to compute statistics to identify trends, relationships and differences in data sets to achieve the aim of the study.

4.2.3 Demographic Characteristics of Respondents and Response Rate: Of all 518 questioners distributed among respondents in 12 selected schools, only 503 respondents completed the survey. A further of 15 students refused to do the survey for no specific reason. The majority of respondents were male (70.2%) and aged 16 (17.94%) and 17 (19.06%) years old. The average age of respondents was 15 and 37.9% of the respondents are from families with average annual income level (6000 to 12000 US $).

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[6] Statistical Package for the Social Sciences

Table 4.2 Response Rate by Sex

	Sex	Frequency	Percent	Valid Percent
	Boy	351	69.8	70.2
Valid	Girl	149	29.6	29.8
	Total	500	99.4	100.0
Missing	System	3	0.6	
Total		503	100.0	

Table 4.3 shows the breakdown of the respondents by their Family income level.

Table 4.3 Response Rate for 3 selected each Areas by Family Income Level

Income Level (annually)	Frequency Y	Percent	Valid Percent
Less than 500,000 (6000 US$)	129	25.6	28.9
500,000 to 1,000,000 (6000 to 12000 US$)	169	33.6	37.9
More than 1,000,000 (More than 12000 US$)	148	29.4	33.2
Total	446	88.7	100.00
Missing System	58	11.3	
Total	503	100.00	

Table 4.4 presents the breakdown of the respondents by age.

Table 4.4 Response Rate for 3 selected each Areas by Age

	Age	Frequency Y	Percent	Valid Percent
	10	1	0.2	0.2
	11	6	1.2	1.3
	12	33	6.6	7.4
	13	66	13.1	14.8
Valid	14	59	11.7	13.2
	15	56	11.1	12.6
	16	80	15.9	17.9
	17	85	16.9	19.1
	18	43	8.5	9.6
	Total	429	86.3	100.0
Missing	System	74	14.7	
Total		503	100.0	

4.2.4 Survey Procedure: It was necessary to get permission from Iranian educational system in order to survey students. Accordingly, the length and purpose of the survey were outlined and the confidential nature of the survey was emphasised. Survey conducted during the school time and students were helped for any inquiries.

4.2.5 Survey: Questionnaire Reliability Check

As a means of assessing the internal reliability of the questionnaire, Cronbach's alpha[7] (α) (Table 4.5) is calculated for 150 samples. Cronbach's alpha is computed for Q1-1 to Q18-3 and the output result is 0.81 that is considered acceptable statically (Vaus, 2002). "It is conventional to view an α of 0.7 or greater as indicating a reliable scale (Hinton, 2005, P. 303), so we would view this limited questionnaire data as reliable"(α> 0.7 or α =0.7)

Table 4.5 presents the computed alpha in case of excluding each question.

Table 4.5: The computed alpha (in case of excluding the question)

No.	Cronbach's alpha	No.	Cronbach's alpha	No.	Cronbach's alpha	No.	Cronbach's alpha
Q 1-1	0.808	Q 4-3	0.793	Q 9-5	0.794	Q 15-2	0.788
Q 1-2	0.801	Q 5-1	0.824	Q 9-6	0.794	Q 16-1	0.793
Q 2-1	0.795	Q 5-2	0.796	Q 10-1	0.798	Q 16-2	0.792
Q 2-2	0.792	Q 6-1	0.801	Q 10-2	0.8	Q 16-3	0.79
Q 2-3	0.8	Q 6-2	0.787	Q 10-3	0.795	Q 16-4	0.8
Q 2-4	0.798	Q 6-3	0.85	Q 10-4	0.796	Q 16-5	0.787
Q 2-5	0.794	Q 7	0.789	Q 11-1	0.807	Q 16-6	0.779
Q 2-6	0.793	Q 8-1	0.795	Q 11-2	0.803	Q 16-7	0.792
Q 3-1	0.792	Q 8-2	0.794	Q 12-1	0.797	Q 16-8	0.792
Q 3-2	0.78	Q 8-3	0.798	Q 12-2	0.8	Q 18-1	0.799
Q 3-3	0.792	Q 9-1	0.808	Q 12-3	0.803	Q 18-2	0.805
Q 3-4	0.789	Q 9-2	0.8	Q 14-1	0.808	Q 18-3	0.807
Q 4-1	0.79	Q 9-3	0.802	Q 14-2	0.8		
Q 4-2	0.787	Q 9-4	0.785	Q 15-1	0.801		

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[7] Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when we have multiple Likert questions in a survey/questionnaire that form a scale and we wish to determine if the scale is reliable (www.statistics.laerd.com)

According to the result from reliability check for 150 samples, the Standard Deviation is 0.31535. According to SCI (2006) the population of Tehran age 10 to 18 is 2,438,323. In the survey, as the population is large, a subset of population is selected. The required sample size depends on two variables: margin of error (confidence interval) and confidence level that clear how much error we are prepared to tolerate and how certain we want to be about our generations from samples (Vaus, 2002). The minimum number of respondents has been determined 424 within a given margin of error (3%) at the 95% confidence level (Brown S., 2007) (Table 4.6).

Table 4.6 :Sample Size

Margin of Error	Confidence Level	Sample Size
1	95	3820
2	95	955
3	**95**	**424**
4	95	239
5	95	153
6	95	106
7	95	78
8	95	60
9	95	47
1	90	2626
2	90	656
3	90	292
4	90	164
5	90	105
6	90	73
7	90	54
8	90	41
9	90	32

If we know the standard deviation of the population, and we want to estimate the mean μ to within a given margin of error E in a 1– confidence interval, here's how to find the required sample size n (Brown S., 2007):

Sample Size: $n = (\dfrac{Z_{r/2} \times \dagger}{E})^2$

Z α/2= 100 (1– α)%   σ = Standard Deviation   E= Margin of Error

Note. The target population (teenagers in Tehran) is the number of people we are studying. Often we may not know the exact population size.

The mathematics of probability proves the size of population is irrelevant unless the size of the sample exceeds a few percent of the total population we are examining. Population size is only likely to be a factor when we work with a relatively small and known group of people. (Brown S., 2007)

4.3 Overview of Research Methodology : Situational Crime Prevention Assessment

4.3.1   Target areas and time period

Three part of the city have been selected where people live from different socioeconomic status. The areas have been selected nearby the schools where the survey has been conducted. The target areas have been shown in Figure 4.2
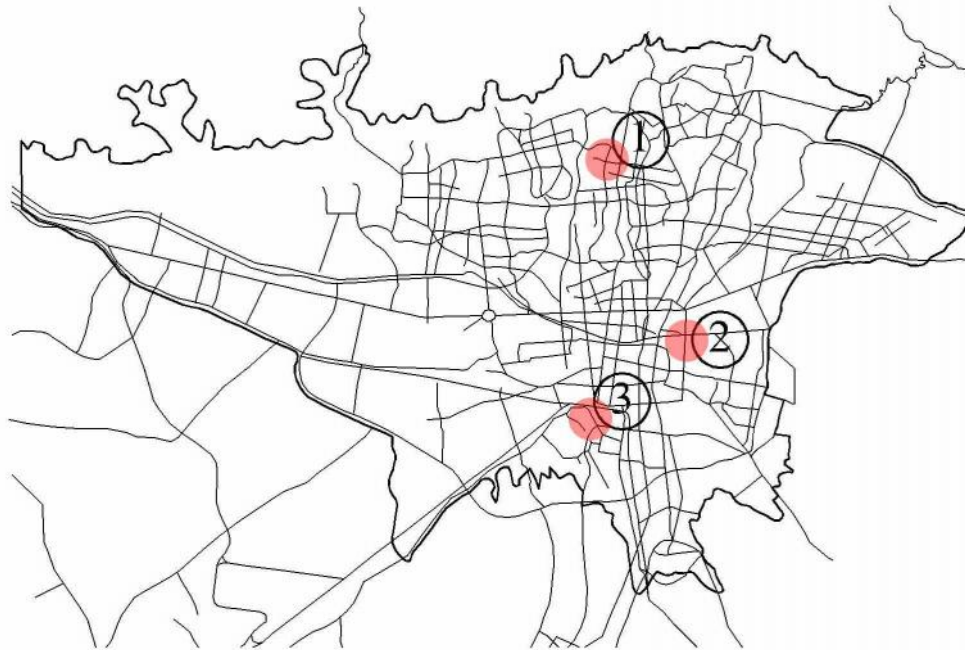
Figure 4.2: Three selected areas where SCP Assessment conducted in

Three selected target areas are comparable in terms of size and land use from 3 areas namely Elahie, Piroozi and Nazi Abad region. The selected areas consist of the main roads in surroundings and the classified side streets within the area that are connected to the main roads. Three selected areas are shown in Figure 4.3.

The aim of this assessment is to assess the related SCP variables known to impact on vandalism and graffiti occurrence, as well as to evaluate the environmental variables that correlate with the high degree of non-political graffiti vandalism damages.
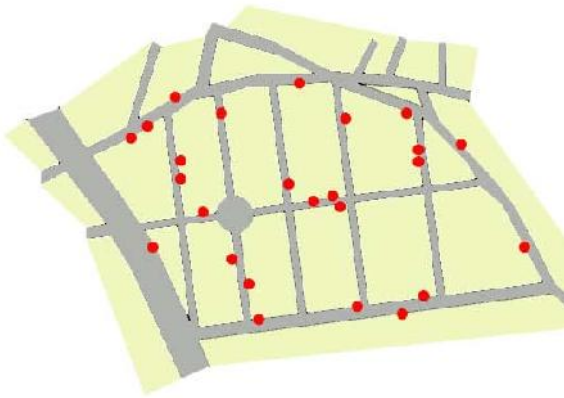
Area Number 1: North part of Tehran (Upper Social status- Elahie)

Number of vandalised cases by
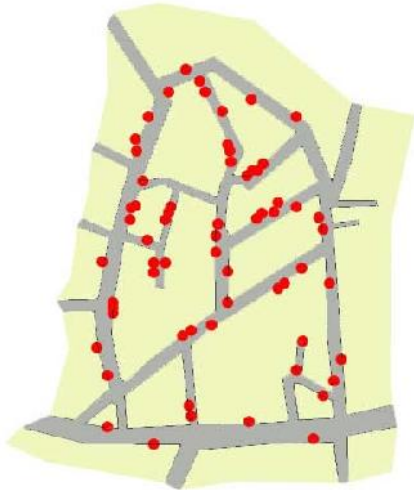
Area Number 2: East part of Tehran (Middle Social status- Piroozi)

Number of vandalised cases by graffiti writers: 65
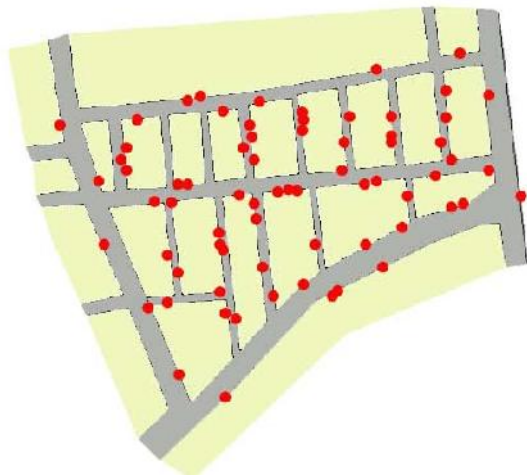
Area Number 3: South part of Tehran (Lower Social status- Nazi Abad)

Number of vandalised cases by

Figure 4.3: Three selected areas where SCP assessment conducted in

The chronic nature of graffiti vandalism and the sense that cleanup efforts are futile will give an exact number of graffiti vandalism in targeted areas.

The SCP assessment method covers all the vandalised facades by graffiti writers (buildings or public properties' surfaces) and fixed street furniture in target areas. The vandalised street furniture such as garbage is excluded because these types of targets are movable and there is no information on other conditions and the places where they have been vandalise. The assessment criteria presented to 50 students in architecture from Soureh University and they were asked to assess 50 vandalised cases by graffiti writer. Students in architecture selected as group of experts to do the assessment due to their potential to analyse the assessment criteria more than any other participates. Moreover, architecture students are more familiar with urban issues in Tehran urban areas. This research also was trying to aware architecture students of their important role to create a sustainable community though they were just a small group of future architects.

The photos of vandalised properties that have assessed in this study are presented in Appendix F.

The night time assessment was also important to help assessing the lighting level and the environmental conditions and the overall quality of night time visual environment.

Table 4.7 presents the number of vandalised properties assessed in 3 selected areas.

Table 4.7 Number of vandalised properties assessed in 3 selected areas

Areas	Numbers	(%)
Area 1	25	15.6
Area 2	65	40.6
Area 3	70	43.8
All areas	160	100

A documentation of sixteen SCP variables and related urban characteristics of vandalised property have been prepared in three selected areas using the data collected during the on site visit (Table 4.8).

In first part of the assessment, the questions designed based on special urban planning of the city that has been discussed in chapter 3 of this research[8]. Apart from assessing the link between the common types of the buildings (High Rise, Detached/Semi Detached, Fixed Street furniture) and degree of graffiti vandalism damages, it has been examined if there is any correlation between the special design of the urban blocks in Tehran (Northern design and Southern design), land use of properties, types of streets and degree of graffiti vandalism damages.

In the second part, a series of SCP variables to tackle vandalism and graffiti identified from the literature. This variables help to prevent vandalism and graffiti by increasing/decreasing the risk of committing crime , removing/ providing inducement to vandals , removing/ providing the availability of the target to vandals and increasing/ decreasing the attraction of the target to vandals.

The assessment is based on the method applied by Minnery and Lim (2005) in a study carried out in Australia (City of Gold Coast in Queensland, 1995-96) to determine the effectiveness of CPTED measures in reducing both crime and fear of crime[9]. In this study, the measures first derived from the detailed analysis of the literature to explain what the variable meant in practice. Each scale measure ranges from 1 (lowest) to 5 (highest).

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[8] See chapter 3.5

[9] The research designed to test the relation between measures of CPTED, rate of Crime and fear of crime. This research introduced an instrument for measuring the levels of CPTED implementation in design of the built environment for the first time at the time of the survey.

Table 4.8 SCP Assessment

Questionnaire No.:....................... Area:............

Q1: Type of Building
1. Northern design
2. Southern design
3. High Rise

4. Detached/Semi Detached
5. Fixed Street furniture
6. Other

Q2: Land Use
1. Residential
2. Parks, Landscapes

3. Shops
4. Other

Q3: Evidence of CCTV
1. Yes   2. No

Q4: Lighting source
1. Street Lights   2. Properties' Lighting Design   3. Decorative lights by owner

Q5: type of street
1. Highway
2. Main road (1)

3. Main road (2)
4. Side street (1)

5. Side street (2)
6. Blind alley

No.	SCP Variables	Very low	Low	average	high	Very high
		1	2	3	4	5
Q6	Lighting Level in the place					
Q7	Level of Glossiness of the surface					
Q8	Level of Lightness of the surfaces' colour					
Q9	The size of surface					
Q10	The level of informal surveillance: How is the risk of being seen by people in the place) (day time)?					
Q11	The level of informal surveillance: How is the risk of being seen by people in the place (night time)?					
Q12	The level of informal surveillance: How is the cars' traffic (day time)?					
Q13	The level of informal surveillance: How is the cars' traffic (night time)?					
Q14	The visibility of the vandalised property to people					
Q15	Formal surveillance: Presence of the police					
Q16	The width of the street					
Q17	The maintenance level of the property					
Q18	The presence of graffiti vandalism					
Q19	The quality of the building (construction)					
Q20	The quality of the building (design and the harmony with the environment)					
Q21	The degree of the damage					

Note: SCP assessment conducted in 3 areas of Tehran in April and May 2009

The next part explained how the scales have been standardised:

Q 6: Lighting Level

To assess the lighting level as experienced by potential vandals and graffiti writers, 5 different lighting levels have been determined that are presented in Table 4.9. The level of lighting is defined in Lux for each group[10].

Table 4.9: Light level Assessment

			Lux
1	Very Low	If it is completely dark	$L<1$
2	Low	If only the material but not colour of the surface can be defined	$1=< L<5$
3	Average	If the colour and material of the surface can be defined but not so clearly	$5<L<10$
4	High	If the colour and material of the surface can be defined clearly	$10<L=<20$
5	Very High	If the light is directed to the surface	$L>20$

Q 7: Glossiness of the surface
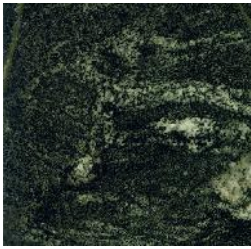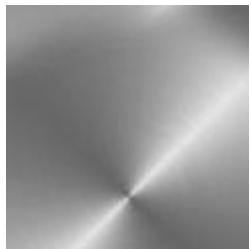
Although the exterior surfaces of the buildings in Tehran are coated with a great variety of materials, however, these materials can be categorised into five groups on the basis of their glossiness that are presented in table 4.10. Some of the materials in each group are shown in Figure 4.4

Table 4.10: Assessment of the materials on the basis of their glossiness

1	Very Low	Stones and cement render (stucco) with rough surfaces
2	Low	Brick, cement render (not very smooth surface) and un polished marble, travertine and granite stones
3	Average	Semi polished marble, travertine and granite stones and very smooth cement render
4	High	Very polished granite, travertine and marble stones,
5	Very High	Steel/Aluminium, Gloss, Mirror

---

[10] In this research, more than measurement of the lighting level, it is important to show how respondents perceived the urban environmental lighting conditions. To give a view on different level of lighting for each categories, some samples are presented on the lighting level in Lux in different condition: "The level of lighting in typical starlight is 0.001 Lux and a full moon night is approximately .3 Lux . The level of lighting in sunset is 10 Lux , in typical side road lighting is 5 Lux and in a good main road lighting is 15 lux"(www. use-ip.co.uk)

Figure 4.4: Assessment of the materials on the basis of their glossiness

1	Very Low	Stones with rough surfaces			
2	Low	Cement render (not very smooth surface)	un polished travertine	Brick	Brick
3	Average	Semi polished travertine	very smooth cement render	Concrete / smooth surface	Semi polished granite
4	High	Polished granite			Polished marble
5	Very High	Steel surface			

Q 8: Lightness of the colour

The colour of the buildings' facades in Tehran mostly depends on the type of materials (such as different types of stones or bricks) used. The facades of the buildings are sometimes painted in different colours. The facades made of glass can be seen in different colours. Different colours of materials are categorised into five groups that are presented in table 4.11 and Figure 4.5 shows some samples.

Table 4.11: Assessment of the materials on the basis of the lightness of the colours

1	Very Low	Black, Very dark grey, Very dark brown, ...
2	Low	Dark Grey, Dark brown, dark red, dark green, Dark red, ...
3	Average	Green, red, khaki, orange, ...
4	High	Yellow, light grey, creamy, light pink, very light green/ orange
5	Very High	White

Q 9: Size of the surface

To examine the correlation between size of the vandalised facades with degree of graffiti vandalism damages considering urban characteristics of Tehran, the facades are assessed on the basis of the size that are presented in table 4.12. It explores whether the size of surface is wide enough to display the graffiti (Ekblom 1988, Lamm Weisel 2002 as cited in Smith, 2003). Architecture design and type of urban blocks[11] are determining factors on the size of vandalised facades in Tehran urban areas. To clarify the assessment criteria, some samples are presented in Figure 4.6.

Table 4.12: Assessment of the size of vandalised facades

		Height	Width
1	Very Low	In northern lots, the height of the facades can vary from 2m to 4m	Less than 1m = < (including fixed street furniture such as lamp post)
2	Low	In southern lots, the buildings themselves are in danger of being vandalised but the	Between 1 to 3 1<L< =3
3	Average	lower part of the building up to 3 - 4 m is	Between 3 to 5 3<L<=5
4	High	more likely to be vandalised by graffiti	Between 5 to 7 5<L<=7
5	Very High	writers[12]	L>7

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[11] See chapter 3
[12] Wilson (1980 as cited in Hollin, 1989) reports that vandalism mainly occur on the ground floor

Figure 4.5: Assessment of the materials on the basis of the lightness of the colours
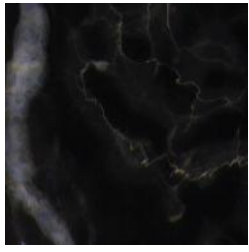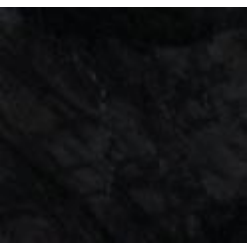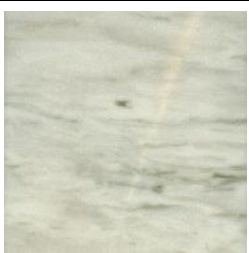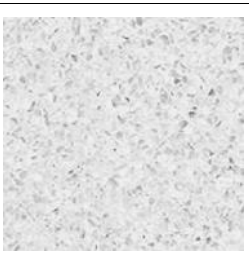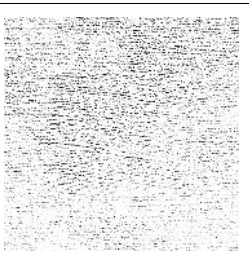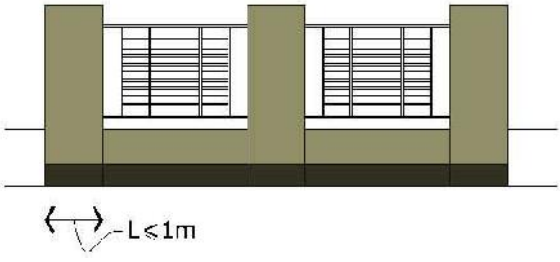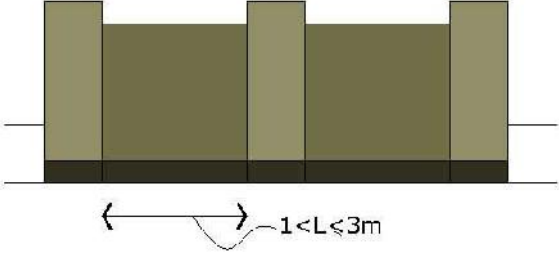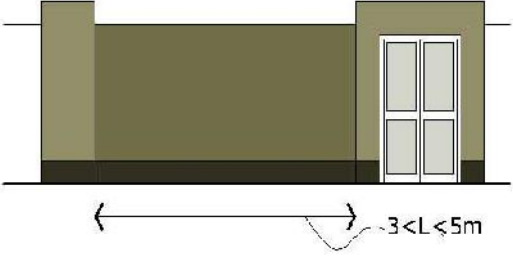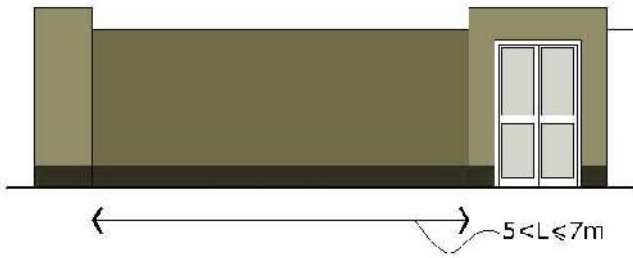
1	Very Low				
		Black			
2	Low				
		Dark red	Dark Grey	Dark Brown	Dark Grey
3	Average				
		Light Brown	Light Brown	Light Green	Light Red
4	High				
		Very light grey	Cream	Pink	Very light grey
5	Very High				
		White	White	White	White

Figure 4.6: Assessment of the size of vandalised facades

1	Very Low		L≤1m
2	Low		1<L≤3m
3	Average		3<L≤5m
4	High		5<L≤7m
5	Very High		7<L

Q 10 & Q11: Assessment of the level of informal surveillance (risk of being seen by people in the place)?

This question is trying to examine how the neighbourhood[13] watch as one of the SCP variables is correlated with degree of graffiti vandalism damages in urban areas of Tehran during day time and night time in comparison to other variables.

Considering urban characteristics of the cities, land use of the area (residential area, business area or mixed area), population density of the area and facade design are determining factors to assess the level of informal surveillance (Department for Transport: UK, 2011). Table 4.13 describes how the informal surveillance in vandalised locations has been assessed.

Base on government report, area number one has low population density, area number two has average population density and area number three has high population density (see Appendix D)

Table 4.13: Assessment of the level of informal surveillance in vandalised location

Population density: Low (0), Average (1), High (2)

Land use of the area: Very isolated from retailers or other human activity (0), reasonable proximity of retailers or other activity (1), very close proximity of retailers or other activity (2)

Design: Poor visibility from site surrounds (0), Acceptable visibility from site surrounds, Positive design to encourage open visibility from site surrounds (2)

Each vandalised facade has been scored base on the criteria explained above during day and night time. The total number for each case is determining factor to assess the level of informal surveillance:

1	Very Low	If the total point score is 0, 1
2	Low	If the total point score is 2
3	Average	If the total point score is 3, 4
4	High	If the total point score is 5
5	Very High	If the total point score is 6

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[13] Informal surveillance

Q12: Cars' traffic during day time and night time

The traffic of the cars in streets in urban areas of Tehran totally depends on the type of street and function of the area (residential or business area). In this research, the assessment of the traffic of the cars in the streets is based on personal communication with police department in selected areas (May, 2009). In general, blind alleys have the lowest level of car traffic. Residential access streets (access to individual residential properties) have low level of car traffic. Residential collectors provide mobility out of residential neighbourhood. These type of streets intended as collectors and distributors of residential traffic to higher level streets and roads have average level of car traffic. Mixed use access / collector that provide access to neighbourhood, commercial properties and multi-family housing complexes have high level of car traffic. Highways and arterials have the highest level of car traffic. However, in some streets, because of the traffic regulations applying to particular streets, highways, intersections... other factors effect on the level of terrific of the cars during day and night time.

Q 14: The visibility of the vandalised property to people

The visibility of graffiti vandalism damages to people depends on how the graffiti damages can be detected by people using the area. The location of the damaged area is the determining factor in assessment of the visibility of the targeted property to people. Some samples are presented in Figure 4.7.

Table 4.14: Assessment of the visibility of the vandalised property to people

		Location
1	Very Low	If it can be detected hardly because of obstacles such as threes or street furniture's
2	Low	If it can be detected only from one direction because of the property design or the location of damaged street furniture
3	Average	It can be seen by people from all directions in the street
4	High	The damaged area can be seen from two crisscross streets (the damaged area is at the corner)
5	Very High	If the damaged area can be seen by people from different streets or obviously from far because of the special location of the damaged area such as vandalised surfaces of highways or vandalised bill boards

Q 15: The presence of the police (formal surveillance)

The presence of the police in selected areas is based on the personal communication with the police centres in each area (April, 2009).

Table 4.15: Assessment of the level of formal surveillance (presence of the police)

1	Very Low	If the police patrol in neighbourhood rarely (only once in few days)
2	Low	If patrol goes on day and night in streets at least once in day/ once at night
3	Average	If patrol goes on day and night in streets at least 3 times in day/ 3 time at night
4	High	If patrol goes on day and night in streets every two hours
5	Very High	If there is a police station/ security guard in the neighbourhood and patrol goes on day and night in streets by police or security guard

Q 16: The width of the street

The assessment of the width of the streets in Tehran is according to usual width of existing streets in Tehran urban areas. Table 4.16 is presenting the assessment criteria.

Table 4.16: Assessment of the width of streets

1	Very Low	If the width of street is less than 5 meter
2	Low	If the width of street is between / equal 5 to 8 meters
3	Average	If the width of street is between / equal 8 to 12 meters
4	High	If the width of street is between / equal 12 equal to 20 meters
5	Very High	If the width of street is 20 or more+ highways

Question 17, 18, 19 and 20 are designed based on the role of low perceived control discussed by Fisher and Baron (1982) and Fisher, Bell and Baum (1984) that could lead to vandalism[14].

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[14] See chapter 2.3 Vandalism and graffiti: responsibilities and causes

Figure 4.7: Assessment the level of visibility of the vandalised facade to people

1	Very Low	The vandalised facade is hidden by threes and hardly can be detected by street users	
2	Low	The vandalised facade can be seen only by street users walking through the nearby pavement	
3	Average	The vandalised facade can be seen by all street users passing through the streets	
4	High	The vandalised facade located at intersections and can be seen by all street users from both streets	
5	Very High	If the damaged area can be seen by people from different streets or obviously from far	

***Q 17:** Assessment of the maintenance level of the property*

Table 4.17 shows how the maintenance level of the vandalised property by graffiti writers has been assessed. The samples are presented in figure 4.8.

Table 4.17: Assessment of the maintenance level of the property

1	Very Low	If the building facade needs to be cleaned and needs major repairment (revamp) + any evidences of broken windows
2	Low	If the facade needs to be cleaned and the facade needs minor repairment such as painting the doors or windows + no evidences of broken windows
3	Average	If the building needs to be cleaned but the facade doesn't need any repairment
4	High	If only some parts need to be cleaned and the facade doesn't need to be repaired
5	Very High	If the building facade is clean and it doesn't need any repairment + new buildings (less than 1 year old)

***Q.18:** presence of graffiti vandalism*

The presence of graffiti vandalism on a building is based on broken windows theory (indicative of social and physical Disorder) and shows how many times a building is targeted by graffiti writers. The question designed as presence of vandalism discussed to lead to suitability of the target to vandalism (Smith, 2003). In some cases the owner of the property, helped to give a report on how many times the buildings targeted by graffiti writers.

Table 4.18 presents the assessment criteria for question 18.

Table 4.18: Assessment of the evidences of vandalism more than once on the same property

1	Very Low	If the property has been vandalised only once
2	Low	If the property has been vandalised two times
3	Average	If the property has been vandalised three times
4	High	If the property has been vandalised four times
5	Very High	If the property has been vandalised more than four times

Figure 4.8: Assessment of the maintenance level of the property

Very Low	Low
Average	High
Very High	Very High

Q19: *Assessment of the construction quality level of a property*

The criteria to assess the construction quality of the property circulated to a number of researchers in this area (Architecture and urban planning)[15] for comments considering

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[15] Five researchers are from department of architecture / university of Tehran (January, 2009).

the urban characteristics of urban areas of Tehran. The criteria modified on the basis of their input that are presented in table 4.19.

Five factors have been determined as effecting factors on construction quality of the properties. There are samples presented in Figure 4.9 and Figure 4.10.

Table 4.19: Assessment of the construction quality level of a property

1) *Very low: if only one out of 5 factors is according to design standards*
2) *Low: if only two out of 5 factors is according to design standards*
3) *Average: if only three out of 5 factors is according to design standards*
4) *High: if only four out of 5 factors is according to design standards*
5) *Very High: If all studied factors are acceptable in term of design standards*

		Facade materials	Facade design	openings	Entrance	General design
1	Very Low					
2	Low					
3	Average					
4	High					
5	Very High					

Facade materials: If designer considered the climate / appropriate use of materials/vandals proof material
Facade design: Joints/ construction methods /construction details
Openings: The size /place of openings in relation to other openings
Entrance: Location/size in accordance with the building size
General design: the location of accessories mechanical and electrical equipments

Figure 4.9:   Assessment of the construction quality level of a property

Bad Design Vs. Good Design

| 1 | Facade materials | Inappropriate use of materials | Appropriate use of materials |

Figure 4.10: Assessment of the construction quality level of a property

Bad Design Vs. Good Design

2	Facade design	Inappropriate design of the facade	Appropriate design of the facade
3	openings	Inappropriate design of the openings vulnerable to vandalism and graffiti	Appropriate design of the openings
4	Entrance	Inappropriate design of the entrance (use of vulnerable materials)	Appropriate design of the entrance
5	General design	Inappropriate location of accessories mechanical and electrical equipments	Appropriate location of accessories mechanical and electrical equipments

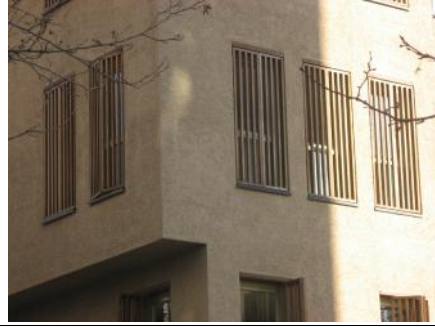*Q20: Assessment of the design quality of a property and the harmony with the environment*

The same as question 19, the criteria to assess the design quality of a property and the harmony with the environment presented to five researchers in this area (Architecture and urban planning) and they were asked to comment on criteria considering the urban characteristics of urban areas of Tehran. The criteria modified on the basis of their input and presented in table 4.20.

The materials used, sky line of the buildings, design of the openings and entrance in relation to next buildings and some general items are determining factors on design quality of the building considering its environment. Figure 4.11 and 4.12 present some good and bad design of the buildings.

Table 4.20: Assessment of the design quality of a property and the harmony with the environment

1) *Very low: if only one out of 5 factors is according to design standards*
2) *Low: if only two out of 5 factors is according to design standards*
3) *Average: if only three out of 5 factors is according to design standards*
4) *High: if only four out of 5 factors is according to design standards*
5) *Very High: If all studied factors are acceptable in term of design standards*

		Materials used	Sky line	Entrance	Openings	General items
1	Very Low					
2	Low					
3	Average					
4	High					
5	Very High					

The material used, sky line[16] of the building, design of the openings , entrance in relation to adjacent buildings and general items such as use of plants have been assessed to be in accordance to other buildings and the urban environment of the neighbourhood

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16 "The outline of a group of buildings or a mountain range seen against the sky "(American Heritage Dictionary 4). " the term city skyline refers to a profile of a buildings that forms the cityscape at night and the silhouette at night (Lim and Heath 1993 as cited in Han., Kin., Yip ., Chin Lai ,2005)

Q.21: assessment of degree of graffiti damages

Degree of the graffiti vandalism damages determined based on the size of damage.

Table 4.21 explains the assessment criteria and figure 4.13 present some samples.

Table 4.21: Assessment of the degree of graffiti damages

1	Very Low	If damaged area is less than 1 m^2
2	Low	If damaged area is 1 m^2 =<A<2 m^2
3	Average	If damaged area is 2 m^2 =<A<3 m^2
4	High	If damaged area is 3 m^2 =<A<4 m^2
5	Very High	If damaged area is 4 m^2 =<A

Figure 4.11:   Assessment of the design quality of a property and the harmony with the environment

	Bad Design Vs. Good Design		
1	Appropriate use of materials (sustainable construction materials)		
2	Good control over the skyline		
3	design of the entrance in accordance with the character and design of adjacent buildings		

Figure 4.12:   Assessment of the design quality of a property and the harmony with the environment

Bad Design Vs. Good Design

| 4 | design of the openings   in accordance with the character and design of adjacent | | |
| 5 | Sustainable design | | |

Figure 4.13:   Assessment of degree of graffiti damages

1	Very Low		
2	Low		
3	Average		
4	High		
5	Very High		

4.3.2 SCP Assessment: Reliability check

As a means of assessing the internal reliability of the questionnaire, the assessment criteria presented to 50 students in architecture and they were asked to assess 50 vandalised cases by graffiti writer. Cronbach's alpha (α) is calculated for 50 samples. Cronbach's alpha is computed for Q6 to Q21 and the output result is 0.88 that is considered acceptable statically). It should be noted that a reliability coefficient of 0 .70 or higher is considered "acceptable" in most social science research situations. (α> 0.7 or α =0.7) (Hinton, 2005, P. 303).

Table 4.22 presents the computed alpha in case of excluding each question. By excluding Question 21, Cronbach's alpha value changed to 0.91. Question 21 has been excluded due to insufficient information to assess the age of buildings.[17] By excluding question 21, there was no missing data in any variables specified.

A high level of reliability of the items in the questionnaire is found (α=0.91).

Spearman's Rank Correlation Test and Pearson chi square test used to analyse the data (ordinal and categorical data) to investigate any correlation between SCP variables, the urban environmental variables and degree of graffiti damages. Both statistical tests explained in chapter 5 of this research.

Spearman's Rank Correlation Test is discussed on page 138.

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[17] "If a particular variable is responsible for a large number of the missing values, that variable can be dropped from the analysis. The advantage of this is that we do not lose any cases and at the same time we eliminate an unreliable item. The advisability of this approach depends on how important that particular variable is for analysis"(Vaus, 2002, P.176).

Table 4.22: The computed alpha (in case of excluding the question)

No.	SCP Variables	Cronbach's alpha
Q6	Lighting Level in the place	0.84
Q7	Level of Glossiness of the surface	0.846
Q8	Level of Lightness of the surfaces' colour	0.852
Q9	The size of surface	0.864
Q10	The level of informal surveillance: How is the risk of being seen by people in the place) (day time)?	0.801
Q11	The level of informal surveillance: How is the risk of being seen by people in the place (night time)?	0.818
Q12	The level of informal surveillance: How is the cars' traffic (day time)?	0.777
Q13	The level of informal surveillance: How is the cars' traffic (night time)?	0.784
Q14	The visibility of the vandalised property to people	0.807
Q15	Formal surveillance: The presence of the police	0.792
Q16	The width of the street	0.807
Q17	The maintenance level of the property	0.861
Q18	The presence of graffiti vandalism	0.87
Q19	The quality of the building (construction)	0.837
Q20	The quality of the building (design and the harmony with the environment)	0.834
Q21	The age of the building	0.91

The Chi-Square test for independence, also called Pearson's Chi-square test or the Chi-square test of association is used to discover if there is a relationship between two categorical variables. The assumption is that Two variables that are ordinal or nominal (categorical data). And there are two or more groups in each variable (laerd Statistics. N.d). the p-value is used to decide whether or not we can reject the null hypothesis. If the p-value is less than "alpha" which is typically set at 0.05, then we can reject the null hypothesis.

An exploratory Factor analysis[18] was conducted to assess the underlying structure of 15 items of the survey questionnaire using principal Component method[19] and Varimax rotation. The goal of factor analysis was to determine how the SCP variables are categorised and what themes arose from variables.

For successfully running factor analysis, it is important to make sure that the data are appropriate. It is doesn't make sense to use factor analysis if the different variables are unrelated (Habing, 2003). "Factor Analysis assumes the normality of the data, so it is not a great tool for ordinal data. However, in practice, we can use Factor Analysis on ordinal data if the scale is 5 or more." (Yatani K. n.d.). Moreover, When Principal component method is used for estimating factors, we don't require any normality assumption (Habing 2003, Daultrey, n.d.) and the data do not need to be normally distributed.

Accordingly, the data from SCP assessment is appropriate for factor analysis.

The Kaiser-Meyer-Olkin (KMO) value is 0.882 (significant if ranges from 0 to 1) which is considered to be meritorious and the value of Bartlett's test is 0.00 (significant if<0.05) which suggests that the strength of the relationship among the variables is strong, such that the data are suitable for conducting a factor analysis[20].

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[18] "Factor analysis is a data reduction technique that reduces the number of variables used in an analysis by creating new variables (called factors) that combine redundancy in the data" " it used to analyze the correlations between variables, so that related data could be categorized into a smaller number of categories or factor groups. Once the categories are formed, the researcher must determine what the meanings of the groupings are by determining the common traits that are similar among the variables in that category (Cornish, 2007)

[19] It is to Calculate initial factor loadings (Cornish, 2007)

[20] Two useful tests are often carried out before a factor analysis: Kaiser-Meyer-Olkin (KMO) test and Bartlett's test. KMO test examines the data for sampling adequacy. This gives a measure of the common variance amongst the variables that the factors will be able to account for. KMO statistic ranges from 0 to 1.0 and KMO overall should be .60 or higher to proceed with factor analysis. Any value below this would mean that the factor analysis will not be able to account for much of the variability in the data and so is not worth undertaking. Bartlett's test is used to test if k samples have equal variances. Equal variances across samples are called homogeneity of variances. Some statistical tests, for example the analysis of variance, assume that variances are equal across groups or samples. The Bartlett test can be used to verify that assumption". (Darlington, n.d., Hinton 2005).

The analysis of the data yielded four strong factors.[21] Table 4.23 displays the items and factor loadings for the rotated factors. After rotation, the first factor accounted for 27.778 percent of the variance and the second factor 20.563, third factor 9.602 and fourth factor accounted for 7.56 percent of the variance. The first factor seems to index the risk of committing crime; second factor is an index of physical condition of the property. Third factor composed of two items seems to index the availability of the target to graffiti writers while the fourth factor is an index to the attraction of the target. The result shows 65% of all variance. Rated on a scale of 1-5, the first factor implicated to risk of committing crime has an extremely high rating. This indicated that risk of committing crime is very important in any graffiti vandalism occurrences in urban areas of Tehran. The second factor implicated to physical condition of property has also a high rating that indicates to importance of physical condition of the target in any graffiti vandalism occurrences in urban areas of Tehran. The fourth factor implicated to attraction of the target (including the lighting level in targeted area) has the lowest rating.

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[21] The number of factors are equal to the number of eigenvalues (Eigenvalues are the variances of the factors) over 1. "choosing eigenvalues over 1, is the most common one"(Cornish, 2007)

Table 4.23 SCP Assessment: Factor analysis

No.	SCP variables	Factor 1	Factor 2	Factor 3	Factor 4
Q6	How is the Level of lighting				0.759
Q7	How glossy the surface is				0.55
Q8	How light colure the surface is				0.621
Q9	what is the size of surface			0.686	
Q10	How is the risk of being seen by people in the place (day time)	0.815			
Q11	How is the risk of being seen by people in the place (night time)?	0.754			
Q12	How is the cars' traffic (day time)?	0.9			
Q13	How is the cars' traffic (night time)?	0.897			
Q14	How is the visibility of the vandalized property to people?			0.647	
Q15	The possibility presence of the police	0.799			
Q16	The width of the street		0.479		
Q17	The maintenance level of the property		0.826		
Q18	The presence of graffiti		0.625		
Q19	The quality of the building (construction)		0.808		
Q20	The quality of the building (design and the harmony with the environment)		0.811		
		27.778	20.563	9.602	7.56
		27.778	48.341	57.943	65.503

Note. Loadings < .40 are omitted

4.4 Summary

This chapter has reviewed the research methodology implemented for this research. The questionnaire survey, the questionnaire design , number of respondents and three selected areas where survey conducted in discussed in this chapter. The Reliability of survey questionnaires has been examined.

In second part of the chapter, the SCP assessment and the criteria for SCP assessment have been explained.

Some information is provided on preliminary analysis determined by factor analysis to categorise the variables and to identify the variables of greatest influence on graffiti vandalism occurrence in urban areas of Tehran.

The next chapter is a report on the results of the data analysis using different statistical methods to address the aims of the study.