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# The Relationship Between Perceived Beauty and Safety in Urban Recreation Parks

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**Abstract:** Slides of three urban recreation parks in different locations of Istanbul were evaluated by Istanbul University students in three different campuses, for perceived security, scenic quality, or both. The aims of this study are to determine whether judgments of personal safety in urban recreation parks show sufficient reliability to be usefully studied, to use such judgments to identify park design features effecting perception of security in urban parks and to identify the relations between visibility, perceived security and perceived attractiveness of urban parks. A conclusion of the study showed that there is a strong relationship between the visual features and perceived security and beauty. Another finding is a low correlation between the perceived safety and beauty.

**Key words:** Perceived beauty, safety, urban recreation parks

## INTRODUCTION

Urban parks can provide valuable recreation opportunities for most of the people who live in Istanbul. On the other hand, according to statistics of Istanbul Department of Public Security, some kinds of crimes that occur in these places had increased between 1999-2001. 28% increase in death rates and 70% increase in usurpation rates have been noted down in two years. Also, many existing sites are under used and affected by the increased crime rate[1-3].

Users' perceptions of personal safety in urban recreation parks are more important than visual attractiveness of urban recreation parks[4]. The safety-related item of satisfaction was the second strongest predictor of the urban recreation parks usage[5].

While so much has been written about different aspects of urban recreation parks and their security, these studies describe an effort to identify characteristics that effect the users' perception of personal safety in public recreation parks. In this study the relation between perceived security and visual attractiveness will also be addressed, because both factors may be related to visibility and utilization of park settings[6,7]. Schroeder and Anderson[3] state that park managers have attempted to control crime through design changes, such as planting thorny shrubs to discourage pedestrian access to parts of the site and removing shrubs to improve visibility. Such design changes are instituted to improve security, but many affect the scenic quality of parks as well[3,8,9,10].

## MATERIALS AND METHODS

Color slides were rated for scenic quality and for perceived security by college students in Istanbul[8,11,12,3,13,14]. Color slides were taken in three outdoor recreation parks in Istanbul. The slides were also scored for physical features present in the scenes and compositional aspect of the scenes. Details of these procedures are presented below.

**Outdoor recreation park selection:** Three outdoor recreation sites in Istanbul were selected for this study. The three parks have different sizes, vegetation density, extent of facilities, level of development and visual access to residential and other urban areas surrounding the park (Fig. 1).

Macka Democracy Park was located in the Beyoğlu Administrative District. Its size is approximately twenty ha. After 1940 the Park was re-planned a number of times. The last planning and construction projects occurred in 1993[15]. The physical and natural features of the Park represent natural characteristics.

The second park is Kurucesme (Cemil Topuzcu) Park, which is located in the Ortaköy boundary of the Bosphorus Sea. Its size is approximately four ha. The park

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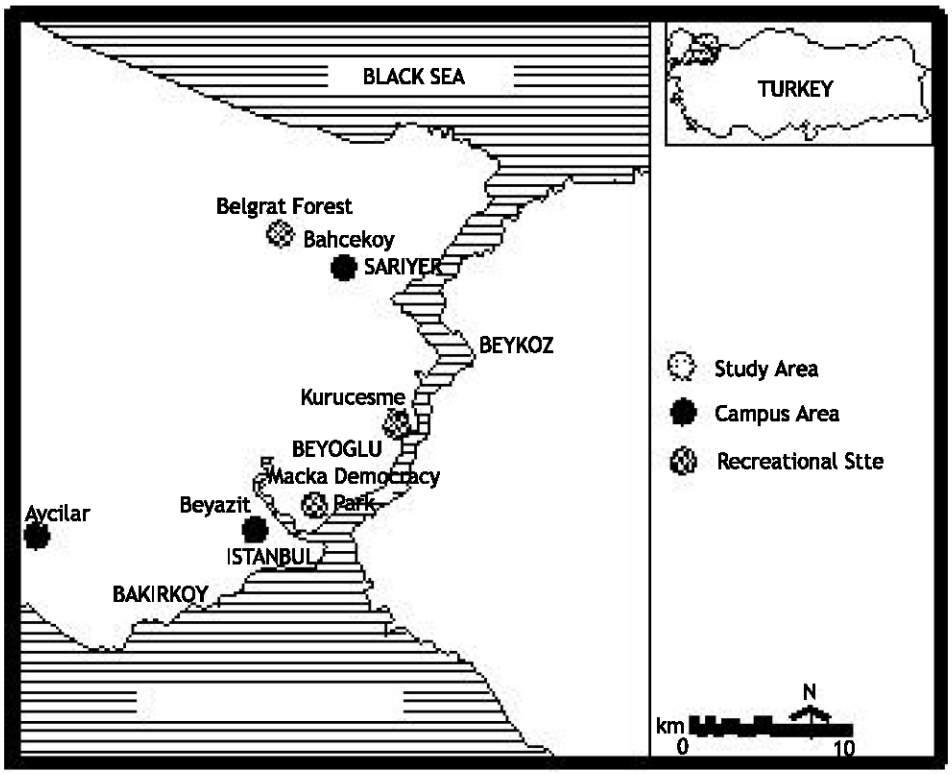


Fig. 1: Location

Table 1: Evaluations of visual features of park slides

The rates of natural, physical and cultural features of the slides.
0 (0%), 1 (1-20%), 2 (21-40%), 3 (41-60%), 4 (61-80%), 5 (81-100)

| | Slide number | | | | | |
|---|---|---|---|---|---|---|
| Visual features | 1 | 2 | 3 | 4 | 5 | 6 |
| Constructions on the park | | | | | | |
| Woody vegetation | | | | | | |
| Grass | | | | | | |
| Shrubs | | | | | | |
| Water surface | | | | | | |
| Athletic fields | | | | | | |
| View distance | | | | | | |
| Maintenance problems | | | | | | |
| People density | | | | | | |
| Path density | | | | | | |
| Path's width | | | | | | |
| Construction outside of the park | | | | | | |
| Park facilities | | | | | | |
| Playgrounds | | | | | | |
| Lights | | | | | | |
| Stairs | | | | | | |
| Topographic variation | | | | | | |
| Benches | | | | | | |
| Fences | | | | | | |
| Graffiti | | | | | | |
| Litters | | | | | | |
| Dirtiness | | | | | | |
| Car density | | | | | | |

Table 2: Reliability Analyses-Scale (Alpha)

Hotelling's T-Squared=34174.8770 F=1352.0552 Prob.=0.0000
Alpha=0.7336 Standardized item alpha=0.7381

enables some of the different kinds of urban recreation opportunities common in Turkish cities. The park is overused during the summer due to fishing and high scenic qualities on the Bosphorus Sea-shore.

The last park is the recreation park of Belgrad Forest, which is located in the Belgrad Forest, Sariyer. Its size is approximately 5,000 ha. The park has been used as Istanbul's main recreation area since 1956. The physical features of the park represent natural characteristics. The main use of the park is picnicking during all seasons except winter[16].

**Photosampling procedure:** The researcher sampled large parks by walking along the main path through each park. All slides were photographed full daylight between 10:00 am and 4:00 pm, between March 11/2002 and May 18/2002. Slides were photographed towards the center of the park from points equally spaced around its perimeter. Special features the researchers considered that would influence perceptions of the security of particular settings, such as telephone boxes, gates and fences, lights, stairwells, graffiti and litter were especially photographed. All parks were over-used on weekends. As a consequence all parks were photographed on weekdays when there were relatively few people present.

**Evaluation of the slides:** Forty-five slides were selected, involving fifteen slides from each of three parks. Some slides represented similar physical features therefore twenty-one slides were selected; seven from each park. The selected slides were shown to a group of thirty-eight students at Istanbul University on their Avcilar Campus. The students were told that the scenes were of urban parks and recreation areas. They were instructed to rate the scenes according to how safe they would feel being in the places shown. A second group of thirty-five students were at Istanbul University on their Beyazit Campus and a third group of thirty-two students were from Istanbul University's Faculty of Forestry Campus at Sariyer. These students rated the 21 slides for personal security and for scenic quality. After completing the rating tasks, all the raters were asked to list specific features from the scenes that caused them to give either high or low ratings of perceived safety or scenic quality. The rated features are listed in Table 1.

There are different security and scenic quality evaluation scales. Tarraat[24] used a scale ranged from "0" (very unsafe) to "9" (very safe) in his study. Anderson[11] used an evaluation scale ranged from "0" to "10". Schroeder and Anderson[3] used a scale from "0" (very unattractive) to "9" (very attractive) to evaluate scenic quality of the parks. We experimented a nine-point evaluation scale in trial inquiry. The results accumulated on "3", "5", "7". Therefore we have decided to use "5" points evaluation scale, "1" (very unattractive, very unsafe) to "5" (very attractive, very safe).

To determine the reliability of the study an analysis has been made. As a result of this analysis $\alpha$= 0.7336 (standardized $\alpha$= 0.7381) was found (Table 2). And this result shows that this study is highly reliable. SPSS was used for statistical analyses in this study.

## RESULTS

**Perception ratings:** The level of agreement among the group rating perceived security and scenic beauty was evaluated from the interrater correlation matrices. There are some differences on the average interrater correlation on the perceived scenic beauty, not only each rater group but also all possible pairs of raters within a group (Table 3). There is an agreement among the groups rating on perceived security except the group from Avcilar campus.

Averaging the ratings for all raters within a group and then correlating across the common 8 slides determined intergroup agreement. Correlation on the Avcilar Campus $r_s$:0.437 ($p<0.001$), on the Beyazit Campus $r_s$:0.437 ($p<0.001$) and on the Sariyer Campus $r_s$:0.450 ($p<0.001$) has been found.

Table 3: Average interrater correlations for three groups of observers rating perceived security and scenic beauty

| Campuses | Perceived scenic beauty | Perceived personal security |
|---|---|---|
| Within group | | |
| Avcilar | 0.025 | -0.032 |
| Beyazit | -0.019 | -0.183*** |
| Sariyer | 0.039 | -0.201*** |
| Intergroup | 0.016 | -0.123*** |

***p<0.001

To explore in greater detail the agreement among the raters, we analyze the interrater correlation matrices for all rating tasks the "5" point evaluation scale described above and shown on Table 4.

Thus, the majority of observers seem to perceive greater beauty on slide 11 and lowest beauty on slide 12. Most of the observers feel the safest place as slide 13 and lowest secure place as slide 21. Table 4 indicates that there is an agreement among the groups rating perceived security and scenic beauty for each slide.

**Relationship between visual features and perceptions:** Each physical feature of the set of slides reflects perceived security and scenic beauty quality as shown in Table 5. The visible amounts of woody vegetation are positively associated with perceived scenic beauty. Although, Schroeder and Anderson[3] indicate that the amount of grass visible had a strong positive association with perceived scenic beauty. The second positive physical feature is water related to perceived scenic quality.

In general, man-made features such as, nearby buildings, fences, graffiti are negatively correlated with scenic beauty. The amount of grass visible and view distance have a strong positive association with perceived security. The majority of the raters associated high security with developed parks, long view distance and access to nearby streets and buildings. On the other hand high scenic quality depends on the path's width, people density and maintenance problems.

Table 5 shows the relationship between the visual features with the perceived security and scenic beauty by simple correlation. Each visual feature was evaluated alone. Evaluating the effect of some visual features together with perceived beauty and security is a problem. To determine a combination of visual features influence we have used stepwise regression analysis.

The regression of perceived scenic beauty on physical features (Table 6) accounts for 42% of the variance in perceived scenic beauty using ten features. Woody vegetation is the strongest predictor while maintenance problems comes fourth in the group that have negative effect on scenic quality.

Table 4: Assessment of the slides

| Slide Number | Perceived scenic beauty (A) Mean | Perceived scenic beauty (A) Standard deviation | Perceived personal security (B) Mean | Perceived personal security (B) Standard deviation | Simple correlation A*B |
|---|---|---|---|---|---|
| 1 | 2.9524 | 1.0037 | 2.8667 | 1.0567 | 0.411*** |
| 2 | 3.1048 | 1.0183 | 2.7143 | 1.1242 | 0.245** |
| 3 | 3.9143 | 0.9914 | 2.9333 | 1.1458 | 0.376*** |
| 4 | 3.0095 | 1.1223 | 2.7905 | 1.0256 | 0.353*** |
| 5 | 3.0571 | 1.1421 | 2.0286 | 1.1047 | 0.387*** |
| 6 | 1.8095 | 0.8781 | 2.4327 | 1.0862 | 0.460*** |
| 7 | 3.1238 | 1.0892 | 2.9333 | 1.1541 | 0.236** |
| 8 | 1.9143 | .8999 | 2.6857 | 1.0407 | 0.217** |
| 9 | 2.7048 | 1.2083 | 2.6571 | 1.1671 | 0.500*** |
| 10 | 2.4000 | 1.1317 | 2.0762 | 1.1240 | 0.195** |
| 11 | 4.3810 | 0.7517 | 3.1333 | 1.0925 | 0.125 |
| 12 | 1.5810 | 0.9176 | 2.3143 | 1.1378 | 0.588*** |
| 13 | 4.2000 | 0.8593 | 3.3048 | 1.1018 | 0.422*** |
| 14 | 1.8000 | 0.9547 | 2.3333 | 1.1491 | 0.316*** |
| 15 | 2.6154 | 1.0821 | 2.5146 | 1.1620 | 0.458*** |
| 16 | 1.8857 | 1.0680 | 2.7238 | 1.2519 | 0.386*** |
| 17 | 3.2571 | 1.1687 | 2.4667 | 1.1525 | 0.424*** |
| 18 | 3.4286 | 1.0177 | 2.2667 | 1.1374 | 0.382*** |
| 19 | 3.3619 | 0.9620 | 2.6952 | 1.2099 | 0.335*** |
| 20 | 4.2286 | 0.8689 | 2.2476 | 1.2072 | 0.184** |
| 21 | 2.2500 | 1.2287 | 1.7238 | 0.9657 | 0.580*** |

**p<0.01 ***p<0.001

Table 5: The influence of the visual features on the perceived security and scenic beauty

| Visual features | Perceived beauty | Perceived security |
|---|---|---|
| Constructions in the park | 0.011 | 0.135*** |
| Woody vegetation | 0.406*** | 0.090*** |
| Grass | 0.391*** | 0.216*** |
| Shrubs | 0.103*** | 0.018 |
| Water surface | 0.359*** | 0.126*** |
| Athletic fields | -0.037 | 0.068** |
| View distance | 0.368*** | 0.217*** |
| Maintenance problems | -0.268*** | -0.143*** |
| People density | 0.167*** | 0.085*** |
| Path density | 0.166*** | 0.131*** |
| Path's width | 0.159*** | 0.127*** |
| Construction outside of the park | -0.075*** | 0.072** |
| Park facilities | 0.084*** | 0.111*** |
| Playgrounds | -0.109*** | 0.068** |
| Lights | 0.117*** | 0.171*** |
| Stairs | 0.071** | 0.052 |
| Topographic variation | 0.150*** | 0.023 |
| Benches | -0.010 | 0.091*** |
| Fences | -0.052 | 0.083*** |
| Graffiti | -0.047 | 0.050 |
| Litter | 0.108*** | 0.114*** |
| Dirtiness | -0.126*** | -0.119*** |
| Car density | 0.056** | 0.063** |

**p<0.01 ***p<0.001

Table 6: The main influence of the visual features on the perceived beauty

| Visual features | B | t | Sig. |
|---|---|---|---|
| Constant | 0.952 | 10.092 | 0.000 |
| Woody vegetation | 0.301 | 14.060 | 0.000 |
| Water surface | 0.207 | 13.167 | 0.000 |
| View distance | 0.223 | 10.162 | 0.000 |
| Maintenance problems | -0.155 | -10.066 | 0.000 |
| Grass | 0.188 | 10.810 | 0.000 |
| Playgrounds | -0.160 | -6.743 | 0.000 |
| People density | 0.086 | 4.311 | 0.000 |
| Topographic variation | 0.051 | 3.462 | 0.001 |
| Path density | 0.052 | 3.180 | 0.001 |
| Benches | -0.050 | -3.045 | 0.002 |
| Not: Standardized $R^2$=0.42 | F= 157.457 | | P<0.001 |

Table 7: The main influence of the visual features on the perceived safety

| Visual features | B | t | Sig. |
|---|---|---|---|
| Constant | 1.908 | 22.241 | 0.000 |
| View distance | 0.118 | 4.989 | 0.000 |
| Grass | 0.114 | 5.947 | 0.000 |
| Dirtiness | -0.104 | -5.636 | 0.000 |
| Constructions on the park | 0.088 | 4.931 | 0.000 |
| Maintenance problems | -0.090 | -4.845 | 0.000 |
| Fences | 0.078 | 3.573 | 0.000 |
| Lights | 0.053 | 2.588 | 0.010 |
| Athletic fields | 0.073 | 2.710 | 0.007 |
| Water surface | 0.044 | 2.485 | 0.013 |
| Litter | 0.051 | 2.139 | 0.033 |
| Not: Standardized $R^2$=0.13 | F= 32.467 | | P<0.001 |

Table 8: The influence of the parks characteristics on the perceived safety and beauty

| | Park characteristics A | Park characteristics B | Mean difference (A-B) | Significant |
|---|---|---|---|---|
| Perceived beauty | 1 | 2 | -0.1486 | 0.051 |
| | | 3 | -0.6124 | 0.000 |
| | 2 | 1 | 0.1486 | 0.051 |
| | | 3 | -0.4639 | 0.000 |
| | 3 | 1 | 0.6124 | 0.000 |
| | | 2 | 0.4639 | 0.000 |
| Perceived security | 1 | 2 | -0.0426 | 0.739 |
| | | 3 | 0.3489 | 0.000 |
| | 2 | 1 | 0.0426 | 0.739 |
| | | 3 | 0.3916 | 0.000 |
| | 3 | 1 | -0.3489 | 0.000 |
| | | 2 | -0.3916 | 0.000 |

Note: Tukey HSD test was used in order to determine the difference of park characteristics
1=Urban characteristic park 2= Semi-urban characteristic park
3=Natural characteristic park For Perceived Beauty F= 36.177 P<0.001
For Perceived Security F= 20.554 P<0.001

The regression of perceived security on physical features (Table 7) accounts for 13% of the variance in perceived security using ten features. View distance and amount of grass image are the strongest predictors.

Overall the correlation between security and scenic quality is low (r=0.36; p<0.001). Table 8 reflects how a feature is related to perceived security and scenic quality of the parks.

The parks that were rated as the safest and as having the highest scenic quality had long view distances, large amount of grass and water view in their photo. Maintenance problems received extremely low ratings in both perceived safety and security.

High security is associated with open areas with long view distance, signs of development and nearby populated areas. On the other hand high scenic quality depends on the presence of natural vegetation in either forests or park-like settings and is lowered by man-made features.

## DISCUSSION

Strumse[17] and Modge[18] have disclosed that demographic differences have influences on landscape preferences. Also in this study it has been explored that even though education levels and ages of participants are almost the same similarities in their perception of safety and beauty are very low. Participants come from different parts of the country therefore they have different socio-economic structure which is the main reason of low level of similarities in their perceptions (Table 3). As opposed to that an increase in the correlation of groups in some slides have been observed and this finding is parallel to the study done by Schoeder and Anderson[3]. This can be explained by the decrease in the diversity of objects that take place in slides.

Parson[19] and Ulrich[20] have found that when the naturalistic dense vegetation increases sense of safety decreases in urban areas. But findings of this study do not support this result. Moreover it has been observed that naturalistic dense vegetation has a little effect on the increase of perception of safety. Jorgensen *et al.*[21] have stated in their study that high amount of grass visible increase the perception of safety and at the same time seasonal flowers have no less effect than grass on perception of safety. In this study the effects of seasonal flowers on perception haven't been studied but it has been observed that the amount of grass visible has an effect on perception of safety. Schroeder and Anderson[3] couldn't find any relation between perception of beauty and amount of grass visible, but in this study it has been found that high amount of grass visible has a positive effect on perception of beauty.

In many studies view distance is effective on landscape preferences[22,23]. In Schroeder and Anderson[3] long view distance has a negative effect on perception of beauty but as seen in Table 6 it has been found that long view distance has a positive effect on perception of beauty.

In general as shown in Table 8 perceived beauty is positively related to natural features. Maintenance problems and man-made features tend to lower judgments of beauty. It is opposite in perceived security. Visitors fell more secure if there is considerable amount of man-made features. Except these main differences perceived beauty and security are affected from same kinds of features (r =0.36; p<0.001). The first common effect that increases both perceived beauty and security is large grass fields and the second one is long view distances.

Determining the level of beauty or safety of a park is a very hard decision nevertheless according to the data taken from this study there are special features that effect perceived beauty and safety. This study reaches the following conclusions about perceived beauty and personal safety at recreation parks. There is a low correlation between perceived beauty and personal safety. The characteristics of recreation parks are effective on perceived beauty and safety. Undeveloped parks received extremely low perceived security judgments but also the highest scenic quality ratings. Visual features at the parks are effective on perceived beauty and safety. Lawn and view distance effect perceived beauty and safety in the same way. To establish a safe and beautiful recreation park long view distances made up of wide lawn areas are needed. The most effective feature that enhances perceived beauty is woody vegetation but it has no effect on perceived safety. The most detracting factors from perceived beauty and safety are litter and maintenance problems. Perceived beauty enhances from developed parks to undeveloped parks.

This study did not address several factors that may also influence perceived safety and aesthetics such as users activities, group sizes, observers' age, invisible features (noises, smells, etc.), users characteristics and planning purposes. Raters have evaluated the slides of the parks therefore if they had visited to the park themselves they would have been able to see more, would have had additional information, would have known more about the general settings of the park and would have received more information about nearby features such as, types of buildings, circulation, gates, types of land uses, etc.

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