Medio Ambiente y Comportamiento Humano
2006, 7(2), 115-133.
ISSN 1576-6462

Identifying attractive and unattractive urban places: categories, restorativeness and aesthetic attributes

M. Carmen Hidalgo[1*], Rita Berto[**], Maria Paz Galindo[***] y Anna Getrevi[****]

*Universidad de Málaga.
**Universita' degli Studi di Padova.
***Universidad de Sevilla.
****Universita' degli Studi di Padova.

Abstract

In the context of research into aesthetic preferences, urban places are often considered to be part of the same broad and over-general category. The present study attempts to address this issue and to explore a procedure that allows us to identify categories of attractive and unattractive urban places. The research consists of two studies. The first study involves adults from Malaga (Spain), whereas the second study involves adults from Padova (Italy). The samples of residents from the two cities were asked to identify the most visually attractive and unattractive place of the city and rate the place in terms of diverse variables: the perceived restorative qualities (in terms of attention restoration theory) and the aesthetic attributes used by Nasar (1994) to describe urban environments. The most attractive place was generally either "historic-cultural" or "recreational places", whereas the least attractive was mostly in the "housing" or "administrative categories". The attractive place was considered more aesthetic and more restorative regarding each of the variables than the least attractive place. Aesthetic attributes do not predict attractiveness whereas the perceived restorative potential predicts attractiveness in both studies.

Keywords: urban places, aesthetic preferences, perceived restorativeness

[1] Dpto. Psicología Social, Antropología Social, Trabajo Social & Servicios Sociales Facultad de Psicología. Universidad de Málaga. Campus de Teatinos s/n, 29071 Málaga, Spain. email:mchidalgo@uma.es

Espacios urbanos más y menos atractivos: categorías, capacidad restauradora y atributos estéticos

Resumen

En el contexto de la investigación sobre preferencia ambiental, los espacios urbanos a menudo son considerados como parte de una amplia y única categoría. El presente estudio intenta analizar esta cuestión y explorar un procedimiento que nos permita identificar categorías de espacios urbanos más y menos atractivos. La investigación consta de dos estudios. El primero se llevó a cabo en Málaga (España), mientras que el segundo tuvo lugar en Padua (Italia). Ambas muestras identificaron los espacios urbanos más y menos atractivos de cada ciudad, y evaluaron dichos lugares en capacidad restauradora percibida y en los atributos estéticos usados por Nasar (1994) para describir los ambientes urbanos. Los espacios urbanos más atractivos fueron generalmente lugares "histórico-culturales" o "recreativos". Por el contrario, los menos atractivos pertenecían casi en su totalidad a lugares "residenciales" o "administrativos". Asimismo, los espacios urbanos más atractivos fueron evaluados como más restauradores y puntuaron más alto en todos los atributos estéticos que los lugares menos atractivos.

Palabras clave: espacios urbanos, preferencia ambiental, capacidad restaurador

Introduction

The most frequent approach to the study of environmental preference is for non-expert participants to assess a set of pictures of places, usually selected by the researchers according to established criteria. Thus, from this point of view, when analysing the visual quality of environments the issue of environmental sampling is of major importance. However, little attention has been paid to this in the context of research into environmental aesthetics, especially in respect to urban landscape sampling. In relation to this, even though the selection of urban scenes is made by experts concerning well-known parameters, it might be the case that the samples do not incorporate all the categories of valued places associated with real people's environmental experiences of the city. In this sense, urban places have often been taken as a global category (Kaplan, Kaplan y Wendt, 1972; Ulrich, 1981). It is possible that this

argument is at the basis of one of the more well-known results in environmental preference research: natural landscapes are considered very attractive; urban ones are considered unattractive (e.g. Hernández and Hidalgo, 2005; Kaplan and Kaplan, 1989; Purcell, Lamb, Mainardi Peron & Falchero, 1994; Ulrich, 1981, 1993) The present study attempts to address this issue and its starting point is concern over the lack of differentiation of urban places in research on environmental aesthetics. Thus, we wanted to explore a procedure that allows us to identify categories of attractive and unattractive urban places.

The procedure used in this work has been used by the authors in previous studies (Galindo, 1994, Galindo and Hidalgo, 2005). Participants were asked to list the most visually attractive and unattractive places in the city they live. In a first step, the researchers analysed those places chosen by the citizens and established a group of landscape categories taking into account their expert knowledge of the cities: Seville and Malaga, Spain (using land-use, cultural and historical criteria). In a second step, two judges independently classified each scene cited into the categories delimited previously. The classification of the scenes was only accepted when both judges reached complete agreement. Following this method, Galindo and Hidalgo (2005) identified five main categories that could be differeciated from an aesthetic point of view "Cultural-historical places/landscapes" (representative and/or emblematic places of the city, linked strongly with its historical-cultural development); "Recreational places for leisure and/or walking" (parks, squares and public open spaces designed in order to be used by citizens with such aims), "Panoramic places" (favoured places in the city from where it is possible to access visually large areas of the city); "Housing areas" (mainly working-class areas) and "Industrial places". Landscapes in the first three categories were valued as very attractive; landscapes in the two last categories were valued as very unattractive.The participants in these studies were city residents who had wide knowledge of their own city and a strong feeling of belonging to it. Thus, whether this category system could be utilised for different samples and geographical contexts remains a pending issue which is considered in the present study.

In the context of environmental aesthetic studies, several works have indicated the relevance of *restorativeness* (the capacity of some environments to reduce tiredness caused by directed attention and to re-

establish certain cognitive abilities) to aesthetic preferences for natural and urban environments (e.g. Hernández, Hidalgo, Berto & Peron, 2001; Kaplan and Kaplan, 1989; Kaplan, 1995; Staats, Kieviet & Hartig, 2003; Van den Berg, Koole & Van der Wulp, 2003). Nevertheless, more data are required to corroborate and clarify this relationship. Hartig and Staats (2003) acknowledge this need in the introduction to their latest monograph on the subject: "Still, we lack assessments of actual restoration in, for example, disliked natural environments and highly preferred urban environments" (p. 105). One of the main purposes of this study is to offer some information about this issue. In relation to this, we found in our previous work (Galindo and Hidalgo, 2005) that the aesthetic values residents gave to urban spaces strongly differed regarding their perceived restorative power. In the same line, Peron, Berto and Purcell (2002) encountered problems concerning *restorativeness* and environmental categories. When subjects are asked to assess environments according to the five factors on the *Perceived Restorativeness Scale* (for details, see Korpela and Hartig, 1996) it is taken for granted that every place is characterized by all these five factors, but this is not always true: natural green places are restorative, but sandy deserts are not (Peron et al., 2002). Some built places are not very restorative but cultural-historical places are. They performed a *reverse restorative experiment* by asking participants to list places related to each *Perceived Restorativeness Scale* factor and then they organized them into categories.

Finally, following the results of Galindo and Hidalgo (2005), Nasar's aesthetic attributes (1994, 1997) could be important criteria to determine the degree of preference. To this end, the following attributes have been used in this work: *openness, mystery, complexity, order*, *vegetation, maintenance, style*, and *perceived use*.

In more specific terms, the aims of this study are:

- To identify categories of attractive and unattractive urban places.
- To assess the *restorative* value of the attractive and unattractive places in the city.
- To assess Nasar's semiotic and aesthetic attributes in the most and the least attractive places in the city.

This will be carried out in two different urban places and with three different samples: in the city of Malaga (Spain), with a sample that complements that of Galindo and Hidalgo (2005) study, and in the city of Padova (Italy), with 2 different samples, equivalent to the 2 study samples of Malaga: people born in Padova and people not born in Padova.

Study 1

Method

Participants

The sample consisted of 58 residents of Málaga, Spain (38 females and 20 males, mean age 26 years, SD=5.02) who met the following criteria: a) they were not born in Málaga and had been living there for less than 3 years; and b) they had a weak sense of belonging to the city.

Instrument

Participants were asked to fill in a questionnaire made up of 5 parts (Galindo and Hidalgo, 2005):

1. They were asked to list the most visually attractive and the most visually unattractive places of the city;
2. Participants had to fill in the *Perceived Restorativeness Scale* (PRS; Spanish version, Hidalgo and Hernández, 2001) for the most attractive and the most unattractive place. The PRS is made up of 26 items, plus 2 items of preference and 1 item of familiarity. It is rated on a 11-point scale, where *0*=not at all, *6*= rather, *10*=completely. For more details concerning the PRS, see Hartig et al. (1997).
3. Participants were asked to assess the most attractive and the most unattractive places on a five-point scale (*1*=not at all, *5*=a lot) for an 11-item battery concerning the following aesthetic attributes (Nasar, 1994, 1997): 1-Vegetation; 2-Visual diversity/richness; 3-Harmony/congruence between its different elements; 4-Openness and/or spaciousness; 5-Luminosity; 6-A historic or representative place of the city; 7-Cleanliness; 8-Maintenance/upkeep; 9-Place for leisure activities; 10-Meeting place; 11-A novel place.

4. Participants were asked social and demographic questions concerning gender, age, length of residence in the city, level of familiarity with the city, and the extent to which they identified with the city.

Procedure

Participants were convened, voluntarily, in small groups in a classroom of Malaga University. They filled in the questionnaire in no more than 15 minutes.

Results

The results are organized in 4 parts. First, the general categories of the"most attractive" and the "most unattractive" places in the city. Second, the perceived restorativeness of both places. Third, the assessment of the sensorial and semiotic aesthetic attributes. And fourth, the influence of restorativeness and the aesthetic attributes of places on the categorization of such places as "attractive" vs. "unattractive".

The "most attractive" and the "most unattractive" places in the city: general categories

All the places were classified by two independent judges on the basis of the general system of categories suggested by Galindo and Hidalgo (2005). The system consists of 5 categories (defined in the introduction): "cultural-historical places", "recreational places for leisure and/or walking", "housing areas", "panoramic places", and "industrial places". As previously mentioned, the classification of each scene into a category was only accepted when the two judges reached a completely agreement.

The most attractive places of the city were "historical-cultural places" (48.27%), "recreational places" (32.75%), and "panoramic places" (12.06%). On the other hand, the least attractive places were mainly represented by "housing areas" (58.62%), most of them working-class housing estates, and by a new category that emerged: "administrative/service places" (32.75%), including bus/train stations or administrative buildings. Table 1 shows the frequency and percentage for the most attractive and the most unattractive places of the city in each category.

Table 1. Frequency and percentages of the places listed as the most attractive and the most unattractive of Malaga.

	Most attractive		Most unattractive	
	Frequency	Percentage	Frequency	Percentage
Cultural-historical Places	28	48.27		
Recreational places	19	32.75	4	6.89
Panoramic places	7	12.06		
Housing areas	2	3.44	34	58.62
Industrial places			1	1.72
Administrative/ Service places*			19	32.75
Total	56	96.52	58	99.98

* the new category added to Galindo & Hidalgo's categorization

Perceived restorativeness of the "most attractive" and the "most unattractive" places

Participants were asked to assess the restorative value of the most attractive and the most unattractive places on the *Perceived Restorativeness Scale* (PRS). The PRS measures the perception of five restorative factors: *being-away, fascination*, *coherence, scope,* and *compatibility* (Purcell et al., 2001). A global score for *restorativeness* was obtained from the mean values of the five PRS factors. The most attractive places in the city obtained mean scores of more than 5 on the PRS, whereas the PRS mean scores for the most unattractive places were always less than 3.5 (see Table 2). A paired *t*-test comparison was performed on the general PRS mean scores and on the 5 subscales mean scores between the most attractive and unattractive places. The two types of environments differed in *General Restorativeness, t* (57)=13.53 and in the five subscales: *Being Away, t* (57)=11.79; *Fascination, t* (57)=12.22; *Coherence, t* (57)=8.21; *Scope, t* (57)=7.37; and *Compatibility, t* (57)=8.05. All the differences were statistically significant ($p<0.0001$). That is, participants consider the most attractive places more restorative than the most unattractive ones, as well as the five subscales.

Table 2. Mean value of R*estorativeness* and of the five *Perceived Restorativeness Scale* subscales (standard deviation in parenthesis) of the most attractive and the most unattractive places of Malaga

	Attractive Place	Unattractive Place
Being away	6 (1.8)	2.5 (1.8)
Fascination	5.9 (1.7)	1.8 (1.5)
Coherence	6 (1.5)	3.5 (1.9)
Compatibility	5.8 (2.2)	3 (2.1)
Scope	5.9 (1.6)	3.5 (2.1)
Restorativeness	5.9 (1.3)	2.8 (1.4)

Assessment of the sensorial and semiotic aesthetic attributes of the "most attractive" and the "most unattractive" places

The mean score for each of the aesthetic attributes was calculated for the most attractive and the most unattractive place. Taking into account that the places considered most attractive obtained the highest scores in all the 11-battery items (see Table 3) when compared to the most unattractive, a paired *t*-test was carried out for each attribute. All the differences were statistically significant ($p<0.0001$): *novel place,* t (57)=4.89; *facilities for leisure activities,* t (57)=3.94; *presence of vegetation,* t (57)=4.89; *meeting place,* t (57) =5.09; *cleanliness,* t (56)=8.37; *upkeep/maintenance,* t (55)=8.10; *congruence of scenic elements,* t (57)=10.89; *visual diversity,* t (57)=14.45); *luminosity,* t (57)=4.63; *historic or emblematic place,* t (57)=8.14, *and openness,* t (57)=5.87. These results suggest that for the participants the most attractive and unattractive places of the city differ regarding all the attributes.

Table 3. Mean score (standard deviation in parenthesis) of the 11 aesthetic attributes of the most attractive and the most unattractive places of Malaga

	Attractive Place	Unattractive Place
Novel place	2.96 (1.13)	1.91 (1.11)
Leisure	3.10 (1.26)	2.22 (1.14)
Vegetation	2.72 (1.28)	1.63 (0.71)
Meeting place	3.44 (1.44)	2.32 (1.31)
Cleanliness	3.63 (0.83)	2.24 (1.03)
Maintenance	3.69 (0.89)	2.26 (1.15)
Congruence	3.89 (0.78)	2.10 (0.91)
Visual richness	4.06 (0.83)	1.75 (0.80)
Luminosity	4.10 (0.89)	3.18 (1.14)
Historic place	4.05 (1.22)	2.22 (1.25)
Openness	4.17 (0.77)	3.05 (1.06)

The influence of restorativeness and the aesthetic attributes of places on the categorization of such places as "attractive" vs. "unattractive".

To study the impact of perceived restorativeness on the classification of a place as attractive or unattractive we carried out a logit analysis (which are similar to regression analysis but geared to the non-parametric condition of having a dichotomous dependent variable). The results suggest that *restorativeness* is a significant predictor of a place's attractiveness ($p<0.001$). Another logit analysis was calculated to verify the effect of the 11 aesthetic attributes on the dichotomous categorization of the places. However, only *visual diversity* is significant ($p<0.005$) as a predictor variable.

Discussion

The results offer information about the more frequent categories of attractive and unattractive urban places. Our study gave rise to the same categories of attractive places as the previous study: "historical-cultural places" "recreational places", and "panoramic places". On the other hand, next to "housing areas" a new category emerged from the most unattractive places of the city, i.e. "*administrative/service places*" (this category includes places such as bus or train stations and administrative buildings). It seems that place category is important for aesthetic preferences, to the point that the most attractive and the most unattractive places hardly ever belong to the same category.

Regarding restorative power, the most attractive places were perceived as more restorative than the most unattractive ones. Indeed, the results suggest that *restorativeness* is a significant predictor of a place's attractiveness. These results confirm the relationships between the restorative value of places and their aesthetic value.

Finally, the attractive places scored better on the 11 aesthetic attributes. This suggests that these attributes, together with restorativeness, constitute important criteria for determining scenic quality, although this effect was not enough to predict the attractiveness of a place.

Study 2

Introduction

The results obtained with the sample of Malaga-born people (Galindo and Hidalgo, 2005) was extended by the sample of non-native Malaga people (Study 1). These two samples were "complementary", but they still assessed the same scenario: the city of Malaga (Spain). A replication of these studies was carried out in Padova (Italy) to provide a new scenario with a cross-cultural perspective.

The Italian sample was equivalent to the 2 study samples of Malaga. Thus, it consisted of two sub-samples: 1) people born in Padova or living there for more than 9 years and with a strong sense of belonging to the city; 2) people not born in Padova, living there for less than 3 years, and with a weak sense of belonging to the city. The aim of this study was to explore the generality of the results of Study 1 in a different cultural scenario.

Method

Participants

A total of 98 residents of Padova, Italy, participated in this study. Participants were divided into two groups:

1) 46 university students (28 females and 18 males; mean age=29.26 years, SD=5.49) resident in Padova, Italy. These participants met the following criteria: a) they were born in Padova or they had been living there for a minimum of 9 years; and b) they expressed a strong sense of belonging to the city.

2) 52 residents of Padova, Italy (43 females and 9 males, mean age=25.98 years, SD=4.37) meeting the following criteria: a) they were not born in Padova and had been living there for less than 3 years; and b) they expressed a weak sense of belonging to the city.

Instrument

An Italian version of the questionnaire used in Study 1 was used for this second study. Briefly, participants had to list the most attractive and the most unattractive places in the city of Padova. Then they were asked to fill in the PRS (Italian version, in Berto 1998, unpublished graduation dissertation) for the most attractive and the most unattractive place,

assess the aesthetic attributes of the most attractive and the most unattractive place, and finally answer some social and demographic questions.

Procedure

Participants were convened in the Environmental Psychology laboratory of the University of Padova either individually or in small groups. The procedure and the questionnaire instructions were the same as in Study 1.

Results

As in study 1, results are organized in 4 parts. First, the general categories of the"most attractive" and the "most unattractive" places in the city. Second, the perceived restorativeness of both places. Third, the assessment of the sensorial and semiotic aesthetic attributes. And fourth, the influence of restorativeness and the aesthetic attributes of places on the categorization of such places as "attractive" vs. "unattractive".

To make the results easier to read the following abbreviations were used: HSB (i.e. participants with high sense of belonging to the city of Padova) refers to participants belonging to sub-sample 1 and LSB (i.e. participants with low sense of belonging to the city of Padova) refers to participants belonging to sub-sample 2.

The "most attractive" and the "most unattractive" places in the city: general categories

A summary classification of the places listed was made by two independent judges. The frequency and percentages of the most attractive and the most unattractive places of the city were calculated for each category for both sub-samples (see Tables 4 and 5).

Table 4. Frequency and percentages of the places listed as the most attractive of the city of Padova by the two sub-samples: : LSB = low sense of belonging, HSB = high sense of belonging

	LSB		HSB	
	F	%	F	%
Cultural-historical places	49	94.2	43	93.5
Recreational places	3	5.8	3	6.5
total	52	100	46	100

For both sub-samples "cultural-historical" places were the most attractive places of the city (HSB= 93.5%, LSB= 94.2%) whereas the most unattractive belonged to the "housing estates" (HSB= 58.7%, LSB= 50%) and "administrative/service places" (HSB= 21.7%, LSB= 47.2%) categories. The Kolmogorov-Smirnov test for two independent samples was calculated to verify whether the frequencies of the places listed for each category differed significantly between HSB and LSB. No significant differences emerged, $p>.05$.

Table 5. Frequency and percentages of the places listed as the most unattractive of the city of Padova by the two sub-samples.

	LSB		HSB	
	F	%	F	%
Cultural-historical places	1	1.9	4	8.7
Recreational places			1	2.2
Administrative/service places	24	46.2	10	21.7
Housing areas	26	50	27	58.7
Industrial places	1	1.9	4	8.7
Total	52	100	46	100

Perceived restorativeness value of the "most attractive" and the "most unattractive" place

The mean score of the five restorative factors (being-away, fascination, coherence, scope, compatibility) and the total restorativeness score (i.e the mean of the five restorative factor scores) of the most attractive and the most unattractive place was calculated for both sub-samples (see Table 6). A two-independent samples t-test was calculated on these means. The two sub-samples differed significantly for: the coherence score of the most attractive place: $t(96)=2.92$, $p=.00$, (HSB M=7.40 vs. LSB M=6.51), the scope score of the most unattractive place: $t(96) = 2.77$, $p=.00$, (HSB M= 3.64 vs. LSB M=2.57), the compatibility score of the most unattractive place: $t(96) = 2.31$, $p=.02$, (HSB M =1.69 vs. LSB M =1.10), the total restorativeness score of the most unattractive place: $t(96) = 2.33$, $p=.02$, (2.10 vs. LSB M =1.60).

The five restorative factor scores and the total restorativeness scores were compared within each sub-sample. The following significant differences resulted from the paired sample t-test for: the total restorativeness score for HSB, $t(45) =17.35$, and for LSB, $t(51)=23.10$; the fascination score for HSB, $t(45)=17.54$, for LSB, $t(51 =17.37$; the

compatibility score for HSB, *t*(45) =13.10, and for LSB, *t*(51)=18.26; the being-away score for HSB, *t*(45) = 13.65, and for LSB, *t*(51) =15.59); the coherence score for HSB, t(45) =10.51, and for LSB, *t*(51) =14.86); the scope score for HSB, *t*(45) =7.03, and for LSB, *t*(51) =10.13.

Table 6. Mean value of the five *Perceived Restorativeness Scale* subscales and of general *restorativeness* (standard deviation in parenthesis) of the most attractive and unattractive places of Padova for both sub-samples.

	Attractive		Unattractive	
	LSB	HSB	LSB	HSB
Being-away	5.98 (1.91)	6.35 (1.88)	1.22 (.92)	1.67 (1.45)
Fascination	6.35 (1.61)	6.67 (1.34)	1.57 (1.30)	1.99 (1.37)
Coherence	6.51 (1.59)	7.40 (1.39)	2.67 (1.55)	3.14 (2.56)
Scope	5.84 (1.84)	6.02 (1.67)	1.10 (.99)	1.69 (1.50)
Compatibility	6.10 (1.93)	6.61 (1.88)	2.57 (1.85)	3.64 (1.97)
Mean restorative score	6.26 (1.38)	6.65 (1.14)	1.60 (.80)	2.10 (1.29)

Assessment of sensorial and semiotic aesthetic attributes of the "most attractive" and the "most unattractive" places

The mean scores of the 11 aesthetic attributes were calculated for the most attractive and the most unattractive place for both sub-samples (see Table 7).

Table 7. Mean scores (deviation standard in parenthesis) of the 11 aesthetic attributes of the most attractive and the most unattractive places of Padova for the two sub-samples

	Attractive		Unattractive	
	LSB	HSB	LSB	HSB
Novel place	3.09 (.93)	3.34 (.94)	1.69 (.96)	1.84 (.96)
Leisure	3.67 (1.11)	3.63 (1.04)	1.30 (.54)	1.63 (.71)
Vegetation	2.57 (1.03)	2.63 (1.10)	1.25 (.43)	1.56 (.62)
Meeting place	4.26 (.97)	4.17 (1.01)	1.55 (.93)	1.73 (.92)
Cleanliness	3.25 (.71)	3.54 (.72)	1.65 (.83)	1.65 (.70)
Maintenance	3.63 (.71)	3.84 (.69)	1.88 (.75)	1.80 (.80)
Congruence	4.05 (1.01)	4.19 (.58)	1.78 (.63)	2.10 (.92)
Visual richness	3.67 (.85)	3.71 (.77)	1.80 (.76)	2.06 (.80)
Luminosity	4.15 (.91)	4.31 (.84)	2.44 (.84)	2.44 (.93)
Historic place	4.34 (.83)	4.50 (.83)	1.50 (.72)	1.86 (1.00)
Openness	4.05 (1.01)	4.26 (.92)	2.17 (.75)	2.43 (.93)
Total aesthetic score	3.70 (.52)	4.01 (1.38)	1.73 (.37)	1.92 (.44)

A two-independent samples t-test was calculated for these mean scores. There were significant differences regarding: cleanliness of the

most attractive place: $t(96) = 2.02$, $p = .04$, (HSB M = 3.54 vs. LSB M=3.25); vegetation of the most unattractive place: $t(96) = 2.93$, $p = .00$, (HSB M=1.56 vs. LSB M=1.25); harmony of the most unattractive place: $t(96) = 2.01$, $p = .04$, (HSB M= 2.10 vs. LSB M=1.78); historic aspects of the most unattractive place: $t(96) = 2.10$, $p = .03$, (HSB M=1.86 vs. LSB M=1.50); leisure facilities of the most unattractive place: $t(96) = 2.54$, $p = .01$, (HSB M=1.63 vs. LSB M= 1.3).

A paired sample t-test was calculated for the 11 attributes scores to see whether differences exist within each group. All the attributes were significant in both groups: novel place for HSB, $t(45) = 7.46$, $p = .00$, and for LSB, $t(51) = 8.26$), $p = .00$; facilities for leisure activities for HSB, $t(45) = 10.30$, $p = .00$, and for LSB, $t(51) = 13.61$, $p = .00$; presence of vegetation for HSB, $t(45) = 6.79$, $p = .00$, and for LSB, $t(51) = 8.44$, $p = .00$; meeting place for HSB, $t(45) = 12.59$, $p = .00$, and for LSB, $t(51) = 14.35$), $p = .00$; cleanliness for HSB, $t(45) = 12.90$, $p = .00$, and for LSB, $t(51) = 12.60$), $p = .00$; upkeep/maintenance for HSB, $t(45) = 12.01$, $p = .00$, and for LSB, $t(51) = 13.32$), $p = .00$; congruence of scenic elements for HSB, $t(45) = 14.37$, $p = .00$, and for LSB, $t(51) = 17.18$), $p = .00$; visual diversity for HSB, $t(45) = 10.80$, $p = .00$, and for LSB, $t(51) = 10.73$, $p = .00$; luminosity for HSB, $t(45) = 10.44$, $p = .00$, and for LSB, $t(51) = 10.20$, $p = .00$; historic or emblematic place for HSB, $t(45) = 13.15$, $p = .00$, and for LSB, $t(51) = 17.18$), $p = .00$; and openness for HSB, $t(45) = 10.50$, $p = .00$, and for LSB, $t(51) = 10.89$, $p = .00$.

The influence of restorativeness and the aesthetic attributes of places on the categorization of such places as "attractive" vs. "unattractive".

A logit analysis was run to verify whether the perception of the total restorativeness of the place affects the dichotomous categorization of the places: attractive vs. unattractive. The predictor was the total restorativeness score, the dependent variable was the dichotomous categorization (attractive vs. unattractive), and "enter" was the method used. It turned out that the perception of the restorative value of the place significantly affects the dichotomous categorization, $p = .00$. This significant effect emerged in the two sub-samples, HSB: $p = .00$, LSB: $p = .00$.

Another logit analysis was calculated to verify the effect of the 11 aesthetic attributes on the dichotomous categorization of the places. The

dependent variable was the dichotomous categorization of the places (attractive vs. unattractive), the predictors were the 11 aesthetic attributes, and "enter" was the method used. No significant differences emerged, $p>.05$.

The "sense of belonging" to the city, and the "time" (years) spent in the city

The "sense of belonging" to the city, and the "time" (years) spent in the city were now considered. The sense of belonging was rated on a 5-point scale, where *0* = not at all, *5* = completely. Two linear regression analyses were run to verify whether these variables have an affect on the perception of the restorative value of the places. The independent variables were the "time" spent in the city in years, and the "sense of belonging", the dependent variable was the total restorativeness score of the most attractive place, "enter" was the method used. Only the "sense of belonging" significantly affects the restorativeness score, $F(1, 97) = 9.24$, $p=.00$. The same linear regression was calculated for the most unattractive place. Again, only the "sense of belonging" significantly affects the restorative score of the most unattractive place, $F(1, 97) = 8.71$, $p=.00$.

Two linear regression analyses were run to verify whether the "sense of belonging" and the "time" spent in the city affected the assessment of the place's aesthetic value. The independent variables were "sense of belonging" and "time", the dependent variable was the aesthetic score of the most attractive and the most unattractive place, "enter" was the method. The "sense of belonging" significantly affects the aesthetic score of the most attractive place, $F(1, 97) = 4.84$, $p=.03$. No significant results were obtained for the most unattractive, $p>.05$.

Discussion

Study 2 was a systematic replication of Study 1. Participants in this study differed in their "sense of belonging" and "familiarity" with the city. The sense of belonging is different from the level of familiarity which can be measured in years spent in the city. Hernández et al. (2001) showed that the assessment of the restorative value of a place is independent of the level of familiarity. In the present study, the sense of belonging (high vs. low) did not affect the identification of the most attractive and the most unattractive place of the city: both groups agreed in considering

"cultural/historical" places as the most attractive, whereas "housing" and "administrative/service" as the most unattractive, regardless of length of familiarity with the city. Again, for both groups, Nasar's aesthetic attributes more characterized the most attractive place than the most unattractive. Both groups also agreed in perceiving the most attractive place as more restorative than the most unattractive. The results showed that even if the aesthetic attributes do not affect the categorization of the place as attractive or unattractive, these attributes significantly affect the place's restorative value. It is the place's restorativeness that affects the categorization of the place as attractive or unattractive.

The mean restorative score of the most attractive place of the city of Padova was quite high, even higher than in the Malaga study. This confirms that urban places can also be restorative. The "high sense of belonging" group assessed whether the most attractive or the most unattractive place was more "aesthetic" and more restorative than the "low sense of belonging" group. It seems that a sort of "affective bond" filtered the assessments. In fact, the "sense of belonging" affected the assessment of the restorative value of the most attractive and the most unattractive place of the city, whereas no effect emerged regarding the years spent in the city.

General discussion

The places listed as the most attractive and most unattractive belong to environmental categories that can be distinguished from both aesthetic and restorative points of view (Galindo & Hidalgo, 2005). These results could be useful for future studies on urban preferences, thereby improving the issue of environment sampling. The most attractive places in a city can be classified as "historical-cultural places" and "recreational places". These results have several implications. First, the type of place or category seems to be very important for aesthetic preferences, to the point that the most attractive and the most unattractive places hardly ever belong to the same category. Traditionally, a strong preference for natural environments versus urban ones has been observed. However, it seems that within the urban environment there are still some favourite places. Interestingly, these are the scenarios or categories poorly represented in most studies on urban environment preferences. The most commonly assessed urban spaces are streets, buildings, and industrial

areas, which are the areas considered most unattractive in our studies. In contrast, there is a virtual absence of "historical-cultural places", "recreational places", and "panoramic places", which are more aesthetically valued in our studies with different samples and locations. Thus, for example, Frewald (1989, unpublished doctoral dissertation), Herzog and Gale (1996), and Herzog and Shier (2000) have shown that older buildings are preferred over modern buildings when maintenance levels are kept up. Thus, it seems clear that these categories have to be included in future studies on urban preference. On the other hand, we found that the most or least attractive urban places differ regarding perceived restorativeness, the most attractive places being the ones with a higher score in this variable. Indeed, the result of logit analysis shows that restorativeness is a significant predictor of the attraction of a place. These results add to the increasing data in the literature concerning the restorative value of the places as an aesthetic quality criterion which people use to assess the aesthetic value of an environment. It is worth noting that on a scale from 0 to 10, the most attractive urban places obtained high scores in the perceived restorativeness scale. These values are close to those obtained by natural environments in other studies, which confirms the findings of Herzog et al. (2003) who reported that the restorative potential of some urban places is higher than natural ones. If this is confirmed in future studies, this finding could lead, as supported by Hartig and Staats (2003), to a break with the traditional model of natural environments being equated with restorative environments and urban environments being equated with "stressing" or non-restorative environments.

Finally, the most attractive urban environments differ significantly from the more unattractive ones regarding several aesthetic attributes: vegetation, visual diversity, congruence, openness, luminosity, historical place, cleanliness, maintenance, place for leisure activities, meeting place, and novel place. This demonstrates their suitability in the field of aesthetic preferences studies and suggests that these attributes, together with restorativeness, constitute important criteria for determining scenic quality. Nevertheless, these differences are not enough to predict the classification of a place as attractive or unattractive. It is possible that this effect can be explained by the procedure of stimulus selection used in this study (the places analysed

were listed as they were remembered by participants). Future work should address this issue taking into account the importance of some of these variables in environmental aesthetic studies.

Referencias

Berto, R. (1998). *Rapporti tra restorativeness dei luoghi e preferenza espressa*. Unpublished graduation dissertation. University of Padova.

Frewald, D. B. (1989). *Preferences for older buildings: A psychological approach to architectural design.* Unpublished doctoral dissertation. University of Michigan.

Galindo, M. P. (1994). *Evaluación de la preferencia ambiental de paisajes urbanos. Hacia un modelo psicosocial de carácter integrador.* Unpublished doctoral dissertation, University of Seville, Spain.

Galindo, M. P. & Hidalgo, M. C. (2005). Aesthetic preferences and the attribution of meaning: environmental categorization processes in the evaluation of urban scenes. *International Journal of Psychology, 40*, (1), 19-26.

Hartig, T., Korpela, K., Evans, G. W. & Garling T. (1997). A measure of restorative quality in environments. *Scandinavian Journal of Psychology, 37*, 378-393.

Hartig, T., Mang, M. & Evans, G.W. (1991). Restorative effects of natural environments experiences. *Environment and Behavior, 23* (1), 3-26.

Hartig, T. & Staats, H. (2003). Guest Editors' introduction: Restorative environments. *Journal of Environmental Psychology. 2,* 103-107.

Hernández, B., Hidalgo, M.C., Berto, R & Peron, E. (2001). The role of familiarity on the restorative value of a place. Research on a Spanish sample. *Bulletin of People-Environment Studies, 18*, 22-24.

Hernández, B., Hidalgo, M. C. (2005). Effect of urban vegetation on psychological restorativeness. *Psychological Reports, 96*, 1025-1028.

Hidalgo, M.C. & Hernández, B. (2001) Si te sientes bien te recuperarás mejor: La evaluación de los lugares restauradores. En C. San Juan, B. Rodríguez y A. Vergara (comp..), *Monografías Socioambientales*: VII Congreso de Psicología Ambiental. Human Habitats-XXI. Barcelona: Publications Universitat de Barcelona.

Herzog, T. R. & Gale, T. A. (1996). Preference for urban buildings as a function of age and nature context. *Environment and Behavior. 28* (1), 44-72.

Herzog, T. R. & Shier, R. L. (2000). Complexity, age and building preference. *Environment & Behavior. 32* (4), 557-575.

Herzog, T. R., Colleen, P., Maguire, C. P. & Nebel, M. B. (2003). Assesing the restorative components of environments. *Journal of Environmental Psychology, 23*, 159-170.

Kaplan, S. (1995). The restorative benefits of nature: toward an integrative framework. *Journal of Environmental Psychology, 15,* 169-182.

Kaplan, S. & Kaplan, R. (1989). *The experience of nature: a psychological perspective.* Cambridge: Cambridge University Press.

Kaplan, S., Kaplan, R. & Wendt, J.S. (1972). Rated preference and complexity for natural and urban visual material. *Perception and Psychophysics, 12* (4), 354-356.

Korpela, M.K. & Hartig, T. (1996). Restorative qualities of favourite places. *Journal of Environmental Psychology, 16,* 221-233.

Lamb, R.J, Purcell, A.T., Mainardi Peron, E. & Falchero, S. (1992). Cognitive categorization and preference for places. In S.J. Neary, M.S. Symes & F.E. Brown (Eds.), *The urban experience. A people-environment perspective,* 405-416. IAPS 13/1994, London, E & FN SPON.

Nasar, J. L. (1994). Urban design aesthetics. The Evaluative qualities of building exteriors. *Environment and Behavior, 2*6 (3), 377-401.

Nasar, J. L. (1997). New Developments in Aesthetics for Urban Design. In G.T. Moore & R.W. Marans. Eds. *Advances in Environment. Behavior.and Design (Vol. 4)* (pp. 149-193). New York: Plenum Press.

Peron E., Berto R. & Purcell T. (2002). Restorativeness, preference and the perceived naturalness of environments. *Medio Ambiente y Comportamiento Humano,* 3 (1), 19-34.

Purcell, T., Peron, E. & Berto R. (2001). Why do preferences differ between scene types? *Environment and Behavior*, 33 (1), 93-106.

Purcell, T., Lamb, R.J., Mainardi Peron E. & Falchero, S. (1994). Preference or preferences for landscape? *Journal of Environmental Psychology, 14*, 195-209.

Staats, H., Kieviet, A. & Hartig, T. (2003). Where to recover from attentional fatigue: An expectancy-value analysis of environmental preference. *Journal of Environmental Psychology, 23*, 147-157.

Stamps, A.E. (2004). Mystery, complexity, legibility and coherence: A meta-analysis. *Journal of Environmental Psychology, 24,* 1-16.

Ulrich, R. S. (1981) Natural versus urban scenes. Some psychological effects. Environment and Behavior, 13, 523-556.

Ulrich, R. S. (1993) Biophilia, biophobia and natural landscapes. In S. R. Kellert, & E. O. Wilson (Eds.), *The biophilia hypothesis*. Washington, DC: Island Press.

Van den Berg, A. E., Koole, S. L. & Van der Wulp, N. Y. (2003). Environmental preference and restoration: (How) are they related?. *Journal of Environmental Psychology, 23*, 135-146.l