PERCEPCIÓN DE CUALIDADES RESTAURADORAS DE LOS ESPACIOS ESCOLARES DE BACHILLERATO EN LA CIUDAD DE XALAPA, MÉXICO

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Resumen

El presente estudio se llevó a cabo con estudiantes de centros educativos de nivel bachillerato en Xalapa, México, y tuvo el objetivo de identificar y comparar las cualidades restauradoras percibidas en sus espacios escolares de acuerdo con la Teoría de la Restauración de la Atención. Se trabajó con una muestra no probabilística de 706 estudiantes de siete bachilleratos. Se recopilaron datos mediante una encuesta sociodemográfica y la *Escala del Potencial Restaurador de los Espacios Escolares (EPREE*). Los resultados mostraron que las áreas verdes de las escuelas eran los espacios de descanso con mayores cualidades restauradoras, y que los lugares de descanso favoritos poseían más cualidades restauradoras que los no favoritos. Los alumnos varones, los de más edad y aquellos cuya madre (jefe de familia) tenía niveles inferiores de estudios reportaron una percepción más positiva de los espacios escolares. Las escuelas más grandes y con áreas verdes fueron mejor valoradas en las dimensiones de fascinación, posibilidad de estar alejado, y extensión. Los resultados confirmaron las propuestas centrales de la teoría de la restauración de la atención en el contexto de los espacios escolares.
Palabras clave: restauración psicológica, escenario educativo, ambiente escolar, estudiantes, psicología ambiental.

PERCEIVED RESTORATIVENESS IN SCHOOL SPACES OF HIGH SCHOOLS IN XALAPA CITY, MÉXICO

Abstract

The present study was carried out with high school students from Xalapa, Mexico. Its aim was to identify and compare the perceived restorativeness in their school environments according to the attention restoration theory. This work is based on a non-probabilistic sample of 706 students from seven high schools. All data were compiled by a sociodemographic survey and the Scale of the Restorative Potential of School Spaces (EPREE, for its the Spanish acronym). The results proved that green areas were the rest spaces with major restorative qualities and that the students' favorite rest places possessed more restorative qualities than other places. Males, older pupils and those whose mother (head of the family) had a lower educational level reported a more positive perception of the school spaces. The largest schools with green areas obtained a higher evaluation for their dimensions of fascination, being away and extent. The results confirmed the main propositions of the attention restoration theory.
Keywords: psychological restoration, educational settings, school environments, students, environmental psychology.

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PERCEPÇÃO DE QUALIDADES RESTAURADORAS DOS ESPAÇOS ESCOLARES DE ENSINO MÉDIO NA CIDADE DE XALAPA, MÉXICO

Resumo

Este artigo foi realizado com estudantes de centros educativos de ensino médio em Xalapa (México) e teve como objetivo identificar e comparar as qualidades restauradoras percebidas em seus espaços escolares de acordo com a Teoria da Restauração da Atenção. Trabalhou-se com uma amostra não probabilística de 706 estudantes de sete turmas de ensino médio. Coletaram-se dados mediante uma enquete sociodemográfica e a Escala do Potencial Restaurador dos Espaços Escolares (EPREE). Os resultados mostraram que as áreas verdes dos centros eram os espaços de descanso com maiores qualidades restauradoras e que os lugares de descanso preferidos pelos estudantes possuíam mais qualidades restauradoras do que os não preferidos. Os estudantes do gênero masculino, os de mais idade e aqueles cuja mãe (cabeça de família) tinha níveis inferiores de escolaridade relataram uma percepção mais positiva dos espaços escolares. Os maiores centros e com áreas verdes tiveram melhores avaliações nas dimensões de fascinação, possibilidade de estar isolado e extensão. Os resultados confirmaram as propostas centrais da Teoria da Restauração da Atenção no contexto dos espaços escolares.
Palavras-chave: restauração psicológica, cenário educativo, ambiente escolar, estudantes, psicologia ambiental.

INTRODUCTION

The world is a constant source of stimuli for people. An overload of information from the environment demands that we pay *direct attention*, in other words make a prolonged mental effort to perform the required everyday activities, avoiding distractors which can interfere in our tasks (Kaplan & Kaplan, 2009). Over time, this process causes mental fatigue, which in turn affects a person's ability to perform optimally at the cognitive and emotional levels.

People need spaces or settings which help restore their psychological capabilities to continue to operate effectively. Thus, a *restorative environment* is understood as a setting which favors an individual's psychological recovery (Kaplan & Talbot, 1983). On the other hand, *psychological restoration* is the complex of processes which allow a person to recover the capabilities and functional resources which have been diminished by the demands of the environment (Hartig & Staats, 2003).

Attention Restoration Theory (ART) describes some qualities that help people achieve psychological restoration after coping with situations which produce mental fatigue. From this perspective, the *perception of restorativeness* or of *restorative potential* in the environment involves four fundamental dimensions (Kaplan & Kaplan, 1989):

a) Fascination: a set of perceived characteristics that draw the person's attention, in this case involuntary attention, which does not require mental exertion.

b) Being away: a set of perceived characteristics which help the individual distance himself, physically or psychologically from that which demands focused attention.

c) Compatibility: the perception that the environment coincides with the purposes of the person who experiences it.

d) Extent: a quality of the environment which invites one to explore beyond what is immediately perceived (Scopelliti & Giulliani, 2004). This dimension comprises *coherence* or the ability to perceive clarity and order in an environment (Kaplan, 1995). Although Kaplan considers coherence an element of extent, Martinez-Soto & Montero (2010) found that it forms an additional dimension, separate from *reach* (a characteristic of extent), in Mexican contexts.

Studies based on ART have found that greater restorativeness is perceived in natural environments where there are plants and water (Hernandez & Hidalgo, 2005; Kaplan & Kaplan, 1989). However, restorative experience does not occur only in the presence of natural environments (Hartig, Mang & Evans, 1991), and not all such environments contribute to restoration, mainly when there are other variables which influence individuals who experience the setting, such as perception of danger or unpleasantness (Van den Berg, Hartig & Staats, 2007, Van den Berg & Heijne, 2005).

Another recurrent finding is that preferred places present higher levels of perceived restorativeness (Korpela, Kytta & Hartig, 2002; Martinez-Soto & Montero, 2010; Wilkie & Stavridou, 2013). In turn, the effects of restoration in people can be observed in favorable changes in mood, a reduction in physiological activation, and improved performance of tasks that require direct attention (Hartig & Staats, 2003).

In schools, students are faced with various sources of environmental stress (noise, school size, arrangement of furniture, and design, among others), which negatively impact their wellbeing (Mejia-Castillo, 2010) and contribute to decreased academic performance, although schools themselves have physical characteristics, which may favor students' psychological recovery. Some studies report that incorporating restorative elements in schools (mainly plants or trees) is associated with: greater feelings of comfort and

friendliness, lower levels of absenteeism and sanctions for misconduct (Han, 2009), better performance and terminal efficiency in students (Matsuoka, 2010), greater pro-environmentalism (Collado & Corraliza, 2013), and greater physiological and psychological wellness in students (Kels, Evans & Röderer, 2013).

Despite the relevance of these studies at the global level, in Mexico, information has not been found on the restorativeness of school settings. Studies to date have focused on some factors of the environment, such as noise in elementary school classrooms (Estrada, 2007; Estrada & Mendez, 2010) or unsuitable arrangement of furniture in preschool settings (Urbina, 1981), and how such factors have negative cognitive and behavioral consequences.

On the other hand, studies outside Mexico, which are based on the dimensions of ART, focus mainly on the physical qualities of the environment, ignoring characteristics of social context that may be linked to the restorative process. Most of the studies use adaptations of the Perceived Restorativeness Scale developed by Hartig, Korpela, Evans and Garling (1997), which is an adequately reliable and valid scale of the dimensions of ART, but is designed to evaluate different natural and built environments, and therefore fails to incorporate certain particular elements of the reality of school settings.

In a qualitative study with high-school students, Mejia-Castillo and Lagunes-Cordoba (2015) found that, despite the lack of plants and green areas and deterioration of some schools, students identify certain restorative qualities (related to the dimensions of ART), which incorporate the potential for interaction and social contact.

A theoretical review and limited advances in research on restorativeness in Mexican educational settings underscores the need for fuller knowledge of the context.

This project was implemented at high schools in the city of Xalapa, Veracruz, Mexico, and had the following objectives:

1. Identify the rest spaces that high-school students used at their schools.

2. Determine differences in perceived restorativeness in those spaces, and establish comparisons and associations for such perceptions in relation to students' sociodemographic variables, preference for place, and physical characteristics of schools (presence of green areas and size of schools).

METHOD

Participants

For reasons of convenience, a non-probabilistic sample was taken of 706 tenth and eleventh grade students (49% male and 51% female), at seven high schools in Xalapa, Veracruz, Mexico. The participants' age range was 15 to 19 years, with a mean age of 16. Participating students were chosen by school officials based on their schedules and availability of space.

The inclusion criteria required that students were enrolled in school at the time of the study and answered the questionnaires voluntarily and fully. Students in the last three semesters were excluded, because they enroll in vocational electives which may provide them access to different restorative spaces unavailable to other students.

Settings

The study was conducted in the city of Xalapa, capital of the state of Veracruz, in eastern Mexico. According to the Population and Housing Census (National Institute of Statistics and Geography, 2010), it has 457,614 inhabitants. In this context, high-school level education is offered by public and private schools, which are organized in different modes (general high school, vocational high school, and technical professional education).

Seven schools of Xalapa constituted the study settings and presented widely varying characteristics, which are presented in Table 1.

Table 1.
General characteristics of the studied schools

School	General characteristics	Total school size*	**Total green area***
School A	Located in the center of the city. One two-storey building. One central yard.	500 m^2	No green areas. Only some pots.
School B	Located in the center of the city. Three two-storey building. One central yard. One court.	2,226 m^2	No green areas. Only some pots.
School C	Located in the center of the city. One three-storey building. One central yard (used as two courts).	2,475 m^2	No green areas, just pots.
School D	Located at the suburbs of the city. It shares school areas with a junior high school. There are five two-storey buildings. Two buildings are used for high school. It has one court and one parking lot.	12,800 m^2	4,714 m^2 (36.84%)
School E	Located near the city center. It has two buildings (one-storey and three-storey), one court and one parking lot.	11,658 m^2	5,397 m^2 (46.3%)
School F	Located at the suburbs of the city. It has four one-storey buildings, one yard and one court.	19,700 m^2	11,242 m^2 (57.07%)
School G	Located at the suburbs of the city. It has six buildings, one central yard and two courts.	20,000 m^2	18,196 m^2 (90.98%)

Note: *Area estimated with Google Earth Pro (2015)

Instruments

Sociodemographic and general data sheet. General data form included: school of origin, age, gender, average, rest place, students' favorite place in school, and educational level of parents or guardians on whom they are economically dependent. Also, lines were provided for students to describe the characteristics of their rest space and activities in which they could engage there.

Scale of Restorative Potential of School Spaces (Spanish acronym EPREE). A psychometric scale constructed and validated for the purposes of this study and the inherent characteristics of school spaces (*unpublished*). The EPREE uses questions specifically designed to assess the dimensions of the restorative potential of school spaces. It uses a Likert pictorial format (Reyes-Lagunes, 1993) with 5 answer options, with five boxes next to each question (from larger to smaller), with options corresponding to a traditional Likert scale (*Totally agree* to *Totally disagree)*. The scale consists of 20 questions, divided in five dimensions: fascination (α=.90), compatibility (α=.78), being away (α=.79), coherence (α=.71), and extent (α=.66). The factorial structure had adequate fit indexes in the confirmatory factor analysis (CFI=0.95, GFI=0.945, TLI=0.94, RMSEA=0.05), with a total reliability of .86 and explained common variance of 54.6 percent.

Schools maps. Maps obtained from the software Google Earth Pro 2015 were used to calculate total extent and viewed percentage of green areas at each school.

Procedure

A formal request was submitted to the Directorate General of High School Education of the State of Veracruz, Mexico. Then, interviews were conducted with officers at each site to inform them of the terms of the study. Surveys were applied in June 2015, with the support of a total of six survey takers, who received prior training.

The survey takers explained the instructions to the group at the start. Application of the survey took approximately 20 minutes, during which time the interviewers were available to answer questions and explain complicated terms to the students. Data analysis was performed using the SPSS software version 20.0.

Statistical analysis

Frequencies, percentages, and descriptive statistics were used to analyze the general characteristics of the population. Differences between groups for categorical variables were determined by means of the X^2 test and, due to the lack of normality, the Kruskal-Wallis and Mann-Whitney U tests were used on continuous variables.

As measures of association, a contingency coefficient was used for categorical variables and Spearman's correlation was used for continuous variables.

RESULTS

The general characteristics of the sample obtained are presented below, as well as a report on the most used rest spaces by school, along with their perceived restorativeness. Also the differences in perceived restorativeness based on students' sociodemographic characteristics are shown. Subsequently, perceived restorativeness was compared regarding the students' favorite or not favorite place. Finally, comparisons are made on perceived restorativeness for schools of different sizes and with different ratios of green areas regarding their total length.

General characteristics of the population

Table 2 presents the general data for the population surveyed, including: participants' age, percentage by gender, educational level of the head of family (father, mother, or other), and students' grade average at each of the schools. In regards to the gender distribution in some schools, males outnumbered females in the sample and in others the opposite applied.

Table 2.
General sociodemographics characteristics of the sample studied.

Variable	Total sample	School A	School B	School C	School D	School E	School F	School G	p
Age±SD	16±0.75	15.6±0.53	15.6±0.49	16±0.67	15.7±0.54	16.3±0.74	16.9±0.66	16±0.77	<.001*
Gender								45**	
Male	341	62	49	51	42	55	37	45	
	(48.5%)	(55.9%)	(50.5%)	(45.5%)	(40%)	(49.5%)	(46.8%)	(51.1%)	
Female	361	49	48	61	63	55	42	43	
	(51.4%)	(44.1%)	(49.5%)	(54.5%)	(60%)	(49.5%)	(53.2%)	(48.9%)	
Academic degree (father)									<.001**
Elementary	6.8%	7.2%	1%	2.7%	7.6%	8.1%	12.7%	10.2%	
*JHS**	15.8%	6.3%	9.3%	5.4%	28.6%	17.1%	22.8%	25%	
*HS**	20.8%	21.6%	10.3%	10.7%	26.7%	24.3%	22.8%	30.7%	
*BD**	24.6%	27.9%	43.3%	41.1%	12.4%	20.7%	11.4%	10.2%	
Postgraduate	11.7%	13.5%	20.6%	24.1%	2.9%	8.1%	1.3%	8%	
Total	79.7%	76.6%	84.5%	70.9%	78.1%	78.4%	70.9%	84.1%	
Academic degree (mother)								<.001**	
Elementary	7.3% 1.8%	3.1%	2.7%	8.6%	8.1%	20.3%	14.1%		
*JHS**	16.8%	15.3%	5.2%	6.3%	25.7%	24.3%	22.8%	26.6%	
*HS**	20.9%	23.4%	10.3%	11.6%	24.8%	27.9%	20.3%	39.1%	
*BD**	24.2%	29.7%	35.1%	42%	18.1%	17.1%	12.7%	12.5%	
Postgraduate	12.4%	18.9%	25.8%	17.9%	5.7%	6.3%	3.8%	7.8%	
Total	81.5%	89.2%	79.4%	79.7%	82.9%	83.8%	79.7%	100%	.001**
Average±SD	7.6±0.91	7.6±1	7.6±0.75	7.8±0.7	7.8±1.04	7.7±0.78	7.3±1.2	7.5±0.8	.003*

Notes: JHS= junior high school, HS= High School, BD= Bachelor degree.
* *Kruskal-Wallis Test*.
** *Chi-squared Test*.

The mean age presented significant differences. School F had the highest mean of all. Grade averages also presented significant differences, with schools C and D reporting the highest averages. The fact that students at schools in the city center (mainly schools B and C) are dependent on parents with higher educational levels is noteworthy.

Most used rest spaces in schools

The answers given by participants regarding the rest spaces they use were grouped in six major categories: 1. Classrooms, 2. Halls or balconies outside classrooms, 3. Courtyards, patios, or playing fields, 4. Green areas, 5. Eating areas or cafeterias. 6. Other spaces (libraries, stairwells, school entrances). As shown in table 3, the most widely used rest spaces were classrooms (N=289) and the least used were eating areas or cafeterias (N=26).

Rest spaces in schools and perceived restorativeness

For comparative analysis of restorativeness in the categories of rest spaces, the *Kruskal-Wallis* was used. It was necessary to exclude category 6, due to the variety of answers given, which reflected highly specific characteristics of the schools. Statistically significant differences were found between rest spaces for perceptions of fascination, compatibility, being away, extent, and total restorative potential ($p<.001$ in all the cases mentioned). The dimension of coherence did not present significant differences ($p=.244$).

To determine which rest spaces scored highest for each restorative characteristic, comparisons were made between the mean ranges of each of the categories for rest spaces (grouping data from the 7 schools), for each factor in the scale and the total scale, by means of the *Mann-Whitney U* test. Table 3 shows the statistically significant differences found between adjacent rest spaces, in the order of their mean ranks.

Table 3.
Perceived restorativeness by rest places in the seven schools as a whole (sorted by mean ranks).

Dimensions (restorativeness)	**Rest places**	***N***	**Mean rank**
Fascination	Green areas	83	434.57
	Eating areas or cafeterias	26	398.58
	Courtyards, patios, or playing fields	74	365.24
	Halls or balconies outside classrooms	150	351.95
	Classrooms	289	281.27**
	Total	670	
Being away	Eating areas or cafeterias	26	474.98
	Green areas	83	423.16
	Courtyards, patios, or playing fields	74	415.94
	Halls or balconies outside classrooms	151	359.26**
	Classrooms	288	246.16**
	Total	670	
Compatibility	Green areas	83	413.31
	Courtyards, patios, or playing fields	74	412.28
	Halls or balconies outside classrooms	151	351.94**
	Eating areas or cafeterias	26	334.62
	Classrooms	289	294.65
	Total	671	
Coherence	Green areas	83	375.25
	Eating areas or cafeterias	26	355.23
	Courtyards, patios, or playing fields	74	337.60
	Halls or balconies outside classrooms	151	333.66
	Classrooms	289	331.57
	Total	671	
Extent	Green areas	83	483.40
	Courtyards, patios, or playing fields	74	439.59
	Halls or balconies outside classrooms	151	364.78
	Eating areas or cafeterias	26	313.56**
	Classrooms	289	258.69
	Total	671	
Restorativeness (total score)	Green areas	83	472.34
	Eating areas or cafeterias	26	434.67
	Courtyards, patios, or playing fields	74	406.50
	Halls or balconies outside classrooms	150	355.97
	Classrooms	288	253.80**
	Total	669	

Note: ** ($p<.001$) in relation with upper contiguous category, according to the mean rank.

The results also showed that green areas were the spaces that scored highest for perceived fascination, compatibility, extent, and total restorative potential, whereas eating areas/cafeterias finished in first place for the dimension being away. Regarding the dimensions compatibility and extent, courtyards scored in second place, and for fascination and total restorative potential, eating areas/cafeterias were second.

On the other hand, classrooms were the spaces with the lowest perceived restorativeness, which received the lowest scores for all dimensions on the scale and for total restorative potential.

Perceived restorativeness in relation to students' sociodemographic characteristics

To determine whether there were gender-based differences in the perceived restorativeness of school spaces, an analysis was conducted by means of the *Mann-Whitney U* test, which found that males perceive greater *fascination* (mean rank: 374.39 *vs.* 328.97, p=.003), *potential to be away* (mean rank: 370.99, *vs.* 332.07, p=.011), and *total restorative potential* (368.69 *vs.* 333.33, p=.021). For the other dimensions, no statistically significant differences were found.

In regards to age, analysis with the Kruskal-Wallis test found that there were significant differences in the dimensions of fascination (p=.005), being away (p<.001), extent (p<.001), and total restorative potential. In all cases, the mean rank was higher for older students. This finding was confirmed by the analysis of correlation (*Spearman*'s rank correlation), which confirmed that there was a low, but significant correlation between students' age and scores on each of the aforementioned dimensions (fascination, r=.126; being away, r=.160; extent, r=.225; total restorative potential, r=.163, con p<.001 in all cases).

Significant differences were also found in relation to the educational level of mothers as heads of households. Average score ranges were significantly lower (Kruskal-Wallis test) for students whose mothers had elementary or junior high school studies in the dimensions of fascination (p<.001), coherence (p=.028), extent (p<.001), and total restorative potential (p<.001). This was confirmed by means of analysis of correlation (*Spearman*'s coefficient), which found a low, but significant negative correlation (p<.001) between the mother's educational level and scores for fascination (r=-.164), coherence (r=-.10), extent (r=-.136), and total restorative potential (r=-.171).

When the total restorative potential was analyzed using the rest of the sociodemographic variables studied, no statistically significant differences were found.

Favorite vs. Non-favorite rest spaces and restorativeness associated with them

The favorite rest spaces, which fell within the five categories analyzed in the previous section, were courtyards, playing fields, or patios (23% of answers), followed by green areas (14.4%), halls or balconies outside classrooms (10.5%), and eating areas or cafeterias (9.2%). The least favorite spaces were classrooms (9.2%). Also, 24.6% of answers on favorite spaces referenced various spaces grouped under the category "others," citing very specific places in each school, which were rarely mentioned as rest spaces. Finally, 7.3% of participants who answered this question reported not having a favorite place in their schools.

To determine whether rest spaces coincide with students' favorite places in schools, analyses of correlation by category were conducted. A significant contingency coefficient 0.476 (p<.001) was obtained, which allowed to conclude that there was a moderate association between students' favorite places and the places where they spent their recess time.

To determine whether there were differences in perceived restorativeness between students who rested in their favorite places and those who rested elsewhere, an analysis was conducted by means of the Mann-Whitney U test. It was found that when the rest spaces used coincided with the students' favorite places, they reported higher levels of perceived fascination (p<.001), compatibility (p=.013), being away (p<.001), extent (p=.001), and total restorative potential (p<.001). The only dimension which did not present significant differences between the two groups was coherence (p=*ns*).

School size and perceived restorativeness

In order to determine if there were differences between small and large schools in relation to levels of perceived restorative potential, schools were grouped based on their size in two categories: small schools (less than 10,000 m^2) and large schools (more than 10,000 m^2).

Large schools presented higher levels of fascination, being away, and extent, compared with small schools (p<.001 for all cases). Total restorative potential was also significantly greater in large schools (p<.001). No statistically significant differences were observed in the dimensions of compatibility and coherence (p=*ns* for each case).

Extent of green areas and perceived restorativeness

As an important part of the theoretical considerations supporting this investigation, the restorativeness of schools based on their percentage of total extent of green areas was analyzed. For this purpose, four groups were defined: 1.

Schools without green areas (only potted plants), 2. Schools with a percentage of green areas between 25% and 50% of their total extension 3. Schools with a percentage of green areas between 50% and 75% of their total extension, and 4. Schools with a percentage between 75% and 100% of green areas. Globally (Kruskal-Wallis test), statistically significant differences were found for the dimensions of fascination, being away, extent, and total restorative potential (p<.001 for all cases).

The specific differences between groups were analyzed by means of the Mann- Whitney U test. The mean ranges showed that the values for group 1 were significantly lower than those for group 2 in the four dimensions (p=.001 in all cases). Also, in the dimension fascination, it was found that the scores for group 3 were significantly higher than those for group 4 (p=.001). Finally, group 3 was significantly above group 2 in perceived extent (p=.006).

DISCUSSION

Although the schools studied had diverse characteristics in their physical spaces, five groups of spaces were identified that students constantly mention as spaces where they spend their rest time: green areas, courtyards or playing fields, classrooms, halls outside classrooms, and eating areas or cafeterias. This was the overview, and only three schools (A, B, and C) had no spaces in the category of green areas.

The study shows that green areas are the school spaces with the greatest perception of fascination, compatibility, extension, and total restorative potential. The results coincide with investigations which find that natural settings have greater restorativeness (Kaplan & Kaplan, 1989, Hernandez & Hidalgo, 2005).

Two spaces which also presented high levels of perceived restorativeness were eating areas and courtyards/patios or playing fields. To interpret this, it is important to consider that the activities for which spaces are used are important to perception of those qualities. Some comments collected on those spaces clearly confirm this: "[the courtyard is] a well-lit, open space where we can socialize;" "[the cafeteria is] pretty, spacious, has tables and chairs, filled with good smells, a place you can spend time with friends, eat, play, or sleep." Consequently, studies on restorativeness need to account for the activities in which people can engage, as well as the implicit physical and social factors (Kort, Gal & Staats, 2004).

On the other hand, it was found that classrooms are the school spaces that receive the lowest scores for restorativeness and are at the bottom among preferred spaces, but are located where a majority of students spend their free time. Some comments about classrooms are: "It is large, white, dirty, with writing on the walls;" "It's a small, windowless box. It's almost all white and it almost always feels overcrowded".

Of the five main categories considered for rest spaces, the spaces preferred by students are courtyards, patios, or playing fields (23.9% of answers), followed by green areas. These findings allow us to observe that the relationship between use of rest spaces and preference is inverted in some cases, where the most widely used rest space (classroom), is also the one least often mentioned as favorite and the preferred space (courtyards, patios, or playing fields) is in fourth place in use for rest, among the five categories.

This suggests that, although schools have different settings, short rest times do not allow students to get to distant sites which may have greater restorativeness. It is important to mention that outdoor spaces are used by some students who take part in athletic activities such as soccer and basketball. Therefore, it is proposed for future studies examining psychological restorativeness of school spaces, to consider the differences of access and time such athletic activities entail, where only some students are involved.

Mejia-Castillo and Lagunes-Cordoba (2015) found that halls or corridors outside classrooms are spaces where large numbers of students spend their rest time. The study found that those settings allow the perception of extent and therefore contribute greatly to perceived total restorative potential. The findings presented here confirm that those spaces are widely used by students, occupying the second place in the use of rest spaces, only behind classrooms. However, their perceived restorativeness is below spaces like green areas and courtyards.

In terms of the analysis by specific dimensions of restorativeness, the dimension compatibility did not show statistically significant differences due to school size, extent of green areas, and sociodemographic variables. Given that the scale was designed mainly with questions about the possible relationship with others in their rest spaces, it is suggested that a physical space becomes compatible to the extent that it offers opportunities for social interaction, regardless of the type of setting, size, extent of green areas, and gender of participants. In this sense, it should be noted that adolescence is a stage in which peer groups are a very important source of social support and a promoter of psychological wellbeing for the individual (Orcasita & Uribe, 2010). For that reason, young people need school spaces that contribute to interaction with others. The complementary remarks on the study which describe rest spaces constantly cite this relationship: "the play ground is a large space where I can spend time with my friends

and acquaintances; it has benches where we can sit;" "[the green rest space] is very nice, and you can make a lot of friends there; it's very peaceful and clean."

The results regarding differences due to sociodemographic variables in perceptions of restorativeness show that educational spaces favor the perception of male students, who score higher than their female counterparts in the dimensions of fascination, being away, and extent. Some prior investigations postulate that there are gender-based differences in use of space, both in school settings (Ozdemir & Yilmaz, 2008) and on other public spaces (Legendre, 2007); however, further research is still needed on the characteristics of preferred activities and differentiated use of space among adolescents in Mexican schools. Sociology has also offered explanations of unequal use of space between men and women (Canton, 2007; Shilling, 1991), and future studies would be well advised to incorporate theoretical models from that perspective.

Another sociodemographic variable that presents significant differences is age. Older students perceive greater restorativeness in school. In this regard, given that data were collected from two classes of high school students, it is probable that the time students have been in school contributes to such positive perceptions; however, specific studies are needed to draw conclusions.

According to the Mexican Association of Market Research and Public Opinion Agencies ([Spanish acronym AMAI], Lopez-Romo, 2011), the educational level of the head of family is an indicator of socioeconomic level. The results presented here show that students with women heads of family who have lower educational levels (and consequently, lower socioeconomic levels) obtain higher levels of perceived restorativeness. The General Theory of Adaptation (Nelson, 1964) explains that people adapt to certain everyday environments, which could help to explain the fact that coming from spaces with material inadequacies and deficiencies may contribute to a favorable perception of the educational facilities under consideration in this study.

Regarding preference for rest spaces, these results confirm that greater restorative potential was perceived in students' favorite places than in their non-favorite places, mirroring the findings reported by other authors and in other contexts (Korpela, Kytta, & Hartig, 2002; Martinez-Soto & Montero, 2010; Wilkie & Stavridou, 2013). It is important to mention that several students at different schools report as their favorite spaces a wide variety of places (libraries, lecture halls, and reading areas, among others). However, for reasons of rules and regulations, most of them lack the opportunity to spend their rest time there.

School size was another relevant variable in this study. Large schools scored higher than small schools on fascination, being away, and total restorative potential. Regarding fascination, it is inferred that a large space may provide a greater variety of stimuli and situations that attract students' involuntary attention and greater opportunities to distance themselves from things that demand voluntary attention. In relation to being away, large schools allow students to isolate themselves from sources of tension in their free time.

Finally, there is a clear difference in perceived restorativeness between schools with and without green areas. However, comparing schools in group 3 (50% to 75% extent of green areas) and 4 (more than 75% extent of green areas), the first group presented greater perceived restorativeness. This does not have a simple explanation and our data do not allow us to attribute these differences to a specific situation. It is possible that, aside from the extent of green areas, care, number and size of trees and bushes, presence of litter, and others, may influence the perceived restorativeness of green areas; these factors should be studied in future investigations.

The study presented here offers an overview of the conditions found in high schools in a Mexican city, and it was found that the schools studied have widely varying characteristics. Analysis with the dimensions of Attention Restoration Theory allows concluding that the school spaces studied may favor students' psychological restoration and, in general, enhance their wellbeing. Some preferred spaces which students lack access (such as libraries and some green areas, among others) may play the role of restorative environments and promoters of mental health. The study shows that well-kept green areas and large spaces boost perceived restorative potential in schools, and therefore allow affirming that those characteristics may contribute to students' cognitive and emotional recovery.

Finally, the data obtained may help stakeholders analyze the conditions of educational facilities and propose solutions to spatial and temporal limitations, which may affect students' psychological recovery.

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