Development of a scale of perceived environmental annoyances in urban settings

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Abstract

The construction and validation of an original scale was pursued to measure perceived environmental annoyances in urban settings. This scale included all the potentially aversive situations encountered in the daily lives of city-dwellers. The answers of 926 French respondents to our initial 68-item scale were first analysed. Using statistical techniques, the number of items was reduced to 51 from which the factorial structure was extracted. Seven principal dimensions emerged: feelings of insecurity, inconveniences associated with using public transport, environmental annoyances and concerns for global ecology, lack of control over time related to using cars, incivilities associated with the sharing of public spaces between different users, lack of efficiency resulting from the density of the population, and an insecure and run-down living environment. We also examined these dimensions of perceived environmental annoyances in urban settings according to the sex, age, occupational category and geographical location of respondents. The validated multidimensional scale constitutes a promising instrument for urban research that could usefully be employed in the emerging field at the interface between health psychology and environmental psychology.

Keywords: Urban stress; Urban stressors; Quality of life; Assessment

1. Introduction

Research in environmental psychology has increasingly turned towards measuring perceived environmental quality, of which one research objective is to study the congruence between the quality of environments and people’s expectations, goals and value systems (Priemus, 1986). The congruence between biological, behavioural and socio-cultural needs of individuals and available environmental resources is a major component of well-being (Stokols, 1996). In this perspective, research on the quality of life and satisfaction engendered by the environment lies at the interface between the thinking of urban planners and that of researchers in the social and behavioural sciences. It examines interactions between objective physical, spatial and social characteristics at different levels on an environmental scale and how people perceive these subjectively (Amerigo & Aragones, 1997; Lee & Marans, 1980; Marans, 2003).

Among the methods of evaluating environmental quality, research instruments for measuring residential satisfaction and/or indicators of urban environment quality, at the levels of housing, neighbourhoods and communities, have been well developed (Bonaiuto, Aiello, Perugini, Bonnes, & Ercolani, 1999; Bonaiuto, Fornara, & Bonnes, 2003; Canter & Rees, 1982; Carpenter & Carp, 1982). These instruments measure perception of the characteristics of residential space and the extent of satisfaction and attachment to places expressed by individuals relative to different dimensions of their proximal environment. Researchers seeking answers to this question have recognized the multidimensional nature of residential satisfaction, a concept that includes the qualities attributed to the physical-spatial, social and personal, functional and contextual environment.

All the instruments used in these research studies share the common feature of focusing on individuals’ residential space and have failed to examine more broadly the larger
urban environment. It is certainly true that most studies of residential satisfaction were conducted in urban settings and questionnaires have included a certain number of items on the neighbourhood, which respondents were asked to evaluate according to a number of urban characteristics (pollution, signs of vandalism, insecurity, parking, public transportation, etc.). Yet the city is located at a different spatial level, engendering its own specific characteristics, most notably reflecting its population density and heterogeneity. This has not been directly incorporated into these studies as a key variable.

There has been little research, moreover, that has simultaneously evaluated dimensions relative to the image of the city. While the urban setting offers city-dwellers various sources of satisfaction, research on this issue has focused mainly on the potentially negative aspects of living in large cities, compared with average-sized towns and cities (Moser, 1992). Studies have been designed to evaluate the environmental quality of cities, a concept that is part of the larger notion of the quality of life and related to reflections on the health of the population living in such an environment.

In reviewing the literature, three distinct directions of research on urban nuisances can be identified, related, respectively, to physical annoyances (making reference to the model of stress), to interpersonal and social conduct, and to life-styles specific to city-dwellers.

Environmental stressors have been studied since the 1970s with the question being asked: What are the effects on physical health, well-being and changes in behaviour, of single or multiple physical annoyances such as noise, population density and pollution—all of which are to be found in higher concentrations in large cities (Evans, 1982; Evans & Cohen, 1987; Evans & Stecker, 2004; Glass & Singer, 1972)? The concept of “ambient stressors” has been proposed to designate the cumulative, physically detectable, environmental conditions that are considered as negative; these stressors have chronic effects on individuals and are generally beyond their own control (Campbell, 1983).

Conjointly with this research on the enduring physical conditions of the urban environment, other researchers have examined social annoyances related to urban living conditions, particularly deteriorating social exchanges, insecurity and criminality.

The feeling of insecurity is considered as something specifically urban, even though individual perceptions of the risk of being aggressed in a given environment are not directly related to crime-rates (Lagrange, 1984). By insecurity, one is referring to the objective risk of being involved in or the victim of an aggressive act, the individual perception of this risk and the estimate of personal vulnerability results from this. Fear and the feeling of insecurity are particularly strong in those cities with the largest populations, with higher residential density and greater ethnic heterogeneity (Liska, Lawrence, & Sanchirico, 1992).

Some research has shown that urban living incurs social withdrawal behaviour, reduces helping behaviour and destroys civility (Korte, 1980; Milgram, 1970). Incivility is defined as a form of deviance with respect to the tacit norms regulating social exchanges in daily life (Bernard, 1997). Earlier research demonstrated the relationship between the perception of physical and social incivilities within neighbourhoods, tangible signs of the degradation of residential space, official crime statistics and the feeling of insecurity and the deterioration of the social order for those living in cities (Brown, Perkins, & Brown, 2004; Perkins, Meeks, & Taylor, 1992; Skogan & Maxfield, 1980).

The notion of city-dwellers’ life-style refers partly to the practicalities of daily travel which induce substantial spatio-temporal constraints on residents of large cities and the surrounding suburbs. Inability to control the time spent travelling, saturated public transport networks and private cars blocked in traffic jams constitute major stress factors, the negative effects of which on health and well-being have been confirmed in a number of studies (Evans, Wener, & Phillips, 2002; Gee & Takeuchi, 2004; Koslowsky, Kruger, & Reich, 1995).

By living and/or traveling regularly in large cities, residents are frequently exposed to all of these nuisances simultaneously, coming from multiple sources. These annoyances may have additive or multiplicative effects. Stress theory refers to the coping process that mediates the relationship between an aversive stimulus and the individual’s reaction; in the case of multiple stressors, adjustment to one stressor may increase vulnerability to other stressors (Lepore & Evans, 1996). It is therefore important to identify the different sources of environmental annoyance in urban setting, not in an isolated way, but rather with an instrument that includes all the situations encountered in living in cities that are likely to be perceived as annoyances.

The perception of urban annoyances varies according to the spatio-temporal characteristics of a geographical location. Thus the large metropolitan centres are characterized by the vastness of the spatial scale which creates spatio-temporal constraints on daily life, the concentration of economic activities, which increases environmental annoyances, and a high population density which increase the phenomena of anonymity (Moser, 1992). In the case of France, the focus of the present study, a representative large-scale survey of the French population found that residents in the Paris region had a representation of their living environment as more “stressful”, compared to those living in provincial towns (Crenner, 1996). At the level of daily activities, Moser and Corroyer (2001) found that Parisians, in the public space of a large retail-store, demonstrated than those living in an moderate-sized provincial town, and that the uncivil behaviours were more evident in the two locations when population density was higher. However, there are contradictory findings which failed to show a difference in the perception of the
degree of environmental nuisances between Parisians and those living in the Provinces (Badoux-Lévy & Robin, 2002; Moser & Robin, 2006).

Research on the physical environment has certainly confirmed the relationship between social class and the environmental quality of living environments. Geographers have introduced the concept of “socio-territorial indicators” to identify and analyse socio-spatial variations in the quality of life at different points on the geographical scale, ranging from the global to the local (Pacione, 2003). Working at the neighbourhood level, certain environmental psychology researchers have developed the concept of “high-stress neighbourhood,” a source of vulnerability and pathogeny, independent of age, sex or ethnicity (Taylor, Repetti, & Seeman, 1997). In these disadvantaged neighbourhoods, a number of characteristics co-vary (e.g., noise, crowding, pollution, housing and neighbourhood quality, physical incivilities, criminality) (Taylor, 1982).

Beyond the variations associated with city size and socio-economic variables, other research has shown that demographic variables such as age and sex modify both how one lives in a city, by developing different patterns of activity (Bonaiuto & Bonnes, 1996), and the representation of environmental quality, the older population tending to perceive their neighbourhood more positively, compared to younger city-dwellers, with the exception of the dimension of security (Carp & Carp, 1982). Feminist researchers have particularly developed the idea of that gender is present both in considering urban behaviour and representations of the city (Coutras, 2003; Hanson & Pratt, 1995).

The present study follows an earlier research which sought to construct and validate a new instrument for evaluating environmental quality in urban setting, based on situations occurring on a daily basis that might be perceived as potentially stressful for city-dwellers. To create the list of urban situations to include in the questionnaire and ensure that these were comprehensible for all our respondents, we conducted two preliminary studies, the results of which were described in an earlier report (Robin, Matheau-Police, Ratiu, & Lavarde (2004).

The first study consisted of an analysis of the qualitative answers of 40 city-dwellers when asked “what stressed them in living in the city, in their neighbourhood, or in the building they lived in”. The data collected provided information on potential sources of stress (for example, noise, or the underground transit system) and the effect this had on them (feeling squeezed in, losing one’s time, being afraid, etc.) The answers enabled us to generate an initial list of 84 descriptive situations reflecting actual city life, based on the information our respondents had provided, excluding any terms that involved interpretation. The relevance and generalization to different-sized French cities was then tested in a second study with 163 urban residents in Paris and in the French provinces: this generated a version containing 68 items.

Since this list of 68 urban situations that were potentially sources of annoyance emerged from the overview we obtained from a sample of city-dwellers in the context in which they were living, a first question to be asked was how these answers were structured along different dimensions. Would this inventory enable us to confirm in a larger sample the different categories of urban annoyance that have been identified in the research literature, that is physical annoyances, social annoyances and functional constraints (Amerigo & Aragonès, 1997; Bonaiuto et al., 1999, 2003, Carp & Carp, 1982, Canter & Rees, 1982)?

A second question will be examined in this study. Although if the urban way of life presents common characteristics, the literature shows that it also demonstrates diversity related to both the spatial scale and population density, as well as to the urban residents’ socio-demographic characteristics, which determine both the residential framework of respondents and how they live in the city. We hypothesize that the different dimensions of perceived environmental annoyance will vary according to the respondents’ specific socio-demographic and geographical characteristics.

In summary, this stage of our research has three objectives: first, to assess the validity of the scale in a large sample, that is with all the population categories and in all the large French cities; second, to reduce the number of items and explore the factorial structure of the instrument in order to develop more focused sub-scales of the different dimensions making up the instrument, which we have called in French “Gêne environnementale perçue en milieu urbain” (“CEPMU”) and which we propose to translate into English as “Perceived environmental annoyances in urban settings”; and third, to analyse the results of the GEPMU scale in function of the socio-demographic and geographical categories of the sample.

2. Method

2.1. The scale

The scale consists of an exhaustive list of specifically urban situations that city-dwellers would potentially find aversive. Each situation was evaluated according to its extent of annoyance on a 0–4 scale (0 = this is not applicable to me; 1 = this doesn’t disturb me at all; 2 = this disturbs me a bit; 3 = I am disturbed by this; 4 = this disturbs me a lot).

2.2. Research protocol

This scale, including a number of socio-demographic and geographical questions was reproduced in the popular French monthly science magazine “Sciences et Avenir” (February 2004, No. 59). Readers were asked to fill out the questionnaire printed in the magazine. To be eligible they had to be at least 18 years old and to live in a large provincial city with a population greater than 100,000 residents, or Paris and its close suburbs. Respondents were asked to respond to all the items in each box in the
questionnaire and to send their results anonymously to our research institute.

2.3. Sample

The questionnaire was returned by 1382 respondents. We excluded a priori 244 questionnaires because they failed to correspond to our criteria of geographical location. We also eliminated from the analysis all subjects who failed to answer one or more questions, or whose answers were uncodable. The final sample consisted of 926 respondents. The break-down by age, sex, job-category and geographical location of these subjects appears in Table 1.

More men than women sent in questionnaires; the sample was more provincial than Parisian and included all the age-ranges, with a larger proportion in the 46–65 age-range. All occupational categories were represented, with a higher proportion of senior managers, professionals and pensioners and a low proportion of unskilled workers. Compared with the French population as a whole on 1 January 2004 (according to the French National Institute for Statistics and Economic Studies [INSEE]), men in our sample are over-represented (58.1% vs. 48.5%) as well as the age-group 46–65 (42.2% vs. 28.8%) and the higher professional occupational categories (28.2% vs. 13.1%). As for geographical location within mainland France, respondents resided in 44 of the 57 urban centres with more than 100,000 inhabitants that were listed by INSEE. The final sample consisted of 926 respondents. The break-down by age, sex, job-category and geographical location of these subjects appears in Table 1.

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Table 1
Characteristics of the research sample (N = 926)

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>538</td>
<td>58.1</td>
</tr>
<tr>
<td>Female</td>
<td>388</td>
<td>41.9</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–25</td>
<td>127</td>
<td>13.7</td>
</tr>
<tr>
<td>26–45</td>
<td>268</td>
<td>29.0</td>
</tr>
<tr>
<td>46–65</td>
<td>391</td>
<td>42.2</td>
</tr>
<tr>
<td>66–92</td>
<td>140</td>
<td>15.1</td>
</tr>
<tr>
<td>Occupational category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craftsmen, shop-keepers, employers</td>
<td>12</td>
<td>1.3</td>
</tr>
<tr>
<td>Professionals, senior managers</td>
<td>261</td>
<td>28.2</td>
</tr>
<tr>
<td>Intermediary professionals</td>
<td>147</td>
<td>15.9</td>
</tr>
<tr>
<td>Salaried workers</td>
<td>128</td>
<td>13.8</td>
</tr>
<tr>
<td>Unskilled workers, service personnel</td>
<td>16</td>
<td>1.7</td>
</tr>
<tr>
<td>Students</td>
<td>103</td>
<td>11.1</td>
</tr>
<tr>
<td>Pensioners</td>
<td>223</td>
<td>24.1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>36</td>
<td>3.9</td>
</tr>
<tr>
<td>Geographical location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paris and the close suburbs</td>
<td>351</td>
<td>37.9</td>
</tr>
<tr>
<td>Provinces</td>
<td>575</td>
<td>62.1</td>
</tr>
</tbody>
</table>

3. Results

3.1. The factor structure of the scale

We conducted a series of principal component analyses (PCAs) on answers to the scale’s 68 items, using varimax rotation. We initially combined the response-categories “0” (“this is not applicable to me”) and “1” (“this doesn’t disturb me at all”). While these two categories relate to different contexts, we considered they were equivalent from the subjects’ perspective, in the sense of the absence of annoyance. The first PCA we conducted generated a 7-factor solution (eigenvalues greater than 1), accounting for 46.3% of the variance. Redundant items (with correlations >.50) were eliminated, as well as those which failed to be loaded on any of the seven factors. As we proceeded with different PCAs, certain items could therefore be eliminated since they failed to provide any additional information (in terms of increased explained variance) and because their exclusion did not reduce the stability of the factor structure and the internal consistency of the sub-dimensions. The definitive scale contained 51 items and confirmed the existence of a factorial structure made up of 7 factors (accounting for 47.8% of the variance). The scale’s homogeneity was confirmed by the internal consistency coefficient (Cronbach’s α = 0.91). The 51 items making up the scale are therefore sufficiently homogeneous to enable the calculation of an overall score that takes account of the extent of perceived environmental annoyance by the respondents (see Annex 1 for a list of all 51 items).

Finally, to confirm the stability of the factorial structure we obtained, we then repeated the analyses dividing the sample into two equal-size sub-samples to which respondents were randomly allocated. The factorial structure and content of items for the dimensions 1, 2, 3, 5 and 7 were replicated. For one of the two sub-samples, certain items in factor 4 (e.g., Lack of control over time due to the use of cars) and in factor 6 (e.g., Loss of efficiency related to the population density) were found on a same factorial axis, providing evidence for a single dimension of time constraints due to human density in one case and automobile density in the other. Given the satisfactory homogeneity of factor 4 in the overall sample, we chose to present the findings in terms of seven factorial dimensions.

We present here the scale’s seven factorial dimensions (see Table 2). The factorial coordinates of each of the 51 items enabled the assignment of each of the situations to one of the seven factors: none of these items overlapped with other factors. One notes that the title given to each factor refers to a grouping of related urban situations as well as the person’s specific feelings within each of these situational categories.

Factor 1: Feelings of insecurity (6 items; eigenvalue = 9.6; 18.9% of the variance; α = 0.83). This dimension covers a particular sensitivity in the face of perceived social risks. It contains items evoking the idea that the individual...
Table 2
Item coordinates for the first 7 factors

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1—Feelings of insecurity ($\sigma = 0.83$)</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Thinking that one might be aggressed in public transport or shopping malls 0.84</td>
</tr>
<tr>
<td>43</td>
<td>Thinking one might be aggressed at home or in my block of flats 0.78</td>
</tr>
<tr>
<td>38</td>
<td>Thinking that one might be a victim of assault in a public place 0.76</td>
</tr>
<tr>
<td>8</td>
<td>Returning home alone in my neighborhood 0.62</td>
</tr>
<tr>
<td>3</td>
<td>Having to be constantly on guard 0.61</td>
</tr>
<tr>
<td>48</td>
<td>Encountering people who provoke you or marginal people in public places 0.40</td>
</tr>
<tr>
<td>Factor 2—Inconveniences related to using public transport ($\sigma = 0.86$)</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Having to wait for public transportation 0.78</td>
</tr>
<tr>
<td>33</td>
<td>Putting up with timetable changes or delays in public transport 0.73</td>
</tr>
<tr>
<td>4</td>
<td>Public transport which is not frequent enough 0.70</td>
</tr>
<tr>
<td>17</td>
<td>Over-crowding in public transport 0.67</td>
</tr>
<tr>
<td>20</td>
<td>Numerous changes in routes and/or forms of transport 0.64</td>
</tr>
<tr>
<td>8</td>
<td>Putting up with public transportation strikes 0.61</td>
</tr>
<tr>
<td>42</td>
<td>The relative discomfort of public transport 0.60</td>
</tr>
<tr>
<td>4</td>
<td>Not having an alternative when there is a problem with the usual means of public transport 0.60</td>
</tr>
<tr>
<td>40</td>
<td>Being late because of an incident in the transportation system 0.54</td>
</tr>
<tr>
<td>44</td>
<td>The smells in public transport vehicles 0.42</td>
</tr>
<tr>
<td>Factor 3—Environmental annoyances and global environmental concerns ($\sigma = 0.79$)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>The increase in pollution from cars 0.79</td>
</tr>
<tr>
<td>21</td>
<td>Unhealthy air in the streets 0.77</td>
</tr>
<tr>
<td>47</td>
<td>The increase in industrial pollution 0.70</td>
</tr>
<tr>
<td>18</td>
<td>The increase in the number of cars in the streets 0.55</td>
</tr>
<tr>
<td>46</td>
<td>Lack of green spaces near where I live 0.52</td>
</tr>
<tr>
<td>26</td>
<td>Continuous noise in the streets 0.51</td>
</tr>
<tr>
<td>7</td>
<td>Lack of, or dangerousness of, bicycle paths 0.43</td>
</tr>
<tr>
<td>45</td>
<td>Increased poverty in the city 0.42</td>
</tr>
<tr>
<td>5</td>
<td>Sudden noises from cars and other vehicles (sirens, horns, the squealing of tires) 0.41</td>
</tr>
<tr>
<td>Factor 4—Lack of control over time in relation to car use ($\sigma = 0.79$)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Being late because of traffic 0.79</td>
</tr>
<tr>
<td>22</td>
<td>Being caught in a traffic jam and not being able to do anything about it 0.79</td>
</tr>
<tr>
<td>24</td>
<td>Driving around for an hour looking for a parking space 0.68</td>
</tr>
<tr>
<td>14</td>
<td>Losing time in traffic jams or generally in travelling 0.65</td>
</tr>
<tr>
<td>Factor 5—Incivilities related to different users sharing public spaces ($\sigma = 0.73$)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cars badly parked 0.59</td>
</tr>
<tr>
<td>41</td>
<td>Roller-bladers or cyclists that don’t pay attention to others 0.56</td>
</tr>
<tr>
<td>6</td>
<td>Drivers of cars who don’t respect pedestrians and cyclists 0.53</td>
</tr>
<tr>
<td>25</td>
<td>The use of cell-phones and Walkmans in public places 0.52</td>
</tr>
<tr>
<td>27</td>
<td>Difficulty in moving around on the pavement with prams, strollers, caddies, suitcases, etc. 0.50</td>
</tr>
<tr>
<td>28</td>
<td>Aggression between drivers 0.50</td>
</tr>
<tr>
<td>29</td>
<td>People who are impolite, nervous or aggressive in public places 0.43</td>
</tr>
<tr>
<td>35</td>
<td>People who throw out bits of paper or other rubbish on the street 0.43</td>
</tr>
<tr>
<td>32</td>
<td>People who let their dogs to leave their mess just anywhere 0.42</td>
</tr>
<tr>
<td>30</td>
<td>Lack of planning for the elderly or the handicapped 0.34</td>
</tr>
<tr>
<td>Factor 6—Lack of efficiency due to population density ($\sigma = 0.63$)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Crowds in the supermarkets on busy days and at certain hours of the day 0.65</td>
</tr>
<tr>
<td>36</td>
<td>Having to queue up for administrative services, government offices etc. 0.60</td>
</tr>
<tr>
<td>34</td>
<td>People who walk too slowly in public places 0.50</td>
</tr>
<tr>
<td>29</td>
<td>Getting stuck in a crowd 0.46</td>
</tr>
<tr>
<td>Factor 7—An insecure and run-down living environment ($\sigma = 0.81$)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Blocks of flats that are run-down or tagged, with windows broken and graffiti, etc. 0.73</td>
</tr>
<tr>
<td>9</td>
<td>Groups of youths on the staircases, in hallways, or in the parking areas of blocks of flats 0.65</td>
</tr>
<tr>
<td>23</td>
<td>Blocks of flats that are poorly maintained in my neighborhood 0.65</td>
</tr>
<tr>
<td>31</td>
<td>Lack of cleanliness in public places 0.56</td>
</tr>
<tr>
<td>30</td>
<td>The attitudes of certain youths in public places 0.52</td>
</tr>
<tr>
<td>15</td>
<td>Large housing-units directly next to each other (high-rises, row-houses) 0.51</td>
</tr>
<tr>
<td>16</td>
<td>Badly lit streets 0.44</td>
</tr>
<tr>
<td>19</td>
<td>Neighbours who don’t care about the noise they make 0.39</td>
</tr>
</tbody>
</table>
could potentially and personally become a victim of aggression at home or in the street.

Factor 2: Inconveniences associated with using public transport (10 items; eigenvalue = 3.8; 7.6% of variance; \(z = 0.86\)). This factor combines a number of items referring to the nuisances and inconveniences suffered within the physical environment of public transportation (discomfort, smells, overcrowding). It also includes situations which generate users’ feelings of powerlessness (putting up with public transportation strikes) in the context of the inability to control the amount of time their travel arrangements take (waiting for public transport).

Factor 3: Environmental annoyances and global environmental concerns (9 items; eigenvalue = 3.4; 6.7% of variance; \(z = 0.79\)). This factor essentially combines items focusing on noise and pollution, regardless of their origin. However, all the environmental nuisances associated with cars and other forms of private transportation are present in this dimension. Finally, this dimension includes other more general global-environment concerns: changes over time for the human population (increasing poverty) and ecology (lack of green space).

Factor 4: Lack of control over time due to the use of cars (4 items; eigenvalue = 2.3; 4.5% of the variance; \(z = 0.79\)). Here it is a matter of problems related to traffic congestion that elicit the individual’s feeling of lack of control, particularly over the use of time, and travel every day.

Factor 5: Incivilities encountered in the shared use of public spaces (10 items; eigenvalue = 1.9; 3.8% of the variance; \(z = 0.75\)). This factor contained items evoking the perception of the lack of rules of conduct regulating relationships between different groups of users who cross each other’s paths in public spaces: drivers, pedestrians, animal-owners, cyclists and roller-bladers, but it also concerned people who are more vulnerable because of their specific needs: the elderly, the disabled, people pushing prams, strollers and push-carts, etc. These deviations from behavioural norms also reflect aggressivity and insularity, and lack of respect for others.

Factor 6: Loss of efficiency related to the population density (4 items; eigenvalue = 1.6; 3.2% of the variance; \(z = 0.63\)). On this dimension, population density and crowding are associated with feelings of loss of control over time-use, related to the constant presence of other people who interfere with carrying out daily activities.

Factor 7: An insecure and run-down local environment (8 items; eigenvalue = 1.4; 3.0% of the variance; \(z = 0.81\)). This dimension includes the tangible signs of social disorder in the individual’s residential environment: poorly-maintained buildings, youths hanging out in groups in the stairways, noise at disturbing hours from the neighbours.

3.2. Socio-demographic and geographical variables

To examine the results of the dimensions according to the sex, age, occupational category and geographical location (Paris or the provinces), we first calculated the annoyance scores for each dimension (the sum of all the answers to items composing the factor, divided by the number of items) then performed Student’s t-test for sex and the geographical location and ANOVAs for the age and the occupational categories on the overall score of the whole scale and its sub-scores, with the exception of dimension 6 (“Loss of efficiency related to the population density”), which lacked sufficient internal consistency. Post hoc comparisons using Fisher’s Least Significant Difference Test (LSD) for \(2 \times 2\) planned comparisons were also performed. One can see in the tables below, showing the results for the whole sample in the last column, that the most disturbing dimensions for our respondents are those which concern incivilities in public places (factor 5), environmental annoyances (factor 3) and car traffic (factor 4).

Sex and perceived environmental annoyances: Table 3 presents the relationships between sex and the scale’s factorial dimensions. The overall score for women was higher than that of men, indicating that they perceived more environmental annoyances than men. This higher sensitivity was found for all dimensions with the exception of situations related to car-use and those involving the deterioration of the living environment.

Age and perceived environmental annoyances: Table 4 presents age differences in responses to the scale dimensions and the results of post hoc comparisons tests. For the overall score, there were no significant differences between the age-groups. Each dimension taken separately did,

---

**Table 3**

Sex and dimensions of perceived environmental annoyances

<table>
<thead>
<tr>
<th></th>
<th>Men ((N = 538))</th>
<th>Women ((N = 388))</th>
<th>Both sexes ((N = 926))</th>
<th>(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means (standard deviations)</strong></td>
<td></td>
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</tr>
<tr>
<td>1. Feeling of insecurity</td>
<td>1.85 (0.98)</td>
<td>2.11 (1.07)</td>
<td>1.96 (1.03)</td>
<td>***</td>
</tr>
<tr>
<td>2. Public transport</td>
<td>1.85 (1.02)</td>
<td>2.02 (1.03)</td>
<td>1.92 (1.03)</td>
<td>*</td>
</tr>
<tr>
<td>3. Environmental annoyances</td>
<td>2.43 (0.82)</td>
<td>2.63 (0.79)</td>
<td>2.51 (0.81)</td>
<td>***</td>
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<tr>
<td>4. Car traffic</td>
<td>2.52 (1.15)</td>
<td>2.47 (1.27)</td>
<td>2.50 (1.20)</td>
<td>n.s.</td>
</tr>
<tr>
<td>5. Incivilities in public places</td>
<td>2.75 (0.71)</td>
<td>2.88 (0.69)</td>
<td>2.81 (0.71)</td>
<td>**</td>
</tr>
<tr>
<td>7. Insecure and run-down living environment</td>
<td>2.27 (0.99)</td>
<td>2.23 (1.01)</td>
<td>2.25 (1.00)</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Mean of all dimensions</strong></td>
<td>2.15 (0.63)</td>
<td>2.28 (0.61)</td>
<td>2.21 (0.63)</td>
<td>**</td>
</tr>
</tbody>
</table>

\(p<.05, \text{**}p<.001, \text{***}p<.0001, \text{n.s.} = \text{not significant.}\)
however, generate significant differences. Feelings of insecurity increased with age: respondents aged over 65 were most sensitive to this and stand out from the rest of the sample. These older respondents, together with the 46–65 year-olds, were very sensitive to incivilities in public spaces. On the other hand, their score fell below the sample mean for environmental annoyances and constraints caused by the use of cars, compared to the other age-groups. For the 46–65 year-olds, we found, in addition to the characteristics of those aged over 65 (insecurity and incivilities), a high level of annoyance related to an insecure and run-down living environment.

On the other hand, the under-25 year-olds were less concerned with insecurity and incivilities—standing out from the rest of the sample on these dimensions. They perceived more problems related to public transportation, to cars and to environmental annoyances, similar to those in the following age-group (26–45), the latter having the highest means in the sample for these dimensions.

Occupational category and perceived environmental annoyances. Table 5 presents the dimensions of the scale by occupational category and the results of post hoc comparisons tests. In order to eliminate the small number of responses in several categories, ANOVAs were performed for the five categories containing >10% of the sample (n = 878, see table 1). The relatively few unskilled workers were combined with salaried workers. The overall picture that emerges is that environmental annoyances are indeed related to occupational category: the highest scores were obtained for unskilled/salaried workers, followed by the intermediary professions.

Unskilled/salaried workers and pensioners have similar profiles of perceived environmental annoyances, resembling each other on three dimensions: they scored highest in the sample for feelings of insecurity, incivilities and a
run-down living environment. The highest scores for perception of environmental nuisances were found in this category of unskilled/salaried workers, close to those of intermediary professionals on this dimension and different from those of pensioners, the category for which the annoyance level was weakest in the sample.

In the dimension relating to car traffic, it was those in the intermediary and higher occupational categories who complained the most. Students scored below or equal to the sample mean in all these domains, except for evaluating the inconveniences of public transport. Nevertheless, no significant differences were found between the social categories in annoyance with public transport. Students deviated from the rest of the sample with a low score for perception of incivilities.

Geographical location and perceived environmental annoyances: For the overall score, we did not find any significant difference between those living in the Paris region and those living in large towns or cities in the provinces in their perception of environmental annoyances. This was also the case for two dimensions: “feelings of insecurity” and “insecure and run-down living environment”. Respondents living in the provinces expressed greater displeasure with environmental annoyances, car traffic and incivilities than

Table 5
Occupational categories and dimensions of perceived environmental annoyances

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<thead>
<tr>
<th></th>
<th>Senior Prof. (N = 261)</th>
<th>Intermed. Prof. (N = 147)</th>
<th>Workers/employees (N = 144)</th>
<th>Pensioners (N = 223)</th>
<th>Students (N = 103)</th>
<th>All categories (N = 878)</th>
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<tr>
<td>Means (standard deviations) and results of post-hoc comparisons tests</td>
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<tr>
<td>1. Feeling of insecurity</td>
<td>1.74 (0.95)</td>
<td>1.80 (1.02)</td>
<td>2.08 (1.01)</td>
<td>2.25 (1.05)</td>
<td>1.84 (1.03)</td>
<td>1.95 (1.02)</td>
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<tr>
<td>2. Public transport</td>
<td>1.82 (0.89)</td>
<td>1.80 (0.98)</td>
<td>1.78 (0.98)</td>
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<td>1.88 (0.82)</td>
<td>1.78 (0.92)</td>
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<tr>
<td>3. Environmental annoyances</td>
<td>2.43 (0.84)</td>
<td>2.72 (0.76)</td>
<td>2.72 (0.74)</td>
<td>2.34 (0.79)</td>
<td>2.51 (0.78)</td>
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<tr>
<td>4. Car traffic</td>
<td>2.60 (1.20)</td>
<td>2.67 (1.14)</td>
<td>2.52 (1.19)</td>
<td>2.30 (1.21)</td>
<td>2.48 (1.27)</td>
<td>2.51 (1.20)</td>
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<tr>
<td>5. Incivilities in public places</td>
<td>2.76 (0.67)</td>
<td>2.76 (0.73)</td>
<td>2.92 (0.61)</td>
<td>2.95 (0.73)</td>
<td>2.51 (0.76)</td>
<td>2.80 (0.70)</td>
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<td>Senior Prof.</td>
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<tr>
<td>Students</td>
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<tr>
<td>7. Insecure and run-down living environment</td>
<td>2.16 (0.91)</td>
<td>2.23 (1.00)</td>
<td>2.42 (0.98)</td>
<td>2.29 (1.13)</td>
<td>2.10 (0.88)</td>
<td>2.24 (0.99)</td>
<td>n.s. (.06)</td>
</tr>
<tr>
<td>Senior Prof.</td>
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<tr>
<td>Students</td>
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<tr>
<td>Mean of all dimensions</td>
<td>2.23 (0.53)</td>
<td>2.31 (0.58)</td>
<td>2.39 (0.55)</td>
<td>2.24 (0.67)</td>
<td>2.24 (0.54)</td>
<td>2.28 (0.58)</td>
<td>*</td>
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</tbody>
</table>

*p < .05, **p < .001, ***p < .0001, n.s. = not significant.
Table 6
Geographical location and dimensions of perceived environmental annoyances

<table>
<thead>
<tr>
<th></th>
<th>Paris and close suburbs</th>
<th>Provinces</th>
<th>All groups</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 351)</td>
<td>(N = 575)</td>
<td>(N = 926)</td>
<td></td>
</tr>
<tr>
<td>Means (standard deviations)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Feeling of insecurity</td>
<td>1.93 (0.98)</td>
<td>1.97 (1.05)</td>
<td>1.96 (1.03)</td>
<td>n.s.</td>
</tr>
<tr>
<td>2. Public transport</td>
<td>2.27 (0.79)</td>
<td>1.71 (0.93)</td>
<td>1.92 (1.03)</td>
<td>***</td>
</tr>
<tr>
<td>3. Environmental annoyances</td>
<td>2.44 (0.82)</td>
<td>2.55 (0.80)</td>
<td>2.51 (0.81)</td>
<td>*</td>
</tr>
<tr>
<td>4. Incivilities in public places</td>
<td>2.21 (1.32)</td>
<td>2.66 (1.08)</td>
<td>2.50 (1.20)</td>
<td>***</td>
</tr>
<tr>
<td>5. Incivilities in public places</td>
<td>2.73 (0.72)</td>
<td>2.85 (0.69)</td>
<td>2.81 (0.71)</td>
<td>*</td>
</tr>
<tr>
<td>6. Insecure and run-down living environment</td>
<td>2.19 (1.01)</td>
<td>2.29 (0.98)</td>
<td>2.25 (1.00)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Mean of all dimensions</td>
<td>2.22 (0.61)</td>
<td>2.20 (0.64)</td>
<td>2.21 (0.63)</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

*p < .05, **p < .001, ***p < .0001, n.s. = not significant.

Parisiens. We found a Paris/provinces effect for the dimension of inconveniences associated with public transport: lower in the provincial towns and cities, higher in Paris and the nearby suburbs (see Table 6).

4. Discussion

The overall objective of the study presented here was to pursue our work in constructing an instrument to assess environmental annoyances as perceived by people living in large cities. Studying a small sample of urban residents in two initial pilot studies enabled us to create an inventory of situations occurring on a daily basis that might be perceived as potentially stressful for city-dwellers. This procedure allowed us to establish the construct validity of the measure of urban annoyances, by making sure that the conceptual validity did not reflect just our personal and theoretical conceptions as researchers, and that the items corresponded adequately to the targeted concept and finally, that they provided an adequate reflection of the phenomenon we were studying.

The scale of perceived environmental annoyances in urban settings that we constructed is robust. Reduced from 68 items in the original version to 51 items, it is both multidimensional and sufficiently homogenous to calculate an overall score of perceived environmental annoyances (Cronbach’s $\alpha = 0.91$). This score takes into account the intensity of the annoyance individuals feel in the face of different sources of nuisance inherent in daily life in large cities. Analysis of the scale’s factorial structure enabled us to extract seven principal dimensions, six of which are sufficiently homogenous to calculate sub-scores of the scale’s intensity in each of these dimensions.

With the aim of facilitating the use of this instrument in urban research, we propose in Annex 2 a shorter version of the scale, reduced to 28 items. This abbreviated version respects the factorial structure that emerged in studying the scale’s properties provides an equivalent number of items by dimension, that of the GEMPU scale with 51 items obtained from the respondents in the first pilot study. For this abbreviated version, the items in factors 4 and 6 have been combined in a new dimension (“Lack of control over time due to driving cars and population density”). This short version has satisfactory internal consistency (Cronbach’s $\alpha = 0.85$), as do most of the sub-dimensions, given the lower number of items per dimension (Cronbach’s $\alpha$: between 0.66 and 0.86).

The scale’s factorial structure confirms the value of considering physical, social and functional dimensions in assessing how people perceive urban life.

The physical dimension of urban nuisances has already been explored in detail through research on environmental stressors (Campbell, 1983; Evans & Jacobs, 1982). This is reflected in factor 3 in our scale: environmental nuisances. This factor consists of items that evoke perceptible physical nuisances, such as the noise and, particularly, the pollution that chronically impinge on city-dwellers. Pollution has rightly caused public authorities to become concerned, as a result of both the repercussions on people’s health and the threats it poses to climatic changes on a global scale. We should note in this context that the more individuals perceive pollution to be serious, the more angry and anxious they become about it (Zeidner & Shechter, 1988). Research has shown that ecological worries and sensitivity to the deterioration of the global environment are associated with increased somatic complaints and a change in attitudes and practices with respect to health (Petrie et al., 2001).

One notes moreover that this factor also contains a more general reference to other planetary concerns associated with trends towards globalization. In this sense, the loading of increasing urban poverty on this factor can be seen as consistent with the somewhat more abstract and less direct perception of the increase of our planet’s ills, related to ecological concerns that are being expressed. This interpretation is consistent with that of Farrell (2005), whose research on perceptions of the homeless found that such perceptions contradicted the usual conception of the phenomenon of homelessness as an indicator of urban dysfunction, triggering feelings of fear (Perkins et al., 1992).

The social dimension associated with living in large cities was reflected in three of the factors in our scale: feelings of insecurity (factor 1), incivilities in the sharing of public
spaces by different users (factor 5) and the insecure and run-down living environment (factor 7).

Factor 7 refers back to the poor quality of residential conditions, most often associated with social problems (unhealthy housing, large housing estates, disadvantaged neighbourhoods). This factor is linked both to social incivilities that are enacted in the subject’s immediate environment (while the incivilities in factor 2 are expressed in the public space of the streets) and with the feeling of insecurity related to the physical context (e.g., street lighting) and its social context (e.g., the attitudes of certain youth). Certain items could have been found in factor 1 (e.g., poorly-lit streets) and, conversely, other items in factor 1 could have been strongly correlated with factor 7 (e.g., the presence of people who are provocative or are marginal).

One notes that a clear incivility dimension associated with the sharing of public spaces by different users was found in our study. Such uncivil behaviour between city-dwellers emerged as the most irritating dimension of urban nuisances for city-dwellers (mean score = 2.80). This finding confirms earlier research demonstrating the negative effect of urban life on social bonding (Korte, 1980; Milgram, 1970).

The functional dimensions of the scale involve nuisances related to travelling around in the city, either using public transport (factor 2), driving cars (factor 4) or travelling around on foot (factor 6).

Some of the situations that make up these factors may reflect the inadequacy of services provided to satisfy people’s daily needs (the frequency of public transportation, lack of parking, the opening-hours of public services). Other research conducted in France has shown a correlation between the quality of the network of underground transport in Paris and the negative evaluation of the quality of the physical environment of the metro system (Moch & Bonnefoy, 1997).

A further point common to these three factors is the annoyance due to the density of the population in the city (overcrowding in public transport, traffic jams, crowds), all of which one can find in the literature on the ambient stressors in large cities (Epstein, 1982) and which relates to the question of the regulation of private space and intimacy in the urban ecosystem (Morval, 1981).

But what emerges most forcefully in the three mobility contexts that characterize these three factors is the disturbing nature of lack of temporal control over travelling, triggering in the users a feeling of powerlessness.

Stress reactions to the lack of predictability of how long the trajectory of public transport will last during rush hours have already been documented (Evans et al., 2002). Similarly, the stress-level of car-drivers who commute has been associated with the perception of the inability to predict how much time will be spent on the road (Kluger, 1998; Koslowsky et al., 1995). However, the feeling of powerlessness and of spatio-temporal constraints, specific to the urban way of life, can also be understood in a larger contextual perspective. In a study on motorists’ experiences, Lupton (2002) considered road-rage as one response to the stress of urban life, not only because of traffic congestion, but also due to the pressures, particularly around the question of time, resulting from the competitive world of work.

The relationships between the dimensions of the scale presented above and socio-demographic variables show the greater weight given to the different dimensions of perceived urban nuisances by women than by men, with the exception of those related to driving cars and the run-down and insecure living environment. The heightened sensitivity of women to the disturbances of daily life has been found in other research (Badoux-Lévy & Robin, 2002; Matuszek, Nelson, & Quick, 1995). This is consistent with gender-based research, which support the notion that women do have a specific way of apprehending the urban environment (Coutras, 2003; Hanson & Pratt, 1995).

The results also show the differential sensitivity to the scale’s dimensions as a function of occupational category and age. Job-categories play an important role: unskilled workers/employees appear to “screen out” the overall perceived environmental annoyance the most effectively; this is most evident in the physical and social dimensions (insecurity, incivilities, the run-down living environment, environmental nuisances). One could link this result with the lower quality of housing of those with lower-incomes and limited opportunities to avoid constraints which would increase their exposure and reduce their sensitivity to urban stressors. On the other hand, it is quite probable that the low level of overall perceived environmental annoyance felt by managers and senior professionals that we found in our research can be explained by their autonomy, as much social as occupational, and their access to urban resources which accord them privileges in their living conditions, which would in turn minimize the impact of urban stressors on them.

As for age differences affecting how the subjects responded to the scale, we found that the oldest group of city-dwellers in our sample (age-range 66–92) were above all sensitive to the negative social aspects of the urban context. Since this cannot be explained by low-quality residential accommodation (the score of this age-group was below the mean on factor 7), we can interpret this result in terms of greater perceived vulnerability by the elderly to signs of social disorder, whereas their way of life, particularly offering more choice in the time of day they travel and the form of transport they use, allows them to live at a rhythm that protects them from other types of aversive urban situations. Yet we should note that the low level of concern of the elderly with environmental annoyances, relative to the other age groups, contradicts what has been reported in some earlier studies (Badoux-Lévy & Robin, 2002; Zeidner & Shechter, 1988).

In summary, the variations in the dimensions of perceived urban annoyances depending on socio-demographic characteristics suggest directions for subsequent research, reflecting mechanisms which vary in importance,
but which, for some city-dwellers, probably interact: activities undertaken in the urban space that vary according to age, sex and type of occupation (Bonaiuto & Bonnes, 1996); the quality of residential space and of the neighbourhood in which one lives, clearly related to the socio-economic variable (Pacione, 2003); and, finally, the question of perceived vulnerability relative to the insecurity and inequality dimensions, for which we can hypothesize that this process is a concern shared by women, the elderly and the low-income populations.

As for geographical location, we expected to find that Parisians would have been more annoyed by the environmental nuisances than residents in other cities. Compared to provincial towns and cities, the Paris region, as is the case for all major metropolitan centres, is characterized by its highly extended spatial scale, creating major spatio-temporal constraints in daily living and contributing to the social representation of the Parisian way of life as “stressful”. In our study, this hypothesis was confirmed only in the domain of inconveniences related to the use of public transportation. One should point out that many Parisians do not own cars, due to difficulties in diving and parking in central Paris and the high priority given to improving the network of public transportation in the capital. Thus, within the 20 arrondissements that make up Paris, only 19% of the active population travel to work by car, according to data from the National Institute for Statistics and Economic Studies (INSEE; see Niel, 1998). But, while the public transit system is more highly developed in Paris than in the provinces, its failure to satisfy the demands of users is becoming increasingly evident (e.g., the network is highly centralized while commuter transport between suburbs is rising, overcrowding during rush hours, and numerous technical problems and strikes which interrupt or slow down the traffic).

The lower level of perception of three categories of annoyance—environmental, the use of cars and incivilities—by Parisians compared to those living in provincial cities—is harder to interpret. We need to point out that in their representations of their country, the French have formed dichotomized categories: “Paris/suburbs” for those living in the greater Paris region (the Île-de-France) and “Paris/provinces” for those living in the rest of France. It is possible that the representation of Paris as “stressful” comes particularly from those living in the provinces and not from Parisians themselves. One could suggest that for these latter, the richness of urban resources in the national capital, its symbolic valence and its strong identity-aspects, might act as filters which reduce the perception of environmental inconveniences. This interpretation is consistent with the finding of Felonneau (2004), who found in her study the perception of incivilities in urban setting that this was mediated by psychological processes related to residents’ socio-spatial identity and by their positive or negatives ideological overall representations of the urban environment.

5. Conclusion

The scale of perceived environmental annoyances in urban settings emerges as an interesting instrument for urban research which, until now, has not had access to an instrument that includes the physical, social and functional aspects of urban environmental annoyances and how these are perceived by their residents.

Our research, however, contains a number of limitations, particularly in terms of its methodology. We should recognize that while our sample contained a relatively large number of French residents and in general reflected the socio-demographic and geographical characteristics of the population targeted, the scale made no pretense to being representative of the French population. Moreover, the scale was constructed specifically within the context of France and, while the dimensions of urban nuisances brought to light in this study are certainly present in the large cities of other countries, it would be injudicious to use our scale in other settings without initially adapting it to the socio-cultural contexts that exist in other countries.

We hope the scale will contribute to the debate on the evaluation of objective and subjective characteristics of environmental quality (Marans, 2003). For example, this instrument could be used advantageously by urban planners and city officials responsible in certain municipalities for measuring the level of urban nuisances perceived by residents. If the scale were to be used in such contexts it would be appropriate to identify a representative sample of those living in the target-city. Depending on the results obtained and the dimensions of the specific urban annoyances specifically mentioned by the residents, urban decision-makers could envisage giving priority to certain city-planning options destined to improve the quality of life of the inhabitants. A second application of the scale would be to use it in a follow-up of the impact of urban projects after they have been implemented.

This instrument could also contribute to other research on issues concerning how city-dwellers adapt to the urban way of life. In particular, it would be interesting to understand better the role of processes such as perceived control, causal attribution and coping strategies that mediate between acute and chronic exposure to environmental stressors and psychological distress (Evans & Stecker, 2004). This perspective could contribute to identifying the conditions of the urban setting that are deleterious to the health of city-dwellers, or those that are beneficial and susceptible to improving the quality of life and well-being of populations, by offering them more control over the contexts in which they live (Jutras, 2002).

Acknowledgements

We would like to thank our colleagues, Jean-Marc Bernard, for his help with the methodology of the statistical analyses, Eugénia Ratiu and Anne-Marie Lavard for their participation in the preliminary studies.
## Appendix A

Scale for measuring perceived environmental annoyances in urban settings (Table A.1).

Scale for measuring perceived environmental annoyances in urban settings short version (Table A.2).

<table>
<thead>
<tr>
<th>Table A.1</th>
<th>Scale for measuring perceived environmental annoyances in urban settings*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Being late because of traffic</td>
</tr>
<tr>
<td>2.</td>
<td>Cars badly parked</td>
</tr>
<tr>
<td>3.</td>
<td>Having to be constantly on guard</td>
</tr>
<tr>
<td>4.</td>
<td>Public transport which is not frequent enough</td>
</tr>
<tr>
<td>5.</td>
<td>Sudden noises from cars and other vehicles (sirens, horns, the squealing of tires)</td>
</tr>
<tr>
<td>6.</td>
<td>Drivers of cars who don’t respect pedestrians and cyclists</td>
</tr>
<tr>
<td>7.</td>
<td>Lack of, or dangerousness of, bicycle paths</td>
</tr>
<tr>
<td>8.</td>
<td>Returning home alone in my neighborhood</td>
</tr>
<tr>
<td>9.</td>
<td>Groups of youths on the staircases, in hallways, or in the parking areas of blocks of flats</td>
</tr>
<tr>
<td>10.</td>
<td>Blocks of flats that are run-down or tagged, with windows broken and graffiti, etc.</td>
</tr>
<tr>
<td>11.</td>
<td>Crowds in the supermarkets on busy days and at certain hours of the day</td>
</tr>
<tr>
<td>12.</td>
<td>The increase in pollution from cars</td>
</tr>
<tr>
<td>13.</td>
<td>The relative discomfort of public transport</td>
</tr>
<tr>
<td>14.</td>
<td>Losing time in traffic jams or generally in travelling</td>
</tr>
<tr>
<td>15.</td>
<td>Large housing-units directly next to each other (high-rises, row-houses)</td>
</tr>
<tr>
<td>16.</td>
<td>Badly lit streets</td>
</tr>
<tr>
<td>17.</td>
<td>Over-crowding in public transport</td>
</tr>
<tr>
<td>18.</td>
<td>The increase in the number of car in the streets</td>
</tr>
<tr>
<td>19.</td>
<td>Neighbours who don’t care about the noise they make</td>
</tr>
<tr>
<td>20.</td>
<td>Numerous changes in routes and/or forms of transport</td>
</tr>
<tr>
<td>21.</td>
<td>Unhealthy air in the streets</td>
</tr>
<tr>
<td>22.</td>
<td>Being caught in a traffic jam and not being able to do anything about it</td>
</tr>
<tr>
<td>23.</td>
<td>Blocks of flats that are poorly maintained in my neighborhood</td>
</tr>
<tr>
<td>24.</td>
<td>Driving around for an hour looking for a parking space</td>
</tr>
<tr>
<td>25.</td>
<td>The use of cell-phones and Walkmans in public places</td>
</tr>
<tr>
<td>26.</td>
<td>Continuous noise in the streets</td>
</tr>
<tr>
<td>27.</td>
<td>Difficulty in moving around on the pavement with prams, strollers, caddies, suitcases, etc.</td>
</tr>
<tr>
<td>28.</td>
<td>Aggression between drivers</td>
</tr>
<tr>
<td>29.</td>
<td>Getting stuck in a crowd</td>
</tr>
<tr>
<td>30.</td>
<td>The attitudes of certain youths in public places</td>
</tr>
<tr>
<td>31.</td>
<td>Lack of cleanliness in public places</td>
</tr>
<tr>
<td>32.</td>
<td>Lack of planning for the elderly or the handicapped</td>
</tr>
<tr>
<td>33.</td>
<td>Putting up with timetable changes or delays in public</td>
</tr>
<tr>
<td>34.</td>
<td>People who walk too slowly in public places</td>
</tr>
<tr>
<td>35.</td>
<td>People who let their dogs to leave their mess just anywhere</td>
</tr>
<tr>
<td>36.</td>
<td>Having to queue up for administrative services, government offices, etc.</td>
</tr>
<tr>
<td>37.</td>
<td>People who are impolite, nervous or aggressive in public places</td>
</tr>
<tr>
<td>38.</td>
<td>Thinking that one might be a victim of assault in a public place</td>
</tr>
<tr>
<td>39.</td>
<td>Thinking that one might be aggressed in public transport or shopping malls</td>
</tr>
<tr>
<td>40.</td>
<td>Being late because of an incident in the transportation system</td>
</tr>
<tr>
<td>41.</td>
<td>Roller-bladers or cyclists that don’t pay attention to others</td>
</tr>
<tr>
<td>42.</td>
<td>Not having an alternative when there is a problem with the usual means of public transport</td>
</tr>
<tr>
<td>43.</td>
<td>Thinking one might be aggressed at home or in my block of flats</td>
</tr>
<tr>
<td>44.</td>
<td>The smells in public transport vehicles</td>
</tr>
<tr>
<td>45.</td>
<td>Increased poverty in the city</td>
</tr>
<tr>
<td>46.</td>
<td>Lack of green spaces near where I live</td>
</tr>
<tr>
<td>47.</td>
<td>The increase in industrial pollution</td>
</tr>
<tr>
<td>48.</td>
<td>Encountering people who provoke you or marginal people in public places</td>
</tr>
<tr>
<td>49.</td>
<td>People who throw out bits of paper or other rubbish on the street</td>
</tr>
<tr>
<td>50.</td>
<td>Putting up with public transportation strikes</td>
</tr>
<tr>
<td>51.</td>
<td>Having to wait for public transportation</td>
</tr>
</tbody>
</table>

*This scale was administered in French. The present translation should not be considered as definitive: It has not been validated and is provided for illustrative purposes and for comprehension by readers. The French scale described in this article—“L’échelle d’évaluation de la Gêne Environnementale Perçue en Milieu Urbain” (or GEPMU, for short)—is available on request from the first author at the address indicated on the title page.
Feeling of insecurity: Items 20, 21, 22 ($\alpha = 0.86$).
Inconveniences associated with public transport: Items 7, 10, 27, 28 ($\alpha = 0.73$).
Environmental annoyances and global environmental concerns: Items 8, 11, 14, 23, 24, 25 ($\alpha = 0.73$).
Inicivilities encountered in shared public spaces: Items 2, 3, 15, 19, 26 ($\alpha = 0.66$).
Insecure and run-down living environment: Items 4, 6, 9, 16, 17 ($\alpha = 0.73$).
Lack of control over time due to driving cars and population density: Items: 1, 5, 12, 13, 18 ($\alpha = 0.70$).

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