Supplementary Materials

Supplementary S1—In Field Questionnaire

A1: Name of the area

A2: Atmospheric condition during the interview

A3: Estimated temperature

A4: Comfort of the interviewer

B1: Which is the reason for the visit?

B2: Can you state, in order of importance, the three sounds or noises that characterize this place?

a. road traffic b. other transport (train, plane, ...) c. voices d. noise from construction sites, machinery e. natural noises (water, wind, ...) f. animals g. facilities / services (air conditioners, boilers, ...) h. music i. business activities j. other (…)

B3: Can you mark, in order of importance, the three visual elements that characterize this place?

a. car in transit b. cars parked c. people d. billboard e. trash f. water (fountains, river, ...) g. facilities / services h. monuments / historic buildings i. animals j. business k. plants / flowers l. other (…)

B4 How important are peace and quiet in this place?

1. Irrelevant 2. Pretty important 3. Very important

B5 Is there any element that reduces the tranquillity of this place? If so, which one?

a. car in transit b. car parked c. people d. adverting board e. trash f. presence of shipyards / machinery g. other transport (train, plane, ...) h. music i. water (fountains, river, ...) j. facilities / services k. monuments / historic buildings l. animals m. business n. plants / flowers o. other (…)

B6 What elements could increase the tranquillity of this place?

a. people's voices b. laughter / scream of babies c. natural noises (water, wind) d. animals e. music f. plants / flowers g. monuments / historic buildings h. equipment (games, benches, ...) i. business j. water (fountains, river, ...) k. better cleaning l. pedestrian area / traffic reduction m. other (…)

B7 On a scale from 1 (for nothing) to 5 (extremely) how quiet is this place?

B8 After being in this place, how do you feel?

1. more relaxed 2. less relaxed 3. no change

B9 How do you judge this place from a noise point of view?

1. very silent 2. quite silent 3. neither silent nor noisy 4. noisy enough 5. very noisy

C1 How long does it take to reach this place from where you resides / works?

1. less than 15 min 2. 15–30 min 3. 30–60 min 4. more than 1 h

C2 How do you reach this place?

1. walk 2. bicycle 3. public transport 4. motorcycle / scooter 5. car

C3 How often do you visit this place?

1. every day 2. one or more times a week 3. once a month 4. more rarely 5. tourism

C4 In relation to the perceived level of noise, how do you judge the environment in which you resides?

1. very silent 2. quite silent 3. neither silent nor noisy 4. noisy enough 5. very noisy

C5 Your address

C6 On a scale from 1 (for nothing) to 5 (extremely) how pleasant is this place?

C7 On a scale from 1 (not at all) to 5 (extremely) how much do you feel sensitive to noise?

C8 In relation to weather conditions, how comfortable do you feel this day?

1. not comfortable 2. neutral 3. comfortable

C9 Can you tell me your age range?

1. <18 years 2. 18–26 years 3. 27–35 years 4. 36–50 years 5. 51–65 years 6. >65 years

C10 Can you tell me your level of education?

1. primary school 2. secondary school 1st grade 3. secondary school 2nd grade 4. graduate 5. postgraduate (master, doctorate)

C11 Gender

After the collection, each questionnaire has been processed and the responses categorized into variables and possible values to be used in the model.

A2: The weather conditions were considered as variables "0" or "1", respectively indicating the absence and presence of four meteorological elements expected as responses. A total of four variables were used: A21, A22, A23, A24, whether or not there were rain, wind, clouds, sun. A3: The temperature has been reported without any encoding, such as number of degrees Celsius measured during the interviews. A4: The comfort experienced by the interviewer provided three variables (A41, A42, A43), where 1 the degree of perceived comfort. B1: The reason for the visit was indicated by assigning value "1" to the response indicated by the interviewee and value "0" to the rest. The variables used are 7, from B11 to B17. B2: The three sound sources that characterize the investigated sites have been coded in three different ways in order to identify which of the different interpretations can best contribute to the definition of output variables. In a first approach, three variables were considered: B21, B22, B23, representing sound sources identified respectively as first, second and third. The variables have as many levels, such as the different sound sources, and assume forms B21a, B21b, ..., B22a, B22b, ..., B23a, B23b, ... depending on the sources identified. Lower case letters indicate the code assigned to each of them. A second approach has envisaged the definition of as many variables as are the sources identified and the assignment to each of them of the value "1" when it was mentioned by the respondents, indifferently as before, second or third, and "0" otherwise. In a third approach the sound sources have been grouped on the base of the preferences expressed by the respondents as "positive" "Indifferent" or "negative". Three variables were then defined, respectively B2pos, B2ind, B2neg, which assume value "1" if at least one of the three sources has been indicated, "0" otherwise. B3: The responses to visual elements have been elaborated in the same way as the sound sources. Three different approaches were used, the first considering the order in which the visual elements were identified, the second whether or not the different elements, the third the presence of positive, indifferent or negative elements. B4: Respondents' opinion on the importance of peace and quiet in the places investigated was coded into three variables B41, B42, B43 corresponding to the three expected answers. B5: The presence or absence of disturbance elements was considered by assigning values "1" or "0" respectively to variable B5 in order to assess the influence of one or more sources of disturbance identified on the output variables. B6: As in the previous question, the influence of identified location deficiencies is evaluated by assigning value "1" to variable B6 in case of one or more answers provided, value '0' otherwise. B7: The tranquillity given to the site was maintained as a whole number between 1 and 5. B8: The effect of visit on mood was coded by assigning value "1" to the given response and value "0" to the others. The variables used are B81, B82, B83. B9: The noisiness given to the site was maintained as a whole number between 1 and 5. C1: The time taken to reach the investigated site was encoded by assigning value "1" to the given response and value '0' to the others. The four the variables used are C11, C12, C13, C14. C2: As for question C1, the vehicle used was coded in 5 variables, C21 to C25, "1" is for the answered one. C3: Also for the visits frequency, 5 variables were used, C31–C35, "1" corresponding to the given answer and "0" the others. C4: The noise judgment reported on the living environment of each interviewee was maintained as a whole number between 1 and 5. C5: The answers given to question C5 were not enough to be considered in the model set-up. C6: The pleasantness given to the site was maintained as a whole number between 1 and 5. C7: Self-evaluation of noise sensitivity was maintained as a whole number between 1 and 5. C8: The comfort experienced by respondents led to three variables (C81, C82, C83) with "1" for the degree of perceived comfort. C9: The age has been encoded in 6 variables, C91–C96, with "1" for the answered one. C10: The title of study was coded in 5 variables, C101–C105, "1" for the corresponding one. C11: The gender is represented by two variables, C11M and C11F; the one corresponding to sex (M = male, F = female) assumes the value "1" and "0" the other.

Supplementary S2—Models

Several different models were constructed in order to identify the objective variables on which base the judgments given by the respondents. The three output variables chosen are the perceived tranquillity (question B7), which is the main objective of the work, noisiness (question B9) and judgment of pleasantness assigned to the place (question C6). For each of these outputs, a template including all variables was first created to perform a preliminary survey of what included in the linear model. Subsequently, the non-significant variables were gradually removed to obtain the most compact model possible in each case and provide a wider explanation of the variability of the output. What follows describes the construction of the models, separating the processing according to the output variable.

B7 - Tranquillity

The first built model, as mentioned, includes all variables. DL is the difference L_{A10}–L_{A90}.

mod.B7.tot <- glm(B7 ~ L_{Aeq} + L_{A10} + L_{A90} + DL + A22 + A23 + A24 + A3 + A42 + A43 + B11 + B12 + B13 + B14 + B15 + B16 + B17 + B21 + B22 + B23 + B2a + B2b + B2c + B2d + B2e + B2f + B2g + B2h + B2i + B2j + B2k + B2l + B2pos + B2ind + B2neg + B31 + B32 + B33 + B3a + B3b + B3c + B3d + B3e + B3f + B3g + B3h + B3i + B3j + B3k + B3l + B3m + B3n + B3pos + B3ind + B3neg + B41 + B42 + B43 + B5 + B6 + B81 + B82 + B83 + B9 + C11 + C12 + C13 + C14 + C21 + C22 + C23 + C24 + C25 + C31 + C32 + C33 + C34 + C35 + C4 + C6 + C7 + C81 + C82 + C83 + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

The influence of the characteristics of the interviewees—gender, age, and degree of education—was evaluated through the model:

mod.B7.ana <- glm(B7 ~ L_{Aeq} + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

where the L_{Aeq} appears to keep the reference to the different areas investigated through the measured noise equivalent level.

The influence of the place's habit and habit was then evaluated. First in a single pattern then first separating the habits and at the end the attitude:

mod.B7.attabi <- glm(B7 ~ L_{Aeq} + B11 + B12 + B13 + B14 + B15 + B16 + B17 + B41 + B43 + B81 + B82 + C11 + C12 + C13 + C21 + C22 + C23 + C24 + C25 + C31 + C32 + C33 + C34 + C35, family = gaussian, data = data.field)

mod.B7.abi <- glm(B7 ~ L_{Aeq} + B11 + B12 + B13 + B14 + B15 + B16 + B17 + C11 + C12 + C13 + C21 + C22 + C23 + C24 + C25 + C31 + C32 + C33 + C34 + C35, family = gaussian, data = data.field)

mod.B7.att <- glm(B7 ~ L_{Aeq} + B41 + B43 + B81 + B82, family = gaussian, data = data.field)

The influence of meteorological conditions was evaluated with the model:

mod.B7.meteo <- glm(B7 ~ L_{Aeq} + A22 + A23 + A24 + A3 + C81 + C82 + C83, family = gaussian, data = data.field)

The effect of the detected sound sources has been investigated with three different models, using the three approaches in their classification. By retaining the distinction between the first, second and third source identified, the model was created:

mod.B7.acu.1 <- glm(B7 ~ L_{Aeq} + B21 + B22 + B23, family = gaussian, data = data.field)

Considering only the mentioned sources, excluding the answers given in less than 1% of cases:

mod.B7.acu.2 <- glm(B7 ~ L_{Aeq} + B2a + B2b + B2c + B2d + B2e + B2f + B2h + B2i + B2k + B2l, family = gaussian, data = data.field)

By grouping the mentioned sources into positive, indifferent or negative:

mod.B7.acu.3 <- glm(B7 ~ L_{Aeq} + B2pos + B2ind + B2neg, family = gaussian, data = data.field)

By employing the positive, indifferent or negative division approach, the visual elements identified have been added to the mod.B7.acu.3 model:

mod.B7.acu.B2B3 <- glm(B7 ~ L_{Aeq} + B2pos + B2ind + B2neg + B3pos + B3ind + B3neg, family = gaussian, data = data.field)

With the data from the noise measurements the model was built:

mod.B7.acu <- glm(B7 ~ L_{Aeq} + L_{A10} + L_{A90} + DL, family = gaussian, data = data.field)

Finally, the tranquillity perception was contrasted with the other two output variables: perceived noise and pleasantness / pleasantness of the place:

mod.B7.B9C6 <- glm(B7 ~ B9 + C6, family = gaussian, data = data.field)

B9 - Noisiness

The first model built includes all the variables:

mod.B9.tot <- glm(B9 ~ L_{Aeq} + L_{A10} + L_{A90} + DL + A22 + A23 + A24 + A3 + A42 + A43 + B11 + B12 + B13 + B14 + B15 + B16 + B17 + B21 + B22 + B23 + B2a + B2b + B2c + B2d + B2e + B2f + B2g + B2h + B2i + B2j + B2k + B2l + B2pos + B2ind + B2neg + B31 + B32 + B33 + B3a + B3b + B3c + B3d + B3e + B3f + B3g + B3h + B3i + B3j + B3k + B3l + B3m + B3n + B3pos + B3ind + B3neg + B41 + B42 + B43 + B5 + B6 + B7 + B81 + B82 + B83 + C11 + C12 + C13 + C14 + C21 + C22 + C23 + C24 + C25 + C31 + C32 + C33 + C34 + C35 + C4 + C6 + C7 + C81 + C82 + C83 + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

The influence of the characteristics - age, gender, degree of education - is assessed with the model:

mod.B9.ana <- glm(B9 ~ L_{Aeq} + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

The effects of domestic noise and individual noise sensitivity are included in the model:

mod.B9.sen <- glm(B9 ~ L_{Aeq} + C4 + C7, family = gaussian, data = data.field)

The influence of the detected sound sources was investigated using the three different classification methods. Keeping the distinction between the first, second, and third sources identified:

mod.B9.acu.1 <- glm(B9 ~ L_{Aeq} + B21 + B22 + B23, family = gaussian, data = data.field)

Considering only the mentioned sources:

mod.B9.acu.2 <- glm(B9 ~ L_{Aeq} + B2a + B2b + B2c + B2d + B2e + B2f + B2h + B2i + B2k + B2l, family = gaussian, data = data.field)

By grouping sound sources into positive, indifferent or negative:

mod.B9.acu.3 <- glm(B9 ~ L_{Aeq} + B2pos + B2ind + B2neg, family = gaussian, data = data.field)

The influence of visual elements on noise has also been investigated perceived, using the third method of classification:

mod.B9.B2B3 <- glm(B9 ~ L_{Aeq} + B2pos + B2ind + B2neg + B3pos + B3ind + B3neg, family = gaussian, data = data.field)

Finally, a model with the data derived from the noise measurements was constructed:

mod.B9.acu <- glm(B9 ~ L_{Aeq} + L_{A10} + L_{A90} + DL, family = gaussian, data = data.field)

C6 - Pleasantness

The first model includes all the variables:

mod.C6.tot <- glm(C6 ~ L_{Aeq} + L_{A10} + L_{A90} + DL + A22 + A23 + A24 + A3 + A42 + A43 + B11 + B12 + B13 + B14 + B15 + B16 + B17 + B21 + B22 + B23 + B2a + B2b + B2c + B2d + B2e + B2f + B2g + B2h + B2i + B2j + B2k + B2l + B2pos + B2ind + B2neg + B31 + B32 + B33 + B3a + B3b + B3c + B3d + B3e + B3f + B3g + B3h + B3i + B3j + B3k + B3l + B3m + B3n + B3pos + B3ind + B3neg + B41 + B42 + B43 + B5 + B6 + B7 + B81 + B82 + B83 + B9 + C11 + C12 + C13 + C14 + C21 + C22 + C23 + C24 + C25 + C31 + C32 + C33 + C34 + C35 + C4 + C7 + C81 + C82 + C83 + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

The effect of the characteristics - age, gender, degree of education - is included in the model:

mod.C6.ana <- glm(C6 ~ L_{Aeq} + C91 + C92 + C93 + C94 + C95 + C96 + C101 + C102 + C103 + C104 + C105 + C11M + C11F, family = gaussian, data = data.field)

The effects of the meteorological conditions and the perceived comfort of respondents were investigated with the model:

mod.C6.meteo <- glm(C6 ~ L_{Aeq} + A22 + A23 + A24 + A3 + C81 + C82 + C83, family = gaussian, data = data.field)

The influence of the visual elements found on the pleasantness of the areas has been studied with three distinct models, using the three different methods used in the classification of visual elements. Keeping the distinction between the first, second and third element identified:

mod.C6.vis.1 <- glm(C6 ~ L_{Aeq} + B31 + B32 + B33, family = gaussian, data = data.field)

Considering each named element:

mod.C6.vis.2 <- glm(C6 ~ L_{Aeq} + B3a + B3b + B3c + B3d + B3e + B3f + B3g + B3h + B3i + B3j + B3k + B3l + B3m + B3n, family = gaussian, data = data.field)

By grouping visual elements into positive, indifferent or negative:

mod.C6.vis.3 <- glm(C6 ~ L_{Aeq} + B3pos + B3ind + B3neg, family = gaussian, data = data.field)

A last model was constructed considering the possible influence of the sound sources, combined with the visual elements identified, on the pleasantness, using the grouping of each of them in positive, indifferent or negative:

mod.C6.B2B3 <- glm(C6 ~ L_{Aeq} + B2pos + B2ind + B2neg + B3pos + B3ind + B3neg, family = gaussian, data = data.field)

In the following are the results obtained from the models, previously described in different order because the results regarding the noise perception and the pleasantness of the places are propaedeutic to that of tranquillity perception.

Noisiness

mod.B9.tot: a strong positive correlation ($p < 0.001$) with the L_{A10} statistical level and a negative correlation ($p < 0.01$) with L_{Aeq} came out; the nature of this latter correlation suggests that the results of this model are spoiled by artefacts derived from the inclusion of all variables. However, the correlations identified will be more thoroughly analysed with subsequent models. Some significant correlations ($p < 0.001$) emerged with different visual elements.

mod.B9.B2B3: correlations with age and level of interviewees' education were found, which will be verified in mod.B9.ana, and a strong negative correlation ($p < 0.001$) with perceived tranquillity.

mod.B9.ana: No significant relationship between personal data and perceived noise, which is in this model positively correlated only with L_{Aeq}.

mod.B9.sen: the individual sensitivity to the noise and noise of the home environment does not result having any influence on the perceived noise in the locations investigated, which is also positively correlated with L_{Aeq}.

mod.B9.acu.1: the perceived noise is positively correlated ($p < 0.001$) with L_{Aeq} and negatively ($p < 0.01$) in the detection of sound sources: aircraft, people, animals as the main source.

mod.B9.acu.2: The correlations with the individual sound sources identified, which emerged in the mod.B9.acu.1 model, are not found if ignoring the order in which the sources have been named. The only positive correlation ($p < 0.001$) obtained with this model is between L_{Aeq} and perceived noise.

mod.B9.acu.3: positive correlation ($p < 0.001$) resulted with L_{Aeq} and the presence of indifferent or negative sound sources ($p < 0.05$).

mod.B9.B2B3: the merging of visual elements to the template masks the correlation between negative sound sources and noises, but it highlights a positive correlation with the presence of negative visual elements ($p < 0.001$).

mod.B9.acu: L_{Aeq}, L_{A10} and L_{A90} levels correlate ($p < 0.01$) to noise perceived: the L_{Aeq} negatively and the two statistical levels positively.

Pleasantness

mod.C6.tot: only one positive correlation ($p < 0.001$) from the total model with the judgment of perceived tranquillity.

mod.C6.ana: pleasantness is not related to the characteristics of the interviewees; the only correlation obtained is negative with L_{Aeq} ($p < 0.001$).

mod.C6.meteo: meteorological conditions do not affect the judgment of pleasantness, which even in this model is negatively correlated with L_{Aeq} ($p < 0.001$).

mod.C6.vis.1: the model highlights some correlations ($p < 0.01$), mostly negative. However, cases occurs where the correlation of visual elements with the pleasantness changes in sign according to the order in which they have been identified; this inconsistency suggests the inadequacy of the method of encoding the answers used.

mod.C6.vis.2: ignoring the order in which they were named, some visual elements are negatively correlated ($p < 0.01$) with the enjoyment judgment: car in transit, parked cars, plant and yards. These are all visual elements indicated by the respondents as negative, so their correlation with the plea of pleasantness is likely to be found also in the model that divides visual elements into positive, indifferent or negative.

mod.C6.vis.3: pleasantness is correlated negatively with presence of visual elements considered indifferent ($p < 0.01$) and negative ($p < 0.001$) and a negatively correlated ($p < 0.001$) with L_{Aeq}.

mod. C6.B2B3: including sound sources in the analysis of pleasantness, negative correlations ($p < 0.01$) with both sound sources and visual elements judged as indifferent or negative were found. Negative correlation ($p < 0.001$) with L_{Aeq} also appears in this case.

Tranquillity

mod.B7.tot: two strong correlations ($p < 0.001$) emerge from the total model with noise and pleasantness, respectively negative and positive.

mod.B7.ana: respondents' characteristics are not correlated with judgment of tranquillity expressed by them; this model only highlights a correlation of the judgment of tranquillity with L_{Aeq} ($p < 0.001$).

mod.B7.attabi: a positive correlation emerges ($p < 0.001$) between the importance assigned to tranquillity with the judgment of tranquillity expressed. Two other correlations appear among those who declare more relaxed and less relaxed after visiting the site: the first positive ($p < 0.001$) and the second negative (p <0.01); this data acts as an internal control of the questionnaire, showing consistency between the judgment of tranquillity and the effect on the mood of the visit. Again, negative correlation between the judgment of tranquillity and L_{Aeq} ($p < 0.001$).

mod.B7.abi: The only correlation highlighted by this model is with L_{Aeq} ($p < 0.001$).

mod.B7.att: as in mod.B7.attabi, correlations emerge ($p < 0.01$) with the importance given to the tranquillity and positive effect of the visit (positive) and with the negative effect of the visit (negative). The negative correlation with L_{Aeq} ($p < 0.001$) remains in this model as well.

mod.B7.meteo: weather conditions do not affect the judgment of tranquillity expressed. mod.B7.acu.1: only a negative correlation with L_{Aeq} ($p < 0.001$) emerged.

mod.B7.acu.2: negative correlation ($p < 0.001$) with L_{Aeq}.

mod.B7.acu.3: the presence of sound sources considered indifferent or negative is correlated negatively to the judgment of tranquillity expressed (respectively, $p < 0.01$ and $p < 0.001$); even L_{Aeq} shows a negative correlation ($p < 0.001$).

mod.B7.B2B3: negative correlations with sound sources identified as indifferent or negative and L_{Aeq} and negative correlation ($p < 0.001$) between the judgment of tranquillity and the presence of negative visual elements.

mod.B7.acu: the model built on the noise data has only one negative correlation ($p < 0.05$) between the judgment of tranquillity and the L_{A10}.

mod.B7.B9C6: tranquillity is positively correlated ($p < 0.001$) to pleasantness and negatively ($p < 0.001$) to noisiness.

The final model and result is then the one reported in Section 2.4 in the main text.