

INTRODUCTION TO EXPERIENCES WITH EFFORTS TO STANDARDIZE SOCIAL NOISE SURVEYS

S Kuwano (1), S Namba (2) & M Florentine (3)

(1) Department of Environmental Psychology, Osaka University, Japan, (2) Takarazuka University of Art & Design, Japan, (3) Communication Research Laboratory, Northeastern University, USA

1. INTRODUCTION

A social survey as well as a laboratory experiment is a useful tool in the study of noise problems. A well designed social survey gives us valuable information concerning people's attitudes to noise. Many social surveys on noise problems have been conducted in various places and for various purposes. Each survey is conducted independently and the content of the questionnaire and/or the number of categories may differ considerably. Therefore they cannot be compared with each other. If social surveys conducted in different places by different researchers can be compared with each other, useful information may be obtained. In the Acoustical Society of Japan, the committee of the social survey on noise problems was established in 1989 and discussed about the compatibility of social surveys. The committee has proposed the fundamental items concerning living environment for the questionnaire with some remarks about their application to practical surveys^{1,2)}. This proposal of the Acoustical Society of Japan is introduced with the results of preliminary surveys conducted in Japan and the U.S.

2. QUESTIONNAIRE

The original version of the questionnaire was published in Japanese in 1992¹⁾ and its English translation was published in 1996²⁾. The whole questionnaire proposed by ASJ is listed in the appendix. The questionnaire was translated into English discussing with a British linguist. When the questionnaire was translated into English, a question concerning occupation was deleted. Also some terms in the questionnaire were modified when it is applied to the survey in Boston. The examples are as follows:

(1) detached house → separate single family house (2) public facilities (such as park and school) → availability of public facilities (3) noise from motorcycle gangs → motorcycles (4) aircraft noise → airplanes or jets (5) chimes → chimes,

bells, sirens used in schools (6) street cries → people helling on the street (7) sounds of insects → sounds of insects (crickets or frogs, for example) (8) The sound makes me unhealthy → The sound influences my physical/emotional state (9) not fixed → varies (10) Have local regulations in the neighboring area → Lobby for local regulations for the neighborhood (11) examinee → a student studying for exams

3. PRELIMINARY SURVEY

Respondents

The preliminary survey was conducted in 1990 and 1995 (February and November) in Japan and in 1995 in the U.S. The number of respondents were as follows:

Japan (1)	22 females and 234 males
Japan (2)	90 females and 87 males
Japan (3)	105 females and 81 males (2 unidentified)
U.S.	70 females and 30 males

Reliability of the survey

In Japan the survey was conducted three times and the results of the three surveys were compared. Example of the result are shown in Figs.1 and 2. The figures show the percentages with which each sound in the list in Q3 (see appendix) is audible in their neighborhood. The respondents were students of Osaka University and lived in Kansai area. It can be seen that the results of the three surveys show good agreement with each other. Similar tendency could be found in

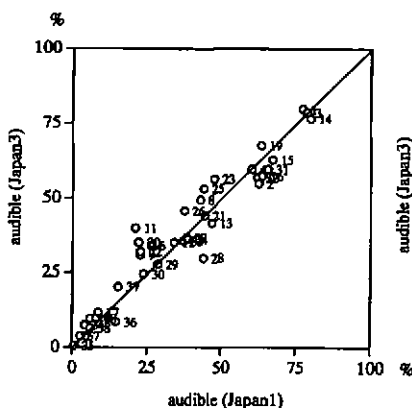


Fig.1 Comparison between the first and the third survey in Japan (The numbers in the figure correspond to the sound sources in Q3. See Appendix.)

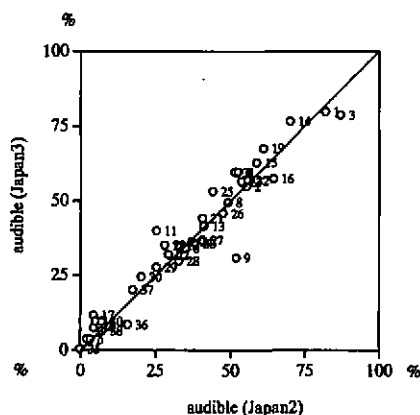


Fig.2 Comparison between the second and the third survey in Japan

percentages with which sounds are perceived as being annoying when they are audible. These results suggest the reliability of the questionnaire survey, i.e. similar results can be expected when the survey is conducted with similar group of respondents living in similar environment.

Comparison of the results between Japan and the U.S.

The percentages with which sounds are annoying when they are audible are compared between the Japanese (third survey) and the U.S. data as shown in Figs.3 and 4. Interesting differences and similarities can be seen. For example, in both surveys twittering of birds (No.32) was judged little annoying, on the other hand, construction noise (No.11) or other unspecified noise (No.38) was judged annoying when they were audible. Announcements of street vendors using a loudspeaker (No.14) and murmuring of a brook (No.34) were judged annoying in the U.S., while they were accepted in Japan. On the other hand, Karaoke in restaurants or bars (No.18) was selected as being annoying in Japan with fairly high percentages. In the U.S. the percentage with which Karaoke was judged annoying is not so high as in Japan.

Examples of the results of cross analysis using the degree of satisfaction with quietness as a key item are shown in Figs.5 - 12. The results of both surveys shows fairly good agreement with each other. As the quietness is more satisfactory, the more satisfactory clean air and the amount of greenery are in both surveys. This suggests that quietness, clean air and amount of greenery are compatible with each other. On the other hand, in Japan the convenience of shopping and transportation showed a tendency that they are negatively correlated with the satisfaction of quietness. It seems difficult to find an environment where it is quiet as well as convenient in shopping and transportation. Such tendency is not clear in the U.S. survey, which may be due to the small number of respondents.

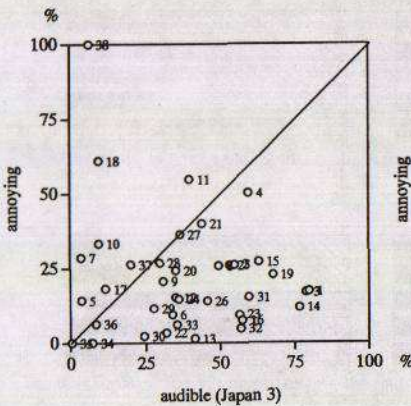


Fig.3

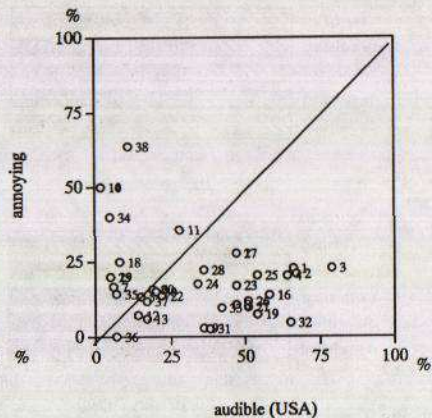


Fig.4

4. SUMMARY

Preliminary surveys were conducted using the standard questionnaire proposed by the Acoustical Society of Japan in Japan and in the U.S. Some terms were modified when the questionnaire was applied to the survey in U.S. There was no serious problem in the questionnaire and the reliability of the questionnaire was confirmed. Useful information could be found comparing the results of both surveys.

ACKNOWLEDGEMENT

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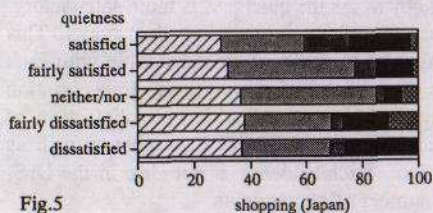


Fig.5

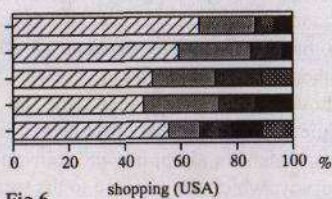


Fig.6

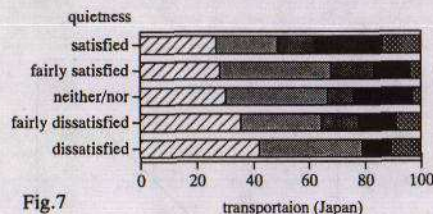


Fig.7

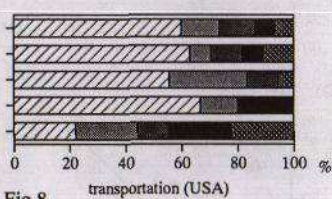


Fig.8

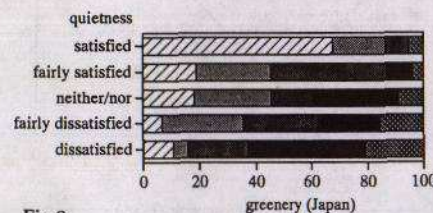


Fig.9

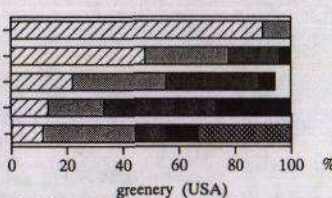


Fig.10

□ satisfied ■ fairly satisfied ■ neither/nor ■ fairly dissatisfied ■ dissatisfied

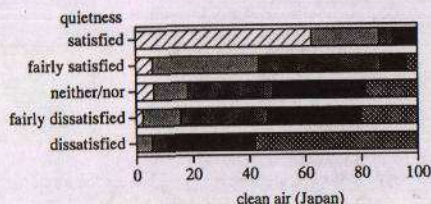


Fig. 11

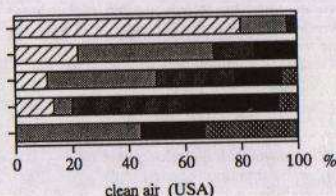


Fig. 12

APPENDIX: QUESTIONNAIRE ON LIVING ENVIRONMENT

Through this survey, we would like to know about your experience and opinions concerning your living environment, especially the sound environment. Your answers will be treated statistically and the individual data will under no circumstances be published. Please answer each question frankly. Please do not miss any question. Results will not be used for any other purposes.

Name of person responsible for the survey _____
Institution _____
Telephone number _____

Q1. The following are questions concerning your living conditions. Please mark the box which is appropriate to your situation.

1. Your living area:

- ☐ residential
☐ commercial
☐ industrial
☐ mixture of residential and commercial
☐ mixture of residential and industrial
☐ mixture of industrial and commercial
☐ suburbs
☐ remote area between mountains
☐ other: ()

2. Structure of your house:

- ☐ ferro-concrete
☐ wood
☐ pre-fabricated
☐ other: ()

3. Number of storeys your house has:

- ☐ 1
☐ 2
☐ more than 3
☐ other: ()

4. Type of your house:

- ☐ detached house
☐ apartment house
☐ other: ()

5. If your house is an apartment house:

How many storeys does the building have?:

()

Which floor do you live on?:

()

Please mark the appropriate box.

- ☐ Are you the owner?:
☐ Are you the tenant?:
☐ other: ()

6. How many years have you lived in the present house?

- ☐ less than one year
☐ less than 3 years
☐ less than 5 years
☐ less than 10 years
☐ more than 10 years

7. If you have any of the following in the vicinity of your house, please mark the appropriate boxes.

- ☐ main road
☐ bus or truck terminal
☐ parking
☐ railroad
☐ airport
☐ factory
☐ bar
☐ shop
☐ school or kindergarten
☐ park
☐ farm
☐ hotel
☐ other: ()

Q2. To what degree are you satisfied with your surroundings? Please circle the appropriate number for each item.

Note: 1 = satisfied

2 = fairly satisfied

3 = neither satisfied nor dissatisfied

4 = fairly dissatisfied

5 = dissatisfied

Convenience of shopping 1 2 3 4 5

Convenience of transportation 1 2 3 4 5

Amount of greenery 1 2 3 4 5

Clean air 1 2 3 4 5

Quietness 1 2 3 4 5

Public facilities 1 2 3 4 5

(such as park and school)

Q3. Are the following sounds audible in your house? Are you annoyed by the sounds? Please circle the appropriate numbers.

Note: 1 = inaudible

2 = audible but not annoying

3 = annoying

- | | | | |
|---|---|---|---|
| (1) road traffic noise | 1 | 2 | 3 |
| (2) car horns | 1 | 2 | 3 |
| (3) sirens of ambulance or patrol car | 1 | 2 | 3 |
| (4) noise from motorcycle gangs | 1 | 2 | 3 |
| (5) traffic signals | 1 | 2 | 3 |
| (6) train noise | 1 | 2 | 3 |
| (7) super express train noise | 1 | 2 | 3 |
| (8) aircraft noise | 1 | 2 | 3 |
| (9) helicopter noise | 1 | 2 | 3 |
| (10) noise from factories | 1 | 2 | 3 |
| (11) construction noise | 1 | 2 | 3 |
| (12) sounds from school or kindergarten | 1 | 2 | 3 |
| (13) chimes | 1 | 2 | 3 |
| (14) announcements of street vendors using a loudspeaker | 1 | 2 | 3 |
| (15) commercials from a loudspeaker car | 1 | 2 | 3 |
| (16) sounds from a car collecting garbage | 1 | 2 | 3 |
| (17) street cries | 1 | 2 | 3 |
| (18) KARAOKE in restaurants or a bars | 1 | 2 | 3 |
| (19) voices of children | 1 | 2 | 3 |
| (20) cries of babies | 1 | 2 | 3 |
| (21) idling sounds of cars | 1 | 2 | 3 |
| (22) sounds from air-conditioners | 1 | 2 | 3 |
| (23) banging of doors or windows | 1 | 2 | 3 |
| (24) sounds of musical instruments | 1 | 2 | 3 |
| (25) sounds from televisions or stereo sets | 1 | 2 | 3 |
| (26) sounds of water supply or drainage in toilets or bathrooms | 1 | 2 | 3 |
| (27) sounds from the floor above | 1 | 2 | 3 |
| (28) cries of pets | 1 | 2 | 3 |
| (29) sounds from a festival | 1 | 2 | 3 |
| (30) sounds of fireworks | 1 | 2 | 3 |
| (31) sounds of insects | 1 | 2 | 3 |
| (32) twittering of birds | 1 | 2 | 3 |
| (33) cries of crows | 1 | 2 | 3 |
| (34) murmuring of a brook | 1 | 2 | 3 |
| (35) sounds of sea waves | 1 | 2 | 3 |
| (36) sounds of the gong of a temple | 1 | 2 | 3 |
| (37) sounds from special events | 1 | 2 | 3 |
| (38) other: () | 1 | 2 | 3 |

Q4. What is the *most* annoying sound in the above list of sounds? Please insert the number of the sound in the parenthesis. ()

Those who did not find any annoying sound in Q4 should proceed to Q5.

SQ1. In which way are you annoyed by the sound you mentioned in Q4?

Please mark the appropriate boxes. You can mark as many as you like.

☐ The sound is a little annoying, but not so serious.

☐ I cannot relax because of the sound.

☐ The sound is irritating.

☐ The sound makes me unhealthy.

☐ The sound disturbs listening to telephone, television, or radio.

☐ The sound disturbs working or reading.

☐ The sound disturbs conversation.

☐ The sound disturbs sleep.

☐ Other: ()

SQ2. At what time of day are you annoyed by the noise? Please mark the appropriate boxes.

☐ early morning

☐ during the day

☐ evening

☐ night

☐ late at night

☐ whole day

☐ not fixed

SQ3. When you are annoyed by the noise, what would you like to do, or what did you do? Please circle the appropriate numbers.

Note: 1 = I would like to do.

2 = I have done.

Complain to the neighbor directly. 1 2

Complain to the neighbor by telephone. 1 2

Write a letter to the neighbor. 1 2

Inform the city office or the police. 1 2

Have local regulations in the neighboring area. 1 2

Have my house sound-insulated. 1 2

Move house. 1 2

Other: () 1 2

Q5. Please mark the appropriate boxes concerning yourself.

Gender: ☐ female

☐ male

Age: ☐ under twenty

☐ twenties

☐ thirties

☐ forties

☐ fifties

☐ sixties

☐ above seventy

Number of family members (including yourself):

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ more than 6

Are there any of the following in your family?

Please mark the appropriate boxes.

☐ night worker

☐ examinee

☐ the sick

☐ the aged

☐ baby

☐ children under 10

Do you have any of the following? Please mark the appropriate boxes.

☐ musical instrument

☐ car or motorcycle

☐ air-conditioner

☐ stereo set

☐ electric tools

☐ pet animals

Unless you object to doing so, please write your name, address and occupation.

Name:

Home address:

Occupation: