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A NATIONAL SURVEY OF THE EFFECTS OF ENVIRONMENTAL NOISE ON PEOPLE AT HOME.

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1. INTRODUCTION

A national noise attitude survey has been carried out. The questions asked were designed to take account of recent research using the group discussion technique. The survey is considered to have produced responses, possibly for the first time, fully reflecting the extent and nature of the adverse consequences of noise.

In previous social surveys about noise exposure, respondents have typically been asked to indicate the extent to which they consider noise 'bothers', 'annoys', or 'disturbs' them, or is 'satisfactory or unsatisfactory'. By contrast this national noise attitude survey has been designed to give more specific information on the actual adverse effects of the main sources of environmental noise on people at home.

The study has been carried out as part of the noise research programme of the Department of the Environment.

2. THE GROUP DISCUSSION TECHNIQUE

We undertook an exploratory study using a group discussion technique to establish the consequences of noise that householders consider to be important and to understand the vocabulary they use to describe these effects.

The group discussion technique involves a series of meetings, each conducted by a 'moderator' who guides the discussion within the intended subject area. The moderator is careful not to introduce any opinions or conventional noise response terms so that participants are encouraged to produce their own views and terminology.

A total of 16 group discussions, each involving 6-8 people, aged between 20-60 years, covering all socio-economic groups, were held in different regions of England and Wales. Participants were invited to talk about and express their views on the kinds of environmental noise they could hear while at home. They also discussed the effects of being exposed to noise and their experiences and feelings about this. Later in the discussion period participants were invited to discuss the clarity and relevance of questions used in previous noise surveys and whether they felt a survey interview would elicit their true feelings.

2.1 The noise reaction process

Noises were described in such a way that they could be broadly classified into three groups, being enjoyable, tolerable or unacceptable. Participants were encouraged to describe their experience of exposure to noise. It was apparent that different people reacted to noise in different ways, depending on factors such as their age, sex, working status, life-style and personality characteristics. However, from the experiences discussed a simple three level model of the noise reaction process was deduced which describes the reactions of most participants in our group discussions.

Level 1 occurred when someone first became aware of a noise. The typical response was either to ignore the noise, or to become curious about the identity of the source where this was not readily apparent. If the noise continued, the consequences were dependent on the kind of noise. Noises that were said to be tolerable resulted either in no adverse reaction or at most, in a degree of irritation. For most participants continued exposure resulted in no greater adverse consequences. For some individuals, however, prolonged exposure might result in the greater adverse reactions of Level 2.

The reactions of most individuals exposed to those kinds of noise said to be unacceptable tended to progress from Level 1 to the more serious reactions of Level 2. At this level two types of reaction emerged. Some participants (most frequently men) expressed their reaction to noise as outwardly directed aggression, projected at the creator of the noise. They spoke of 'annoyance', 'aggravation', 'bitterness' and 'anger' produced by the noise and blamed the person making the noise for subjecting them to this disturbance. Other participants (most frequently women) tended to suppress their reactions to noise, directing them inwards on to themselves rather than towards the creator of the noise. For these participants the words frequently used were 'tense', 'pressured', 'fraught', and 'anxious'.

Emotional response to noise was greatest where it was considered to have continued for an unacceptable length of time, where the noise was extremely loud or where the noise was very emotive in nature. In the latter case, it was not so much the noise itself that caused the reaction, but the meaning attached to it. Noises such as crying or screaming prompted the hearer to speculate about the cause and the possibility of violence. It is possible for the disturbance caused by the noise of a dog barking to be minor compared with anxious concern about the welfare of the animal. Similarly, transportation noise can be a constant reminder of such factors as pollution, health hazards, personal danger, or urban congestion which may be associated with the source.

At Level 3 the state of tension and frustration increased further. Those participants tending to express reactions used terminology that was more violent than at Level 2. They typically spoke of 'hatred', 'hostility' and used words such as 'revenge', 'murder', 'strangle' or 'kill' illustrating the strength of emotion that can be evoked by noise.

At Level 3 those participants tending to suppress reactions focused upon the impact the noise was having on themselves rather than blaming those creating the noise. They became 'wound down' and defeatist in their attitude, speaking of 'depression', 'tiredness' and being 'upset'. Some participants mentioned feelings of 'guilt' and 'shame'. Guilt arose, for example, when noise-induced tension drove them to 'take it out' on others or when they felt unable to provide a satisfactory home environment which was free from unreasonable noise and allowed their family to relax. Some participants reported other effects such as headaches and migraine attacks.

2.2 Appraisals of typical survey questions

Participants were invited to discuss the wording and design of previous survey questions, in particular whether they were appropriate and easy to understand.

It became clear that for some questions the responses given were not always in line with the intent of the question or the actual experience of the respondent.

For example some terms used in questions, such as 'satisfactory or unsatisfactory' were considered too formal, weak and detached from the way people experienced the effects of noise. Such terms could not be used effectively to express the strength of feeling experienced. Similarly, the term 'bother' was not part of the vocabulary used to describe noise and tended only to be used negatively as in 'not bothered'. The term 'annoyance' needs to be used with caution as it has been found to have two uses both as a general indicator of adverse effects and also as a specific emotional reaction experienced by some people only.

Participants felt that that they could only give meaningful answers to questions that were specific about time, place and type of noise. It was found that questions including a list of descriptors of the adverse consequences of noise were favoured by participants and that these should include both interference with domestic activities and emotional responses. It also emerged from the discussions that many people tend to trivialise the adverse effects that noise has on them, even though these effects may be very important to them personally.

3. THE NATIONAL NOISE ATTITUDE SURVEY

The findings of the group discussions were incorporated into the design of the questionnaire used in the national noise attitude survey. This was a national survey carried out in November 1991 involving one adult from each of 2,373 randomly selected households and was specifically dedicated to assessing the awareness and attitude of respondents to environmental noise. Approximately 30% of the total sample said that noise spoiled their home life to some extent and 1% said that their home life was totally spoiled by noise.

Detailed questions about personal reactions to noise were only asked of those people who answered 'yes' to one or more of the following questions about any of 49 specific noise sources heard while they were at home.

Do you personally object to this noise?
Does the noise irritate you?
Does the noise sometimes disturb you?
Are you personally concerned about the noise?
Do you find the noise annoys or upsets you at times?
Do you consider the noise a nuisance to you personally?'

3.1 Objection to noise

The 49 specific noise sources were simplified during subsequent analysis into 10 main categories of environmental noise. Figure 1 shows the percentage of the total sample who hear and 'object' (in at least one of the ways listed in the above questions) to each category of noise. In Figure 1 the categories of noise are placed in order from top to bottom according to the number of people who object to each category of noise as a proportion of those who hear it.

This shows that, of all the categories of environmental noise, the greatest proportion of people who hear noise from neighbours will object in some way.

The number of people in our sample hearing many of the categories of noise is fairly small. Therefore we only present information on the 4 most commonly heard categories of noise in the remainder of this paper. These categories are noise from neighbours, road traffic, aircraft and trains.

Of the total sample, 28% object to noise from road traffic and 22% object to noise from neighbours. A BRE survey[1] in 1986/87 found that 11% of people were 'bothered' by road traffic noise and 14% by neighbour noise. Comparisons between the percentage of people 'objecting' to noise found in this 1991 survey with similar information from previous surveys are difficult because of the improvements in questionnaire wording and design.

Table 1 summarises the relevant findings from three recent BRE surveys. The 1985-1987 data was derived from an omnibus type survey where noise was one of a number of topics under investigation. Respondents to this survey were asked whether they were bothered by each general type of noise they heard. In contrast, the 1991 noise attitude survey was dedicated to noise with respondents being offered a range of adverse reactions for each of 49 specific noise sources. In 1992 the omnibus survey was repeated with a smaller sample of people. Table 1 suggests that there has been little change in community dissatisfaction with noise between 1985-1992. However it is also likely that the results of the noise attitude survey more accurately reflect the current community attitudes to noise.

The proportion of people who hear and 'object' to the various specific sources of neighbour noise are shown in Figure 2. A previous BRE survey[2] found similar trends, although these new results suggest an increase in the proportion of people objecting to amplified music, noisy animals and peoples' voices. It may be that such noises are perceived as unnecessary or as resulting from unthinking or malicious behaviour and therefore they attract more objection than noise from other sources such as lawn mowers and domestic appliances.

3.2 Activity disturbance and emotional reactions

Those people who indicated any objection to noise were also asked about the extent of their reactions in terms of both activity disturbance and specific emotional effects.

Table 2 shows the percentage of the total sample that reported various types of activity disturbance and emotional reaction from the 4 most prevalent categories of noise. In this table the responses are ordered with the most frequently reported responses at the top. The order of occurrence of responses is largely controlled by the effects attributed to traffic noise, simply because more people hear traffic noise, however it can be seen that the order of responses is similar for all noise types. Many people will, of course, experience both activity disturbance and emotional reactions. However, Table 2 illustrates that people will more frequently report emotional reactions rather than report activity disturbance as a result of exposure to environmental noise.

3.3 Type of action taken

A lot of professional and media attention is given to statistics about noise complaints. Table 3 shows the types of action being taken by respondents to try and reduce neighbour noise. We have found that approximately 60-70% of people who object to each type of neighbour noise will take no action at all. Approximately 20-30% of those who object will complain directly to the person responsible and the majority of these will take no further action. About 5% of people will take 3 or more separate types of action.

Of particular interest is the percentage of people who complain to an Environmental Health Officer (EHO). It is likely that the true percentage will include some of those who complain to an unspecified Local Authority department. Even so, Table 3 indicates that a small proportion (at most 16%) of those people who object to neighbour noise will at some time contact an EHO. This further suggests that complaint statistics based on complaints to EHOs greatly underestimate the true extent of objection to neighbour noise in the community.

4. CONCLUSION

This research has found little change in the extent of community dissatisfaction with noise between 1985 - 1992. However, the results of improvements in questionnaire design suggest that some previous surveys have underestimated the true depth and extent of community dissatisfaction with all types of environmental noise.

This national noise attitude survey demonstrates that road traffic noise is the most widespread form of noise disturbance, being heard by and affecting more people than any other source of noise. 28% of people object in some way to road traffic noise, whilst 22% object to noise from neighbours.

The research shows that the most frequently reported personal consequences of exposure to noise in the home are emotional reactions either expressed as annoyance and anger or suppressed as anxiety and resentment. Other common consequences include the disruption of particular activities such as sleeping, resting and listening to television or radio.

Statistics based on complaints to EHOs are shown to greatly underestimate the true extent of objection to neighbour noise in the community.

Approximately 30% of people said that environmental noise spoiled their home life to some extent.

5. REFERENCES

1. W.A. Utley and E.C. Keighley, Community response to neighbourhood noise, Proceedings of the 5th International Congress on Noise as a Public Health Problem, 1988.

2. W.A. Utley and E.C. Keighley, Neighbourhood noise disturbance, Proceedings of the Institute of Acoustics, Vol 11(5), 1989.

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FIGURE 1
% WHO HEAR AND OBJECT TO NOISE

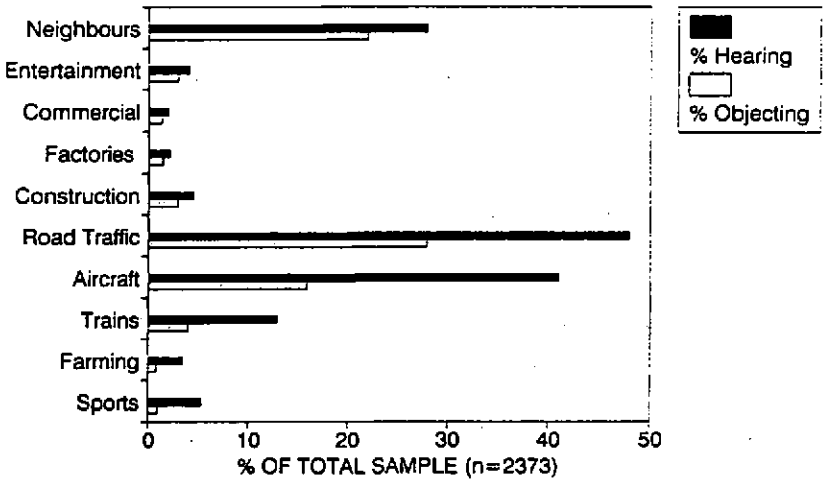

FIGURE 2 % WHO HEAR AND OBJECT TO SPECIFIC NEIGHBOUR NOISES

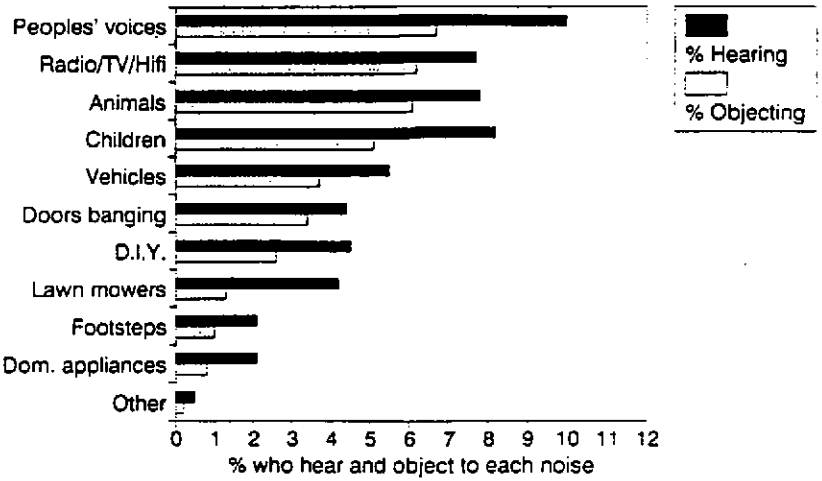

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Table 1 RECENT SURVEY FINDINGS:
% of sample 'bothered' or 'objecting' to different types of noise

Type of Noise	Survey Details		
	1985-1987 Neighbourhood Noise Survey; n = 14,406 Omnibus Type "Bother"	1992 n = 2,000 Omnibus Type "Bother"	1991 Noise Attitude Survey; n = 2,373 Dedicated Type "Object/Irritate/Disturb/ Concern/Annoy/Upset/ Nuisance"
Neighbours	14%	14%	22%
Road Traffic	11%	11%	28%
Aircraft	7%	7%	16%
Trains	1%	2%	4%

Table 2 EFFECTS OF NOISE:
% of total sample (n = 2373) who report various effects

Type of Effect	Type of Noise			
	Neighbours	Road Traffic	Aircraft	Railways
A. Activity Disturbance				
Affects sleep or rest	12%	16%	5%	2%
Disrupts listening to TV/radio/music	11%	13%	7%	1%
Disrupts conversation/use of phone	5%	9%	6%	1%
Can't open windows/doors	6%	10%	2%	1%
Distracts from reading/writing	7%	8%	4%	1%
Limits use of garden	4%	4%	2%	1%
Constrains use of part of house	4%	5%	1%	1%
B. Emotional Reaction				
Irritates me	14%	19%	8%	2%
Resent loss of peace and quiet	11%	15%	6%	1%
Annoys me	12%	15%	5%	1%
Gets on my nerves	11%	12%	4%	1%
Makes me angry	7%	7%	2%	1%
Stops me concentrating	4%	6%	3%	1%
Makes me fed up	5%	6%	2%	1%

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Table 3 ACTION TAKEN TO REDUCE NEIGHBOUR NOISE:
% of those who object taking various actions

Type of Neighbour Noise	Total Number of Cases 'Objecting'	Type of Action Taken												
		No Action	Complain to Person Making Noise	Complain to Police	Complain to E.H.O.	Complain to Housing Dept.	Complain to L.A. (Unspecified)	Install Double Glazing	Take Legal Advice or Action	Petition	Complain to MP or Councillor	Other Action	Any Action
Peoples voices	161	59%	23%	14%	3%	4%	8%	4%	2%	3%	-	1%	41%
Radio/TV/HiFi	149	58%	29%	5%	3%	4%	6%	4%	1%	-	-	4%	42%
Animals (Barking Dogs etc)	145	68%	24%	2%	6%	3%	3%	1%	-	1%	-	1%	31%
Children	122	57%	31%	10%	1%	1%	6%	5%	-	-	1%	4%	43%
Neighbours Vehicles (Car Repairs etc)	80	61%	18%	9%	6%	3%	10%	6%	-	-	-	3%	38%
Doors Banging	83	65%	24%	2%	6%	6%	8%	4%	-	-	-	1%	35%
U.F.F.	64	77%	17%	2%	3%	2%	2%	2%	-	-	-	-	23%
Lawn Mowers	11	97%	3%	-	-	-	-	-	-	-	-	-	3%
Footsteps	26	69%	8%	8%	-	4%	4%	8%	-	4%	-	-	31%
Domestic Appliances	20	70%	20%	5%	-	-	-	-	-	-	-	5%	30%