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NEIGHBOURHOOD NOISE DISTURBANCE

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INTRODUCTION

Noise from neighbours and other people nearby, now causes more widespread disturbance than any other environmental noise source. Neighbourhood noise bothers 14% of the adult population compared with 11% bothered by road traffic noise and 7% by aircraft noise. The Building Research Establishment is undertaking a major study of neighbourhood noise disturbance. The results of an investigation of noise complaints have already been published [1]. This paper concentrates on the results of an omnibus survey though reference is made to the data on complaints where relevant.

The main omnibus survey was carried out on three occasions in 1986/87 and produced a total of over 14,000 respondents. A pilot survey and a number of in depth interviews preceeded the main survey. The questionnaire provided information on the characteristics of the sources which caused disturbance. The effect of demographic variables on the likelihood of being disturbed has been examined. The respondents also provided information on actions which they had taken to reduce the noise and on the effectiveness of such actions.

The results of the study have provided a better understanding of the nature of the problem but some further research is required to enable effective methods for reducing disturbance to be proposed.

SURVEY DATA

The "Omnimas" omnibus survey used to obtain the survey data is carried out on a weekly basis. It uses a sample of about 2400 respondents who are selected by multi-stage random sampling from the adult population of England, Wales and the Scottish mainland. The interviews are carried out in the respondent's home and only with respondents identified by the sampling system.

Because of the lack of information about neighbourhood noise disturbance two preliminary studies were undertaken. A pilot survey was carried out covering two consecutive weeks in November 1985. In-depth interviews were then carried out with 31 respondents selected from the pilot survey sample. The results of these studies were used in designing the questionnaire for the main survey. The main survey was undertaken for two consecutive weeks on three occasions, July and November 1986 and July 1987. A total sample of 14,406 respondents was obtained.

RESULTS

Noise sources

Initially respondents were asked whether they heard and were bothered by noise from five sources, aircraft, trains, road traffic, neighbours and other people nearby. The 40% who heard noise from neighbours and/or other people nearby were then asked about disturbance from a number of specific noises. The

proportions who hear and are bothered by these specific sources are shown in Figure 1. Five sources each bother around 4% of the total sample and these include the two sources, amplified music and barking dogs, which account for about two thirds of complaints to Environmental Health Officers (EHO). At the other end of the scale domestic appliances, though often mentioned as a possible cause of noise disturbance only bothered 0.5% of respondents. About half of those bothered by any specific noise are in fact bothered by more than one source. 25% are bothered by two sources and 20% by either three or four sources. The in-depth interviews confirmed that disturbance from multiple sources occurred when neighbours had a noisy lifestyle or when there was more than one noisy neighbour.

An examination of the location of the source and the time at which disturbance occurs shows up some major differences between the five most important noise sources. Radio/TV/hi-fi is situated inside another dwelling in the large majority of cases. Noise from neighbour's vehicles, children and people's voices often arises from open space adjacent to the respondent's dwelling. This probably explains, at least in part, why this group of noise sources is much less important as a source of complaint to EHOs. The noise of animals is much more likely than other major sources to originate from gardens (25%). This difference was more pronounced in the case of the complaints data which indicated that 58% of complaints about barking dogs arose where the dog was outside the dwelling. Although most people who are bothered suffer disturbance when inside their home, in over 50% of cases the noise reaches them by external transmission.

The general pattern for the variation in disturbance with time of day is that the probability of disturbance increases through the day reaching a maximum in late evening when people are trying to get to sleep. There are a number of differences from this pattern that are worth noting. The proportion of respondents bothered by noise from barking dogs was the same in all time periods while the complaint data actually indicated the daytime as the worst period. Noise from neighbours' vehicles was unlikely to cause bother during the day but was more likely than other sources to cause disturbance in the early morning. As might be expected, people were most likely to be bothered by noise from lawn mowers during the day. There is no evidence of significant disturbance arising from moving of lawns at times outside this period.

Respondents who were bothered by any of the specific noises (except animals) were asked whether the noise was made by adults, teenagers or children. Generally most said that the noise was made by adults and this even applied to noise from radio/TV/hi-fi where 63% blamed adults and 33% teenagers. With the exception of the specific children/teenager category only for the noise of footsteps did the proportion blaming teenagers and children approach the figure for adults. Although the proportion blaming teenagers for vehicle noise is only 36% compared to 61% blaming adults, when the smaller number of teenagers using vehicles is taken into account it seems that the likelihood of a vehicle user causing noise disturbance may well be greater for teenagers.

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Demographic factors

The pilot survey data have been analysed to investigate whether any particular sub-groups of the population are more or less likely to be disturbed by neighbourhood noise. A number of factors had no effect or only a minor effect on the likelihood of disturbance. These included, the sex of the respondent, his or her household status, working status and socio-economic status.

Three factors, age of respondent, tenure and type of dwelling had important effects on the incidence of disturbance from neighbourhood noise in general and from some of the specific sources in particular. For road traffic the proportion bothered increased with age to reach a peak for the 55-64 age group. The youngest age groups were also less likely to be disturbed by aircraft noise. For neighbourhood noise the proportion bothered showed a distinct peak for the 25-34 age group and this pattern was also found with certain of the specific noises, particularly peoples' voices, radio/TV/hi-fi, animals and vehicles. In almost all cases the people least likely to be bothered by neighbourhood noises were those over 65.

The type of dwelling generally had only a slight effect on the proportion bothered by transportation noise though those in flats (5%) were much less likely to be bothered by aircraft noise than those in detached houses (9%). Those living in flats were much more likely to be disturbed by neighbourhood noise than those in semi-detached and terraced houses with people in detached houses least likely to be bothered. This pattern was also observed in the complaints made to EHOs. Many of the specific sources and particularly voices, radios etc., banging doors and footsteps show a similar effect to the overall data. However there were much smaller differences between dwelling types for some sources including those such as animals, vehicles and children which are most likely to be situated outside the dwelling.

The third factor found to have an important effect on the incidence of disturbance was the type of tenure. As with the other two factors there was little effect on the incidence of bother caused by transportation noise although those in fully owned dwellings were more likely to be disturbed by road traffic noise. There was a large difference in the proportions bothered by neighbourhood noise for respondents who fully owned their own home (9%) and for those living in dwellings rented from a local authority (19%). People buying their home and those in private rented accommodation were close to the overall figure of 14% with those in the rented dwellings slightly more likely to be bothered. Again there were differences in the patterns for the various specific sources with only radio etc. and banging doors showing the same pattern as for the overall response. Noises from animals and vehicles are equally disturbing across all types of tenure. Peoples' voices are much more likely to disturb those in the private rented sector than the public sector where the proportion bothered is no greater than for those buying their home with a mortgage.

It is clear from the above that neighbourhood noise disturbance is not spread

uniformly through the general population. There are sub-groups which have either a much higher or a much lower risk of hearing this type of noise and of being disturbed. Table 1 contrasts the data for a high risk sub-group consisting of those in the 25-34 age group who live in flats rented from a local authority and a low risk sub-group who are over 65 and live in wholly owned detached houses.

Noise from neighbours or other people nearby	High risk	Low risk	Overall
Percentage hear	72	16	40
Percentage bothered	34	6	14
Any specific noise			
Percentage hear	67	15	40
Percentage bothered	37	8	15

Table 1 Proportion of two sub-groups who hear and are bothered by neighbourhood source

The incidence of bother in the high risk group is about five times that in the low risk group.

Actions to reduce noise

Respondents were asked whether they would have liked to reduce the noises which bothered them, whether they took any action about the noise and whether any such action was effective. Overall, about two thirds of those bothered by any specific noise wanted to try to reduce the noise. However when asked what action they had taken only 28% of respondents who were bothered had taken any action. The proportion taking action varied from 38% for radio/TV/hi-fi to only 5% for lawn mower noise.

The most commonly taken action was to complain to the neighbour or the person responsible for the noise. 21% adopted this approach with proportions for individual sources varying from 30% for radio/TV/hi-fi to 4% for lawn movers. The next most popular action was to complain to the local authority and this approach was adopted by 10% of those bothered. Some respondents were able to identify a particular department such as Housing or Environmental Health but the large majority mentioned the local authority in general. Other actions taken included complaining to the police (6%), taking legal action or advice (0.5%) and improving insulation (1.5%). It is clear that those bothered by neighbourhood noise may complain to either the local authority or the police without first making their disturbance known to their neighbour or to the

person responsible for the noise. For noise from neighbours' vehicles, voices and footsteps about 30% complained to the local authority but not to the person producing the noise. Vehicles and voices were also the sources (together with children) about which people were most likely to complain to the police without first complaining to their neighbour.

When those who had taken some action were asked how effective the action had been it was found that overall only 10% considered it to have been completely effective, while a further 30% considered the action to have been partly effective. Table 2 shows that some sources of disturbance are easier to control than others. Radio/TV/hi-fi was the source which could

Source	Number of actions	Completely effective %	Partly effective %	Completely ineffective %	EFX
Radio/TV/hi-fi	450	13	42	45	34
Domestic appliances	30	20	17	63	28
Peoples' noises	293	11	30	59	26
D.I.Y.	135	13	26	62	26
Children	286	8	29	63	23
Inside doors	181	8	29	63	23
Neighbours' vehicles	207	10	25	65	22
Outside doors	185	8	25	67	21
Animals	200	7	28	66	21
Lawn mowers	20	15	10	75	20
"Other" noises	73	6	27	67	20
Footsteps	56	7	18	75	16

Table 2 Proportions of actions considered effective and ineffective for each specific noise source. The effectiveness index EFX is the sum of the percentage Completely Effective plus half the percentage Partly Effective.

be controlled most effectively and the only source for which more than half of actions were considered at least partly effective. When the data was analysed in terms of the effectiveness of each type of action it was found that a complaint to the EHO (EFX = 36) and improved insulation (EFX = 35) were most successful. The overall effectiveness of complaints to a local authority (including EHO) was much lower (EFX = 22) than for complaints where the EHO was specifically mentioned. Legal action or advice was the least successful action (EFX = 14) with only 2% of cases being completely effective.

DISCUSSION

The picture of neighbourhood noise disturbance which begins to emerge is a complex one in which people are bothered by a wide variety of noise sources. A substantial proportion of those bothered are affected by multiple sources

some of which can be situated inside an adjoining dwelling, and others in gardens or in open spaces near to their dwelling. While the most often cited source, radio/TV/hi-fi is almost always situated inside another dwelling, the other major sources are often found outside in gardens or open spaces.

Not everybody appears to be at equal risk of being disturbed by neighbourhood noise. Moreover, those who are bothered are affected to different degrees and in different ways. When asked to indicate what effect the noise had on them most mentioned annoyance or the fact that the noise got on their nerves. In terms of the effect on home life a substantial proportion mentioned sleep disturbance particularly in the case of voices, vehicles, banging doors and amplified music. For some respondents the noise may only be a minor irritation, but for others it can cause so much tension and worry that they feel it is necessary to get out of the dwelling to avoid the noise or consider it is having a serious effect on their health. In extreme cases fatalities have resulted from disputes about neighbour noise. The in-depth interviews showed that in some cases the level of noise itself did not cause concern but rather that hearing the noise triggered concern about some other matter, for example, the welfare of a dog left unattended all day or the possibility of damage to property by children kicking a football against a fence.

It is clear that while a large majority of those bothered would like to reduce the disturbing noise less than one third actually do anything. The in-depth study showed a marked reluctance to complain to neighbours. Reasons put forward for this included a general view that complaining would cause unpleasantness and might make matters worse. In some cases fear of a violent reaction or possible retaliation discourage people from complaining. Even when some action is taken against the noise a majority consider such action ineffective. There are a number of possible reasons for this. Neighbours or those producing the noise may simply take no notice of a complaint (or may even respond by turning up the volume). Since many of the noise sources are intermittent it may be difficult for an EHO or the police to hear and assess the offending noise prior to taking some action. Even when a complaint achieves some reduction in the noise the problem may recur at sometime in the future. Where the noise source is situated in the street or open space around dwellings the EHO will not be able to use his powers under Section 58 of the Control of Pollution Act (COPA) and a complaint to the local authority is therefore unlikely to be effective in such situations. A particular situation for which complaints are likely to prove ineffective is where the neighbour does not make an unreasonable amount of noise but the level of sound insulation between the dwellings is poor.

The current low level of effectiveness of actions to reduce neighbourhood noise disturbance demonstrates a need for new measures to tackle the problem. Because of its complex nature it is likely that effective control will require more than one solution. In many cases disturbance arises from carelessness on the part of the noise producer who may not be aware of the annoyance which he is causing. Here publicity and education will have an important role. In

other cases attention to building design and to the planning of estates may help to reduce the risk of disturbance. In this context it is worth noting that in over 50% of cases the disturbing noise source is situated outside the dwelling rather than inside an adjoining dwelling. This is perhaps not surprising given the relatively low external insulation of a dwelling particularly when windows are open for ventilation. For some sources it may be necessary to develop new initiatives which might use community based procedures. The development of solutions will require some further research and a study has just started to investigate the problem of amplified music in more detail. The results of this study will indicate whether improved sound insulation performance could substantially solve the problem or whether the only viable solution is to persuade people to turn down the volume of their equipment.

CONCLUSIONS

(1) A survey of a nationally representative sample shows that 40% of the adult population hear neighbourhood noise and 14% are bothered by it compared to 11% who are bothered by road traffic noise.

(2) The most widespread sources of disturbance are amplified music, peoples' voices, children, barking dogs and neighbours' vehicles.

(3) Those who are bothered by amplified music or peoples' voices hear the sound most often through a party wall or floor. The other major sources of disturbance are most often heard through external transmission. overall, the disturbing noise is situated inside an adjoining dwelling in less than 50% of cases. Disturbance is most likely to occur during the evening and at night.

(4) The probability of being bothered by neighbourhood noise is affected by certain demographic factors and those in the younger-mid age range living in flats rented from a local authority appear to be at the greatest risk.

(5) Less than half of those who would like to reduce the bothersome noise actually take some action. Although the most common action is to complain to the neighbour, many are reluctant to take this action because of the risk of upsetting relationships with their neighbours. Actions to reduce noise were considered effective in only about 40% of cases.

(6) Because of the complex nature of the problem some further research is required to aid the search for solutions. It is likely that the most effective solution will be different for different noise sources.

REFERENCES

(1) W A Utley and I B Buller 1988. Journal of Sound and Vibration, 127(2), 319-330. A study of complaints about noise from domestic premises.

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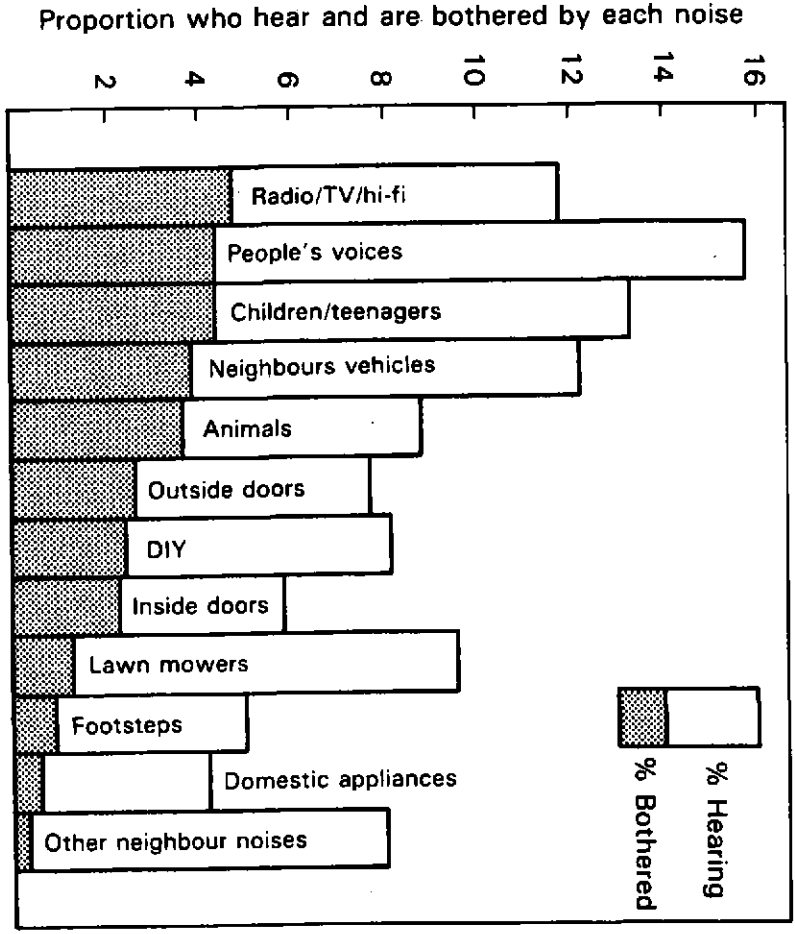

Figure 1 The proportion of people who hear and are bothered by specific neighbour noises (n = 14,406)