

CAN A TELEPHONE SERVICE REDUCE ANNOYANCE ?

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ABSTRACT

Nearly 800 interviews with residents of three German regional airports were conducted. They were asked about noise annoyance and attitudes towards the airport. A transparent information policy was desired mostly and rated to be effective in terms of a good neighbourhood. A 24-hour, toll-free noise line was therefore offered. University staff recorded complaints and gave information. The residents used the noise line especially in the mornings, evenings and on weekends. The usefulness of this service was rated 4.5 (quite/very helpful) on a 5-point scale. Tower controllers, airport staff, and the residents got some insight into the other parties view. Some residents noticed pilots flying more sensible afterwards.

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INTRODUCTION

Information policy is an important factor in annoyance generation and reduction (Porter, 2000; Vogt & Kastner, 2000). Already in the first Heathrow study (McKennell, 1963) it was concluded that attitudes towards aviation in general and noise in particular significantly affect annoyance. People, who think that too little is done against noise, who are afraid of accidents and fear for their health are more annoyed than people with neutral or positive attitudes under the same noise load (McKennell, 1963, p. 77). Negative emotions like fear and anger are especially induced when people are kept in suspense and future developments are beyond their influence.

Therefore, the information exchange between noise producers and people annoyed plays an important role in noise control policy. A study about neighbourhood noise in The Netherlands showed for example that in 40 % of the cases a dialogue took place, which in 60 % could at least partially resolve the noise problem (Kuipers, 1990). Although there are many tools and experiences (e. g. Hinton, 2000; Popp, 2000; Psychas, 2000; Solberg, 2000; Soulage & Aujard, 2000; Witter, 2000), only few airports use them to full extent. At most airports in Germany, complainants reach the air traffic control services or the traffic centre of the airport, where of course safety has the highest priority and not noise abatement. Sometimes the local government provides a complaint service. Some large airports like Duesseldorf International

engaged public relations offices for this purposes. All these operators do not systematically collect and analyse data with the aim to diagnose and solve the most important problems. An exception is BAA Heathrow (Witter, 2000), which operates a Community Information Office. The complaints are entered into a Noise Complaint Data Base, which gives information capable of designing noise abatement procedures. As described by Flindell and Witter (1999), noise complaints in Heathrow are related to a noise and track monitoring system. Deviations from the flight paths are pursued and the residents are called back and informed. They additionally are invited into the visitors centre for more information. Heathrow also has a citizen forum, where people come together to discuss noise problems and potential abatement procedures. The exchange of arguments alone is seen a necessary preposition to find agreements. The average annual number of noise calls varies around 3'300 and represents about 1% of residents in the 57 dB(A) zone.

An example of a governmental noise phone is given by the city of Garbsen near Hannover Airport. The green party installed a noise line including fax and email under the motto "noise is annoying", but only for three days a year from 1800 to 2100 hours (November 2000 and September 2001). The aim was to identify focal points with respect to noise problems and to act accordingly. The green party stated the noise line very successful and reported 100 complaints. However, these were not systematically documented or analysed.

In view of the importance of information policy in annoyance generation and reduction, disappointingly rare examples are existing considering this way of annoyance abatement. The following study investigated noise annoyance, attitudes towards the airport, the role of information policy and their mutual influences. From the results of a first data gathering, a personal and online way of information exchange (mobile noise phone; NoiseCall) between the airport and its residents was derived. In order to evaluate the success, interviews with residents were conducted before and after installation of the NoiseCall, subsequently referred to as pre- and post-interviews. Moreover, during the NoiseCalls themselves, the residents were asked how useful the service is to them.

METHOD

The study has been conducted at three German regional airports varying in size. Airport one is a fast growing regional airport. Passengers increased from 72'867 in the year 1980 to 677'400 in 1999. 45'134 movements are expected for the busiest six months of the year 2010, mainly propeller aircraft up to and beyond 5.7 tons maximum take-off weight and jet aircraft up to 150 tons like the B737-500. A serious problem is its location in a densely populated area. The airport has developed from a sporting airfield founded in the sixties. Managers and politicians did not foresee this development and therefore many dementi were given, for example that charter traffic could never establish, which proved false in the end. The people living in the vicinity of the airport naturally developed great mistrust against the airport management and politicians. The term "salami-tactic" was found for this kind of slice-by-slice airport extension. Most recently, the airport obtained the licence for 160 landings after 2200 hours in the six busiest months of the year, which is a break of a long-held taboo and a problem in terms of medical noise effects. The daytime average noise level L_{eq} varied within a small range of 53 to 58 dB(A) in the exposed investigation areas and was much higher than in the no noise control area (40 dB(A)).

Airport two is a regional airport with 47.000 movements in the six busiest months of the year 1999. Moreover, helicopters and sporting planes play an important role since several flying schools and aeroclubs have their home bases here. The airport plans an extension, which keeps the total number of movements constant but reduces small propeller aircraft and increases ICAO 16 propeller airplanes by 42 % and jets by 580 % in the year 2010. In the past few years great mistrust towards the airport has been developed, in the view of the residents

due to an insufficient information policy of the airport management. Daytime Leq values ranged from 40 to 60 dB(A) around airport two. Thus airport one and two were in similar ranges.

Airport three hosts at present several helicopter builders, parachuting and flying clubs, and one charter flight a week during summer. The extension of airport three to an international airport was applied for. With great effort, different lengths and positions of the runway were simulated with respect to noise contours. In one case, the number of people exposed to a daytime Leq of 45 dB(A) will be reduced from currently over 7'000 to 4'000 despite the increase in traffic. Although this high sophisticated airport planning will rather reduce than increase noise problems in objective terms, the residents naturally fear more noise and pollution. Daytime Leq values ranged from 35 to 48 around airport three. Thus, among the studied airports, airport three was by far the least noisy.

The Dortmund University NoiseCall was offered six weeks at airport one, sixteen weeks at airport two and eight weeks at airport three. Residents were invited to call free of charge 24 hours during these time periods. The calls were transferred to a mobile phone operated by psychologists, who were well informed about aviation in general and the noise situation at the respective airport in particular. They recorded complaints, gave information to the residents, asked them to what extent they were annoyed (Table 1). If necessary and/or desired by the caller, airport or air traffic control were contacted for more information, which was later passed on to the residents. Finally, in order to evaluate the service, the callers were asked, how useful they find the NoiseCall. All ratings were made according to the 5-point category scales of Rohrmann (1978). The usefulness categories were for example not at all (1), a little (2), moderately (3), quite (4), and highly (5) useful. Moreover, before and after installation, residents were pre- and post-interviewed as described by Haugg and Vogt (this conference). Table 2 gives an overview of the number of interviews in the different stages of the study at the three airports.

Table 1: Structure of the NoiseCall interview.

Case characteristics	Sex, age, investigation area Code, date, time of day
Complaint	Reason for the call, date and time of the noise event, description of the aeroplane, flight routes and heights, activity being disturbed, extent of interference and annoyance (five point rating scale)
Potential counter-measures	What could the airport do to tackle the specific problem which triggered the call, probability that thereby the attitude of the caller towards the airport would change (five point rating scale), usefulness of the NoiseCall (five point rating scale), if medium or less useful what can be improved, two further questions on specific noise problems of the respective airport (see Haugg & Vogt, this conference)
Ring back	Time, date, and telephone number for a ring back if necessary and/or desired, satisfaction with ring back (five point rating scale), if medium or less satisfied what else was desired

Table 2: Number of interviews at the three airports.

Airport	Pre-interviews	Noise calls	Post-interviews	Total
One	120	27	43	190
Two	183	65	79	327
Three	171	28	76	275
Total	474	120	198	792

RESULTS

Figure 1 shows that 30 % of all pre-interviewed residents mentioned an open and comprehensive information flow as the most important step to achieve and maintain a good neighbourhood. It outranked even active noise control measures (“reduce noise” in Figure 1) or the prevention of further extensions of the airport (“freeze status quo” in Figure 1). At airport one, which is already a large regional airport, the residents also mentioned monetary compensation as potential measure. Airport three on the other hand, having the smallest noise load, also had the least percentages of desires for physical abatement procedures and the highest acceptance (“nothing/accepted” in Figure 1).

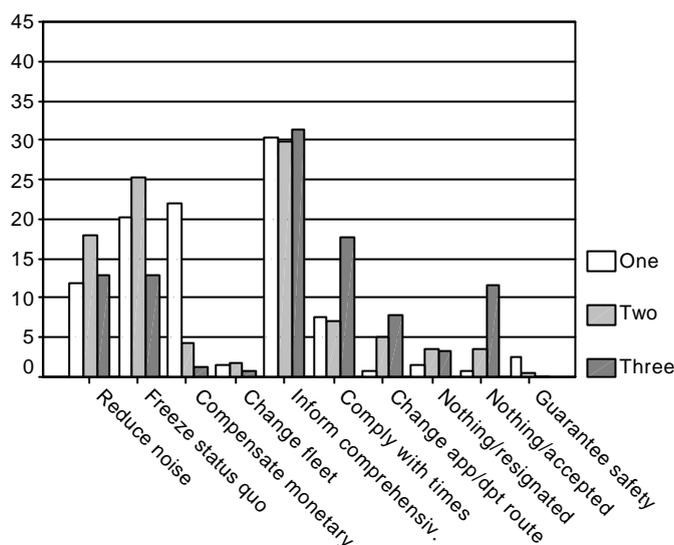


Figure 1: “What can the airport do to achieve and maintain a good neighbourhood?” Percentages of post-hoc categorised answers at the three airports in 474 pre-interviews.

The great majority of the residents at all airports consequently voted for a personal way of information exchange. The NoiseCall was designed to meet this desire. The residents of airport one and two used the 24-hour service and called especially in the early mornings, when the first start-ups were heard, for example at 0530 hours at airport two. Also in the evenings – all airports operated until 2200 hours – a cumulative frequency of incoming calls was recorded. Residents of airport three, which has no clear inbound and outbound traffic peak, called preferably during midday breaks and weekends.

Most callers complained about single intensive noise events for example a training helicopter, an extraordinary loud sporting plane or low-flying charter aircraft. The operator could give general information about flight paths and flight levels. If necessary or desired by the caller, the airport or air traffic control services were contacted and further information was obtained and passed on to the resident. During the back ring, single residents reported that in the meantime the situation had improved. It was the impression of the operators that tower controllers were reminded of noise reducing flight manoeuvres and accordingly gave instructions to the pilots.

At all airports, this service was on average rated very useful (4.5 on 5point scale). Tested against the centre of the scale, the positive mean rating was statistically significant ($p=0.000$).

Figure 3 shows the average annoyance rating before and after installation of the NoiseCall at the three airports. Although the callers appreciated the NoiseCall very much, the general community rating did not change significantly. This was due to the majority of non-users, who did not report an annoyance reduction. However, the average annoyance of the users decreased from 3.0 (medium annoyed) to 2.6, which failed statistical significance only by 1% ($p=0.060$).

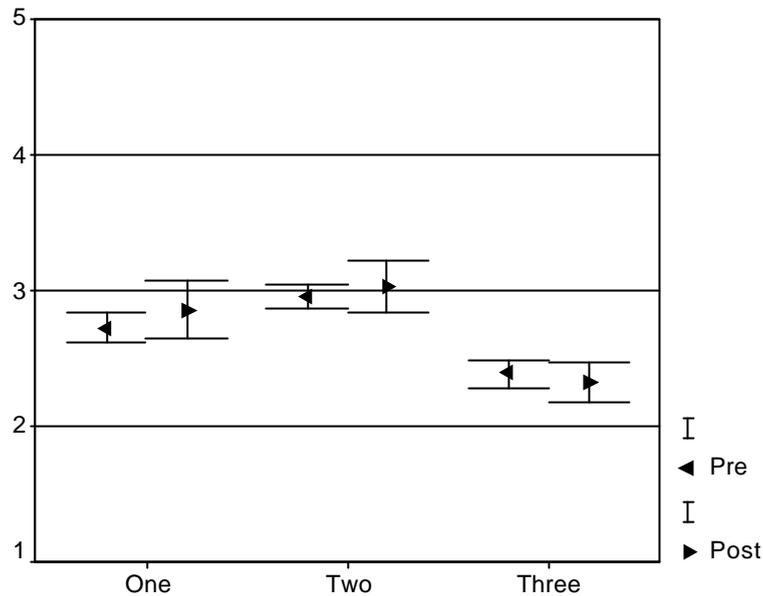


Figure 3: Mean annoyance \pm standard error before and after introduction of the NoiseCall at the three airports in 474 pre- and 198 post-interviews.

An analysis of variances with the within-subject factor time (pre, post) and the group factor airport for the data displayed in Figure 3 revealed a main effect of the airport ($F_{2,145}=5.645$; $p=0.004$). Post-hoc t-tests showed that the residents of airport three were significantly less annoyed than those at airport two, while all other comparisons were below statistical significance ($p_{one,two}=1.000$; $p_{one,three}=0.203$; $p_{two,three}=0.004$). This result can be attributed to the lower noise levels at airport three.

CONCLUSION

The Dortmund University NoiseCall paid tribute to the fact that only about one third of noise annoyance is due to noise level and two thirds to information policy and other non-acoustical moderators. Altogether, the NoiseCall proved an adequate tool for the relatively few people using it. However, it could not reduce community response in general. Further statistical analysis will focus on the annoyance reduction of NoiseCall users compared to non-users. Moreover, several proposals of residents to make the NoiseCall more attractive are investigated to increase the number of users.

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