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DISTURBANCE OF EVERY DAY ACTIVITIES DUE TO ROAD TRAFFIC AND AIRCRAFT NOISE

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1. INTRODUCTION

In the field of environmental psychology we assume interactions between people and their environment. Further more it includes the active handling of environmental stressors like the one for example noise. If we want to figure out how that handling works it is nessacary to focus on the process of handling rather than only on the results. That means we have to consider how noise effected individuals structure their every day life and weather that structure changes under actual exposition to noise.
Our study concentrated on four selected residential areas (RA). One RA was impacted by high sound levels (aproximately 70 db(A)) with its main source aircraft, the second RA was impacted by medium sound levels (approximately 60 db (A)) also caused by aicraft. The sound pressure levels on the other two RA's where similar. Different was only its source. In the last two cases it was traffic noise. In the above mentioned RA's we collected information refering to noise impacts in general through a standarized questionnaire. After that we did interviews by calling the individuals by phone up to ten times a day. These interviews, which where repeated eight times during a six week period included questions refering to the actual interference of their doing caused by noise.

2. THE METHOD

Until now Experience-Sampling-Methods were used and developed in the field of stressovercome-research and in the field of socio-diagnostic to seize social structures. The methods foundation is the attempt, to seize the evolutionary part of behavior adequately. The individuals where asked to observe themselves in everyday life situations and to structure that observation with an instrument exclucively developed for such surveys Through that method the situation of interest can be meassured during or directly after ist appearence consequently it is a garant of a high ecological validity.

The ecological noise research sees the individual not as a passiv recipient of noise, but as an active one who is able to deal with the specific enviromental situation. Taking that into account it is interesting to study the interaction between individual and noise during their joint appearance. In our study we phoned the participants up to ten times spread randomly over the whole day and the interview took approximately two minutes. The main interest concentrated upon the question of the participants activity and weather he felt disturbed in his activities through noise. On the one hand the results where compaired with the ones of a standarized questionnaire which included questions about disturbance and annoyance caused by noises in which the participants could claim the the level of disturbance in retropective. On the other hand we compared the reported psychological stress and the physical sound level values.

3. QUESTIONS OF IMPORTANCE

Refering to the reported activities following aspects where of importance:

1. Do noise affected individuals postpone or at least neglect their planned activities?
2. Which of the reported activities are the most sensitive to interruptions?
3. Are there specific parts during the day in which the participants are more sensitive to interruptions?
4. Are there any differences in the effects of noise when the noise sources are different?
5. Is the method adaquate to meassure the participants every day life without taking to much influence?

4. RESULTS

In the first step we aggregated the data into average values per hour on both sides.. Two independent raters coded the reported activities through a developed category cliche. The coherence - defined after Kritz- reached 0.83 coeffizient which was an acceptable finding. 14 categories where used and the reported activities where distributed in one of them.
Outdoor activities were summarized under that one feature. Indoor activities were distinguished between: sleep, relaxing, reading, passiv and interactive communication, job related activities, hobbys, nursing other people, housework, eating, hygiene, private correspondence and the so called in between activities which occur neither entirely indoor nor entirely outdoor respectively changing the rooms while receiving our phonecall.

Frequency analysis of the temporal distribution and the disturbance of the reported activities through noise in dependency of ist source and the sound pressure level

The individuals within the region with high sound levels caused by aircraft, in the following lines called AHL, sleep more than the other individuals. The individuals within the region exposed to medium sound levels caused by aircraft (AHM) reported high rates of relaxation and the lowest outdoor activities. In both regions

with the the high sound levels (aircraft and road traffic related) we found the highest rates of radio and TV consumption.

The AHL individuals begin their day earlier than all other individuals but they take a nap in the afternoon. The AHM individuals had the highest rates of relaxation activities during the afternoon The relaxation activities of all other participients were spread all over the day. The temporal distribution of radio and TV consumption was quite the same in all regions. We found an increase of consumption in the evening hours.

A five-point-scale was used to meassure the level of disturbance.(no - low - medium - rather - high) This scale was proofed concerning the equidistance.
On the first sight it was very striking that the rated disturbances caused by noise were very low developed. If we ignore the standard deviation the absolut mean is found below „low disturbance". The activity with the lowest rates of disturbance is the consumption of Radio and TV. An explaination might be that the communication disturbance can be avoided through tuning up the radio/TV sound level. This assumption might go along with the high ratings of disturbances within the outdorr activities. During those activities is a camouflage of or a escape from the noise impact impossible.
For those activities like reading, homework, interactive communication and furthermore the ootdoor activities the figure showed the expected picture of disturbance: In the regions with higher sound pressure levels caused by one noise source the rated disturbances caused by noise were higher than in regions with medium noise levels. Outdoor activities occupy a special case because of their highest disturbance values.

The question of noise related postponements of activities was a central aspect of the survey. We expected that activities with a high likage to mental exertion and therefore more sensitive to sound levels would be more often postponed in the regions with high sound pressure levels, (rather) than in those with medium levels. This assumtion could not be veryfied because of method related reasons.: First, this specific study needed a permanent attendance of the participients at their home, therefore we predominantly find housewifes and retired people in the sample who, less than other population groups, prefer activities linked to lower mental exertion. Second, especially those activities have a chance to be seized which need a long performance. Like the ones mentioned above these activities too are linked to lower mental exertion. Third, the schedule of phonecalls was limited to the hours 8am and 8pm, thus neither really postponed activities nor periods of silence could have been seized.

Within the study we spent a high expense to meassure the physical stress at the same time as we were asking the participant about the degree of being disturbed by noise. The goal was to identify the correlative relation between the physical strassor „noise" and the disturbance of single activities. The coherence of noise and annoyance was closer for the traffic noise areas than for the aircraft noise areas. Most probably, this means that the aircraft noise annoyance is not adequately described by average values per hour.

5. DISCUSSION: THE METHOD'S EFFICACY

It can be said that with using the method we can seize the every daylife without changing it in a significant way. Anyhow the results suggest that a present disturbance of activities caused by noise in the every day life of that sample almost does not occur. In the standarized questionnaire which was conducted before the phone interviews the findings were compaired to international results much alike and reported „ normal disturbance". Assuming that the general noise annoyance relates to the reported disturbances we suppose that we failed in registrating the actual disturbance of activities. The reason might be that we randomly called the individuals during times with no disturbances. On the other hand it can not be excluded that our phone contact had a mitigative effect on the noise annoyance.