

Personal and situational variables in relation to traffic noise annoyance and its effects on personal and behavioral variables:

Results of a representative survey

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INTRODUCTION

A representative survey [1] showed that 15% of the Swiss population is bothered or highly bothered by road traffic noise [2]. Significant measures have been undertaken to reduce the number of people exposed to noise exceeding the threshold limits. The most effective form of noise abatement works directly on the source of the noise. Apart from technical improvements this means that people are asked to adopt low-noise behavior, e.g. by buying low-noise tires or using public transport or slower means of transportation. Of the study population, 15% mentioned adopting measures against environmental noise, among which were measures targeting protection from the noise emissions of others. People living in a city were more likely to take measures than people living in a village or the surrounding areas. Differences between language regions were almost significant [2].

Aim of the study: Because the processes behind low-noise behavior are not well understood, we are developing a process model in a comprehensive research program to explain the change of noise-relevant behavior. Within the scope of this research program we are re-evaluating existing survey data to further refine our model.

Research question: Which factors (e.g. noise annoyance) predict whether someone will take measures against noise? To what extent do those measures involve the reduction of one's own noise emission?

METHOD

Procedure and participants: The study is based on a representative survey (Umweltsurvey [1]) that was conducted with 3369 participants (response rate 52%) between November 2006 and March 2007. The randomly selected participants completed a first questionnaire by phone and a second questionnaire in writing.

Measures: Variables analyzed were age, sex, language region, home-ownership, noise annoyance, volume of road traffic next to one's home, personal norm of environment-friendly behavior, environmental consciousness, whether measures were taken and which measures these were.

RESULTS

Preliminary results of the evaluation are presented here. Only 0.2% of the indicated measures (weighted) could be categorized as measures reducing one's own noise emission. The other measures targeted protection from the noise emission of others, such as, constructional measures or complaints. In the logistic regression only those participants were included who completed both questionnaires . (N = 2289, average age (SE) = 51 (17), 56% female)

Table 1 illustrates significant predictors that explain whether someone took steps against environmental noise. The most important predictors were noise annoyance and home-ownership. Factors not reaching significance were sex, language region and environmental consciousness. Exp *b* values over 1 imply a higher probability to take measures with an increased predictor value.

Table 1: Logistic regression of the measures taken against environmental noise

-	B (SE)	Wald's χ^2	df	p	exp <i>b</i>
Included					
Constant	-5.225 (.351)	219.528	1	.000	.005
Age	.011 (.003)	10.824	1	.001	1.011
Tenant	Ref.	Ref.	Ref.	Ref.	Ref.
Home-owner	.485 (.111)	19.133	1	.000	1.625
Noise annoyance	.827 (.078)	113.151	1	.000	2.287
Volume of traffic	.179 (.059)	9.070	1	.000	1.196
Personal norm of environmental-friendly behavior	.235 (.067)	12.174	1	.000	1.265

Note. $R^2 = .08$ (Cox & Snell), .13 (Nagelkerke). Overall model evaluation $\chi^2 (5) = 221.355$, $p < .001$. Goodness-of-fit test (Hosmer & Lemeshow) $\chi^2 (8) = 19.269$, $p < .05$. Only significant predictors are displayed.

DISCUSSION AND OUTLOOK

Only 0.2% of the participants indicated that they had reduced their own noise emission. This shows that reduction of their own noise emission as a way of reducing environmental noise is not in people's awareness.

The tendency to take measures against noise increases with higher age, home-ownership, higher noise annoyance, higher volume of road traffic and a stronger personal norm. Environmental consciousness did not reach a significant level. However, environmental consciousness in the study population is a significant predictor for environment-friendly behavior [2]. This allowed us to hypothesize that noise-reducing measures are commonly not associated with typical environment-friendly behaviors.

The investigation of further predictors is needed to explain more variance of noise-reducing measures. Therefore we are currently collecting model specific data with an online survey. Based on our model we will eventually design interventions to promote low-noise behavior.

REFERENCES

- [1] Diekmann, A. & Meyer, R. (2008). *Schweizer Umweltsurvey 2007. Dokumentation und Codebuch*, Zürich, Professur für Soziologie, ETH Zürich.
[2] Diekmann, A., Meyer, R., Mühlmann, C. & Diem, A. (2009). *Schweizer Umweltsurvey 2007. Analysen und Ergebnisse. Bericht für das Bundesamt für Statistik (BFS) und das Bundesamt für Umwelt (BAFU)*, Zürich, Professur für Soziologie, ETH Zürich.

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