



2018 ERA-ENVHEALTH open conference
*Considering vulnerable groups in policy,
research and risk communication in the field of
Environment and Health*

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**Risk communication:
tools for training, enhancement and empowerment**



Risk communication in environment and health

The Env&Health theme is characterized by:

- ▶ a **complex governance**: in the European Union, *environmental* issues are devolved to the Union, while *health is regulated* by the States;
- ▶ a **high level of uncertainty, ambiguity and complexity** regarding the scientific research results, which involves examining the multiple aspects of risk exposure and the consequences on community health;
- ▶ a **highly variable public risk perception**, linked to different cultural, socio-economic and political contexts. It can play a role in epidemiological study results.

Each of these characteristics involves critical elements related to the **knowledge transfer and exchange**



Risk perception analysis can provide useful insights for

- understanding specific exposure pathways, linked to cultural behaviours or lifestyles
- exploring knowledge and information needs about health and the environment
- making results understandable
- properly address recommendations



Risk communication: an ongoing debate

- ▶ \leftrightarrow experts \leftrightarrow regulatory agencies \leftrightarrow policy makers \leftrightarrow citizen associations \leftrightarrow social actors \leftrightarrow corporations \leftrightarrow media \leftrightarrow
- ▶ Controversial
- ▶ Rapid change of media environment and role in society
- ▶ \rightarrow crisis of the agenda setting role \leftarrow
- ▶ \rightarrow Disintermediation \leftarrow
- ▶ Methodologies, places and frames quickly changing



Tools for research + education

Questionnaire for adults in HBM research

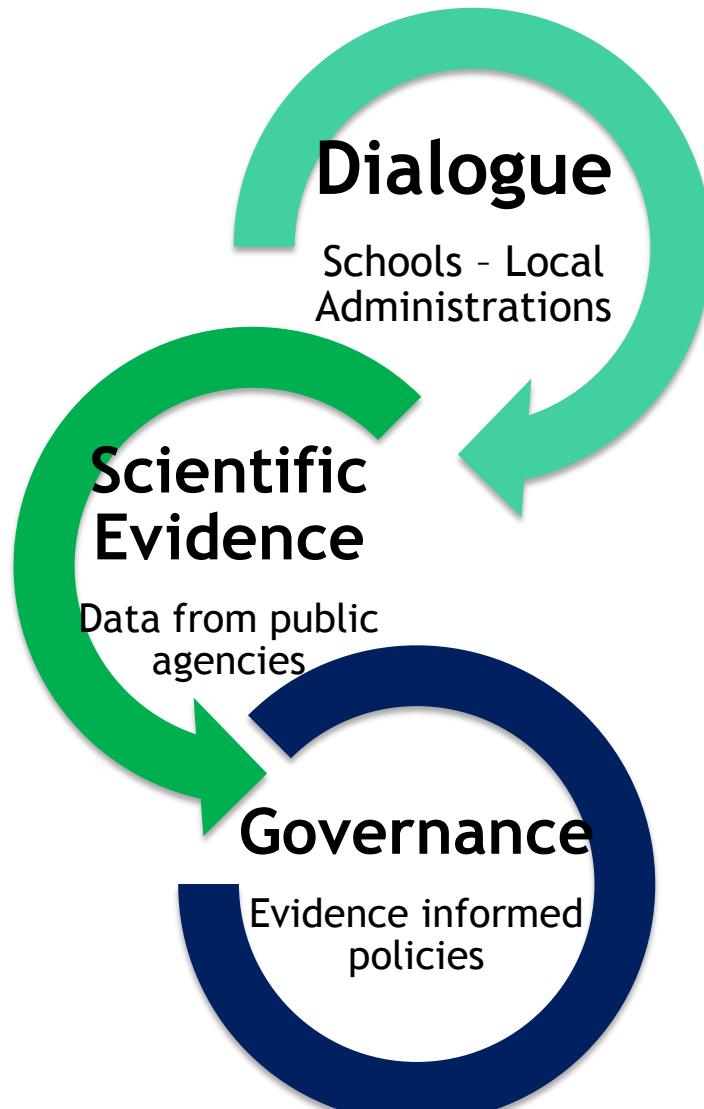
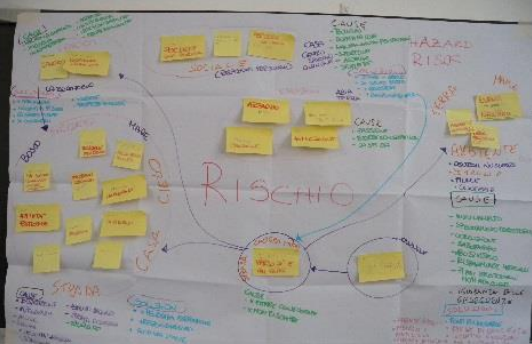
- ▶ Environmental Epidemiology studies including HBM in Italy addressed the issue of risk perception and risk communication
- ▶ Qualitative and quantitative tools have been developed and are presently used in further research to test the use and to transfer results
- ▶ Work in schools with youth direct involvement
- ▶ → risk perception / environmental monitoring ←
- ▶ Training in risk communication

Tools for research: LIFE+ GIOCONDA ongoing activities



Gioconda

i GIOVANI CONTANO NELLE DECISIONI
su AMBIENTE e SALUTE



Tools for research: questionnaire for children in education and capacity building



- ▶ **ACTIVITY:** involve adolescents in the construction of effective evidence-informed policies on the environment and health
- ▶ **MEAN:** a process of learning and dialogue with adolescents based on a scientific approach: examining and discussing **data (env. monitoring and risk perception)**, facts and options, and then elaborate proposals for action → mobility, energy, gardens and cycling paths management



GiocoConda

i **GIOVANI CONTANO NELLE DECISIONI**
→ su **AMBIENTE e SALUTE**



Tools for research: questionnaire for children in education and capacity building

To understand young people's perception of risk associated with environmental pollution

- ▶ → to monitor air pollution and noise
- ▶ → to collect questionnaires on risk perception
- ▶ → to build a learning and co-creation process
- ▶ → to set up a web-based tool to allow replication

Noise risk was particularly relevant in the process → knowledge, awareness, education tool, dialogue with experts, self sufficiency

Research Article

Open Access

Marco Chetoni, Elena Ascari, Francesco Bianco, Luca Fredianelli, Gaetano Licitra, and Liliana Cori

Global noise score indicator for classroom evaluation of acoustic performances in LIFE GIOCONDA project





International Journal of
*Environmental Research
and Public Health*



Article

Annoyance Judgment and Measurements of Environmental Noise: A Focus on Italian Secondary Schools

Fabrizio Minichilli ^{1,*}, Francesca Gorini ¹, Elena Ascari ² , Fabrizio Bianchi ¹, Alessio Coi ¹ ,
Luca Fredianelli ³, Gaetano Licitra ², Federica Manzoli ¹, Lorena Mezzasalma ¹ and Liliana Cori ¹

Int. J. Environ. Res. Public Health 2018, 15, 208



GIOCONDA NOISE STUDY

PARTICIPANTS:

8 schools involved, 28 classes

→ 603 students

- 521 completed the
questionnaire on risk
perception

→ 40 teachers,

→ 20 public administrators

→ 30 researchers



The poster features a blue background with a map of Italy. At the top, the 'Gioconda' logo is displayed with the tagline 'I GIOVANI CONTANO NELLE DECISIONI' and 'PER UN AMBIENTE E SALUTE'. Below this, the names of the study locations are listed: Valdarno Inferiore, Ravenna, Napoli, and Taranto. Each location is accompanied by a green silhouette of a person holding a yellow star. The word 'Partecipano' is written in large, stylized yellow letters. At the bottom, a list of participants is provided, underlined in yellow.

Gioconda
I GIOVANI CONTANO NELLE DECISIONI
PER UN AMBIENTE E SALUTE

Valdarno Inferiore
Ravenna
Napoli
Taranto

Partecipano

più di 600 studenti tra gli 11 e i 17 anni e i loro genitori
30 Insegnanti
8 scuole secondarie di primo e secondo grado a Napoli, Taranto, Ravenna, Valdarno Inferiore (San Miniato, Montopoli in Val d'Arno, Castelfranco di Sotto e Santa Croce sull'Arno).



METHOD

MEASURED NOISE

Acoustical **evaluation** of any classroom with:



A single specific indicators

A global indicator

representing the judgment of the overall noise situation

PROCEDURE

1. setting a list of significant acoustic parameters to investigate;
2. establishing a range score for each parameter;
3. establishing a Global Noise Score GNS to be assigned to the classroom;
4. carrying out the measurement campaigns;
5. analysing the data and providing the results.

METHOD

MEASURED NOISE

Six parameters, defined in accordance with international standards:

- the L_{DAY} for investigating the exposure to external sources, calculated from:

1. external noise monitoring $L_{DAY-Ext}$
2. internal short-term measurements $L_{DAY-Int}$

- the following four parameters to investigating
the building acoustic characteristics:

3. façade insulation: $D_{2m,nT,w}$
4. wall insulation: R'_w
5. reverberation time: RT
6. speech intelligibility index: STI





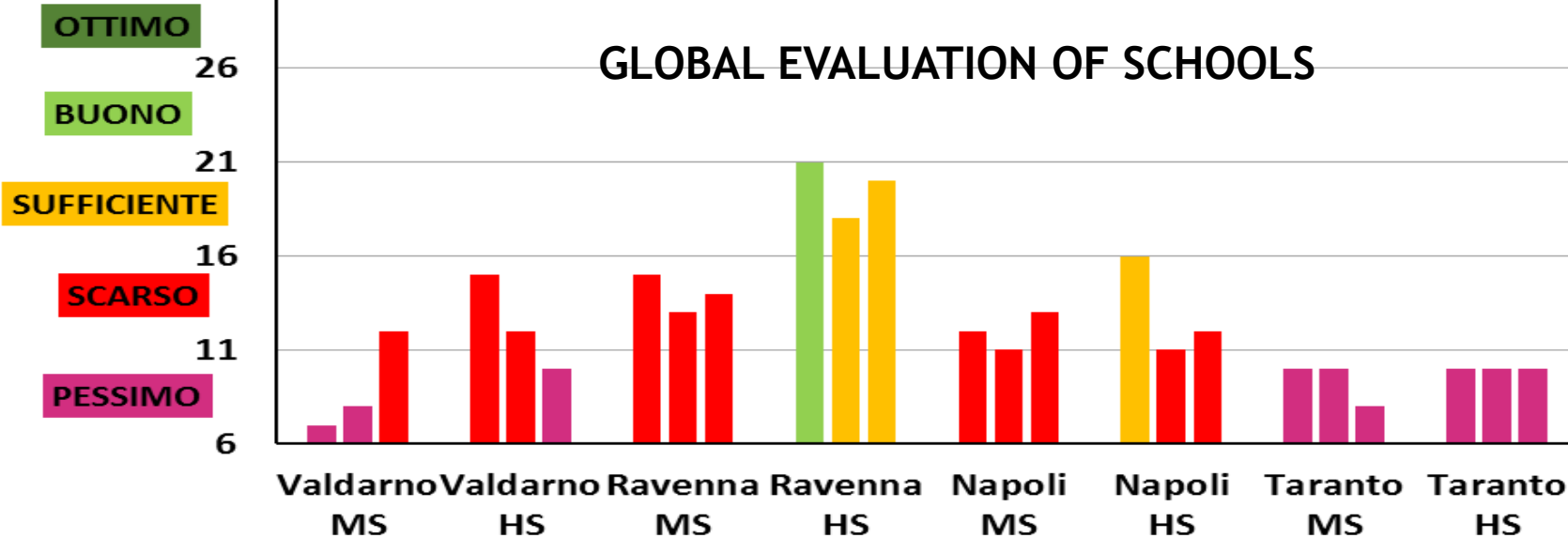
indicator:
GLOBAL NOISE SCORE

Summarize the six analysed parameters

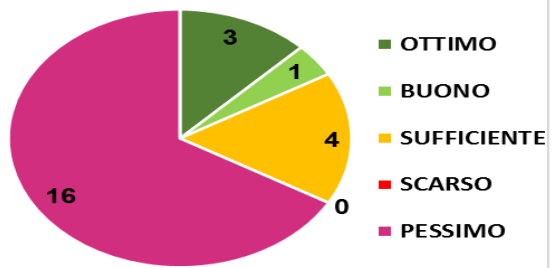


EXISTING PROBLEMS

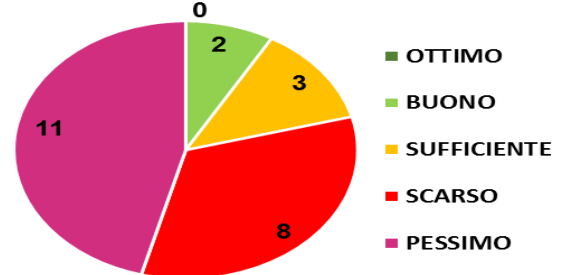
- Use of building created for different uses
- Lack of ceiling with sound insulation
- Lack of good frames and proper maintenance



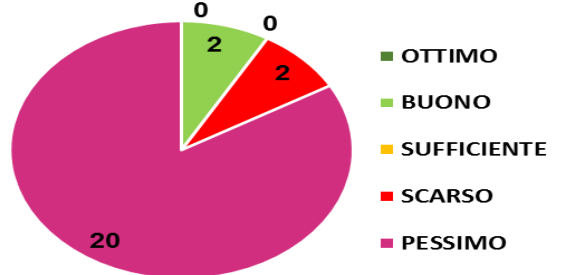
LIVELLO EQUIVALENTE ESTERNO



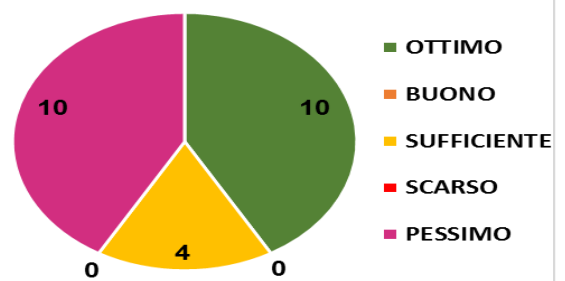
ISOLAMENTO DI PARETE



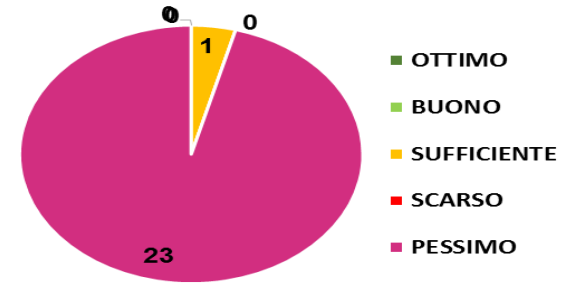
TEMPO DI RIVERBERO



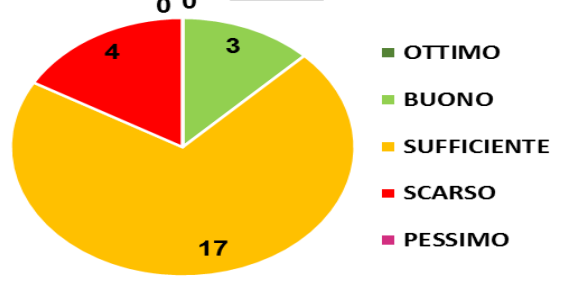
LIVELLO EQUIVALENTE INTERNO



ISOLAMENTO DI FACCIATA



RASTI



METHOD**PERCEIVED NOISE**

Data collection was performed using a self-administered **questionnaire** filled in the classroom setting.

The questions, arranged in different sections, were designed to investigate the level of awareness on environmental issues, the perception of risk related to environment and health, and the willingness-to-pay.



QUESTIONS

- a “Do you think your school is noisy?”
- b “How annoying is the noise you usually hear when you're at school?”
- c “The annoying noise in the area around your school is causing you any problem?”
- c1 “I do not hear people speaking in the room”
- c2 “The noises distract me”
- d “How often do you notice noise?”

- Questions *a, b, d* were on a Likert-type format (1-5) with the following options:
 - Questions *a-b*, “not at all, a little, somewhat, much, very much”;
 - Question *d*, “never, seldom, sometimes, often, always”;
- Questions *c1, c2* were on dichotomous answer (yes/no).



Individual risk perception index

An individual risk perception index (RPI) calculated as a weighted average of absolute frequencies of each choice:

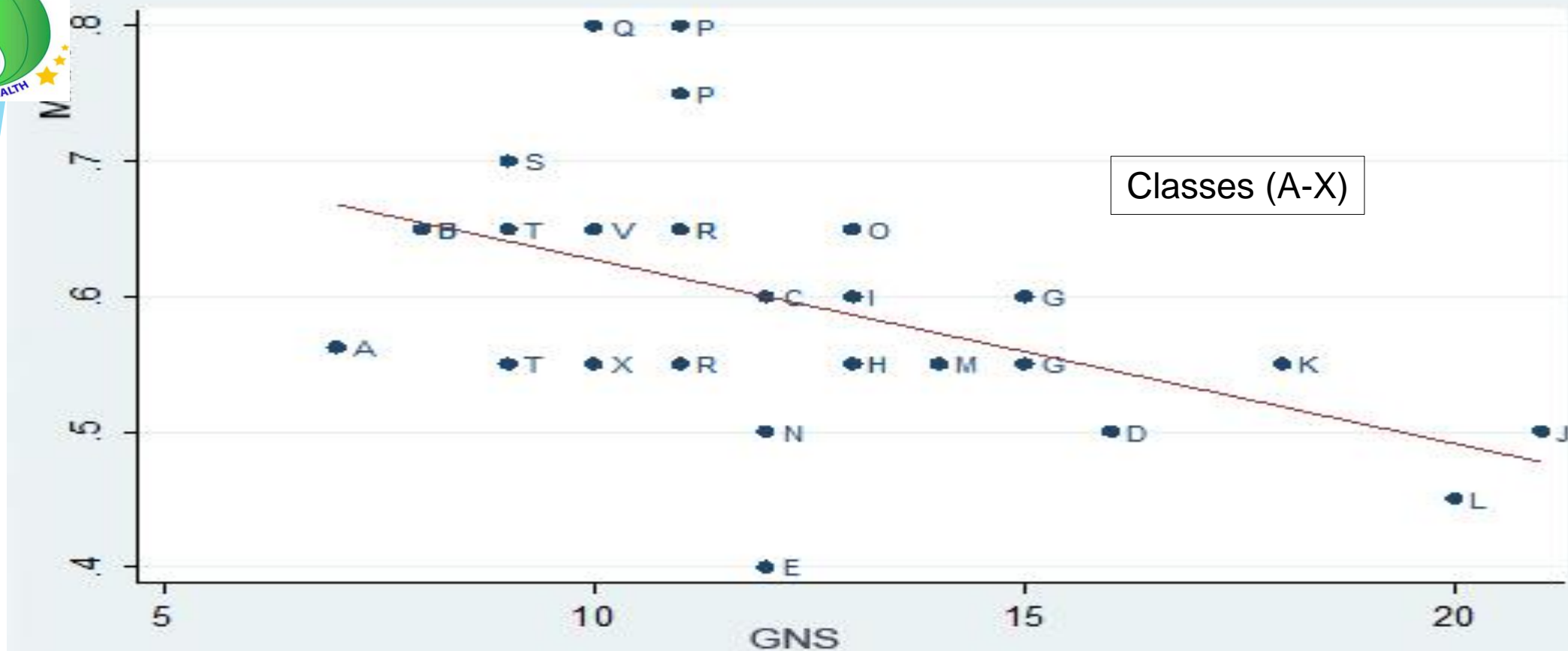
$$RPI = \frac{\sum_i^k n_i \pi_i}{N \cdot (k)}$$

n_i = absolute frequency of the i th mode (e.g. not at all, a little, somewhat, a lot, very much);

π_i = weight assigned to the i th mode (e.g. 1=not at all, 2=a little, 3=somewhat, 4=a lot, 5=very much);

N = total number of observations (i.e. the total number of respondents);

k = number of points (in this case =5) in the Likert scale.



The graph presents a decreasing of risk perception (MRPI) with the increasing of the acoustic quality in classroom, meaning that for higher GNS (i.e. lower background noise and lower reverberation time) the noise and annoyance perceived are lower.



REVERSE CORRELATION

Conclusions

1 – The data show a **good correlation between noise perceived by students and noise measured** in the classrooms involved in the GIOCONDA project. GNS, the **General Noise Score** obtained summing the six acoustic parameters, **is a good indicator** of the acoustic situation in a classroom, because is very well correlated with the global index Median Risk Perception and is good correlated with almost all the answers to the questionnaire, so GNS is representative of the perceived acoustic situation.

2 - Noise risk for young citizens represented a challenge in terms of **knowledge, awareness and monitoring capacity.**

Conclusions



3 - A process of information and discussion raise the attention and the awareness of different stakeholders:

- ▶ in public administrations → in schools – pupils and teachers
- ▶ in research community → in environmental protection agencies
- ▶ in health protection agencies

4 - NOISE in schools is a PREVENTABLE RISK

- Building renovation and revamping
- Low cost measures to limit the indoor noise
- Re-organization of cities

THE CHALLENGES → Risk monitoring and management
→ Risk communication



Tools for training: a guidance document

CCM-Epiambnet project → support the integration of environment and health competencies in developing epidemiology research and surveillance

- **risk communication for environmental epidemiology operators in Health Agencies and Environmental Protection Agencies**
- **A guidance document** including theory and 13 practical examples of risk communication
- **Training by discussing, working and elaborating on experience**



Tools for training: a guidance document

Suggestions / critiques emerged, which can improve the subsequent training path and the use of the guidance document →

- ▶ Responsibility for communication - the people who participated in the seminar are not always authorized to communicate or get involved in the strategies
- ▶ Usually communication is managed centrally
- ▶ The role of experts: how do you state and recognize?



Thank you for your attention

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