STUDENTS PARTICIPATION AND NOISE RISK PERCEPTION

Gioconda

i GIOVANI CONTANO NELLE DECISIONI su AMBIENTE e SALUTE

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Introduction

The LIFE GIOCONDA project "*Young voices count in decisions on environment & health"* aims to provide Local Authorities with an innovative methodology to supports policies on Environment and Health involving young people.

In fact, young people are the most vulnerable subjects of environmental pressure, they are the key-actors in future actions to improve the quality of environment, and their perception risk perception is an important indicator of attitudes, concerns and wish of the entire community.

Introduction

Noise effects on health, well-being and learning are of growing concern among the general public and policy-makers in Europe [1].

Noise exposure accounts for 3.0% of deaths worldwide but represent 10% of the global disease burden [2].

Noise perception can affect general well-being and more specifically, the health-related quality of life [3-4].

Environmental noise has been shown to increase stress levels, heart rate, ischemic heart diseases and hypertension [5-8].

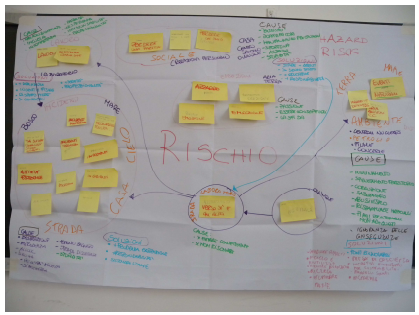
Introduction

The individual's ability to perceive environmental risks depends on several psychological factors, including the knowledge and sensitivity towards environmental problems.

Notwithstanding the importance of this issue, little is known about risk perception in children, including noise-related risk perception.

It has reported that children perceive the risk of noise as low even if it affects their everyday activities [15].

In the framework of GIOCONDA project environmental noise exposure and risk perception were addressed.



Dialogue

Schools – Local Administrations

Scientific Evidence

Data from public agencies

Governance

Evidence informed policies

- 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, facts and options, and then elaborate concrete proposals for action.

Scientific RESEARCH:

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

4 Italian areas characterized by different environmental conditions: Naples (in the region of Campania), Ravenna (Emilia-Romagna), Taranto (Apulia) and Lower Valdarno Valley (Tuscany).

To examine noise risk in the process (knowledge, awareness, education tool, dialogue with experts, self sufficiency)

PARTICIPANTS:
8 schools involved, 28 classes → 603 students. 521 completed the questionnaire on risk perception.
→40 teachers,
→20 public administrators
→30 researchers

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 $\mathbf{L_{DAY\text{-}Ext}}$;
2. internal short-term measurements $\mathbf{L_{DAY\text{-}Int}}$;

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

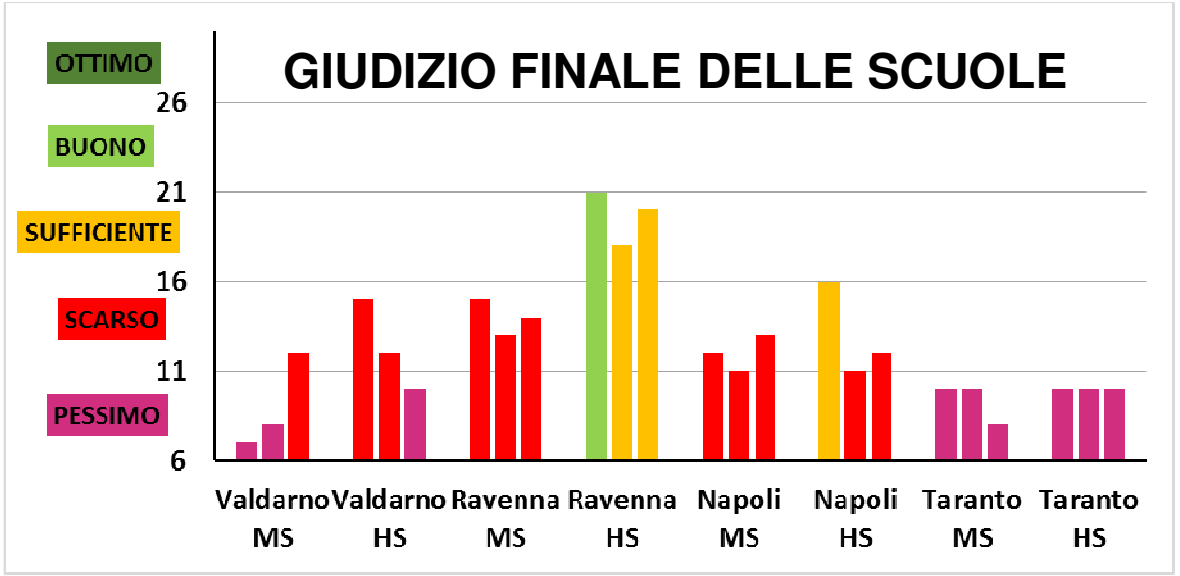
3. façade insulation: $\mathbf{D_{2m,nT,w}}$;
4. wall insulation: $\mathbf{R'_w}$;
5. reverberation time: **RT** ;
6. speech intelligibility index: **STI** .

RISULTATI GLOBALI PROGETTO GIOCONDA

indicatore:

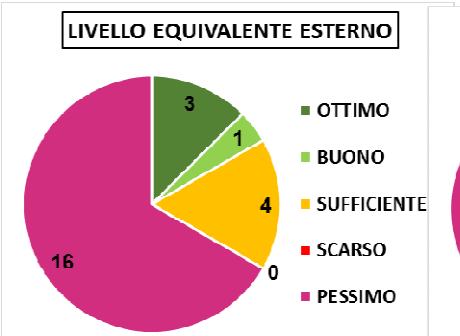
GLOBAL NOISE SCORE

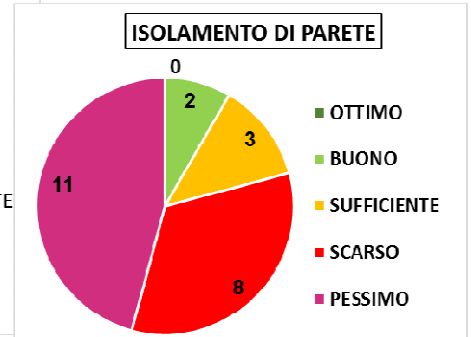
Riassume i sei parametri analizzati

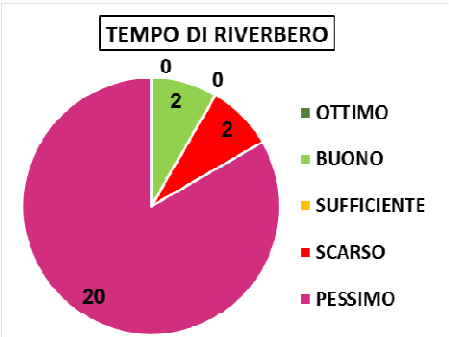


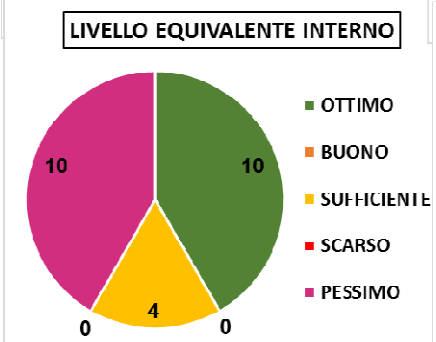
PROBLEMI RISCONTRATI

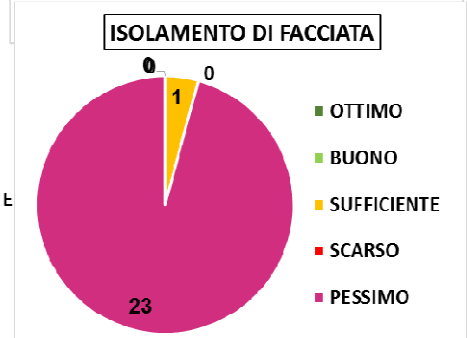
- **Mancanza di controsoffitti acustici anti-riverbero**
- **Mancanza di infissi fonoisolanti**
- **Pessima manutenzione degli infissi**

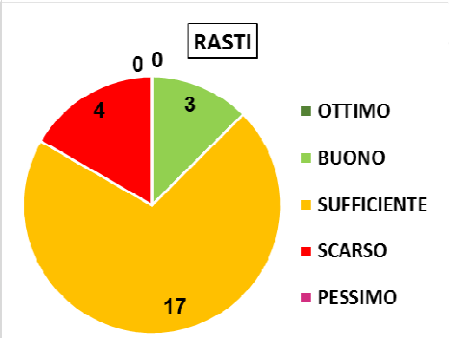












METHOD

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.

METHOD

PERCEIVED NOISE

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).*

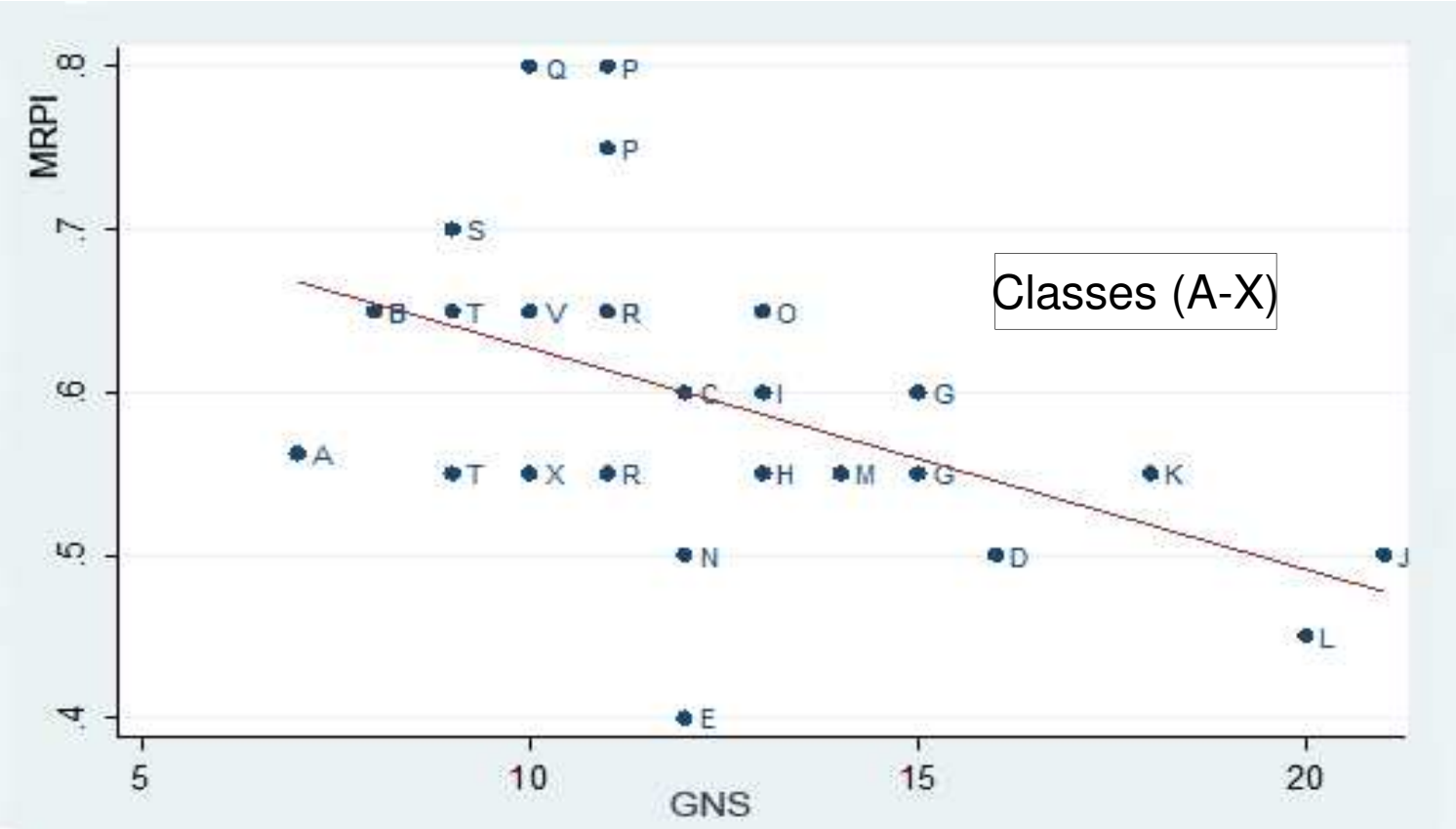
Individual risk perception index

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 ith mode (e.g. not at all, a little, somewhat, a lot, very much);
π_i = weight assigned to the ith 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.

Median Risk Perception Index MRPI vs Global Noise Score GNS

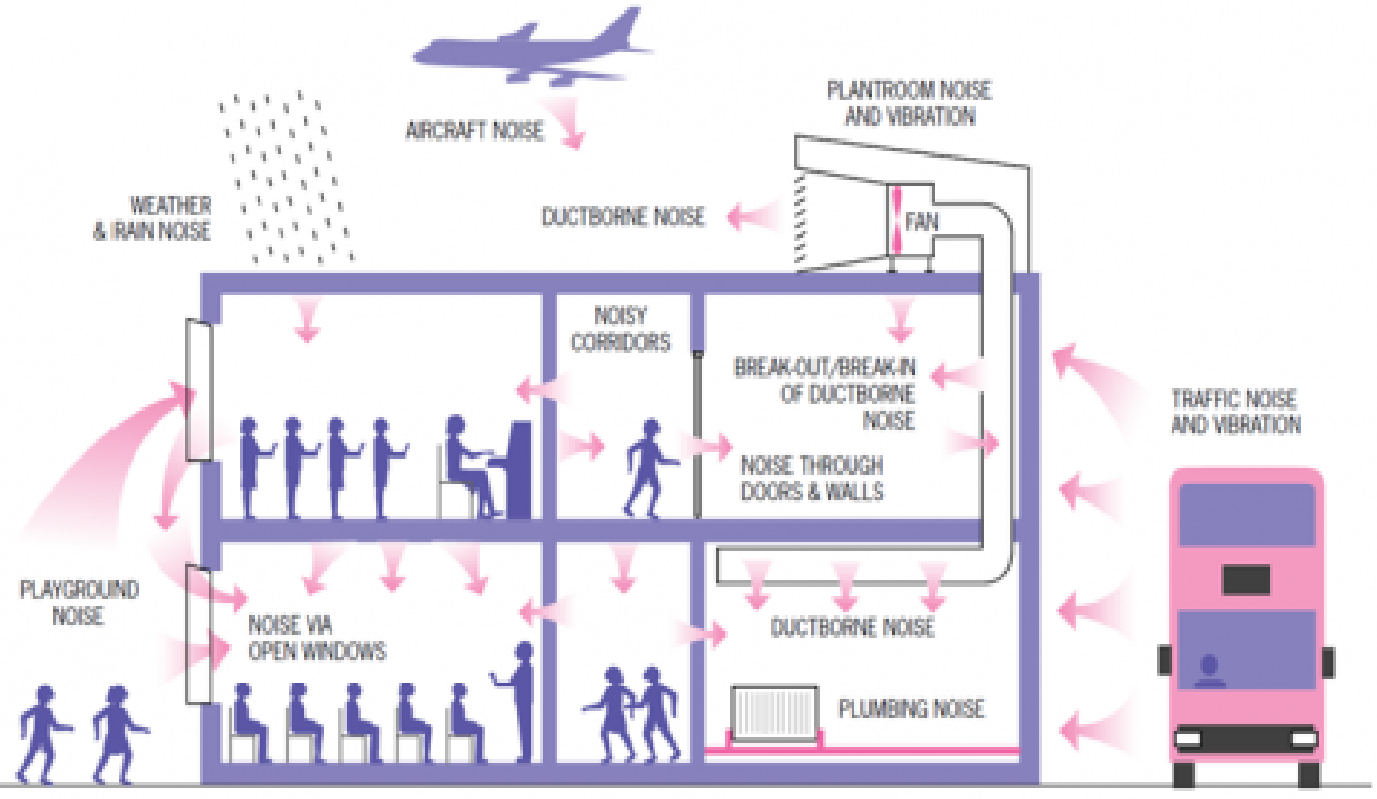


The graph presents a **decreasing of risk perception (MRPI) with the increasing of the acoustic quality in classroom**, meaning that for higher GNS (i.e. lower background noise and lower reverberation time) the noise and annoyance perceived are lower. ➡ **REVERSE CORRELATION**

RESULTS

Global Noise Score (representing total noise situation) and **Median Risk Perception Index** (representing the global perception) have a very good reverse correlation.

There is a reverse correlation between them, because where evident elements for a better noise control are present, risk perception decreases.



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 CHALLENGE → Risk monitoring and management

→ Risk communication

Thank you for your attention

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