Seismic Risk Perception Test
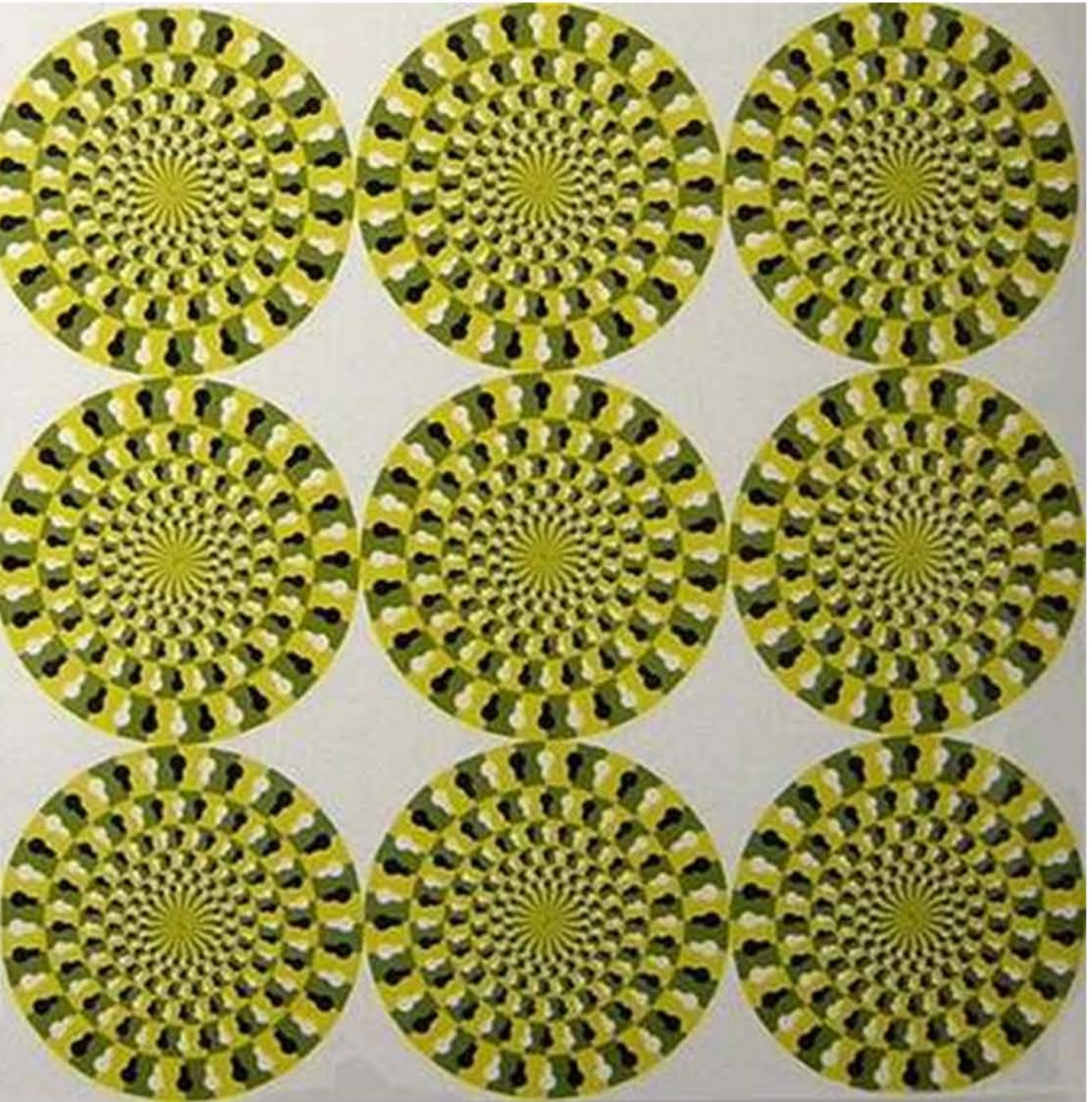
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www.terremototest.it

Risk perception is a collective process that selects and interprets signals on the impact of uncertain events. These signals may relate to direct observations or information received from others.

There are two main approaches to studying risk perception, the realistic approach and the constructivist approach.

The constructivist approach thinks the risk is not "objective", but subjective and socially constructed.
To understand risk perception it is necessary to consider a number of social, psychological and cultural ambits, as well as interaction among them.

This test is built according to the constructivist approach.

The perception of seismic risk does not always depend on the actual value of the risk, but rather on the way in which it is perceived.

In general, people perceive risks as negligible, acceptable, tolerable, or unacceptable and compare them with the benefits. Several factors influence a person's decision to accept or reject a risk.
For this reason the role of perception is very important, especially in the absence of reliable estimates of the actual or real risks.
The clarity of the language used by the mass media and scientists in communicating this information to people is essential for proper knowledge.
To try to better understand the perception of seismic risk in Italy and to provide information useful to raise awareness of the risk we launched this research project at the national level.
Thank you for participating.
The test is completely anonymous and requires about 5 minutes to be compiled.

After completing the test online you will immediately receive an answer on a comparison between your perception and hazard regulations of the area in which you live.

René Magritte—Call of the peaks (1942)

For the construction of the seismic risk perception test we reviewed the research on this topic over the last decade reported in the work of Wachinger, G. & Renn, O. (2010): Risk Perception and Natural Hazards. CapHaz-Net WP3 Report, DIALOGIK non-profit Institute for Communication and Cooperative Research, Stuttgart (available at: http://caphaz-net.org/outcomes-results/CapHaz-Net_WP3_Risk-Perception.pdf).

Among the different approaches we chose the semantic differential method. The semantic differential is a psychological evaluation method designed by Osgood, Suci and Tannenbaum in 1957 to quantify the "connotation" of linguistic terms.

Having defined the element or elements with respect to which you want to study the attitude of the subjects, they are given a sheet comprising a series of scales of "semantic proximity" between two poles. The subjects must indicate, usually on a 7 positions scale, "to which of the two poles" the object of investigation is closer in their opinion. The measurement is made along the discrete gradation between the bipolar pairs of contrasting adjectives or terms, and the results of the sample are then aggregated for the relative statistical studies.

	1	2	3	4	5	6	7	
good								bad

At the beginning of the test each compiler is required to provide the following information

The test was constructed beginning from the factors that determine the seismic risk:
- Hazard
- Exposed value
- Vulnerability.

Assigned to each factor is a number of contrasting terms (eg. unexpected-expected) to which it is possible to assign a score on a 7-point Likert scale.

The factors related to seismic risk are introduced by a question, which is associated with the scales.

Seismic Risk Perception Test

Please note that the test is carried out not for profit, but for research purposes in order to study the idea people have about earthquakes.

Answer the questions scoring for each pair of opposite terms (beautiful-ugly, bright-dark, etc.) the point that best represents your perception. For example to represent a medium value between strong-weak marked the value 4.
It is necessary to fill all the questions.
Fill in the test without linger on. Thank you.

- Region
- District
- Municipality of residence
- Zip code (home)
- Zip code (office)
- Age
- Sex
- Place of birth
- Nationality
- Civil status
- Do you have children?
- Number of children
- Household composition
- There are disabled people with reduced mobility?
- Education level
- Employment

FILL IN THE TEST

NEXT

Seismic Risk Perception Test

Answer the questions scoring for each pair of opposite terms (beautiful-ugly, bright-dark, etc.) the point that best represents your perception. For example to represent a medium value between strong-weak marked the value 4.
It is necessary to fill all the questions.
Fill in the test without linger on. Thank you.

If you try to imagine an earthquake in the area where you live, how would you describe it?

	1	2	3	4	5	6	7	
unexpected								expected
weak								strong
small								big
distant								near
foreseeable								unforeseeable
short								long
moderate								violent
slow								fast
innocuous								dangerous
far away								nearby

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Seismic Risk Perception Test

Answer the questions scoring for each pair of opposite terms (beautiful-ugly, bright-dark, etc.) the point that best represents your perception. For example to represent a medium value between strong-weak marked the value 4.
It is necessary to fill all the questions.
Fill in the test without linger on. Thank you.

In case of an earthquake, how do you imagine your home?

	1	2	3	4	5	6	7	
safe								unsafe
strong								fragile
by law								against regulations
invulnerable								vulnerable
strong								weak
stable								unstable

In case of an earthquake, how do you imagine your workplace?

	1	2	3	4	5	6	7	
safe								unsafe
strong								fragile
by law								against regulations
invulnerable								vulnerable
strong								weak
stable								unstable

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Seismic Risk Perception Test

Answer the questions scoring for each pair of opposite terms (beautiful-ugly, bright-dark, etc.) the point that best represents your perception. For example to represent a medium value between strong-weak marked the value 4.
It is necessary to fill all the questions.
Fill in the test without linger on. Thank you.

Compared to an earthquake, how would you describe the institutions and the people around you?

	1	2	3	4	5	6	7	
pragmatic								fatalist
prepared								unprepared
sure								not sure
close								distant
cohesive								divided
helpful								unhelpful
involved								Not involved

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See for example the work "Understanding risk perception from natural hazards: Examples from Germany" by T. Plapp & U. Werner Institute for Finance, Banking and Insurance / Postgraduate Programme Natural Disasters, Universität Karlsruhe (TH), Karlsruhe, Germany.

The table shows the variables on the perception of seismic risk considered in the test and their relationships with the factors of the semantic differential mehod of Osgood et al.

SEISMIC RISKS FACTORS

PERCEPTION FACTORS		Hazard	Exposed Value	Vulnerability
	Heuristic Information	Unexpected-expected Far in time-closer in time	Poor-rich Modern-ancient Non industrialized-industrialized	Safe-unsafe According to the law-non according to the law Prepared-unprepared
	Cognitive affective Social political institutional Cultural background	Perceived personal risk Familiarity with death because of the earthquake Experience of an earthquake	Perceived degree of scientific knowledge Risk knowledge (old-new risk) Increased risk in the future	Possibility to influence the risk Perceived frequency of occurrence Predictability of the risk
		Evaluation Factor	**Power Factor**	**Activity Factor**
		DIFFERENTIAL SEMANTIC FACTORS		

[Hazard, 10 scale]
If you try to imagine an earthquake in the area where you live, how would you describe it?

[Vulnerability, 12 scale]
In case of an earthquake, how do you imagine your home?
In case of an earthquake, how do you imagine your workplace?

[Exposed value, 7 scale]
Compared to an earthquake, how would you describe the area where you live?

[Perception of seismic risk, 22 scale]
Compared to an earthquake, how would you describe the institutions and the people around you?

You see the earthquake as an event …

These last two questions refer to the variables on the perception of seismic risk in general: cognitive affective, social, political, institutional and cultural.

The seismic risk perception survey began on 22 January 2013 and is still underway.
This seismic risk perception test (www.terremototest.it) has been spread through the social network, the web pages of regional, provincial, and municipal websites and on local online newspapers.
The diffusion of the test was deliberately conducted through the official sites of the sector (Department of Civil Protection, INGV, OGS, universities, etc..) in order to avoid having a biased sample base.
The priority areas for investigation as indicated in the project DPC-ING S2 - Constraining Observations into Seismic Hazard, coordinated by Laura Peruzza (OGS - National Institute of Oceanography and Experimental Geophysics) are the Po Valley and the Southern Appennines, but has expanded to include all the regions of Italy. In relation to the research project S2, data collection will be terminate in May 2013.

Seismic Risk Perception Test

Answer the questions scoring for each pair of opposite terms (beautiful-ugly, bright-dark, etc.) the point that best represents your perception. For example to represent a medium value between strong-weak marked the value 4.
It is necessary to fill all the questions.
Fill in the test without linger on. Thank you.

Compared to an earthquake, how would you describe the area where you live?

	1	2	3	4	5	6	7	
not industrialized								industrialized
uninhabited								inhabited
modern								ancient
poor								rich
neat								dowdy
organized								not organized
rarely visited								visited

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Seismic Risk Perception Test

You see the earthquake as an event…

	1	2	3	4	5	6	7	
you have not experienced directly								you have experienced directly
at low personal risk								at high personal risk
not fatal								fatal
unknown to science								known to science
as a new risk								as an old risk
that does not evoke fear								that evokes fear
that it is possible influence								that it is not possible influence
that rarely occurs								that often occurs
foreseeable								unforeseeable
it will decrease in the future								it will increase in the future
you don't think about								you think about
caused by fate								not caused by fate
revenge of nature, a divine punishment								a natural event
caused by man								not caused by man
that you can not mitigate by urban planning								that you can mitigate by urban planning

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To what degree do you feel informed about the risk of an earthquake in your local area?

- ☐ much
- ☐ enough
- ☐ few
- ☐ nothing

What are your main sources of information about an earthquake?

- ☐ Newspapers   ☐ Television
- ☐ Friends and parents   ☐ School
- ☐ Internet   ☐ Books
- ☐ Civil Protection   ☐ Region
- ☐ Municipality   ☐ District
- ☐ Research Institutions and Universities   ☐ Other

In your local area do you think there are other natural hazards more or less likely to occur than an earthquake.

	More likely	Equally likely	Less likely
Landslides	☐	☐	☐
Floods	☐	☐	☐
Flooding	☐	☐	☐
Volcanic eruptions	☐	☐	☐
Tsunami	☐	☐	☐
Hurricane or tornadoes	☐	☐	☐

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Impact of the project for the design of educational activities

The processing of the data collected on the seismic risk perception will give us detailed information on the national territory to launch campaigns to heighten awareness and improve risk education. In particular - for the first time in the Nation – it will be possible to formulate risk education activities in light of the variables that exercise the most influence on risk perception: environmental, cultural, institutional, cognitive and affective variables. This is also in view of the fact that seismic risk education activities are more effective when taken into due consideration are the local realities to which they refer.

Further developments

The test has been proposed as a permanent observatory to SISTAN - National Statistical System of Istat. This will allow us to collect "continuous" data on seismic risk perception and observe the variations in the short, medium and long term.

Possible implementations of the test involving a comparison between the perception and the "real" data have also been foreseen for the other two risk factors: vulnerability and the value exposed.
At present, however, the main obstacles in this direction are related to the difficulty in obtaining accurate and updated data on these two factors, realities to which they refer.

As of 27 March 2013, data had been collected from 4,671 tests distributed as indicated in the table below.

Data as of 27.03.2013	
Abruzzo	183
Basilicata	85
Calabria	141
Campania	326
Emilia-Romagna	407
Friuli-Venezia Giulia	50
Lazio	255
Liguria	61
Lombardia	302
Marche	101
Molise	39
Piemonte	137
Puglia	140
Sardegna	23
Sicily	204
Toscana	589
Trentino-Alto Adige	44
Umbria	49
Valle d'Aosta	5
Veneto	1530
Total	**4,671**

Test scores evaluation

The scales have a direction in relation to the perception of risk. This direction is determined from: 1 - values of low perception - to 7 - values of high risk perception. For example, in the scale unexpected-expected, the value 1 indicates a low risk perception, the value 7 indicates a high risk perception.
As regards hazard perception, this direction is reversed compared to that expressed by the hazard classes defined by the rules given in the table.

Seismic Zone	Description	Acceleration with a probability of exceedance of 10% in 50 years (ag)
1	It 's the most dangerous area, where strong earthquakes may occur	ag > 0.25
2	In the municipalities included in this area quite strong earthquakes can occur	0.15 < ag ≤ 0.25
3	The municipalities included in this area may be subject to modest trsmbling	0.05 < ag ≤ 0.15
4	It's the less dangerous area	ag ≤ 0.05

Therefore, to carry out the comparison between the perceived hazard and the scientifically assessed the values of the former are processed according to the following matrix.

Transformation of the perceived hazard	
Description	Score
Value 5,26 to 7,00	1
Value 3,51 to 5,25	2
Value 1,76 to 3,50	3
Value 1,00 to 1,75	4

This first processing makes it possible to respond online to the compilers of the test. Comparing the hazard perceived with the scientifically assessed hazard. The response is generated at the end of the test directly on a web page.

Online response page after completing the test   1/2

Thank you for completing the test on seismic risk perception.

This test makes it possible to analyze many aspects of risk perception. At this stage we believe it is useful to give you a simple and immediate response 'on line' to the test that you have compiled.

The answer regards one of the dimensions measured by the test: the perception of seismic hazard compared with the seismic hazard that science assigns to your local area and obtained according to the earthquakes that actually hit it in past centuries and those which, on the basis of geological studies and geophysical surveys, can occur there in the future.

Therefore, since the score of your test indicates that you have a lower perception of seismic hazard than the scientifically assessed seismic hazard, you should pay utmost attention and find out about the seismic classification of your area.
Consider that the risk can change on the basis of both the strength of the earthquake and the stability/safety of your home and the places you go to on a regular basis.
We therefore invite you to pay special attention to your actions and your choices which are critical in terms of worsening or improving your level of personal safety with respect to seismic risk.

Some useful information in regard to the safety of your home, for example is accessible at: http://www.formicablu.it/prj_related_content_video.asp?idMateriale=5).

For information on education initiatives on seismic risk consult: http://www.edurisk.it
To learn about upcoming prevention campaigns on seismic risk consult http://www.iononrischio.it
You can contact us by writing to: info@terremototest.it

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The seismic hazard of a region is derived from all available scientific knowledge: historical, archaeological, geological, physical, etc. To simplify understanding and usability, the risk is expressed in four classes or earthquake zones, with values ranging from 4 (low hazard) to 1 (high hazard).
For further information on the seismic risk and seismic zoning of Italy with a listing by municipalities please visit http://www.protezionecivile.gov.it/jcms/it/classificazione.wp.

Remember, however, that the seismic risk, ie the possibility of damage or other consequences as a result of an earthquake, is composed of two other factors in addition to hazard:
- the exposed value, regarding the people and the tangible and intangible assets present in that local area;
- vulnerability, which refers to the solidity of the buildings that are located in that area and which depends not only on how they were constructed, but also on their state of preservation.

	Very high Hazard	High Hazard	Average Hazard	Low Hazard
Scientifically assessed hazard	1	2	3	4
Hazard perceived	1	2	3	4

The calculated value of the perceived hazard for your test is **lower than the value of the seismic hazard scientifically assessed** for the local area where you live.
This means that your perception of danger is underestimated compared to the seismic hazard indicated by science for your local area.

In brief, the seismic hazard is the probability that an earthquake of a certain strength (magnitude) may occur in a certain area at a given time interval.