Determinants of environmental risk perception in adolescents

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INTRODUCTION

The current study is part of a LIFE+ Environment Policy and Governance research project (GIOCONDA), which aims at involving the youth in the construction of effective evidence-informed policies on environment and health. One of its major priorities is to understand young people's perception of risk associated to environmental pollutants and how it is affected by demographic variables and by perceived pollution. In order to achieve this purpose a population-based questionnaire study was conducted on a sample of 499 Italian students form junior high schools and high schools, from four Italian areas identified by different environmental conditions. The questionnaire on risk perception, that was part of a larger questionnaire, was modeled on the psychometric paradigm (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978), assessing several important qualitative characteristics of the risks associated with environmental pollutants.

METHOD

Participants N. of students and mean age (SD)	Junior High School		High School	
	M	F	M	F
VALDARNO – Tot - 120	N = 34 11.5 (0.30)	N = 33 11.7 (0.52)	N = 51 17.0 (0.74)	N = 2 16 (0.12)
RAVENNA - Tot. 152	N = 45 13.0 (0.62)	N = 47 12.8 (0.37)	N = 36 15.2 (0.65)	N = 24 15.1 (0.74)
NAPLES - Tot. 126	N = 28 13.6 (0.75)	N = 28 13.4 (0.86)	N = 32 15.8 (1.20)	N = 38 15.2 (1.33)
TARANTO - Tot. 101	N = 44 12.2 (0.59)	N = 25 12.5 (0.44)	N = 23 17.9 (0.76)	N = 9 17.9 (0.76)

The questionnaire

It comprised eight 5-points rating scales assessing the following qualitative characteristics of the risks perception: knowledge of consequences on health, own fear of consequences on health, peers fear of consequences on health, others fear of consequences on health, severity of consequences on health, avoidance of consequences on health, immediacy of consequences on health, delay of consequences on health.
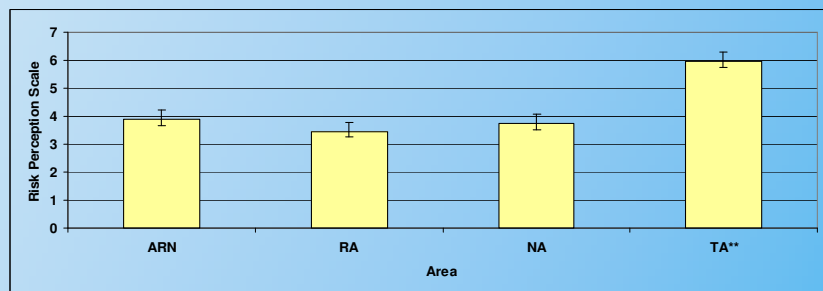
RESULTS

Factorial analysis with n=499 and 8 variables; Principal Components extraction with methods of Eigenvalue > 1 and screeplot; Rotation: Varimax normalized.

Items about Risk Dimensions	M (SD)	FACTOR-1	FACTOR-2
a. Knowledge of consequences on health (1= Not at all; 5 = Very well)	3.16 (0.96)	0.662898	0.049384
b. Own fear of consequences on health (1= Not at all; 5 = A lot)	3.29 (1.14)	0.799803	0.118897
c. Peers fear of consequences on health (1= Not at all; 5 = A lot)	2.79 (1.06)	0.680278	0.314996
d. Others fear of consequences on health (1= Not at all; 5 = A lot)	3.26 (1.11)	0.577373	0.282703
e. Severity of consequences on health (1= Not at all; 5 = Very severe)	3.53 (1.02)	0.840678	-0.068349
f. Avoidance of consequences on health (1= Not at all; 5 = Very well)	2.40 (0.97)	-0.018445	0.930985
f. Immediacy of consequences on health (1= None; 5 = A lot)	3.29 (1.10)	0.715698	-0.070818
g. Delay of consequences on health (1= None; 5 = A lot)	3.58 (1.07)	0.698348	-0.065435

Factorial analysis revealed two components (explained variance= 58%): **Risk Perception** (Factor-1) and **Risk Acceptance** (Factor-2). Inter rater reliability for Factor-1 (6 items) was good (Cronbach's alpha = 0.835).

Risk Perception was reversed in a 7-level scale (RP-7) and showed a negative correlation (r= -0.28 ; p < .001) with the control-item "what about air quality at school (1=very bad; 5=very good)" and a positive correlation (r= +0.41 ; p < .001) with the control-item "are you concerned about air pollution at school (1= Not at all; 5 = A lot)".

Factorial ANOVA 4x2x2 with RP-7 as dependent variable and Area (ValdArno / Ravenna / Naples / Taranto), Age of Students (Junior High School / High School), and Sex (M/F) as between factors showed a significant effect of Area ($F_{(3,483)}$= 34.78; p<0.001; η^2p= 0.05) and a significant effect of Age of Students ($F_{=(1,483)}$= 4.27; p<0.05; h2p = 0.12): Taranto > all other areas and High School students > Junior High School students.

	VALDARNO	RAVENNA	NAPLES	TARANTO
N	120	152	126	101
M	3.87	3.46	3.73	5.95
SD	0.34	0.15	0.16	0.21

	Junior High School	High School
N	284	215
M	4.02	4.87
SD	0.11	0.20

DISCUSSION

Factorial analyses revealed two principal components, labeled risk perception and risk acceptance. Results showed that the risk perception scale significantly correlates to the two questions about air pollution at school. Moreover, younger students presented lower scores on the risk perception scale than older students, probably because their "ecological consciousness" is not fully developed yet. Finally, participants from the city of Taranto (notorious for a highly polluting steel refinery) showed higher scores than participants from other areas (Ravenna, Valdarno, and Naples). These findings highlight distinct patterns of risk perception depending of age and place of living.

REFERENCES

Fischhoff B, Slovic P, Lichtenstein S, Read S, Combs B. How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. Policy Sciences, 1978; 9: 127-152.