

What do I care about the environment?

Results from PISA 2006 on 15-year-old students' attitudes towards environmental issues

Some environmental issues

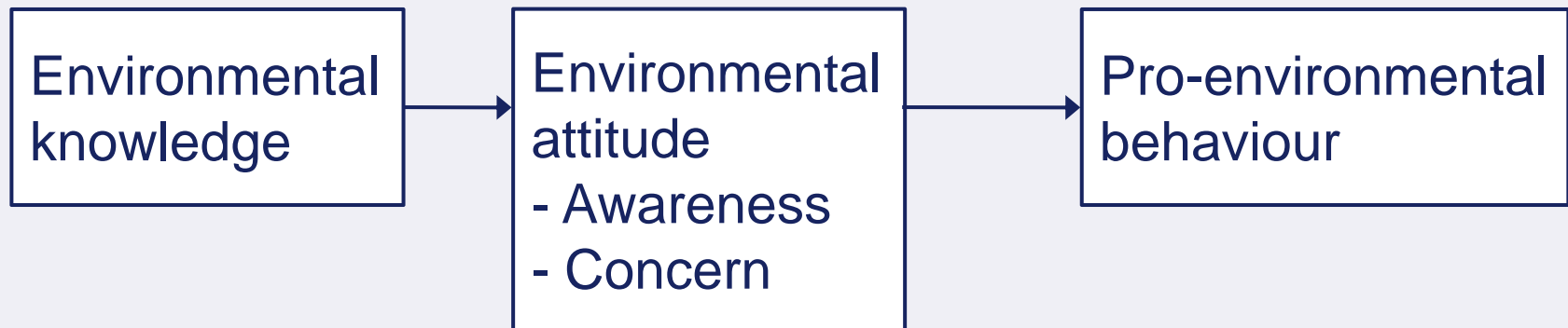
- smog
- hurricanes
- droughts
- glacier melt
- disposal of nuclear waste

Theoretical background



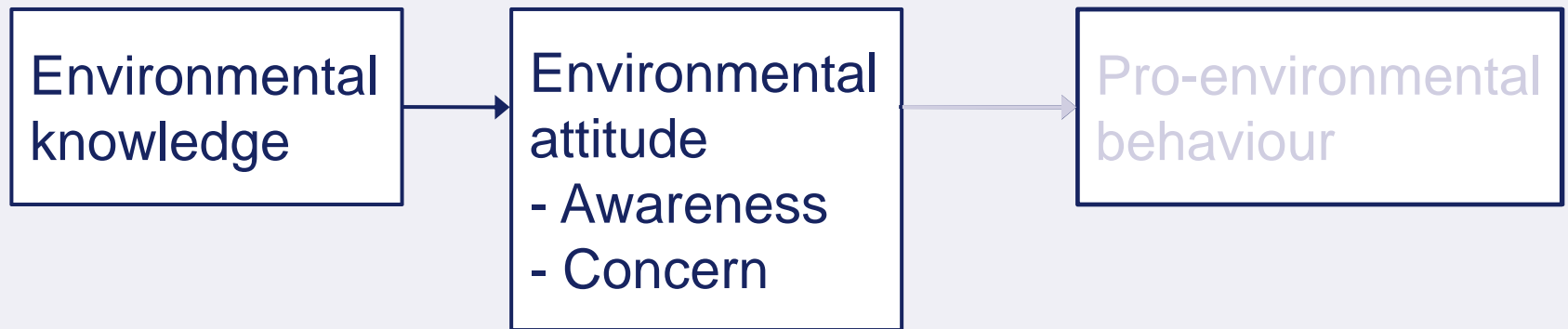
(cf. Kollmuss & Agyeman, 2002)

Theoretical background

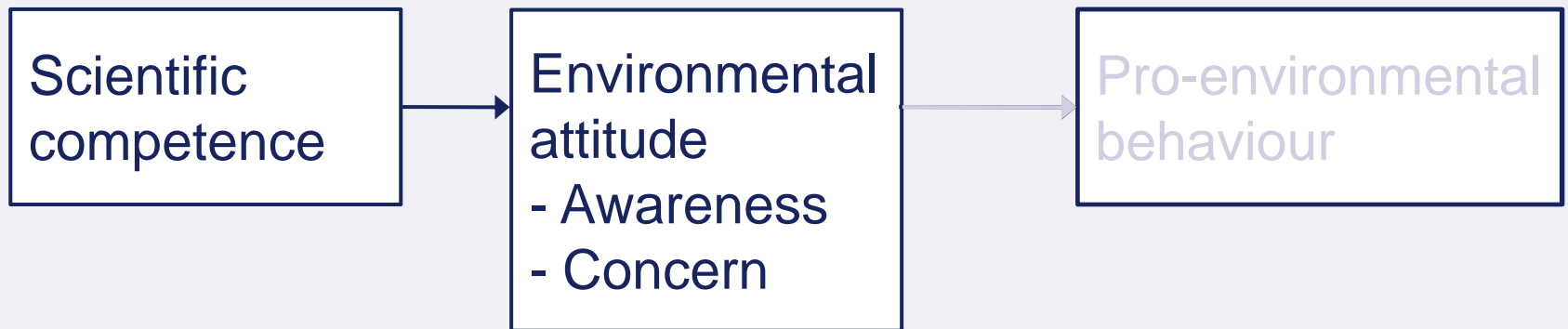


(cf. Kollmuss & Agyeman, 2002)

Theoretical background



Theoretical background



Theoretical background



Theoretical background



Theoretical background

- at best a moderate association of knowledge and behaviour (e.g., Hines, Hungerford, & Tomera, 1986/87)
- different kinds of knowledge (e.g., Frick, Kaiser, & Wilson, 2004)
- problem awareness/knowledge predicts moral norm (Bamberg, & Möser, 2007)

Theoretical background

Value-Belief-Norm theory of environmentalism (Stern, Dietz, & Kalof, 1993)

- egoistic
- altruistic
- biospheric

$$M = V_{\text{ego}} \times AC_{\text{ego}} + V_{\text{soc}} \times AC_{\text{soc}} + V_{\text{bio}} \times AC_{\text{bio}}$$

Hypotheses

- Perceived understanding of specific complex environmental issues (i.e., awareness) and appraisal of those issues as a serious concern predict attitudes towards specified actions for sustainable development (i.e., responsibility).
- Environmental concern moderates the relationship of awareness and responsibility.
- exploratory research question:
Does scientific competence predict responsibility when awareness and concern are considered simultaneously?

Method: sample

- sample of 15-year old students from 20 western industrialised countries
- subsample:
3 × same concern category
- $N = 69\,462$
- 51.5 % female

Australia
Austria
Belgium
Canada
Denmark
Finland
France
Germany
Greece
Ireland
Italy
Japan
Luxemburg
Netherlands
New Zealand
Portugal
Spain
Sweden
UK
USA

Method: attitudes towards environmental issues

- 6 items addressing 3 environmental issues, 4-point rating scale (*strongly agree* – *strongly disagree*)
- e.g., “I am in favour of having laws that regulate factory emissions even if this would increase the price of products.”
- Cronbach’s $\alpha = .79$
- z-standardised on OECD-level

⇒ agreement with normative statements

Method: awareness of complex environmental issues

- assessing perceived comprehension (self-reported)
- 3 items, 4-point rating scale (*I have never heard of this – I am familiar with this and I would be able to explain this well*)
- “the increase of greenhouse gases in the atmosphere”, “acid rain”, “nuclear waste”
- Cronbach’s $\alpha = .73$
- z-standardised on OECD-level

⇒ cognitive

Method: appraisal of environmental issues as a serious concern

- 3 items, nominal scale with 4 response options
- “air pollution”, “energy shortages”, “nuclear waste”

- (1) This is a serious concern for me personally as well as others
 - (2) This is a serious concern for other people in my country but not me personally
 - (3) This is a serious concern only for people in other countries
 - (4) This is not a serious concern to anyone
- distinct categories

⇒ affective

Method: science competence

PISA 2006 science test

- total of 103 science items
- multi-matrix design
- IRT-scaling
- 5 plausible values for each student
- reliability = .92
- z-standardised on OECD-level

Method: further covariates

- gender
0 = male; 1 = female
- index of economic, social and cultural status (ESCS)
 - home possessions
 - highest parental occupation
 - highest parental education

Results: Descriptive statistics

Concern for...	<i>n</i>	responsibility			PVSCIE	ESCS
		<i>M</i>	<i>SD</i>	% female	<i>M</i>	<i>M</i>
no one	1709	-1.00	1.53	37.3	450	-0.08
other countries	3114	-0.61	0.92	33.4	490	0.10
own country	12868	-0.57	0.87	44.6	496	0.07
self + own country	51771	0.24	1.00	54.8	509	0.04

Results: Regression models for responsibility

Predictor	Model 1		Model 2		Model 3	
	B	(SE)	B	(SE)	B	(SE)
(1) awareness	0.28	.01	0.23	.01	0.15	.01
(2) no one			-0.40	.10	-0.37	.10
(3) other countries			-0.07	.03	-0.06	.03
(4) self + own country			0.73	.03	0.74	.03
IA (1) (2)					0.15	.04
IA (1) (3)					0.01	.02
IA (1) (4)					0.10	.01
science competence						
gender						
ESCS						
R ²	.072		.176		.178	

Results: Regression models for responsibility (cont.)

Predictor	Model 4		Model 5	
	B	(SE)	B	(SE)
(1) awareness	0.09	.02	0.09	.02
(2) no one	-0.31	.10	-0.30	.10
(3) other countries	-0.04	.03	-0.04	.03
(4) self + own country	0.74	.03	0.73	.03
IA (1) (2)	0.17	.04	0.17	.04
IA (1) (3)	0.02	.02	0.02	.02
IA (1) (4)	0.11	.01	0.11	.01
science competence	0.15	.02	0.14	.02
gender			0.06	.02
ESCS			0.01	.02
R ²	.193		.193	

Discussion

- lower proportions of female students in psychologically more distant concern categories
- When the self is not concerned, it does not matter who else is – no distinction between „others“.
- both significant interaction terms with positive sign
- effect of perceived understanding on responsibility beyond scientific competence as assessed by the test
- small contribution of gender and no statistically significant contribution of ESCS

Discussion

- highly selective sample
- possibly, high social desirability

Conclusion

- Interventions should address affective aspects next to cognitive factors/knowledge.
- It is worthwhile to take a closer look at psychological variables relating to the environment in future assessments.
 - unconfounding perceiver of concern and person affected by environmental issues
 - possibly, reducing the effect of social desirability
- We recommend usage of rating-scales
 - to assess students' awareness of consequences,
 - to assess students' value orientations.

Thank you very much.

References

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