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Data Article

International Social Survey Program (ISSP) environment dataset modules: Open data and its applicability in PLS-SEM Research

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ABSTRACT

This data article is based on the International Survey Programme (ISSP) Environment III Dataset and linked to a publication in *Ecological Economics*, in which we developed a model for explaining and predicting sustainable consumption behavior of Europeans using data of nine participating countries. In our study, we find that sustainable consumption behavior can be associated with environmental concern, which is influenced by increased levels of environmental knowledge and environmental risk perception. In this companion data article, we describe the usefulness, value, and relevance of the open ISSP dataset and take our linked article as an example. The data are publicly available via the GESIS-website (gesis.org). The dataset consists of individual-based interviews on the respondents' perceptions regarding a variety of social matters, such as the environment, which we argue is especially suitable for PLS-SEM applications (for example, to conduct cross-sectional analyses).

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Specifications Table

Subject:	Social Sciences
Specific subject area:	Perceptions of environmental protection, including assessment of one's own contribution and attitudes towards knowledge, risk perception and consumption behavior.
Type of data:	Survey data
How the data were acquired:	This section is based on the available information provided by Gesis (https://doi.org/10.4232/1.13271):
	The ISSP data were acquired via the following methods: Interview - self-completed questionnaire; face-to-face interviews, either as Pen-and-Paper Personal Interviews (PAPI) or Computer-Assisted Personal Interviews (CAPI). Please find a copy of the survey questionnaire submitted as supplementary material and can be downloaded via this link: https://access.gesis.org/dbk/46218.
	The ISSP 2010 Environment III codebook, or variable report (2019/06/13), describes the data on variable level. (See ISSP 2010 Environment III Variable Report: https://access.gesis.org/dbk/66194). ISSP publishes an individual variable report for all new annual modules and datasets published.
	SPSS and Stata were used to put together the data.
Data format:	Raw
	Analyzed
Description of data collection:	From the ISSP Environment III 2010 module, the related research article [1] used data collected in nine European countries ($N = 11,675$) that are ranked among the top ten countries based on their 2020 SDG index scores [2]. The data collection was monitored by the ISSP methodology committee that ensured that the data collected were comparable across countries [3].
	ISSP has collected and shared various kinds of datasets on social science topics for research purposes annually since 1985. The Environment related modules have been collected in four different rounds in 1993, 2000, 2010 and 2020. In addition to the environment related datasets, the ISSP dataset includes data on, for example, the role of government, social networks, families, work orientation, lifestyle of citizens. These can offer valuable opportunities for researchers to also explore cross-nationally other societal phenomena.
Data source location:	The Research Data Center (RDC) International Survey Programs offers researchers data access to international study series that are curated by the GESIS organization. The survey series include in addition to the International Social Survey Programme (ISSP), the European Values Study (EVS), the primary data of the European Commission's Eurobarometer program, Comparative Study of Electoral Systems (CSES) and the European Election Studies (EES / PIREDEU).
	The ISSP is a continuous program of cross-national collaboration that runs annual surveys on topics important for the social sciences in about 50 countries.
	More specifically about the Environment module, that is the focus of this Data in Brief article: The ISSP Environment module series comprises three cross-national surveys conducted in 1993, 2000, 2010 and 2020. The surveys are always partial replications of the previously conducted surveys. The Environment modules mainly focus on individual respondents' attitudes towards environment related issues, for example, environmental protection, respondents' behavior, and respondents' preferences regarding governmental measures on environmental protection. (https://www.gesis.org/en/issp/modules/issp-modules-by-topic/environment)
Data accessibility:	Repository name: International Social Survey Programme
	Data identification number:ZA5500 International Social Survey Programme: Environment III - ISSP 2010
	Accessible for DIB reviewers without login details:
	https://data.mendeley.com/datasets/dw5yrjtbj3/1
	To access the datasets, the user needs to create a username and login the website of gesis.org, the Leibniz Institute for the Social Sciences. The dataset can be found in .sav and .dta file formats in the gesis database:
	https://search.gesis.org/research_data/ZA5500
	ZA5500_v3-0-0.sav.zip SPSS (Dataset) 5.39 MB
	ZA5500_v3-0-0.dta.zip Stata (Dataset) 3.33 MB
	https://www.gesis.org/en/issp/search-and-data-access

Related research article:	U. A. Saari, S. Damberg, L. Frömbling, C.M. Ringle, Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. Ecological Economics 189 (2021) 107155. https://doi.org/10.1016/j.ecolecon.2021.107155

Value of the Data

- The data are useful because they 1) allow doing comparisons across different time periods; 2) allow for cross-country comparisons; 3) are transparently shared; 4) have proven validity and reliability; 5) the fieldwork and data collection has been conducted in participating countries (regions) by local universities, research centers, market research institutes, and national social survey units.
- The Environment dataset (collected in 1993, 2000, 2010, 2020-2023) offers promising avenues for future research on the transitioning to a more sustainable world, for example, by allowing to study globally how individuals' attitudes towards the environment in different countries have possibly changed during the past thirty years.
- Especially in the context of social sciences, consumer behavior research, and more sustainable business development, the large datasets collected from individual respondents from different countries can offer researchers new ideas on how to focus on building more relevant education on sustainability topics, sustainable businesses, and services for citizen-consumers. This may also offer the possibility for new theory development on the change of attitudes towards the environment and how this impacts our lives in different contexts - in home environments, at workplaces and in society.
- Researchers, practitioners, companies, market research institutes, policy makers can benefit from cross-country generalizable insights.
- The data can be used and reused for a variety of data analysis methods, including partial least squares structural equation modeling (PLS-SEM) [13]. A variety of PLS-SEM articles have been published on ISSP data, including Becker and Ismail [4]. Some articles, for instance, used the dataset for methodological approaches on sampling weights in PLS-SEM simulations.

1. Objective

This data article is based on secondary data collected and maintained by the GESIS institute. It is an annually collected individual response-based dataset that deals with central themes covering social science research topics, including the individual citizens' environmental attitudes. Since 1985, the ISSP has provided international datasets that support cross-cultural and cross-temporal research. The 'Environment´is one of the eleven ISSP topic modules. The four datasets on individuals' environmental attitudes, Environment I-IV modules have been collected in 1993, 2000, 2010-2011 and 2020-2023. The Environment modules have been collected with the help of a common survey tool that includes questions the respondents' attitudes towards environmental protection, as well as their personal behavior and preferences regarding governmental measures on environmental protection [5].

This *Data in Brief* article focuses on the dataset from Environment III 2010 [5] module that was used in an original research article [1] to develop and test a structural path model on sustainable consumption behavior among Europeans in 9 countries. The value of this data article lies in the description of the applied dataset's importance for open data and transparency in research and the validity and replicability of the research findings that are based on the analysis of an open dataset. The data collection and publication of the Environment IV module has been prolonged due to the COVID-19 pandemic. However, at this point (March 2023), there is data published from the 14 countries, of which 7 are in Europe [6]. The Environment IV dataset covers most of the questions that were in the Environment III study, and in addition there are questions the consumption of meat, the size of living spaces, the use of motor vehicles, and some of

the environmental knowledge related questions deal with the understanding of the harmfulness of living habits [6].

2. Data Description

The raw data file contains individual responses to survey questions and demographic information on respondents. The total number of valid cases in the Env III module is 50,437, including respondents from 36 countries globally, and out of these 21 in Europe. There are in total 360 variables. The demographic details include information on gender; birth; age; years in school; country specific education; highest completed degree; work status; hours worked weekly; employment relationship; number of employees; supervise other employees; number of employees supervised; type of organization: for-profit vs. non-profit and public vs. private; occupation (ISCO 1988); main employment status; living in steady partnership.

The data were collected in a variety of countries and the methods used depend on the country.

- Argentina, Austria, Bulgaria, Switzerland, Chile, Czech Republic, Spain, Croatia, Israel, Korea, Latvia, Lithuania, Mexico, Philippines, Portugal (CAPI)
- Russian Federation, Slovenia, Slovak Republic, Turkey, Taiwan, South Africa - Interviews; self-completed questionnaires; face-to-face interviews (PAPI or CAPI)
- Australia, Canada, France, Japan, New Zealand, Netherlands, Sweden (self-completers)
- Belgium/Flanders (self-completers - ISSP module), CAPI - background variables)
- Denmark, Germany (CASI - ISSP module, CAPI - background variables)
- Finland (self-completers, CASI)
- United Kingdom (self-completers – ISSP module, face-to-face – background variables),
- Iceland (self-completers – combined postal and web)
- Norway (self-completers – combined postal and web)
- United States (face-to-face with CAPI + CAPI, telephone – mixed mode)
- Temporal research design: Cross-sectional
- Type of data format: Numerical

For each of the participating countries, there is one or two principal investigators (PI) assigned from local leading universities focusing on research in social sciences. The PIs are members of the data authoring entity and are responsible for overseeing the data collection in their own country. The data were collected by research institutes at universities or associated research centers and collaborating market research institutes. Thus, ensuring that the collection of the data was conducted according to the ISSP guidelines and that the sampling procedure and modes of data collection were applied correctly.

The topics covered in the survey are the following:

1) *most important issues for the own country;*
2) *private entrepreneurs as best possibility to solve economic problems;*
3) *governmentś responsibility to reduce income differences among the citizens;*
4) *postmaterialism scale;*
5) *trust in people;*
6) *estimation of people as fair; trust in people in government doing what is right;*
7) *politicians tend to profit from their position;*
8) *personal concern about environmental issues;*
9) *most important environmental problem for the own country;*
10) *most affecting environmental problem for respondent and his family;*
11) *estimation of own knowledge about the causes of environmental problems and about the solutions to these environmental problems;*
12) *attitudes to modern science and to the environment; attitudes to environmental protection and economic or population growth;*

Table 1

Measurement items for the constructs in the theoretical model.

Constructs	Measurement items	Sources
Environmental Knowledge	V18: How much do you feel you know about the causes of these sorts of environmental problems? V19: How much do you feel you know about solutions to these sorts of environmental problems? V37: How much do you agree or disagree with…: I find it hard to know whether the way I live is helpful or harmful to the environment.	Vainio and Paloniemi (2014)
Risk Perception	*In general, do you think that … is…?* V39: Air pollution caused by cars. V40: Air pollution caused by industry. V43: Rise in the world's temperature caused by climate change.	Marquart-Pyatt (2015)
Environmental Concern	V15: Generally speaking, how concerned are you about environmental issues? *And how much do you agree or disagree with each of these statements?* V23: We worry too much about the future of the environment and not enough about prices and jobs. V25: People worry too much about human progress harming the environment. V36: Many of the claims about environmental threats are exaggerated.	Vainio and Paloniemi (2014)
Behavioral Intention	*How willing would you be to…to protect the environment?* V29: Pay much higher prices. V30: Pay much higher taxes. V31: Accept cuts in your standard of living.	Lo (2016), Marquart-Pyatt (2008)
Sustainable Consumption Behavior	*How often do you… (for environmental reasons)?* V56: Make a special effort to buy fruit and vegetables grown without pesticides or chemicals. V58: Reduce the energy or fuel you use at home. V59: Choose to save or re-use water. V60: Avoid buying certain products.	Wang (2017)

Note: All items were measured on a 5-point Likert scale except the items of sustainable consumption behavior, which were measured on a 4-point scale. We reverse-coded the following items to show the same direction of effects: V29-31, V39-V43, and V56-V60 (the original scale ranged from 1 (highest response) to 5 (lowest response).

13) *willingness to pay higher prices and higher taxes or to accept reductions in standard of living in order to protect the environment; self-classification of participation in environmental protection;*

14) *classification of dangerous effects from air pollution caused by cars, from industry, from chemicals in agriculture, from water pollution, from a rise in the worldś temperature caused by the climate change (greenhouse effect), from the modification of genes of certain crops and nuclear power stations;*

15) *preference for the regulation of environmental protection by the government, the citizens or the economy;*

16) *estimation of the efforts of the own country to protect the world environment;*

17) *preferred way of getting national business as well as the citizen to protect the environment;*

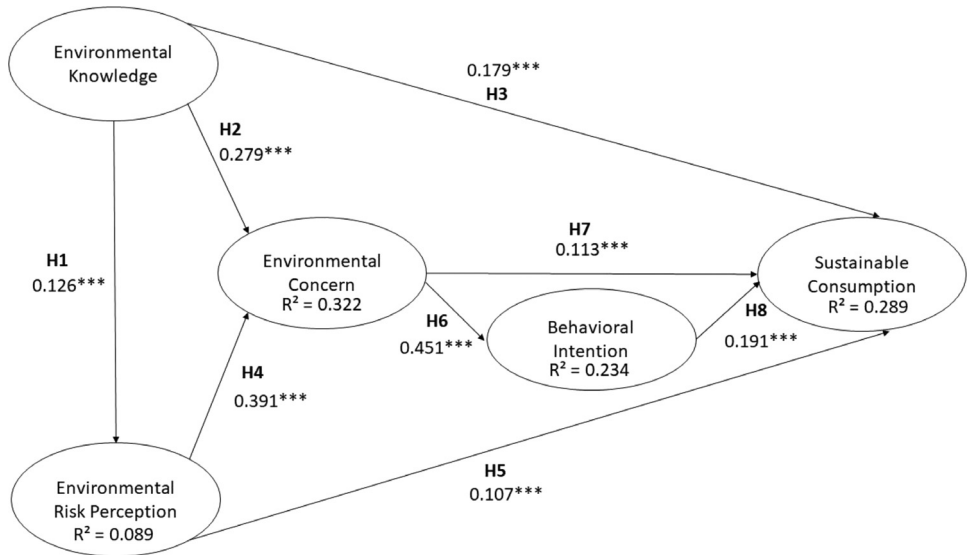18) *which energy source should be given national priority to meet future energy needs;*

Fig. 1. Theoretical model and results, in which gender, age, degree, and countries have been considered as control variables. *Note:* *** = $p < 0.01$. (Adapted from [1]).

19) *attitudes towards international agreements for environmental problems;*
20) *agreement with poorer countries to make less effort than richer countries to protect the environment;*
21) *economic progress will slow down without better protection of the environment;*
22) *frequency of special efforts to sort glass or tins or plastic or newspapers for recycling;*
23) *frequency of special efforts to buy fruit and vegetables grown without pesticides or chemicals;*
24) *frequency of special efforts in cutting back on driving a car, reducing energy at home and saving water for environmental reasons, avoid buying products for environmental reasons;*
25) *membership in an environmental protection organization;*
26) *personal environmental political activities in the last five years* [5].

Table 1 shows the constructs and scales that we used in our companion article [1], which are based on prior research and have been validated in prior studies (adapted from scales used in [1]).

3. Experimental Design, Materials and Methods

Fig. 1 shows the research model in the published companion article [1]. The relationships in the model are based on prior research [7–11] and subsample used for creating the European model consists of n=11,675 individual responses from nine European countries. We included the following countries in our analysis: Austria ($N = 980$), Czech Republic ($N = 1381$), Denmark ($N = 1186$), Finland ($N = 1113$), France ($N = 2033$), Germany ($N = 1289$), Netherlands ($N = 1296$), Norway ($N = 1286$), Sweden ($N = 1111$). The main results of our PLS-SEM analysis (according to the guidelines by Hair et al. [12,13]) show that higher levels of environmental knowledge lead to higher levels of risk perception. Both constructs are further positively influencing the target construct sustainable consumption. Environmental concern and behavioral intention are mediators in these relationships. Moreover, the results show that the model has explanatory power (R^2=0.289; i.e., the model explains 28.9% of the variance in sustainable consumption behavior).

Ethics Statement

Hereby, we Svenja Damberg and Ulla A. Saari, consciously assure that for our manuscript the following is fulfilled:

1) This material is the authors' own original work, which has not been previously published elsewhere.
2) The paper is not currently being considered for publication elsewhere.
3) The paper reflects the authors' own research and analysis in a truthful and complete manner.
4) The paper properly credits the meaningful contributions of co-authors and co-researchers.
5) The results are appropriately placed in the context of prior and existing research.
6) All sources used are properly disclosed (correct citation). Literally copying of text must be indicated as such by using quotation marks and giving proper reference.
7) All authors have been personally and actively involved in substantial work leading to the paper and will take public responsibility for its content.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

International Social Survey Programme: Environment III - ISSP 2010 (Original data) (Mendeley Data).

CRediT Author Statement

Ulla A. Saari: Conceptualization, Writing – original draft, Writing – review & editing; **Svenja Damberg:** Conceptualization, Writing – original draft, Writing – review & editing.

Acknowledgments

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