

# *FUTURE OF EDUCATION CONFERENCE 2024*

## *Measuring Sustainability Literacy: Adaptation and Factor Analysis of the Sustainable Consciousness Questionnaire Among Greek Adults*

Christos Petsimeris\*

Ionian University, Greece

Katerina Salta

National and Kapodistrian University of Athens, Greece

Dionysios Koulougliotis

Ionian University, Greece

Florence, 21/6/2024

# 2030 Agenda for SD (2015)

- Points out the need & commitment of the global community
- For achieving sustainable development in its three dimensions
- In a balanced and integrated manner &
- Goes further by explicating the 17 SDG's &
- Accompanied by 169 relevant targets

# Sustainability Consciousness Questionnaire (SCQ)

- SCQ is a recently developed and empirically validated instrument among young adults (18-19 years)
- Which aims at evaluating sustainability literacy by taking into account the holistic nature of SD
- Via investigation of people's cognitive &
- Affective views of the concept.

- For the development of the SCQ instrument
- The researchers used the scale developed by Prof. Michalos
- For measuring knowledge, attitudes and behavior
- Concerning SD among teenage students (15-16 years) in Canada
- The SCQ was tested among Swedish students of different ages

## Final Version of SCQ

- The final SCQ version consists of a total of 50 items
- Which aim at probing three psychological constructs
  - Knowingness (K – 19 items, No 1-19 in the instrument)
  - Attitudes (A – 14 items, No 20-33 in the instrument)
  - Behavior (B – 17 items, No 34-50 in the instrument)
- With regard to sustainable development

- Each psychological construct (K,A,B) contained items
- that were related to all three dimensions of SD namely
- Environment (6 in K, 4 in A, 7 in B)
- Society (5 in K, 4 in A, 4 in B)
- Economy (8 in K, 6 in A, 6 in B)

- The content of the SCQ items was designed in such way
- So that it includes the fifteen subthemes of SD
- Proposed by the UNESCO framework for the United Nations Decade of Education for Sustainable Development
- And which are related to the:
  - Environmental (5 subthemes)
  - Social (7 subthemes)
  - Economic (3 subthemes)
- Dimensions of SD

- In order to probe the sustainability consciousness of a population belonging to a different cultural content and/or age group, it is first necessary to examine the psychometric properties of the SCQ instrument *ex novo*. In this way, it may be assured that the new version of the instrument in a language different from the original and in addition in a different age group, will provide valid measurements which may be subsequently exploited by all interested parties.
- In this work, the final version of SCQ which was validated for the age group of young adults (18-19 years) in Sweden [9], was adapted in the Greek language to produce the Greek version of the original instrument, called SCQ-GR. Then, the SCQ-GR questionnaire was handed out to adults who serve in the Greek public sector and statistical analysis was conducted in order to answer the following research question:
- What are the psychometric properties of the Sustainability Consciousness Questionnaire within the adult population of the Greek cultural context, as revealed via exploratory factor analysis?



# Methodology

- The long version of the sustainability consciousness questionnaire was translated into the Greek language.
- Three translators comprised by the authors of this publication was employed for the forward (English to Greek) translation of the SCQ. In addition, a professional Greek-English translator (Greek native) was involved in the back translation (Greek to English).
- The product of the back translation from was examined by the team of the three translators for comparability of meaning with the target language and clarity of wording.

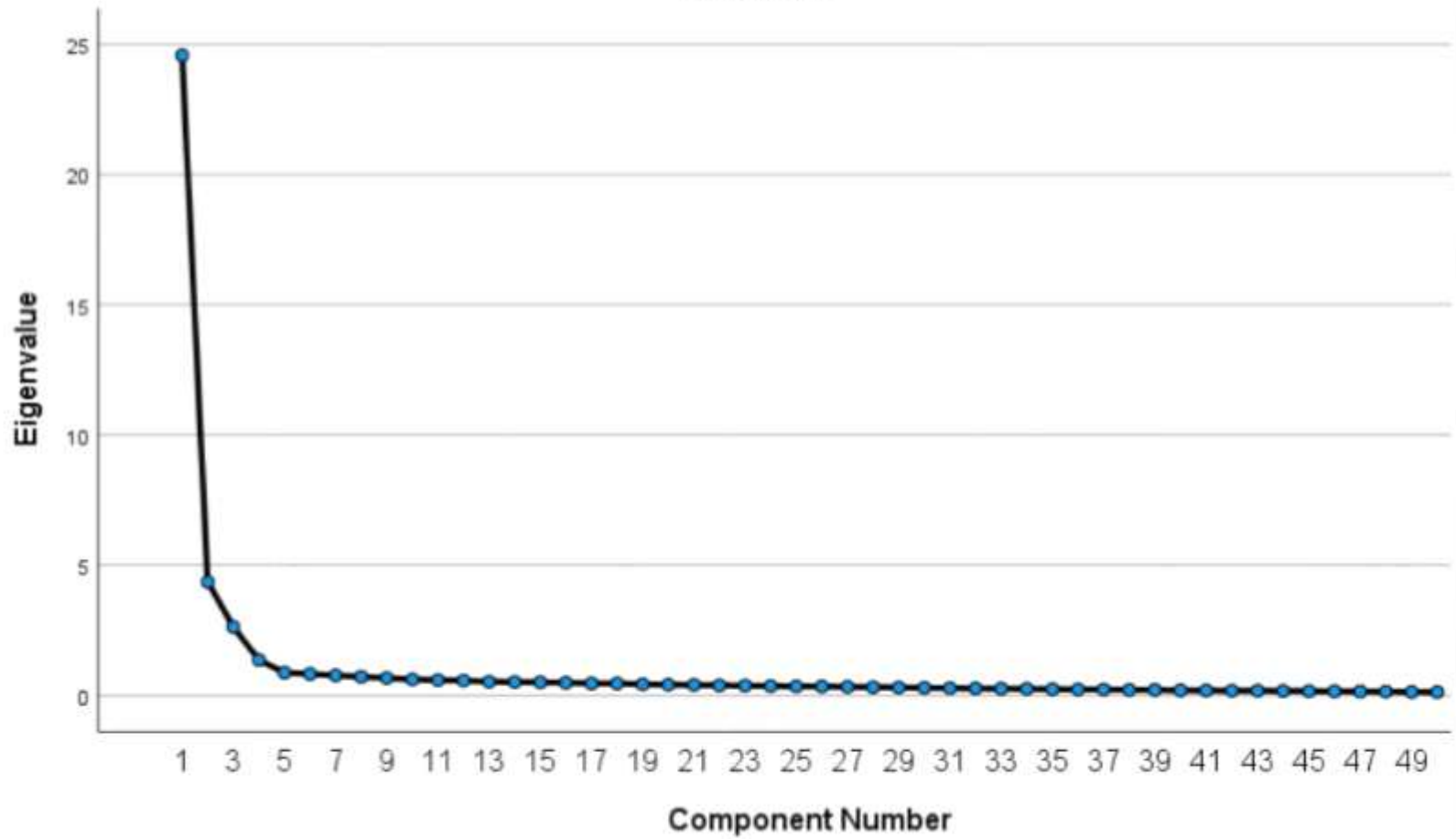
- The final version of SCQ-GR was administered and filled in electronically and anonymously (via Google forms) by adults who serve in the Greek public sector, between October and December 2021.
- The respondents marked their level of agreement with each of the 50 statements (items) of the instrument
- using a five-point Likert-scale (1-5),
- ranging from “Strongly disagree” (=1) to “Strongly agree” (=5).
- For the 19 items referring to knowingness, a “Don’t know” option was also available for each item.
- The SPSS software was employed.

# Results

- A total of 631 filled-in questionnaires were collected
- Between October-December 2021
- With regard to gender, the sample consisted of 310 and 320 participants
- who identified as female and male respectively, while one respondent did not report any gender.
- With regard to age, the respondents presented the following distribution:
  - 124 in the 20-39 year groups
  - 227 in the 40-49 year groups
  - 188 in the 50-59 year groups
  - 92 in the 60-69 year groups

- The preliminary statistical measure Kaiser-Meyer-Olkin (KMO) was calculated equal to 0.979
- which well above the lowest acceptable limit of 0.50, indicating the sampling adequacy for the EFA analysis.
- In addition, the Bartlett's test of sphericity was shown to be statistically significant ( $p < 0.001$ )
- indicating the appropriateness of the factor model for the specific data set.
- EFA resulted in four factors (components) with eigenvalues larger than 1 (Kaiser's criterion) and the four-factor factor solution was confirmed by the scree-plot as well

Scree Plot



Item in original SCQ in [9]] – Dimension of 3D	1	2	3	4
25 (A7) – Eco	0,780	0,369		
32 (A18) – Soc	0,780	0,379		
27 (A10) – Env	0,776	0,351		
30 (A14) – Soc	0,773	0,374		
20 (A1) – Soc	0,764	0,429		
22 (A3) – Eco	0,762	0,347		
37 (B4) – Soc	0,760	0,359		
50 (B17) – Soc	0,760	0,378		
26 (A8) – Eco	0,756	0,324		
28 (A11) – Soc	0,737	0,312		
21 (A2) – Soc	0,730	0,397		
47 (B14) – Soc	0,729	0,336		
31 (A16) – Eco	0,719	0,337		
36 (B3) – Env	0,714			
24 (A6) – Env	0,709	0,319		
29 (A13) – Soc	0,681	0,338		
34 (B1) – Env	0,659	0,305		
45 (B12) – Env	0,656		0,440	
44 (B11) – Eco	0,627		0,369	
35 (B2) – Env	0,565			
43 (B10) – Env	0,562		0,513	
39 (B6) – Eco	0,551		0,434	
49 (B16) – Eco	0,485		0,477	
8 (K9) – Soc	0,350	0,777		
9 (K10) – Soc	0,388	0,759		
7 (K8) – Soc	0,331	0,753		
10 (K11) – Soc	0,390	0,752		
11 (K12) – Eco	0,362	0,748		
2 (K2) – Soc	0,355	0,747		
14 (K16) – Eco	0,328	0,744		
6 (K7) – Env	0,410	0,723		
13 (K15) – Soc	0,393	0,718		
12 (K14) – Env	0,429	0,715		
5 (K5) – Soc	0,318	0,714		
16 (K18) – Env	0,432	0,705		
19 (K21) – Env		0,703		
17 (K19) – Eco		0,700		
15 (K17) – Eco	0,355	0,684		
1 (K1) – Eco		0,679		
18 (K20) – Soc		0,645		
3 (K3) – Env	0,310	0,632		
46 (B13) – Soc	0,316		0,722	
42 (B9) – Eco			0,717	-0,381
48 (B15) – Soc	0,402		0,672	
40 (B7) – Env	0,477		0,508	
41 (B8i) – Env				0,804
23 (A5i) – Env				0,79714
4 (K4i) – Env		0,388		0,698
38 (B5i) – Soc				0,672

# Discussion

- Four components identified
- Component 1: Attitudes and behavior towards SD
- Component 2: Knowledge regarding SD
- Component 3: Social-environmental activism
- Component 4: Feeling of detachment from SD

# Conclusions

- The Greek version of the Sustainability Consciousness Questionnaire (SCQ-GR), applied in adult population, was shown to be an instrument with strong psychometric properties, as probed via exploratory factor analysis. It contains a structure of four factors, all of which with high reliability and which in total explain a very large part (ca. 65%) of the variance.
- The content of the four identified factors refers to the following themes regarding SD: a) Attitudes and behavior, b) Knowledge, c) Social-Environmental Activism and d) Detachment.
- The availability of SCQ-GR provides the possibility for valid measurement of the different aspects of sustainability literacy among the adult Greek population. Therefore, it is expected to serve as a valuable tool for assessing the effectiveness of different policies and educational initiatives related to sustainable development and thus contribute to its further advancement.



# Thank you for your attention!

- Email:
- [c.petsimeris@ydmed.gov.gr](mailto:c.petsimeris@ydmed.gov.gr)
- [chrispetsimeris@hotmail.com](mailto:chrispetsimeris@hotmail.com)