Eco-Generativity Scale Short Form: proprietà psicometriche della versione italiana

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Sommario

Le sfide ambientali rappresentano una nuova priorità per la società a causa delle loro minacce al benessere delle persone. *L'Eco Generativity Scale Short Form* (EGS-SF) è un questionario composto da 16 item che misura quattro fattori: generatività ecologica, generatività sociale, identità ambientale, agentività/percorsi. È stato sviluppato per approfondire lo studio in riferimento a come incrementare risposte orientate positivamente su questioni ambientali, di carriera, salute e benessere. La ricerca attuale valuta le proprietà psicometriche della versione italiana dell'EGS-SF in 161 studenti universitari italiani. È stata implementata l'analisi fattoriale confermativa per valutare la struttura fattoriale della scala. Gli alfa di Cronbach sono stati utilizzati per valutare la coerenza interna. La validità concorrente della EGS-SF è stata valutata con la Satisfaction with Life Scale (SWLS) e la Flourishing Scale (FS). L'analisi fattoriale confermativa ha confermato che il modello di ordine superiore composto da quattro fattori si adatta adeguatamente ai dati, dimostrando anche una buona coerenza interna. La validità concorrente della *Eco-Generativity Scale Short Form* (EGS-SF) si è dimostrata soddisfacente in relazione sia alla *Satisfaction with Life Scale* (SWLS) che alla *Flourishing Scale* (FS). I risultati suggeriscono che la versione italiana della EGS-SF ha adeguate caratteristiche psicometriche e può essere efficacemente utilizzata per la ricerca e l'intervento nel contesto italiano.

Parole chiave

Eco-generatività, Scala di eco-generatività in forma breve, Benessere, Psicologia della sostenibilità e dello sviluppo sostenibile, Eco-ansia.

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Eco-Generativity Scale Short Form: Psychometric Properties of the Italian Version

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Abstract

Environmental challenges are a novel priority for society due to their threats to nature and people's well-being. The *Eco-Generativity Scale Short Form* (EGS-SF) is a 16-item questionnaire that measures four factors: ecological generativity, social generativity, environmental identity, and agency/pathways. It was developed in order to study in depth how to increase positive-oriented responses to environmental, career, health and well-being issues. The current study evaluates the psychometric properties of the EGS-SF – Italian version in 161 university students from Italy. We implemented confirmatory factor analysis to evaluate the scale's factor structure and Cronbach's alphas to assess internal consistency. The EGS-SF's concurrent validity was assessed with the Satisfaction with Life Scale (SWLS) and the Flourishing Scale (FS). The confirmatory factor analysis confirmed the four-factor higher-order model as having an adequate fit to the data, also demonstrating good internal consistency. The concurrent validity of the Eco-Generativity Scale (EGS-SF) was shown to be satisfactory in relation to both the Satisfaction with Life Scale (SWLS) and the Flourishing Scale (FS). Results suggested that the EGS-SF – Italian version has strong psychometric features and may be effectively used in research and intervention in the Italian context.

Keywords

Eco-Generativity Scale Short Form, Eco-generativity, Well-being, Eco-anxiety, Psychology of sustainability and sustainable development.

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Introduction

Climate change represents a major challenge for societies of today (Heeren & Asmundson, 2023). Climate change's adverse impacts encompass phenomena such as global warming, fires and forest deterioration, biodiversity loss, and diminution of freshwater supplies, which also negatively affect individuals' health and well-being. These impacts also contribute to specific adverse psychological phenomena, one of which is eco-anxiety, namely an enduring concern for natural catastrophes (Clayton & Karazsia, 2020). While some researchers view eco-anxiety also as an adaptive response (Mathers-Jones & Todd, 2023) to challenges associated with the environment, it can impact mental health (Usher et al., 2019). Findings have shown that younger individuals (Léger-Goodes et al., 2022; Sciberras & Fernando, 2022) and university students are particularly vulnerable to these adverse effects and are more exposed to ecological concerns through new technology (Searle & Gow, 2010).

To constructively cope with environmental issues, Di Fabio and Svicher (2023a) have advanced the new construct of eco-generativity, a paradigm shift to assume a positive perspective toward environmental challenges. Furthermore, the perspective requires paying attention not only to the short but also to the medium and long term with responsibility and prosociality also toward future generations. Moreover, the authors have developed a novel scale to assess eco-generativity: the *Eco-Generativity Scale* (EGS) (Di Fabio & Svicher, 2023a). In this scale, following the psychology of sustainability and sustainable development (Di Fabio, 2017a; Di Fabio, 2021; Di Fabio & Cooper, 2023; Di Fabio & Rosen, 2018) and strength-based prevention perspectives (Di Fabio & Saklofske, 2021), integrating previous contributions in the literature, a higher-order factor of eco-generativity is offered. It comprises an overall higher-order factor and four dimensions: ecological generativity, social generativity, environmental identity, and agency/pathways. Eco-generativity refers to a person's capacity to support environmentally friendly behaviours and preserve the natural world for the betterment of subsequent generations. The construct encompasses responsibility and positive attitudes towards the environment and communities, which guarantees the continuation of life on Earth and the transmission of a healthy environment for future inhabitants of the planet (Di Fabio & Svicher, 2023a).

More recently, Di Fabio and Svicher (2023b) developed a shortened 16-item version of the EGS, namely the *Eco-Generativity Scale Short Form* (EGS-SF), reflecting EGS's four-factor higher-order model of the scale (ecological generativity, social generativity, environmental identity, and agency/pathways) with four items each. Ecological generativity involves the wise utilization of energy, the preservation of nature and wildlife, and the adoption of sustainable living practices. Social generativity emphasizes the importance of community care and the well-being of subsequent generations, emphasizing the significance of one's efforts for collective

prosperity. Environmental identity pertains to the perception of oneself as being interconnected with nature, feeling tranquillity in natural surroundings, dedicating resources and time to the natural world, and adopting sustainable habits. Agency/pathways represent a person's self-perception of attaining objectives and creating effective strategies (Di Fabio & Svicher, 2023b). The EGS-SF demonstrated excellent psychometric properties (Di Fabio & Svicher, 2023b). The current study aims to investigate the psychometric properties of the EGS-SF Italian version.

Methods

Participants

One hundred and sixty-one university students from Central Italy took part in the current study. The mean age of participants was 21.4 years (SD = 4.10), and 61.5% (n = 99) were female, whereas 38.5% (n = 81) were male.

Procedure

Students voluntarily took part in the study. Written and informed consent in accordance with Italian privacy laws (Legislative Decree DL 196/2003) and the European Union General Data Protection Regulation (EU 2016/679) was provided by each participant. To control for order effects, the questionnaires were administered in counterbalanced order.

Instruments

The *Eco-Generativity Scale-Short Form* (EGS-SF) – Italian version by Di Fabio and Svicher is a 16-item self-report tool with responses evaluated via a 7-point Likert scale («strongly disagree» — «strongly agree»). It comprises an overall higher-order factor and four factors: Ecological Generativity, Social Generativity, Environmental Identity, and Agency/Pathways.

The *Satisfaction with Life Scale* (SWLS; Diener et al., 1985) – Italian version (Di Fabio & Gori, 2016) is a self-administered scale consisting of five items. It assesses cognitive processes associated with the general subjective impression of well-being, with a particular emphasis on an individual's ability to make independent judgments. Participants provided responses using a 7-point Likert scale («Strongly agree» — «Strongly disagree»). The value of Cronbach's alpha was 0.87.

The *Flourishing Scale* (FS; Diener et al., 2010) – Italian version (Di Fabio, 2016) is an 8-item self-administered tool advanced to evaluate sociopsychological well-being across multiple domains of an individual's life, including optimism, self-

esteem, and relationships. Participants express their level of agreement using a 7-point Likert scale («Completely disagree»- «Strongly agree»). The Cronbach's alpha coefficient was 0.90.

Statistical analysis

Confirmatory factor analysis (CFA) was employed to investigate the factor structure of the EGS-SF Italian version. We tested a model (Di Fabio & Svicher, 2023b), including four factors (Ecological Generativity, Social Generativity, Environmental Identity, and Agency/Pathways) regressed onto an eco-generativity higher-order factor. Fit indices were considered: comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). Values > 0.90 and > 0.95 for the CFI and TLI, respectively, underlined as acceptable and good fit. Differently, RMSEA values < 0.08 suggested a reasonable fit, with a further distinction of values below 0.05 suggesting a good fit (Hu & Bentler, 1999). Concurrent validity with the SWLS and FS was measured through correlations. RStudio 2022.12.0 for Mac and *Lavaan* 0.6-15, *SemPlot* 1.1.6, and *Psych* 2.3.3 packages were used to run statistical analyses.

Results

The results of the Confirmatory Factor Analysis (CFA) inherent to the Italian version of the Eco-Generativity Scale-Short Form (EGS-SF) are presented in Table 1. The CFA identifies a higher-order four-factor solution with adequate fit indexes. The path diagram of the higher-order model of the EGS-SF is presented in Figure 1.

Factor Loadings of Confirmatory Factor Analysis and reliability assessed via Cronbach's alphas are showed in Table 2. Results of CFA indicated good factor loadings; results of Cronbach's alphas indicated reliable internal consistency for each factor. Regarding the concurrent validity, the results of the correlations of the Italian versions of the Eco-Generativity Scale-Short Form and Satisfaction with Life Scale (SWLS), and Flourishing Scale (FS), showed statistically significant and positive correlations (Table 3).

Table 1

Fit indexes of the *Eco-generativity Scale Short Form* – Italian version (n = 161)

Model	Chi-square(df)	CFI	TLI	RMSEA	SRMSR
Higher-order	175.460(100)***	0.94	0.93	0.07	0.06

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Squared Residual.

Table 2

Eco-Generativity Scale Short Form, Italian Version (ECG-SF). Factor Loadings of Confirmatory Factor Analysis and measures of reliability (n = 161).

	Confirmatory Factor Analysis				Reliability
Item	l	l	l	l	Cronbach's Alpha
EG1	0.73				
EG2	0.80				
EG3	0.85				
EG4	0.60				
EG					0.83
SG1		0.81			
SG2		0.84			
SG3		0.77			
SG4		0.52			
SG					0.82
EI1			0.79		
EI2			0.85		
EI3			0.80		
EI4			0.75		
EI					0.87
AP1				0.66	
AP2				0.64	
AP3				0.71	
AP4				0.56	
AP					0.73
EGS-SF total					0.90

Note. l = factor loadings; EG = Ecological Generativity; SG = Social Generativity; EI = Environmental Identity; AP = Agency/Pathways.

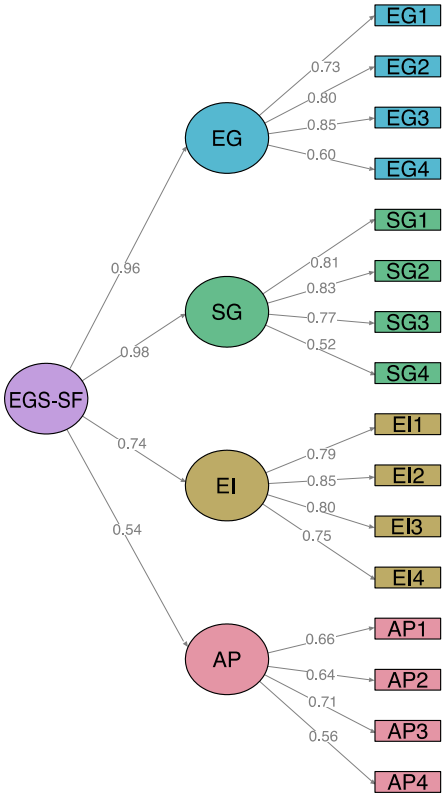
Table 3

Correlations among ECG-SF, SWLS, and FS (n = 161)

	SWLS	FS
1. EG	0.28**	0.31**
2 SG	0.31**	0.28**
3. EI	0.24**	0.27**
4 AP	0.44**	0.46**
5 EGS-SF	0.37**	0.39**

Note. EG = Ecological Generativity; SG = Social Generativity; EI = Environmental Identity; AP = Agency/Pathways. ECG-SF = *Eco-Generativity Scale Short Form.* ** $p \leq 0.01$ * $p \leq 0.05$.

Figure 1



Note. EG = Ecological Generativity; SG = Social Generativity; EI = Environmental Identity; AP = Agency/Pathways. EGS-SF = E*co-Generativity Scale Short Form.*

Eco-Generativity Scale Short Form – Italian version: Path diagram of the higher order model (n = 161).

Discussion

The current study implemented confirmatory factor analysis (CFA) to assess the psychometric properties of the EGS-SF – Italian version, a brief self-administered questionnaire designed to measure eco-generativity. The findings of our research are in line with those of Di Fabio and Svicher (2023b), supporting a higher-order model consisting of four factors. The reliability of factors and the overall score were deemed satisfactory. Concurrent validity was established by observing statistically significant and positive correlations with the Satisfaction with Life and Flourishing scales. Potential future investigations could examine several different targets including high school students and workers. Furthermore, future research could consider the relationship between the EGS-SF and positive psychological factors such as resilience (Wilson et al., 2019), emotional intelligence (Di Fabio & Palazzeschi, 2011; Di Fabio et al., 2016; Petrides & Furnham, 2000), humour (Di Fabio, 2019; Martin et al., 2003; Marunic et al., 2023), and critical disadvantages like perfectionism (Di Fabio et al., 2018; Feher et al., 2020; Smith et al., 2016).

In brief, the EGS-SF Italian version exhibited satisfactory psychometric characteristics, offering new possibilities for research and intervention in addressing adaptive responses to challenges associated with environment, career, organizations, health and well-being, in line with the psychology of sustainability and sustainable development (Di Fabio, 2017a, 2017b, 2021; Di Fabio & Cooper, 2023; Di Fabio & Rosen, 2018; Rosen & Di Fabio, 2023) and strength-based preventive perspectives (Di Fabio & Saklofske, 2021). EGS-SF was found to be a promising short and trustworthy instrument for measuring eco-generativity in the Italian context, satisfying the established accountability framework. Using brief tools is useful for both maintaining cost-effectiveness throughout administrations (Whiston, 2001), as well as being aligned to the most recent parsimonious perspective (Duffy et al., 2023).

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