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Eco-Anxiety and Environmentally-Responsible Consumption in Emerging Adulthood

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Abstract

Major life transitions of today's emerging adults unfold alongside unprecedented global events, such as environmental crises. Eco-anxiety is reported to compromise mental health of youth and may be linked to a range of behavioral responses to environmental problems. Resilience and perceived dynamic social norms may serve as protective factors. Therefore, in Study 1, cluster analysis was conducted in an emerging adult subsample (N = 373; M_{age} = 22.40, SD = 3.79) drawn from a representative survey of Lithuanian adults, identifying four profiles characterized by configurations of eco-anxiety, resilience, dynamic social norms, and environmentally-responsible consumption (everyday- and activism-oriented). These profiles were replicated in Lithuania in Study 2 using an independent convenience sample of emerging adults (N = 423; M_{age} = 21.16, SD = 2.50). Across both studies, profiles included *Mobilized Distressed*, *Adaptive Engaged*, *Resilient Reserved*, and *Disengaged*. Findings highlight the need for tailored support approaches for emerging adults navigating environmental distress.

Keywords

eco-anxiety, environmentally-responsible consumption, resilience, dynamic social norms, emerging adults

Introduction

The complexity of developmental tasks in emerging adulthood, such as transitions in education, work, and relationships, alongside ongoing identity formation and a sense of being "in between" adolescence and adulthood, is well documented (Arnett, 2006). What distinguishes the current generation of emerging adults, however, is that these developmental tasks unfold alongside multiple global societal challenges, including geopolitical instability, misinformation, polarization, economic uncertainty, migration, and accelerating human-induced environmental crises (Barbot et al., 2020; United Nations, n.d). In addition, these challenges are navigated at a life stage characterized by relatively limited accumulated life experience and fewer established financial and institutional buffers (e.g., stable employment, secure housing, access to social protections) compared with later adulthood (Ardelt, 1998, 2010; Wood et al., 2018).

Among these broader challenges, environmental crises represent an ongoing and globally prominent source of uncertainty (Hickman et al., 2021; Ojala, 2023), with long-term consequences, such as resource scarcity, food system disruption, and extreme weather events, that are likely to unfold over the lifespans of today's emerging adult (Grant et al., 2025). Consistent with this context, a growing body of research indicates that many young people experience emotional responses to environmental crises, commonly referred to as eco-anxiety[1] (Hickman et al., 2021; Niedzwiedz et al., 2023) – psychological distress or anxiety related to perceived environmental threats, including but not limited to climate change (Clayton et al., 2021; Pihkala, 2020; Žukauskienė et al., 2025). Therefore, there is a need to examine eco-anxiety in emerging adulthood, because it unfolds during a life stage already characterized by multiple competing developmental tasks and global challenges.

Eco-anxiety is experienced at different levels, ranging from low or occasional distress to more persistent responses (Clayton & Karazsia, 2020). These differences are important

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because the strength of eco-anxiety may determine if people take actions in response to environmental crises (Stanley et al., 2021). Moderate levels of eco-anxiety have been linked to greater engagement in pro-environmental behavior (i.e., actions that reduce harm to the environment and/or contribute to its protection (Steg & Vlek, 2009)), whereas very high levels of eco-anxiety may be associated with avoidance or reduced action; low levels of eco-anxiety, in turn, are related to limited motivation to engage (Heeren et al., 2022; Kühner et al., 2025; Mathers-Jones & Todd, 2023; Ogunbode et al., 2022; Tam et al., 2023).

Pro-environmental behaviors, such as donation to environmental organizations have been experimentally shown to influence environment-conservation related emotions (Zeier et al., 2025), which may be relevant for how people cope with eco-anxiety. Accordingly, engaging in pro-environmental behavior may represent one way in which people respond to eco-anxiety (Fyke & Weaver, 2023). In market-based societies, environmentally-responsible consumption – efforts to reduce environmental harm across the consumption process (Markle, 2013) – represents one of the most common and accessible forms of pro-environmental behavior. For emerging adults in particular, environmentally-responsible consumption such as limiting the purchase of new clothing (Ogunbode et al., 2022), favoring secondhand items or products with reduced packaging (Whitmarsh et al., 2022), and more broadly, choosing products with lower environmental impact (Pavani et al., 2023), can provide a feasible way to express environmental engagement in daily life, as it typically requires fewer resources and less coordination than many other forms of costly behavior such as writing petitions to policy makers or installing solar panels.

Environmentally-responsible consumption can be expressed through two distinct forms. Some actions are habitual and embedded in everyday routines (e.g., reducing water or electricity use, refusing packaged goods), while others reflect activism-oriented consumption choices that require greater effort (e.g., encouraging others to consume responsibly) (Schwartz et al., 2023). Considering both forms makes it possible to identify whether people primarily rely on everyday conservation actions, engage in more effortful and visible ones, or both, in response to eco-anxiety (Kabasakal-Cetin, 2023; Kerse & Kerse, 2025; Kohl, 2022). Importantly, higher-impact behaviors, such as activism-oriented consumption, that extend beyond individual choices are considered particularly relevant for addressing persistent environmental problems (Nielsen et al., 2021).

Resilience – the ability to adapt to adversity, regulate emotional responses, and recover from stress (Werner, 1995) – supports coping with a wide range of life challenges (Masten, 2001), including distress related to environmental crises (Magruder & Chipman, 2025). However, resilience capacity is still developing in emerging adulthood (Jankowiak et al., 2025; Madewell & Ponce-Garcia, 2016); strategies that were effective earlier in life, such as relying on family support, may no longer be fully available, while new adaptive strategies may not yet be firmly established (Crane et al., 2025). As a result, resilience resources can vary substantially across emerging adulthood, with some people showing stronger coping capacity than others (De Maat et al., 2023). Considering resilience together with eco-anxiety and environmentally-responsible consumption might unravel why some emerging adults remain engaged with environmental issues despite uncertainty, distress, and competing developmental demands, whereas others may experience eco-anxiety as overwhelming (Shao & Yu, 2023). In this sense, resilience may compensate for limited life experience by supporting engagement rather than disengagement related to addressing environmental crises; without sufficient resilience, on the other hand, eco-anxiety may compound existing pressures rather than motivate action.

Dynamic social norms – perceptions that others are increasingly engaging in environmentally-responsible consumption over time (Sparkman, 2021) – are linked to a variety of environmentally-responsible consumption choices, including reduced meat consumption (Sparkman et al., 2021; Wolfswinkel et al., 2025), intention to choose plant-based meals (Sparkman & Walton, 2019), and increase of reusable coffee cups use (Loschelder et al., 2019). When emerging adults are managing competing priorities, dynamic social norms may act as heuristics, signaling that environmentally-responsible consumption is increasingly common and socially supported. Perceived as part of a broader collective shift, such choices may feel easier to adopt alongside other life demands (Cialdini & Goldstein, 2004; Sparkman & Walton, 2019).

There are many contextual cues globally that could serve as dynamic social norms. For example, recycling behaviors increases (European Environment Agency, 2025), traditional and social media increasingly communicate the need to conserve the environment (Hase et al., 2021), environmental issues are being integrated into educational curriculum (UNESCO, 2023), renewable energy infrastructure expands (World Economic Forum, 2025), corporate practices are increasingly shaped by environmental standards, reporting requirements, and sustainability commitments (European Union, 2022), societal groups are mobilizing against environmental crises (Lynas et al., 2021; Thomas-Walters et al., 2025), etc. It is therefore plausible that this plural set of signals provides ample opportunities for dynamic social norms to emerge and motivate environmentally-responsible consumption. Importantly, even witnessing increases in similar behaviors (not necessarily environmentally-responsible consumption itself) may still encourage engagement in environmentally-responsible consumption, particularly when such signals are activated through appropriate interventions or campaigns (Sparkman & Weber, 2023).

Current Study

The current study aims to explore how eco-anxiety, two forms of environmentally-responsible consumption (i.e., everyday-

and activism-oriented), resilience, and dynamic social norms tend to co-occur among emerging adults. Eco-anxiety varies in intensity, and this variation may be reflected in how emerging adults engage in conservation behaviors, from routine everyday actions to more effortful, activism-oriented forms. Eco-anxiety can be broadly categorized into at least three expression levels that shape pro-environmental engagement: very high level associated with avoidance or reduced action, moderate level linked to greater engagement and low level related to limited engagement (Heeren et al., 2022; Kühner et al., 2025; Mathers-Jones & Todd, 2023; Ogunbode et al., 2022; Tam et al., 2023). Consistent with this, cluster analyses of pro-environmental behavior tend to recover four groups even across behaviorally diverse indicators such as recycling and sustainable transportation (Poškus, 2020; Poškus & Žukauskienė, 2017), leading us to expect three to four clusters in our studies. Further, resilience is particularly relevant for emerging adults facing competing life demands, as it may help sustain environmental engagement despite these pressures. Dynamic social norms, in turn, can serve as decision-making heuristics that reduce cognitive load when choosing whether to engage in conservation-oriented consumption. Studies examining resilience and dynamic social norms using cluster analysis have typically proposed five and four clusters respectively (Shakouri Youvalari & Zaim Gökbay, 2026; Shen et al., 2025; Van Der Meulen et al., 2019; Wolfswinkel et al., 2024). Given the well-established relationship between eco-anxiety and pro-environmental behavior, we expect resilience and dynamic social norms to cluster around these core variables without inflating the solution beyond four groups (Exploratory hypothesis 1). Furthermore, we expect high eco-anxiety to cluster with low behavioral engagement, moderate eco-anxiety with active engagement, and low eco-anxiety with disengagement (Exploratory hypothesis 2). Given the lack of evidence on how resilience and dynamic social norms group together with eco-anxiety and conservation-oriented consumption, the direction of this remains open to exploration. Understanding heterogeneity in how these factors cluster is important because different groups may require different strategies to support both coping with eco-anxiety and sustained engagement in environmentally-responsible consumption. Because this is the first study to examine how eco-anxiety, environmentally-responsible consumption, resilience, and dynamic social norms co-occur, confirming the resulting profiles in an independent sample was necessary (Everitt et al., 2011) before they could inform such strategies. We therefore examined whether the same profiles would emerge in two samples that differed in composition and recruitment, as replication across independent samples is one way of establishing that a typology shows a pattern that recurs (Bergman & Magnusson, 1997).

Beyond individual outcomes, at a societal level, emerging adults' ability to remain well adapted to the complexities of today's world, including managing eco-anxiety and engaging in environmentally-responsible consumption, is relevant for the stability of social and economic systems that rely on intergenerational contributions. When emerging adults are able to complete education, remain engaged in work, and achieve economic participation, they contribute to tax-based systems that support public services and income security across the life course (Kim & Lee, 2025; Poletti et al., 2023).

Study 1

Method

Sample and Procedure. Participants for the current study were emerging adults aged 18–29 years (M_{age} = 22.40, SD_{age} = 3.79). The majority of participants identified as Lithuanian (93%), with smaller proportions identifying as Lithuanian-speaking Polish (4.3%), Russian (2.1%), or another nationality (0.5%). Other sociodemographic characteristics are presented in Table 1.

The sample of emerging adults was drawn from a nationally representative omnibus survey of Lithuanian

Table 1. Sample Characteristics

	Study 1	Study 2
Characteristics	*n* (%)	*n* (%)
Sex/Gender		
Female/Women	214 (57.4)	292 (69)
Male/Men	159 (42.6)	122 (28.8)
Other	—	6 (1.4)
Refused to indicate	—	3 (0.7)
Place of residence		
City (>50.000 residents)	170 (45.6)	323 (76.4)
Town (2.000 – 50.000 res.)	91 (24.4)	54 (12.8)
Village (<2.000 res.)	112 (30.0)	46 (10.9)
Education		
Unfinished secondary	72 (23.8)	4 (9)
Secondary	147 (39.4)	292 (69)
Vocational	58 (15.5)	7 (1.7)
Higher	96 (25.7)	120 (28.3)
Family income		
1100 Euros and less	25 (6.7)	—
1101–2000 Euros	89 (23.9)	—
More than 2000 Euros	86 (23.1)	—
No response	173 (46.4)	—
Relationship status		
Single	234 (62.7)	165 (39)
In relationship	84 (22.5)	217 (51.3)
Married	42 (11.3)	10 (2.4)
Divorced	2 (5)	3 (7)
No response	11 (2.9)	28 (6.6)

Note. Study 1, *N* = 373; Study 2, *N* = 423. In Study 1, only biological sex data was collected, as the measure was tied to the predetermined omnibus survey structure. In Study 2, objective income was omitted to prioritize other variables and keep the questionnaire a reasonable length.

residents aged 18 years and older ($N = 2,136$), with age strata (including 18–29 years) used to ensure proportional representation. An omnibus survey is a multi-topic survey in which multiple research modules are administered within a single nationally sampled data collection (Statistics Canada, 2003).

The survey was conducted in February–March 2024 through face-to-face interviews administered by a professional research company. Households were selected using random route sampling, a probability-based procedure designed to approximate equal selection probability across households. Individuals in institutional settings (e.g., correctional or healthcare facilities) and those without a permanent residence were not included in the sampling frame (Adams & Brace, 2006). The survey company adhered to established professional and ethical standards for social research (ICC/ESOMAR, 2016), including informed consent and voluntary participation. No personally identifiable information was collected.

This Study 1 and the following Study 2 protocols were approved by the ethical committee of the Institute of Psychology of Mykolas Romeris University (protocol number 5/-2023).

Measures. Permissions were obtained for all non-public measures. Instruments were translated into Lithuanian using independent translators, with discrepancies resolved through expert discussion. Given space constraints of the omnibus survey, brief versions of each measure were used, selecting items based on prior factorial evidence and conceptual relevance to the study aims. This approach also reflects a broader effort to limit respondent burden, as longer questionnaires are associated with reduced participation and lower response quality (Eisele et al., 2022; Galesic & Bosnjak, 2009). Descriptive statistics are presented in Table 2.

Eco-anxiety symptoms were assessed using four items adapted from the Climate Change Anxiety Scale (Clayton & Karazsia, 2020). The term "climate change" was replaced with "environmental crisis" to align with the focus of the study. Items were selected from the cognitive-emotional impairment (e.g., "*Thinking about environmental crisis makes it difficult for me to sleep*") and functional impairment (e.g., "*My concerns about environmental crisis interfere with my ability to get work or school assignments done*") subscales based on prior factorial evidence and conceptual relevance. Before responding, participants were provided with a definition of "environmental crisis" which is as follows "An environmental crisis is a consequence of human mistreatment of the environment and nature, which puts the survival of humanity and all life on earth at risk. The ecological crisis is manifested in climate change, increased pollution, resource depletion, loss of species, etc." Responses were recorded on a 5-point scale ranging from 1 *(never)* to 5 *(almost always)*.

Environmentally-responsible consumption was measured using eight items covering four domains of consumption: water and electricity conservation, non-wasteful food consumption, and shopping (Žukauskienė et al., 2025). Each domain included two facets of environmentally-responsible consumption: everyday consumption and activism-oriented consumption. Everyday consumption reflects efforts to reduce the environmental impact of daily consumption practices (e.g., "*I find ways to use all the food I buy or prepare*"), whereas activism-oriented consumption reflects efforts to influence others to engage in less environmentally damaging consumption (e.g., "*I find ways to encourage others not to waste food*"). Participants indicated how often they engaged in these consumption practices on a 5-point scale ranging from 1 (*never*) to 5 (*almost always*).

Resilience was measured with three items from The Brief Resilience Scale (Smith et al., 2008). Sample item: "*I usually come through difficult times with little trouble*". Responses were recorded on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Dynamic social norms were measured with one item formulated for this study based on past research (de Groot et al., 2021), namely "*To what extent do you agree that more and more people are contributing to addressing the environmental crisis?"* Item was evaluated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The full questionnaire included measures of environmental risk perception, emotions related to environmental crises, intentions regarding having children, life satisfaction, general

Table 2. Descriptive Statistics of Study Variables

	Study 1			Study 2		
	M (SD)	*Cronbach's α*	*S/K*	*M (SD)*	*Cronbach's α*	*S/K*
Eco-anxiety	1.40 (0.63)	.884	1.88/3.63	1.51 (0.63)	.831	1.33/1.23
Environmentally-responsible consumption						
Everyday consumption	3.07 (0.88)	.712	−0.28/−0.24	3.48 (0.71)	.509	−0.74/1.09
Activism-oriented consumption	2.49 (0.99)	.788	0.27/−0.76	2.51 (0.87)	.644	0.09/−0.70
Resilience	3.62 (0.73)	.833	−0.38/0.71	4.62 (1.30)	.837	−0.43/−0.36
Dynamic social norms	3.49 (0.89)	—	−0.47/0.30	4.55 (1.18)	—	−0.63/0.88

Note. Study 1, $N = 373$; Study 2, $N = 423$.

anxiety, and prioritization of ongoing global challenges that are not used in this study.

Analytic Strategy. Statistical analyses were conducted using IBM SPSS Statistics Version 23. First, reliability analyses, descriptive statistics, and bivariate rank correlations were computed for all study variables. Missing data analysis revealed that missingness was low overall and concentrated in the dynamic social norms item (10.2% missing). The remaining variables, scored as the mean of available items, had less than 1.1% missing data each; as a single-item measure, dynamic social norms could not benefit from this compensatory scoring. Pairwise deletion was used for correlational analyses, and listwise deletion was used for the cluster analyses, retaining 334 of 373 cases with complete data on all study variables. The resulting sample sizes are reported in the note to Table 3 for the correlational analyses and in the note to Table 4 for the cluster analyses.

To identify patterns of eco-anxiety, environmentally-responsible consumption, resilience, and dynamic social norms, a two-step cluster analytic procedure was applied. Prior to analysis, all variables were standardized to z-scores to ensure equal contribution to the distance measure. As a result, cluster descriptions throughout the Results and Discussion (e.g., high, low, above- or below-average) reflect each cluster's relative standing within the sample rather than normative or clinical levels; unstandardized means are reported in Table 4 for interpretation on the original response scales. Hierarchical cluster analysis using Ward's method and squared Euclidean distance was first conducted to explore the appropriate number of clusters, with the optimal solution determined by inspecting the agglomeration schedule and dendrogram. The resulting cluster centers were then entered into a k-means analysis to refine and finalize cluster assignments. Multivariate differences between clusters were examined using MANOVA within the general linear model framework, with univariate tests inspected to interpret differences across individual variables. To explore demographic differences across clusters, chi-square tests were conducted for gender and one-way ANOVA with Games-Howell post-hoc tests for age, given unequal variances across clusters.

Because the exact cluster sizes could not be specified in advance, a sensitivity analysis conducted in G*Power 3.1 was used to estimate the smallest detectable multivariate effect given the final sample size ($N = 373$), assuming $\alpha = .05$ and power of .80.

Hypotheses were not preregistered, since the exploratory nature of the cluster analysis meant the full profile structure could not be specified in advance.

Results

Rank correlations of all study variables are presented in Table 3.

Inspection of the agglomeration schedule indicated a substantial increase in coefficients at the transition from five to four clusters (coefficients: 983.44 to 1104.99, $\Delta = 121.55$), with subsequent merges showing further accelerating increases. Visual inspection of the dendrogram corroborated this solution. Accordingly, a four-cluster solution was carried forward.

The four-cluster solution was subsequently tested using k-means cluster analysis, yielding four distinct groups of participants (Figure 1, Table 4). The first cluster, labeled *Mobilized Distressed* ($n = 38$, 11.4%), was characterized by the highest eco-anxiety scores, above-average engagement in both everyday- and activism-oriented consumption, low resilience, and near-average dynamic social norms. The second cluster, *Adaptive Engaged* ($n = 98$, 29.3%), showed low eco-anxiety alongside high levels of both consumption forms, moderate dynamic social norms, and average resilience. The third cluster, *Resilient Reserved* ($n = 122$, 36.5%), displayed low eco-anxiety, below-average engagement in both consumption forms, near-average resilience, and near-average dynamic social norms. The fourth cluster, *Disengaged* ($n = 76$, 22.8%), was distinguished by below-average scores across all variables including eco-anxiety, both consumption forms, resilience, and dynamic social norms, indicating overall disengagement from both environmental concern and action.

The multivariate effect was significant, Wilks' $\Lambda = .070$, $F(15, 900.34) = 97.60$, $p < .001$, $\eta^2p = .589$, indicating large differences between clusters across the variable set. Univariate follow-up tests revealed significant effects for all five variables (Table 5).

Gender distribution differed significantly across clusters, χ^2 (3, $N = 334$) = 13.58, $p = .004$, Cramer's $V = .202$.

Table 3. Rank Correlations of Study Variables

	1	2	3	4	5
1. Eco-anxiety	—	.21**	.44**	−.15**	.07
2. Everyday consumption	.12*	—	.54**	.11*	.13**
3. Activism-oriented consumption	.30*	.68**	—	.06	.08
4. Resilience	−.05	−.03	−.05	—	.18**
5. Dynamic social norms	.09	.06	−.06	.26**	—

Note. Study 1 correlations are presented below the diagonal; Study 2 correlations are presented above the diagonal. *N* ranges from 334 to 370 in Study 1 and from 371 to 403 in Study 2 due to pairwise deletion. Spearman's rho coefficients are reported. *$p < .05$. **$p < .01$.

Table 4. Cluster Profiles for Study 1 and Study 2

	Mobilized distressed	Adaptive engaged	Resilient reserved	Disengaged
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
Study 1 (*n* = 334)				
Eco-anxiety	2.78 (0.58)	1.24 (0.34)	1.26 (0.39)	1.20 (0.36)
Everyday consumption	3.55 (0.60)	3.83 (0.52)	2.50 (0.70)	2.81 (0.76)
Activism-oriented consumption	3.36 (0.57)	3.38 (0.71)	1.65 (0.51)	2.28 (0.73)
Resilience	3.38 (0.58)	3.90 (0.61)	3.97 (0.56)	3.00 (0.67)
Dynamic social norms	3.55 (0.72)	3.72 (0.70)	3.90 (0.66)	2.49 (0.74)
n	38	98	122	76
Study 2 (*n* = 371)				
Eco-anxiety	2.36 (0.58)	1.39 (0.37)	1.18 (0.32)	1.21 (0.34)
Everyday consumption	3.71 (0.55)	4.00 (0.42)	3.19 (0.59)	2.96 (0.72)
Activism-oriented consumption	3.06 (0.65)	3.17 (0.58)	1.82 (0.51)	2.00 (0.72)
Resilience	3.80 (1.08)	5.39 (0.83)	5.39 (0.79)	3.33 (1.09)
Dynamic social norms	4.90 (1.06)	4.74 (0.88)	5.04 (1.00)	3.52 (1.31)
n	82	105	109	75

Note. Cluster solutions are based on cases with complete data on all study variables. Study 1: *n* = 334 of 373; Study 2: *n* = 371 of 423.

Mobilized Distressed and *Adaptive Engaged* clusters were predominantly female (65.8% and 70.4% respectively), whereas *Disengaged* and *Resilient Reserved* clusters showed an approximately equal gender distribution (~51% male, ~49% female).

Age differed significantly across clusters, F (3, 330) = 3.95, p = .009. Games-Howell post-hoc tests indicated that *Resilient Reserved* was significantly younger (M = 21.56, SD = 3.66) than both *Disengaged* (M = 23.04, SD = 3.91, p = .043) and *Adaptive Engaged* (M = 23.10, SD = 3.46, p = .008). *Mobilized Distressed* (M = 22.55, SD = 4.29) did not differ significantly from any other cluster.

Study 2

Method

Sample and Procedure. To replicate the findings the second set of data was collected in a convenient sample in Lithuania. Participants for the current study were emerging adults aged 18–29 years (M_{age} = 21.16, SD_{age} = 2.50). Eligibility criteria required participants to be between 18 and 29 years old; respondents outside this range were excluded from the analyses (N = 137). Nationality was recorded only in Study 1 (via the omnibus survey) and was not collected in Study 2. Other sociodemographic characteristics are presented in Table 1.

Participants were recruited using convenience sampling through multiple channels, including educational institutions (universities, colleges, and vocational schools), a business association with access to member companies, and posts distributed on social media platforms. Participants indicated that they received the survey invitation primarily through educational institutions (76.1%), followed by other channels such as social networks (22.5%), and employers (1.4%).

Data were collected in 2025 January - May through an online questionnaire administered via SurveyMonkey. Prior

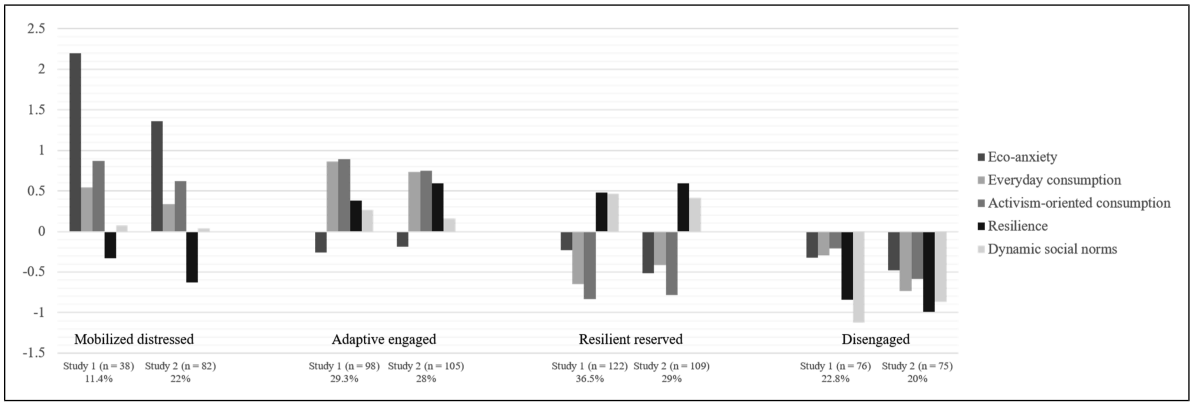


Figure 1. Replicated Cluster Profiles for Study 1 and Study 2
Note. Values represent standardized z-scores

Table 5. Univariate Effects of Cluster Membership on Study Variables

	Study 1			Study 2		
	F (3, 330)	*p*	η^2p	*F* (3, 367)	*p*	η^2p
1. Eco-anxiety	172.66	<.001	.611	155.63	<.001	.560
2. Everyday consumption	84.73	<.001	.435	64.33	<.001	.345
3. Activism-oriented consumption	161.55	<.001	.595	126.96	<.001	.509
4. Resilience	48.68	<.001	.307	116.01	<.001	.487
5. Dynamic social norms	70.26	<.001	.390	32.96	<.001	.212

Note. Box's test indicated violation of the equality of covariance matrices assumption in both studies ($p < .001$). Levene's test indicated unequal error variances across clusters for most variables in both studies ($p < .05$).

to accessing the questionnaire, participants were presented with an information and consent form describing the purpose of the study and their rights as participants. Only respondents who indicated that they had read and understood the information and agreed to participate were directed to the questionnaire. Participation was voluntary, and no personally identifiable information was collected.

Measures. In this study exactly the same measures were used as in Study 1, reflecting the same effort to limit respondent burden through brief measures. Descriptive statistics are presented in Table 2. Internal consistency of the environmentally-responsible consumption subscales was lower in Study 2 than in Study 1 (everyday consumption: α = .51 vs .71; activism-oriented consumption: α = .64 vs .79). Inspection of inter-item correlations indicated small to moderate positive associations among behaviors (everyday consumption: $r = .13 – .31$; activism-oriented consumption: $r = .25 – .46$). The reduced reliability in Study 2 may reflect the more heterogeneous nature of the convenience sample compared with the population-based sample used in Study 1. Data were additionally screened for multivariate outliers using Mahalanobis distance. Using the $\chi^2(5) = 20.52$ threshold at $p < .001$, no case exceeded the cutoff. Therefore, the full sample was used for the subsequent analyses.

The full questionnaire included measures of environmental risk perception, emotions related to environmental crises, intentions regarding having children, life satisfaction, general anxiety, prioritization of ongoing global challenges, and precarious childhood experiences that are not used in this study.

Hypotheses were not preregistered, for the same reason noted in Study 1.

Analytic Strategy. The same analytic and sample size evaluation strategy was used as in Study 1.

Missing data analysis showed that missingness ranged from 4.7% to 12.3% across variables and, unlike in Study 1, was not concentrated in a single item; the pattern of cases missing on multiple variables together was consistent with partial questionnaire completion, likely reflecting the online, self-administered format. Pairwise deletion was used for correlational analyses, and listwise deletion was used for the cluster analyses, retaining 371 of 423 cases with complete data on all study variables. The resulting sample sizes are reported in the note to Table 3 for the correlational analyses and in the note to Table 4 for the cluster analyses.

Results

Rank correlations of all study variables are presented in Table 3.

In Study 2, inspection of the agglomeration schedule indicated a substantial increase in coefficients at the transition from five to four clusters (coefficients: 1031.10 to 1154.75, Δ = 123.65), with subsequent merges showing further accelerating increases. Visual inspection of the dendrogram corroborated this solution. Accordingly, a four-cluster solution was carried forward.

K-means cluster analysis yielded four clusters that closely replicated the Study 1 solution (Figure 1, Table 4). The first cluster, labeled *Mobilized Distressed* (n = 82, 22%), was characterized by the highest eco-anxiety scores, above-average engagement in both everyday- and activism-oriented consumption, low resilience, and near-average dynamic social norms. The second cluster, *Adaptive Engaged* (n = 105, 28%), showed low eco-anxiety alongside high levels of both consumption forms, moderate dynamic social norms, and average resilience. The third cluster, *Resilient Reserved* (n = 109, 29%), displayed low eco-anxiety, below-average engagement in both consumption forms, near-average resilience, and near-average dynamic social norms. The fourth cluster, *Disengaged* (n = 75, 20%), was distinguished by below-average scores across all variables including eco-anxiety, both consumption forms, resilience, and dynamic social norms.

Replicating Study 1, the multivariate effect was again significant, Wilks' Λ = .089, F (15, 1002.49) = 93.89, $p <$ .001, η^2p = .554. Univariate effects were significant for all five variables across clusters (Table 5).

Gender distribution differed significantly across clusters, χ^2 (3, N = 365) = 12.14, p = .007, Cramer's V = .182. Analyses

were conducted among participants who identified as male or female, excluding those who selected other or preferred not to answer ($n = 6$). *Mobilized Distressed* and *Adaptive Engaged* clusters were again predominantly female (80.0% and 74.0% respectively), while *Resilient Reserved* showed a more balanced gender distribution (57.9% female). *Disengaged* was also predominantly female (71.6%), which differed from the pattern observed in Study 1.

Age differed significantly across clusters, F (3, 367) = 3.51, p = .016. Games-Howell post-hoc tests indicated that *Disengaged* was significantly younger ($M = 20.48$, $SD = 1.81$) than both *Adaptive Engaged* ($M = 21.34$, $SD = 2.57$, $p = .044$) and *Resilient Reserved* ($M = 21.60$, $SD = 2.66$, $p = .005$). *Mobilized Distressed* ($M = 20.90$, $SD = 2.60$) did not differ significantly from any other cluster. These findings partially replicated Study 1 – both studies showed significant age differences across clusters and *Mobilized Distressed* did not differ from others in either study. However, the specific pattern differed: in Study 1 *Resilient Reserved* was the youngest cluster, whereas in Study 2 *Disengaged* emerged as the youngest group.

(Dis)confirming Hypotheses in Study 1 and Study 2

Exploratory hypothesis 1, which predicted that resilience and dynamic social norms would cluster around eco-anxiety and environmentally-responsible consumption without inflating the solution beyond four groups, was supported in both studies. Exploratory hypothesis 2 was partially supported in both studies – as expected, moderate eco-anxiety clustered with active behavioral engagement (*Adaptive Engaged*; Study 1: $n = 98$; Study 2: $n = 105$) and low eco-anxiety clustered with disengagement (*Disengaged*; Study 1: $n = 76$; Study 2: $n = 75$). However, contrary to expectations, high eco-anxiety clustered with above-average rather than reduced behavioral engagement in both studies (*Mobilized Distressed*; Study 1: $n = 38$; Study 2: $n = 82$), suggesting that distress may mobilize rather than inhibit conservation-oriented consumption among emerging adults. Regarding the open exploration of resilience and dynamic social norms, both variables patterned consistently across studies – resilience was notably low in the *Mobilized Distressed* cluster and highest in the *Adaptive Engaged* and *Resilient Reserved* clusters. Dynamic social norms were slightly above average in the *Mobilized Distressed* cluster, above average in the *Adaptive Engaged* and *Resilient Reserved* clusters, and notably low in the *Disengaged* cluster, replicating across both studies.

Discussion

Today's emerging adults navigate a complex set of challenges, with accelerating environmental crises representing an additional pressing layer. Emerging adulthood spans a relatively wide age range, with different developmental tasks and life circumstances, thus how people relate to environmental distress and conservation behavior may vary not only between people but across this life stage itself. To design effective support systems there is a need to understand how eco-anxiety, coping resources, and behavioral responses combine within this age group, and whether distinct subgroups exist that may require tailored approaches to address eco-anxiety and motivate engagement with environmental challenges. The present studies contribute to these efforts by mapping the co-occurrence of eco-anxiety, environmentally-responsible consumption, resilience, and dynamic social norms among emerging adults across two independent samples, identifying four replicated profiles – *Mobilized Distressed*, *Adaptive Engaged*, *Resilient Reserved*, and *Disengaged*. The replication of this structure across an independent nationally representative and convenience sample strengthens confidence that these profiles reflect a systematic pattern rather than a sampling artifact (Bergman & Magnusson, 1997). Both exploratory hypotheses received full or partial support. The cluster solution did not exceed four groups, confirming that resilience and dynamic social norms organized around eco-anxiety and consumption rather than inflating the solution (Exploratory Hypothesis 1). The expected pattern of moderate eco-anxiety clustering with active engagement and low eco-anxiety with disengagement was also observed, though high eco-anxiety clustered with above-average rather than reduced behavioral engagement (Exploratory Hypothesis 2).

Mobilized Distressed cluster was characterized by the highest eco-anxiety, moderate engagement in both everyday- and activism-oriented consumption, below average resilience, and near-average dynamic social norms. Contrary to expectations (Mathers-Jones & Todd, 2023; Ogunbode et al., 2022), high eco-anxiety did not translate into behavioral avoidance. Instead, this group remained actively engaged in conservation-oriented consumption despite elevated distress. Notably, activism-oriented consumption was somewhat higher than everyday consumption in this profile, suggesting that eco-anxiety may lean emerging adults toward more visible and effortful forms of environmental action. The near-average dynamic social norms might suggest that this engagement is driven by intrinsic motivation rather than perceived social pressure. However, the low resilience represents a vulnerability. Without adequate coping resources, sustained engagement under high emotional burden may be difficult to maintain over time and could eventually tip into burnout or avoidance (Bird et al., 2024). This group might need support in managing the emotional weight of eco-anxiety and in building resilience resources to sustain their already present environmental engagement. Formal and informal social support groups, facilitated by trained mediators, can create spaces for constructive processing of eco-anxiety and building resilience capacity without requiring people to step back from the engagement they already show (Bellehumeur et al., 2026; Pihkala, 2025). Climate Cafés, informal group settings where people gather to discuss climate-related

emotions, illustrate one such format, with participants reporting reduced isolation and increased hopefulness after attending (Calabria & Marks, 2024).

Adaptive Engaged cluster was characterized by below average eco-anxiety, the highest engagement in both type of consumption across all profiles, above average resilience, and moderate dynamic social norms. Unlike *Mobilized Distressed*, this group highly engages in conservation without elevated distress (Hogg et al., 2024), suggesting a different and more sustainable motivational pathway, supported by stronger coping resources and greater sensitivity to shifting social norms rather than driven by anxiety. Importantly, this profile represents the most adaptive response to environmental challenges among emerging adults. In future research, understanding what enables this profile, whether values, social context, or accumulated coping experience, may be as important for intervention design as understanding what drives distress in other groups. Given their sensitivity to shifting social norms, this group may also be well positioned to take on ambassador-style roles that model and communicate environmentally-responsible consumption to others, an approach shown to both reinforce the ambassador's own sustained engagement (Hassler et al., 2025) and increase engagement among the peers they communicate with (Potoski & Callery, 2018).

Resilient Reserved cluster was characterized by low eco-anxiety, below average engagement in both forms of consumption, and the highest resilience and dynamic social norms across all profiles. High resilience may create a sense that environmental challenges are manageable, reducing the felt need to act (Shao & Yu, 2023). Next, more than any other profile, this group perceived that others are increasingly engaging in conservation-oriented consumption, and yet this did not translate into behavioral engagement. Given that dynamic social norms typically motivate pro-environmental behavior (Sparkman, 2021), this finding seems worthwhile to test further. It may reflect that emerging adults in this profile do not identify with conservation-oriented consumers as their reference group, making perceived shifts in others' behavior carry little motivational weight (Hornung, 2022). Notably, unsustainable dynamic social norms, signaling that others are increasingly do not conserve the environment, have been shown to outperform sustainable dynamic norms in reducing consumption, driven by social moral cleansing (Granato & Mugge, 2025). Whether a similar mechanism could explain the disconnect between norm awareness and action in this profile remains to be tested Alternatively, perceiving others as already acting may reduce personal felt obligation, consistent with diffusion of responsibility (Ai & Rosenthal, 2024). Everyday consumption was higher than activism-oriented consumption in this profile, representing a potentially accessible entry point for intervention, though before designing such efforts, it would be important to first understand what mechanisms and factors underlie the apparent disconnect between norm awareness and behavioral engagement in this group. Though untested here, related work suggests that simply telling people others are acting doesn't reliably build personal responsibility, but pairing that message with a direct call to act might, for this group, work better than norm messaging alone (Ai & Rosenthal, 2024).

Disengaged was the only profile that was below average on all five variables, making it the most distinctively low-scoring group across eco-anxiety, both forms of consumption, resilience, and dynamic social norms. However, a closer look reveals a more nuanced picture. Eco-anxiety in this profile exceeded that of *Resilient Reserved* in Study 2, and environmentally-responsible consumption in Study 1 surpassed that of *Resilient Reserved* as well. Notably, activism-oriented consumption was relatively higher than everyday consumption, suggesting that more visible and activism-oriented forms of environmental action may be easier to adopt for this group. This suggests that *Disengaged* cluster may not represent a group that is indifferent to environmental issues, but rather one that is inadequately resourced to act. This group had the lowest resilience and the lowest awareness that others are increasingly acting on environmental issues, leaving them with few personal or social resources to support environmental engagement. It is unclear whether this pattern reflects stable characteristics or temporary life circumstances. Critical life transitions such as changes in housing, employment, or family circumstances can disrupt established pro-environmental routines, redirecting resources toward more immediate concerns (Shirani et al., 2017), and coming from disadvantaged backgrounds has been shown to shift people toward short-term priorities at the expense of longer-term environmental action (Grandin et al., 2022). Whether this reflects being overwhelmed by competing demands, carrying heavier personal or social burdens, or belonging to more marginalized or underserved groups remains an open question. This profile therefore needs closer attention, not as one to motivate toward environmental action, but as one that may first require broader psychosocial support before environmental engagement becomes a realistic possibility. Still, some activities may help build personal capacities while feeling worthwhile in their own right, instead of presenting environmental engagement as another demand. One low-barrier starting point may be citizen science activities such as biodiversity monitoring, which ask little upfront commitment and let people participate at their own pace. Beyond generating environmental data, participants in such projects commonly report gains in self-efficacy, motivation, and a sense of connection to others (Peter et al., 2021), benefits that might be relevant to building personal resources.

Gender distribution differed greatly across clusters in both studies, with *Mobilized Distressed* and *Adaptive Engaged* showing a consistent female majority. This is broadly consistent with well-established findings that women tend to report higher levels of eco-anxiety, environmental concern, and pro-environmental behavior than men across cultures and contexts (Kühner et al., 2025). However, women were not

uniformly represented in engaged profiles only, but also appeared in *Disengaged*, suggesting that gender alone does not determine environmental engagement and that meaningful within-gender heterogeneity exists (Borau & Mai, 2026). The elevated female representation in *Disengaged* cluster in Study 2 should be interpreted with caution, as the convenience sample in Study 2 consisted of approximately 69% women overall, which likely inflated female representation across all clusters. *Resilient Reserved* showed the most balanced gender distribution across both studies, which may reflect that this profile is driven more by individual coping capacity than by gender-linked patterns of environmental concern.

Age differed across clusters in both studies, consistent with the view that emerging adulthood encompasses qualitatively different developmental phases (Arnett, 2006). However, the specific pattern of age differences was not consistent. In Study 1, *Resilient Reserved* was the youngest cluster, whereas in Study 2, *Disengaged* were the youngest, and age differences across all profiles were modest in magnitude (approximately 1–2 years). The inconsistency in age patterns across studies may partly reflect sample differences and not reflect a universal developmental phenomenon, as Study 1 used a nationally representative sample while Study 2 relied on a convenience sample. The only consistent finding was that *Mobilized Distressed* did not differ in age from any other cluster in either study, suggesting this profile is likely not tied to a particular phase of emerging adulthood, but rather is shaped by stable individual characteristics, for example environmental values, personality traits, or emotional sensitivity (Cipriani et al., 2024; Hopwood et al., 2021). Neuroticism in particular has been linked to both climate change concern and eco-anxiety, suggesting that people who tend toward anxiety more generally may be more prone to environmental distress regardless of age (Cipriani et al., 2024; Hopwood et al., 2021).

Several methodological limitations should be noted. The internal consistency of both environmentally-responsible consumption subscales was lower in Study 2 than in Study 1, which likely reflects the greater diversity among participants in the convenience sample in terms of their consumption patterns (Cortina, 1993). Although inspection of correlations between instrument items confirmed small to moderate positive associations and no measurement concerns were identified, findings involving these subscales in Study 2 should be interpreted with some caution. Additionally, the statistical tests comparing cluster profiles assumed equal spread of scores within each cluster across variables, an assumption that was not fully met in either study. While the multivariate analyses used here are generally considered robust to this at the sample sizes used, this is worth keeping in mind when interpreting the results (Tabachnick & Fidell, 2007). Further, both studies relied on abbreviated versions of established measures to limit respondent burden. While this approach is supported by methodological research (Eisele et al., 2022; Galesic & Bosnjak, 2009; Kost & Correa Da Rosa, 2018), and reliability of the abbreviated scales was acceptable in both studies, the abbreviated eco-anxiety measure retained items from its two core facets (cognitive-emotional and functional impairment) but has not been independently validated against clinical or normative cut-offs. Eco-anxiety levels reported in this study should therefore be interpreted in relative terms within each sample; this concern is partially offset in Study 1, where the nationally representative sample allows raw means to approximate population-level eco-anxiety among Lithuanian emerging adults, though this still does not constitute a validated severity threshold. More broadly, the use of abbreviated measures across both studies limits our ability to capture the complete constructs as represented in the original instruments, and constrains comparability with studies using full versions of these scales.

Next, the convenience sample in Study 2 included a disproportionately high proportion of female participants (69%), which may have influenced cluster composition and limits the comparability of gender-related findings across studies. Future research should examine whether profiles replicate when gender is more proportionally represented. Beyond this, both studies relied on a binary conceptualization of gender, which excludes the experiences of non-binary and gender-diverse individuals. Emerging evidence suggests that LGBTQ + people report stronger climate change beliefs and higher worry about climate change compared to their cisgender heterosexual counterparts (Whitley & Bowers, 2023), suggesting that gender diversity may be a source of variation in eco-anxiety profiles. Future studies could therefore examine how eco-anxiety profiles and conservation engagement manifest among gender-diverse emerging adults.

Based on the present findings, we propose several avenues for future research. One direction that could meaningfully expand our findings is to examine whether the profiles identified here extend beyond the environmental domain. Emerging adults in the *Disengaged* profile, for instance, may face broader disengagement across multiple life areas, including education, employment, and relationships, suggesting that low environmental engagement may be one expression of a more general pattern of resource depletion rather than environmental indifference specifically. Future research could examine how everyday developmental demands of emerging adulthood compete with environmental concerns for cognitive and emotional resources, such that lower reported eco-anxiety may reflect limited attentional capacity rather than lower environmental concern (Hobfoll, 1989). Financial instability or geopolitical uncertainty, for example, may leave little space to engage with environmental threats even among people who otherwise value environmental protection. A concrete step in this direction would be to include measures of perceived task priority in future studies, which could reveal the extent to which competing developmental demands shape eco-anxiety and conservation engagement among emerging adults.

The core contribution of this work lies in examining eco-anxiety within the specific developmental stage of emerging

adulthood, rather than within youth as a broad category (Marcolini et al., 2025). Theoretically, this means situating eco-anxiety alongside the developmental tasks, competing demands, and wide variation in circumstances already characteristic of this life stage, occurring together with the pressures of the current environmental crisis. Empirically, the four profiles show that eco-anxiety within this one developmental stage takes different forms, co-occurring with different levels of resilience and appearing in distinct patterns of consumption across subgroups. The clearest illustration of this is the *Disengaged* profile. Low engagement in this group might readily be read as indifference toward environmental issues. It may equally reflect broader structural pressures many emerging adults face, such as housing and income instability or geopolitical uncertainty, pressures that can compete with environmental concern for limited personal resources.

To conclude, the present studies examined eco-anxiety, environmentally-responsible consumption, resilience, and dynamic social norms as co-occurring patterns among emerging adults. Four replicated profiles were identified that differ in how these variables combine within individuals. The replication of this structure across a nationally representative and an independent convenience sample strengthens confidence in its validity. Importantly, both engagement and disengagement appear to be shaped by the interplay of emotional, motivational, and coping-related factors. These profiles suggest that support efforts targeting eco-anxiety and conservation engagement among emerging adults may need to be tailored to the specific needs and resources of different groups. Future studies could build on these findings by examining how competing developmental demands shape environmental distress and conservation engagement, and by including more gender-diverse and sociodemographically varied samples to build a fuller picture of eco-anxiety in emerging adulthood.

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Ethical Considerations

This study was approved by the committee of Psychological Research Ethics of Institute of Psychology in the Faculty of Human and Social Studies of Mykolas Romeris University. DECISION Nr. 5/-2023.

Consent to Participate

Where appropriate, written informed consent was obtained from the participants prior to data collection. No individually identifiable data are reported in this study. Prior to completing the survey, participants and their guardians were informed that their anonymized and aggregated data will be used for scientific purposes, including publication in research articles.

Consent for Publication

The authors give their consent to publish the manuscript.

Authors Contribution

Audra Balundė: Contributed to Funding Acquisition, Conceptualization, Writing - Original Draft, Writing - Review & Editing, Resources, Data Curation, Methodology, Formal Analysis, Validation, Investigation, Visualization, Supervision. **Rita Žukauskienė**: Funding acquisition, Project Administration, Resources, Methodology, Validation, Investigation, Writing - Review & Editing. **Aistė Bakaitytė-Bagdonė:** Contributed to Funding Acquisition, Conceptualization, Resources, Methodology, Validation, Investigation, Writing - Review & Editing.

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Transparency and Openness Statement

The raw data and materials used in this manuscript are available upon request from the corresponding author. Analyses were conducted using IBM SPSS Statistics and no analysis syntax is available. This study did not include a pre-registration plan for data collection or analysis.

Declaration of Generative AI and AI-Assisted Technologies in the Manuscript Preparation Process

During the preparation of this work, the authors used AI-assisted language tools to improve readability and sentence structure. All intellectual content, including conceptualization, analysis, interpretation, and conclusions, represents solely the authors' own work. The authors take full responsibility for the accuracy and integrity of the paper.

Note

1. The conceptual heterogeneity of eco-anxiety is currently debated in the literature. In this study, we rely on a commonly used working definition, while issues related to the construct's broader conceptual boundaries are beyond the scope of this paper and are left to methodological research (Coffey et al., 2021; Van Dijk et al., 2025).

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Rita Žukauskienė, PhD a professor at the Institute of Psychology, at Mykolas Romeris University (MRU). Also, she is a Head of the Applied Psychology Research Laboratory at MRU. She is constantly involved in studying human

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Aistė Bakaitytė-Bagdonė is an Associate Professor at Mykolas Romeris University (Lithuania). Her research sits at the intersection of trauma and forensic psychology, examining how individuals - particularly in emerging adulthood - process distressing experiences and, in some cases, transform them into resilience and constructive action, a perspective closely related to how eco-anxiety can shape environmentally-responsible behavior.