

# AN EXPLORATION OF ECO-ANXIETY AND ENVIRONMENTAL ENGAGEMENT IN MALTA USING A MIXED-METHODS RESEARCH DESIGN

Claire Bonello, & Mary-Anne Lauri

*Department of Psychology, University of Malta (Malta)*

## Abstract

The ongoing ecological crisis has stirred profound emotional, cognitive, and behavioural responses among individuals worldwide. One emotional response that has entered psychological research is eco-anxiety, which stems from concern over environmental events and the deteriorating state of our planet. Eco-anxiety can manifest in practical or debilitating forms, which can either lead to action or inaction, respectively, with the possibility of eco-anxiety becoming maladaptive. This study examined eco-anxiety, pro-environmental intentions and pro-environmental behaviours within the Maltese population, employing an explanatory sequential mixed methods research design, and adopting appraisal theory and the Campbell Paradigm of Attitudes as theoretical frameworks. The 13-item Hogg Eco-Anxiety Scale was utilised to identify eco-anxiety levels in 243 Maltese adults through an online questionnaire. Furthermore, we explored the relationships of eco-anxiety with pro-environmental intentions and behaviours, and climate change news exposure. Both pro-environmental intentions and behaviours exhibited positive correlations with eco-anxiety, although the latter relationship was less pronounced. Eco-anxiety positively and significantly correlated with climate change news exposure. Subsequently, we conducted four qualitative focus groups as part of the second phase, delving deeper into Maltese individuals' risk perception, efficacy beliefs, environment-related attitudes, and pro-environmental intentions and behaviours. Participants predominantly expressed negative emotions in response to ecological degradation. These negative emotions aligned with participants' perceived lack of environmental efficacy in addressing the crisis through personal and collective actions, despite their desire and intention to act in a pro-environmental manner. Participants discussed perceived costs and barriers to acting pro-environmentally, including inconvenience, cost and time, that frequently outweighed their positive attitudes towards such behaviour. In conclusion, our study highlights the importance of reframing the ecological crisis by promoting facilitators for pro-environmental behaviour, and encouraging active engagement, meaning-focused coping, and biospheric values. Such an approach would transform debilitating eco-anxiety into practical eco-anxiety, eco-hope, and eco-empathy. These findings have implications for both the fields of psychology and environmental conservation, offering insights into Maltese individuals' experiences with eco-anxiety, and promoting pro-environmental action.

**Keywords:** *Eco-anxiety, pro-environmental intentions, pro-environmental behaviours, environmental efficacy.*

---

## 1. Introduction

Our world today is confronted with an array of urgent ecological challenges. These issues collectively give rise to what experts call the "triple planetary crisis" (United Nations, 2022). Such a crisis is rooted in three interconnected global predicaments, being: climate change, the loss of nature and biodiversity, and the pervasive issue of pollution and waste. Malta, a small island state with a dense population, is no exception when it comes to environmental challenges (Environment and Resources Authority, 2020). These issues are being caused and perpetuated by human, or anthropogenic, causes, mainly the widespread use of non-renewable fossil fuels, and extraction and abuse of natural resources (United Nations, 2022).

Meanwhile, such anthropogenic behaviours and their effects are posing imminent threats to Earth itself, and its human and non-human inhabitants. Indeed, nearly two-thirds of Maltese individuals acknowledge personal exposure to environmental and climate-related risks, highlighting a growing perception of climate change as a tangible personal threat (European Commission, 2023).

Besides physical threats, such as increased extreme weather and climate events, the ecological crisis also poses new psychological challenges, with eco-anxiety being a widely mentioned and studied phenomenon within the field of environmental psychology (Albrecht, 2011). Despite this, eco-anxiety has not yet been explored within a Maltese context. Therefore, this study aimed to bridge this research and theoretical gap by exploring eco-anxiety among Maltese adults within the frameworks of appraisal theories (Arnold, 1970; Scherer, 2001) and the Campbell Paradigm of Attitudes (Kaiser et al., 2010) using an explanatory sequential mixed methods research design.

### 1.1. Eco-anxiety and its link to environmental engagement

The appraisal of the ecological crisis as being caused by anthropogenic causes, paired with its uncertain outcomes, may lead to eco-anxiety (Albrecht, 2011). Eco-anxiety has been classified as a non-pathological, inherent and natural response to the ecological crisis, rather than a mental health disorder that requires treatment. However, Mathers-Jones and Todd (2023), although pointing towards the motivating effect of eco-anxiety on environmental engagement, propose the possibility of eco-anxiety becoming maladaptive. As an illustration, Hickman et al. (2021) found that nearly half of young individuals thought that their emotions regarding the ecological situation were having and would have an impact on their level of functioning, pointing towards eco-anxiety's potential of becoming severe in its effects (Kurth & Pihkala, 2022).

Kurth and Pihkala (2022) distinguish between practical and paralysing eco-anxiety, that lead to what Andrews and Hoggett (2019) called ecologically adaptive or maladaptive responses, respectively (Andrews & Hoggett, 2019). Practical eco-anxiety is characterised by self-reflection and concern, alongside eventual pro-environmental behaviours (PEBs), such as information-seeking, regulating emotions and connecting with nature (Andrews & Hoggett, 2019). Meanwhile, fear and grief encompass paralysing eco-anxiety, that leads to defensive and withdrawal responses that characterise ecologically maladaptive responses. Indeed, several studies have exposed a positive correlation between eco-anxiety and PEB, suggesting a practical form of eco-anxiety (Mathers-Jones & Todd, 2023; Verplanken et al., 2020). Conversely, Stanley et al. (2021) found that eco-anxiety had no effect on personal environmental engagement, and a negative effect on environmental collective action. These conflicting findings point towards the necessity to explore the effects of eco-anxiety on environmental engagement further. Indeed, this study sought to test the correlation of eco-anxiety with PEB.

Efficacy beliefs have been studied in relation to eco-anxiety and environmental engagement, being termed 'environmental efficacy' (Huang, 2016). Indeed, lack of efficacy in the face of ecological threats have been found to stimulate eco-anxiety (The Lancet Child and Adolescent Health, 2021). On the other hand, appraising one's capabilities to engage in PEB, even when the ecological crisis is appraised as a threat, has been found to produce pro-environmental action, with high environmental self-efficacy also acting as a buffer for eco-anxiety's paralysing form (Mead et al., 2012). Building upon these findings, Innocenti et al. (2023), Maran and Begotti (2021) and Shao and Yu (2023) found that media and information on the ecological crisis was positively associated with both eco-anxiety, and individual and collective self-efficacy, pointing to the role of media in instigating practical eco-anxiety and subsequent environmental engagement.

### 1.2. Theoretical framework

This study was framed within Magda Arnold's four-step Appraisal Theory of Emotion (Arnold, 1960, 1970), Scherer's Sequential Check Theory of Emotion (Scherer, 2001) and the Campbell Paradigm of Attitudes (Kaiser et al., 2010). Arnold (1970) proposed a four-step sequential process of responses triggered by exposure to a situation, which in the case of this study, is the ecological crisis. This process unfolds in the following sequence: 1) Situation, 2) Appraisal, 3) Emotion, and 4) Action. Meanwhile, Scherer (2001) breaks Arnold's 'appraisal' step into four dimensions, being the appraisal of a situation's relevance, implications, normative significance and one's coping potential. The outcomes of the appraisal of the ecological crisis influences the resulting emotion and action taken, which can be both ecologically adaptive and maladaptive in nature.

The last step of Arnold's Appraisal Theory of Emotion, being 'Action', can be framed within the Campbell Paradigm of Attitudes that distinguishes between pro-environmental intentions (PEIs) and pro-environmental behaviours. (Kaiser et al., 2010). This paradigm contends that whether one's PEIs translate into behaviour depends on their attitudes towards the ecological crisis, their mitigating actions, and the appraised costs of behaving pro-environmentally (Kaiser et al., 2010). Therefore, having PEIs does not necessitate PEBs. As an example, the Special Eurobarometer survey found that the majority of Maltese respondents are willing to adopt lifestyle changes for environmental improvement, suggesting the presence of pro-environmental intentions (PEIs) that are supported by positive attitudes (European Commission, 2023; Kaiser et al., 2010). Conversely, considering one's carbon footprint when planning vacations was the

least performed PEB in Malta, suggesting perceived difficulty of and a lack of positive attitudes towards this PEB and its environmental effects (European Commission, 2023; Kaiser et al., 2010).

Considering the above, this research aimed to explore eco-anxiety and its link to environmental engagement, being operationalised as pro-environmental intentions and behavior, within the Maltese context through the collection and analysis of both quantitative and qualitative data within an explanatory sequential mixed methods research design.

## 2. Design

Coffey et al. (2021) highlighted the need for research using mixed methods to study eco-anxiety. Hence, this study employed an explanatory sequential mixed methods research design (Creswell & Clark, 2010). Specifically, quantitative and qualitative results were synthesised to enable an exploration of eco-anxiety and environmental engagement within the Maltese context.

## 3. Objectives

The objectives of this study, enabled through its mixed methods design, were: 1) to identify the correlation of eco-anxiety with pro-environmental intentions and behaviours in a Maltese sample, 2) to gather Maltese adult's appraisals of and attitudes regarding the ecological crisis and experiences with eco-anxiety, together with the pro-environmental intentions they have and behaviours they perform, and 3) to gather Maltese adult's perspectives on the barriers to environmental engagement they encounter.

## 4. Methods

This study employed an explanatory sequential mixed methods design (Creswell & Clark, 2010), with participants of both the quantitative and qualitative phase comprising of Maltese adults aged 18 years and above recruited via convenience and snowball sampling methods.

### 4.1. Quantitative phase

The first, quantitative phase involved the administration of a questionnaire to 243 Maltese adults to gauge eco-anxiety utilising the Hogg Eco-Anxiety Scale (Hogg et al., 2021). This scale was chosen due to its ease of administration, brevity, and established validation across diverse populations (Hogg et al., 2021; Uzun et al., 2022).

Environmental engagement was assessed through two variables: PEIs, measured via the Willingness to Mitigate questionnaire (Evans et al., 2014), and PEBs, assessed using the Ecological Behaviour Scale (Casey & Scott, 2006). Additionally, a self-constructed item gauging exposure to climate change news was included.

### 4.2. Qualitative phase

Four qualitative focus groups were conducted, with two groups comprising Maltese participants aged 18-45 and the remaining two groups consisting of individuals aged over 45. Group composition was purposively determined to allow for potential age-related differences to surface.

The focus group guide was shaped by the theoretical framework, and informed by quantitative data results. Qualitative findings were analysed utilising abductive thematic analysis, enabling themes to be both guided by the theoretical framework and open to emerging insights (Thompson, 2022)

### 4.3. Ethics and verification strategies

Ethical clearance was obtained from the University of Malta Faculty Research Ethics Committee, and informed consent was secured from all participants.

Validity, reliability and trustworthiness were ensured through the utilisation of standardised scales aligned with research objectives, reflexivity, audit trails, and triangulation of data, theory, and methodology (Creswell & Clark, 2010).

## 5. Results and discussion

Eco-anxiety scores, measured through Likert scales between 1 (rarely/not at all) and 4 (almost always), were relatively low among the quantitative sample ( $M=1.56$ ,  $SD=0.52$ ). Nonetheless, focus group participants expressed predominantly negative emotions in response to the ecological crisis, stemming from uncertainty, urgency, lack of environment efficacy beliefs, negativity of the media, and the need for change paired with a lack of or uncertainty about proposed solutions. Such appraisals, together with other factors,

such as convenience, comfort, efficiency, money and time, were proposed as barriers to behaving pro-environmentally despite having PEIs. Indeed, the quantitative phase exposed a moderately significant positive correlation between eco-anxiety and PEIs ( $r(238) = .413, p < .001$ ), coinciding with findings of Gao et al. (2019). Meanwhile, a very weak positive correlation between eco-anxiety and PEB was found ( $r(236) = .190, p = .003$ ), contrasting to the stronger correlation found by Verplanken et al. (2020). However, the construct which Verplanken et al.'s (2020) studied slightly differs in their conceptualisation compared to eco-anxiety, given that global warming is just one environmental issue encompassing the ecological crisis that eco-anxiety refers to, and the use of different scales.

The weaker relationships of eco-anxiety with PEB may suggest a paralysing form of eco-anxiety that trumps environmental engagement, as proposed by Kurth & Pihkala (2022). More so, Mathers-Jones & Todd (2023) found that attention to climate change impacts predicts less PEB. This brings forth a potential moderating factor that may have indirectly influenced the weak relationship between eco-anxiety and PEB, also prompting the need for further exploration to identify the influence of attention to climate change impacts on paralysing eco-anxiety.

Paralysing eco-anxiety may stem from low environmental efficacy, with the latter factor moderating the effect between risk perception and ecologically adaptive behaviour performance (Innocenti et al., 2023; Mead et al., 2012). The impact of low environmental efficacy on PEIs was evident when one focus group participant who appraised the urgency of the ecological crisis expressed their intention to adopt a vegetarian diet, only to later abandon the idea due to low self-efficacy and the belief that this individual action would have little impact. The appraisal of PEBs as ineffective was considered another barrier to environmental engagement. Such barriers can both reduce the likelihood of environmental engagement and contribute to the continuation of maladaptive responses that harm the environment, while possibly contributing to eco-anxiety's anxiety-oriented response and resulting defence mechanisms that further fuel paralysing eco-anxiety (Andrews & Hoggett, 2019; Kurth & Pihkala, 2022).

Additionally, an increase in eco-anxiety levels significantly and positively correlated with increased climate change news exposure through news coverage mainly on social media ( $H(4) = 43.466, p < .001$ ). This finding coincides with those of Innocenti et al., (2023), Shao and Yu (2023), and Maran and Begotti (2021). However, focus group participants raised concerns about the media's negativity and lack of reporting of 'good' news. Interestingly, this tendency was identified as a factor reinforcing participants' belief in the futility of individual actions, leading to feelings of hopelessness and eco-anxiety, and acting as a barrier to environmental engagement. Therefore, these qualitative accounts contradict the positive and significant association found between information exposure, eco-anxiety and PEB (Shao and Yu, 2023; Maran and Begotti, 2021).

In the case of participants proclaimed pro-environmental intentions and behaviours, focus group participants professed their desire to use public transportation, but their actual use of their private car given the high costs of more environmentally-friendly transport means (Kaiser et al., 2010). However, quantitative participants reported being more likely to carpool, walk, cycle or use public transportation, than avoiding eating meat or cutting down on flying, suggesting the relative easiness of more environmentally-friendly means of transportation when compared to changing one's diet and travel plans. Similarly, the Special Eurobarometer Survey found that considering one's carbon footprint of one's transport when planning a holiday was the least performed PEB in both the Maltese and general EU sample (European Commission, 2023). On the other hand, the vast majority of respondents in the Environmental Attitude Survey stated that they were willing to change their lifestyle in order to help improve the environment (Environment and Resources Authority, 2020), pointing towards the need for a more nuanced understanding of the changes Maltese individuals are willing to make, perceived barriers to and costs of making such changes, and ways of facilitating environmental engagement and making it less costly.

## 6. Conclusion

The aim of this study was to explore the link between eco-anxiety and environmental engagement in a Maltese sample using a mixed methods research design, exposing a positive and significant correlation of eco-anxiety with PEI, PEB and climate change news exposure. The media was perceived as a barrier to environmental engagement. These findings both coincide (e.g., Verplanken et al., 2020) and contradict (e.g., Shao & Yu, 2023) existing literature.

Despite valuable insights, the study's limitations, such as the use of a convenience sample, limit the generalisability of results to the broader Maltese population. Nevertheless, this research adds to the understanding of eco-anxiety and environmental engagement and sets the stage for future investigations in Malta. By identifying facilitators of environmental engagement and promoting optimistic narratives in the media, transformative eco-anxiety can inspire hopeful action and meaningful participation in addressing environmental crises and fostering restoration efforts.

## References

- Albrecht, G. (2011). Chronic environmental change: Emerging “psychoterratic” syndromes. In I. Weissbecker (Ed.), *Climate Change and Human Well-Being* (pp. 43–56). New York: Springer.
- Andrews, N., & Hoggett, P. (2019). Facing up to ecological crisis: A psychosocial perspective from climate psychology. In J. Foster (Ed.), *Facing Up to Climate Reality: Honesty, Disaster and Hope* (pp. 155-171). London: London Publishing Partnership.
- Arnold, M. B. (1970). *Feelings and Emotions: The Loyola Symposium*. Oxford: Academic Press.
- Casey, P. J., & Scott, K. (2006). Environmental concern and behaviour in an Australian sample within an ecocentric – anthropocentric framework. *Australian Journal of Psychology*, 58(2), 57-67.
- Coffey, T., Bhullar N., Durkin J., Islam, S., & Usher, K. (2021). Understanding Eco-anxiety: A Systematic Scoping Review of Current Literature and Identified Knowledge Gaps. *The Journal of Climate Change and Health*, 3, 100047.
- Creswell, J. W., & Clark, V. L. P. (2010). *Designing and Conducting Mixed Methods Research*. Los Angeles: SAGE Publications.
- Environment and Resources Authority. (2020). *Recognising Malta’s Environmental Challenges: National Strategy for the Environment for 2050*. Malta: Environment and Resources Authority.
- European Commission (2023). *Special Eurobarometer: Climate Change* (538). Brussels: European Commission.
- Evans, L., Milfont, T. L. & Lawrence, J. (2014). Considering local adaptation increases willingness to mitigate. *Global Environmental Change*, 25, 69-75.
- Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & Susteren, L. van. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. *The Lancet Planetary Health*, 5(12), E863-E873.
- Hogg, T. L., Stanley, S. K., O’Brien, L. V., Wilson, M. S., & Watsford, C. R. (2021). The Hogg Eco-Anxiety Scale: Development and validation of a multidimensional scale. *Global Environmental Change*, 71.
- Huang, H. (2016). Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *Journal of Business Research*, 69, 2206-2212.
- Innocenti, M., Santarelli, G., Lombardi, G. S., Ciabini, L., Zjalic, D., Di Russo, M., & Cadeddu, C. (2023). How Can Climate Change Anxiety Induce Both PEBs and Eco-Paralysis? The Mediating Role of General Self-Efficacy. *International Journal of Environmental Research and Public Health*, 20(4).
- Kaiser, F. G., Byrka, K., & Hartig, T. (2010). Reviving Campbell’s Paradigm for Attitude Research. *Personality and Social Psychology Review*, 14(4), 351-367.
- Kurth, C., & Pihkala, P. (2022). Eco-anxiety: What it is and why it matters. *Frontiers in Psychology*, 13.
- Maran, D. A., & Begotti, T. (2021). Media Exposure to Climate Change, Anxiety, and Efficacy Beliefs in a Sample of Italian University Students. *International Journal of Environmental Research and Public Health*, 18(17).
- Mathers-Jones, J., & Todd, J. (2023). Ecological anxiety and PEB: The role of attention. *Journal of Anxiety Disorders*, 98.
- Mead, E., Roser-Renouf, C., Rimal, R. N., Flora, J. A., Maibach, E. W., & Leiserowitz, A. (2012). Information Seeking about Global Climate Change among Adolescents: The Role of Risk Perceptions, Efficacy Beliefs and Parental Influences. *Atlantic Journal of Communication*, 20(1).
- Scherer, K. A. (2001). Appraisal Considered as a Process of Multilevel Sequential Checking. In K. R. Scherer, A. Schorr & T. Johnstone (Eds.), *Appraisal Processes in Emotion: Theory, Methods, Research* (pp. 92-120). Oxford: Oxford University Press
- Stanley, S. K., Hogg, T. L., Leviston, Z., & Walker, I. (2021). From anger to action: Differential impacts of eco-anxiety, eco-depression, and eco-anger on climate action and wellbeing. *The Journal of Climate Change and Health*, 1.
- The Lancet Child and Adolescent Health. (2021). A climate of anxiety. *The Lancet Child & Adolescent Health*, 5(2), P91.
- Thompson, J. (2022). A Guide to Abductive Thematic Analysis. *The Qualitative Report*, 27(5), 1410-1421.
- United Nations Climate Change (2022, April 13). *What is the Triple Planetary Crisis?* Retrieved August 10, 2023, from <https://unfccc.int/blog/what-is-the-triple-planetary-crisis>
- Uzun, K., Öztürk A. F., Karaman M., Cebeci, F., Altin, M. O., Arici, A. & Artan, T. (2022) Adaptation of the eco-anxiety scale to Turkish: A validity and reliability study. *Archives for Health Science Research*, 9(2). 110-115.
- Verplanken, B., Marks, E., & Dobromir, A. I. (2020). On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming? *Journal of Environmental Psychology*, 72.