frontiers | Frontiers in Sustainability

TYPE Systematic Review
PUBLISHED 26 November 2024
DOI 10.3389/frsus.2024.1371737

OPEN ACCESS

EDITED BY
Massih Zekavat,
University of Groningen, Netherlands

REVIEWED BY
Alice Alosi,
Sant'Anna School of Advanced Studies, Italy
Melanie Rohse,
Anglia Ruskin University, United Kingdom

*CORRESPONDENCE
Virginie Francoeur
✉ virginie.francoeur@polymtl.ca

RECEIVED 16 January 2024
ACCEPTED 11 November 2024
PUBLISHED 26 November 2024

CITATION
Ayassamy P, Francoeur V and Paillé P (2024) Workplace eco-anxiety: a scoping review of what we know and how to mitigate the consequences.
Front. Sustain. 5:1371737.
doi: 10.3389/frsus.2024.1371737

Workplace eco-anxiety: a scoping review of what we know and how to mitigate the consequences

Prisca Ayassamy[1], Virginie Francoeur[1]* and Pascal Paillé[2]

[1]Polytechnique Montréal, Montréal, QC, Canada, [2]NEOMA Business School, Mont-Saint-Aignan, Upper Normandy, France

Purpose: Eco-anxiety can affect individuals' environmental engagement conditions. People spend approximately 35 h or more per week in a workplace environment. It is worth considering whether workplace initiatives exist to deal with eco-anxiety. Little research has been carried out on workplace-related eco-anxiety and no studies have been conducted on how to respond to this health issue within the workplace specifically. To address this issue, we explored eco-anxiety in a workplace context in the literature and developed a model of change to better respond to employees' eco-anxiety.

Methodology: First, a scoping review was conducted to investigate workplace eco-anxiety. Second, an analysis was performed in which Lewin's theory of change was used to propose changes in the workplace designed to better respond to eco-anxiety.

Findings: Lewin's three stages can guide action to reduce eco-anxiety in the workplace. Step 1 (unfreeze) involves becoming aware of the eco-anxiety problem within the organization, step two (change) consists of finding alternatives in the built environment such as green spaces and pro-environmental behavior through circular economy practices, and step 3 (refreeze) involves stabilizing this change.

Originality: Our study is among the few to explore eco-anxiety in the workplace specifically and, to our knowledge the first, to propose an intervention model for management and employees. Lewin's three stages can guide action to reduce eco-anxiety in the workplace.

KEYWORDS

eco-anxiety, workplace, theory of change management, pro-environmental behavior, nature-based interventions, green human resource management, scoping review

1 Introduction

Studies have shown that a significant portion of the US population, particularly individuals aged 27–45, worry about their carbon footprint when considering having children (Schneider-Mayerson and Leong, 2020). Additionally, a survey of 10,000 young people aged 16–25 revealed that 59% were extremely worried, 75% felt that the future is frightening, 83% felt that people have failed to take care of the planet, 45% reported that climate change negatively impacts their daily lives and work, and more than 50% reported feelings such as sadness, anxiousness, anger, powerless, helplessness, and guilt (Hickman et al., 2021).

The anxiety people experience in response to ecological crises is referred to as 'eco-anxiety' (Hogg et al., 2024). It is a type of anxiety that stems from concerns about human-induced climate change (Clayton et al., 2017). It is severe enough to cause distress and dysfunction

(Mental Health Commission of Canada, 2023) in individuals' ability to sleep, work and socialize (Clayton, 2020). Globally, an estimated 12 billion working days are lost every year to depression and anxiety for US$1 trillion per year in lost productivity (World Health Organization, 2022). While these statistics primarily address general anxiety disorders, it is plausible to suggest that eco-anxiety, a form of anxiety caused by apprehension of a threat associated with the climate crisis, contributes to these alarming statistics. Despite the growing discourse on eco-anxiety, there remains a notable gap in understanding its implications within workplace settings (Joshua et al., 2022). Limited research has explored the nexus between eco-anxiety and workplace dynamics, highlighting a critical area for further investigation (Brooks and Greenberg, 2022). Emerging literature suggests that high levels of eco-anxiety are associated with negative emotional and physical reactions, such as sadness, fear, and anger, and can lead to isolation, insomnia, stress, and depression (Clayton, 2020; Gousse-Lessard and Lebrun-Paré, 2022). In contrast, eco-anxiety at a low or moderate level can be associated with positive stress, or eustress, and may encourage individuals to adopt pro-environmental behaviors (Joshua et al., 2022; Pikhala, 2020; Verplanken et al., 2020). In this context, pro-environmental behaviors (PEB) can constitute a form of eco-anxiety regulation strategy focused on problem-solving when there is rapid and concrete feedback (Pikhala, 2020; Lebrun-Paré, 2018). PEB through employees' efforts, contributes to making the organization and/or society more sustainable (Lamm et al., 2013). Within a workplace, PEB would help to focus employees' activities on minimizing the negative aspects of people's actions by saving water, recycling, and reducing waste and energy consumption (Stern, 2000). Addressing eco-anxiety at both the individual and organizational levels is essential. On an employee level, values and self-concordance are important, while at the organizational level, environmental dynamic capabilities, leadership, and human resource management practices can play a significant role (Unsworth et al., 2021). Additionally, an organization's environmental impact is influenced by its institutional context (Bryant et al., 2020), necessitating a process of change within the organization (Unsworth et al., 2021). To address these challenges, exploring Lewin's theory of change can be a valuable tool for planning and communicating interventions within organizations (Lewin, 1947). This approach allows for transparent communication and discussion of interventions with staff members, stakeholders, and the target population (Romão et al., 2023).

Eco-anxiety is an emerging research topic. Reviews conducted to date on the topic have not explored this problem specifically in a workplace setting, despite eco-anxiety becoming a major health issue causing losses for organizations. Since 2020, four reviews of eco-anxiety have been published (see Table 1). Though different in their chosen approaches (i.e., scoping or systemic), the reviews focus on defining eco-anxiety and the emotions associated with it, except for Brooks and Greenberg (2022), who focused on climate-induced mental ill-health as a potential predictor of workplace behaviors. The researchers all share a common focus on the lack of attention given to the impact of eco-anxiety in workplace settings. Existing literature, such as the work of Joshua et al. (2022), emphasizes the need for further studies on this topic, while Noy et al. (2022) points out that there is a dearth of studies on workplace interventions for understanding and supporting employees in this context. The objective of this research is to respond to the call of three authors (see Noy et al., 2022; Joshua et al., 2022; Brooks and Greenberg, 2022) to find strategies designed to reduce ecoanxiety in the workplace. To advance knowledge in this field, our study aims to address three specific research questions: (1) How does the current literature address the issue of eco-anxiety in workplace settings? (2) What are the levers of change to reduce eco-anxiety in workplaces? (3) How can workplaces respond to this challenge? To answer these questions, we conducted a scoping review and proposed guidelines for the workplace.

To answer our research questions, we explored Lewin's theory due to its potential to drive significant change. Lewin (1935), who greatly influenced work psychology and management, highlighted the inherent conflict between the desire to enact change and the influential forces that affect individuals. Building upon this, Burnes (2020) further elucidated that Lewin's theory focuses on improving organizational performance by prioritizing human relationships and fostering collaborative and participative group transformation. It is widely acknowledged as an effective approach for instigating behavioral changes in individuals. As such, our study centers on a three-step model (unfreezing, changing, and freezing), that underscores the criticality of collaboration between employers and employees in successfully implementing changes (see section 3.2). Throughout our exploration, we delved into several terms to facilitate change within organizations. One such term is Nature-Based Solutions (NBS), associated with Nature-Based Interventions (NBI), which encompasses actions aimed at protecting, managing, and restoring ecosystems to address societal challenges as described by Fang et al. (2023). Furthermore, NBI refers to a form of therapy that can be administered through nature-based interventions. Another term of significance is Green Human Resource Management (GHRM), which plays a pivotal role in fostering the adoption of pro-environmental behaviors by cultivating a supportive culture and building capabilities within an organization. Additionally, the concept of green work-life balance, presented by Ghouri et al. (2020) and Wen et al. (2022), can enhance employees' work roles.

Finally, our study contributes to the development of knowledge on eco-anxiety in the workplace in various ways. First, we provide an outlook regarding the emerging trend of eco-anxiety in workplace settings. Second, we present a model depicting the variables influencing eco-anxiety to understand what actions can be implemented to alleviate or reduce anxiety as well as other psychological symptoms to bring about greater job satisfaction. Finally, by applying Lewin's change theory, we offer a three-step guide for organizations seeking to alleviate their employees' eco-anxiety through targeted management actions (Lewin, 1947). Our review is distinguished by its focus on an intervention model rooted in Lewin's change theory, a framework commonly used in management research (Srivastava and Agrawal, 2020; Burnes, 2020), but to our knowledge not utilized in the literature on eco-anxiety. In summary, our study aims to provide human resources and managers with different strategies to address eco-anxiety in the workplace. While our study explores strategies to manage eco-anxiety, it also recognizes that eco-anxiety may be a persistent challenge that requires ongoing management and adaptation throughout different life stages (Pikhala, 2020).

2 Methodology

A scoping review was conducted to investigate workplace eco-anxiety. This approach involves a synthesis aimed at investigating

TABLE 1 Four reviews published since 2020.

Authors	Journal	Type of literature review	Sample	Results
Boluda-Verdu et al. (2022)	Journal of Environmental Psychology	Systematic	12	Significant variation in the definitions given for eco-anxiety. Definitions vary in terms of eco-anxiety being considered pathological or non-pathological.
Brooks and Greenberg (2022)	Occupational Medicine	Scoping	5	Eco-anxiety can lead to increased job tension, higher turnover intentions, and workplace hostility. Social support may lessen the effects of climate-induced stress on work outcomes.
Coffey et al. (2021)	Journal of Climate Change and Health	Systematic	9	Most of the study comes from the Western countries. Future research is needed in the non-Western countries using different methodologies. Further clarity and theoretical development of the concept are required to advance understanding of eco-anxiety.
Pikhala (2020)	Sustainability	Conceptual	N/A	Eco-anxiety is closely linked with various challenging emotions (i.e., grief, guilt, anger, and despair). Different actions can help alleviate eco-anxiety (emotion regulation, peer support, deeper connection with nature). There is a need to empirically validate eco-anxiety and beneficial actions to reduce it.

and providing an overview of evidence and evidence gaps through a different field (Peters et al., 2022). It is a tool used to determine the scope or coverage of the literature on a given topic and to provide clear indications of the number of articles and studies available as well as an overview of the topic (Munn et al., 2018), which is a critical component for creating theoretical frameworks and building conceptual models (Snyder, 2019).

To do so, we developed a protocol using a scoping review framework shown in Figure 1. It is processed in four stages: (1) Search strategy, (2) Inclusion and exclusion criteria, (3) Data results and extraction, and (4) Coding.

2.1 Search strategy

We developed a review protocol using a scoping review framework as set out in the Preferred Reporting Items for Systematic Reviews and Meta-analysis guidelines for scoping reviews (PRISMA). The first step was to create a sequential set of keywords. These were classified and separated into three parts: anxiety, climate change, and employees. The aim was to ensure that articles specifically related to anxiety and climate change in the workplace could be identified (See Appendix A). The second step was to define the inclusion and exclusion criteria, code the data, and extract the articles from the database.

2.2 Inclusion and exclusion criteria

We used inclusion and exclusion criteria to classify the articles (see Table 2). This approach aims to identify, select, and critically assess documents connected to the research objectives (Tranfield et al., 2003) and is characterized by a structured design allowing for duplication (Staples and Niazi, 2007).

In terms of inclusion, we chose empirical (qualitative and quantitative) peer-reviewed academic journals. The temporal horizon was 10 years. We selected articles published in English, conducted within all types of organizations, and focused on employees as the unit of analysis. We chose English since 75% of articles published in the social sciences and 90% of articles published in the natural sciences are written in English (Hamel, 2007). We excluded articles on protocols, editorials and reviews, and other non-empirical studies. We also excluded non-organizational contexts such as the residential sector. Finally, papers examining emotions not relevant to anxiety and mental health were also excluded.

2.3 Data results and extraction

We conducted a search using the Web of Science ($n = 77$) and Scopus ($n = 26$) databases, which yielded a total of 103 articles. According to Birkle et al. (2020), the Web of Science (WoS) is a renowned database of research publications and citations, recognized for its comprehensive coverage of around 34,000 journals. On the other hand, Scopus is the largest searchable citation and abstract database, known for its extensive and regularly updated content (Rew, 2010). While Scopus provides higher citation counts, its coverage pattern is comparable to that of the Web of Science (Bergman, 2012).

Second, these articles were all uploaded to EndNote 20 software, and two of the researchers conducted a screening of the titles and abstracts. Articles identified as irrelevant were removed from the sample (Researcher 1 excluded 68 articles, while Researcher 2 excluded 75 articles, see Figure 1). Third, after screening the full text of the articles, researchers agreed to exclude other articles to meet the inclusion and exclusion criteria (see Table 2). Fourth, in line with the scoping steps, we added 5 articles found manually by directly accessing journal sites or through the bibliographic references of key articles on eco-anxiety, as has been the case in several previous systemic and scoping reviews (see, for example, Francoeur et al., 2021). As a result, 10 articles were retained in the sample.

Our sample size roughly matches the number of articles reported in other studies. In recent systematic and scoping reviews on eco-anxiety, the numbers range from 5 (Brooks and Greenberg, 2022) to 12 articles (Boluda-Verdu et al., 2022). This not only shows that the subject is relatively new but that it is also underexplored, indicating

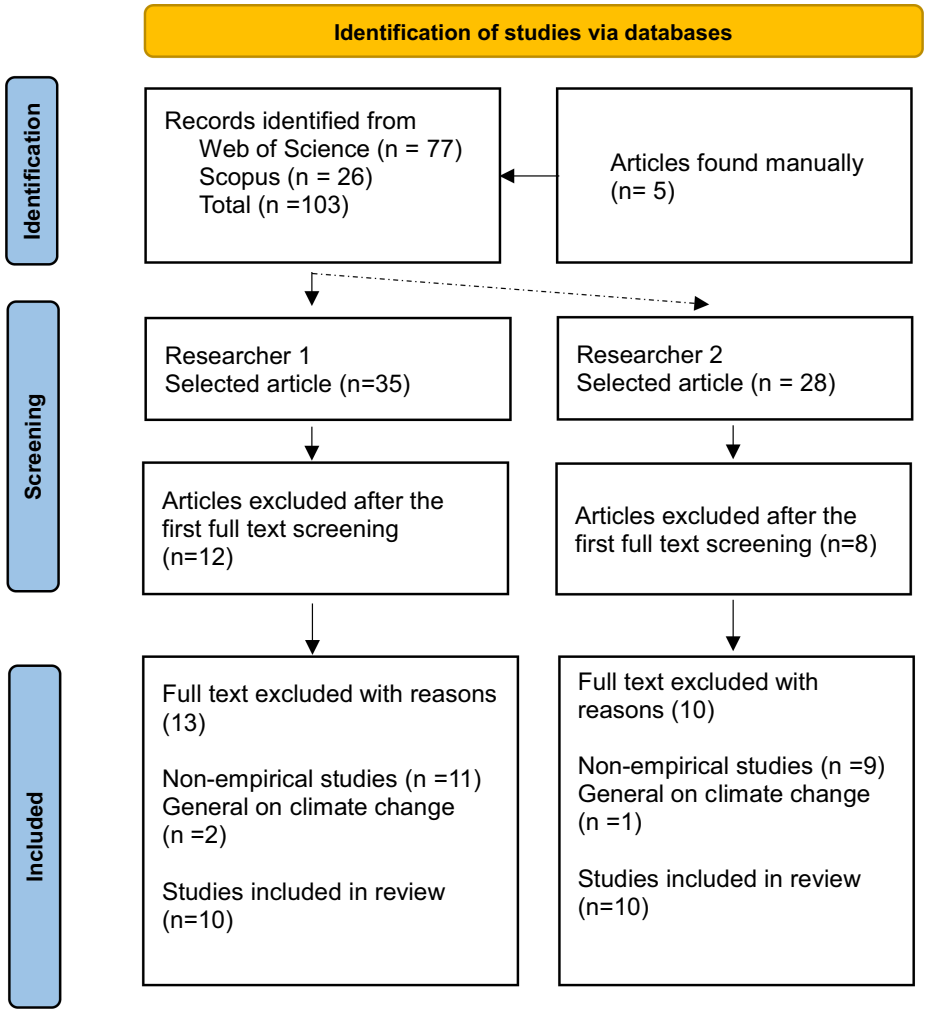

FIGURE 1
PRISMA diagram flow.

TABLE 2 Inclusion and exclusion criteria.

Characteristics	Inclusion criteria	Exclusion criteria
Temporal horizon	2012–2022	Studies published before 2012 or after 2022
Design of research	Empirical (quantitative and qualitative)	Protocols, editorials, and reviews and other non-empirical studies
Quality criterion	Indexed peer-reviewed academic journals	Books, non-scientific journals
Language of publication	English	All others
Place of intervention	All types of organizations	Non-organizational like residential sectors
Concept	Eco-anxiety in the workplace	Other emotions not related to the climate crisis
Unit of analysis	All types of employees (individual and collective level)	Unemployed people

that our findings are consistent with other reviews conducted on eco-anxiety.

2.4 Coding

For this step, we collected important information using an Excel document to extract the data. To create the coding grid, we followed the recommendations of Tranfield et al. (2003). The coding grid includes two levels: the characteristics of the article and the data needed to answer the research question. To extract the data, two researchers performed the dual data extraction process since it is a crucial part of a scoping review in helping to reduce the risk of error (Buscemi et al., 2006). The fact of independently coding several publications meant that the two researchers could compare different categories to ensure a mutual understanding and interpretation of the meaning of the categories. For example, two researchers independently coded 70% of the levers of change to reduce eco-anxiety in workplaces.

After defining a specific coding grid, an intercoder reliability ratio was calculated using the κ (kappa) test to verify consensus between the two researchers. The test showed that the level of consistency between the researchers was 0.712 ($p < 0.0005$). This is comparable to other reviews conducted using similar methods (see Yuriev et al., 2018) and represents a substantial strength of agreement between researchers (Landis and Koch, 1977).

3 Results

3.1 Eco-anxiety in the workplace: an outlook

This section aims to answer our first question: How does the current literature address the issue of eco-anxiety in workplace settings?

Our findings highlighted the articles shown in Table 3, in which the articles are classified by year of publication and based on their objectives and findings. We found that not all the articles used the exact term "eco-anxiety" to describe this psychological and physical discomfort related to the climate crisis. Of the 10 articles selected, four use the term "anxiety" or "eco-anxiety," meaning that the other six use other terms such as mental health while linking them somehow to climate change. As highlighted by Coffey et al. (2021), the term remains unclear and poorly understood, referring to distress caused by climate change. We retained the articles identified from our search results since the settings were "organizational," even if the term used was mental health linked to climate change. In connection with our research questions, Noy et al. (2022), Brooks and Greenberg (2022), and Joshua et al. (2022) acknowledge the existence of eco-anxiety and recognize the lack of literature on eco-anxiety in workplaces. Andreucci et al. (2021) examine the benefits of nature, while other researchers (Head and Harada, 2017; Newnham et al., 2020; Tiatia et al., 2022) propose approaches and support for employees.

3.1.1 Trends in the literature

As a reminder, we conducted our search for empirical studies over 10 years (2012 to 2022). The first article found was published in 2013. 10% appeared in 2017, 20% in 2018 and 2022, and 30% in 2021. This shows that the subject is still new in the work context but also that it has evolved since 2018 (see Figure 2).

The results shown in Table 4 classify the articles by journal and methodological approach. Two trends were observed. First, three main fields stand out: (1) Environmental and Climate Change, (2) Health, Social Work and Psychology, and (3) Business and Management. Although our study focuses on the workplace, the list shows that only 30% of the articles were published in journals associated with the workplace, demonstrating the interdisciplinary nature of eco-anxiety.

Second, most articles were found to be qualitative (40%) or used mixed methods (20%), with 40% being purely quantitative. This result runs counter to other systematic reviews on eco-anxiety, which have found that studies are predominantly quantitative (Pikhala, 2022). This finding is also surprising given that several systematic reviews on the greening of workplaces suggest a predominance of quantitative studies (see, for example, Francoeur et al., 2021, in which an average of 81% of studies were reported as being quantitative).

3.2 Eco-anxiety nomological network related to the workplace

In our proposed model of eco-anxiety in the workplace, we aim to provide a comprehensive illustration of the interconnected factors that impact employees' overall well-being. At the core of the model, we delve into the emotional state of employees, focusing on aspects such as exhaustion and stress (e.g., Gago and Sa, 2021; Tiatia et al., 2022). Moving beyond this, we analyze environmental elements including working conditions and climate-related events that directly affect the natural environment in which employees operate. Additionally, the model takes into consideration perceived pro-environmental climate and culture within the organization, which play a crucial role in helping employees to adopt pro-environmental behaviors. Employees' perception of an openly communicated set of green values can signal the organization's commitment to being eco-friendly. This, in turn, may contribute to employees adopting pro-environmental behaviors when they are experiencing lower levels of eco-anxiety compared to higher levels of eco-anxiety (Joshua et al., 2022). Also, by promoting pro-environmental attitudes and behaviors, organizations can create a supportive environment for employees (Tisch and Galbreath, 2018), effectively reducing anxiety and psychological symptoms (Noy et al., 2022). Ultimately, this can contribute to improving overall job satisfaction among employees when there are adequate resources (Hochwarter et al., 2008). For a visual reference, please see Figure 3.

3.3 Levers of change and workplace interventions

This section addresses the two last questions: what are the levers of change to reduce eco-anxiety in workplaces? How can workplaces respond to this challenge? For this, we turn to the theory of change. We will explore Lewin's theory of change since it helps to expose the levers of change in the workplace.

Lewin (1947) proposed a 3-step model of change, as outlined by Burnes (2020). The first step, unfreezing, involves disrupting the existing equilibrium to create a space for change. Lewin emphasized the need to shake up the status quo before new behaviors can be embraced. The second step entails examining all relevant forces and factors, considering various options for change and acceptable behaviors. Lastly, the freezing step involves stabilizing the new equilibrium to prevent regression to old behaviors. In a workplace setting, these steps can manifest through group activities that leverage organizational culture, norms, policies, and practices. To support this process, a well-equipped workforce, including adequately trained employees and psychological support for those affected by the changes, is essential as highlighted by Newnham et al. (2020). Moreover, a model presenting stages and processes involving Plan, Do, Check and Act is vital for successfully navigating through the change process, which is summarized in Table 5.

3.3.1 Step 1: unfreeze—exposing the existence of eco-anxiety

During the unfreezing phase, organizations must carefully assess the existing conditions, pinpoint areas of weakness, outline necessary changes, and address any barriers that could impede change

TABLE 3 Overview of articles.

#	Study reference	Objectives	Findings related to our studies	Sample	Method	Type of industry
1	Joshua et al. (2022)	To examine employees' eco-anxiety as a potential boundary condition in the indirect relationship between restaurant green attributes and employee's green behavior.	Eco-anxiety is a moderator between green psychological climate and voluntary employee green behavior. Employees' eco-anxiety significantly attenuates the indirect relationship between restaurants' green attributes and voluntary employee green behaviors, although it does not significantly moderate the indirect relationship between restaurants' green attributes and required employee green behaviors.	Employees in Lagos ($n = 446$) Male: 48.4% Female: 51.6%	Quantitative: Surveys	Tourism (Restaurant in Lagos)
2	Tiatia et al. (2022)	To reach a consensus on various themes regarding the impact of climate change of Pacific peoples on mental health and to understand various coping strategies.	Climate change causes a variety of emotional responses such as anger, guilt, hopelessness, grief, fear, and anxiety, impacting mental health and wellbeing. Countries receiving climate migrants must fund responsive, culturally safe services and be prepared for addressing existing inequities and barriers. Various strategies can help cope with the effects of climate change including good leadership at government and legislative level, support from family and community, education and knowledge, and engagement in spiritual practices.	Experts in mental health and/or climate change ($n = 70$) Male: 45% Female: 65%	Mixed methods: Qualitative and Quantitative: Delphi method	Health (Pacific region, and New Zealand)
3	Noy et al. (2022)	To conduct an exploratory study as a response to concerns about worry and distress and a need for organizational knowledge for effective workplace mental health strategies.	All levels of the workforce acknowledged enduring and continuing stigma attached to mental health issues and that the workplace is not currently managing eco-anxiety. Manager interviews revealed a stronger emphasis on organizational strategy, while the focus groups brought out individual lived experiences. When workers felt hope for the future they saw positive conservation project outcomes, nature regenerating, or new approaches to natural resources management and environmental protection. A culture of openness and support from colleagues and managers was valued, as was alignment between personal and organizational goals.	Environmental organization (Phase 1: 8 Senior managers and Phase 2: 9 employees) Phase 1: Male: 25% Female: 75% Phase 2: N/A	Qualitative: Interviews (individual and focus group)	Environment (Australia)

(Continued)

TABLE 3 (Continued)

#	Study reference	Objectives	Findings related to our studies	Sample	Method	Type of industry
4	Andreucci et al. (2021)	To describe key research and design paradigms that influence the benefits of nature within the workplace, neighborhood, and city.	Regarding climate change, our relationship with nature, and particularly biophilic design, may be key for improving sustainable behavior and our well-being. Connecting our daily lives with nature through design and policy at various scales (building, neighborhood, and city) might encourage a stronger connection, improve our health, and make sustainable action feel more meaningful, potentially helping to address current crises.	Key stakeholders (Designers, public servant, etc.) *N* = N/A	Mixed methods: Qualitative and Quantitative: critical literature review, 3 case studies	London and Chicago (focusing on workplace and cities)
5	Gago and Sa (2021)	To study individual worries about environmental problems and how this relates to psychological symptoms and life satisfaction.	A moderately high level of environmental worry was associated with negative effects in young adults (psychological distress and lower wellbeing). Relativization and problem-focused strategies could be adopted along with efforts promoting beliefs and behaviors that preclude feelings of powerlessness.	Portuguese young adults (*n* = 106) Male: 30% Female: 70%	Quantitative: Surveys	University (Portugal)
6	Van Heugten (2018)	To explore challenges and opportunities arising after two major earthquakes.	Reported that workplace aggression increases after natural disasters. The increased stress levels were attributed to various causes, including a lack of resources for work. Managers had difficulty balancing the practical and emotional needs of staff, leading to increased anxiety for over half of the participants after a natural disaster (earthquake).	Front-line workers (28) and managers (15) Total: *n* = 43 Male: 13% Female: 86%	Qualitative: Interviews (grounded theory)	Human and social service (New Zealand)
7	Tisch and Galbreath (2018)	To understand how organizations build resilience considering climatic changes.	Farmers have developed organizational resilience related to climate change. Personal stress from extreme weather predicted future resilience. Adaptation can be anticipatory. Social relationships are instruments to build resilience.	Dairy farmers (*n* = 38) N/A	Qualitative: Interviews	Dairy farms (New Zealand)

(Continued)

TABLE 3 (Continued)

#	Study reference	Objectives	Findings related to our studies	Sample	Method	Type of industry
8	Head and Harada (2017)	To understand the emotions around climate change through a study of emotional management strategies employed by climate scientists.	A shared understanding among the participants that the strong climate change denialist movement was a source of pressure and a cause of anxiety. The study identified various emotional management strategies among scientists when confronted with the emotional challenges of climate change data, including compartmentalizing work and personal life, developing resilience against criticism and threats, engaging in everyday activities (e.g., reading detective novels, gardening), etc.	Climate scientists ($n = 13$) Male: 69% Female: 30%	Qualitative: Interviews	Universities and government bodies (Australia)
9	Kuntz et al. (2013)	To investigate teachers' burnout perceptions and workplace attitudes in the aftermath of the major Christchurch earthquakes.	Disaster-related variables played an important role in the burnout dimension of cynicism. Negative perceptions of support for teaching staff and change to safety procedures after a disaster (perceived school disaster responsiveness) were accompanied by negative attitude. Finding highlights the need for organizations to adopt practices that ensure that employees' needs are met and provide support and assistance after a disaster.	School teachers ($n = 125$) Male: 23.2% Female: 75.2%	Quantitative: Surveys	School (New Zealand)
10	Hochwarter et al. (2008)	To assess the relationship between hurricane-induced job stress and perceived resources on work outcomes.	Hurricane induced job stress–perceived resources relationships significantly influenced job satisfaction. This interaction also predicted changes in job tension (studies 1–3) and work intensity (studies 4–5). Specifically, hurricane stress led to its most deleterious outcomes when employees perceived low levels of resources. Interestingly, those perceiving adequate resources reported increased job satisfaction when hurricane stress was high (2 of 5 studies).	Sample 1: (n = 368) Blue-collar and white-collar Male: 44% Female: 56% Sample 2: ($n = 167$) Manufacturing organization Male: 45% Female: 55% Sample 3: (n = 120) Employees of a disposal company Male: 59% Female: 41% Sample 4 ($n = 247$) Blue-collar and white-collar Female: 45% Male: 55% Sample 5. ($n = 120$) Municipal agency Female: 47.8% Male: 52.2%	Quantitative: Surveys	University, manufacturing organization, refuse disposal company, municipal agency (Florida, USA)

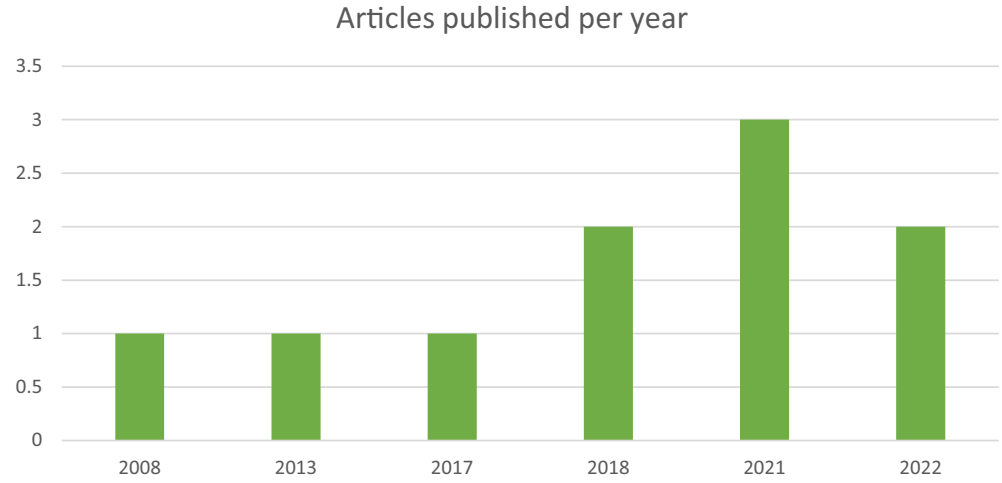

FIGURE 2
Number of articles by year of publication.

TABLE 4 Journal classification under associated themes.

Field	Journal	Quantitative	Qualitative	Mixed	Total
Environmental and Climate Change	Climate and Development	0	0	1	1
	Sustainability	0	0	1	1
	Environmental Sustainability	1	0	0	1
Health, Social Work and Psychology	Global Health Promotion	0	1	0	1
	The British Journal of Social Work	0	1	0	1
	Emotion, Space and Society	0	1	0	1
	New Zealand Journal of Psychology	1	0	0	1
Business and Management	Business Strategy and the Environment	0	1	0	1
	Journal of Management	1	0	0	1
	Journal of Sustainable Tourism	1	0	0	1
Total		4	4	2	10

implementation (Shirey, 2013). In our study, we linked the initial phase of unfreezing with recognizing the presence of eco-anxiety. According to Hwong et al. (2022), raising public awareness and advocating for climate change could aid in educating people about the potential mental health implications of climate change, as well as in promoting environmental actions that can lessen its impact and support mental well-being.

The discussion of emotions related to climate change has the potential to broaden perspectives and offer more effective solutions (Head and Harada, 2017). According to Pikhala (2020), eco-anxiety is a sense of unease stemming from uncertainty about the future and is closely linked to fear. Understanding that individuals can influence events contributing to the global climate crisis empowers them to make an impact by fostering an "internal locus of control" – a personal sense of responsibility and action to address issues by altering their behavior (Ikiugu et al., 2015). While this sense of personal responsibility is highlighted in various studies, it is important to recognize that the relationship between personal action and broader climate impacts is complex and varies based on individual and contextual factors (Robison et al., 2022). Nevertheless, the organizational context can have a positive impact (e.g., Joshua et al., 2022).

This leads us to step 2, i.e., change.

3.3.2 Step 2: change—encouraging pro-environmental behavior

The change phase is the second stage. It is the stage where actions such as planning, communication and employee learning are essential to accomplish the desired change and overcome worries and uncertainties about the change program (Shirey, 2013). Noy et al. (2022) highlighted that the worry and distress stemming from climate change can create a health issue at work, thereby threatening workers' mental health. This calls for intervention strategies. Clayton (2020) noted that a therapeutic response to eco-anxiety could involve utilizing the natural world as part of a therapeutic intervention.

The study conducted by Baudon and Jachens (2021) suggests that addressing eco-anxiety may involve promoting connections between

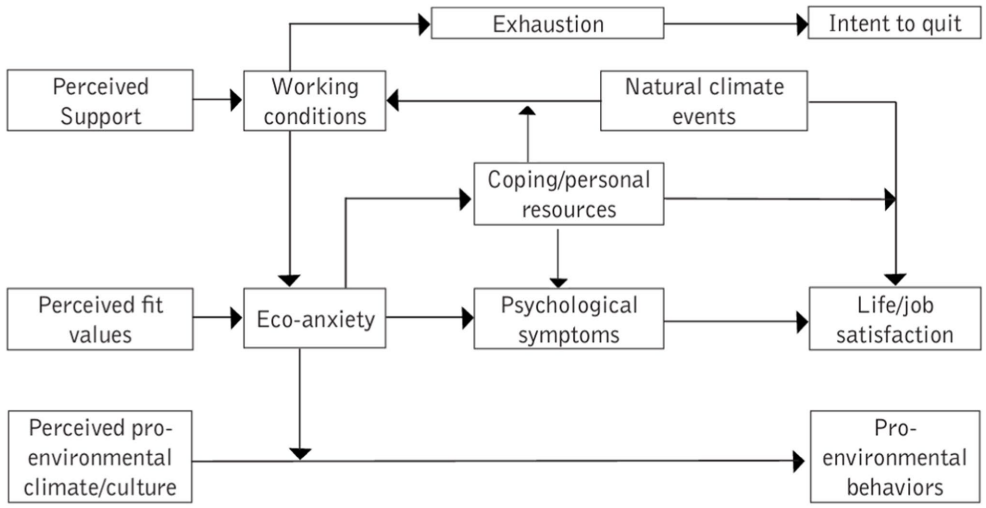

FIGURE 3
Proposed model for eco-anxiety in the workplace.

TABLE 5 Lewin's model to respond to eco-anxiety in the workplace.

3-step model of change stages	Steps in workplace	Recommendations
Unfreezing (Plan)	1. Recognize the existence of eco-anxiety within employees in the workplace.	1. Advocate within the workplace that eco-anxiety is a "normal" response to the current climate crisis.
	2. Set targets and goals on determining the actions to take and how to properly respond.	2. Conducting green interviews enables managers to understand greenness from employees' standpoint and, therefore, supports green performance planning.
	3. Define and encourage pro-environmental behaviour (PEB).	3. Combine targeted human resource strategies with creative reconceptualization of existing waste streams (circular economy).
	4. Show support through green human resource management (GHRM).	4. Operate as a team player through the influx of green human management.
	5. Reassure employees.	5. Employees should be encouraged and empowered (for example, by giving them a voice to participate in decision-making).
Change (Do)	1. Plan green practices and nature-based intervention (NBI).	1. Introduce consultation platforms to enable employees to present solutions for solving environmental issues and problems and trial their implementation.
	2. Communicate and implement PEB and practices through the circular economy, green infrastructure, biophilic design or connecting with nature.	2. GHRM can help develop human work activities that will protect and influence the natural environment.
	3. Connect employees with new PEB through reducing energy, recycling, zero-waste programs, connecting with nature through shared employee garden, etc.	3. Advocate for more resources to support employees and generate better environmental outcomes.
Refreezing (Check and Act)	1. Remeasure targets and goals through monthly sessions to evaluate progress on sustainability and evaluate the level of eco-anxiety.	1. Focus on training programs to provide employees with environmental-related information.
	2. Introduce billboards and indications to highlight PEB.	2. Focus on sustainable development to bring organizational performance evaluation system in line with their environmental objectives.
	3. Encourage employees' engagement and PEB through prizes and awards.	3. Provide counseling from an eco-psychologist and share experiences.

individuals, practitioners, groups, and nature, known as ecotherapy. This approach emphasizes the use of nature as a cognitive intervention to reshape individuals' perspectives on climate change, enabling them to take meaningful action (Baudon and Jachens, 2021). Building connections with nature, such as through green spaces, can have a restorative psychological impact, providing relief from stress and mental fatigue (Van den Berg et al., 2010). It may also result in long-term benefits for perceived health (Evensen et al., 2013). Nature-based

Solutions (NBS) are innovative infrastructure solutions designed to tackle challenges related to climate change, ecosystem resilience, human well-being, and health. By embracing NBS, Nature-Based Interventions (NBIs) can be effective forms of therapy delivered through nature-focused interventions.

In a study by Gritzka et al. (2020), it was found that Nature-Based Interventions (NBIs) could positively impact an employee's mental health and well-being. Another study by Oh et al. (2020) observed a shift from negative to positive emotions, particularly an anxiety reduction when participants spent time in a natural environment. Therefore, creating biophilic green spaces in work environments could help alleviate anxiety and promote well-being. Additionally, Andreucci et al. (2021) suggested that fostering a connection with nature and implementing biophilic design elements could enhance both pro-environmental behavior (PEB) and personal well-being. PEB, defined as voluntary or prescribed actions that contribute to sustainability efforts within an organization or society (see Ramus and Steger, 2000; Lamm et al., 2013), as shown by Channa et al. (2021), can aid in conserving natural resources and advancing corporate social responsibility. Furthermore, PEB aligns with the principles of a circular economy, a model that seeks to reduce, reuse, recycle, and recover materials, thus addressing economic, environmental, and social challenges (Kirchherr et al., 2017).

The adoption of a circular economy faces various challenges, including uncertain outcomes and limited resources, hindering their successful implementation (Ayassamy, 2024). It has been emphasized that human resources play a pivotal role in determining an organization's productivity (Singh and Singh, 2019). By leveraging targeted human resource strategies, organizations can maximize the social and environmental impacts of their circular business strategies, contributing to sustainable development (Clube and Tennant, 2022). This approach, known as Green Human Resource Management (GRHM), has gained prominence due to heightened awareness and regulatory requirements for effective environmental management (Ren et al., 2018; Paillé, 2022). GRHM entails implementing policies and practices to encourage employees to adopt environmentally sustainable behaviors, influencing their perceptions of the organization's environmental goals (Dumont et al., 2017). Furthermore, organizations can cultivate a learning culture in the workplace, as indicated in existing literature, to support the establishment of a circular economy strategy (Subramanian and Suresh, 2022).

3.3.3 Step 3: refreeze—monitoring progress and integrating sustainable engagement

The final phase of the change process is refreezing, which is crucial for solidifying the changes within the organization. During this phase, the objective is to integrate the changes into the organization's systems, structures, policies, and work procedures to ensure that they become a permanent part of the organizational culture (Shirey, 2013). It is essential to sustain the efforts and attention of the change agents until the changes are fully established and accepted throughout the organization (Santos et al., 2022). This phase requires active organizational engagement to oversee and support the implementation of the new changes. Subramanian and Suresh (2022) recommend that managers focus on environmental-focused training programs to equip employees with relevant knowledge, align the performance evaluation system with environmental objectives, and involve employees in decision-making processes related to environmental considerations.

4 Discussion

In this study, we aimed to address the concerns raised by three authors (Brooks and Greenberg, 2022; Joshua et al., 2022; Noy et al., 2022) regarding the need to identify effective strategies for alleviating eco-anxiety in the workplace. Our approach involved conducting a scoping review and applying Lewin's theory of change to pro-environmental behavior to develop practical guidelines. The findings highlighted the absence of a one-size-fits-all solution for addressing eco-anxiety, emphasizing the importance of deploying a range of strategies related to problem-solving, finding meaning, and managing emotions at different stages of change (Mah et al., 2020). The study underscored the significance of emotions in coping with eco-anxiety in both personal and professional settings and emphasized the need to approach climate change in a manner that transcends purely rational and scientific perspectives (Head and Harada, 2017).

In a recent study conducted by Noy et al. (2022), it was found that actively participating in solutions can serve as a powerful motivator and driving force for individuals. The study highlighted that eliminating eco-anxiety could find relief and moderation through a sense of purpose, hope, and achievement. The research pointed out that organizational management practices focused on environmental concerns can alleviate eco-anxiety by demonstrating a commitment to addressing the climate crisis. Furthermore, organizational practices can help reduce uncertainty by enhancing understanding of environmental issues and boosting individuals' confidence in confronting these challenges. This, in turn, can inspire concrete actions to address environmental concerns. When people are anxious about environmental degradation, introducing pro-environmental behaviors in a work setting can serve as a source of motivation and empowerment, leading to positive impacts on the planet and helping to alleviate their eco-anxiety. However, it's crucial to note that excessively high levels of eco-anxiety may lead to feelings of powerlessness, paralysis, and moral disengagement, according to studies by Pikhala (2020) and Verplanken et al. (2020). Research conducted by Hwong et al. (2022) emphasized the importance of engagement in reducing environmental footprint and energy consumption as a means of addressing mental health needs associated with climate change. Active involvement in mitigating climate change was found to have positive effects on individuals' mental well-being, as observed by Clayton (2020). These actions should not feel forced, as individuals should perceive themselves as working toward a common goal. This perspective can help employees view their organization's environmentally friendly strategies as a positive influence, according to an empirical study by Joshua et al. (2022). Marrucci et al., (2021) used the term "Involving" and "Rewarding" for the GHRM practices within an organization. This positive influence can be seen as a form of support, and it's suggested by Boon (2022) that realizing they are not alone in their concerns can assist individuals in managing the negative mental health effects associated with environmental concerns. Instead of trying to eliminate eco-anxiety, it is suggested that helping

employees understand, manage, and learn from their fears will be more beneficial.

Our research suggests incorporating biophilic settings and connecting with nature to help alleviate eco-anxiety. However, Andreucci et al. (2021) highlight the need for careful implementation of biophilic design to avoid it being perceived as a shallow intervention. This emphasizes the importance of understanding the strengths and limitations of such approaches and applying relevant research to different situations. Several studies have also emphasized the positive impact of nature on mental health, with Clayton (2020) noting the restorative potential of people's connection to nature and the therapeutic value of natural settings. Additionally, Brooks and Greenberg (2022) emphasize the importance of a well-supported workforce in providing effective support for employees, including training in psychological care and coping with mental health impacts (Newnham et al., 2020). Tiatia et al. (2022) further underline the necessity of education and advocacy to address the mental well-being effects of climate change, which emphasizes the need for Green HRM within organizations.

4.1 Theoretical implications and practical contributions

Firstly, our paper provides a comprehensive review of eco-anxiety, offering a new perspective on the subject in the workplace context. It focuses on proposing an intervention model for both management and employees, differentiating it from previous reviews (i.e., Coffey et al., 2021; Boluda-Verdu et al., 2022). Secondly, the proposed model identifies various variables that influence employees and their eco-anxiety. Thirdly and notably, it is the first review, to our knowledge, to emphasize an intervention model, specifically Lewin's change model (i.e., Lewin, 1947), guiding organizations seeking to reduce their employees' eco-anxiety through management actions such as GHRM, NBS and NBI through the second step of the model (see Table 5). Practically, this research stands to significantly improve work environments. It is particularly relevant to managers and human resource departments as it can assist in identifying the most suitable actions to reduce eco-anxiety in different organizational settings. Not only does the review propose actionable steps, but it also offers recommendations for specific situations in alignment with Lewin's 3-step model (unfreeze, etc.). By providing this guidance, the aim is to streamline decision-making processes for managers dealing with eco-anxiety in the workplace, ultimately increasing awareness, promoting green spaces and sustainable practices, and facilitating long-term change.

4.2 Limitations and future research

The concept of eco-anxiety is a relatively recent development closely linked to the issue of climate change (Pikhala, 2020). Our study specifically investigated eco-anxiety and its representation in literature related to mental health and climate change. To advance research in this area and steer clear of overly broad keywords like "climate change and mental health," we suggest that researchers adopt consistent terminology in future studies. It's important to acknowledge that our study only encompassed English-language articles from peer-reviewed journals, potentially overlooking pertinent books or reports. Therefore, our findings should be interpreted cautiously, as we cannot generalize based on our limited sample. Nevertheless, our results align with previous reviews, such as Brooks and Greenberg (2022). The relative lack of attention to the "workplace" as a setting (Joshua et al., 2022) likely explains the limited number of articles retrieved in our search. We propose that future research should delve into the factors associated with eco-anxiety in the workplace. Moreover, empirical research could validate our proposed model across different workplace contexts to pinpoint the most effective strategies for alleviating eco-anxiety. This might involve conducting interviews or surveys with employees from diverse organizations and leveraging green human resource management to gather feedback on testing the proposed model.

5 Conclusion

Eco-anxiety is a growing health issue that affects people of all generations, including young children, teenagers, and adults. This anxiety can impact people's ability to address environmental issues, especially in the workplace where individuals typically spend around 35 h per week. Organizations, through GHRM, should implement strategies to address eco-anxiety. Instead of trying to eliminate it, organizations should focus on developing the capacity to understand, manage, and gain insights from eco-anxiety. GHRM should aim to enhance understanding of environmental issues, boost individuals' confidence in facing these challenges, and incorporate sustainable approaches such as the circular economy and nature-based solutions. These approaches can help individuals channel their anxiety into meaningful and impactful actions, such as adopting pro-environmental behaviors.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

PA: Conceptualization, Formal analysis, Methodology, Writing – original draft, Data curation, Validation, Writing – review & editing. VF: Conceptualization, Funding acquisition, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing, Data curation. PP: Conceptualization, Funding acquisition, Supervision, Validation, Writing – review & editing, Methodology.

Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. This research was funded by the Quebec Circular Economy Research Network (RRECQ) with an amount of 15,000 Canadian dollars and by a research grant from Polytechnique Montréal for new professors (10,000 CAD).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/frsus.2024.1371737/full#supplementary-material

References

Andreucci, M. B., Loder, A., Brown, M., and Brajkovic, J. (2021). Exploring challenges and opportunities of Biophilic Urban Design: evidence from research and experimentation. *Sustain. For.* 13:4323. doi: 10.3390/su13084323

Ayassamy, P. (2024). The relationship between biodiversity, circular economy, and institutional Investors in the Sustainable Transition: a mixed review. *Circ. Econ. Sustain.* doi: 10.1007/s43615-024-00368-4

Baudon, P., and Jachens, L. (2021). A scoping review of interventions for the treatment of eco-anxiety. *Int. J. Environ. Res. Public Health* 18:9636. doi: 10.3390/ijerph18189636

Bergman, E. M. L. (2012). Finding citations to social work literature: the relative benefits of using web of science, Scopus, or Google scholar. *J. Acad. Librariansh.* 38, 370–379. doi: 10.1016/j.acalib.2012.08.002

Birkle, C., Pendlebury, D. A., Schnell, J., and Adams, J. (2020). Web of science as a data source for research on scientific and scholarly activity. *Quant. Sci. Stud.* 1, 363–376. doi: 10.1162/qss_a_00018

Boluda-Verdu, I., Senent-Valero, M., Casas-Escolano, M., Matijasevich, A., and Pastor-Valero, M. (2022). Fear for the future: eco-anxiety and health implications, a systematic review. *J. Environ. Psychol.* 84:101904. doi: 10.1016/j.jenvp.2022.101904

Boon, P. I. (2022). Is poor mental health an unrecognised occupational health and safety hazard for conservation biologists and ecologists? Reported incidences, likely causes and possible solutions. *Pac. Conserv. Biol.* 29, 273–291. doi: 10.1071/pc21059

Brooks, S. K., and Greenberg, N. (2022). Climate change effects on mental health: are there workplace implications? *Occup. Med. (Lond.)* 73, 133–137. doi: 10.1093/occmed/kqac100

Bryant, A., Griffin, J. J., and Perry, V. G. (2020). Mitigating climate change: a role for regulations and risk-taking. *Bus. Strateg. Environ.* 29, 605–618. doi: 10.1002/bse.2391

Burnes, B. (2020). The origins of Lewin's three-step model of change. *J. Appl. Behav. Sci.* 56, 32–59. doi: 10.1177/0021886319892685

Buscemi, N., Hartling, L., Vandermeer, B., Tjosvold, L., and Klassen, T. P. (2006). Single data extraction generated more errors than double data extraction in systematic reviews. *J. Clin. Epidemiol.* 59, 697–703. doi: 10.1016/j.jclinepi.2005.11.010

Channa, N. A., Hussain, T., Casali, G. L., Dakhan, S. A., and Aisha, R. (2021). Promoting environmental performance through corporate social responsibility in controversial industry sectors. *Environ. Sci. Pollut. Res.* 28, 23273–23286. doi: 10.1007/s11356-020-12326-2

Clayton, S. (2020). Climate anxiety: psychological responses to climate change. *J. Anxiety Disord.* 74:102263. doi: 10.1016/j.janxdis.2020.102263

Clayton, S., Manning, C., Krygsman, K., and Speiser, M. (2017). Mental health and our changing climate: Impacts, implications, and guidance. Washington, DC: American Psychological Association and EcoAmerica.

Clube, R. K. M., and Tennant, M. (2022). Social inclusion and the circular economy: the case of a fashion textiles manufacturer in Vietnam. *Bus. Strategy Develop.* 5, 4–16. doi: 10.1002/bsd2.179

Coffey, Y., Bhullar, N., Durkin, J., Islam, M. S., and Usher, K. (2021). Understanding eco-anxiety: a systematic scoping review of current literature and identified knowledge gaps. *J. Climate Change Health* 3:100047. doi: 10.1016/j.joclim.2021.100047

Dumont, J., Shen, J., and Deng, X. (2017). Effects of green HRM practices on employee workplace green behaviour: the role of psychological green climate and employee green values. *Hum. Resour. Manag.* 56, 613–627. doi: 10.1002/hrm.21792

Evensen, K. H., Raanaas, R. K., and Patil, G. G. (2013). Potential health benefits of nature-based interventions in the work environment during winter. A case study. *PsyEcology* 4, 67–88. doi: 10.1174/217119713805088315

Fang, X., Li, J., and Ma, Q. (2023). Integrating green infrastructure, ecosystem services and nature-based solutions for urban sustainability: a comprehensive literature review. *Sustain. Cities Soc.* 98:104843. doi: 10.1016/j.scs.2023.104843

Francoeur, V., Paillé, P., Yuriev, A., and Boiral, O. (2021). The measurement of green workplace behaviours: a systematic review. *Organ. Environ.* 34, 18–42. doi: 10.1177/1086026619837125

Gago, T., and Sa, I. (2021). Environmental worry and wellbeing in young adult university students. *Curr. Res. Environ. Sustain.* 3:100064. doi: 10.1016/j.crsust.2021.100064

Ghouri, A. M., Mani, V., Khan, M. R., Khan, N. R., and Srivastava, A. P. (2020). Enhancing business performance through green human resource management practices: empirical evidence from Malaysian manufacturing industry. *Int. J. Product. Perform. Manag.* 69, 1585–1607. doi: 10.1108/IJPPM-11-2019-0520

Gousse-Lessard, A.-S., and Lebrun-Paré, F. (2022). Regards croisés sur le phénomène « d'écoanxiété »: Perspectives psychologique, sociale et éducationnelle. *Éducation relative à l'environnement: Regards–Recherches–Réflexions*, 17.

Gritzka, S., MacIntyre, T. E., Dorfel, D., Baker-Blanc, J. L., and Calogiuri, G. (2020). The effects of workplace nature-based interventions on the mental health and well-being of employees: a systematic review. *Front. Psych.* 11, 1–23. doi: 10.3389/fpsyt.2020.00323

Hamel, R. E. (2007). The dominance of English in the international scientific periodical literature and the future of language use in science. *AILA Rev.* 20, 53–71. doi: 10.1075/aila.20.06ham

Head, L., and Harada, T. (2017). Keeping the heart a long way from the brain: the emotional labour of climate scientists. *Emotion Space. Soc.* 24, 34–41. doi: 10.1016/j.emospa.2017.07.005

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., et al. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *Lancet Planetary Health* 5, e863–e873. doi: 10.1016/S2542-5196(21)00278-3

Hochwarter, W. A., Laird, M. D., and Brouer, R. L. (2008). Board up the windows: the interactive effects of hurricane-induced job stress and perceived resources on work outcomes. *J. Manag.* 34, 263–289. doi: 10.1177/0149206307309264

Hogg, T. L., Stanley, S. K., O'Brien, L. V., Watsford, C. R., and Walker, I. (2024). Clarifying the nature of the association between eco-anxiety, wellbeing and pro-environmental behaviour. *J. Environ. Psychol.* 95:102249. doi: 10.1016/j.jenvp.2024.102249

Hwong, A. R., Kuhl, E. A., Compton, W. M., Benton, T., Grzenda, A., Doty, B., et al. (2022). Climate change and mental health: implications for the psychiatric workforce [article]. *Psychiatr. Serv.* 73, 592–595. doi: 10.1176/appi.ps.202100227

Ikiugu, M. N., Westerfield, M. A., Lien, J. M., Theisen, E. R., Cerny, S. L., and Nissen, R. M. (2015). Empowering people to change occupational behaviours to address critical global issues. *Can. J. Occup. Therapy* 82, 194–204. doi: 10.1177/0008417414567529

Joshua, J. B., Jin, Y., Ogunmokun, O. A., and Ikhide, J. E. (2022). Hospitality for sustainability: employee eco-anxiety and employee green behaviours in green restaurants. *J. Sustain. Tour.* 31, 1356–1372. doi: 10.1080/09669582.2022.2043877

Kirchherr, J., Reike, D., and Hekkert, M. (2017). Conceptualizing the circular economy: an analysis of 114 definitions. *Resour. Conserv. Recycl.* 127, 221–232. doi: 10.1016/j.resconrec.2017.09.005

Kuntz, J. R., Näswall, K., and Bockett, A. (2013). Keep calm and carry on? An investigation of teacher burnout in a post-disaster context. *N. Z. J. Psychol.* 42, 83–94.

Lamm, E., Tosti-Kharas, J., and Williams, E. G. (2013). Read this article, but don't print it: organizational citizenship behavior toward the environment. *Group Org. Manag.* 38, 163–197. doi: 10.1177/1059601112475210

Landis, J. R., and Koch, G. G. (1977). An application of hierarchical kappa-type statistics in the assessment of majority agreement among multiple observers. *Biom.* 363–374. doi: 10.2307/2529786

Lebrun-Paré, F. (2018). « Articuler écologisme et émancipation: la dimension critique et politique d'une initiative citoyenne de transition socioécologique » Mémoire. Montréal (Québec, Canada), Université du Québec à Montréal, Maîtrise en sciences de l'environnement.

Lewin, K. (1935). Psycho-sociological problems of a minority group. *Character & Personality; A Quarterly for Psychodiagnostic & Allied Studies*. doi: 10.1111/j.1467-6494.1935.tb01996.x

Lewin, K. (1947). Frontiers in group dynamics. *Hum. Relat.* 1, 5–41. doi: 10.1177/001872674700100103

Mah, A. Y., Chapman, D. A., Markowitz, E. M., and Lickel, B. (2020). Coping with climate change: Three insights for research, intervention, and communication to promote adaptive coping to climate change. *J. Anxiety Disord.* 75, 102282. doi: 10.1016/j.janxdis.2020.102282

Marrucci, L., Daddi, T., and Iraldo, F. (2021). The contribution of green human resource management to the circular economy and performance of environmental certified organisations. *J. Clean. Prod.* 319:128859. doi: 10.1016/j.jclepro.2021.128859

Mental Health Commission of Canada. (2023). Understanding and coping with eco-anxiety. https://mentalhealthcommission.ca/resource/understanding-and-coping-with-eco-anxiety

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., and Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med. Res. Methodol.* 18:143. doi: 10.1186/s12874-018-0611-x

Newnham, E. A., Dzidic, P. L., Mergelsberg, E. L. P., Guragain, B., Chan, E. Y. Y., Kim, Y., et al. (2020). The Asia Pacific disaster mental health network: setting a mental health agenda for the region [article]. *Int. J. Environ. Res. Public Health* 17:9. doi: 10.3390/ijerph17176144

Noy, S., Patrick, R., Capetola, T., Henderson-Wilson, C., Chin, J. W., and LaMontagne, A. (2022). Minding environment, minding workers: environmental workers' mental health and wellbeing. *Glob. Health Promot.* 29, 8–17. doi: 10.1177/17579759221081881

Oh, K. H., Shin, W. S., Khil, T. G., and Kim, D. J. (2020). Six-step model of nature-based therapy process. *Int. J. Environ. Res. Public Health* 17:685. doi: 10.3390/ijerph17030685

Paillé, P. (2022). Green human resource management research issues, trends, and challenges. Cham, Switzerland: Springer International Publishing.

Peters, M. D. J., Godfrey, C., McInerney, P., Khalil, H., Larsen, P., Marnie, C., et al. (2022). Best practice guidance and reporting items for the development of scoping review protocols. *JBI Evidence Synthesis* 20, 953–968. doi: 10.11124/JBIES-21-00242

Pikhala, P. (2020). Eco-anxiety and environmental education. *Sustainability* 12:10149. doi: 10.3390/su122310149

Pikhala, P. (2022). Toward a taxonomy of climate emotions. *Front. Climate* 3:738154. doi: 10.3389/fclim.2021.738154

Ramus, C. A., and Steger, U. (2000). The roles of supervisory support behaviors and environmental policy in employee "Ecoinitiatives" at leading-edge European companies. *Acad. Manag. J.* 43, 605–626. doi: 10.2307/1556357

Ren, S., Tang, G., and Jackson, E. (2018). Green human resource management research in emergence: a review and future directions. *Asia Pac. J. Manag.* 35, 769–803. doi: 10.1007/s10490-017-9532-1

Rew, D. (2010). SCOPUS: another step towards seamless integration of the world's medical literature. *Eur. J. Surg. Oncol.* 36, 2–3. doi: 10.1016/j.ejso.2009.08.001

Robison, R., van Bommel, M., and Rohse, M. (2022). Relationships between climate mitigation actions and mental health: a systematic review of the research landscape. *Front. Climate* 4:794669. doi: 10.3389/fclim.2022.794669

Romão, D. M. M., Setti, C., Arruda, L. H. M., de Melo, R. C., de Araujo, B. C., Tan, A. R., et al. (2023). Integration of evidence into theory of change frameworks in the healthcare sector: a rapid systematic review. *PLoS One* 18:e0282808. doi: 10.1371/journal.pone.0282808

Santos, E., Queiroz, M., Borini, F. M., Carvalho, D., and Dutra, J. S. (2022). The journey of business transformation: unfreeze, change and refreeze – a multiple case study. *J. Organ. Chang. Manag.* 36, 47–63. doi: 10.1108/JOCM-03-2022-0063

Schneider-Mayerson, M., and Leong, K. L. (2020). Eco-reproductive concerns in the age of climate change. *Clim. Chang.* 163, 1007–1023. doi: 10.1007/s10584-020-02923-y

Shirey, M. R. (2013). Executive presence for strategic influence. *J. Nurs. Adm.* 43, 373–376. doi: 10.1097/NNA.0b013e31829d6096

Singh, S. K., and Singh, A. P. (2019). The interplay of organizational justice, psychological empowerment, organizational citizenship behaviour, and job satisfaction in the context of circular economy. *Manag. Decis.* 57, 937–952. doi: 10.1108/MD-09-2018-0966

Snyder, H. (2019). Literature review as a research methodology: an overview and guidelines. *J. Bus. Res.* 104, 333–339. doi: 10.1016/j.jbusres.2019.07.039

Srivastava, S., and Agrawal, S. (2020). Resistance to change and turnover intention: a moderated mediation model of burnout and perceived organizational support. *J. Organ. Chang. Manag.* 33, 1431–1447. doi: 10.1108/JOCM-02-2020-0063

Staples, M., and Niazi, M. (2007). Experiences using systematic review guidelines. *J. Syst. Softw.* 80, 1425–1437. doi: 10.1016/j.jss.2006.09.046

Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behaviour. *J. Soc. Issues* 56, 407–424. doi: 10.1111/0022-4537.00175

Subramanian, N., and Suresh, M. (2022). The contribution of organizational learning and green human resource management practices to the circular economy: a relational analysis – evidence from manufacturing SMEs (part II). *Learn. Organ.* 29, 443–462. doi: 10.1108/TLO-06-2022-0068

Tiatia, J., Langridge, F., Newport, C., Underhill-Sem, Y., and Woodward, A. (2022). Climate change, mental health and wellbeing: privileging Pacific peoples' perspectives - phase one. *Clim. Dev.* 12, 655–666. doi: 10.1080/17565529.2022.2145171

Tisch, D., and Galbreath, J. (2018). Building organizational resilience through sensemaking: the case of climate change and extreme weather events. *Bus. Strateg. Environ.* 27, 1197–1208. doi: 10.1002/bse.2062

Tranfield, D., Denyer, D., and Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge using systematic review. *Br. J. Manag.* 14, 207–222. doi: 10.1111/1467-8551.00375

Unsworth, K. L., Davis, M. C., Russell, S. V., and Bretter, C. (2021). Employee green behaviour: how organizations can help the environment. *Curr. Opin. Psychol.* 42, 1–6. doi: 10.1016/j.copsyc.2020.12.006

Van den Berg, A. E., Maas, J., Verheij, R. A., and Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. *Soc. Sci. Med.* 70, 1203–1210. doi: 10.1016/j.socscimed.2010.01.002

van Heugten, K. (2018). Inter-personal and organisational aggression in human services following a community disaster. *Br. J. Soc. Work* 48, 1682–1699. doi: 10.1093/bjsw/bcx121

Verplanken, B., Marks, E., and Dobromir, A. I. (2020). On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming? *J. Environ. Psychol.* 72:101528. doi: 10.1016/j.jenvp.2020.101528

Yuriev, A., Boiral, O., Francoeur, V., and Paillé, P. (2018). Overcoming the barriers to pro-environmental behaviors in the workplace: A systematic review. *J. Clean. Prod.* 182, 379–394. doi: 10.1016/j.jclepro.2018.02.041

Wen, J., Hussain, H., Waheed, J., Ali, W., and Jamil, I. (2022). Pathway toward environmental sustainability: mediating role of corporate social responsibility in green human resource management practices in small and medium enterprises. *Int. J. Manpow.* 43, 701–718. doi: 10.1108/IJM-01-2020-0013

World Health Organization. (2022). Mental health at work. Available at: https://www.who.int/news-room/fact-sheets/detail/mental-health-at-work (accessed May 6, 2023).