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International Journal of Research in Counseling and Education
Volume 07 Number 01 2023
ISSN: Print 2620-5750 – Online 2620-5769
DOI: https://doi.org/10.24036/00621za0002

Received July 1st, 2023; Revised July 15th, 2023; Accepted August 30th, 2023

Understanding Eco-Anxiety as a mediator between emotional stability and Eco-Activism

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Abstract
Current climate change demands concrete behavior that has a positive impact on the environment, namely eco-activism. Eco-activism is influenced by various factors, one of which is emotional stability. The emergence of eco-activism can also be caused by a person's eco-anxiety. This study aims to present an overview of the correlations between eco-activism, emotional stability, and eco-anxiety in Indonesian society, where eco-anxiety has a role as a mediator. On-line questionnaires comprising the Ten Item Personality Inventory (TIPI), the Hogg Eco-Anxiety Scale (HEAS-13) and the Pro-Environmental Behavior Scale (PEBS-2013) were administered to 279 Indonesian citizens (WNI) aged 19–65 years. The results of this study shows that having emotional stability can enable an individual to react to challenging circumstances like climate change in an environmentally beneficial manner. Furthermore, an individual's emotional stability greatly impacts their ability to effectively handle challenging situations, frequently linked with feelings of anxiety. Interestingly, anxiety related to climate change can enhance a person's motivation to positively contribute to environmental efforts. Moreover, eco-anxiety significantly mediates the correlation between emotional stability and eco-activism. This research provides an overview of the relationship between emotional stability, eco-anxiety, and eco-activism in Indonesian society, which has not been widely researched.

Keywords: Eco-Anxiety, Emotional Stability, Eco-Activism,

How to Cite: Widyayanti, Y.V. Mustika, M.D. (2023). Understanding Eco-Anxiety as a mediator between emotional stability and Eco-Activism. *International Journal of Research in Counseling and Education*, 7 (1): pp. 41-49, DOI: https://doi.org/10.24036/00621za0002

Introduction

Climate change is increasingly visible and cannot be resolved in the near future. Scientists believe that the temperature of Earth will continue to increase in the next few decades, primarily from the impact of greenhouse gases due to human activities (NASA, 2022). This phenomenon has an impact not only on the environment but also on other living beings. To overcome these problems, it is necessary to take concrete steps that may contribute to a positive effect on the environment (Abdelwahed et al., 2022). Such behavior is also known as eco-activism.

Eco-activism is defined as actions taken to halt or reduce environmental damage. Such actions can be diverse and include activities at the local, political, conservation, and environmental justice levels (Jain & Jain, 2022). There can be various forms of eco-activism, such as recycling, saving energy and air, reducing household consumption, and participating in environmentalist communities. Generally, the goal of eco-activism is to promote ecological sustainability, the conservation of biodiversity, and the well-being of humans and other species.

Eco-activism is influenced by several factors, one of which is a person's personality (Gifford & Nilsson, 2014; Rothermich et al., 2021). The Big Five personality model is often used to represent the personality domain and includes openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability or neuroticism. There is empirical evidence that people with certain personalities show greater concern for the environment (Hirsch, 2010; Hopwood et al., 2021; Milfont & Sibley, 2012) and have greater involvement in behaviors that affect the environment (Soutter et al., 2020).

One of the personality domains that is thought to contribute to eco-activism is neuroticism. Nonetheless, researchers will focus more on emotional stability, which is considered to reflect the essence of neuroticism,

but from the opposite direction. Emotional stability is defined as a fundamental personality trait related to a calm attitude, especially in the face of challenges and threats (Ellis et al., 2018). Neuroticism is not limited to a high level of negative emotions but also includes a high reactivity to increased emotions (emotional variability). That is what makes researchers treat emotional stability as the opposite of neuroticism in their research (Dong et al., 2022; Goldberg, 1990).

Some experts consider that people with low emotional stability show higher pro-environmental behavior than those who do not (Chiang et al., 2019; Hennecke et al., 2014; Hopwood et al., 2021). A degradation in individual emotional stability (e.g., through information about threats as a result of climate change) can encourage pro-environmental behavior (Hopwood et al., 2021). Low emotional stability also causes a person to worry about many aspects of his or her life, one of which is environmental issues. This concern can trigger the emergence of eco-activism behavior (Chiang et al., 2019; Gifford & Nilsson, 2014). There is other empirical evidence showing a relationship between eco-activism and emotional stability. Holmström (2015) suggests that people who have low emotional stability are often anxious and feel bad about themselves. This makes them feel powerless to do anything, including engaging in pro-environmental behavior.

The emergence of eco-activism is also caused by the anxiety felt by humans as a form of response to the phenomenon of climate change. It has both direct and indirect impacts on human mental health (Berry et al., 2010; Fritze et al., 2008; Gunasiri et al., 2022). Some of the direct impacts of climate change, such as extreme weather events, can affect mental health problems such as stress, depression, and anxiety disorders (Gunasiri et al., 2022).

Anxiety disorders related to environmental changes are starting to be widely discussed by experts. There are several terms used to describe anxiety felt as a result of environmental changes; one such term is eco-anxiety (Coffey et al., 2021; Loll et al., 2023; Maran & Begotti, 2021). Clayton (2020) describes eco-anxiety as anxiety related to perceptions of climate change, even among those who are not directly affected. Coffey et al. (2021) added an explanation of eco-anxiety as a concept used to understand the relationship between climate change and anxiety, which is related to perceptions of the negative impacts of climate change. Based on this explanation, it can be concluded that eco-anxiety is anxiety that arises as a result of climate change, whether it is experienced directly or indirectly.

Eco-anxiety can be influenced by several factors, one of which is personality. A person's personality can shape their views and responses to events, including phenomena that occur in the environment. Hopwood et al. (2021) suggested that personality can affect anxiety related to the environment. Not only that, but a person's vulnerability to experiencing eco-anxiety also varies with their personality (Clayton, 2020).

Some experts have conducted research to assess the link between eco-anxiety and personality. Research shows that one of the personality characteristics, namely low emotional stability, is associated with a person's tendency to experience negative emotions, such as fear and anxiety (Clayton, 2020; Gray & McNaughton, 2000; Kotov et al., 2010; Loll et al., 2023). Hengartner et al. (2017) found that low emotional stability was significantly correlated with anxiety. Emotional stability may affect how a person deals with stressful situations. Effective coping strategies will help relieve stress, while ineffective coping strategies will cause anxiety (Dong et al., 2022). Based on this explanation, it appears that one personality characteristic that can affect eco-anxiety is emotional stability. This means that people who have low emotional stability scores tend to experience eco-anxiety more readily.

The impact of eco-anxiety is also being understood more deeply, whether it is constructive or destructive. Anxiety about the environment is felt to be constructive if it can motivate a person to take mitigating actions (McNeill & Dunlop, 2016) or engage in activities that may have positive consequences for the environment (e.g., becoming an environmental activist or buying an electric car; Kurth & Pihkala, 2022). Based on a survey conducted by the American Psychological Association in 2019, those who experience eco-anxiety are more motivated to change their behavior to have a positive impact on the environment (Bethune, 2020). This is also supported by research conducted by Kurth and Pihkala (2022), who found that eco-anxiety is significantly related to eco-activism and is also a predictor of environmental activity (Jain & Jain, 2022).

Research on eco-anxiety, eco-activism, and emotional stability has not been widely carried out in Indonesia. Indonesia is one of the countries affected by climate change (CMCC, 2021). This makes Indonesian people vulnerable to experiencing eco-anxiety. Indonesia's geographic situation as an archipelago country with biodiversity means that Indonesian people have a very close relationship with the environment. Further, Indonesia is slowly starting to implement policies that support environmental health (Ministry of Environment and Forestry Indonesia, 2023). However, this has not been reviewed deeply through a psychological approach in Indonesian society. Therefore, the relationship between eco-anxiety, eco-activism, and emotional stability in Indonesian society, involving eco-anxiety as a mediator, needs to be understood further.

This study will provide a new understanding of the constructs of eco-anxiety, eco-activism, and emotional stability. The results of this research will also provide an overview of the interrelationships among these three constructs within Indonesian society, which have not been extensively studied so far. This will offer insights into the factors that can influence the emergence of eco-activism in Indonesian society, which is currently needed.

Methods

Research Design

The research design in this study was non-experimental and quantitative; the research variables were measured without any manipulation. The variables to be measured in this case were emotional stability, eco-anxiety, and eco-activism. Specifically, this study aimed to observe eco-anxiety as a mediator between eco-activism and emotional stability. The following was the hypothesis in this study:
H1. Eco-anxiety mediates the correlation between emotional stability and eco-activism.

Participants

The participants in this study were 279 Indonesian Citizens (WNI) aged 19-65 years. Participants in this age group belong to the adult category, where a person's physical, cognitive, and psychosocial development reach the highest level (Klimczuk, 2016). A psychological characteristic of a person classified as an adult is being able to make decisions about personal values and also as part of the world. That includes the decision to engage in positive behavior for the environment, which is eco-activism. In addition, as a person becomes older, their ability to regulate emotions will improve (Charles, 2010; Strough & Bruine de Bruin, 2020). This makes the emotional stability better. The phenomenon of eco-anxiety is also commonly experienced by young adults (19-45 years old) (Clayton, 2020). Additionally, middle adulthood (45-65 years old) tends to guide and carry forward sustainability to the next generation (Feist et al., 2020). Taking into account these characteristics, this study aimed to understand more about eco-anxiety, eco-activism, and emotional stability in participants who are classified as adults. The sampling technique used in this study was non-probability sampling. Non-probability sampling is a method of selecting a sample from a population where not every individual or item in the population has a known or equal chance of being included in the sample (Babbie, 2016). This is because the total population size was unknown and the participants selected were those who were easy for researchers to access (Gravetter et al., 2021). The non-probability sampling methods used in this research was purposive sampling, where the researcher intentionally selects specific individuals who meet certain criteria important for the study, in this case, Indonesian citizens aged 19-65 years old.

Instruments

The eco-activism variable was measured using the Pro-Environmental Behavior Scale (PEBS-2013) created by Markle (2013) and has already passed a translation process into Indonesian. This measurement tool assesses 4 subscales of pro-environmental behavior: conservation, environmental citizenship, food, and transportation. It consists of 19 items and has several different types of scales to choose from.
The emotional stability variable was measured using the Ten Item Personality Inventory (TIPI) measuring instrument made by Gosling et al. (2003). This measurement tool measures five personality domains: openness, agreeableness, emotional stability, conscientiousness, and extraversion. The TIPI has been adapted to Indonesian by Akhtar (2018). This study addressed only the emotional stability domain. There are two items that measure the emotional stability domain: "Anxious, irritable" and "Calm, emotionally stable". Participants were asked to select one of seven levels (1 = "Highly Unsuitable", 7 = "Highly Appropriate").
The eco-anxiety variable was measured using the Hogg Eco-Anxiety Scale (HEAS-13) measurement tool made by T. Hogg (2021), which has been translated into Indonesian by Fitrianisa et al (2022), and Setiawan (2022). This measurement tools consists of 13 items, with four levels to choose from: "Not at all," "Sometimes," "Often," and "Almost every day." It contains four dimensions of eco-anxiety: affective symptoms, rumination, behavioural symptoms, and anxiety about one's negative impact on the planet, which were each distinct from stress, anxiety and depression.
All the above measuring instruments have undergone reliability and validity tests and all of them have been declared reliable and valid in accordance to Nunnally & Bernstein (1994).

Research Procedure

The data collection in this study was carried out online and disseminated via social media to reach more participants and not be hindered by distance and time. Researchers ensured that participants understood their rights and obligations in this study. At the beginning of the questionnaire, the researcher explained that participation in this study was voluntary, data confidentiality was guaranteed, and participants could withdraw from the study at any time. After approximately three weeks of data collection, the researcher then confirmed the suitability of the characteristics of the participants who had filled out the online form and then processed the data using the SPSS application.

Data Analysis

The data analysis method used in this research was mediation analysis using PROCESS v4.2 from Hayes in the SPSS program. By using PROCESS v4.2, researchers were able to determine the significance of the indirect effect of the mediator, namely eco-anxiety. In the process of testing the variables, both the correlation between

variables and the mediator function of eco-anxiety in the relationship between eco-activism and emotional stability were considered.

This study is a non-experimental quantitative study with a type of correlational analytics. This study looked at the relationship between variables without attempting to explain the influence between the variables (Gravetter & Forzano, 2017), which is the variable of quantitative labor demands and burnout. In addition, the study will also test the moderation model with moderation analysis used to know the role of social support in the relationship between quantitative labor demands and burnout. So, this study hypothesizes that social support moderates the relationship between quantitative demands and burnout.

Result and Discussion

This research engaged 279 participants, comprising 149 women (53%) and 130 men (47%). A total of 189 (68%) participants in this study aged 19-45 years, while the remaining 90 participants (32%) were aged 46-65 years. The participants were Indonesian citizens (WNI) who live in various provinces in Indonesia, spread across the islands of Java, Sumatra, Kalimantan, and West and East Nusa Tenggara. The largest number of participants in this study, 115 people (41.22%), domiciled in DKI Jakarta Province, followed by those living in West Java Province with 97 people (34.77%). Table 1 below shows the descriptive data in this study.

Table 1. Means, Standard Deviation, Correlations, and Scale Reliabilities

	Cronbach's alpha	Mean	SD	*Eco-Activism*	*Emotional Stability*	*Eco-Anxiety*
Eco-Activism	.568	3.221	.461	1		
Emotional Stability	.504	4.875	1.182	.209**	1	
Eco-Anxiety	.880	.874	.415	.336**	–.126*	1

*** Correlation is significant at the 0.01 level (2-tailed)*
** Correlation is significant at the 0.05 level (2-tailed)*

The table above shows the correlation values for each variable in this study. Emotional stability had a negative correlation with eco-anxiety. This means that the higher a person's emotional stability, the lower their experience of eco-anxiety, and vice versa. In contrast, the correlation between emotional stability and eco-activism was positive. This indicates that the higher the emotional stability of a person, the higher the eco-activism of that person, and vice versa. The correlation between eco-anxiety and eco-activism was also positive, meaning that the higher the eco-anxiety experienced by a person, the higher their eco-activism, and vice versa. The mediation analysis found that emotional stability and eco-activism had a direct positive correlation (β = 0.7258, LLCI = 0.4177, ULCI = 1.0339). There was also a significant correlation between emotional stability and eco-activism through a mediator, namely eco-anxiety (β = –0.1905, LLCI = 0.4177, ULCI = 1.0339). This means that eco-anxiety mediates the relationship between emotional stability and eco-activism. However, the existence of eco-anxiety as a mediator makes the relationship between emotional stability and eco-activism negative. Based on these outcomes, the hypothesis in this study is confirmed. Eco-anxiety mediates the correlation between emotional stability and eco-activism

Discussion

Climate change that has occurred in Indonesia makes it urgent for all people to adopt behaviors that have a positive impact on the environment, meaning eco-activism. In this study, the eco-activism of Indonesian people who are classified as adults was found to be influenced by their emotional stability. This is in line with previous research conducted by Holmström (2015). There is a positive correlation between emotional stability and eco-activism because people who are emotionally unstable tend to feel bad about themselves. This includes feeling powerless to carry out pro-environmental behavior (eco-activism). A person with high neuroticism copes with a problem (such as climate change) by avoiding it, whereas people who are emotionally stable tend to try to solve the problem by addressing the source of the problem (Poskus, 2017). This makes emotionally stable people able to deal with stressful situations by overcoming negative emotions (e.g., anxiety, fear, or anger), having more effective problem-solving abilities, and having better empathy for their surroundings. These conditions support the emergence of eco-activism as a response to climate change. In addition, one of the characteristics of humans who are classified as adults is that they are increasingly able to regulate their emotions. This may provide a new understanding of how a person's eco-activism can increase with age.

A person's emotional stability is related not only to the eco-anxiety they experience but also to eco-activism. This study showed that there was a negative correlation between emotional stability and eco-anxiety, in line

with research conducted by Clayton (2020), Dong et al. (2022), and Loll et al. (2023). A person who has a low level of emotional stability tends to experience more anxiety than one who does not (Abdel-Khalek, 2013; Dong et al., 2022); this includes anxiety about the environment (eco-anxiety). A person with emotional stability has the ability to remain stable and balanced (Costa & McCrae, 1992; Joaquim et al., 2022; Johnson, 2017); this plays an important role in how a person manages themself in responding to events. There is empirical evidence that high levels of neurosis serve as a protective mechanism against death (Gale et al., 2017; Joaquim et al., 2022). This mechanism has been associated with the presence of more intense fear emotions, as well as with the presence of maladaptive anxiety, such as anxiety disorders in general and specific phobias (Joaquim et al., 2022). Moreover, Dong et al. (2022) found that personality dimensions, one of which was neuroticism, can affect how a person deals with stress and that this influence has its own emotional consequences. The existence of effective coping mechanisms can relieve stress, whereas ineffective coping can cause anxiety. In view of the characteristics of adult humans who can better regulate emotions, in general, will make the coping strategies become effective. This indicates that humans in the adult age category tend not to experience anxiety, including eco-anxiety.

The eco-anxiety experienced by a person also affects their eco-activism. The existence of a positive correlation between eco-anxiety and eco-activism in this study accords with the findings of previous studies discussing eco-anxiety and eco-activism (Clayton, 2020; Jain & Jain, 2022; Kurth & Pihkala, 2022; Loll et al., 2023; Verplanken et al., 2020). A person who experiences eco-anxiety is worried that a change in the environment will endanger them and the people around them. The existence of anxiety and concern can motivate mitigating actions and behaviors that have positive consequences for the environment (Clayton, 2020; Verplanken et al., 2020). Eco-anxiety is also considered an emotion that can provide awareness and involvement, which contribute positively to the environment (Kurth & Pihkala, 2022). In terms of the condition of Indonesia, which is very close to the environment, the environmental changes have been felt by the local community. This may increase eco-anxiety and thus motivate a person to engage in eco-activism. This study provides an understanding that, in Indonesian society, the presence of eco-anxiety is considered constructive because it can make a person who experiences it react in a way that may have a positive impact on the environment.

This study also shows that eco-anxiety mediates the correlation between emotional stability and eco-activism. The presence of eco-anxiety as a mediator was found to change the relationship between emotional stability and eco-activism. The existence of an interaction between emotional stability and eco-anxiety in this study turned out to be negatively correlated with eco-activism. These results are inversely proportional to the results of the correlation when examining the role of emotional stability, without any interaction with eco-anxiety, toward eco-activism, which was previously positive. Even when a person is emotionally stable and experiences eco-anxiety, this does not necessarily result in the emergence of eco-activism. The occurrence of this can be caused by the presence of other variables that are not measured in this study (extraneous variables). The extraneous variables that can exert influence include self-discrepancy, guilt (Gao et al., 2020), self-efficacy (Innocenti et al., 2023), and community characteristics (Eom et al., 2018; Ogunbode et al., 2022; Tom & Chan, 2017). For countries in the "Global South," political and financial limitations and limited knowledge, as well as limited opportunities, can also be contributing factors (Eom et al., 2018; Gonzáles-Hernández et al., 2019; Seth, 2021; Simpson et al., 2021). Indonesia has a society with collectivist characteristics, where the tendency to engage in eco-activism is even greater in individualist societies. Individualist societies act according to personal beliefs and preferences, in contrast to collectivist societies, which tend to adhere only to social norms (Eom et al., 2016). Indonesia is included in the "Global South" group of countries. This suggests that an absence of eco-activism in Indonesian society can occur due to political and financial limitations, knowledge, and limited opportunities.

This research has several limitations that can be addressed in future research. First, the tools used to measure emotional stability in this study were not comprehensive. Tools that specifically measure emotional stability could be used in future research. Second, the data in this study are self-reported, so there is a possibility of bias in the respondents. Moreover, this study did not examine the background of the respondents (e.g., socioeconomic, educational), so the data obtained were incomplete. It is hoped that the results of this study will encourage similar studies in Indonesian society, especially those related to extraneous variables that are not measurable. This needs to be done to gain a more comprehensive understanding of eco-activism, emotional stability, and eco-anxiety in Indonesian society.

Conclusion

The results of this study provide an overview of eco-activism, emotional stability, and eco-anxiety in Indonesian society; such research is still limited. The ability to be emotionally stable may help a person respond to stressful situations such as climate change with behavior that is positive for the environment. Not only that, a person's emotional stability also plays an important role in how effectively they deal with stressful situations, which often lead to anxiety. In fact, anxiety about climate change also increases a person's motivation to have

a positive impact on the environment. But the result of this study also shows that even when a person is emotionally stable and experiences eco-anxiety, this does not necessarily result in the emergence of eco-activism. This could be due to political and financial limitation, limited knowledge, as well as limited opportunities to engage in eco-activism. Based on these findings, in order to ensure that eco-activism continues within Indonesian society, efforts are needed to enhance public awareness across various socioeconomic statuses. The opportunities provided for people to participate in eco-activism should also be increased or even established as part of social norms. Researchers encourage similar studies, especially to understand the factors influencing the existence of eco-activism in Indonesian society, which is currently needed.

Acknowledgment

The results of this study provide an overview of eco-activism, emotional stability, and eco-anxiety in Indonesian society; such research is still limited. The ability to be emotionally stable may help a person respond to stressful situations such as climate change with behavior that is positive for the environment. Not only that, a person's emotional stability also plays an important role in how effectively they deal with stressful situations, which often lead to anxiety

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