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ORIGINAL ARTICLE

Early Childhood Eco-Anxieties Regarding Environmental Problems

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ABSTRACT

Eco-anxiety is the sense of loss that an individual feels in the face of environmental problems, which includes emotions such as sadness, anger, and distress. This study aims to identify early childhood children's eco-anxieties related to the problems of drought, forest fires, and endangered species. The study was conducted with 55 children in the 4–8 age groups attending a public school. Since the study aims to identify children's eco-anxieties as they are, the study was designed as a qualitative case study. The data were obtained through a structured interview form and analyzed through content analysis. According to the study results, 96% of children have eco anxieties about drought, forest fires, and endangered species. Adverse changes in the environment, losses in the child's life, loss of life, loss of food, human indifference, and economic anxiety were identified as the root causes of children's eco-anxiety. Considering the data, the eco-anxiety experienced by children should be considered in public studies to be prepared and carried out on environmental problems, information to be shared in the media, and environmental education activities at schools, and actions should be designed to solve environmental problems.

KEY WORDS: Early childhood education; eco-anxiety; environmental problem

INTRODUCTION

Earth is the shared home for all life. However, it has been polluted due to the changing needs of people, significant adverse effects of consumption habits, rapid population growth, ever-growing industry, and technological developments. As a result, its available resources are no longer what they used to be, and significant environmental problems are looming on the horizon, if not already with us. Today, these human-induced damages to nature are deemed to be the biggest problem facing the world, and it is thought that all countries will be affected by these problems in the short and the long term (Çeliköz, 2023; Ürey and Şahin, 2010). Studies show that the damage to the environment has reached a level that threatens the lives of humans and all other living things on Earth and that children should be raised as sensitive citizens by providing them with environmental education from early childhood on (Akyüz, 2024; Ürey et al., 2011).

On the other hand, ecological problems are sometimes addressed with an emphasis on environmental apocalypse, implying a threat to people's lives and breeding feelings of loss, mourning, grief, fear, and anxiety over time (Aslan and Kara, 2023; Clayton et al., 2017; Pihkala, 2020). In other words, environmental problems have caused psychological and material damage in recent years. Regarding environmental problems caused by ecological degradation, mental health professionals note that many psychological problems, such as pessimism, hopelessness, unhappiness, anxiety, and last but by no means least, depression, are observed in individuals from childhood onwards (Kidner, 2007).

Children appear to be the most susceptible group to the economic, social, and health-related problems caused by environmental issues arising from climate change (Karabal, 2022). Today, with easy access to and sharing of information, environmental issues are finding widespread coverage in the media, and some of the content in the news we encounter in daily life can negatively affect individuals, particularly young people and children (Karabal, 2022). As children learn about negative ecological changes, phenomena, and catastrophes, they begin to think the planet is in trouble (Hickman et al., 2021). While schools focus on raising citizens' awareness of the problem and seeking solutions, the information also shows children that the world is in dire straits. Moreover, while prominent and crucial organizations such as the United Nations and the World Health Organization bring the problem to the public agenda with striking reports, these can also cause anxiety among individuals. For example, the final report of the commission jointly organized by The Lancet and the Institute for Global Health at University College London begins with the statement, "Climate change is the greatest global health threat facing the world in the 21st century" (Costello et al., 2009). While these and similar statements and information draw individuals' attention to the issue, they can also push them into a helpless, hopeless, and anxious state. Reachout (2019) found that four out of five students are somewhat or very concerned about the problem of climate change. Half of

the students stated that they felt these emotions every week; more than 14% said that their concerns about climate change mainly affected them, and more than 17% stated that they lost sleep due to their concerns about climate change. The American Psychological Association (APA) describes this condition as a "chronic fear of environmental apocalypse." While mental health professionals have described these experiences with different terms such as 'pre-traumatic stress syndrome', 'environmental melancholia' or 'psychogeriatric illness', in recent years the DSM-5 has labelled this problem as 'Eco-anxiety'. Although eco-anxiety implies the feeling of anxiety, the term is more like an umbrella in this context. It includes many emotions such as fear, anger, exhaustion, powerlessness, loss, helplessness, phobia, and hopelessness, describing the state of total helplessness of individuals in the face of environmental problems (Clayton et al., 2017; Coyle and Van Susteren, 2012; Dockett, 2019). In short, the concept of eco-anxiety has emerged as an umbrella term used by mental health experts to conceptualize the issue (Güneş, 2023).

Eco-anxiety caused by climate change in individuals has been the subject of research in various disciplines. In recent years, comparisons between countries have also begun to appear in the literature. In 2022, McKinsey Health Institute conducted a study on stress in ten European countries and found that Turkish resident members of Generation Z were much more concerned about the climate crisis than their peers in other countries (Arora et al., 2022). In another international study conducted with ten thousand young people from various countries, 59% of the participants were highly concerned about climate, and 84% were at least moderately concerned (Hikman et al., 2021). While studies indicate that the number of people seeking help from mental health professionals for eco-anxiety is increasing day by day, it is also recommended that awareness-raising activities on environmental issues should be carried out meticulously and educational programs should be designed in a way that does not cause eco-anxiety (Clayton et al., 2017; Fritze et al., 2008). Considering today's environmental conditions, it would not be unreasonable to assume that eco-anxiety will be on the table of a wide range of disciplines in the coming years (Cunsolo and Ellis, 2018). Pihkala (2020) states that experts working with children should be aware of the wide range of mental states and emotions they may experience as a result of eco-anxiety.

The concept of eco-anxiety is expected to become more and more visible due to the increasing severity of environmental problems and the increasing visibility of the reports and warnings shared with the public on this issue. Still, the studies conducted on this issue in Turkey are pretty limited (Aslan and Kara, 2023; Güngör and Felekoğlu, 2018; Kara, 2022; Ogelman and Kök, 2023; Oral and Durmuş, 2023; Gezer and İlhan, 2021; Özbay and Alçı, 2021; Güneş, 2023). A general assessment of the existing studies reveals most literature reviews and scale adaptations, with the relatively rare case-finding studies mainly being carried out with adults and adolescents. In Turkey, the need for much more data and research on the phenomenon of eco-anxiety is evident (Karabal, 2022). Although children in early childhood, the first and primary stage of education, are more vulnerable in terms of age, the absence of any study describing their current state of eco-anxiety is noteworthy. Defining the problem is an essential step toward a solution. This study assessed early childhood children's eco-anxiety towards environmental issues, considering the problems of drought, forest fires, and endangered species, which are the results of global warming and are considered comprehensible by children.

In this context, the following specific questions were investigated.

- What kind of eco-anxieties do children in early childhood experience about drought?
- What kind of eco-anxieties do children in early childhood experience about endangered species?
- What kind of eco-anxieties do children in early childhood experience about forest fires?

METHODOLOGY

Research Model

The present study is qualitative and based on a case study. Hancock et al. (2021) define a case study as the researcher's endeavor to uncover a social fabric, the individuals who make up this fabric, the patterns, the environment, and individual experiences. In this context, the case study is the preferred approach as it enables systematic information gathering about how a limited system functions and works (Chmiliar, 2010). Given the purpose of the study, early childhood children's eco-anxieties about environmental problems were collected with a structured eco-anxiety interview form.

Study Group

The study group, selected by convenience sampling method – a non-random sampling method – consisted of 55 children between the ages of 4 and 8. According to Gravetter and Forzano (2012), in convenience sampling, which is preferred due to time, funds, and labor force limitations, the study group should be selected from easily accessible units with whom the application would not be a significant challenge. Since the study aims to investigate the eco-anxiety of children in early childhood, it was carried out with children attending school, who were assumed to be able to express their feelings and thoughts better. Accordingly, the study consisted of children in the classrooms of one volunteering elementary school teacher and three volunteering preschool teachers in a public school in Aliağa district of Izmir province, where the researcher believed that it would be easy to collect data in terms of time, labor, accessibility, and opportunities to get quick feedback. In the study, detailed demographic data about the study group and the opinions expressed within the scope of the study are presented in coded form by the confidentiality principle. The children are symbolized with the letter "C," with individual participants being represented with numbers to follow the letter.

Demographic details of the study group are presented in Table 1.

Thirty of the participants are boys, and 25 are girls. The age distribution of the participants is as follows: Five participants are 4 years old; 19 participants are 5 years old; eight participants are 6 years old; 17 participants are 7 years old; and six participants are 8 years old.

The codes of children according to age are presented in Table 2.

Table 3 provides information on the environmental problem the children in the research group preferred to discuss during the interview.

In the study, three environmental problem images were shown to the children so that they could express themselves more easily. The children chose one of them voluntarily and proceeded to express their opinions on the subject. According to Table 2, the number of children who wanted to talk about endangered species was 19, the number of children who wanted to talk about forest fires was again 19, and the number of children who wanted to talk about drought was 17.

Table 4 presents the emotional states of the children at the beginning and end of the interview.

Table 1: Demographic details of the study group

Variable	f	%
Gender		
Girl	25	45
Boy	30	55
Age		
4 years old	5	9
5 years old	19	35
6 years old	8	14
7 years old	17	31
8 years old	6	11

N=55

Table 2: Presents according to age groups (N=55)

Age	Participants
4 years old	C19, C20, C37, C 43
5 years old	C2, C3, C5, C7, C9, C10, C16, C18, C21, C22, C23, C32, C35, C39, C40, C41, C42, C45, C53
6 years old	C1, C6, C11, C25, C34, C38, C46, C52
7 years old	C12, C13, C14, C15, C17, C24, C26, C28, C29, C31, C44,
8 years old	C47, C48, C50, C51, C54, C55
	C8, C27, C30, C33, C36, C49

Table 3: Environmental problem preferences of the participating children

Scenarios	f	Participants
Drought	17	C1…-…C17
Endangered Species	19	C18…-…C36
Forest Fires	19	C37…-…C55
Total	55	C1…-…C55

According to the data presented in Table 4, 46 children described their emotional state as happy at the beginning of the study, with 4 considering themselves confused, 3 feeling sad, and 2 feeling angry. Of the children who started the study happy, 22 described themselves as sad, nine as scared, eight as confused, five as angry, and 2 as happy after reading the news report.

The participating children's awareness levels about environmental problems are presented in Table 5.

According to Table 5, 40 children who participated in the study stated that they had not heard anything about the environmental problem covered, and 15 children stated that they had heard about it. Table 5 presents information on where they get information about environmental problems.

According to Table 6, 6 of the children who participated in the study stated that they obtained information about environmental problems from the media, 4 from their families, 3 from their observations, and two from school. Table 7 shows the content of children's knowledge about environmental problems.

Table 4: The children's emotional states at the beginning and the end of the interview

At the beginning	f	At the end	f	Participants
Happy	46	Sad	22	C9, C10, C11, C12, C13, C14, C15, C25, C26, C27, C28, C29, C30, C31, C32, C33, C45, C46, C47, C48, C49, C50
		Scared	9	C2, C3, C18, C19, C20, C37, C38, C39, C40
		Confused	8	C1, C5, C6, C7, C23, C24, C43, C44
		Angry	5	C4, C21, C22, C41, C42
		Happy	2	C8, C51
Confused	4	Sad	2	C53, C35
		Scared	1	C52
		Angry	1	C34
Sad	3	Sad	2	C54, C55
		Confused	1	C36
Angry	2	Scared	1	C16
		Sad	1	C17

Table 5: Children's awareness of the environmental problem

Have you heard about the environmental problem?	f	Participants
Yes, I heard about it	15	C9, C15, C16, C26, C27, C30, C31, C32, C33, C34, C36, C43, C47, C51, C52
No, I have not heard about it	40	C1, C2, C3, C4, C5, C6, C7, C8, C10, C11, C12, C13, C14, C17, C18, C19, C20, C21, C22, C23, C24, C25, C28, C29, C35, C37, C38, C39, C41, C41, C42, C44, C45, C46, C48, C49, C50, C53, C54, C55

According to Tables 7 and 8, children participating in the study described the environmental problem as solid waste, six as marine pollution, 1 as air pollution, and one as technological pollution.

Data Collection Tool

Structured eco-anxiety interview form

The data were collected using the "Eco-Anxiety Interview Form" (Appendix 1). The interview form consists of three parts. The first part contains introductory questions about the participant's name and surname, date of birth, their feelings on the day of the interview, whether they have ever heard anything about the environmental problem at hand, and if so, their sources of information and the specifics of what they know about the environmental problem. The second part includes images and news text on the environmental problem selected by the child. The third part of the interview form contains questions about the child's feelings, asking them to explain their feelings after the presentation of the news story.

Table 6: Channel of information about environmental problems

Channel of information	f	Participants
Media	6	C9, C15, C30, C33, C36, C52
Family	4	C16, C26, C34, C51
Own-observation	3	C27, C43, C47
School	2	C31, C32

Table 7: The extent of children's awareness of the environmental problem

What have you heard?	f	Participants
The solid waste problem	8	C9, C15, C26, C31, C32, C34, C43, C51
Marine pollution	6	C16, C27, C30, C33, C36, C52
Air pollution	1	C47
Technological pollution	1	C33

Validity and reliability

The researcher prepared the structured eco-anxiety interview form after reviewing the relevant literature. Care was taken to ensure the news text in the interview form did not contain leading statements. The researcher prepared five interview questions and asked three preschool education experts, four environmental education experts, and two psychological counselors for their opinions about the form. The wording and the number of questions were changed in light of the experts' comments. As a result, the interview form for each environmental problem comprised seven questions, four of which were open-ended and three of which were multiple-choice. Once the seven interview questions were formulated with the help of expert opinions, two academicians who are experts in the field of qualitative study were consulted to increase the internal validity of the questions and to understand whether they provide context, comprehensibility, and clarity. In light of the feedback provided by the experts, the interview questions were revised and finalized. The result was a structured interview form consisting of 7 open-ended questions. The pilot stage of the study was conducted with five children, testing the comprehensibility of the questions. The questions were clear

Table 8: Early childhood eco-anxieties about drought

At the beginning	f	At the end	f	Anxiety	Participants
Happy	15	Sad	7	Food shortage	C10, C14
				Water shortage	C11, C13, C17
				Extinction of fish	C12, C14, C15
				Paying more for drinking water	C13
		Confused	4	Drying up of water	C1, C5, C7
				Losing venues to swim	C5
				Fish extinction	C1, C5
				People not caring	C5
				Lack of enough water for animals	C6
				Deforestation	C6
				Losing means to cool off.	C6
		Scared	2	Water shortage	C2
				Fish extinction	C2
				Losing routes for maritime transportation	C2
				Cracking of soil	C3
		Angry	1	Trees drying up	C4
		Happy	1	Moving to a place with plenty of water	C8
Angry	2	Scared	1	Drying up of water	C16
				Not having any fish to catch	C16
		Sad	1	Water shortage	C17
				Lack of enough water for animals	C17
				Trees drying up	C17
Total	17				

and comprehensible, leading to the commencement of the actual implementation. In qualitative research, validity and reliability are possible by presenting the research steps in detail. To fulfill this requirement, direct statements from the children were quoted as part of the data presentation. The interviews were recorded, and two more researchers were asked to evaluate the interviews so that the verification of the children's statements was verified by three experts together with the researcher.

Data collection process

The permissions required to apply for the form at the designated school were obtained before the introduction of the structured interview form, which was prepared as a data collection tool. The researcher went to the school designated for implementation and interviewed 55 children who volunteered for the study. To minimize data loss, the researcher also recorded the interviews. Before the interview, the researcher gave the teacher and the children brief information about the study. In this context, she explained the purpose of the study and how it would be conducted. A quiet space was set up in the school, and the interviews were conducted individually as the children went there. At the beginning of the interview, children were shown images of three environmental problems (drought, endangered species, forest fires) and were asked which topic they wanted to discuss so that children could more easily express their feelings and thoughts about the topic they preferred. The questions in the interview form were asked of 55 children in the same order. The interviews lasted 7–14 min on average for each child.

Data analysis

A content analysis technique was used to evaluate the data obtained. Content analysis strives to develop the concepts and relations that can explain the data gathered. What content analysis essentially does is to bring together similar data within the framework of specific concepts and themes and to organize and interpret them in a way that the reader can understand (Yıldırım and Şimşek, 2006). The codes that emerged in the data analysis were shared with two independent researchers conducting qualitative studies whose assessment of the codes was consistent.

FINDINGS

Early Childhood Eco-Anxieties About Drought

Table 8 presents the drought-related eco-anxieties of the children who expressed their views on drought as part of the study.

According to Table 8, 15 children who chose to discuss the image of drought felt happy before the interview; two expressed that they felt angry.

When the emotions of the children (f = 15) who felt happy before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 7), confused (f = 4), scared (f = 2), angry (f = 1) and happy (f = 1). When the emotions of the children (f = 2) who felt angry before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 1) and scared (f = 1).

When asked why they felt sad, the children who felt sad stated that they felt anxious about "food shortages (C10, C14)," "water shortages (C11, C13, C17)," "fish extinction (C12, C14, C15)," "paying more for drinking water (C13)," "lack of enough water for animals (C17)" and "trees drying up (C17)." Among the striking statements voiced by the children who felt sad are the following:

"I feel sad because if there are no fruits, I cannot eat fruits. Thus, I cannot grow." C10.

"I feel sad. Because I feel upset about the state of the trees, they produce food for us. Like fruits and vegetables." C14.

When asked why they felt confused, the children who felt confused stated that they felt anxious about "drying up of water (C1, C5, C7)," "losing venues to swim (C5)," "fish extinction (C1, C5)," "people not caring (C5)," "lack of enough water for animals (C6)," "deforestation (C6)" and "losing means to cool off (C6)." Among the striking statements voiced by the children who felt confused are the following:

"I am confused because it dried up. Now, we will not be able to swim. How will the fish live now? I am confused because people do not do anything about it" C5.

"Because this is the first time I saw a drought. Are we going to run out of water? I am both confused and scared" C7.

"I am surprised that the tree has become like this and the lake has dried up. No one can drink without water, and we cannot water our animals. Without trees, there will be no wind. We cannot stay cool" C6.

When asked when they felt scared, the children who felt scared stated that they felt anxious about "water shortage (C2)," "fish extinction (C2)," "losing routes for maritime transportation (C2)," "cracking of soil (C3)," "drying up of water (C16) and "not having any fish to catch (C16)." Among the striking statements voiced by the children who felt scared are the following:

"I am scared because terrible things are happening. The ground is bad, the sky above is bad, and the trees are bad. It scared me. We cannot fish if there's no water." C16.

"We are running out of water. The trees are dying, and I am scared. Please, let us not run out of water. If the sea disappears, there will be no ships" C2.

A small number of children were observed to be angry or happy after the interview. The child who felt angry voiced anxiety about "trees drying up" (C4), while the child who felt happy stated that potential happiness would arise from "moving to a place with plenty of water" (C8).

Early Childhood Eco-Anxieties about Endangered Species

The children's eco-anxieties about endangered species, as discovered in the study, are presented in Table 9.

According to Table 9, before the interview, 16 children who chose to talk about the image of endangered species felt happy, two expressed that they felt confused, and one reported being sad.

When the emotions of the children (f = 16) who felt happy before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 9), scared (f = 3), confused (f = 2), and angry (f = 2). When the emotions of the children (f = 2) who felt confused before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 1) and angry (f = 1). The child who felt sad at the beginning of the interview (f = 1) felt confused by the end of the interview.

When asked why they felt sad, the children who felt sad stated that they felt anxious about "animals dying off (C28, C29, C30, C32, C33, C35)," "animals being abandoned (C25, C26)" and "losing meat supply (C29)," as well as the "the plight of the animals (C25, C26, C27, C28)." Among the striking statements voiced by the children who felt sad are the following:

"Do not let the animals be abandoned. They have offspring. Who will take care of those little animals?" C25.

"I am sad that animals are dying out. It is a pity for the animals. It hurts. They would feel sad because they have no friends" C29.

"I love polar bears very much; sadly, they are dying. The loss of the glaciers is a bad thing. I would like to travel and see them when I grow up" C30.

"I feel bad when I see animals like this. I feel sad that people kill animals. Maybe one day, it will be a terrible day not to have them" C35.

When asked why they felt scared, the children who felt scared stated that they felt anxious about "animals dying off (C18)" and "destruction of the animals' habitats (C19, C20)." Among the striking statements voiced by the children who felt scared are the following:

"I am anxious about the animals dying off. If the animals die, we will not have food. If the plants disappear, there will be no wind, no clean air, and no way to cool." C18.

"Do not let polar bears die. I want to see them" C20.

When asked why they felt confused, the children who felt confused stated that they felt anxious about "animals dying off (C23, C24)" and "the destruction of the animals' habitats (C36)". Among the striking statements voiced by the children who felt confused are the following:

"I am surprised that the glaciers are melting. I am shocked that the animals are dying off. Animals drown when the ice melts" C23.

"I was surprised they polluted the seas and messed up the whole place. How can it be so polluted?" C36.

When asked why they felt angry, the children who felt angry stated that they felt anxious about the "slaughter of animals (C22)," "animals being abandoned (C21)" and "people not caring (C22)" as well as "what people did (C34)." Among the striking statements voiced by the children who felt angry are the following:

Table 9: Early childhood eco-anxieties about endangered species

At the beginning	f	At the end	f	Anxiety	Participants
Happy	16	Sad	9	Animals being abandoned	C25, C26
				Animals are unable to take care of their offspring	C25
				Decrease in animal populations	C26
				Animals dying off	C28, C29, C32
				Animals being killed (hunting)	C28, C29
				Losing the ability to see animals and their habitats again	C30
				Losing meat supply	C32, C31
				Not being able to keep pets at home	C33
		Scared	3	Losing meat supply	C18
				Trees dying off	C18
				Lack of wind	C18
				Losing means to cool off.	C18
				Animals being abandoned	C19
				Exhaustion of animals	C19
				Losing the ability to see animals and their habitats again	C19, C20
		Confused	2	Animals dying off	C23, C24
				Destruction of the animals' habitats	C23
		Angry	2	Slaughter of animals	C22
				People not caring	C22
				Animals being abandoned	C21
Confused	2	Sad	1	Slaughter of animals	C35
		Angry	1	Fish dying off	C34
				People not caring	C34
Sad	1	Confused	1	Pollution of the animals' habitats	C36
Total	19				

"The sea is littered and polluted. The polar bear is now lonely. We need to save it" C21.
"People are killing animals. Their numbers are dwindling. Why are they being murdered?" C22.
"Because people are polluting their environment. Fish are dying in the sea. When they throw bottles away, the fish die" C34.

Early Childhood Eco-Anxieties about Forest Fires

Table 10 presents the eco-anxieties of the children who expressed their opinions about forest fires in the study.

According to Table 10, before the interview, 15 children who chose to talk about the image of forest fires felt happy; two expressed that they felt confused, and two reported being sad.

When the emotions of the children (f = 15) who felt happy before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 6), scared (f = 4), confused (f = 2), angry (f = 2), and happy (1). When the emotions of the children (f = 2) who felt confused before the interview were analyzed at the end of the interview, it was seen that, after the interview, they felt sad (f = 1) and angry (f = 1). The child who felt sad at the beginning of the interview (f = 1) felt confused by the end of the interview.

When asked why they felt sad, the children who felt sad stated that they felt anxious about "trees burning (C45, C47, C48, C49)," "harm to living things (C45, C48, C49)," and "inability to breathe (C46, C47)." Among the striking statements voiced by the children who felt sad are the following:

"I am sad because the trees make it possible for us to breathe. If they are harmed, we cannot breathe." C46.
"I feel sad because the forest has burned down. We will lose trees, fewer trees, and animals may die. Helicopters are putting out the fire. The water in the sea is running out" C48.
"When a place burns, the nature suffers. Pity for nature. Moreover, our nature could look more beautiful. Everything goes black. Smoke fills the air. It smells bad" C54.

When asked why they felt scared, the children who felt scared stated that they felt anxious about "animals losing their shelter (C37, C40)," "animals losing food supplies (C39, C41)" "the risk of fire spreading around (C38, C39, C40, C52)." Among the striking statements voiced by the children who felt scared are the following:

Table 10: Early childhood eco-anxieties about forest fires

At the beginning	f	At the end	f	Anxiety	Participants
Happy	15	Sad	6	Trees burning	C45, C47, C48, C49
				Animals dying off	C45, C48, C49
				Air pollution	C46
				Inability to breathe	C46, C47
				Loss of picnic grounds	C47
				Loss of shades	C47
				Losing seawater	C48
				Lack of clean air	C49
				Lack of raw materials for paper production	C49
		Scared	4	Animals dying off	C40
				Animals migrating away	C37, C40
				Destruction of the animals' habitats	C37, C40
				Animals are losing food supplies.	C39, C41
				Soil drying up	C37
				Desertification	C37
				Flowers burning	C41
				Air pollution	C38
		Confused	2	People not caring	C43, C44
		Angry	2	Trees burning	C41, C42
				Destruction of the animals' habitats	C41, C42
				Destruction of hiking paths	C41
				Bad smell	C41
		Happy	1	Firefighters are doing their job.	C51
Confused	2	Sad	1	Trees burning	C53
				Animals dying off	C53
		Scared	1	Trees burning	C52
				Bad smell	C52
Sad	2	Sad	2	Air pollution	C54
				Trees burning	C55
				Destruction of the animals' habitats	C55
				Bad smell	C54
Total	19				

"I was scared because the fire started to spread everywhere. People get afraid. Tiny children. What will the animals eat? They will not find any food if the forest burns down" C39.
"In case the animals get hurt. What if they die? The birds' houses will burn down. Turtles will be unable to cannot escape. Nice-smelling flowers burn in the forests. The bees will not have any flowers left" C40.

When asked why they felt confused, the children who felt confused stated that they felt anxious about "people not caring (C43, C44)." Children who felt happy expressed happiness about forest fires due to "firefighters doing their job (C51)."

Figure 1 summarizes the eco-anxieties of the children participating in the study regarding environmental problems such as drought, forest fires, and endangered species.

According to Figure 1, almost all the children (96%) in the study felt eco-anxieties about environmental problems.

The distribution of the emotional states of children with ecological anxiety is presented in Figure 2.

The analysis of the children's emotional states with reference to their eco-anxieties, presented in Figure 2, reveals that sadness is the most intensely felt emotion voiced by 51% of the children. Sadness is followed by fear (21%), confusion (17%), and anger (11%).

Figure 3 summarizes the causes of participating children's eco-anxieties regarding environmental problems in the context of drought, forest fires, and endangered species and the thematic distribution of the causes.

According to Figure 3, the causes of eco-anxiety felt by children in early childhood include adverse changes in the environment (f = 27), a loss in the child's life (f = 20), loss of life (f = 17), human indifference (f = 7), loss of food (f = 6), and economic anxiety (f = 1). The anxiety most frequently mentioned by children about the adverse changes in the environment is the disappearance of the animals' habitats (f = 5). It is followed by, respectively, water drying up (f = 4), animals being abandoned (f = 4), air pollution (f = 3), trees drying up (f = 2), animals migrating away (f = 2), bad smells (f = 2), soil cracking (f = 1), animals not being able to take care of their offspring (f = 1), a decline of animal populations (f = 1), exhaustion of animals (f = 1), pollution of animal habitats (f = 1), desertification (f = 1), and lack of wind (f = 1).

The most frequently noted anxiety about losses in children's lives is the death of animals (f = 9). It is followed by not being able to eat meat (f = 3), not being able to cool off (f = 2), not being able to see animals and their habitats again (f = 2), not being able to breathe (f = 2), not being able to swim (f = 1), the loss of maritime transportation (f = 1), not being able to fish (f = 1), not being able to have pets at home (f = 1), not being able to have picnics (f = 1), not being able to find shade (f = 1), not being able to find clean air (f = 1), not being able

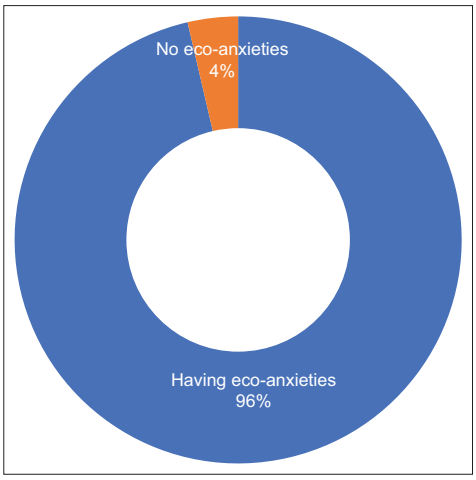

Figure 1: The eco-anxieties of the children

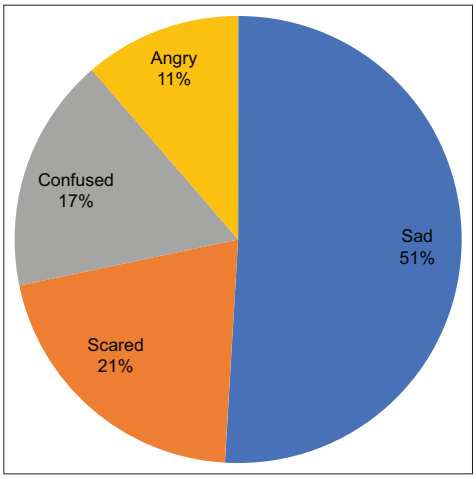

Figure 2: The distribution of the children's emotional states regarding their eco-anxieties

to produce paper (f = 1), and the loss of hiking trails (f = 1).

The most frequently noted anxiety about the loss of life is the death of animals (f = 9). It is followed by trees burning (f = 8), fish extinction (f = 6), trees' extinction (f = 1), fish dying off (f = 1), flowers burning (f = 1), and trees dying (f = 1).

The most frequently noted anxieties about human indifference are that people do not care about environmental problems (f = 5) or hunt animals (f = 3).

The most frequently noted anxiety about the loss of food is the lack of water (f = 5). It is followed by not being able to find food (f = 2), not being able to give water to animals (f = 2), and not being able to find food for animals (f = 1).

The source of anxiety noted most frequently among economic anxieties is that they will pay more for drinking water (f = 1) because they will not be able to find water.

According to the results of this study, which investigated early childhood children's eco-anxieties about drought, forest fires, and endangered species, 96% of children feel eco-anxieties

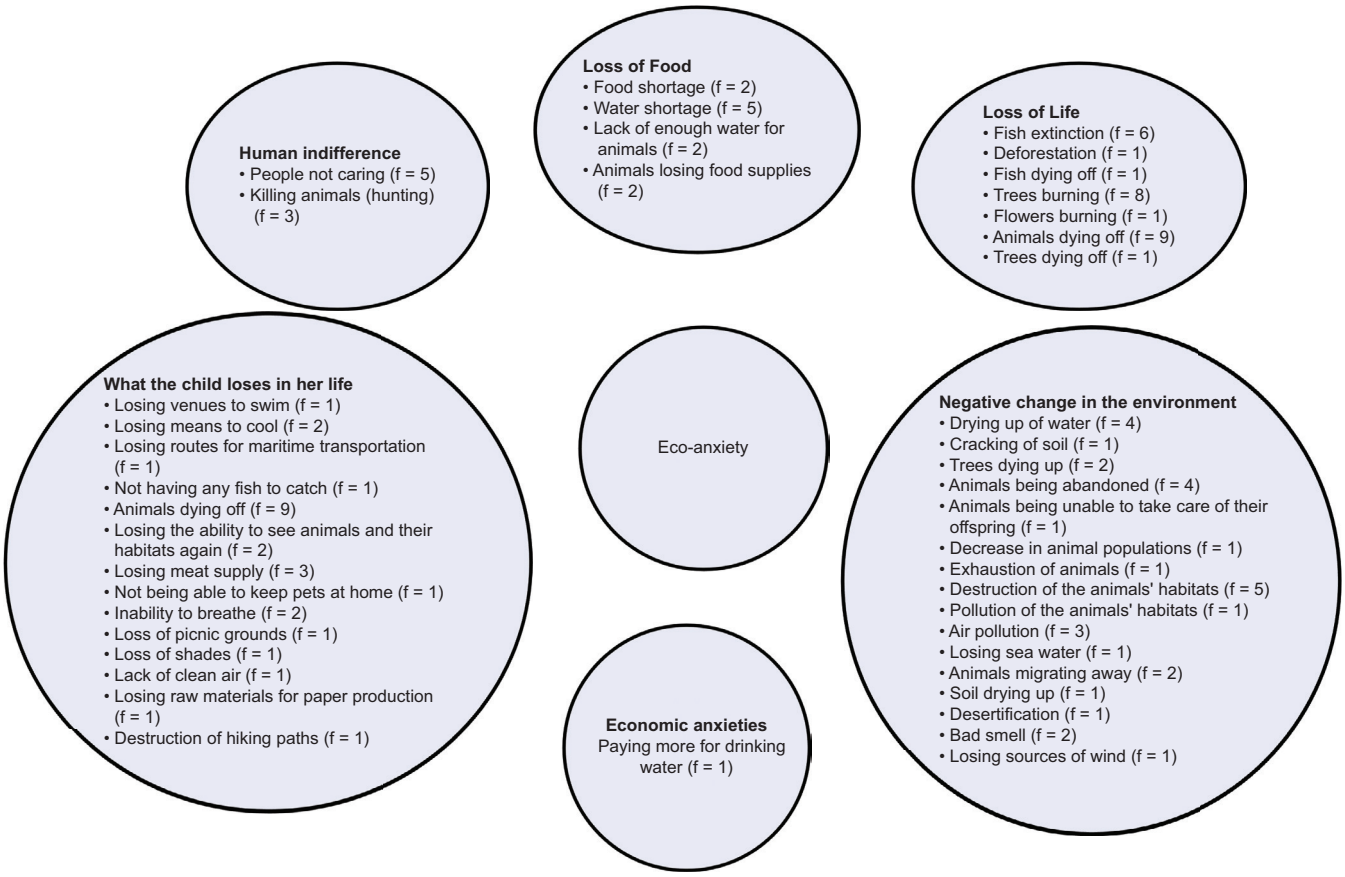

Figure 3: Causes of eco-anxieties and their thematic distribution

about these problems. The children expressed sadness, fear, confusion, and anger in this context.

DISCUSSION AND CONCLUSIONS

At the beginning of the study, children stated that they were happy and, to a much lesser extent, confused, sad, and angry. However, after they were interviewed about the environmental problem of their choice, their feelings changed, and only two children still expressed happiness.

According to the study, 27% of children have some knowledge about environmental problems. Children's sources of information are the media, family, their own observations, and school. Children's knowledge about environmental problems mostly focuses on solid waste, marine pollution, air pollution, and technological pollution.

In the study, adverse changes in the environment, losses in the child's life, loss of life, loss of food, human indifference, and economic anxiety were identified as the causes of children's eco-anxiety.

Cianconi et al. (2020) interpret eco-anxiety as a very new concept and a complex problem, while Pikhala (2020) stated that eco-anxiety includes feelings of fear, anxiety, sadness, guilt, anger, being overwhelmed, stress, and excitement. Experts generally believe that it is reasonable for individuals to experience these feelings towards environmental problems (Albrecht et al., 2011; Ojala, 2012), and the World Health Organization (2018) points out a link between environmental problems on the one hand and mental and psychosocial disturbance to people on the other. To make the issue even more crucial, even people who have not been directly exposed to any environmental problems have recently been found to be concerned about climate change (Tara et al., 2022). Furthermore, eco-anxiety studies carried out in different disciplines show that many individuals feel these emotions (Pihkala, 2020). According to the results of this study, the majority of children experience eco-anxiety along with sadness, fear, anger, and confusion. When the children who felt happy were asked why they felt happy, one mentioned the firefighter extinguishing the forest fire, and the other mentioned the possibility to move to new places due to the drought as a source of happiness. While some children may feel eco-anxiety in the face of environmental problems, others may maintain a state of denial, not caring (Pihkala, 2024), or seeing the opportunities within. The children who have not reported eco-anxieties in the present study may be in a similar place.

The increasingly widespread eco-anxiety involves feelings that are difficult for the individual to cope with and that can be challenging at times. On the other hand, anxiety, like any

other emotion, signifies a need, and that need in the context of this study may be to know that they are safe. Most forms of ecological anxiety are not pathological and have a "practical" function that leads to the search for solutions (Güneş, 2023). In other words, as with all forms of anxiety, there is an aspect of climate anxiety that alerts us to dangers and leads us to seek more information and solutions about the situation. Therefore, when analysing climate anxiety, psychopathology-focused assessments should not be limited. From a broad perspective, it will be easier to analyse the attention and social reactions pointed out by eco-anxiety (Güneş, 2023; Naveen & Tharakan, 2019). Pihkala (2020) identifies action as the antidote for eco-anxiety. According to Aslan and Kara (2023), grief, anger, and anxiety about ecology should be a starting point for the agency, pro-environmental awareness, and action. In other words, these eco-anxieties experienced by children, as demonstrated in this study, can bring about many losses, but also many skills, new friends, and a sense of doing honorable things (Pihkala, 2024). In other words, eco-anxiety can be seen as an important signal that individuals are feeling the severity of the ecological crisis. Therefore, the fact that almost all the children in the study felt eco-anxiety should be interpreted in this light.

The literature on the environment is not bereft of studies on adults' observations of children's climate-related emotions (Baker et al., 2021; Ürey and Alev, 2010; Ürey and Şahin, 2010; Verlie et al., 2020) and general observations about the effects of climate change on children's development (Burke et al., 2018; Vergunst and Berry, 2021). Climate anxiety increasingly affects people of all ages but is particularly prominent in many children and young people (Hickman et al., 2021; Ogelman and Kök, 2023; Sangervo et al., 2022). Research has shown that young people and environmental activists are more outspoken about the eco-anxieties they experience, and various surveys have indicated that people under the age of 30 and women report having more eco-anxieties (Clayton et al., 2017; Searle and Gow, 2010). Pihkala (2024) emphasizes that alongside all this information, the essential thing is to recognize the scope and depth of the challenge of climate change. Therefore, adverse changes in the environment, losses in the child's life, loss of life, loss of food, human indifference, and economic anxiety were identified as the causes of children's eco-anxiety, revealing that this research is fundamental. These data should be seen as necessary within the scope of environmental literacy. Environmental literacy is a process comprised of four stages. These are awareness (the individual cognitively and emotionally realizes the importance of the relationship with nature for the continuation of their life), anxiety (the individual worries about the problems that arise when the relationship with nature is disrupted), comprehension (the individual develops solution proposals and makes decisions armed with the knowledge about the consequences of the relationship between human beings and the nature) and action (the individual uses their knowledge to change their behavior to mitigate the effects caused by environmental problems) (Kışoğlu et al., 2010). According to this study, the participating children are at environmental literacy's awareness and anxiety stages. Although the number of children participating in the study is limited, the phases of comprehension and action development regarding environmental literacy should be addressed more broadly in environmental education programs to be prepared for children, in public information campaigns on the environment, in the media, and in the activities that children can do with their families about the environment.

Environmental problems that come with climate change are an undeniable reality that threatens all living things. Van Dooren (2016) emphasizes that humans today are witnessing an extinction event of unprecedented scale. The children participating in this study also define their anxiety in terms of extinction. The anxieties most frequently mentioned by children about the adverse environmental changes are the disappearance of the animals' habitats, drought, animals being abandoned, and air pollution. The most emphasized anxieties about the losses in their lives are animals dying off, not being able to eat meat, not being able to cool off, not being able to see the animals and their habitats again, and not being able to breathe. In terms of loss of life, they are concerned about animals dying, trees burning, and fish going extinct. The most frequently noted anxieties about human indifference are that people do not care about environmental problems and hunt animals. The most frequently emphasized anxiety about food loss are water shortages, food shortages, and insufficient water for animals. The source of anxiety noted most frequently among economic anxieties is that they will pay more for drinking water. Negative environmental changes have reached such an extent that they attract the attention of even children in early childhood. Since the study was conducted with children in early childhood, it is seen that the anxieties mentioned are issues the children at that age can relate to, based on concrete facts and their immediate environment. Children's statements about sea and air pollution are particularly noteworthy since the study was conducted in Aliağa, an industrial seaside district of Izmir province. The egocentric thinking structure of children in early childhood (Hobson, 1980; 1982) may also provide a better understanding of children's anxieties.

It is recommended that early childhood education programs, primary school life science lessons, and pre-school education programs should be prepared by considering the issue of eco-anxiety in the acquisitions for children. In addition, it is recommended to consider this as a preliminary study and to plan studies that will deepen in quantitative and qualitative design for the subject and age groups. In this study, it was not examined whether children encountered any climate problem that would create eco-anxiety. In future studies, comparative studies can be conducted with children who experience victimizations due to climate problems and children who do not experience victimizations.

Limitations

As there are various limitations in every research, this study was carried out within various limitations. This study was limited to the age range of 4–8 years old who attended school

in early childhood. It is limited to the images and questions in the data collection tool. It is limited with drought, endangered species, and forest fires among climate problems.

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