Article

Nature-Related Cognitive Schemas and Self-Reported Psychological Flourishing

Aistė Diržytė [1],* and Aidas Perminas [2]

[1] Faculty of Creative Industries, Vilnius Gediminas Technical University, Trakų str. 1, 01132 Vilnius, Lithuania

[2] Faculty of Social Sciences, Department of Psychology, Vytautas Magnus University, K. Donelaičio str. 58, 44248 Kaunas, Lithuania; aidas.perminas@vdu.lt

* Correspondence: aiste.dirzyte@vgtu.lt; Tel.: +37-061459911

check for updates

Abstract: Some sustainability-related belief systems (or schemas in Cognitive Behavior Therapy) might result in shame, guilt, or denial if a person fails to meet the standards. The psychology of Harmonization relates sustainability to flourishing but not to human misery and delineates flourishing one's own life. What nature-related cognitive schemas coexist with psychological flourishing? The purpose of this study was to identify the nature-related cognitive schemas that correlate to self-reported psychological flourishing. This paper provides some data on an overall survey (n = 722) that aimed at evaluating the cognitive schemas, strengths, and cognitive abilities of Lithuanian gymnasium students. We applied the Flourishing Scale (FS) of E. Diener alongside several measures to investigate nature-related cognitive/emotional/behavioral variables. The results revealed associations between different nature-related cognitive schemas (experiential, consumeristic, eco-protectionist, and valorist) and psychological flourishing, positive emotional reactions to nature, and spending time in nature. As this study demonstrates only positive or negative relationships among the examined variables, one of the implications for future research is identifying schemas as predictors of behavioral sustainability and creating an experimental or longitudinal design.

Keywords: flourishing; nature-related schemas; CBT; emotions; behaviors; Lithuania

1. Introduction

Cognitive schemas are information structures about oneself, objects, and one's relationships with the objects [1]. They are stored in memory [2] and might determine a person's current perceptions about their self and the world [3], behavioral responses to stimuli, and emotional well-being [4]. Cognitive schemas are essential constructs in Cognitive Behavior Therapy (CBT), which has been verified as an effective method to modify human behavior [5].

Nature's cognitive schemas are a relatively under-researched construct of a set of beliefs about nature. Authors who analyze constructs such as "nature relatedness" [6–11], "attitudes to nature" [12], "conservation attitudes" [13], "environmental attitudes" [14], "environmental values" [15], and "self-reported pro-environmental behaviors" [16] investigate the cognitive schemas of nature in terms of CBT.

Why is research on nature's cognitive schemas important? Positive nature-related cognitive schemas such as "connectedness to nature" as a dependent variable were found to be associated with empathy, emotional intelligence, and many positive behavioral factors [17,18].

In CBT, it is important to change a person's beliefs to change their behavior and emotions. By changing beliefs, behaviors (even problematical ones) and emotions can change simultaneously [19].

The constructive transformation of one's beliefs (attitudes, knowledge, and information structures) towards oneself, others, nature (and, consequently, behaviors) is central to reaching the sustainable development goals (especially well-being [18]).

The psychology of sustainability and sustainable development highlights the sustainability and sustainable development of each person, facilitating the flourishing of his/her intrapersonal talents. However, it also emphasizes the well-being and the quality of life of the environment and of each person both in the natural environment and in the other kinds of environments [18]. Thus, analyses on nature-related cognitive schemas could contribute to a better understanding of the processes facilitating personal and environmental flourishing.

Furthermore, the psychology of sustainability and sustainable development dictates that psychological processes are often involved in environmental decisions and behaviors, as well as in developing a culture of sustainability. Moreover, the internal psychological processes within an individual largely substantiate many of the related decisional and behavioral processes [17]. The CBT approach towards nature-related schemas can contribute to analyzing internal psychological processes and related environmental decisions and behaviors.

Moreover, the psychology of sustainability and sustainable development introduces a framework focused on a positive approach based on keywords such as promotion, enrichment, growth, and flexible change [17]. CBT is also based on keywords such as constructive thinking, positive behavioral change, growth, and flourishing and can serve as a complementary tool to promote the sustainable happiness of a person and society as a whole.

The psychology of sustainability and sustainable development is based on a primary prevention perspective that can foster well-being at different levels. Moreover, it sees sustainability not only in terms of the ecological and socio-economic environment but also in terms of improving the quality of life of every human being [18], which is perfectly in line with the CBT approach.

The CBT approach could have additional value, as some research suggests that variables that can be enhanced with specific training are important resources for the well-being of people in their social environments and also for the construction of positive attitudes towards the natural environment [17]. Interestingly, attitudes for achieving positive outcomes through sustainability measures were examined in an engineering context and shown to be of great significance [20].

However, the CBT based approach is a relatively new input to the field of the psychology of sustainability and sustainable development. Nevertheless, in recent decades, many authors have contributed to solid theoretical foundations on specific nature-related attitudes as promoting wellbeing and quality of life [8–10,21–25].

Many authors analyzed various aspects of belief-related variables, such as connectedness to nature [26], nature inclusive self-concept [21], metacognitive beliefs [27], future consciousness [28], environmental peer persuasion [29], and children's explorations of the meaning of death in human–animal–nature relationships [30].

Some authors explored the association between nature-related beliefs and humanity [31], religion [32], friluftsliv [33], climate change [34], socially responsible investment [35], sustainable development goals [36], environmentally responsible behaviors [37], preservation of the environment [14], sustainable behaviors [38,39], social practices [40], and aesthetic fluency [6].

Many authors analyzed the relations between nature-related attitudes and behaviors: sustainable motivational behavior [41], environmental behaviors [12], environmental actions [42], pro-environmental behavior [28,38,43–46], sustainable lifestyle and behaviors [47], environmentally responsible behaviors [7], civic behavior [28], and the "attitude – behavioral intention" gap [39].

Some authors analyzed how life experiences influence one's pro-ecological commitment [16,48] or connectedness to nature [49,50] or how pleasurable experiences in nature promote a personal connection with nature [51] and, subsequently, nature conservation in individuals [52].

Based on the findings listed above (to name a few), it can be summarized that beliefs about nature are either (1) the result of emotionally significant experiences in nature, (2) the result of decisions

made by the remote monitoring of nature (TV, Internet, etc.), or (3) learned in the immediate social environment. If beliefs about nature are not positive (especially, not encompassing nature-compassion), then behavioral responses to nature might be not compatible with sustainable development goals.

As noted by many authors, nature's cognitive schemas are usually based on early childhood experiences in nature. Many authors have explored how nature's perception relates to experiences in nature [13,53]. A child's proximity to nature might result in reduced stress levels [54] and enhanced emotional well-being [55].

If a person experiences relaxation and joy in nature as a child, activities in nature can be adopted as a way of coping with stress in adulthood. Conversely, if the experience in nature was not pleasurable but caused tension, irritation or even fear, nature might not be perceived as a coping resource. Many authors indicate that nature-related experiences can vary in many ways, including self-reported transcendent dimensions [22,48,56].

Nature's cognitive schemas are also related to decision-making based on information in media networks. If a person grows up in an urban environment and learns about nature mainly through the accumulation of information through the media, then his or her subsequent decision-making depends on the specifics of the information provided (information elements) and how the individual understands the information provided (cognitive elements). Some of this information may be emotionally stimulating, and this information will likely have a major influence on the formation of nature's cognitive schemas.

The development of nature's cognitive schemas can also be influenced by "significant others": A person may "learn" particular attitudes towards nature from referent social surroundings, i.e., parents or friends. If authorities like parents who run businesses have an attitude that "we can secretly dump garbage into the water because it is profitable for our business", then their children can learn the same approach. Moreover, children can learn that outdoor activities are dangerous and should be avoided if their respected educators have the relevant cognitive schemas [57].

CBT has recently been highlighted as an important premise for schema change and resulting behavioral modifications: A reliable schema change is only possible if the alteration is based on emotional stimulation. In other words, educational measures are not sufficient. The meaning of life cannot be logically demonstrated to an individual, nor can the value of nature, compassion, or sentient compassion (in Paul Ekman's words [58]). It likewise cannot be reasonably demonstrated, for example, that "other people need to be loved and treated well" or "behavior must be sustainable" [38]. Similarly, a person will need a new emotional experience to stop their suicidal attempts and to change the thought that "life is meaningless" to "life makes sense".

Thus, compassionate human behavior towards oneself, each other, and nature requires appropriate cognitive schemas. What kind of nature-related cognitive schemas are significantly contributing to sustainability and might facilitate the sustainable development goals and discontinuation of global warming?

The purpose of CBT is usually to transform a person's non-adaptive cognitive schemas into adaptive ones. What nature-related cognitive schemas are adaptive and what ones are non-adaptive? Eating meat is not adaptive in terms of global warming, but some scientists consider it adaptive in terms of human health. Frequent travel by plane or even by car is not adaptive in terms of global warming but can be adaptive for travelers. Can a large part of humanity be expected to become vegetarians or stop traveling because meat production and frequent travel by plane or car are contributing to global warming?

Studies show that people, consciously or unconsciously, usually choose what they find useful and enjoyable, even if it does not conform to their declared values. In terms of CBT, their behavior is directed not by their declared principles or moral standards (for example, sustainability) but basic cognitive schemas. To ensure sustainability, it is important to decide what kind of nature-related cognitive schemas are adaptive to a major part of humanity. The theory of harmonization proposes a

balanced view approach, which suggests integrating diversity through the concordance of discordant elements [59].

As discussed above, some attitudes or "sustainability values" that are beneficial for stopping global warming might induce feelings of shame or guilt, e.g., if a person eats meat or travels frequently by plane. In that case, the thinking process might be as follows: "People who behave in line with sustainability values are good" –> "I cannot behave according to sustainability values" –> "I do not meet my standards of sustainable behavior" –> possible emotional reactions of sadness, guilt, shame, hopelessness, and helplessness. Similarly, observing the behaviors of others might provoke feelings of anger, disgust, or hate: "People who behave in line with sustainability values are good" –> "someone does not behave according to sustainability values" –> "someone does not meet the standards of sustainable behavior" –> possible emotional reactions of antipathy, irritation, or even hatred. Thus, instead of creating sustainable happiness for all, sustainability-related attitudes might contribute to distorted self-images (or subjective identity forms) and create unhappiness at the individual, interpersonal, or group levels.

The psychology of harmonization relates sustainability to flourishing, but not to human misery, and delineates flourishing one's own life, relationships, environments, and flourishing in one's future [59]. What nature-related cognitive schemas coexist with psychological flourishing?

As noted by Di Fabia and Rosen (2018), "the psychology of sustainability and sustainable development is a new research area that can contribute to expanding the horizons of sustainable development and related disciplines. Enriching sustainable development through opening the black box of psychological processes in support of the science of sustainable development is a new and exciting frontier, that will likely lead to major developments and concrete advances for making development more sustainable in the 21st century and beyond" [17].

Based on the psychology of harmonization approach and the literature review, we have grouped nature-related cognitive schemas into four types and given them the following names: eco-protectionist schemas (reflecting thoughts that nature has to be preserved and protected) [13,16,21], experiential schemas (reflecting thoughts on "a special connection" to nature) [6–11,21–23,31], valorist schemas (reflecting thoughts on the importance of caring of nature) [46,60], and consumeristic schemas (reflecting thoughts on "ruling over nature" and that nature has unlimited resources that can be used for the needs of humans) [14,15].

In this study, we aimed to identify nature-related cognitive schemas that correlate to self-reported psychological flourishing. We hypothesized that (H1) there are significant positive associations between self-reported psychological flourishing and cognitive nature-related schemas and that there might be significant differences in nature-related schemas in different self-reported psychological flourishing groups. Then, we hypothesized that (H2) cognitive nature-related schemas are related to emotional reactions to nature and behaviors (namely, spending leisure time in nature). Finally, we hypothesized that (H3) cognitive nature-related schemas are significant predictors of flourishing.

2. Materials and Methods

2.1. Sample

Our sample consisted of 722 Lithuanian gymnasium students. Here, we provide just some data from the overall survey that aimed at evaluating cognitive schemas, strengths, and cognitive abilities. Overall, data from seven different schools were collected in the Vilnius and Telšiai regions. The mean age of the respondents was 16.61 years (±1.24 SD), and 62.9% of respondents were female. Students completed an online-gamified questionnaire at www.kasesu.lt. We informed the participating schools, students, and their parents about the anonymous and voluntary participation, and the respondents (or their parents, when necessary) provided their consent. The procedure was administered online at www.kasesu.lt by "Blue Bridge", Ltd., J. Jasinskio g. 16A, LT-03163 Vilnius, Lithuania, and followed the General Data Protection Regulation (GDPR) guidelines. Before data gathering, this study was

reviewed and approved by the research ethics board of the Institute of Management and Psychology and by experts at the Lithuanian Agency for Science, Innovation and Technology.

2.2. Measures

2.2.1. Self-Reported Psychological Flourishing

We applied the Flourishing Scale (FS) of Ed Diener et al. [61] consisting of 8 items. The Flourishing Scale is a measure of the respondent's self-perceived success in important areas such as relationships, self-esteem, purpose, and optimism. The scale provides a single psychological well-being score. In our study, the response pattern followed a 5-point Likert scale ranging from 5 (totally agree) to 1 (totally disagree). This scale includes the following items: "I lead a purposeful and meaningful life", "My social relationships are supportive and rewarding", "I am engaged and interested in my daily activities", "I actively contribute to the happiness and well-being of others", "I am competent and capable in the activities that are important to me", "I am a good person and live a good life", "I am optimistic about my future", and "People respect me". Cronbach's alpha for the FS items was 0.83.

2.2.2. Nature-Related Cognitive Schemas

To assess *consumeristic* nature-related cognitive schemas, we applied a 4-item subscale from the Ethical Attitudes Toward Business Questionnaire of Lourenço et al. [62]. The response pattern followed a 5-point Likert scale ranging from 5 (totally agree) to 1 (totally disagree). In our study, the scale included the following items: "Mankind was created to rule over the rest of nature", "Humans need not adapt to the natural environment because they can remake it to suit their needs", "Humans must not live in harmony with nature to survive" (reversed), and "The earth is like a spaceship with unlimited room and resources" (reversed). Cronbach's alpha for the items was 0.89.

To assess *eco-protectionist* nature-related cognitive schemas, we applied the "ecological protection" dimension modified 8-item scale derived from the Value Questionnaire of Kunzmann and Baltes [63]. The instructions are as follows: "For each statement, indicate how much would you like to be as a person described below" and "For each statement, indicate how much you are as a person described below". Responses are provided on a scale ranging from 1 (not at all) to 5 (very much). The scale includes the following items: "He/she is helping to protect the environment", "He/she is helping to preserve the beauty of nature", "He/she is living in harmony with nature", and "He/she is helping to protect endangered animals and plants". The Cronbach's alpha for the items was 0.91.

To assess *valorist* nature-related cognitive schemas, we applied recommendations for the Value Survey, 40 PVQ Items from S.H. Schwartz [64] (2007), and used 2 items of Universalism values subscale, no 19 and no 40. The instructions suggested by S.H. Schwartz are as follows: "Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Tick the box to the right that shows how much the person in the description is like you. How much is this person like you?" Responses are provided on a scale ranging from 1 (not like me at all) to 5 (very much like me). Moreover, we asked a supplementary question: "How much do you like this person?" Responses are provided on a scale ranging from 1 (not at all) to 5 (very much). The scale includes the following items: (19) "He/she strongly believes that people should care for nature. Looking after the environment is important to him/her" and (40) "It is important to him to adapt to nature and to fit into it. He believes that people should not change nature". Cronbach's alpha for the 4 items was 0.82.

To assess *experiential* nature-related cognitive schemas, we developed a 5-item scale. The response pattern followed a 5-point Likert scale ranging from 5 (totally agree) to 1 (totally disagree). This scale includes the following items: "I like being in nature, enjoying it, or taking care of it", "I feel a special connection with nature, as if I was a part of it and it was a part of my life", "I like doing something in nature", "Other people may think that I am a complete 'child of nature', maybe even away from civilization, but I just enjoy feeling well or activities in nature", and "When I experience a great deal of stress, being in nature helps me feel better". Cronbach's alpha for the items was 0.85.

In this study, we did not apply some established validated measures, such as NIM [21], because of cultural aspects, e.g., the majority of Lithuanian students have never seen oceans or real mountains (just on the internet or TV).

To assess the emotional responses to nature, we applied an additional question: "How do you like activities in nature?" We developed a response pattern based on pictures, which were visualized by our team and can be used for research purposes without our special permission. Responses are provided using two pictures (see Figure 1) that have the meanings of "disgust" (1) and "interest–excitement" (2).

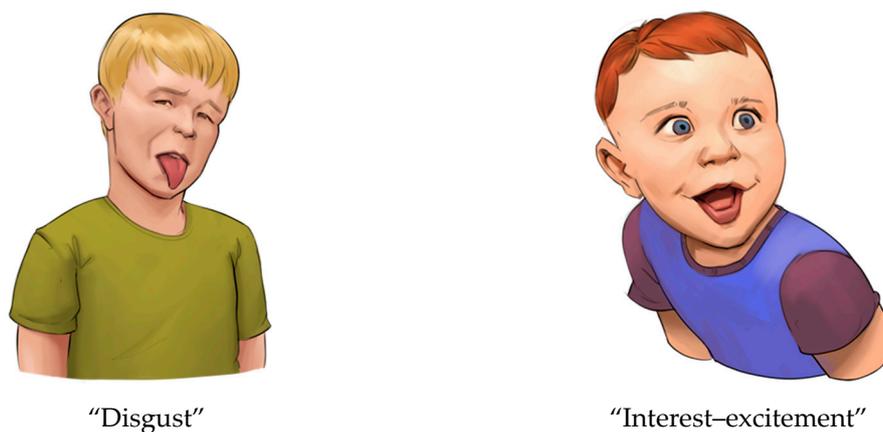　　　　　　　　　"Disgust"　　　　　　　　　　　　　　　　　　"Interest–excitement"

Figure 1. Emotional responses to nature.

In our survey, 13.5% of respondents reported "disgust" towards the activities in nature, and 86.5% reported "interest–excitement".

To assess the behavioral responses to nature, we applied the following items: "In my leisure time, I usually spend time in nature", and "In my leisure time, I usually spend time in parks". Respondents provided "yes" or "no" answers. In total, 38.6% of respondents reported that they usually spend their leisure time in nature, while 15.4% reported that they spend time in parks, and 21.9% reported that they spend time in nature but not in parks. All respondents who reported that they spend time in nature and parks also reported "interest–excitement" towards nature.

2.3. Statistical Analyses

We used the SPSS and AMOS 26.0 programs for data analysis. A Shapiro–Wilk test showed a significant departure from normality for the variables of psychological flourishing, W (160) = 0.944, $p < 0.001$; eco-protectionist nature-related schemas, W (160) = 0.968, $p = 0.001$; valorist nature-related schemas, W (160) = 0.942, $p < 0.001$; consumeristic nature-related schemas, W (160) = 0.905, $p < 0.001$; and experiential nature-related schemas, W (160) = 0.906, $p < 0.001$. Similarly, the Kolmogorov-Smirnov test showed that the data were non-normally distributed for the variables of psychological flourishing, D (160) = 0.091, $p = 0.002$; eco-protectionist nature-related schemas, D (160) = 0.088, $p = 0.004$; valorist nature-related schemas, D (160) = 0.104, $p < 0.001$; consumeristic nature-related schemas, D (160) = 0.149, $p < 0.001$; and experiential nature-related schemas, D (160) = 0.130, $p < 0.001$.

As the data were not normally distributed, we used nonparametric statistics: a Mann–Whitney (U) test and a Kruskal–Wallis (H) test to compare the results between groups. Spearman rho nonparametric correlations were calculated to evaluate the associations between the variables. A K-means cluster analysis was applied to group the respondents into low, medium, and high self-reported psychological flourishing groups for the variance analysis. As mentioned above, we also calculated the internal consistency of all variables (Cronbach's alpha). As the sample was not small (n > 25), a multiple linear regression was also calculated to predict flourishing based on nature-related schemas. As the authors of this paper did not intend to develop and validate a distinct measure of nature-related cognitive schemas, only some selected results for the CFA and SEM are presented.

3. Results

Table 1 presents a descriptive analysis (means and standard deviations) of all study variables.

Table 1. Means and standard deviations of nature-related schemas and self-reported psychological flourishing.

	Mean	Std. Deviation
Psychological Flourishing	3.9058	0.64988
Experiential nature-related schemas	3.9090	0.90858
Consumeristic nature-related schemas	2.3708	1.21065
Valorist nature-related schemas	3.9028	0.75674
Eco-protectionist nature-related schemas	3.6983	0.79200

Spearman correlations between psychological flourishing and nature-related cognitive schemas were calculated (see Table 2).

Table 2. Spearman correlations of psychological flourishing and nature-related cognitive schemas.

		Psychological Flourishing	Experiential Nature-Related Schemas	Consumeristic Nature-Related Schemas	Valorist Nature-Related Schemas
Experiential nature-related schemas	r_s	439 **		.	
	p	0.000			
Consumeristic nature-related schemas	r_s	0.146	−0.006		
	p	0.050	0.937		
Valorist nature-related schemas	r_s	0.212 **	0.331 **	−0.341 **	
	p	0.006	0.000	0.000	
Eco-protectionist nature-related schemas	r_s	0.357 **	0.373 **	−0.126	0.631 **
	p	0.000	0.000	0.073	0.000

**⎯Correlation is significant at a 0.01 level (2-tailed).

The Spearman correlations indicated that there was a significant positive association between self-reported psychological flourishing and experiential nature-related schemas (rs = 0.44, $p < 0.001$), valorist nature-related schemas (rs = 0.21, $p = 0.006$), and eco-protectionist nature-related schemas (rs = 0.35, $p < 0.001$).

The Spearman correlations also indicated that there was a significant positive association between eco-protectionist nature-related schemas and experiential nature-related schemas (rs = 0.37, $p < 0.001$), as well as valorist nature-related schemas (rs = 0.63, $p < 0.001$). There were significant negative associations between valorist nature-related schemas and consumeristic nature-related schemas (rs = −0.34, $p < 0.001$).

Next, a K-Means Cluster analysis grouped the cases into three groups: (1) the medium (n = 205) psychological flourishing group (final cluster center was 3.68), (2) the minimum (n = 52) psychological flourishing group (final cluster center was 2.73), and 3) the high (n = 185) psychological flourishing group (final cluster center was 4.49).

A Kruskal–Wallis H test showed that there were statistically significant differences in the valorist nature-related cognitive schemas between the psychological flourishing groups H (2) = 7.142, $p = 0.028$, with a mean rank score of 81.93 for the medium psychological flourishing group, 63.61 for the low psychological flourishing group, and 93.90 for the high psychological flourishing group. We then conducted post hoc tests to test pairwise comparisons. We found that valorist nature-related cognitive schemas in the medium psychological flourishing group were not significantly different from the low psychological flourishing group ($p = 0.368$) and the high psychological flourishing group ($p = 0.406$).

Groups of low psychological flourishing and high psychological flourishing were significantly different ($p = 0.030$).

A Kruskal–Wallis H test also showed that there were statistically significant differences in the eco-protectionist nature-related cognitive schemas between psychological flourishing groups H (2) = 20.742, $p < 0.001$, with a mean rank score of 77.15 for the medium psychological flourishing group, 47.00 for the low psychological flourishing group, and 98.18 for the high psychological flourishing group. Post hoc pairwise comparisons showed that the medium psychological flourishing group was significantly different from the low psychological flourishing group ($p = 0.034$) and the high psychological flourishing group ($p = 0.025$). Groups of low psychological flourishing and high psychological flourishing were also significantly different ($p < 0.001$).

A Kruskal–Wallis H test further showed that there were statistically significant differences in the experiential nature-related cognitive schemas between psychological flourishing groups H (2) = 49.689, $p < 0.001$, with a mean rank score of 130.55 for the medium psychological flourishing group, 79.94 for the low psychological flourishing group, and 182.93 for the high psychological flourishing group. Post hoc tests of pairwise comparisons revealed that the medium psychological flourishing group was significantly different from the low psychological flourishing group ($p = 0.002$) and high psychological flourishing group ($p < 0.001$). Groups of low psychological flourishing and high psychological flourishing were also significantly different ($p < 0.001$).

However, there were no statistically significant differences in consumeristic nature-related cognitive schemas between the different psychological flourishing groups H (2) = 1.775, $p = 0.412$.

Next, we analyzed the differences in self-reported psychological flourishing and nature-related cognitive schemas when comparing the groups (see Table 3) based on emotional reactions to nature, such as "disgust" (1) and "interest–excitement" (2).

Table 3. Mann Whitney (U) test comparisons based on emotional reactions to nature.

	Emotional Reactions to Nature	N	Mean Rank	Sum of Ranks	Mann–Whitney U	Wilcoxon W	Z	p
Flourishing		51	132.56	6760.50	5434.500	6760.500	−3.986	0.000
		326	197.83	64492.50				
	Total	377						
Experiential nature-related schemas		40	91.65	3666.00	2846.000	3666.000	−4.504	0.000
		254	156.30	39699.00				
	Total	294						
Eco-protectionist nature-related schemas		22	61.98	1363.50	1110.500	1363.500	−2.146	0.032
		141	85.12	12002.50				
	Total	163						

Grouping variable: emotional reactions to nature.

The Mann–Whitney U test indicated that the participants with an emotional reaction to nature of "interest–excitement" demonstrated higher psychological flourishing than participants whose reaction was "disgust" (the mean ranks were 132.56 for "disgust" and 197.83 for "interest–excitement", respectively; U = 5434.500, Z = −3.9861, $p < 0.001$).

The Mann–Whitney U test also revealed that participants with an emotional reaction to nature of "interest–excitement" demonstrated more expressed experiential nature-related schemas than participants whose reaction was "disgust" (the mean ranks were 91.65 for "disgust" and 156.30 for "interest–excitement", respectively; U = 2846,000, Z = −4,504, $p < 0.001$).

In addition, Mann–Whitney U test showed that participants with an emotional reaction to nature of "interest–excitement" demonstrated more expressed eco-protectionist nature-related schemas than participants whose reaction was "disgust" (the mean ranks were 61.98 for "disgust" and 85.12 for "interest–excitement", respectively; U = 1110,500, Z = −2,146, $p = 0.032$).

However, the Mann–Whitney U test did not reveal statistically significant differences between the consumeristic and valorist nature-related schema groups.

Next, we analyzed the differences in self-reported psychological flourishing and nature-related cognitive schemas when comparing the groups based on the behavioral factor, namely, spending leisure time in nature. The Mann–Whitney U test indicated no significant differences in flourishing, consumeristic nature-related cognitive schemas, or eco-protectionist nature-related cognitive schemas based on the behavioral variable. However, participants who spend their leisure time in nature demonstrated more expressed experiential nature-related schemas (the mean ranks were 171.16 for "spending leisure time in nature" and 130.95 for "spending leisure somewhere else", respectively; U = 7604.000, Z = −4.020, $p < 0.001$). Similarly, the Mann–Whitney U test indicated significant differences in valorist nature-related schemas (the mean ranks were 116.97 for "spending leisure time in nature" and 98.46 for "spending leisure somewhere else", respectively; U = 4432.000, Z = −2.181, $p = 0.029$).

Table 4. Multiple regression model: The dependent variable is flourishing, and the predictors are nature-related cognitive schemas.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Std. Error	Beta		
A. Multiple regression with 4 predictors: experiential, consumeristic, valorist, and eco-protectionist schemas					
(Constant)	1.785	0.321		5.558	0.000
Experiential schemas	0.296	0.057	0.385	5.187	0.000
Consumeristic schemas	0.082	0.042	0.141	1.970	0.051
Valorist schemas	−0.008	0.085	−0.009	−0.094	0.925
Eco-protectionist schemas	0.219	0.077	0.251	2.828	0.005
R = 0.546; R Square = 0.298; Adjusted R Square = 0.280; Std. Error of the Estimate = 0.59348; F (4,155) = 16.478, $p < 0.001$					
B. Multiple regression with 2 predictors: experiential and eco-protectionist schemas					
(Constant)	1.992	0.260		7.654	0.000
Experiential schemas	0.306	0.056	0.398	5.423	0.000
Eco-protectionist schemas	0.197	0.064	0.227	3.093	0.002
R = 0.527; R Square = 0.278; Adjusted R Square = 0.269; Std. Error of the Estimate = 0.59809; F (2,157) = 30.263, $p < 0.001$					

Furthermore, we conducted a multiple linear regression using flourishing as the criterion and nature-related schemas as the predictors (Table 4).

As consumeristic and valorist schemas did not contribute significantly to the model (A), a multiple linear regression was calculated to predict flourishing based on experiential nature-related schemas and eco-protectionist nature-related schemas (B). A significant regression equation was found (F (2, 157) = 30.263, $p < 0.000$) with an $R^2 = 0.278$. The respondents' predicted flourishing was equal to

1.992 + 0.197 (eco-protectionist schemas) +0.306 (experiential schemas) points. Flourishing increased by 0.306 points for each experiential schema point. Both experiential nature-related schemas (B = 0.306, *p* < 0.000) and eco-protectionist nature-related schemas (B = 0.197, *p* < 0.002) contributed significantly to the model and were significant predictors of flourishing.

Moreover, we created a model on associations between the latent construct of experiential nature-related schemas and the observed flourishing, valorist, eco-protectionist, and consumeristic schemas. The experiential nature-related schemas were specified as latent constructs, with the other variables specified as observed variables because the experiential schema measure was developed by our research team, while the other schemas and flourishing types were assessed by the established measures of other authors (E. Diener, F. Lourenço et al., U. Kunzmann and P.B. Baltes, S.H. Schwartz). Some standardized and unstandardized coefficients of the variables are presented in Table 5.

Table 5. Standardized and unstandardized estimates of the selected variables.

			Unstandardi-Zed	S.E.	Standar-Dized	*p*
Experiential	→	Ecoprotectionist	0.3381	0.0757	0.3493	0.000
Experiential	→	Enjoy spending time in nature	1.0000		0.8438	
Experiential	→	Feel special connection to nature	1.0843	0.0761	0.7869	0.000
Experiential	→	Enjoy activities in nature	0.8870	0.0652	0.7545	0.000
Experiential	→	Feel like "a child of nature"	1.0039	0.0885	0.6468	0.000
Experiential	→	Nature helps to cope with stress	0.5105	0.1104	0.3716	0.000
Experiential	→	Flourishing	0.1860	0.0395	0.3011	0.000
Eco-protectionist	→	Flourishing	0.0993	0.0448	0.1556	0.0268
Experiential	→	Valorist	0.3451	0.0722	0.3691	0.000
Experiential	→	Consumeristic	0.0190	0.1172	0.0125	0.8713
e9	↔	e8	0.2735	0.0423	0.5453	0.000

The standardized results of the model for the associations between the flourishing and nature-related cognitive schemas are presented in Figure 2. To assess the model fit, the Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker–Lewis coefficient (TLI), and Root Mean Square Error of Approximation (RMSEA) were used. Values higher than 0.90 for CFI, NFI, and TLI, and values lower than 0.08 for RMSEA, are indicative of an acceptable fit. The findings revealed that the fit of the model was acceptable ($\chi 2$ = 93.458; DF = 25; TLI = 0.851; NFI = 0.890; RMSEA= 0.0598 [0.0471 – 0.0730]; CFI = 0.939).
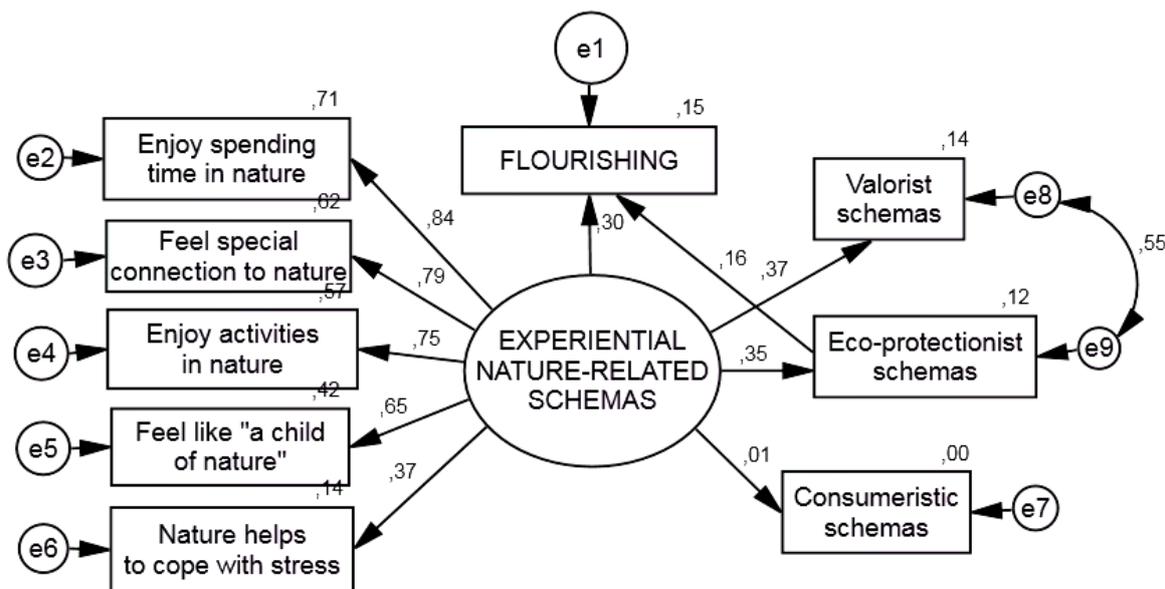

Figure 2. Standardized results of the model for the associations between flourishing and nature-related cognitive schemas.

The model indicates that experiential nature-related schemas are the strongest predictor of an increase in flourishing (compared to other nature-related cognitive schemas), even though there are significant associations between experiential, valorist, and eco-protectionist nature-related schemas. The high correlation between the valorist and eco-protectionist schemas (see Table 2) suggests an e8 and e9 relationship. Keeping in mind the results of the multiple regression and correlation analyses and the findings of many authors suggesting that eco-protectionism, nature conservation, and nature stewardship contribute to flourishing, we also assumed that eco-protectionist schemas are related to flourishing. Furthermore, consumeristic schemas have a non-significant path coefficient for experiential nature-related schemas. Table 2 also reveals that there are no significant correlations between these two types of schemas. We chose to demonstrate this path because it confirms that thoughts on "a special connection to nature" do not coexist with the thoughts on consumeristic "ruling over nature".

4. Discussion

The current study aimed to examine nature-related cognitive schemas and their associations with psychological flourishing and emotional and behavioral reactions to nature.

Based on the literature, we assumed that nature-related cognitive schemas could be grouped into several groups: eco-protectionist nature-related schemas, valorist nature-related schemas, consumeristic nature-related schemas, and experiential nature-related schemas. These schemas have presumptive underlying beliefs that can be summarized as: "I want to protect the nature" (eco- protectionist), "It is important to care about nature" (valorist), "I can do whatever I want with nature recourses" (consumeristic), and "I enjoy being in nature" (experiential). Different cognitive schemas reflect different emotional experiences but also might predict different cognitive–behavioral strategies for the future. The impact of different nature-related cognitive schemas on sustainable behavior might be a question for future research.

Furthermore, we presumed that positive experiences in nature result in positive nature-related cognitive schemas. The results showed that experiential nature-related cognitive schemas are significantly associated with psychological flourishing, positive emotional reactions to nature, and spending time in nature, which is in line with our expectations. This was confirmed by the results of the Spearman correlation, Kruskal–Wallis (H), and Mann–Whitney (U) analyses. The results obtained are related to the previous theoretical knowledge and most research findings that point to the existence of a relationship between specific beliefs and experience.

Moreover, our results accurately identify differences in eco-protectionist nature-related schemas, valorist nature-related schemas, consumeristic nature-related schemas, and experiential nature-related schemas between medium, low, and high psychological flourishing groups. These findings are related to the previous theoretical findings and most research findings suggesting a relationship between certain dimensions of beliefs and psychological flourishing.

As Aguilar-Luzón, M. del C., and Benítez, I [23] (2018) state, "person–environment interaction involves so many factors that it requires solid theoretical foundations to understand the variables associated with this interaction". For the last decade, many authors have contributed to developing solid theoretical foundations on person–environment interactions. Some authors analyzed cognitive/emotional nature connectedness as a vehicle for promoting wellbeing and quality of life [21,23]. Some research was focused on mediating factors, such as meaning in life as a mediator of the relationship between connectedness to nature and well-being [24].

An interesting ecopsychology approach was proposed by St. John D. and MacDonald D.A. in 2007. The authors offered a Nature Inclusive Measure (NIM) that was developed by creating a pool of nature-related self-descriptive statements. They found that their "nature inclusive self-concept" (namely, "nature inclusiveness" and "nature stewardship") can predict mental, physical, and spiritual well-being [21]. Their findings are perfectly in line with the CBT approach and confirm the premise that one's belief system is the main predictor of wellbeing.

Interestingly, Holli-Anne Passmore proposed six existential anxieties of identity, happiness, isolation, meaning in life, freedom, and death (Eco-Existential Positive Psychology) and suggested that affiliating with nature allows people to be fully flourishing human beings [25].

O. Navarro et al. found that connectedness to nature fosters spirituality and personal wellbeing and that sustainable behavior is explainable by connectedness to nature and spirituality, while behavior, in turn, favors personal wellbeing [22].

Some authors reasonably hypothesized that "human beings have a basic psychological need for nature relatedness; this proposition could have positive benefits for human well-being, the way we design human environments and communities" [8].

Some authors also suggested exploring nature relatedness as a contributor to subjective well-being [9] (mental, physical, or spiritual wellbeing [21]) or holistic wellness [10]. Some research explored the association between connectedness to nature and humanity [31], religion [32], and friluftsliv [33]. Thus, our research added to investigations on person–environment interactions and wellbeing.

Furthermore, in recent decades, much interesting research has been focused on nature-related beliefs, attitudes, and values. Researchers analyzed the intercorrelations and impact of nature-related beliefs on decision making, behavior, and other (non-environmental) beliefs.

Brownlee M. T. et al. analyzed the processes that influence beliefs on climate change [34]. Jansson M. et al. explored investment institutions' beliefs about, and attitudes toward, socially responsible investment [35]. Guan T. et al. analyzed public attitudes toward sustainable development goals [36]. Kilbourne W. and Pickett G. demonstrated that materialism has a negative effect on environmental beliefs and that these beliefs positively affect environmental concerns and environmentally responsible behaviors [37]. Jung H. et al. demonstrated attitude's effects on sustainable behaviors [39].

Interestingly, Whitley C. T. et al. established that "one's values matter in environmental decision-making, but different values are associated with different behaviors; those who adhere to biospheric and altruistic values were more likely to engage in a range of sustainability behaviors whereas those who adhere to egoistic values were less likely to engage in most behaviors" [38].

Based on interviews with the inhabitants of rural places, El-Hajj R. et al. found that respondents explained that their environmental consciousness as a type of 'habitus'—an ethos regulating all social practices [40]. Atari M. et al. hypothesized that nature relatedness can even predict a significant amount of variance in aesthetic fluency [6].

Some authors focused on identifying groups of nature-related beliefs or concentrated on specific beliefs. Ajdukovic I. et al. applied the Environmental Attitude Inventory (EAI) and explored the utilization and preservation of the environment [14].

Analyzing the environmental values and attitudes of rural Nepalese children, S. Regmi et al. found that the relationship between environmental preservation and utilization values is strong. However, the negative correlation of −0.93 in rural Nepal suggested that children usually hold either a preservation value or a utilization value, but not both [15].

Shin F. and Preston J. L. found that reading the pro-environmental encyclical by Pope Francis increased participants' beliefs in, and moralization of, climate change, but this was moderated by their favorable attitudes toward the Pope. The authors concluded that "environmental attitudes can be shaped by views of religious authorities and present an optimistic view that environmental stewardship can be used to improve concern for climate change among religious believers" [56].

Much research has been concentrated on belief-related variables, such as connectedness to nature [26], a nature inclusive self-concept [21], metacognitive beliefs, environmental demands, subjective stress states [27], future consciousness [28], environmental peer persuasion [29], and children's explorations of the meanings of death in human–animal–nature relationships [30].

Hence, our research also contributed to research on nature-related beliefs and attitudes—values that were presumed to be nature-related cognitive schemas in our approach.

Next, much past research investigated nature-related behavioral variables, such as sustainable motivational behavior [41], the relationship between attitudes and the environmental behaviors of key Great Barrier Reef user groups [12], institutionalized collective action and the relationship between beliefs about environmental problems and environmental actions [42], media use, environmental beliefs, self-efficacy, pro-environmental behavior [43], the effects of social normative beliefs on environmental behavior [44], using an agent-based model to investigate climate skepticism and pro-environmental behavior [45], the consumer "attitude–behavioral intention" gap [39], young travelers' intentions to behave pro-environmentally [46], sustainability behaviors among college students [38], sustainable lifestyles and behaviors [47], Turkish children's environmentally responsible behaviors, nature relatedness, motive concerns [7], and social future-oriented behaviors (such as pro-environmental and civic behavior) [28].

In recent decades, some research was centered on environmental issues and emotions. Researchers have analyzed children's affective attitudes toward nature [53], their emotions when making decisions about how to behave pro-environmentally [23], the effects of emotions on the generation of environmental arguments [65], and the role of emotion in turning learning into action [66]. Our study on emotional reactions to nature and their related variables contributes to this body of research, but our findings need further investigation.

In the past decade a large quantity of research has analyzed experiences in nature. Some authors analyzed how significant life experiences influence people who develop pro-ecological commitments [48] or how social experiences are related to children's intergroup attitudes [67]. Some authors explored the psychological rewards of a familiar semirural landscape [68] and the interactions and interconnectedness of human and environmental health [69]. The authors found that pleasurable experiences in nature are suspected to promote a personal connection with nature and, subsequently, nature conservation in individuals [52], which is in line with our findings.

Various studies were conducted by Richardson M. and Sheffield [49] (2017) and Aspy D. J. and Proeve M. [50] (2017). Richardson M. et al. conducted an intervention aimed at noting the good things in nature every day and concluded the following: "participants noted three good things in nature each day for five days and a control group noted three factual things. The intervention group showed sustained and significant increases in nature connectedness compared to the control group. Increases in nature connectedness were associated with psychological health improvement in the intervention group. Noting the good things in nature each day can deliver sustained increases in people's connection with nature" [49].

An experiment involving 115 undergraduate students was conducted by Aspy D. J. and Proeve M. to explore the effects of meditation on social connectedness, nature connectedness, and affect. Participants listened to mindfulness meditation (MM), loving-kindness meditation (LKM), or progressive muscle relaxation (active control group). The participants in the MM and LKM groups reported greater social and nature connectedness post-test than those in the control group [50].

Rosa C. D. et al. explored whether nature-based experiences lead to self-reported pro-environmental behaviors and whether this relation is mediated by connectedness to nature. According to their findings, "greater contact with nature during childhood is associated with greater contact with nature as an adult, which, in turn, is positively associated with a connectedness to nature and pro-environmental behaviors. The stimulation of pleasant experiences while in direct contact with nature during childhood seems to trigger interactions with nature in adulthood and consequently, adults embrace pro-environmental actions" [16].

It was also found that "environmental perceptions are associated with how people experience the environment and relate to its psychosocial dimension, encompassing cognition and affect towards the environment; children display a similar way of representing nature that does not appear to be significantly linked to their place of residence, furthermore, the majority of them associate nature with positive affect" [51]. These results are in line with our research.

Furthermore, for the last decade, some research has focused on nature-related educational issues. Researchers have analyzed the effects of educational programs on children's connectedness with nature [70], career selection decisions [71], and environmental educational initiatives, with a focus on green values and how science motivation relates to environmental values [60], fostering connectedness to nature in higher education [72], and promoting connectedness with nature through environmental education [73].

Our research did not investigate educational issues. However, some authors suggest that "environmental education does not automatically lead to connectedness" [72] and "to motivate the population, an explicitly high ecological identity alone is not sufficient" [45]. We hope that our study on nature-related cognitive schemas, psychological flourishing, and emotional and behavioral reactions to nature contributes to our understanding of the application of cognitive–behavioral therapy (CBT) principles for promoting sustainability (the schemas reflect experience, and to modify schemas, it is desirable to stimulate positive nature-related experiences, emotions, and cognitions).

5. Conclusions

The psychology of sustainability and sustainable development highlights the sustainability of every person, both in the natural environment and in the other kinds of environments. Thus, analyzing nature-related cognitive schemas might contribute to a better understanding of the processes facilitating personal and environmental flourishing.

We assumed that CBT based approach towards nature-related schemas can promote pro-environmental decisions and behaviors, as the psychology of sustainability and sustainable development delineates that internal psychological processes within the individual substantiate many of the related decisional and behavioral processes [17].

Moreover, the psychology of sustainability and sustainable development sees sustainability not only in terms of the ecological and socio-economic environment but also in terms of improving the quality of life of every human being [18], which is perfectly in line with the CBT approach.

We assumed that the CBT approach could also have added value because the research suggests that variables that can be enhanced with specific training are important resources for the well-being of people in their social environments and also for the construction of positive attitudes towards the natural environment [17]. It is important to investigate the relationship between psychological flourishing and different nature-related cognitive schemas because of the issues regarding sustainable behavior and sustainability education.

This paper presents some selected data from a broader survey on the cognitive schemas, strengths, and cognitive abilities of Lithuanian gymnasium students (particularly information on psychological flourishing, nature-related cognitive schemas, and self-reported emotional and behavioral reactions to nature).

We hypothesized that there are significant positive associations between self-reported psychological flourishing and nature-related schemas and that there might be significant differences in nature-related schemas in different self-reported psychological flourishing groups. Then, we hypothesized that different nature-related schemas are related to different emotional reactions to nature and different behaviors (namely, spending leisure time in nature). Finally, we hypothesized that certain nature-related schemas are significant predictors of flourishing. Our research confirmed the hypotheses listed above.

This survey revealed that, in general, psychological flourishing is significantly associated with nature-related cognitive schemas. The research results indicated that there was a significant positive association between self-reported psychological flourishing and experiential nature-related schemas, valorist nature-related schemas, and eco-protectionist nature-related schemas.

The research showed that valorist nature-related cognitive schemas in the medium psychological flourishing group were not significantly different from those in the low psychological flourishing group and the high psychological flourishing group, but the low psychological flourishing and high

psychological flourishing groups were significantly different: Valorist schemas were significantly higher in the high psychological flourishing group.

The data analysis also revealed that there were statistically significant differences in the eco-protectionist nature-related cognitive schemas between the psychological flourishing groups: Eco-protectionist cognitive schemas were significantly higher in the medium and high psychological flourishing groups.

Most importantly, this research revealed that there were statistically significant differences in the experiential nature-related cognitive schemas between the psychological flourishing groups: Experiential cognitive schemas were significantly higher in the medium and (especially) high psychological flourishing groups.

We also investigated the associations between nature-related cognitive schemas. The results demonstrated a significant positive association between eco-protectionist nature-related schemas and experiential nature-related schemas, as well as valorist nature-related schemas, but there were significant negative associations between valorist nature-related schemas and consumeristic nature-related schemas.

We also found no significant association between flourishing and consumeristic nature-related cognitive schemas. Consequently, there were no statistically significant differences in the consumeristic nature-related cognitive schemas between different psychological flourishing groups. This means that cognitions like "mankind was created to rule over the rest of nature", "humans need not adapt to the natural environment because they can remake it to suit their needs", "humans must not live in harmony with nature to survive", and "the earth is like a spaceship with unlimited room and resources" do not contribute to psychological flourishing.

Furthermore, this research indicated that both experiential nature-related schemas and eco-protectionist nature-related schemas contributed significantly to the model and were significant predictors of flourishing. The model on associations between flourishing and nature-related cognitive schemas indicated that experiential nature-related schemas are the strongest predictor of an increase in flourishing compared with other nature-related cognitive schemas, even though there are significant associations between experiential, valorist, and eco-protectionist nature-related schemas.

Keeping in mind the results of the multiple regression and correlation analyses and the findings of many authors suggesting that eco-protectionism, nature conservation, and nature stewardship contribute to flourishing, we also confirmed that eco-protectionist schemas are related to flourishing. Furthermore, we demonstrated that thoughts on "a special connection to nature" do not coexist with thoughts on consumeristic "ruling over nature".

Next, the research indicated that participants with an emotional reaction to nature of "interest–excitement" demonstrated higher psychological flourishing than participants whose reaction was "disgust". Moreover, the data analysis showed that participants with an emotional reaction to nature of "interest–excitement" demonstrated more expressed experiential nature-related schemas than participants whose reaction was "disgust". Furthermore, the research revealed that participants with an emotional reaction to nature of "interest–excitement" demonstrated more expressed eco-protectionist nature-related schemas than participants whose reaction was "disgust". However, there were no statistically significant differences in the consumeristic and valorist nature-related schema groups.

This research indicated no significant differences in the flourishing and consumeristic nature-related cognitive schemas or in the eco-protectionist nature-related cognitive schemas based on the behavioral variable. However, the participants who spend their leisure time in nature demonstrated more expressed experiential nature-related schemas and valorist nature-related schemas.

The psychology of sustainability and sustainable development deals with sustainability not only in terms of the ecological, economic, and social environment but also in terms of improving the quality of life of every human being and promoting the well-being of all people. We hope that this research has provided useful evidence on the processes related to promoting the flourishing of a person and society.

To sum up, this research demonstrates that certain nature-related cognitive schemas are related to psychological flourishing, emotional reactions to nature, and nature-related behavior. These results suggests that positive experiences in nature result in experiential, eco-protectionist, and valorist cognitive schemas, while experiential, eco-protectionist, and valorist cognitive schemas contribute to positive experiences in nature and psychological flourishing. However, this premise needs further investigation.

Limitations and Future Directions

The limitation of the current study is primarily its location, Lithuania. Thus, we could not apply some established measures, and our results are linked to this area. Moreover, based on the data obtained, it is possible to conclude the existence of significant relationships only between the examined variables. One of the possibilities for future research is identifying nature-related cognitive schemas as predictors of sustainable behavior and creating an experimental or longitudinal design.

References

1. Young, J.E.; Klosko, J.S.; Weishaar, M.E. *Schema Therapy: A Practitioner's Guide*; Guilford Press: New York, NY, USA, 2003.
2. Gilboa, A.; Marlatte, H. Neurobiology of Schemas and Schema-Mediated Memory. *Trends Cogn. Sci.* **2017**, *21*, 618–631. [CrossRef] [PubMed]
3. Wynn, J.S.; Ryan, J.D.; Moscovitch, M. Effects of prior knowledge on active vision and memory in younger and older adults. *J. Exp. Psychol. Gen.* **2020**, *149*, 518–529. [CrossRef] [PubMed]
4. Thimm, J.C.; Holland, J.M. Early maladaptive schemas, meaning making, and complicated grief symptoms after bereavement. *Int. J. Stress Manag.* **2017**, *24*, 347–367. [CrossRef]
5. Hofmann, S.G.; Asnaani, A.; Vonk, I.J.J.; Sawyer, A.T.; Fang, A. The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cogn. Ther. Res.* **2012**, *36*, 427–440. [CrossRef]
6. Atari, M.; Afhami, R.; Mohammadi-Zarghan, S. Exploring Aesthetic Fluency: The Roles of Personality, Nature Relatedness, and Art Activities. *Psychol. Aesthet. Creat. Arts* **2018**, *14*, 125–131. [CrossRef]
7. Bahar, F.; Sahin, E. An Associational Research on Turkish Children's Environmentally Responsible Behaviors, Nature Relatedness, and Motive Concerns. *Sci. Educ. Int.* **2017**, *28*, 111–118.
8. Baxter, D.E.; Pelletier, L.G. Is nature relatedness a basic human psychological need? A critical examination of the extant literature. *Can. Psychol.* **2019**, *60*, 21–34. [CrossRef]
9. Nisbet, E.K.; Zelenski, J.M.; Murphy, S.A. Happiness is in our Nature: Exploring Nature Relatedness as a Contributor to Subjective Well-Being. *J. Happiness Stud.* **2011**, *12*, 303–322. [CrossRef]
10. Reese, R.F.; Lewis, T.F.; Myers, J.E.; Wahesh, E.; Iversen, R. Relationship between nature relatedness and holistic wellness: An exploratory study. *J. Humanist. Couns.* **2014**, *53*, 63–79. [CrossRef]
11. Soliman, M.; Peetz, J.; Davydenko, M. The impact of immersive technology on nature relatedness and pro-environmental behavior. *J. Media Psychol.* **2017**, *29*, 8–17. [CrossRef]
12. Goldberg, J.A.; Marshall, N.A.; Birtles, A.; Case, P.; Curnock, M.I.; Gurney, G.G. On the relationship between attitudes and environmental behaviors of key Great Barrier Reef user groups. *Ecol. Soc.* **2008**, 23. [CrossRef]
13. Zhang, W.; Goodale, E.; Chen, J. How contact with nature affects children's biophilia, biophobia and conservation attitude in China. *Biol. Conserv.* **2014**, *177*, 109–116. [CrossRef]

14. Ajdukovic, I.; Gilibert, D.; Fointiat, V. Structural confirmation of the 24-item Environmental Attitude Inventory/Confirmación estructural del Inventario de Actitudes Ambientales de 24 ítems. *Psyecology* **2019**, *10*, 184–216. [CrossRef]

15. Regmi, S.; Johnson, B.; Dahal, B.M. Analysing the environmental values and attitudes of rural Nepalese children by validating the 2-MEV model. *Sustainability* **2020**, *12*, 164. [CrossRef]

16. Rosa, C.D.; Profice, C.C.; Collado, S. Nature experiences and adults' self-reported pro-environmental behaviors: The role of connectedness to nature and childhood nature experiences. *Front. Psychol.* **2018**, *9*, 1055. [CrossRef]

17. Di Fabio, A.; Rosen, M.A. Opening the Black Box of Psychological Processes in the Science of Sustainable Development: A New Frontier. *Eur. J. Sustain. Dev. Res.* **2018**, *2*, 47. [CrossRef]

18. Di Fabio, A. The psychology of sustainability and sustainable development for well-being in organizations. *Front. Psychol.* **2017**, *8*, 1534. [CrossRef]

19. Han, J.; Seo, Y.; Hwang, H.; Kim, S.M.; Han, D.H. Efficacy of cognitive behavioural therapy for internet gaming disorder. *Clin. Psychol. Psychother.* **2020**, *27*. [CrossRef]

20. Rosen, M.A. Engineering and sustainability: Attitudes and actions. *Sustainability* **2013**, *5*, 372–386. [CrossRef]

21. St John, D.; MacDonald, D.A. Development and initial validation of a measure of ecopsychological self. *J. Transpers. Psychol.* **2007**, *39*, 48–67.

22. Navarro, O.; Tapia-Fonllem, C.; Fraijo-Sing, B.; Roussiau, N.; Ortiz-Valdez, A.; Guillard, M.; Fleury-Bahi, G. Connectedness to nature and its relationship with spirituality, wellbeing and sustainable behaviour. *Psyecology* **2020**, *11*, 37–48. [CrossRef]

23. Aguilar-Luzón, M.D.C.; Benítez, I. Advances in environmental psychology regarding the promotion of wellbeing and quality of life/avances de la psicología ambiental ante la promoción del bienestar y la calidad de vida. *Psyecology* **2018**, *9*, 113–117. [CrossRef]

24. Howell, A.J.; Passmore, H.A.; Buro, K. Meaning in Nature: Meaning in Life as a Mediator of the Relationship Between Nature Connectedness and Well-Being. *J. Happiness Stud.* **2013**, *14*, 1681–1696. [CrossRef]

25. Passmore, H.A.; Howell, A.J. Eco-Existential Positive Psychology: Experiences in Nature, Existential Anxieties, and Well-Being. *Humanist. Psychol.* **2014**, *42*, 370–388. [CrossRef]

26. Mayer, F.S.; Frantz, C.M. Connectedness to nature. *J. Environ. Psychol.* **2004**, *24*, 503–515. [CrossRef]

27. Trouillet, R.; Doron, J.; Combes, R. Metacognitive beliefs, environmental demands and subjective stress states: A moderation analysis in a French sample. *Personal. Individ. Differ.* **2016**, *101*, 9–15. [CrossRef]

28. Lalot, F.; Ahvenharju, S.; Minkkinen, M.; Wensing, E. Aware of the Future? Development and Validation of the Futures Consciousness Scale. *Eur. J. Psychol. Assess.* **2019**. [CrossRef]

29. Maki, A.; Raimi, K.T. Environmental peer persuasion: How moral exporting and belief superiority relate to efforts to influence others. *J. Environ. Psychol.* **2017**, *49*, 18–29. [CrossRef]

30. Russell, J. "Everything has to die one day": children's explorations of the meanings of death in human-animal-nature relationships. *Environ. Educ. Res.* **2017**, *23*, 75–90. [CrossRef]

31. Lee, K.; Ashton, M.C.; Choi, J.; Zachariassen, K. Connectedness to Nature and to Humanity: Their association and personality correlates. *Front. Psychol.* **2015**, *6*, 1003. [CrossRef]

32. Allison, E. Nature: For religion conservation. *J. Study Relig. Nat. Cult.* **2017**, *2*, 197–226. [CrossRef]

33. Beery, T.H. Nordic in nature: Friluftsliv and environmental connectedness. *Environ. Educ. Res.* **2013**, *19*, 94–117. [CrossRef]

34. Brownlee, M.T.J.; Powell, R.B.; Hallo, J.C. A review of the foundational processes that influence beliefs in climate change: Opportunities for environmental education research. *Environ. Educ. Res.* **2013**, *19*, 1–20. [CrossRef]

35. Jansson, M.; Biel, A. Investment institutions' beliefs about and attitudes toward Socially Responsible Investment (SRI): A comparison between SRI and Non-SRI management. *Sustain. Dev.* **2014**, *22*, 33–41. [CrossRef]

36. Guan, T.; Meng, K.; Liu, W.; Xue, L. Public attitudes toward sustainable development goals: Evidence from five Chinese cities. *Sustainability* **2019**, *11*, 5793. [CrossRef]

37. Kilbourne, W.; Pickett, G. How materialism affects environmental beliefs, concern, and environmentally responsible behavior. *J. Bus. Res.* **2008**, *61*, 885–893. [CrossRef]

38. Whitley, C.T.; Takahashi, B.; Zwickle, A.; Besley, J.C.; Lertpratchya, A.P. Sustainability behaviors among college students: An application of the VBN theory. *Environ. Educ. Res.* **2018**, *24*, 245–262. [CrossRef]

39.　Jung, H.J.; Choi, Y.J. Influencing Factors of Chinese Consumers' Purchase Intention to Sustainable Apparel Products: Exploring Consumer "Attitude—Behavioral Intention". *Gap Sustain.* **2020**, *12*, 1770. [CrossRef]

40.　El-Hajj, R.; Khater, C.; Tatoni, T.; Adam, A.A.; Errol, V. Integrating Conservation and Sustainable Development through Adaptive Co-management in UNESCO Biosphere Reserves. *Conserv. Soc.* **2017**, *15*, 217–231. [CrossRef]

41.　Chen, S.Y. True sustainable development of green technology: The influencers and risked moderation of sustainable motivational behavior. *Sustain. Dev.* **2019**, *27*, 69–83. [CrossRef]

42.　Doyle, J. Institutionalized collective action and the relationship between beliefs about environmental problems and environmental actions: A cross-national analysis. *Soc. Sci. Res.* **2018**, *75*, 32–43. [CrossRef] [PubMed]

43.　Huang, H. Media use, environmental beliefs, self-efficacy, and pro-environmental behavior. *J. Bus. Res.* **2016**, *69*, 2206–2212. [CrossRef]

44.　Wang, E.S.T.; Lin, H.C. Sustainable Development: The Effects of Social Normative Beliefs on Environmental Behaviour. *Sustain. Dev.* **2017**, *25*, 595–609. [CrossRef]

45.　Kapeller, M.L.; Jäger, G. Threat and Anxiety in the Climate Debate—An Agent-Based Model to Investigate Climate Scepticism and Pro-Environmental Behaviour. *Sustainability* **2020**, *12*, 1823. [CrossRef]

46.　Kiatkawsin, K.; Han, H. Young travelers' intention to behave pro-environmentally: Merging the value-belief-norm theory and the expectancy theory. *Tour. Manag.* **2017**, *59*, 76–88. [CrossRef]

47.　Hou, W.K.; Lai, F.T.T.; Hougen, C.; Hall, B.J.; Hobfoll, S.E. Measuring everyday processes and mechanisms of stress resilience: Development and initial validation of the sustainability of living inventory (SOLI). *Psychol. Assess.* **2019**, *31*, 715–729. [CrossRef]

48.　Diniz, R.; Morais, D.; Pinheiro, J. Life experiences and the formation of pro-ecological commitment: Exploring the role of spirituality/Experiencias de vida y la formación del compromiso pro-ecológico: Explorando el papel de la espiritualidad. *Psyecology* **2018**, *9*, 237–258. [CrossRef]

49.　Richardson, M.; Sheffield, D. Three good things in nature: Noticing nearby nature brings sustained increases in connection with nature. *Psyecology* **2017**, *8*, 1–32. [CrossRef]

50.　Aspy, D.J.; Proeve, M. Mindfulness and Loving-Kindness Meditation: Effects on Connectedness to Humanity and to the Natural World. *Psychol. Rep.* **2017**, *120*, 102–117. [CrossRef]

51.　Bolzan-de-Campos, C.; Fedrizzi, B.; Santos-Almeida, C.R. How do children from different settings perceive and define nature? A qualitative study conducted with children from southern Brazil/¿Cómo niños de contextos diferentes perciben y definen la naturaleza? Estudio cualitativo con niños del sur de Brasil. *Psyecology* **2018**, *9*, 177–203. [CrossRef]

52.　Brügger, A.; Kaiser, F.G.; Roczen, N. One for all? Connectedness to nature, inclusion of nature, environmental identity, and implicit association with nature. *Eur. Psychol.* **2011**, *16*, 324–333. [CrossRef]

53.　Cheng, J.; Monroe, M. Connection to nature: Children's affective attitude toward nature. *Environ. Behav.* **2012**, *44*, 31–49. [CrossRef]

54.　Corraliza, J.; Collado, S.; Bethelmy, L. Nature as a moderator of stress in urban children. *Procedia Soc. Behav. Sci.* **2012**, *38*, 253–263. [CrossRef]

55.　Collado, S.; Íñiguez-Rueda, L.; Corraliza, J. Experiencing nature and children's conceptualizations of the natural world. *Child. Geogr.* **2016**, *14*, 716–730. [CrossRef]

56.　Shin, F.; Preston, J.L. Green as the Gospel: The Power of Stewardship Messages to Improve Climate Change Attitudes. *Psychol. Relig. Spiritual.* **2019**. [CrossRef]

57.　Ernst, J. Early childhood educators' use of natural outdoor settings as learning environments: An exploratory study of beliefs, practices, and barriers. *Environ. Educ. Res.* **2014**, *20*, 735–752. [CrossRef]

58.　Ekman, P. Paul Ekman's Taxonomy of Compassion. Available online: https://greatergood.berkeley.edu/article/item/paul_ekmans_taxonomy_of_compassion (accessed on 30 March 2020).

59.　Di Fabio, A.; Tsuda, A. The psychology of Harmony and Harmonization: Advancing the perspectives for the psychology of sustainability and sustainable development. *Sustainability* **2018**, 10. [CrossRef]

60.　Schönfelder, M.L.; Bogner, F.X. Between science education and environmental education: How science sustainability between science education and environmental education : How science motivation relates to environmental values. *Sustainability* **2020**, *12*, 1968. [CrossRef]

61.　Diener, E.; Wirtz, D.; Tov, W.; Kim-Prieto, C.; Choi, D.; Oishi, S.; Biswas-Diener, R. New measures of well-being: Flourishing and positive and negative feelings. *Soc. Indic. Res.* **2009**, *39*, 247–266.

62. Lourenço, F.; Sappleton, N.; Cheng, R. Does ethicality wane with adulthood? A study of the ethical values of entrepreneurship students and nascent entrepreneurs. *J. Educ. Bus.* **2015**, *90*, 385–393. [CrossRef]

63. Paul, U.K.; Baltes, B. Wisdom-Related Knowledge: Affective, Motivational, and Interpersonal Correlates. *Personal. Soc. Psychol. Bull.* **2003**, *29*, 1104–1119. [CrossRef] [PubMed]

64. Schwartz, S.H. *A Proposal for Measuring Value Orientations across Nations*; European Social Survey, City University London: London, UK, 2007; Chapter 7; Available online: http://www.europeansocialsurvey. org/docs/methodology/core_ess_questionnaire/ESS_core_questionnaire_human_values.pdf (accessed on 30 March 2020).

65. Amérigo, M.; García, J.A.; López-Santiago, S. The effects of emotions on the generation of environmental arguments/Efectos de las emociones en la generación de argumentos sobre el medio ambiente natural. *Psyecology* **2018**, *9*, 204–236. [CrossRef]

66. Walker, P. Different planets: Belief, denial and courage: The role of emotion in turning learning into action. *Greener Manag. Int.* **2004**, *48*, 67–81. [CrossRef]

67. McGlothlin, H.; Killen, M. How social experience is related to children's intergroup attitudes. *Eur. J. Soc. Psychol. Eur.* **2010**, *40*, 625–634. [CrossRef]

68. Richardson, M.; Hallam, J. Exploring the Psychological Rewards of a Familiar Semirural Landscape: Connecting to Local Nature through a Mindful Approach. *Humanist. Psychol.* **2013**, *41*, 35–53. [CrossRef]

69. Isaac, G.; Finn, S.; Joe, J.R.; Hoover, E.; Gone, J.P.; Leftliand-Begay, C.; Hill, S. Native American perspectives on health and traditional ecological knowledge. *Environ. Health Perspect.* **2018**, *126*, 125002. [CrossRef] [PubMed]

70. Bruni, C.M.; Winter, P.L.; Schultz, P.W.; Omoto, A.M.; Tabanico, J.J. Getting to know nature: Evaluating the effects of the Get to Know Program on children's connectedness with nature. *Environ. Educ. Res.* **2017**, *23*, 43–62. [CrossRef]

71. Davis-Sramek, B.; Robinson, J.L.; Darby, J.L.; Thomas, R.W. Exploring the differential roles of environmental and social sustainability in carrier selection decisions. *Int. J. Prod. Econ.* **2020**, *227*, 107660. [CrossRef]

72. Lankenau, G.R. Fostering connectedness to nature in higher education. *Environ. Educ. Res.* **2018**, *24*, 230–244. [CrossRef]

73. Liefländer, A.K.; Fröhlich, G.; Bogner, F.X.; Schultz, P.W. Promoting connectedness with nature through environmental education. *Environ. Educ. Res.* **2013**, *19*, 370–384. [CrossRef]