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THE POSITIVE EFFECT OF NATURE CONNECTEDNESS ON PSYCHOLOGICAL WELLBEING: THE SIGNIFICANCE OF TRUST AS A MEDIATOR

I.V. KRYAZH[a]

[a] *V. N. Karazin Kharkiv National University, 6 Svobody Sq., Kharkiv, 61022, Ukraine*

Abstract

Although the positive effect of nature connectedness (NC) on eudaimonic and hedonistic well-being is confirmed by numerous studies, the question of intrapersonal processes that determine such an impact remains open. Wilson's biophilia hypothesis points to the evolutionary background of NC, as this can be considered pre-trust as an evolutionarily formed trust to the ecological world, to life in its diverse manifestations (Petzold, 2012). It is suggested that pre-trust sets a vector of positive comprehension on what happens while NC actualizes pre-trust, thereby launching a 'system of psychological wellbeing maintenance'. The hypothesis that trust is a mediator between NC and psychological well-being was tested in two studies. Multiple regression and mediation analysis, and structural equation modeling (SEM) were applied. Study 1 (the sample comprised 232 Ukrainian university students) confirmed the model of the NC influence on positive functioning (Ryff's Psychological well-being scale and Hardness test were applied) with trust as a mediator. Study 2 (the sample comprised 276 Ukrainian and Belarusian university students) showed that a latent variable manifested by trust and a sense of coherence index mediated the relationship between NC and subjective well-being. It is shown that trust in oneself is included in support of positive functioning, while subjective wellbeing is supported by experiencing the meaningfulness of life events. Limitations of the studies and their implications for conservation psychology are discussed.

Keywords: nature connectedness, trust, pre-trust, psychological wellbeing, subjective wellbeing, positive functioning, biophilia.

Introduction

The issue of human well-being maintenance becomes particularly relevant in connection with global environmental change. Such change determined by the destructive impact of human activity on the ecosphere, leads to a noticeable deterioration of the living environment posing a threat to human health and wellbeing. Along with the negative consequences of environmental change, positive psychological effects of people's communion with nature are discussed more often. A growing number of studies confirms the positive role of staying in the natural environment

for a person's psychological wellbeing (Hartig, Mang, & Evans, 1991; Wells & Evans, 2003; Hinds & Sparks, 2009; De Young, 2010; Martens, Gutscher, & Bauer, 2011; Bratman, Hamilton, & Daily, 2012; Ratcliffe, Gatersleben, & Sowden, 2013). Various types of psychotherapy based on the interaction of humans with components of nature also evidence that psychological connection with nature is of great importance in maintaining mental health and wellbeing (Esposito, McCune, Griffin, & Maholmes, 2011; McCardle, McCline, Griffin, Esposito, & Freund, 2011; Nimer & Lundahl, 2007; Summers & Vivian, 2018).

Stress recovery theory (Ulrich et al., 1991) and attention restoration theory (ART) (Kaplan & Kaplan, 2003, 2009) explain the recovery effect of nature exposure by the features of natural settings. These theories complement one another explaining how the perception of 'natural scenes' can reduce both physiological stress and mental fatigue (Berto, 2014; von Lindern, Lymeus, & Hartig, 2017). Such an approach focuses attention on objective features of the perceived environment that have an evolutionarily formed and genetically fixed significance. Another approach refers to biophilia which is "the urge to affiliate with other forms of life" (Wilson, 1984, p. 416). It is a subjective experience of connection with other living beings that is important for human wellbeing according to the biophilia hypothesis. Under such understanding, nature can be a resource of wellbeing provided that a person experiences a sense of unity with it realizing "genetically based, human need and propensity to affiliate with life and lifelike processes" (Kahn, 1999, p. 2). As emotional closeness to nature can also increase sensitivity to environmental change and encourage the maintenance of environmental sustainability, it opens ways to promoting the conservation behavior relying on positive experiences and supporting the person's positive functioning (Capaldi, Dopko, & Zelenski, 2014; Carter, 2011; Kasser, 2009). However, the biophilia hypothesis does not specify which psychological mechanisms exactly provide the 'conversion' of emotional affiliation to psychological wellbeing. This article puts forward and tests a hypothesis that nature connectedness contributes to psychological wellbeing through maintaining and strengthening trust.

Nature Connectedness as a Predictor of Psychological Wellbeing

The phenomenon of psychological connection to nature is conceptualized in a number of psychological constructs and measures including emotional affinity towards nature (Kals, Schumacher, & Montada, 1999), nature connectedness (Mayer & Frantz, 2004), connectivity with nature (Dutcher, Finley, Luloff, & Buttolph, 2007), environmental identity (Clayton, 2003), inclusion of nature in self (Schultz, 2002), nature relatedness (Nisbet, Zelenski, & Murphy, 2009), implicit associations with nature (Schultz, Shriver, Tabanico, & Khazian, 2004), and dispositional empathy with nature (Tam, 2013b). Although some of these concepts distinguish only separate aspects of the human-nature relationship (for example, emotional attachment, cognitive representations, identification processes), while some of them point to a multidimensionality of subjective connection to nature, on the whole they can be reviewed as manifestations of a general nature connectedness

(Tam, 2013a; Capaldi et al., 2014). Studies confirm that nature exposure, as well as engaging with natural beauty, leads to nature connection, which in turn leads to psychological wellbeing (Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009; Capaldi et al., 2017).

Over the past decades a considerable dataset has been accumulated on features of the association of nature connectedness with psychological wellbeing regarded in hedonistic and eudaimonic traditions (Tam, 2013a; Zelenski & Nisbet, 2014; Nisbet, Zelenski, & Murphy, 2011; Martyn & Brymer, 2016; Kamitsis & Francis, 2013). The associations varied significantly — from −.1 for Negative affect (Nisbet et al., 2011) to .42 for Positive affect (Zelenski & Nisbet, 2014). Capaldi et al. (2014) conducted a meta-analysis that included 21 studies of the connection between the indexes of nature connectedness and hedonic wellbeing, which revealed a low connection between nature connectedness and subjective wellbeing in general ($r = .19$). Zelenski & Nisbet (2014) also found low correlations between nature connection and eudaimonic wellbeing using Ryff's Scales of Psychological Well-Being that had been developed on the basis of existential and humanistic psychology`s provisions on positive functioning. Significant relations were obtained only for autonomy, purpose in life, and the highest of .30 to .36 for personal growth.

Not too high and inconsistent correlations of nature connectedness with psychological wellbeing give grounds for assuming the presence of mediating links. Empirical evidence has been obtained that such mediators can be spirituality (Kamitsis & Francis, 2013), meaning in life (Howell, Passmore, & Buro, 2013), and regulation of health behavior (Kryazh, 2016). The Kamitsis & Francis study (2013) found that spirituality measured by the Hood Mysticism Scale and characterized by a sense of unity can act as a mediator between both nature exposure and nature connectedness, and psychological health. Still, the results indicate only partial mediation. Howell et al. (2013) confirmed that the association between nature connectedness and well-being is mediated by the meaning in life. In a study by Kryazh (2016) it was shown that the regulation of health behavior mediates the relationship between nature connectedness and subjective wellbeing. With all the differences, the revealed mediators are united by the experience of a harmonious connection: with the world, life, their physical self.

Toward the Question of a Mediator between Nature Connectedness and Psychological Wellbeing: Why Trust?

References to the role of trust as an important condition for positive development and wellbeing were mentioned by Erikson (1963) who viewed the feeling of trust as a basis of the sense of identity that later signals to the individual that they are good. Also for Rogers (1961), a "fully functioning person" who is open to experience is trusting in their own organism. Rogers's work became a theoretical foundation for such core dimensions of psychological wellbeing in Ryff's model as self-acceptance and autonomy (Ryff, 2014). Studies by Ojala (2005, 2012) indicate the role of trust as an existential experience supporting the subjective well-being of adolescents with a high level of ecological concern. Ojala (2017) underlines that "hope based in trust is to give young people the strength to act in the face of uncertainty and

hardship" (p. 5). Developing this provision it can be assumed that trust is the basis for the 'Courage to Be', to maintain a positive functioning in the face of global environmental change. Importance of trust in the natural resources management is also accentuated by Stern & Coleman (2015).

On the other hand, the experience of connectedness with nature as a realization of the «need to affiliate with life» implies openness and a special kind of trust of the natural world and of oneself as its component. Such an experience is defined by Petzold (2012) as pre-trust (Urvertrauen) — a transpersonal trust that determines the expectation of a harmonious connection with parents and other living beings, with the biosphere, the universe or God. That is the evolutionarily formed primitive basic trust, deep trust, which precedes the Erikson's basic trust. Pre-trust is an unconscious condition for any vital activity, assuming trust in the ecological environment — air, water, food, new objects, potentially important for life. Pre-trust is "the consequence of a deep, ancient and growing affinity with the biosphere environment experienced by many generations. The supra-individual [uberindividuelle] and even superhuman meaning of pre-trust becomes evident in animal therapy examples, where such contact renews pre-trust, which has been disabled in contacts with people" (Ibid., s. 18). Pre-trust provides extraindividual connectivity, coherence with life, thereby creating conditions for healthy development, moreover, according to Petzold, pre-trust is at the center of self-regulation and coherence regulation. In this context, trust is interwoven with the sense of coherence (SOC) in the theory of Antonovsky (1987). Jeserich (2012) underlines that one of the values of 'confidence' (Antonovsky used this word when defining the SOC) is 'trust'. M. Eriksson (2017) defines sense of coherence as "a personal way of thinking, being and acting, with an inner trust".

The fact that trust can act as a mediator, through which psychological wellbeing is influenced, is confirmed by studies in organizational psychology examining the credibility to leaders (Kellowaya, Turner, Barling, & Loughlin, 2012). Also in the studies of Kryazh & Grankina-Sazonova (2018) and Kryazh & Levenetz (2018) it is shown that trust mediates the connection between emotional intelligence and both forms of wellbeing – eudaimonic and hedonic.

Study 1

The relation between subjective connectedness with nature and psychological well-being, in the eudaimonic interpretation, as well as hardiness determined by personal attitudes (Maddi, 2013), were investigated in the present study. The hypothesis was tested that these relations are mediated by trust. It was also assumed that psychological well-being and hardiness can be regarded as manifestations of positive functioning, the condition of which is trust.

Method

Participants. The research was conducted in Kharkiv, Ukraine. 232 respondents took part in the study, among them 212 students (aged from 17 to 25, M = 20.2

years; 75% female) and 20 practicing psychologists (aged from 29 to 40, M = 36 years; 75% female). 162 students (aged from 17 to 25, M = 20 years; 71.6% female) study at V. N. Karazin Kharkiv National University (KhNU) and this sample of students was drawn from schools of psychology (98 people), history (33 people), physics and energetic (31 people). 50 students are from National University of Pharmacy (aged from 19 to 23, M = 21 years; 84% female). The data was collected by N. Grankina-Sazonova in a larger study on predictors of positive functioning that she conducted under my guidance.

Materials

Subjective connectedness with nature was examined using two scales: a short Nature Relatedness scale of 4 items (NR4) and Inclusion of Nature in Self (INS) (Schultz, 2002). NR4 is a Russian modification of the short Nature Relatedness scale (Nisbet et al., 2009; Nisbet & Zelenski, 2013); it includes items reflecting the emotional connection with nature: "I always think about how my actions affect the environment"; "My connection to nature and the environment is a part of my spirituality"; "My relationship to nature is an important part of who I am"; "I feel very connected to all living things and the earth" (α = .77). Schultz's (2002) single-item measure INS consists of 7 overlapping circles labelled 'self' and 'nature'. Depending on how strongly the circles cross each other on the picture chosen by a respondent, their connectedness with nature is estimated from 1 (nature and self barely osculate) to 7 (full overlap of nature and self). While the NR4 scale allows estimating the connection with nature as an emotional experience, INS indicates the cognitive evaluation of one's affinity with nature derived from reflexive ideas about 'human-nature' connections.

Positive functioning in this study was assessed through indexes of psychological wellbeing and hardiness. A Russian adaptation of the 84-item Ryff Scales of Psychological Well-Being (Ryff, 1989) by Shevelenkova & Fesenko (2005) was used to study psychological wellbeing. In addition to the general indicator of psychological wellbeing (PW, α = .94), the scale has 6 dimensions: Positive Relations with Others (α = .8), Autonomy (α = .78), Environmental Mastery (α = .75), Personal Growth α = .80), Purpose in Life (α = .83), Self-acceptance (α = .85). Hardiness was measured by a Russian short version of the hardiness test proposed by Osin & Rasskazova (2013). The instrument consists of 24 items that measure the general index of hardiness (α = .89) and three hardy attitudes: Commitment (HCm, α = .73), Control (HCt, α = .73), and Challenge (HCh, α = .89).

Trust was assessed in two ways. The first was a 15-item Kupreichenko`s (2008) Method of examining trust/distrust to the world, to other people and to oneself. This tool allows the estimation of the general indicator of trust (GT, α = .68) and three different trust types – trust to the world (TW, α = .40), to other people (TOP, α = .62), and to oneself (TOS, α = .58). the second assessment used Skripkina's (2000) Reflexive questionnaire of level of self-trust where respondents were suggested to assess the level of self-trust (ST) in 11 different life areas (in professional activity, in the ability to build relationships: in the family, with children,

with parents, with superiors, etc.) on a 6-point scale (α = .78). Since self-trust is measured by both methods, it should be noted that TOS is revealed as trust in one's skills to adequately and objectively what is happening. At the same time, ST rather means trust in oneself as in a person capable to interact effectively with other people.

Results

Since practicing psychologists who were older than students comprised 14% of the sample, a comparative analysis was carried out for all indicators between this group and the students of the Psychology school. The Mann-Whitney U test indicated no significant differences between these groups, and further analysis was conducted for the entire sample including practicing psychologists. Analysis of the data distribution showed that only 6 of the 16 variables corresponded to the normal distribution: GT, PW, positive relations with others, autonomy, environmental mastery, and self-acceptance. That determined the choice of nonparametric methods.

A gender-stratified comparative analysis revealed differences for three indexes: general trust, trust to other people, and control. Females demonstrated a higher GT ($p < .05$) due to a more conspicuous trust to other people ($p < .01$), while males had a stronger hardy Control attitude ($p < .05$).

The results of the correlation analysis are presented in Table 1. The table includes those indicators of trust and positive functioning with which at least one of the indicators of subjective nature connectedness correlates at the level $p < .1$.H

Both indicators of nature connectedness are closely related (ρ = .61) to each other and have statistically significant correlations with indicators of trust. The links of nature relatedness with indicators of trust are most expressed, first of all, in the trust in oneself as a social actor (ST, ρ = .27) and, to a lesser extent, in the trust in own objectivity (TOS, ρ = .18) and GT (ρ = .16). INS has a statistically significant correlation at $p < .01$ with ST (ρ = .18), and there is a tendency at p .1 to correlate with TW and GT (ρ = .11, p = .09). TOS doesn't have any significant relations with NR indexes even at the marginally significant level.

Of the two indicators nature connectedness, only NR has though not high but statistically significant correlations with indicators of hardiness and psychological well-being. In addition to the connection with the general hardiness index (ρ = .15), NR is significantly correlated with the hardy attitude Challenge (ρ = .18). We can also speak about the marginally significant correlations of nature relatedness with two hardy attitudes — Commitment (ρ = .11, p = .1) and Control (ρ = .12, p = .06). INS does not have significant correlations with the hardiness indicators, but we can speak about the marginal correlation coefficient between this indicator and the challenge (ρ = .11, p = .09). NR also correlates with PW (ρ = .16), Personal Growth (ρ = .16) and Self-acceptance (ρ = .15). INS is only connected with Personal Growth only at a marginal level of significance (ρ = .11; p = .09).

Hardiness and psychological wellbeing indicators are closely linked showing correlation coefficients ranging from .29 (Control — Personal Growth) to .76 (Hardiness — Environmental Mastery). The correlation between the general indicators of hardiness and psychological well-being is .74. All indicators of trust have

statistically significant relations with indicators of positive functioning, primarily with general indicators of psychological well-being and hardiness.

To test the hypothesis that indicators such as GT, TOS and ST can mediate the connection between NR and the indicators of positive functioning (Hardness, Challenge, Psychological Wellbeing, Personal Growth, and Self-acceptance), a regression analysis was used (Baron & Kenny, 1986). Table 2 shows beta coefficients estimated for two types of regression equations: the regression of a positive functioning indicator on NR and the regression of a positive functioning indicator

Table 1

Intercorrelations of Variables (Spearmen's ρ) — Study 1 (n = 232)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. GT	1														
2. TW	.72	1													
3. TOS	.65	.29	1												
4. ST	.42	.23	.48	1											
5. H	.53	.35	.41	.60	1										
6. HCm	.48	.33	.37	.59	.92	1									
7. HCt	.46	.29	.42	.49	.89	.70	1								
8. HCh	.49	.34	.33	.51	.88	.70	.74	1							
9. PWB	.52	.38	.47	.56	.74	.71	.64	.64	1						
10. AU	.22	.14*	.36	.29	.47	.38	.47	.44	.63	1					
11. EM	.46	.32	.42	.53	.76	.72	.67	.63	.81	.45	1				
12. PG	.38	.32	.34	.32	.35	.32	.29	.35	.69	.39	.41	1			
13. PL	.44	.35	.34	.49	.56	.55	.47	.47	.81	.34	.63	.62	1		
14. SA	.47	.33	.46	.52	.67	.62	.57	.60	.84	.50	.50	.68	.43	1	
15. NR4	.16*	*.10*	.18**	.27	.15*	.11†	.12†	.18**	.16*	.12†	.13†	.16*	.13†	.15*	1
16. INS	.11†	.11†	*.08*	.18**	*.08*	*.08*	*.02*	.11†	*.07*	*.04*	*.05*	.11†	*.10*	*.04*	.61

$p < .001$, except for † $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed), statistically insignificant correlations are in italics.

Note. 1. GT — general trust, 2. TW — trust to world, 3. TOS — trust to oneself as subscale, 4. STG — self-trust as a general indicator after Skripkina's questionnaire, 5. H — hardiness, 6. HCm — hardiness as commitment, 7. HCt — hardiness as control, 8. HCh — hardiness as challenge, 9. PWB — psychological wellbeing (C. Riff's model), 10. AU — autonomy, 11. EM — environmental mastery, 12. PG — personal growth, 13. PL — purpose in life, 14. SA — self-acceptance, 15. NR4 — short nature relatedness scale, 16. INS — inclusion of nature in self scale.

Table 2

Regression Equations Using Nature Relatedness and Trust Indicators to Predict Indicators of Hardiness and Psychological Wellbeing

Dependent variable	Predictor NR4	R^2 adj	Predictors		R^2 adj	Predictors		R^2 adj	Predictors		R^2 adj
			GT	NR4		TOS	NR4		ST	NR4	
			Beta			Beta			Beta		
H	.13*	.013*	.52**	.06	.28**	.40**	.07	.17**	.61**	−.02	.36**
HCh	.16*	.021*	.47**	.09	.24**	.32**	.11	.12**	.50**	.03	.26**
PWB	.14*	.014*	.53**	.06	.29**	.48**	.06	.25**	.59**	−.02	.35**
PR	.14*	.015*	.39**	.09	.17**	.37**	.08	.15**	.34**	.05	.13**
SA	.15*	.018*	.45**	.09	.22**	.46**	.08	.23**	.52**	.02	.28**

* $p < .05$; ** $p < .001$.

Note. H – hardiness, HCh — hardiness as challenge, PWB — psychological wellbeing (C. Riff's model), PG — personal growth, SA — self-acceptance, NR4 — short nature relatedness scale, INS — inclusion of nature in self scale; GT — general trust, TOS — trust to oneself as subscale, ST — self-trust as a general indicator after Skripkina's questionnaire.

on NR and one of the trust indicator. (For all three of the above mentioned indicators of trust, it was confirmed that they significantly regress on NR, although the RI coefficients were small, within .015 to .06.)

In all cases, the involvement of a trust attitude in the regression equation led to a decrease in the NR beta coefficients that was especially noticeable for ST. NR beta coefficients while controlling for ST are closed to zero, and even change the sign to negative with such dependent variables as PW and hardiness. The weakening effect of TOS and GT is less expressed but reduces NR beta coefficients to statistically insignificant levels.

Although INS does not have statistically significant connections to positive functioning indicators, Sobel's test showed that adding of ST to the regression model causes a significant change in beta coefficients when hardiness and PW are considered as dependent variables. In both cases this is combined with a change in the sign of INS to negative.

Given that the effect provided by GT and TOS varies very little, a number of more complex regression models have been further analyzed. Indicators of positive functioning were considered as dependent variables, and NR, ST, and one of two variables — GT or TOS — were regarded as regressors (Table 3). Comparison of the two sets of regression models supports GT as a stronger predictor than TOS. Models with general trust better explain the variability of the dependent variables (higher RI), and GT has higher beta coefficients. Therefore, ST and GT were included as manifest variables for trust as a latent variable into structural models that describe the specificity of the association between nature connectedness and positive functioning.

Table 3

Predictive Role of Nature Relatedness and Trust Types for Positive Functioning

Predictors	Dependent variable									
	H		HCh		PWB		PG		SA	
NR4 (Beta)	−.03	−.03	.02	.03**	−.02	−.03	.05	.040	.01	.01
ST (Beta)	.47**	.53**	.36**	.44**	.44**	.46**	.21*	.21*	.40**	.39**
GT (Beta)	.33**		.32**		.34**		.30**		.29**	
TOS (Beta)		.16*		.12		.27**		.27**		.28**
F	62.4	47.3	39.0	27.5	60.2	51.7	19.2	17.3	39.8	38.9
R^2	.45**	.38**	.34**	.27**	.44**	.41**	.20**	.19**	.34**	.34**

* $p < .01$; ** $p < .001$.

Note. 1) H — hardiness, HCh — hardiness as challenge, PWB — psychological wellbeing (C. Riff's model), PG — personal growth, SA — self-acceptance, NR4 — short nature relatedness scale, ST — self-trust as a general indicator after Skripkina's questionnaire, GT — general trust, TOS — trust to oneself as subscale. 2) Empty cells mean that the corresponding variable has not been included into the model.

Structural models have been developed that describe the correspondences between nature connectedness, trust, and indicators of psychological wellbeing or/and hardiness. Structural models were estimated using the SEPATH module of Statistica 7; the method of Asymptotically Distributed Free (Gramian) estimation (ADFG), which is one of the appropriate methods for non-normal data, was used (Steiger, 1995; Schumacker & Lomax, 2010). Each model includes three latent variables, the first two of which are present in all models: nature connectedness defined by two manifest variables NR and INS, and trust manifested by GT and ST. Model 1 describes the trust-mediated influence of nature connectedness on PW manifested by Personal Growth and Self-acceptance (Figure 1). According to fit indexes, this model corresponds to empirical data: $\chi^2(7) = 11.1$; $p = .13$; GFI = .985; AGFI = .955; RMSEA = .05.

Model 2, which includes Hardiness manifested by Control and Challenge (Figure 2), was also confirmed: $\chi^2(7) = 10$; $p = .17$; GFI = .987; AGFI = .96; RMSEA = .046.

Models 3 and 4 contain a latent variable referred to as positive functioning. Model 3, in which this latent variable is defined through Challenge, Personal Growth, and Self-acceptance (Figure 3), had satisfactory fit indexes: $\chi^2(12) = 7.3$; $p = .14$; GFI = .981; AGFI = .955; RMSEA = .044.

Model 4 (Figure 4), in which the positive functioning is manifested by two general indicators — hardiness and PW, had in general a little higher fit indexes: $\chi^2(7) = 10.5$; $p = .16$ GFI = .986; AGFI = .957; RMSEA = .047. Also the Akaike information criterion indicates that Model 4 (.166) is preferable to Model 3 (.213).

Figure 1

Structural Model 1 of the Mediated Influence of Nature Connectedness on Psychological Wellbeing

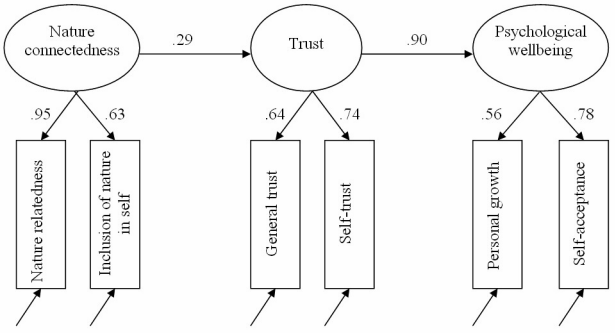


Figure 2

Structural Model 2 of The Mediated Influence of Nature Connectedness on Hardiness

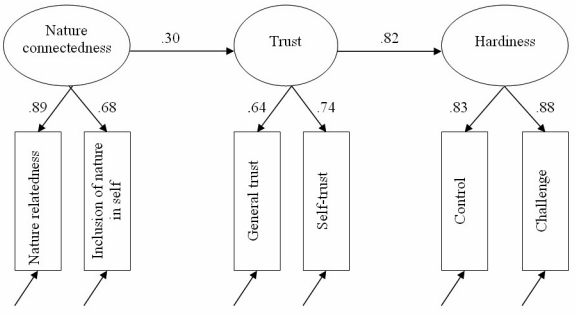


Figure 3

Structural Model 3 of the Mediated Influence of Nature Connectedness on Positive Functioning Manifested by Three Variables

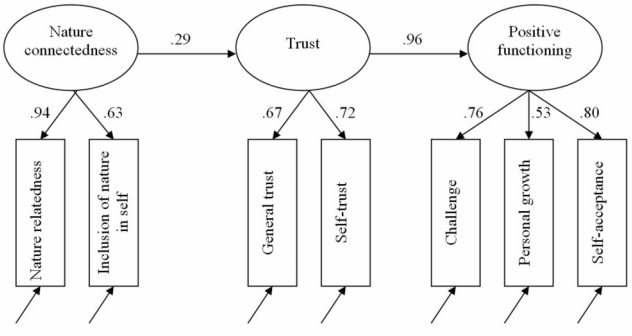
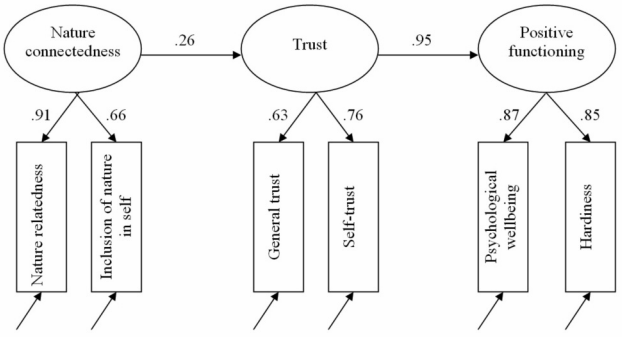


Figure 4

Structural Model 4 of the Mediated Influence of Nature Connection on Positive Functioning Manifested by Two Variables



Discussion

Study 1 did not reveal gender differences in nature connectedness that is at odds with the tendency (confirmed by many studies) for more expressed environmental attitudes in females (Zelezny, Chua, & Aldrich, 2000; Raudsepp, 2001; Kryazh, 2012; etc.), but it agrees with the data of a series of studies on the connectedness with nature (Bruni & Schultz, 2010; Capaldi et al., 2014; Mayer & Frantz, 2004).

The correlation of the two indicators of nature connectedness in this study (.61) is close to the results obtained by Zelenski & Nisbet (2014) on the Canadian student samples (.66). Correlations involving INS were weaker than the correlations for NR, and it is consistent with the study of Tam (2013). That is, the emotional component of the connection with nature is more important than the cognitive one for the personal wellbeing and hardiness. However, the correlations of INS and NR with the scales of psychological wellbeing are inferior to that given by Zelenski & Nisbet (2014) (in the range of .11 to .36). Along with it (as in the mentioned study), in our case, from Ryff's subscales PG is closely related to nature connectedness. Besides, according to our data, the connection with nature is important for Self-acceptance and Challenge as the hardy attitude.

The primary goal of this study was to determine whether the influence of nature connectedness on PW and hardiness is mediated by trust. The results of regression analysis and structural equation modeling suggest that trust really acts as a mediator between subjective connection with nature and PW, as well as hardiness. In such a nature connectedness context psychological wellbeing and hardiness can be qualified as indicators of a more general tendency of a person to positive functioning. At the same time an important role precisely belongs to trust in oneself as to a subject of social interaction who can find mutual understanding and build relationships with others. In other words, the experience of one's own connection with nature will promote positive functioning as long as it maintains trust as a fundamental attitude towards life and oneself.

However, when speaking about the positive role of nature connectedness, it should be noted that according to the results of Study 1, its impact on development and the readiness to cope with challenge should be assessed as weak. At the same time, positive functioning is realized through self-acceptance and openness to change, which allows considering these changes as opportunities for personal development. As for trust, although it is closely related to the indicators of positive functioning, it stands as a separate psychological formation, by which the emotional connection with the natural environment is converted into positive functioning.

Study 2

The assumption that trust and sense of coherence may be mediators between nature connectedness and subjective wellbeing was examined in this study. Alongside this, it is assumed that trust as an affective attitude, and sense of coherence can be considered in one bundle as forms of manifestation of undifferentiated deep trust.

Method

The study was conducted in Ukraine and Belarus. The study involved 276 students (17–25 years M = 20.5 years, 64.5% female). Of the 183 Ukrainian students (17–25 years, M = 20.7 years, 62.8% female) 73 were undergraduates of the School of Psychology KhNU, 110 (18–24 years M = 20 years, 44.6% female) specializing in various fields of knowledge in different Ukrainian universities. Of the 93 Belarusian students (18–24 years, M = 20 years, 67.7% female), 50 people specialized in psychology at the Belarusian State University (18–23 years, M = 20 years, 72% female); 43 people studied at the Faculty of Health-Oriented Physical Training and Tourism at the Belarusian State University of Physical Culture (18–24 years old M = 20.1 years, 62.8% female)[1]. Study 2 was a part of a larger study on environmental attitudes as predictors of subjective wellbeing.

Subjective connectedness with nature was studied using the same two techniques applied in Study 1: NR4 (α = .78) and INS.

Subjective wellbeing (SW) was assessed using two scales: Perrudet-Badoux, Mendelsohn, Chiche Scale of Subjective Wellbeing (SSW) adapted by M.V. Sokolova (1996) (17 items, α = .84) and Diener's Satisfaction with Life scale (SWL) adapted by Leontiev & Osin (2008) (5 items, α = .84). SSW was used to identify the emotional component of SW while SWL measured the cognitive component of SW.

Trust was investigated through 15-item Kupreichenko's (2008) Method of examining trust/distrust with the general trust indicator (GT, α = .63) and subscales of trust to oneself (TOS, α = .65), to other people (TOP, α = .46), and to the world (TW, α = .43).

[1] The author is grateful to Head of the Department of Psychology Prof. Igor A. Furmanov (BSU) and Dean of the Faculty HPT Natalia M. Masharskaya (BSUPC) for their help in organizing the study.

Sense of coherence (SOC) was studied using M.N. Dymshits's English translation of the Orientation to Life Questionnaire. Taking into account the research of E.N. Osin (2007), the variant of scale was used including 27 items (α = .84), of which 9 items measure comprehensibility (α = .67), 10 items – manageability (α = .66), and 8 items – meaningfulness (α = .69).

Results

A comparative analysis was carried out on all indicators for groups of Ukrainian and Belarusian students. Since Tests of Normality showed a violation of the normal distribution for all variables except SSW, SWL, GT, and SOC, the Mann-Whitney U test was applied. Significant differences were revealed for SOC (p <.05) and meaningfulness (p = .000), both indicators are higher for the Ukrainian students. Gender differences revealed that female subjects have higher GT than male (p < .05) due to more expressed TOP (p < .001) and TW (p < .05).

Table 4 includes those indicators, SW, trust and coherence, with which at least one of the indicators of subjective nature connectedness correlates at the level p < .1. NR is significantly linked with cognitive (SWL, ρ = .14) and emotional (SSW, ρ = −. 13) components of subjective wellbeing, with GT, and is connected at a marginal level of significance with TW (ρ = .11, p = .07) and TOS (ρ = .11, p = .06), but the strongest connection is found with meaningfulness (ρ = .20). INS is also most closely related to meaningfulness (ρ = .21) and has significant correlations with SWL (ρ = .13) and GT (ρ = .12) and a marginally significant correlation with TW (ρ = .10, p =. 09). TOP, as in Study 1, does not correlate with indicators of nature connectedness, and of all SOC indicators, only meaningfulness is linked with NC-4.

Table 4

Intercorrelations of Variables (Spearmen's ρ) — Study 2 (n = 276)

	SSW	**SWL**	**Mf**	**GT**	**TW**	**TOS**	**NR4**	**INS**
Scale of subjective wellbeing – SSW	1							
Satisfaction with life – SWL	−.51	1						
Meaningfulness – Mf	−.52	.45	1					
General trust – GT	−.43	.31	.45	1				
Trust to world – TW	−.32	.14*	.44	.68	1			
Trust to oneself as subscale – TOS	−.34	.30	.23	.64	.16	1		
Short nature relatedness scale – NR4	−.13*	.14*	.20	.14*	.11†	.11†	1	
Inclusion of nature in self scale – INS	*−.06*	.13*	.21	.12*	.10†	*.04*	.59	1.

p < .001, except for † p < .10, * p < .05, ** p < .01 (two-tailed), statistically insignificant correlations are in italics.

To check whether meaningfulness and trust indicators mediate connection between subjective nature connectedness and wellbeing indicators, a number of regression equations have been estimated. The results presented in Table 5 indicate meaningfulness as a strong mediator, which in fact completely explains the connection between NR and SSW. The value of GT as a mediator is less expressed, and TW and TOS perform as low mediators for NR only in relation to the emotional component of wellbeing (SSW).

The low influence of INS on SWL (β = .12, R^2_{adj} = .01) is reduced to nothing (Beta = .03) when controlling the meaningfulness (R^2_{adj} = .22) and insignificantly diminishes (Beta = .09) when controlling GT (R^2_{adj} = .11). Although INS does not have a statistically significant influence on SSW (Beta = −. 08), the inclusion of meaningfulness in the regression equation yields a significant change of the Beta-coefficient INS with a reversal of the sign to negative (Beta = .03).

The evaluation of more complex regression equations involving more than two predictors showed that, along with meaningfulness as a strong predictor, GT or TW in conjunction with TOS also mediate the relationship between subjective connectedness with nature and wellbeing (Table 6).

Structural models with a mediator between two latent variables of nature connectedness and subjective wellbeing were checked. The manifest variable GT (fit indexes of the model: $\chi^2(4) = 2{,}7$; p = .61; GFI = .996; AGFI = .984; RMSEA = .000), the latent variable manifested by TW and TOS ($\chi^2(8) = 18.2$; p = .02; GFI = .976; AGFI = .932; RMSEA = .068), the manifest variable Mf ($\chi^2(4) = 1.2$; p = .87; GFI = .998; AGFI = .992; RMSEA = .000) were sequentially considered as mediators. Alternative models of direct influence of nature connectedness on subjective wellbeing were also tested, where variables that manifested wellbeing were added to variables that served as mediators in the models described above. Lower fit indexes were obtained by models with GT ($\chi^2(4) = 3.6$, p = .47; GFI = .994; AGFI = .979; RMSEA = .000) and Mf ($\chi^2(4) = 5.4$; p = .25; GFI = .991; AGFI = .966; RMSEA = .036); and higher indexes belonged to models with TW and TOS ($\chi^2(8) = 9.7$; p = .28; GFI = .997; AGFI = .966; RMSEA = .03).

According to the assumption that personal trust and a sense of connectedness are based on pre-trust, a structural model with a mediator — the latent variable manifested GT and Mf (Figure 5) was tested. This model received high fit indexes: $\chi^2(7) = 5.4$; p = .61; GFI = .992; AGFI = .976; RMSEA = .000.

Discussion

Study 2 also showed the absence of gender differences in attitudes towards nature. No differences were also found in indicators of connectedness with nature between Ukrainian and Belarusian students. This can be estimated as an expected result taking into account the proximity of these two Slavic cultures. The lower meaningfulness in the group of Belarusian students, which determines a lower sense of coherence as a whole, is in some way consistent with Satzuk's (2014) data on the low SOC levels among Belarusian students that were explained by the author as lack of choice and inconsistency of demands in the existing educational system.

Table 5

Regression Equations Using Nature Relatedness, Trust and Meaningfulness Indicators to Predict Subjective Wellbeing Indicators

Dependent variable	Predictor NR4	R^2_{adj}	Predictors		R^2_{adj}	Predictors		R^2_{adj}	Predictors		R^2_{adj}	Predictors		R^2_{adj}
			Mf	NR4		GT	NR4		TW	NR4		TOS	NR4	
			Beta			Beta			Beta			Beta		
SSW	−.12*	.011*	−.54**	−.003	.28**	−.47**	−.05	.22**	−.34**	−.08	.12**	−.33**	−.08	.12**
SWL	.14*	.015*	.47**	.03	.22**	.32**	.09	.11**	.15*	.12*	.04***	.27**	.11	.09**

* $p < .05$; ** $p < .001$, *** $p < .01$.

Note. SSW — scale of subjective wellbeing, SWL — satisfaction with life, NR4 — short nature relatedness scale, Mf — meaningfulness, GT — general trust, TW — trust to world, TOS — trust to oneself.

Table 6

Predictive Role of Nature Connectedness, Meaningfulness and Trust for Subjective Wellbeing

Predictors	Dependent variable											
	SSW						SWL					
NR4 (Beta)	.01	.01			−.02	−.01	.03	.03			.02	.01
INS (Beta)			.04	.03	.05	.04			.03	.03	.02	.02
Mf (Beta)	−.40**	−.43**	−.41**	−.43**	−.41**	−.43**	.41**	.46**	.41**	.46**	.40**	.46**
GT (Beta)	−.28**		−.29**		−.29**		.14*		.14*		.14*	
TW (Beta)		−.12*		-.12*		−.13*		−.08		-.08		−.08
TOS (Beta)		−.21**		-.21**		−.21**		.18**		.18**		.18**
F	48.5	35.2	50.1	36.2	37.4	28.9	28.8	23.8	29.0	23.9	21.7	19.0
R^2	.34**	.33**	.35**	.34**	.35**	.34**	.23**	.25**	.24**	.25**	.23**	.25**

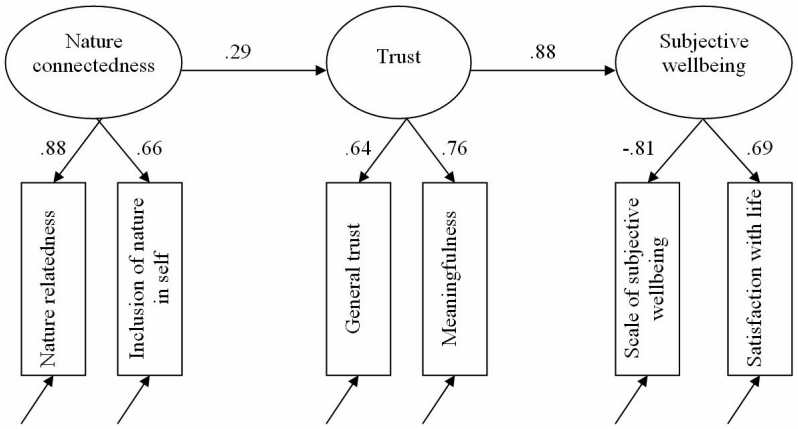
* $p < .05$; ** $p \leqslant .001$

Note. 1) SSW — scale of subjective wellbeing, SWL — satisfaction with life, NR4 — short nature relatedness scale, INS — inclusion of nature in self scale, Mf — meaningfulness, GT — general trust, TW — trust to world, TOS — trust to oneself as subscale.

2) Empty cells mean that the corresponding variable has not been included into the model.

Figure 5

Structural Model 5 of the Mediated Influence of Nature Connectedness on Subjective Wellbeing



As in Study 1, the correlation of INS with SW is generally slightly lower than that of NR and lower than those given by Zelenski & Nisbet (2014). With regard to the nature connectedness correlations with the SW indicators, there is a tendency to a slightly closer connection with SWL (but lower than Mayer & Frantz (2004) obtained by Connectedness to nature scale: $r = .20$).

Of all SOC scale measures, only Mf is associated with subjective closeness to nature, explaining, along with trust attitudes, its positive effect on subjective well-being. This can be explained by the fact that, firstly, meaningfulness indicates rather the emotional experience of the coherence of an event than the rational judgment (Osin, 2007); secondly, the explicit social subtext is absent in statements of this subscale. In other words, the meaningfulness of its content can be considered as a form of manifesting deep trust in life. The unity of meaningfulness with trust is also confirmed by the structural model associating this variable with general trust in the framework of one latent construct.

The hypothesis of trust as a mediator between nature connectedness and subjective well-being was confirmed. It was confirmed that general trust can be considered as an independent mediator explaining a beneficial role of nature connectedness for subjective well-being. At the same time, there are grounds to assert that deep trust/pre-trust as trust in the ecological environment at its various manifestations is used in the 'mechanism' of such influence. In this ecological context, trust in oneself as an actor and trust in social environment, being derived from the pre-trust, draws nearer to subjective well-being, which is indirectly influenced by the nature connectedness.

General Discussion

In sum, subjective closeness with nature is significantly associated with wellbeing in both — eudaimonic and hedonic — aspects, and trust is an important mediator

that determines the benefits of connectedness with nature for wellbeing. Through trust the influence of nature connectedness on wellbeing viewed through indicators of positive functioning also on subjective wellbeing manifested in the form of emotional comfort/discomfort and satisfaction with life, is interpreted. However, a comparison of the results of both studies indicates the significance of different facets of trust for different manifestations of wellbeing. Trust in oneself plays a decisive role in order to maintain dispositions that provide positive functioning. Experiencing one's connection with a large natural world enables the support of self-acceptance and the willingness to transform life experiences into new opportunities for personal growth, provided that this experience fuels self-confidence. Nature here rather acts as a strong partner, whose unofficial support adds self-confidence and helps to move forward. To maintain subjective wellbeing, it is more important to experience its original connection with the ancient world of nature and to accept the intrinsic value of life that increases the trust in life as a whole as meaningful and self-valuable.

In both cases, the natural world appears as a source of a vital resource not just in materialized meaning, but also in a broad psychological, spiritual sense. The experience of its ecosystem identity actualizes the genetically built willingness to rely on the ecological world in its coherence and follow natural processes. In practical terms, reliance on trusting relationships with the natural environment opens new directions for promoting such pro-ecological changes in lifestyle that will contribute to psychological wellbeing.

It should be underlined that, both for wellbeing of a fully functioning person and for subjective wellbeing, the role of subjective connectedness to nature is not big. At the same time, as noted earlier by Mayer & Frantz (2004), nature connectedness is not inferior in importance to such psychological wellbeing factors (that are often considered) as marital status, education, and income. And although, according to the results of both studies, the associations of nature connectedness with psychological wellbeing are somewhat inferior to those described for North American and European samples, they nevertheless confirm the importance of psychological connection with the natural world for human wellbeing.

It also should be noted that in both studies there were no gender differences in the nature of connection, as well as differences between Ukrainian and Belarusian students.

Special mention should be made of the limitations that these studies have. In each study different sets of techniques were used to research trust, and only one aspect of wellbeing, eudaimonic or hedonic, was considered. Although this had specific theoretical grounds, questions about the role of self-trust for subjective wellbeing and the importance of sense of coherence for eudaimonic wellbeing remain unclear. Besides, the low reliability indexes of Kupreichenko's questionnaire improve the measurement error, which could lead to an underestimation of the relationship between Trust to the world and Trust to other people with nature connectedness. It should also be noted that the study involved representatives of one social group, university students.

Therefore, in order to assert that the described mechanism of the influence of nature connectedness on psychological wellbeing is universal, it is necessary to obtain confirmation on samples of other age and social groups.

Conclusion

Although the positive effect of connectedness with nature for eudaimonic and hedonistic wellbeing is confirmed by numerous studies, the question of intrapersonal processes that determine such an impact remains open. The Petzold's concept of pre-trust can serve as a theoretical basis for understanding psychological formations through which the transition occurs from nature connectedness to experiencing happiness, to satisfaction with life, to one's implementation as a fully functioning person. Pre-trust as an evolutionarily formed trust to the ecological environment, to life in its diverse manifestations, sets a vector of positive comprehension of what is happening, the openness to new experience and the readiness to realize one's life potential. Nature connectedness as an experience of unity with nature actualizes pre-trust, thereby launching a 'system of psychological wellbeing maintenance'.

This interpretation is supported by the results of two studies that confirmed that trust mediates the relationship between nature connectedness and both subjective wellbeing and eudemonistic wellbeing considered in the context of positive functioning. At the same time, trust in oneself is included in support of positive functioning, while subjective wellbeing is supported by experiencing the meaningfulness of life events.

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References

Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. San Francisco, CA: Jossey-Bass.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

Berto, R. (2014). The role of nature in coping with psycho-physiological stress: a literature review on restorativeness. *Behavioral Sciences (Basel)*, *4*(4), 394–409.

Bratman, G. N., Hamilton, J. P., & Daily, G. C. (2012). The impacts of nature experience on human cognitive function and mental health. *Annals of the New York Academy of Sciences, 1249*, 118–136.

Bruni, C. M., P., & Schultz, W. (2010). Implicit beliefs about self and nature: Evidence from an IAT game. *Journal of Environmental Psychology*, *30*(1), 95–102. doi:10.1016/j.jenvp.2009.10.004

Capaldi, C. A., Dopko, R. L., & Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: a meta-analysis. *Frontiers in Psychology*, *5*, 976. doi:10.3389/fpsyg.2014.00976

Capaldi, C. A., Passmore, H.-A., Ishii, R., Chistopolskaya, K. A., Vowinckel, J., Nikolaev, E. L., Semikin, G. I. (2017). Engaging with natural beauty may be related to well-being because it connects people to nature: Evidence from three cultures. *Ecopsychology*, *9*, 199–211.

Carter, D. M. (2011). Recognizing the role of positive emotions in fostering environmentally responsible behaviors. *Ecopsychology*, *3*(1), 65–69.

Clayton, S. (2003). Environmental identity: a conceptual and operational definition. In S. Clayton & S. Opotow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 45–65). Cambridge, MA: The MIT Press.

De Young, R. (2010). Restoring mental vitality in an endangered world: Reflections on the benefits of walking. *Ecopsychology*, *2*(1), 13–22.

Dutcher, D. D., Finley, J. C., Luloff, A. E., & Buttolph, J. (2007). Connectivity with nature as a measure of environmental values. *Environment and Behavior*, *39*(4), 474–493.

Erikson, E. H. (1963). *Childhood and society* (2nd ed.). New York: Norton.

Eriksson, M. (2017). The sense of coherence in the salutogenic model of health. In M. B. Mittelmark, S. Sagy, M. Eriksson et al. (Eds.), *The handbook of salutogenesis* (pp. 91–96). Cham, Switzerland: Springer.

Esposito, L., McCune, S, Griffin, J. A., & Maholmes, V. (2011). Directions in human–animal interaction research: Child development, health and therapeutic interventions. *Child Development Perspectives*, *5*(3), 205–211.

Hartig, T., Mang, M., & Evans, G. W. (1991). Restorative effects of natural environment experiences. *Environment and Behavior*, *23*(1), 3–26.

Hinds, J., & Sparks, P. (2009). Investigating environmental identity, wellbeing and meaning. *Ecopsychology*, *1*(4), 181–186.

Howell, A. J., Passmore, H. A., & Buro, K. (2013). Meaning in nature: Meaning in life as a mediator of the relationship between nature connectedness and well-being. *Journal of Happiness Studies*, *14*, 1681–1696.

Jeserich, F. (2012). Kohärenzgefühl und Dimensionen des Vertrauens [Sense of coherence and dimensions of trust]. In Th. D. Petzold (Hrsg.), *Vertrauensbuch zur Salutogenese* (S. 209–244). Bad Gandersheim: Verlag Gesunde Entwicklung. (in German)

Kahn, P. H. (1999). *The human relationship with nature: Development and culture*. Cambridge, MA: The MIT Press.

Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior*, *31*, 178–202.

Kamitsis, I., & Francis, A. J. P. (2013). Spirituality mediates the relationship between engagement with nature and psychological wellbeing. *Journal of Environmental Psychology*, *36*, 136–143.

Kaplan, S., & Kaplan, R. (2003). Health, supportive environments, and the reasonable person model. *American Journal of Public Health*, *93*(9), 1484–1489.

Kaplan, S., & Kaplan, R. (2009). Creating a larger role for environmental psychology: The Reasonable Person Model as an integrative framework. *Journal of Environmental Psychology*, *29*(3), 329–339.

Kasser, T. (2009). Needs, psychological need satisfaction, personal well-being, and ecological sustainability. *Ecopsychology*, *4*, 175–180.

Kellowaya, E. K., Turner, N., Barling, J., & Loughlin, C. (2012). Transformational leadership and employee psychological well-being: The mediating role of employee trust in leadership. *Work and Stress, 26*(1), 39–55.

Kryazh, I. V. (2012). *Psikhologiya globalnykh ecologicheskikh izmeneniy* [Psychology of global environmental changes]. Kharkov: V.N. Karazin Kharkov National University. (in Russian)

Kryazh, I. V. (2016). Sub''ectyvna blyzkist iz pryrodou yak chynnyk psyhologichnogo zdorovya osobystosty [Subjective affinity with nature as factor of psychological health of person]. *Psychologia i Osobystist, 1*(9), 43–52. (in Ukranian)

Kryazh, I. V., & Levenetz, N. V. (2018). Dovira i emoziinyi intelekt jak prediktory sub'ektyvnogo blagopolucha u studentiv [Trust and emotional intelligence as predictors of subjective wellbeing of students]. *Visnyk KhNU imeni V.N. Karazina. Seria "Psychologia"*, *64*, 26–32. (in Ukranian)

Kryazh, I., & Grankina-Sazonova, N. (2018). Mediating role of trust between emotional intelligence and positive functioning of personality. *Fundamental and Applied Researches in Practice of Leading Scientific Schools*, *26*(2), 326–334.

Kupreichenko, A. B. (2008). *Psykhologiya doveriya i nedoveriya* [Psychology of trust and distrust]. Moscow: Institute of Psychology of the RAS. (in Russian)

Leontiev, D. A., & Osin, E. N. (2008). Aprobatsiya russkoyazychnykh versii dvukh shkal ekspress-otsenki sub»ektivnogo blagopoluchiya [Approbation of the Russian versions of two scales of express assessment of subjective well-being]. In *Materialy III Vserossiiskogo Sotsiologicheskogo Kongressa* [Proceedings of the 3rd All-Russian sociological congress]. Moscow: Institute of Sociology of the Russian Academy of Sciences / Russian Society of Sociologists. Retrieved from http://www.isras.ru/abstract_bank/1210190841.pdf (in Russian)

Maddi, S. R. (2013). *Hardiness: Turning stressful circumstances into resilient growth*. Berlin: Springer Science & Business Media.

Martens, D., Gutscher, H., & Bauer, N. (2011). Walking in "wild" and "tended" urban forests: The impact on psychological well-being. *Journal of Environmental Psychology, 31*, 36–44.

Martyn, P., & Brymer, E. (2016). The relationship between nature relatedness and anxiety. *Journal of Health Psychology, 21*(7), 1436–1445. doi:10.1177/1359105314555169

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, *24*, 503–515.

Mayer, F. S., Frantz, C. M., Bruehlman-Senecal, E., & Dolliver, K. (2009). Why is nature beneficial?: The role of connectedness to nature. *Environment and Behavior*, *41*(5), 607–643.

McCardle, P., McCline, S., Griffin, J. A., Esposito, L., & Freund, L.S. (Eds.). (2011). Animals in our lives: Human-animal interaction in family, community, and therapeutic settings. Baltimore, MD: Brookes.

Nimer, J., & Lundahl, B. (2007). Animal-assisted therapy: A meta-analysis. *Anthrozoųs, 20*(3), 225–238.

Nisbet, E. K., & Zelenski, J. M. (2013). The NR-6: a new brief measure of nature relatedness. *Frontiers in Psychology, 4*, 813. doi:10.3389/fpsyg.2013.00813

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior, 41*(5), 715–740.

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2011). Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *Journal of Happiness Studies, 12*(2), 303–322.

Ojala, M. (2005). Adolescents' worries about environmental risks: Subjective well-being, values, and existential dimensions. *Journal of Youth Studies*, *8*(3), 331–347.

Ojala, M. (2012). How do children cope with global climate change? Coping strategies, engagement, and well-being. *Journal of Environmental Psychology*, *32*, 225–233.

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. *Futures*, *94*, 76–84. doi:10.1016/j.futures.2016.10.004

Osin, E. N. (2007). Chuvstvo svjaznosni kak pokazatel psihologicheskogo zdorovja i ego diagnostika [Sense of coherence as psychological health indicator and its diagnostic]. *Psichologicheskaja Diagnostika*, *3*, 22–40. (in Russian)

Osin, E. N., & Rasskazova, E. I. (2013). A short version of the Hardiness Test: Psychometric properties and organizational application. *Vestnik Moskovskogo Universiteta. Seriya 14. Psikhologiya, 2*, 147–165. (in Russian)

Petzold, T. D. (2012). Urvertrauen, Misstrauen und Vertrauen [Basic trust, mistrust, and trust]. In Th. D. Petzold (Hrsg.), *Vertrauensbuch zur Salutogenese* (S. 12–25). Bad Gandersheim: Verlag Gesunde Entwicklung. (in German)

Ratcliffe, E., Gatersleben, B., & Sowden, P. T. (2013). Bird sounds and their contributions to perceived attention restoration and stress recovery. *Journal of Environmental Psychology*, *36*, 221–228.

Raudsepp, M. (2001).Values and environmentalism. *TRAMES, 5*(55/50)(3), 211–233.

Rogers, C. (1961). *On becoming a person*. Boston: Houghton Mifflin.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069–1081.

Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychother Psychosom*, *83*, 10–28.

Schultz, P. W. (2002). Inclusion with nature: the psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 62–78). Norwell, MA: Kluwer Academic Publishers.

Schultz, P. W., Shriver, C., Tabanico, J. J., & Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology, 24*(1), 31–42.

Schumacker, R. E., & Lomax, R. G. (2010). A beginner's guide to structural equation modeling (3rd ed.). New York: Routledge.

Shevelenkova, T. D., & Fesenko, P. P. (2005). Psihologicheskoe blagopoluchie lichnosti (obzor osnovnyih kontseptsiy I metodika issledovaniy) [Psychological wellbeing of person]. *Psihologicheskaya Diagnostika*, *3*, 95–123. (in Russian)

Skripkina, T. P. (2000). *Psikhologiya doveriya* [Psychology of trust]. Moscow: Academiya. (in Russian)

Steiger, J. H. (1995). Structural Equation Modeling (SEPATH). In *Statistica 5* (Vol. III). Tulsa, OK: StatSoft Inc.

Stern, M. J., & Coleman, K. J. (2015). The multidimensionality of trust: Applications in collaborative natural resource management. *Society and Natural Resources*, *28*(2), 117–132.

Summers, J. K., & Vivian, D. N. (2018). Ecotherapy – A forgotten ecosystem service: A review. *Frontiers in Psychology. 9*, 1389. doi:10.3389/fpsyg.2018.01389

Tam, K.-P. (2013, a). Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology*, *34*, 64–78.

Tam, K.-P. (2013, b). Dispositional empathy with nature. *Journal of Environmental Psychology*, *35*, 92–104.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology, 11*(3), 201–230.

Von Lindern, E., Lymeus, F., & Hartig, T. (2017). The restorative environment: A complementary concept for salutogenesis studies. In M. B. Mittelmark, S. Sagy, M. Eriksson et al. (Eds.), *The handbook of salutogenesis* (pp. 181–195). Cham, Switzerland: Springer.

Wells, N., & Evans, G. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior*, *35*, 311–330.

Wilson, E. O. (1984). *Biophilia. The human bond with other species*. Cambridge, MA: Harvard University Press.

Zelenski, J. M., & Nisbet, E. K. (2014). Happiness and feeling connected: The distinct role of nature relatedness. *Environment and Behavior*, *46*(1), 3–23.

Zelezny, L., Chua, P., & Aldrich, C. (2000). Elaborating of gender differences in environmentalism. *Journal of Social Issues, 56*(3), 443–457.

Iryna V. Kryazh — head of the department, Department of Applied Psychology, School of Psychology, V. N. Karazin Kharkiv National University, D.Sc.
Research area: conservation psychology, health psychology.
E-mail: ikryazh@gmail.com

Позитивные эффекты связанности с природой для психологического благополучия: значение доверия как медиатора

И.В. Кряж[a]

[a] *Харьковский национальный университет имени В.Н. Каразина, 61022, Украина, Харьков, площадь Свободы, д. 6*

Резюме

Хотя позитивные эффекты связанности с природой (СП) для психологического благополучия, рассматриваемого в эвдемонистическом и гедонистическом ракурсах, подтверждены многочисленными исследованиями, вопрос о внутриличностных процессах, объясняющих такое влияние, остается открытым. Гипотеза биофилии Уилсона указывает на эволюционную основу СП, в качестве которой может быть рассмотрено пра-доверие как эволюционно сформированное доверие к экологическому миру, к жизни в ее различных проявлениях (Petzold, 2012). Предполагается, что пра-доверие задает вектор позитивного осмысления происходящего, в то время как СП актуализирует доверие, создавая тем самым «систему поддержания психологического благополучия». Гипотеза, что доверие выступает медиатором между СП и психологическим благополучием, проверяется в двух исследованиях с применением множественного регрессионного анализа и моделирования структурными уравнениями (SEM). В исследовании 1 (выборку составили 232 украинских студента) подтверждается модель влияния СП на позитивное функционирование (операционализированное через Шкалу психологического благополучия Ryff и Тест жизнестойкости) с доверием как медиатором. Исследование 2 (выборка включала 276 украинских и белорусских студентов) показало, что латентная переменная, манифестированная показателями доверия и чувства связанности, опосредует отношения между СП и субъективным благополучием. Показано, что доверие к себе включается в поддержку позитивного функционирования, в то время как субъективное благополучие

поддерживается переживанием осмысленности происходящего. Обсуждаются ограничения исследований, а также значение полученных результатов для психологии экосохранения.

Ключевые слова: связанность с природой, доверие, пра-доверие, психологическое благополучие, субъективное благополучие, позитивное функционирование, биофилия.

Кряж Ирина Владимировна — заведующая кафедрой, кафедра прикладной психологии, Харьковский национальный университет имени В.Н. Каразина (Украина), доктор психологических наук.
Сфера научных интересов: психология экосохранения, психология здоровья.
Контакты: ikryazh@gmail.com