

Connection with Nature in children's reference adults

Damaris Teixeira Paz ^I

Elisa Ferrari Justulin Zacarias ^{II}

Maria Inês Gasparetto Higuchi ^{III}

Abstract: Positive experiences with nature during childhood are a strong predictor of Connection with Nature (CWN) throughout life, which has a strong explanatory factor of integral well-being and pro-environmental behavior. The objective of this study was to verify the CWN level of adults and the frequency with which they promote contact with nature to the children in their care. The research protocol included two CWN scales, questions about contact with nature, and sociodemographic data. Thus, 58 parents and 150 teachers of basic education from public schools in Manaus-AM participated in the study. Results showed these adults' education area, age group, and frequency of contact with green areas are significant to differentiate their CN levels. Area of education is also an important factor in determining how often parents and teachers take children to green areas.

Keywords: Contact with nature; Childhood; Connection with nature, Parents; Teachers.

^I Federal University of Amazonas, Manaus, AM, Brazil.

^{II} Amazon National Research Institute, Manaus, AM, Brazil.

^{III} Amazon National Research Institute, Manaus, AM, Brazil.

São Paulo. Vol. 25, 2022

Original Article

DOI: <http://dx.doi.org/10.1590/1809-4422asoc20200013r1vu2022L2OA>

Introduction

Several studies point out the numerous benefits that come from contact with nature, whether as a source of cognitive restoration, relaxation and well-being (COX; GASTON, 2016), as a reducer of symptoms of stress and depression (BEZOLD et al., 2018), or as a mitigating factor in the mortality rate (GASCON et al., 2016). Contact and a positive approach to nature are also crucial for the development of Connection with Nature (CWN), a subjective relationship of bonding with nature that comprises cognitive, affective and experiential aspects (NISBET; ZELENSKI, 2013). This state of consciousness sustained in the interrelationship between itself and the rest of nature, acts as a motivator of commitment and responsibility to conserve this way of life (ZYLSTRA et al., 2014).

The CWN construct derives from the Biophilia hypothesis, which assumes that every human being has an innate need to connect with other living beings (WILSON, 1984). This relationship has taken different forms during the evolutionary process of humanity, shaping itself to adapt to the threats and opportunities of the environment (LUMBER; RICHARDSON; SHEFFIELD, 2017). Even with the resounding technological advances in recent decades, the need to establish close relationships with the natural world is permanent for human beings (LAIRD, 2019).

In addition to promoting the well-being and health – both physical and mental – of people, CWN is also a strong predictor for people to put into practice pro-environmental behaviors and attitudes (LUMBER; RICHARDSON; SHEFFIELD, 2017). In this sense, the CWN construct is a relevant aspect for comprehensive health and environmental protection. However, people differ in relation to the CWN levels, either by the types of relationships they establish with the natural world (NISBET; ZELENSKI, 2013), by the forms of understanding they have about what nature is (MIKOŁAJCZAK et al., 2019), by how much people believe they are part of it (SCHULTZ, 2001), or by the affective bonds established with nature (MAYER; FRANTZ, 2004).

Since the CWN is such an important construct, several studies point to the need for its formation and/or maintenance to be stimulated from the first years of a person's life. Childhood is a very important phase for the construction of CWN and positive experiences with nature at this phase can have long-term effects during a person's life (BRAUN; DIERKES, 2017). Children's interaction with natural environments provides several benefits, such as social development from the bond with the place and the sense of belonging (CUMMING; NASH, 2015); mental development in restoring emotions and attention, in addition to stimulating physical activities (HARRIS, 2018; KAPLAN, 1995; SMITH; DUNHILL; SCOTT, 2018; ULSET et al., 2017).

In the school environment, experiences with and in nature are also associated with better reading skills among children in primary education (HODSON; SANDER, 2017), with greater engagement at school (REESE, 2018; MATSUOKA, 2010) and with the manifestation of pro-social behaviors (WHITTEN et al., 2018) and pro-environmental behaviors, as well as helping children to identify their impact on the natural world and to be willing to take environmental care actions (SAN JOSE; NELSON, 2017). Daily contact

with natural areas – whether at home or at school – intensifies children's resilience in the face of stressful events (COLLADO; CORRALIZA, 2015; CORRALIZA; COLLADO, 2011). Therefore, fathers/mothers and educators play a crucial role in promoting contact with natural environments through frequent and positive experiences for the children in their care and, thus, strengthening the CWN.

Despite all the benefits contact with nature provides, the reality remains marked by the relative absence of experiences in open places with nature, characterizing a worrying distance. This situation can have consequences for the integral development of children, culminating in problems such as what became known as nature deficit disorder (GRAY; PIGOTT, 2018; LOUV, 2016). In general, the troubled lifestyle in the city has led many parents to restrict their children's play to closed environments, and teachers to limit teaching to the perimeter of the classroom (JAMES; WILLIAMS, 2017). All these factors became more salient in this time of Covid-19 pandemic, where displacements and social proximity were/are not recommended, including access to green areas.

In large urban centers, there is a tendency for human beings to move away from nature. In a study by Imai, Nakshizura and Khohsaka (2018), they found a reduction in children's experiences with some native species in Japan over 15 years. This situation shows an indication of the disconnection between children and nature in that country, where the CWN is admittedly high. Such distance is also perceived in the large cities of the Amazon, a territory of exuberant nature, as is the case of Manaus, capital of the state of Amazonas.

Embedded in the largest tropical forest in the world, the city of Manaus, with a population of more than 2 million inhabitants (IBGE, 2010), grows incessantly, so that nature ends up giving way to human occupation. With few forest fragments that can be visited, Manaus is among the least forested capitals, with about 23.9% of public roads with trees (IBGE, 2010). This reality was confirmed by Zacarias (2018), who found that the contact of Manaus residents with natural environments is reduced. The author points out the difficult access, lack of security, heat and difficulties related to transport as obstacles to contact with natural environments. Similar results were also found by Brito (2018) in Boa Vista, capital of Roraima, who showed that nature is understood by the child as a beautiful and fun place, but a distant place, which reveals an affective distance between the child and the natural world, largely due to the few opportunities given by the adults with whom she lives.

The role of the reference adult in the Connection with Nature

Considering that children depend on adults to carry out experiences of contact with nature, fathers/mothers and teachers become references in this sense. Children explore the environment around them from the opportunities offered by the adults of reference. In a study with environmental leaders, Chawla (2006) attributes the commitment of these people to two main reasons: amount of time spent in contact with nature and the figure of the adult reference, essential to convey respect for the natural world.

Thus, reference adults can both arouse interest and distance children from natural environments, based on opportunities to explore the environment around them (WINDHORST; WILLIAMS, 2015). In this way, the view that fathers/mothers and teachers have of nature can reverberate in the type of relationship that children establish and will establish with nature. If the reference adult has a close relationship with nature, positive interactive cycles are created and allow children to move freely in nature, leading them to discover the engaging resources that nature provides, and to increase their motivation to explore more intensely and repeatedly (KYTTÄ, 2006).

If childhood is a great time to stimulate CWN levels, the disconnection process also occurs in childhood. In both situations, it is largely due to the attitudes and beliefs of reference adults about contact with nature. Even with high CWN levels in childhood, it is common to observe a reduction in these levels in adolescence, as at this age there is a tendency to prioritize the establishment of social bonds with peers, leaving experiences in the background. However, in early adulthood, CWN tends to increase and remain stable throughout life (HUGHES et al., 2019). If, however, the experiences in nature manage to associate the adolescents' own needs and unify the bond with their peers, it is likely to expect that the CWN levels will be expressed in a continuous and increasing order.

Detachment from nature can make children see it as something threatening that must be controlled and does not need to be protected. This can also make them become adults disconnected from the natural world (MUSTAPA; MALIKI; HAMZAH, 2015), limiting the enjoyment of the benefits provided by nature and preventing them from adopting more sustainable behaviors in their daily lives. On the other hand, people who had many positive experiences with nature during childhood, tend to provide this contact for the children and young people in their families when they become adults (ERNST; THEIMER, 2011; GRAY; PIGOTT, 2018; KALS; SCHUMACHER; MONTADA, 1999).

For this reason, adults have relevant contributions to fostering CWN among children and young people. The connection levels of these adults can reveal the types of contribution to the approach to nature that each educator, educator or guardian will have. Thus, a person with a low level of connection will offer few opportunities to explore the natural environment, the opposite situation to a person with high CWN levels.

Based on these arguments, this study started from the question of whether this tendency would be present in fathers/mothers and teachers of children in the city of Manaus-AM. Are these children's reference adults promoting contact or contributing to the distance from nature and, consequently, the lack of elevation of CWN levels? Thus, the objective of this study was to verify the level of CWN of fathers/mothers and teachers of basic education and the frequency with which they promote contact with nature to children. For the production of this study, information collected in a pre-pandemic master's and scientific initiation research was used.

Method

These are data from exploratory descriptive studies, through a research protocol

containing questions about sociodemographic data, social strata and questions related to the topic of study. The CWN has implicit and explicit measures. Social Likert-type scales are generally used to measure the explicit CWN; for the implicit CWN, in general, experimental methods are used (GENG et al., 2015). The main advance in scientific production on CWN has been the development of scales adapted to different audiences and contexts (RESTALL; CONRAD, 2015). In this sense, two scales were used: the Connection with Nature Scale (ECN), proposed by Mayer and Frantz (MAYER; FRANTZ, 2004) and the Inclusion of Nature in the Self Scale (INS), developed by Schultz (SCHULTZ, 2001). Both scales were chosen for their ability to measure CWN and because they have already been used and validated in studies aimed at the Brazilian population (PESSOA et al., 2016; ROSA; ROAZZI; HIGUCHI, 2015).

The Connection with Nature Scale (ECN) measures the affective dimension of the CWN, being composed of fourteen sentences designed to measure the extent to which the person feels part of the natural world and what is their connection with it. Participants indicate their degree of agreement with each of them, with 1 being the lowest degree of agreement and 5 the highest degree. Items are for example: "I often feel at one with nature around me," or "I have a clear understanding of how my actions affect nature," "I often feel like I am just a small part of nature, and that I am no more important than the grass or the birds," among others (MAYER; FRANTZ, 2004).

The Inclusion of Nature in the Self (INS) scale is a single-item instrument proposed to measure the degree to which an individual includes nature as part of their identity. It is a measure of people's cognitive relationship with nature, that is, how much a person believes they are part of nature (SCHULTZ, 2001). This pictorial scale consists of seven figures composed of pairs of circles, one labeled as "Self" and the other as "nature," in different degrees of overlap, from totally separated (low connection) to total coupling between the two entities (high connection). It is up to the participant to indicate the figure that they believe best represents their individual relationship with nature (Figure 1).

Figure 1 – Portuguese Translation of the INS scale



Source: Schultz, 2002.

Data were collected in two studies: Study 1 was carried out in 2014 with basic education teachers who taught in elementary school I, II, and high school in state and municipal schools. Study 2 was carried out with fathers and mothers with children up to eleven years old, in 2017. The inclusion criterion adopted in Study 2 was fathers/mothers, biological or not, with sons and daughters up to 11 years of age. The exclusion criterion was fathers/mothers who did not live together or did not take care of the child on a daily basis. For Study 1, 22 schools were selected, distributed in the six areas of the

city, with the participation of approximately 7 teachers in each one. Both teachers and fathers/mothers were selected according to accessibility and filled out the data collection instrument at their workplaces or at their homes, on a previously scheduled date and time. The filling was done individually and lasted, on average, 15 minutes. Data were tabulated in a statistical data sheet of the Social Package for Social Sciences (SPSS), version 21. After this step, data were submitted to simple descriptive analysis and exploratory factor analysis. Both studies were carried out in the city of Manaus, with the respective approvals of the Research Ethics Committee.

In total, 208 people participated in the research, being 150 teachers and 58 fathers/mothers (109 women and 99 men). The mean age among participants was 39.3 years (min. 23 and max. 61), with 93% of respondents with higher or postgraduate education, and 7% with high school. Among the 193 participants who had attended higher education, 14% were in the exact sciences, 63% in the humanities, 21.5% in the biological sciences and 1.5% in interdisciplinary areas.

Results and Discussion

CWN levels

The scales used in this research involve the cognitive (INS) and affective relationship with nature (ECN). At INS, 56.7% of participants showed high CWN levels (E, F and G), 32.7% indicated having medium levels (C and D) and 10.6% indicated having low levels (A and B). In the ECN, 56.3% of the participants showed high CWN levels (averages above 4), 43.7% medium levels (averages between 2.1 and 3.9) and none indicated having low levels (averages below 2.0).

For the ECN scale, factor analysis without rotation indicated the exclusion of two items - item 4 "I often feel disconnected from nature" and item 12 "When I think about my place on Earth, I consider myself at the top of the hierarchy that exists in nature." After this exclusion, the sampling adequacy test (Kaiser-Meyer-Olkin) was 0.806, the Bartlett sphericity test: $\chi^2 = 483.318$; $gl = 55$; $p < 0.01$; and the internal consistency analysis showed a 0.75 Cronbach's alpha. The scale proved to be unifactorial, as described by the authors (MAYER; FRANTZ, 2004). The average of the remaining items was 4.22 with $sd = 0.47$, evidencing a high level of CWN among the study participants (Table 1).

Table 1 - Means of ECN itens

ECN items	Mean	sd
I often feel at one with the nature around me.	3.9	0.9
I think of nature as a community of which I am a part.	4.3	0.8
I recognize and appreciate the intelligence of other living beings.	4.4	0.9
When I think about my existence, I imagine myself as part of a great cycle of life.	4.6	0.6
I feel an identification with plants and animals.	4.2	0.8

I feel that I belong to Earth as much as it belongs to me.	4.2	0.9
I have a clear understanding of how my actions affect nature.	4.6	0,7
I often feel part of the web of life.	4.4	0.8
I feel that all of Earth's inhabitants, human and non-human, share the same life force.	4.0	0.8
Just as a tree is part of the forest, I feel part of nature.	4.3	0,7
I often feel like I'm just a small part of nature, and that I'm no more important than the grass or the birds.	3.5	1.3

Source: Prepared by the authors with adaptation of the scale by Mayer and Frantz (2004), 2021.

Some variables were tested to verify the respective influence on the CWN levels of the reference adults, among them, schooling, age, field of training, type of contact with green areas and memory about outdoor play (Table 2). One-way ANOVA analysis and independent T test were performed.

Table 2 - CWN levels of INS and ECN according to the participants' profile

	INS		ECN	
	M	sd	M	sd
Father/mother	4.3*	1.3	4.2	0.5
Teacher	5.0*	1.7	4.2	0.4
High school	4.2*	1.3	4.0	0.4
Higher education	4.9*	1.7	4.2	0.5
Exact Sciences	5.2	1.4	4.2	0.5
Humanities	4.7	1.8	4.2*	0.5
Biological Sciences	5.3	1.5	4.4*	0.3
Interdisciplinary	5.7	1.5	4.7	0.2
23 to 29 years	4.5	1.5	4.2	0.4
30 to 39 years	4.3*	1.6	4.1*	0.5
40 to 49 years	5, 4,	1.4	4.3*	0.4
50 to 61 years	5.2	2.0	4.3	0.6
Always walk in green areas	5.5**	1.5	4.4**	0.4
Sometimes I walk in green areas	4,5.	1.5	4.2*	0.5
Rarely walk in green areas	4-2	1.9	4.0	0.4
I always played outdoors	5.0*	1.6	4.2	0.4
Sometimes I played outdoors	3/9	1.5	4.0	0.5

I rarely played outdoors	4.1	1.7	4.1	0.5
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Note: the INS averages refer to 7 levels and the ECN to 5 levels.

* $p < 0.05$, ** $p < 0.01$.

Source: Elaborated by the authors

In the measurements of CWN, differences are observed between characteristics of the profile of the reference adults. Schooling proved to be an important variable to determine greater integration with nature when the measure refers to the cognitive component. The independent T test showed that participants with higher education have higher INS levels in relation to those with secondary education ($t(206) = -2.01$; $p < 0.05$).

In the ECN, which measures the affective bond, however, although we observed a slight difference, having higher education is not consolidated as a differentiating aspect among these adults ($t(206) = -1.2$, $p > 0.05$). Gifford and Nilsson (2014) also found that people with more years of formal education are the ones who are most concerned about environmental problems. Schooling as a predictor of environmental behaviors can have an effect on knowledge and this on behavior. In the study by Higuchi et.al. (2018), for example, the authors found that knowledge about the role of the Amazon forest in climate change strongly influences beliefs about the protection and use of forest resources. Knowledge is likely to increase people's ability to identify the benefits of environmental conservation. However, it is necessary to consider other variables (type of knowledge, values, age, context, etc.) that may contribute to knowledge, in association with increased schooling, whether effectively or as a difference factor in one's action in other environmental issues.

In the ECN, which assesses the connection from an affective point of view, the significant differences are in the age groups, in the area of training and in the frequency of contact with nature that the adult has. The one-way ANOVA showed that adults aged 30 to 49 years have significantly higher CWN levels, leading us to believe that at this point in life, these adults may be experiencing a phase of greater academic and work stability ($F(3.204) = 2.9$; $p < 0.05$). In terms of age and frequency of contact, the differences are in accordance with the pattern found on the INS scale ($p < 0.05$). However, for the ECN, the area of training is a prominent factor, as people trained in the areas of biological and interdisciplinary sciences had higher averages than those trained in other areas ($F(4.203) = 3.3$; $p < 0.05$).

It was also found that although teachers, in general, had a higher level of formal education than that found in most fathers/mothers, the fathers/mothers' years of study indicate an influence that can affect the children's CWN level. Such results are in line with a study carried out in Turkey, which showed that children with higher CWN levels had fathers/mothers who had completed higher education (AHMETOGLU, 2019). In this way, this result suggests that more years of studies make reference adults recognize the importance of nature and maintain high affective bonds of children, under their care,

with nature.

Age plays an important role in CWN levels, since participants over 30 years old were the ones who most identified themselves as part of nature. Both fathers/mothers and younger teachers felt less connected to nature. One justification is that younger people tend to be further away from nature and care less about environmental problems (GIFFORD; NILSSON, 2014). In the study by Rosa, Higuchi and Roazzi (2021) with Brazilian university students from Manaus and Ceres, younger people also showed less proximity to the forest than people older than 25 years.

Contact with participants' green areas, during leisure time, is also strongly related to INS degrees. It is also noted that fathers/mothers and teachers with a greater relationship with nature are those who most frequent green areas. The one-way ANOVA showed that those who always go to green areas have levels of INS ($F(2.205) = 13.8$; $p < 0.01$) and ECN ($F(2.205) = 12.4$; $p < 0.01$) higher than those of the other groups. This is a strong association, as contact with natural environments strengthens CWN, and high degrees of CWN encourage the search for more contact with nature (CLEARY et al., 2020; NORTON, 2009). This study corroborates the results of other studies that emphasize the greater the contact, the greater the possibility of an increase in CWN (NISBET; ZELENSKI, 2013), and that positive experiences in nature during childhood reverberate in an increase in CWN in adulthood (HUGHES et al. al., 2019).

The results of both scales show that participants who reported always playing outdoors in childhood had higher INS rates than those whose frequency was marked "sometimes" and "rarely" (Sometimes = 3.8; Rarely = 4.1, and Always = 5.0). This difference was statistically significant ($p < 0.05$). These data are repeated in the ECN, but slightly differentiated (Rarely = 4.1; Sometimes = 4.0; Always = 4.2), that is, not representing a significant difference ($p > 0.05$). These results show that the cognitive measure of CWN is positively related to the memory frequency of playing in free areas. On the other hand, the ECN measure does not show this relationship, since affectivity could be consolidated in other variables for higher CWN indices.

CWN and Experiences/contacts provided to children

Results show that, although there is no significant difference between the degree of CWN and the frequency with which these adults take the children under their care to green areas, there is a rare effort to provide children with experiences and contact with nature (Table 3).

Table 3 - INS and ECN levels as a function of frequency of contacts provided to children

Frequency of contacts provided	INS		ECN	
	M	sd	M	sd
I always take the kids to green areas	5.2	1.3	4.3	0.4
Sometimes I take the kids to green areas	4.8	1.5	4.3	0.5
I rarely take children to green areas	4.8	1.8	4.2	0.5

Source: Elaborated by the authors

Data show that, despite having high CWN levels, fathers/mothers and teachers rarely visit natural spaces and do not take their children to have assiduous contact with nature (Table 4). Among the difficulties Zacarias (2018) shows are the lack of time, logistical problems to travel to natural areas and the perception of risk that the environments offer. Such obstacles were also observed in studies carried out in other countries such as Norway, England, the United States and Oceania (SKAR; GUNDERSEN; O'BRIEN, 2016; SKAR; KROGH, 2009).

Table 4 - Frequency of contact with nature provided to children and students by reference adults

	I take my students or children to green areas			
	N	Rarely	Sometimes	Always
High School	15	6.7%	60%	33.3%
Exact Sciences	27	81.5%	14.8%	3.7%
Humanities	121	10.7%	24%	65.3%
Biological Sciences	42	40.5%	50%	9.5%
Interdisciplinary	3	0	33.3%	66.7%
Teacher	150	74%	22.7%	3.3%
Fathers/mothers	58	13.8%	51.7%	34.5%
23 to 29 years	35	48.6%	40%	11.4%
30 to 39 years	73	45.2%	37%	17.8%
40 to 49 years	71	64.8%	23.9%	11.3%
50 to 61 years	29	79.3%	20.7%	0
Always walk in green areas	88	54.5%	26.1%	19.3%
Sometimes I walk in green areas	74	40.5%	52.7%	6.8%

Rarely walk in green areas	46	89.1%	4.3%	6.5%
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Source: Prepared by the authors.

When asked about the effective contact with nature provided to children, fathers/mothers and teachers reported different practices. Teachers take fewer students to green areas, compared to the frequency with which fathers/mothers take their sons and daughters. On the one hand, this is mainly due to the logistical difficulties that teachers face in carrying out such activities (PAZ; AZEVEDO; HIGUCHI, 2014). On the other hand, although the city of Manaus is surrounded by areas with native forests, there are few green areas that can be accessed by schools for educational activities. Visits to these spaces demand resources to facilitate the displacement that are not always accessible to school institutions and teachers. In the family environment, it is observed that contact with nature is something more frequent, showing that fathers and mothers are able to provide children and adolescents with greater contact with natural environments.

This result may also indicate that the school does not favor this activity, assuming that Amazonian families would attend these places on a regular basis. This is due to the fact that contact with green environments for leisure activities is part of the Amazonian culture, especially in places with the presence of water bodies such as lakes, streams and rivers (OLIVEIRA, 2008). In rural Amazonian communities, children have in their daily lives continuous contact with natural environments and their seasonal changes, such as the flooding and ebb of rivers (ZACARIAS, HIGUCHI, 2021). But in the city of Manaus, however, with the urbanization process many of these natural spaces were degraded, with the removal of natural vegetation, pollution and silting of water bodies. Thus, the most conserved places are far from the urban core. This difficult access thus restricts those who do not have accessible means of travel.

The area of training of fathers/mothers and teachers is another factor that impacts the frequency of visits to green areas with sons, daughters and students. The analyzes showed that participants trained in the areas of exact sciences and humanities take children less to green environments than those trained in other areas, including participants who only have a high school education.

The academic knowledge that professionals in the field of biological and interdisciplinary sciences have about the natural environment may have contributed to the appreciation of natural spaces. Having this type of knowledge helps people understand the importance of natural environments in the occurrence of various phenomena and the respective need for environmental conservation (GIFFORD, NILSSON, 2014). In this sense, adults with such knowledge are more inclined to provide children with both contact and care responsibility.

In the school context, educational legislation recommends that teachers from all areas of education work on environmental issues in an interdisciplinary way. This guideline is not restricted to the disciplines of biological sciences, but insists on the transversality that must be present in early childhood education to higher education (BRASIL/PR - Law

9795/99; BRASIL/MEC-RE 2/2012). However, these data demonstrate that there are curricular challenges to include environmental knowledge in training areas that traditionally do not focus on this knowledge. In this sense, the results show that having a university education is not necessarily a prerequisite for having contact with natural spaces.

The results show other information, apparently conflicting, when it comes to education and training area of adults and the respective incentive of contact with nature for children. Among the participants who most take their children to natural spaces are those with high school education. Coincidentally, only fathers and mothers are included in this group, as all teachers have higher education. This sample characteristic interferes with the information obtained in the study, but also reveals that the training of fathers and mothers does not affect the promotion of contact with nature for children so much. Among teachers, the training area is a characteristic that directly affects the promotion of visits to green areas.

When considering adults individually, however, they have significant contact with natural environments. Among them, 42.3% say they always visit green areas, 35.6% do so sometimes and 22.1% rarely do this type of visit. As for this contact during childhood, 82.7% of the participants reported that they always played outdoors, not necessarily specifying being in nature. Gaining independence in adulthood allows these parents and teachers to make more visits to green areas, even if they are not always able to provide the same experiences for the children they are responsible for. In other studies carried out in Brazil, it was found that among adults, as observed in other countries, contact with nature during childhood is very important to influence living with natural environments during adulthood (ROSA; PROFICE; COLLADO, 2018).

Constant contact with nature is an important factor for strengthening the CWN, as the feeling of well-being provided by natural environments increases people's affective bond with it, making them feel willing to take care of environmental protection (NORTON, 2009). This contact in childhood is a determining element for the construction of the CWN, in such a way that positive experiences with nature tend to extend into adulthood with a greater search for activities in green environments (ROSA; PROFICE; COLLADO, 2018). It remains, however, to observe the external contexts that limit the effective exercise of proximity to nature, as evidenced above.

In the Amazon region, natural environments and nature have different meanings and interpretations by the people who live there. These understandings range from visions of nature and the forest as a source of material resources to the representation of the divine, a space of peace and tranquility (MIKOLAJCZAK et al., 2019; PAZ et al. 2021). However, such meanings seem paradoxical in the face of distance. This distancing operates to undo these positive sensations and makes some people relate natural spaces to risks and physical discomfort (MIKOLAJCZAK et al., 2019), further increasing the disconnection with nature.

Even if during childhood there are few positive experiences with nature, during adulthood it is still possible to strengthen CWN. Once constituted, it tends to remain stable, but direct experiences with natural environments enhance the bond with the

natural world (GENG et al., 2015; IVES et al., 2018). For this reason, educational institutions can and should develop programs that involve teachers, students and their families in activities in nature, to initiate a cycle of closeness and affective bonding.

Final Considerations

Contact with nature is a predictor of CWN and, therefore, is essential for the formation of bonds with natural environments. Necessary for both the promotion of human health and environmental protection. However, some children have had less contact due to the CWN characteristics of their fathers, mothers and teachers. It is a consensus that the disconnection with nature begins in childhood, influenced mainly by the relationship that the child's reference adults have with nature. In this research, it was found that the age group and education are characteristics that differentiate the degrees of CWN. Older fathers/mothers and teachers with more years of formal education showed higher CWN levels.

Academic training areas and CWN levels are positively related to the frequency with which educators take their sons and daughters or students to green areas. Those trained in the sciences and humanities provide little experience with nature to children when compared to those trained in other areas. The social function also distinguishes these experiences, as fathers and mothers provide more experiences with nature to their sons and daughters than teachers can provide to their students.

At the moment of a pandemic we are experiencing, some considerations are in order, as forced social isolation has touched on the need for proximity and experiences in nature. This spatial and social confinement, along with the specific nuances of the virus, triggered another factor in this equation, the increase in stress and anxiety (PANCANI et al., 2020). This scenario of emotional imbalance could be mitigated by living in open areas, with little agglomeration, such as urban green parks or nature preservation places. The adoption of an agenda of experiences with nature, both in the family and at school, can bring relief to a reality that prevents children from having a better quality of life. In times of a pandemic, this situation is unusual, but it can find cheer in the incentive to return to natural environments when everything passes.

In this way, it is urgent to resume and strengthen this contact as a factor of influence, whether for children or adults, so that they can count on and enjoy the benevolence functions of nature, in addition to creating bonds that allow the protection of these spaces. It is also considered necessary to identify what are the obstacles that schools and families find to bring children and young people closer to the natural environments in the studied context. By identifying such externalities, it will be possible to establish strategies for a solution. Such strategies can be effective in facing the effects and causes of disconnection with nature in new generations.

Despite the results produced, some limitations must be considered. This study was conducted with a sample of people with a relatively high level of education, therefore, the absence of participants with levels of education below high school and its restriction

to an urban context are limitations to be considered. For future research, it is suggested to also identify the CWN levels and the relationships with the nature of children and young people. In this way, it is possible to deepen the understanding of the impact that the reference adults have on their students in the construction of their affinity with the natural environments in the studied context.

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Damaris Teixeira Paz

✉ damaris.edu.paz@gmail.com

ORCID: <https://orcid.org/0000-0002-9973-9811>

Submitted on: 02/03/2021

Accepted on: 13/01/2022

2022;25:e00131

Elisa Ferrari Justulin Zacarias

✉ elisa.justulin@gmail.com

ORCID: <https://orcid.org/0000-0003-4658-1640>

Maria Inês Gasparetto Higuchi

✉ higuchi.mig@gmail.com

ORCID: <https://orcid.org/0000-0001-6525-4018>

A Conexão com a Natureza em adultos de referência para crianças

Damaris Teixeira Paz
Elisa Ferrari Justulin Zacarias
Maria Inês Gasparetto Higuchi

Resumo: As experiências positivas com a natureza durante a infância são um forte preditor da Conexão com a Natureza (CN) ao longo da vida, a qual tem forte fator explicativo de bem-estar integral e comportamento pró-ambiental. O objetivo deste estudo foi verificar o nível de CN de adultos e a frequência com que promovem o contato com a natureza às crianças sob seus cuidados. O protocolo de pesquisa incluiu duas escalas de CN, questões sobre contato com a natureza e dados sociodemográficos. Participaram do estudo 58 pais/mães e 150 docentes da educação básica de escolas públicas de Manaus-AM. Os resultados mostraram que a área de formação, a faixa etária e frequência de contato com áreas verdes desses adultos são significativos para diferenciar seus níveis de CN. A área de formação também é um fator importante para determinar a frequência com que os pais/mães e docentes levam as crianças a áreas verdes.

São Paulo. Vol. 25, 2022

Artigo Original

Palavras-chave: Contato com a natureza; Infância; Conexão com a natureza, genitores; docentes.

La Conexión con la naturaleza en adultos de referencia para niños

Damaris Teixeira Paz
Elisa Ferrari Justulin Zacarias
Maria Inês Gasparetto Higuchi

Resumen: Las experiencias positivas con la naturaleza durante la infancia son un fuerte predictor de la Conexión con la Naturaleza (CN) a lo largo de la vida, que tiene un fuerte factor explicativo de bienestar integral y comportamiento proambiental. El objetivo de este estudio fue verificar el nivel de CN de los adultos y la frecuencia con que promueven el contacto con la naturaleza a los niños a su cargo. El protocolo de investigación incluyó dos escalas CN, preguntas sobre el contacto con la naturaleza y datos sociodemográficos. El estudio incluyó a 58 padres/madres y 150 maestros de educación primaria de escuelas públicas en Manaus-AM. Los resultados mostraron que el área de formación, edad y frecuencia de contacto con áreas verdes de estos adultos son significativas para diferenciar sus niveles de CWN. El área de capacitación también es un factor importante para determinar la frecuencia con la que los padres/madres y maestros llevan a los niños a las áreas verdes.

São Paulo. Vol. 25, 2022

Artículo original

Palabras-clave: Contacto con la naturaleza; niñez; conectividad con la naturaleza; padres, profesores.