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ACADEMIC PAPER

Humans and nature:

Ten useful findings from Environmental Psychology research

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It is now generally accepted that human activities are damaging the natural environment we live in and the natural resources that we depend upon. In the long run this development can have severe consequences for the quality of human life; indirectly, by depleting the natural resources necessary to sustain our material welfare, but also directly by damaging the quality of the natural environment (air, water, nature) in which we live. The presence of sustainability and global climate change on the political agenda has led to an increase in academic research on the relationship between people and their natural environment.

Environmental psychologists study the interaction between people and their physical (built or natural) environment. This paper presents ten findings of environmental psychology research on people and their natural environment. Nature in this paper refers to any non-human living environmental features including plants, trees, water features, but also animals. However, the majority of research in this area focuses on green nature: i.e., the presence of plants and trees in the environment. This paper shows that most people are drawn towards natural environments and that passive as well as active exposure to the natural world has beneficial effects on the health and well-being of individuals (for overviews see Maller, Townsend, Pryor, Brown and St Leger (2005), Kahn (1997), Ulrich (1993) and Frumkin (2001). The paper will also show that although there is a lot we know, there is also a lot we don't know, particularly in relation to the psychological processes which underlie the interaction between people and the natural

environment. This is just one of the potential areas wherein environmental and counselling psychologists might collaborate.

1. Living near nature has beneficial effects on wellbeing

People who live near nature report higher wellbeing and life-satisfaction than those who have no nature nearby (Kaplan and Kaplan, 1989; Kaplan, 2001; Leather et al., 1998). Kaplan (2001) showed that reported well-being was higher for people who can see nature (trees, grass and shrubs) from their windows compared to those who have a view of an urban environment or the sky. Natural views also appeared to have a positive effect on neighbourhood satisfaction. Wells (2000) examined the cognitive functioning of low income urban children before and after they had moved to an area with increased vegetation. She found that the greatest improvement in greenness of the living environment resulted into the highest levels of cognitive functioning after the move. Wells and Evans (2003) found that nearby nature has an important beneficial effect on the well-being of rural children. The psychological effects on children of stressful life events (such as family relocation, punishment at school, bullying) were less amongst children who lived in areas with high levels of nearby nature (plants in the home, view from the window and in the back garden).

Questions for counselling psychologists

Do you consider the health impacts of the natural environment when hearing about depressed clients' homes or neighbourhoods?

Do you consider the health impact of the natural environment when planning and maintaining your consulting room?

2. Contact with animals has beneficial health effects

Contact with animals has positive benefits on human beings (Frumkin, 2001). Watching an aquarium has been shown to lower blood pressure (Katcher, Friedman, Beck and Lynch, 1983) or reduce stress in patients waiting for oral surgery (Katcher, Segal and Beck, 1984). In a study with nearly 6000 patients in a cardiovascular clinic, Anderson, Reid and Jennings (1992) found that pet owners had better health (lower blood pressure

and cholesterol) than non pet owners. A nature programme including animals appeared to have a more positive effect on children with hyperactivity/attention deficit disorders and conduct disorders than a program without animals (Katcher and Wilkins , 1993). Friedman, Katcher, Thomas, Lynch and Messent (1983) found that children had lower blood pressure during an experimental study if a dog was present.

Researchers have proposed many reasons as to why people may be drawn to animals (see Vining 2003). It has been suggested that the effects are based on emotional mechanisms (Vining, 2003), where animals can provide a sense of support and comfort. Others suggest that animals help humans connect with nature which has an evolutionary advantage (Wilson, 1984). Wilson (1984) proposes that humans have an innate emotional affiliation with other living organisms: the Biophilia Hypothesis. The fact that there is a strong similarity bias in our attitudes towards animals (Kellert and Westervelt, 1983; Plous, 1993) would support this idea. We are drawn towards those animals which are positive to our survival (providing food or being indicative of food resources), but we are 'disgusted' or fearful of animals which are associated with danger, for example snakes and spiders (Öhman and Mineka, 2001).

Questions for counselling psychologists

Do you consider the role of pets and animals when talking to depressed clients?

Do clients mention pets and animals and if so in what way?

3. Exposure to natural scenes has positive effects on physiological arousal and health

Environmental restoration is the term given to a process whereby the physical environment influences the speed with which people recover from mental exhaustion and negative mood. Within the area of environmental psychology many studies have been conducted to examine this effect and the processes which may underlie it. Most of this research tends to be experimental or quasi experimental in nature and it aims to 'prove' the existence of these effects in (semi) controlled environmental conditions (Bodin and Hartig, 2001; Hartig, Evans, Jamner, Davis and Garling, 2003; Ulrich, Simons and Miles, 2003; Parsons, Tassinary, Ulrich, Hebl and Grossman-Alexander, 1998). In one of the most well known and often cited studies in this area, Roger Ulrich (1984) examined hospital records of 46 patients recovering from gallbladder surgery, over a period of nine years. Half of these patients had a view from their hospital bed of a small stand of deciduous trees, the other half had a view of a brick building wall. Ulrich found that those who had a view of a natural scene had a shorter post-op stay in hospital, took fewer painkillers and received less negative comments in nurses' notes. Ulrich provides a psycho-evolutionary approach in explaining the process underlying environmental restoration. As others Ulrich's suggests hat people are biologically drawn towards nature and natural elements. According to his Stress Recovery Theory (SRT) exposure to nature indices positive emotions in people which suppresses negative

emotions and can therefore help recovery and may even help to built a buffer against future negative emotional experiences (Ulrich, 1983). Ulrich, Simons, Losito, Fiorito, Miles and Zelson (1991) exposed 120 people to a stressful movie and subsequently showed them videos of different outdoor environments. Using several physiological stress measures they found that stress recovery was faster and more complete when people were exposed to natural rather than urban environments. Hartig, et al. (2003) found that after a stressful or cognitively demanding task blood pressure of respondents declined more rapidly when they were seated in a room with a nature view as compared to those who were waiting in a room without a window. It further declined during a walk through a nature reserve but not during a walk in an urban environment. Ulrich, et al. (2003) found that blood donors had lower blood pressure when they had been waiting in a room with a television showing nature scenes compared to those who had been exposed to urban scenes. Parsons, et al. (1998) found that students who were shown a nature-dominated drive recovered more quickly from a stressful event than those who were shown an artefact-dominated drive and they showed greater immunization for a subsequent stressful event (see also Cackowski and Nasar, 2003).

Questions to counselling psychologists

What kinds of emotional experiences do clients describe when talking about specific natural and built environments in which they work and live?

Do you consider the impact of the consultation room on the emotional expressions of your clients?

4. Exposure to nature has a positive effect on cognitive functioning

The Attention Restoration Theory (Kaplan and Kaplan, 1989) refers to environmental restoration as a cognitive rather than an affective process. A range of studies have shown that exposure to nature can help recovery from mental fatigue (Kaplan and Kaplan, 1989; Kaplan and Kaplan, 1990; Hartig, Mang and Evans, 1991). Observing nature can restore concentration and improve productivity (Leather et al., 1998). Stark (2003) showed that pregnant women who participated in a nature based activity programme (involving 120 minutes of nature based activities a week) for 13 to 64 days performed better at an attention task then women who had participated in a non-nature based

programme. Research in work environments suggests that plants in offices can improve productivity (Fjeld, Veiersted, Sandvik, Riise, and Levy, 1998; Heerwagen and Orians, 1986), although too many plants can be distracting and detrimental to performance (Larsen, Adams, Deal, Kweon and Tyler, 1998).

According to Kaplan and Kaplan (1989) an environment is restorative if it:

1) allows people to distance themselves from attentional demands (being away),

2) demands effortless attention (soft fascination: Herzog, Black, Fountaine and Knotts, 1997),

3) enables sustained effortless attention (extent) and

4) is compatible with an individual's inclinations and desires (compatibility).

An important difference between the Attention Restoration Theory (Kaplan and Kaplan, 1989) and the psychoevolutionary approach, described in the previous section (Ulrich et al, 1993) is that Ulrich suggests that affective recovery is an immediate and short term process, whereas Kaplan and Kaplan (1989) suggest that cognitive restoration takes place in stages: clearing the head, restoring directed attention fatigue, facing accumulated matters, and reflection on life goals. A study by Hartig et al. (2003) showed that both processes can take place simultaneously and that affective restoration is indeed more rapid.

Questions for counselling psychologists

Do clients who experience mental exhaustion s talk about nature as a possible place to escape?

What are your views on nature based therapy?

5. People prefer natural scenes over man-made environments

People tend to prefer natural over man made environments (e.g., Hagerhall, 2000; Kaplan & Kaplan, 1989; Kaplan, 1992). In studies where people are asked for their preference and beauty ratings of a range of urban and natural scenes people from a variety of cultures and nationalities consistently prefer scenes which are dominated by natural elements over scenes which are dominated by built elements (e.g., Herzog,

Herbert, Kaplan, and Crooks, 2000; Kaplan and Kaplan, 1989; Van den Berg, Koole and Van der Wulp, 2003).

Recent statistics from the UK Department of the Environment, Food, Rural Affairs (DEFRA) shows that 66% of the UK households indicate that having nearby green space is very important for their wellbeing, only 9% said it was not important (DEFRA, 2007). Other studies have also found that having nature in close proximity, or just knowing it exists, is important to people (Kaplan and Kaplan 1989). Interestingly, this does not necessarily mean that people will also use these spaces (DEFRA, 2007; Kaplan and Kaplan 1989).

So why do people prefer natural over man-made environments? Kaplan and Kaplan (1989) suggest that human beings not only have the ability but also a desire for information processing. Visual stimuli which provide high levels of complexity, coherence, legibility and mystery satisfy this desire and are therefore preferred (Herzog and Flynn-Smith, 2001; Herzog and Miller, 1998). Their model has been supported in studies examining visual art, architecture as well as scenes of urban and natural environments. The latter show that natural scenes tend to be rated higher on the four dimensions in the model than urban scenes (Kaplan and Kaplan, 1989).

Question for counselling psychologists

Do you clients talk about urban and natural environments and if so in what way?

6. People prefer half-open park-like environments

For most of human history humans have lived on the Savannah's of East Africa. Humans have therefore developed a predisposition to like these types of environments: the savannah hypothesis (Wilson, 1984). In support of the savannah hypothesis Orians and Heerwagen (1992) found that people from a range of different natural environments (US, Argentina, Australia) consistently prefer prototypic savannah scenes. Other studies, however, suggest that environmental preferences vary between individuals and are related to experience. Bizerril (2004) showed that 11-17 year old Brazilian students who had more contact with their regional (savannah) landscape showed more affection for it. Kahn (2007) showed that tundra and coniferous forests received more positive evaluations than desert or grassland scenes.

Despite inconsistent findings in support of the savannah hypothesis, most studies do find that people consistently prefer half open-park-like landscapes, rather than dense wild nature (e.g., Parsons, 1991; Newell, 1997; Herzog et al., 2000). Kaplan and Kaplan (1989) found that people prefer tranquil waterscapes and relatively smooth ground texture. Kaplan and Kaplan (1989) suggest that in judging landscapes people are evolutionarily drawn towards environments which afford survivability (Ulrich, 1984; Kaplan and Kaplan, 1989; Wilson, 1984), these are typically half-open, park like environments, environments which provide food and shelter. Appleton's (1975) prospect-refuge theory suggests that preferences for environments are strongly related to the extent to which such environments provide places for prospect and refuge. Herzog (2003) found that two factors were highly related to preferences for different environments: visibility (e.g., visual access, mystery) and locomotor access (e.g., refuge, movement ease).

Koole and vd Berg (2005) suggest that people prefer cultivated (park-like) rather than wild nature because the latter is unconsciously related to awareness of human mortality. Terror management theory suggests that the human-nature relationship is influenced by the development of self-awareness in human beings. To manage awareness of mortality people build a worldview that creates symbolic immortality though a variety of cultural practices (driving a car, eating with a fork) which serve to separate humans from nature

(Koole et al., 2005). They supported this hypothesis by showing amongst others that people are more likely to think about death in wild nature.

Questions for counselling psychologists

Do clients talk about death in relation to nature?

What is the role of nature and natural environments for people with fear and phobia?

7. Favourite places are often dominated by natural elements

The majority of places that people consider favourite are natural places. Favourite places are places that fulfil emotional needs and enable people to develop and maintain their identities (Korpela, Hartig, Kaiser and Fuhrer, 2001). People visit their favourite places for affective and cognitive restoration and self-regulation; a process whereby one tries to control or regulate negative emotions and cognitive depletion (Korpela et al., 2001, Korpela, Kytta and Hartig, 2002). When asked how people feel in their favourite places most of them refer to cognitive and emotional self-regulation

Favourite places are often places dominated by vegetation, although children are less likely to refer to natural places (and more to private places) than adults do. Korpela, et al. (2002) interviewed 8-9 and 12-13 year old Finish children about their favourite places and found that 20% of the children referred to a natural place. Korpela et al. (2001) asked students to describe their most and least favourite place. Almost half of the favourite places (48%) were natural places, whereas only 5% of the most unpleasant places were natural places. Korpela and Hartig (1996) showed that students find favourite places more restorative than neutral or unpleasant places. Newell (1997) studied cultural differences in favourite places among respondents from Senegal, Ireland and USA. She found more similarities than differences in responses. Overall 61% of the respondents preferred a natural place. Korpela and Ylenn (2007) found that people with health problems were more likely to refer to natural places as favourite places and they were more likely to benefit from visiting these places.

Question for counselling psychologists

Do clients talks about places they visit to restore and escape and if so what kinds of places are these and what role does nature play in these places?

8. The restorative potential of natural environments serves as a frame of reference for preferences.

There is a strong relationship between the perceived restorative potential of an environment and judgements of beauty and preferences for those environments. Van Den Berg showed people a frightening move to induce stress and subsequently measured their emotional recovery while watching a natural environment. They found a strong correlation between the perceived beauty of these natural environments and the extent to which they helped to improve the respondents' mood (Van den Berg, Koole and Van der Wulp, 2003). Staats, Kieviet and Hartig (2003) found that when people are in need of restoration (imagining themselves attentionally fatigued) they are twice as likely to find a natural scene beautiful. Hertzog (2003) found that preference ratings of different scenes were strongly correlated to ratings of all four aspects of the Attention Restoration Theory: being away, extent, fascination and compatibility. Purcell, Peron, Berto (2001) showed that people use the restorative potential of a scene as an implicit frame of reference when making preference judgements.

Questions for counselling psychologists

Do clients talk about specific places they like to go or would try to avoid?

Do clients, in need for emotional and cognitive restoration express a desire to visit natural environments?

9. Spectacular nature is awe inspiring and can promote confidence and wellbeing

Most of the environmental restoration and preference research focuses on non threatening natural environments. It seems plausible to assume that environmental restoration can only occur when one feels safe in an environment and that preferences are strongly negatively related to fear expectations. However, some studies have shown that environmental features which increase preference ratings may also increase fear ratings. For instance, mystery (Kaplan and Kaplan, 1989) is both related to preferences and to perceived danger (Herzog and Flynn-Smith, 2001; Herzog and Miller, 1998). Moreover, wildness research has shown that threatening challenging wildlife experiences can have positive effects on people (e.g., Fredrickson and Anderson, 1999; Hartig et al, 1991; Milton – this issue; Williams and Harvey, 2001). Hartig et al. (1991) randomly assigned subjects to backpacking in wilderness, non wilderness holidays (e.g. sightseeing) or no holidays and found wilderness experiences most beneficial for self-reported health and wellbeing. Williams and Harvey (2001) showed that the confrontation with wilderness can inspire thoughts of spiritual meaning and eternal processes. Talbot and Kaplan (1986) found that an outdoor challenge program resulted into greater awareness, respect and confidence in those who participated (Talbot and Kaplan, 1986). Kaplan and Kaplan found that during outdoor experiences people report many positive experiences (Kaplan and Kaplan, 1989; Kaplan, 1984). They suggest that confrontations, threats, and physical challenges can increase energy levels, confidence and inspire awe and wonder. Van den Berg et al. (2005) found that when people are asked to imagine themselves in fearful situations in nature (e.g., getting lost, being overwhelmed by a storm, coming face-to-face with a large animal) half of the respondents said it would be primarily a negative experience. However, the other half

indicated it would be both a positive (fascinating) as well as a negative (fearful) experience.

Questions for counselling psychologists

Do you consider what role challenging outdoor experiences can play in the healing process of clients?

10. Not everybody finds nature attractive

Van den Berg et al. (2005) found that high sensation seekers were more likely to indicate they would find a fearful experience in nature pleasant (fascinating). Men were also more positive then women. Action orientated people (who don't worry but get on with things) as opposed to state-oriented people (who think and worry about change) are more likely to prefer wild nature (Koole et al., 2005). Zube, Pitt and Evans (1983) found that where middle aged people tend to prefer scenes dominated by natural elements. The presence of human-made elements in such scenes tends to lower preference rates. However, the latter is not the case for young children and older people. Despite the well known benefits of contact with nature not everybody likes spending time in nature. In fact most of us spend the majority of our leisure time in built, indoor environments, even when we are in high need for restoration. Bixler and colleagues (Bixler, Carlisle, Hammitt and Floyd, 1994; Bixler and Floyd, 1997) found that around 1/5 of the children who participated in a mandatory nature based school trip did not enjoy the experience at all and indicated they would much rather have stayed in their classroom. In a later study they found that those young people who have stronger fear expectations, disgust sensitivity and a desire for modern comfort were less likely to participate in outdoor leisure activities, to choose natural environments for recreational activities, future jobs or place for a biology lab experiment (Bixler, Floyd and Hammitt, 2002).

Questions for counselling psychologists

Do clients express fear and disgust for nature and natural environments?

What is the role of nature in clients who suffer from phobia?

Discussion and areas for further research

In the field of environmental psychology there is now a limited body of research which suggests that positive experiences with nature might be useful in promoting environmental concern and pro-environmental behaviours. For instance, the use of natural environments for restoration is positively related to environmental concern (Byrka, Hartig and Kaiser, 2007), as is the perceived restorative potential of natural environments (Hartig et al, 2001). A better understanding of the processes which underlie these research findings may help promote environmentally conscious behaviour and therefore may help to contribute to dealing with the environmental problems which are facing our common future.

This paper shows that active and passive exposure to natural environments has a positive effect on the health and wellbeing of most human beings. However, it also shows we know little about why and how. The nature-nurture debate is active and ongoing. Most of the models and theories discussed here assume that the relationship between people and their physical natural environment has at least to some extent an evolutionary basis. Of course there are others, such as Wyman (1982), who suggest that human beings do not have a biological need for contact with nature but that this need has been carefully taught. Vining suggests that we are currently finding ourselves in a paradoxical situation where on the one hand we understand that we are part of the natural world and on the other hand with continued technological development we find ourselves less dependent on our natural environment: 'for many in the industrial world nature has become a sentimental luxury' (2003: 90). There is a need for psychologists to better understand the psychological mechanisms which may underlie environmental preferences and the effects of natural environments on human wellbeing. Counselling psychologists can contribute significantly to the development of research in the area of human environment studies by helping to enhance a better understanding of the relationship between people and their natural environment. Most experimental environmental psychology research focuses on healthy young individuals. Manipulations of stress and cognitive depletion in these studies are short term. More in depth research on the role of nature in the health and wellbeing of individuals suffering from longer term psychological problems can provide valuable insight into the processes which may underlie environmental preferences and the restorative effects of nature.

WC = 3646

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